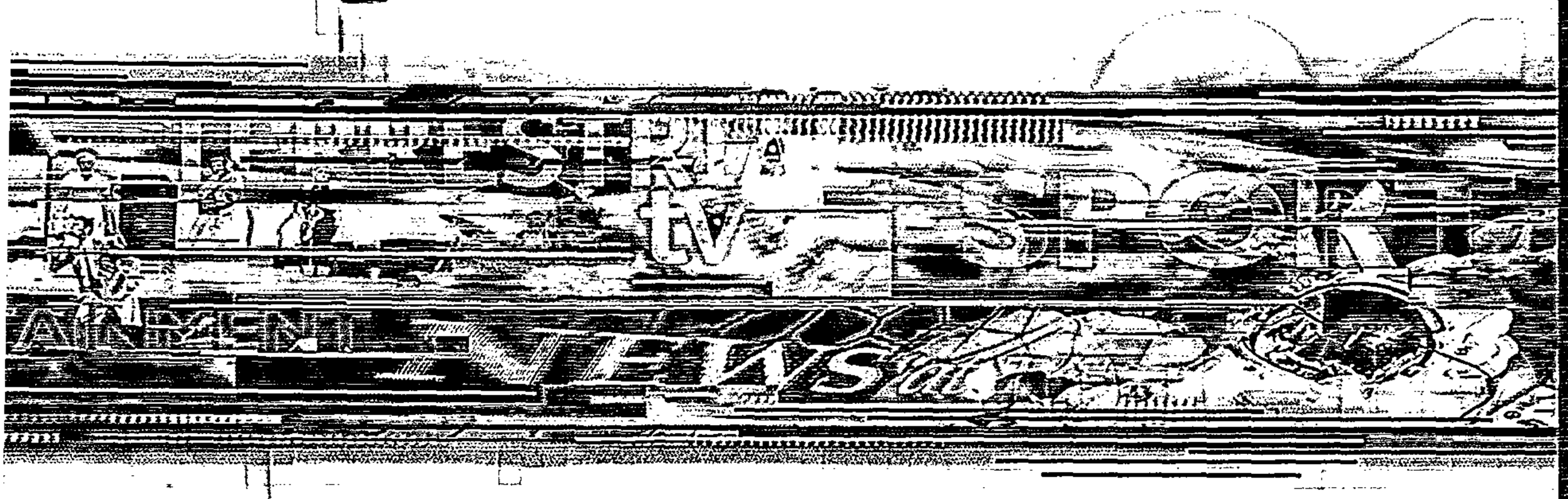
# DTN

## Digital Television Network




# Bid for Multiplex B

## Summary

DTN

Digital Television Network

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## Summary

*The following is a brief summary of certain matters relating to Digital Television Network Limited and its application for Multiplex Licence B. It has been prepared by the applicant and it is provided for information only. The summary does not form any part of the documentation required to be published pursuant to Section 7(8), or any other provision, of the Broadcasting Act 1996. The Independent Television Commission is not responsible for and can accept no liability in respect of, the accuracy or otherwise of its contents.*

*Section A of the application is available for consideration by the public at the ITC's headquarters and on DTN's own Web site at http://www.DTN.Net.uk on the next working day following the closing date for applications. It will also be available within five working days of the closing date at the ITC's regional offices, national offices and selected main libraries.*

*Note: the information presented in this summary refers to a scenario in which DTN is granted all three licences. Where any other combination of licences is concerned a clear reference to this is made in the text. A summary of particularly important differences between multiplex combinations is attached at page 12.*

## Introduction

Digital terrestrial television is the most exciting development in broadcasting since the introduction of colour. DTN is a new company set up specifically to develop this opportunity and is applying to the Independent Television Commission (ITC) for three licences (referred to as B, C and D) to operate the service. Our aim is to take British television into the 21st century, offering viewers over twenty channels of quality television and providing a revolutionary array of information and transaction services.

Our application document runs to more than 1,000 pages of text. At its core, however, is the simple conviction that digital terrestrial television is the future of British broadcasting:

- it will bring a far wider choice of channels to viewers. DTN's carefully selected channels (and the channels of other licensees) will dramatically expand the range of programming available to the public
- viewers will enjoy a radically improved viewing experience, with improved picture quality, CD quality sound and widescreen pictures for movies and sports
- traditional analogue teletext will be transported into the digital era when DTN's data services are launched. These will allow viewers to find a job, book a holiday or browse the Internet from the comfort of their home
- viewers will no longer need to trek to the video shop, as DTN will bring the latest movies into people's homes on a pay-per-view basis.

All this can be delivered without a satellite dish. Viewers will only need a set top box or a new digital television. Consumers can simply plug in the new equipment and start watching. And all this will cost less - our subscribers will pay, on average, half of what BSkyB subscribers pay today and will even be able to save money on their telephone bill through our special telephony service.

DTN's plans for delivering the full promise of digital terrestrial television are explained below.

## The Challenge of Digital Terrestrial Television

DTN is convinced that digital terrestrial television is a substantial commercial opportunity, as well as a boon to British viewers. Nevertheless, we are well aware that it faces real technological and marketing challenges, particularly during its launch period. A unique combination of insight and experience is required to succeed. The crucial ingredients of our approach are as follows:

- programmes of innovation and quality that will appeal to a broad section of the community and will inform, educate and entertain *(see below)*
- new and creative data services bringing the information society to the mass of the UK population *(see page 4)*
- the technical skills and assets to take a highly complex new technology to launch in a little over a year *(see page 6)*
- a relentless focus on the consumer *(see page 8)*

Our conviction is that phrases like the "Information Superhighway" and "convergence" are meaningless until the broad mass of consumers are using and enjoying the new media. DTN's team *(described on page 9)* has the vision, the commitment and the know-how to make digital terrestrial television happen.

## DTN's Programming

Digital terrestrial television will succeed if it provides something that people want. Its real test will be whether people will devote their time and money to watching and using it.

DTN's programming services combine the best traditions of British broadcasting with the novelty and innovation of the digital medium. Digital television is not just a chance to add quality to existing television services, it is an opportunity to use sounds, pictures and data in new and startling combinations. It will provide new creative opportunities to programme makers and a new kind of television experience to viewers. About three quarters of DTN's programming will be British-originated, and we will make a substantial investment in new production.

Behind our channel line-up is a rejection of the notion that an abundance of channels leads inevitably to a vulgarisation of the medium. We believe digital terrestrial television will permit a new type of television to emerge - television which can serve small audiences with specific interests with good quality output.

Our proposal for The British Sports Channel, for example, will enable new forms of sport on television in close collaboration with the many sports associations around the country. It will have several distinct audiences, all sharing a passionate commitment to seeing their favourite sport regularly on television, many for the first

time. The Knowledge Network will show educational programming, appealing to a very different audience. But it will also build discrete groups of committed viewers. Our third new channel, the Money Channel takes a different approach. We believe money is of universal interest, but is treated by most broadcasters in an unduly specialised and excluding way. We will open up the world of money in all its many forms to the entire population. All of these channels will innovate, exploiting the full interactive potential of digital terrestrial.

We will also launch Metro TV. This will begin as a local service in Greater Manchester, made by Mancunians for Mancunians. If it is successful, similar services will be offered in other cities. ITN will supply us with The Living History Channel, devoted to events from the immediate past from the makers of News At Ten. And Digital Box Office will give us a range of pay-per-view offerings from both the British cinema and the Hollywood studios.

In addition to these completely new services, we will be offering a range of exciting channels from established broadcasters. Our plans include a travel channel, a channel on wildlife, a music channel, a movie channel and a cartoon channel; and if we are successful in our application for all three multiplexes, the BBC have indicated that they are willing to offer us eight exciting new services.

Our likely programme line-up is given in Box 1.

**Box 1: DTN Programming**

*If we win three multiplex licences, we plan to offer the following:*

***Original channels created by DTN***
- The Money Channel - a new way of looking at money for a general audience
- The Knowledge Network - a new way of learning for young and old alike
- The British Sports Channel - live sport and sports news, 24 hours a day

***Specialist Channels***
- The ITN Living History Channel - the real stories behind recent events from one of Britain's best known broadcasters
- Animal Planet - wildlife programmes for the whole family
- Travel - where to go, what to see and how much to spend around the world
- The Box - Britain's most popular music channel, programmed by the audience itself

***Digital Box Office***
- Our pay-per-view service of movies, sport and events

***The Best of the World***
- TCM: Turner Classic Movies - classic movies from the Golden Age of Hollywood
- Cartoon Network - the best cartoons from the best kids channel with evening programmes for the grown ups
- MGM Gold - entertainment programming from the home of the Roaring Lion
- And coming later, The Movie Experience - an entire channel devoted to movies from Britain and abroad

***Metro TV***
- Our new local service starting in Greater Manchester and coming to your neighbourhood soon

*Note: If we win two multiplexes, we will offer the Specialist Channels, the Best of the World and the Digital Box Office (NB. we will include The British Sport Channel only if awarded Multiplexes B and C); if we win a single multiplex licence, we will offer the Specialist Channels and the Best of the World (NB we will include only TCM under "Best of the World," if allocated Multiplex D)*

## Data and Telephony Services

As people's ability to access and process information increases, a common concern is that we will become a society of information haves and have-nots. We believe that digital terrestrial television can help democratise the Information Society. The new generation of television equipment will gradually become as ubiquitous as traditional analogue televisions are today, bringing a powerful computer into every home. We have no doubt that this idea will appeal - our market research suggests that people's interest in digital television increases when they are told about the data services that will be available.

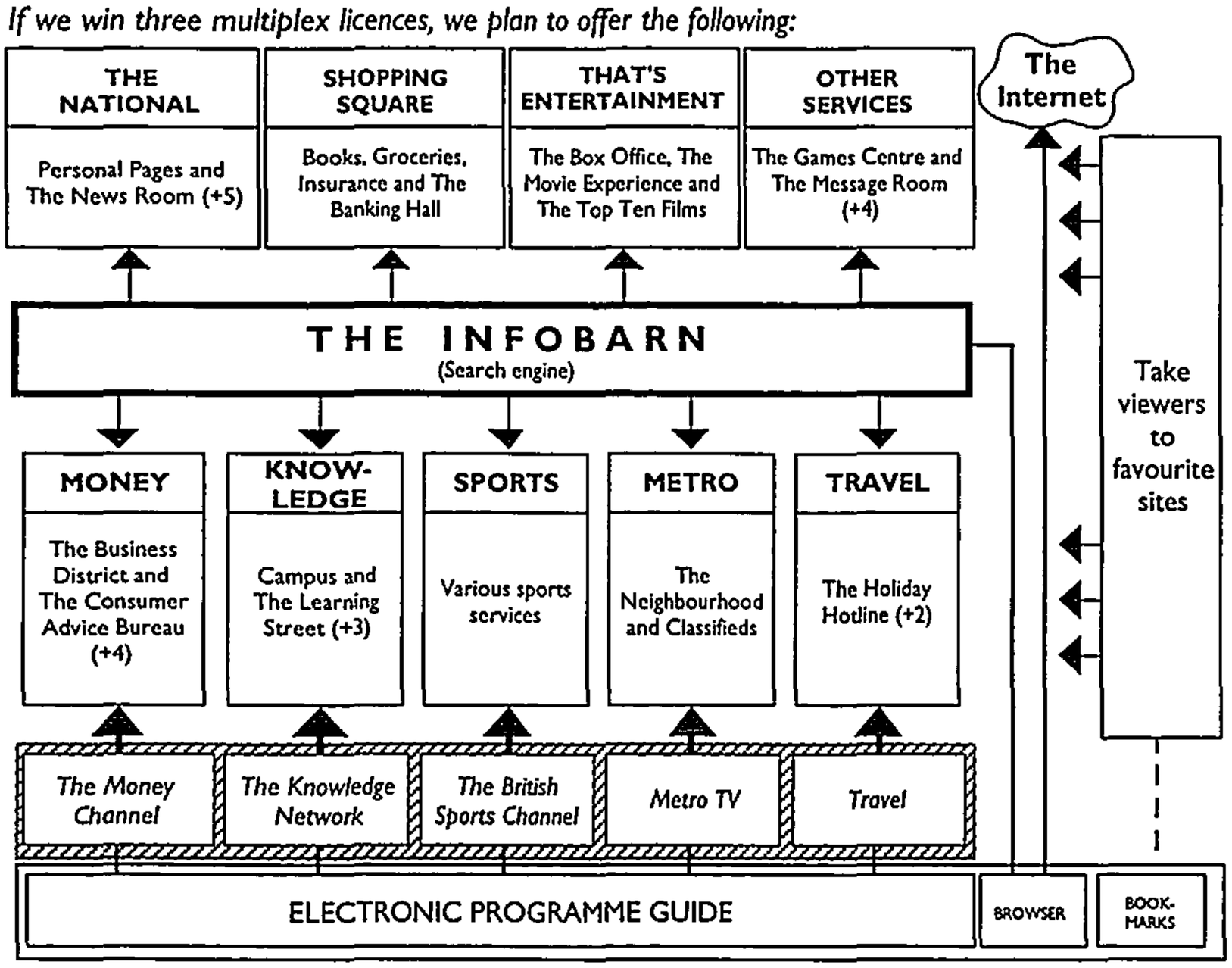
Our data services will be relevant, fast and easy to use. We will offer over 20 services linked to, and cross-promoted by, our channel brands, Money, Knowledge, Sports,

Metro and Travel. In addition, there will be a range of other services, notably the Shopping Square, a home shopping service, and various national news services.

Our services are listed in more detail in Box 2.

**Box 2: DTN Data Services**

*If we win three multiplex licences, we plan to offer the following:*




*DTN's Programme Services* *DTN's Data Services*

*Note: Numbers in brackets indicate number of other services*

*Note: Most of the services above offer both a 'superteletext' service and an online facility. If we are awarded Multiplexes B and C, we will still offer our online service and our 'superteletext' service, although the latter will be reduced in size to reflect the reduced capacity. If we are awarded other joint multiplexes (either B and D or C and D) or any single multiplex, we will not offer our online service and we will have to reconfigure our superteletext service accordingly*

Any consumer resistance to DTN's data services will be overcome by the way that they are presented. The services will make it easy for users to get the information they want, when they want it. Television programmes, continuity features and the EPG (the electronic programme guide - an on-screen version of the TV listings) will all draw the viewer's attention to a series of related and easily-accessible data services, many of which will be marketed using the brands of our conventional channels. A viewer could watch a programme about Tunisia on Travel (our travel channel), enquire about a holiday package advertised on the programme and, using the online link from our set top box, book the holiday and pay for it. This will involve sophisticated technology, moving from a conventional television programme to a very fast version of teletext to an online service and, finally, to an exchange of financial and personal details,

enabling the transaction to be completed. The key point is that the viewer will move easily and seamlessly between all of these services. Book a theatre ticket, find out a phone number, consult our encyclopaedia - go no further than your television set.

DTN has discussed its service proposals with a wide range of companies, associations and charities. We have obtained support for the service concept from over sixty organisations. DTN's parent company, International CableTel is an Internet service provider through its subsidiary Cable Online and it is also a partner in the branded online offering, Virgin.Net. Combined with the telecommunications expertise of both CableTel and NTL, DTN is the best equipped company in the UK to launch these services.

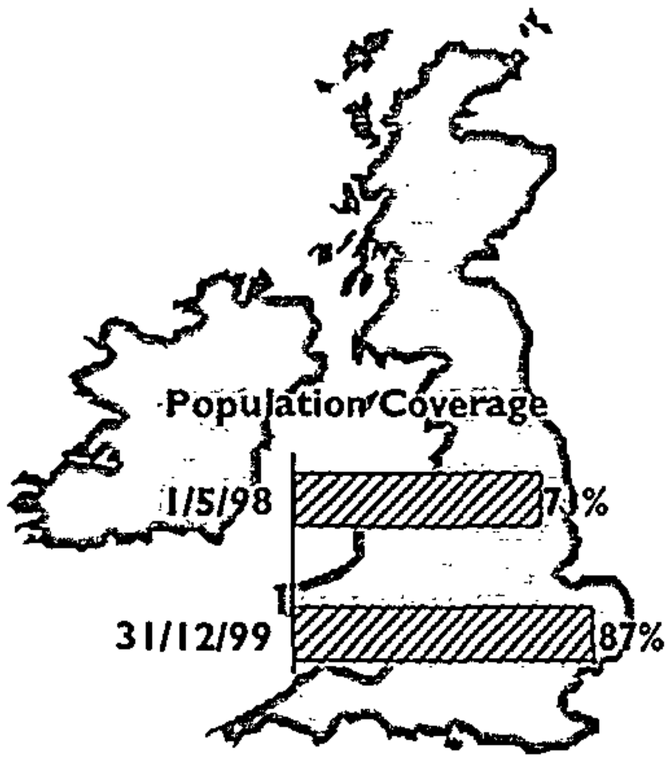
We also plan to provide telephony at a discount to normal rates for long distance and international calls. International CableTel has experience of the positive impact of telephony on the take-up of cable television services in Britain. Accordingly, we are convinced that a package of powerful and affordable programming, easy to use and exciting data services and telephony will be a compelling proposition to the British public.

## Technology Strategy

DTN's technology expertise is the foundation upon which its aspiration to bring digital television to the mass market in the UK is based. Technology will be absolutely critical to delivering easy to use, low cost and high quality services to the largest possible audience in the shortest timeframe. The key elements of digital terrestrial's technology strategy and the rationale behind them are as follows:

- *rapid roll out of the service*: our aim is to bring digital terrestrial television to the British public as quickly as possible. BSkyB is likely to launch its digital satellite service towards the end of 1997. We will launch our service within the first six months of 1998, as shown in the roll-out plan in Box 3.

**Box 3: Outline of Transmission and Roll-out Plan**




If we win three multiplex licences, the key features of our transmission and roll-out plans are as follows:

- start date: 1 May 1998
- coverage at start date: 40 transmitters, 71% of the population
- final coverage complete : end 1999
- coverage at end 1999: 81 transmitters, 87% of the population
- as new frequencies become available, we will extend coverage
- at all stages, our plans for coverage are well ahead of ITC targets

*Note: If we are only awarded a single licence or two licences, we will clearly need to consult with other licensees and agree a transmitter roll-out plan with them*

- *a strategy which makes set top boxes easily accessible*: one strategy for digital terrestrial might be to rely entirely on digital television sets with the necessary software capabilities integrated within them - idTVs, as they have become known. In our view, such a strategy would disenfranchise many members of the public. Set top boxes allow the large number of people who are not contemplating buying a television set in the near future to gain access to digital terrestrial from its launch. In addition, a strategy based around set top boxes will draw suppliers of programming to digital terrestrial - the last thing that they want is to supply channels which hardly anyone can watch. Consequently, in the early years, nearly 90% of DTN's subscribers are projected to be connected to DTN by a set top box.

- *a 'high spec' strategy for set top boxes*: the set top boxes must be future proof. It is important that subscribers do not view digital terrestrial as a technological cul de sac. We must be able to say to them that the set top box they buy or rent will be able to process a signal from satellite and cable, as well as terrestrial. This means extra ports and processing power must be incorporated within the box. Additionally, a 'high spec' box will be able to cope with our data services. DTN has developed a detailed specification for its set top box which meets these objectives.

- *a low cost set top box*: while the set top box needs to incorporate advanced features, it must not be expensive. We intend to combine advanced features and low cost by using standard components and by securing manufacturer support for what we are proposing. Subsidy of the set top box also plays a part, as described below.

## Focus on the Consumer

Three-quarters of households in the UK have yet to subscribe to pay-TV. In formulating our marketing strategy, DTN set out to understand why this is the case. Our market research indicates that people want value, choice and flexibility in multi-channel television. Our marketing strategy seeks to accommodate these findings.

In addition, we also recognise that, when we launch digital terrestrial, we will be selling a totally new technology - and consumers will react with appropriate caution. We know that we will have to build confidence in our service and earn the trust of the public.

To reflect all this, our marketing strategy has a number of different facets:

- *an array of programmes and services designed to build subscriber and viewer numbers*: we have chosen programmes and services which offer quality, novelty and innovation within the broadcasting traditions with which our viewers will be familiar
- *low prices*: we will subsidise our set top box substantially to give the consumer real value for money and will offer both rental and purchase options*. In addition, we will keep the cost of the services low, offering a small basic package and several small additional packages of channels that the customer can pick and mix from at will.
- *hardware design*: our set top box will be future proof, upgradeable to receive satellite and cable channels and any new digital terrestrial channels that come later. All our equipment will be easy to use and "plug and play"
- *effective distribution channels*: we have developed a detailed set of procedures for both rental* and sale of set top boxes and for the sale of idTVs. We have obtained extensive support from retailers for our approach. In addition, we may develop a proposal for a direct rental operation which we believe could play an important role in the early years of the service*
- *excellent customer support*: our subscriber management centre in Cardiff will be staffed by about 1,000 people by the year 2000, fully trained and available 24 hours a day to help consumers with their enquiries.
- *a comprehensive communications plan*: the communication budget we have committed to will make DTN the major advertiser in the sector in 1998 and should achieve a 90% awareness level of the service at the end of our first year. Consumers will know who we are, what we offer and where to go to subscribe to our services.

* *this only applies if we are awarded all three Multiplexes B, C and D or joint Multiplexes B and C - for further details, see page 12*

## DTN's Team

The final ingredient of DTN's strategy is its team. DTN is wholly owned by International CableTel which is the third largest cable operator in the UK and owns NTL, one of two major British transmission companies.

CableTel brings great strengths to DTN. As well as its online interests mentioned above, its cable and residential telephony penetration rates are 50% above the industry average. It has now launched a new package of services which is achieving penetration of twice the industry average. Over 95% of its customers are satisfied with its service.

NTL also brings critical skills to digital television. It has accumulated more expertise relevant to this business than any other company in the UK. In addition, NTL has a full national telecommunications network which will enable DTN to offer its unique range of data and interactive services. No other company in Britain can draw on the range of technical skills and assets that will be required to bring these exciting new services to the British public.

We have also assembled some of the best programme makers from Britain and abroad to create a raft of new channels. As mentioned above, we have in addition, obtained the support of over sixty companies who would like to offer data services.

We believe our team combines the key attributes to succeed - a rare combination of technical and commercial skill, entrepreneurialism, a history of well-judged innovation and a commitment to quality. Details of the team are shown at Box 4.

[redacted]

## ... and finally

The ITC's Invitation to Apply requires that, while applicants are permitted to apply for more than one licence, each licence must be applied for separately. Applicants are also prohibited from making an application for one licence wholly conditional upon securing one or more licences. We are therefore bidding for three single licences, respectively Multiplexes B, C and D. However our aspiration is to win all three.

This is because we want the new business to succeed. Our view is that digital terrestrial television is not isolated from the rest of the pay television industry. On the contrary, it has to carve out a market for itself against a very powerful competitor. To create effective competition to digital satellite, digital terrestrial cannot afford to go through difficult and time consuming attempts to collaborate. By allocating the maximum number of commercial multiplexes to a single entity, the ITC can give digital terrestrial the best chance of establishing itself against its competition.

## Differences between Multiplex Combinations

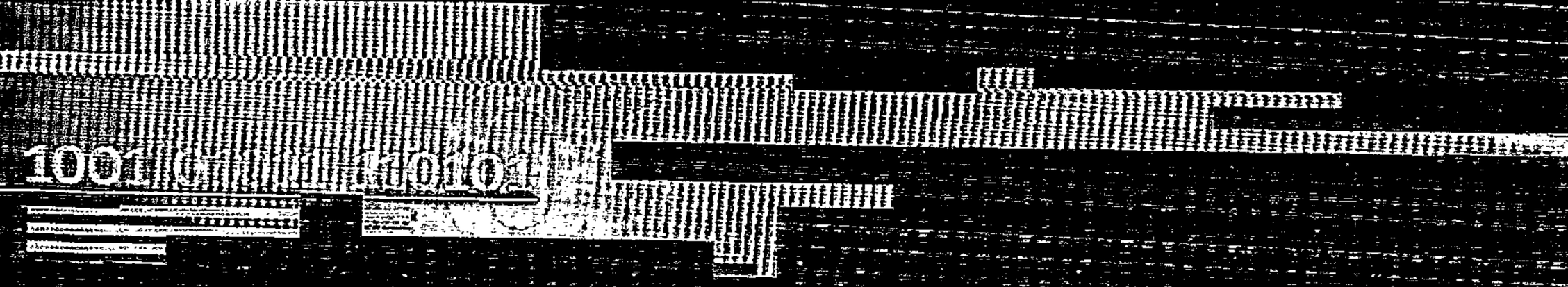
(i) Allocation of channels to multiplexes

| Channel | B | C | D | BC | BD | CD | BCD |
|---|---|---|---|---|---|---|---|
| The ITN Living History Channel | B | C | D | B | B | C | D |
| Animal Planet | B | C | D | B | B | C | B |
| Travel | B | C | D | B | B | C | B |
| The Box | B | C | D | B | B | C | D |
| TCM: Turner Classic Movies | B | C | D | B | B | C | D |
| Cartoon Network | B | C | | B | B | C | D |
| MGM Gold | B | C | | B | B | C | D |
| Data Services | B | C | D | B | B | C | B |
| CA/SMS/EPG | B | C | D | B | B | C | B |
| The British Sports Channel | | | | C | | | B |
| Digital Box Office | | | | C | D | D | C |
| Data Services | | | | C | D | D | C |
| CA/SMS/EPG | | | | C | D | D | C |
| The Money Channel | | | | | | | B |
| The Knowledge Network | | | | | | | B |
| Metro TV/Hindi Channel | | | | | | | C |
| Horizons | | | | | | | B |
| Style/Showcase | | | | | | | B |
| Arena/Learning | | | | | | | D |
| Data Services | | | | | | | D |
| CA/SMS/EPG | | | | | | | D |

(ii) Promoting or assisting the acquisition of equipment: if DTN is granted all three Multiplexes B, C and D or B and C (jointly), then we plan to subsidise set top boxes and offer them for rental; in any other eventuality, we are not planning to either subsidise or rent them

(iii) the effects of other differences between multiplex combinations are summarised in the notes to Boxes 1-4 (see above)

*DTN welcomes enquires about our application; if you would like more information, please contract* [redacted]



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COPY 1

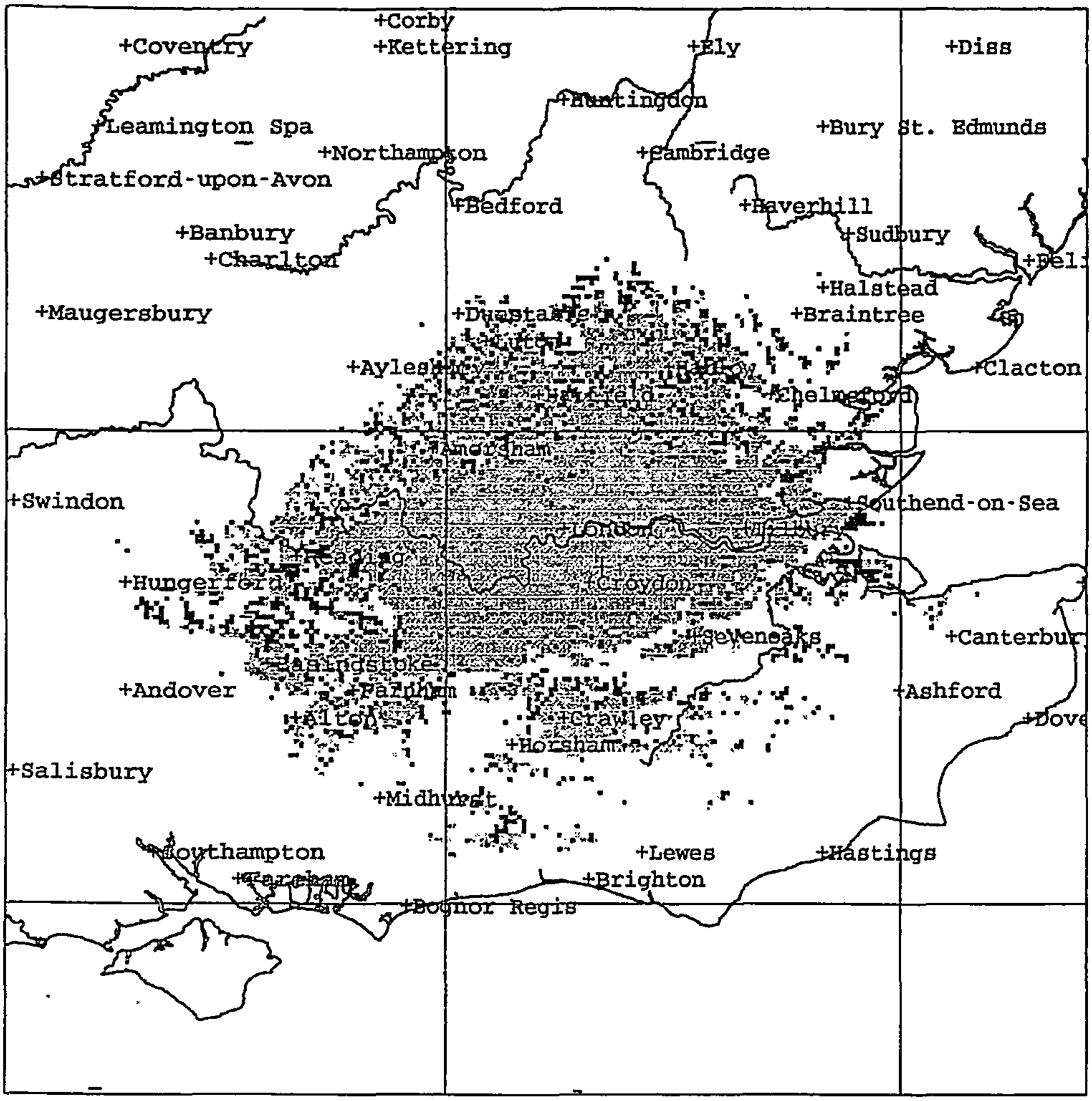
# DTN

## Digital Television Network

# Bid for Multiplex B

## Section A

DTN
Digital Television Network




CRYSTAL PALACE -3dB

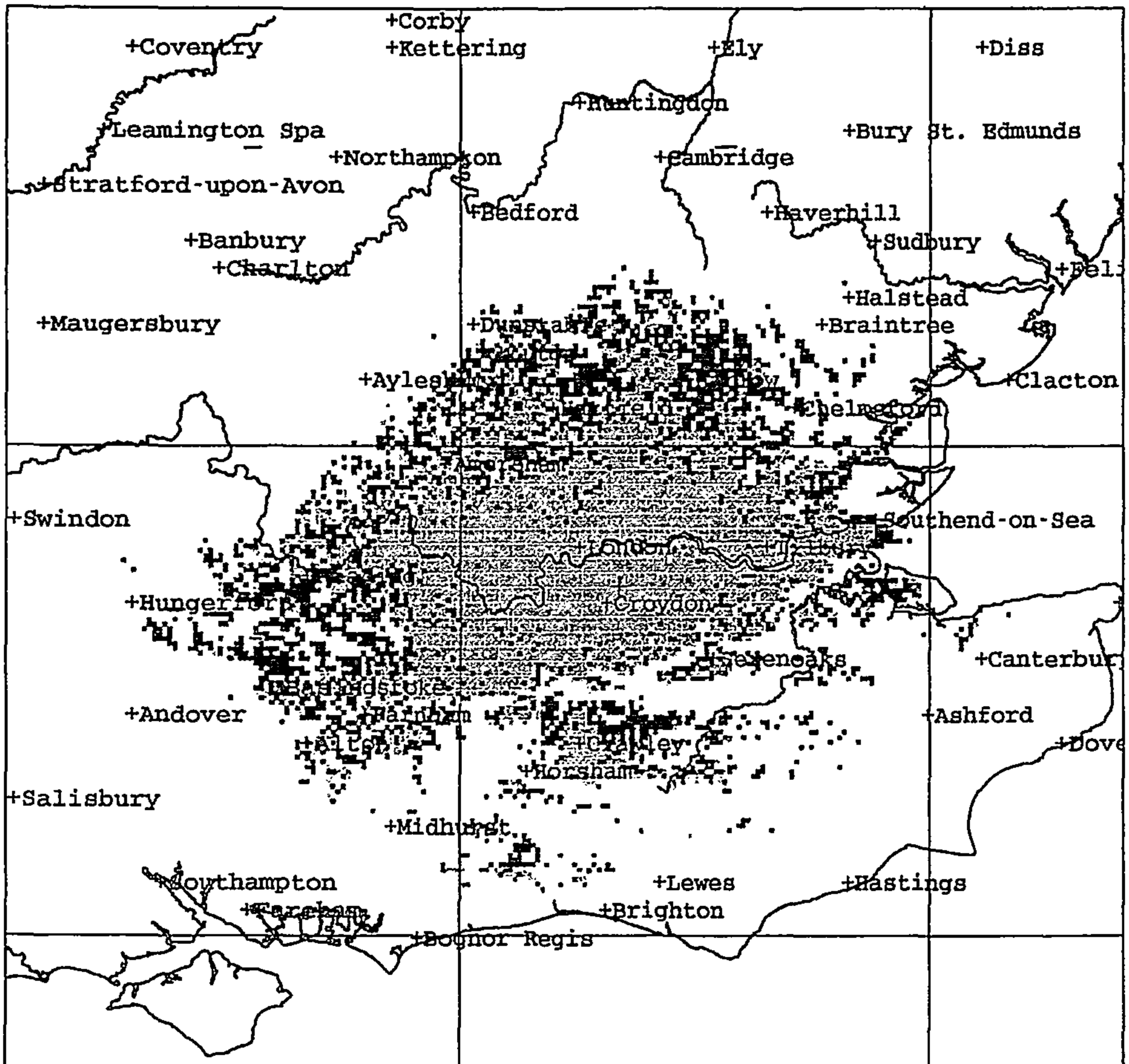
Field Strength (dBuV/m)

1

2

3

| | |
|---|---|
| File: | CTEMPCP1.fs |
| Tx NGR | TQ339712 |
| Site height | 110.0 metres |
| Aerial height | 211.0 metres |
| Max ERP | 6.500 kW |
| Frequency | 479.300 MHz |
| Bottom left ngr | SZ100600 |
| Top right ngr | TM400900 |




CRYSTAL PALACE -6dB

Field Strength (dBuV/m)

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | |

| | |
|---|---|
| File: | CTEMPCP2.fs |
| Tx NGR | TQ339712 |
| Site height | 110.0 metres |
| Aerial height | 211.0 metres |
| Max ERP | 6.500 kW |
| Frequency | 479.300 MHz |
| Bottom left ngr | SZ100600 |
| Top right ngr | TM400900 |

Consequently every reasonable effort has been taken in the system design to ensure that a constant level of transmission is maintained at all times. The following safeguards have been incorporated:

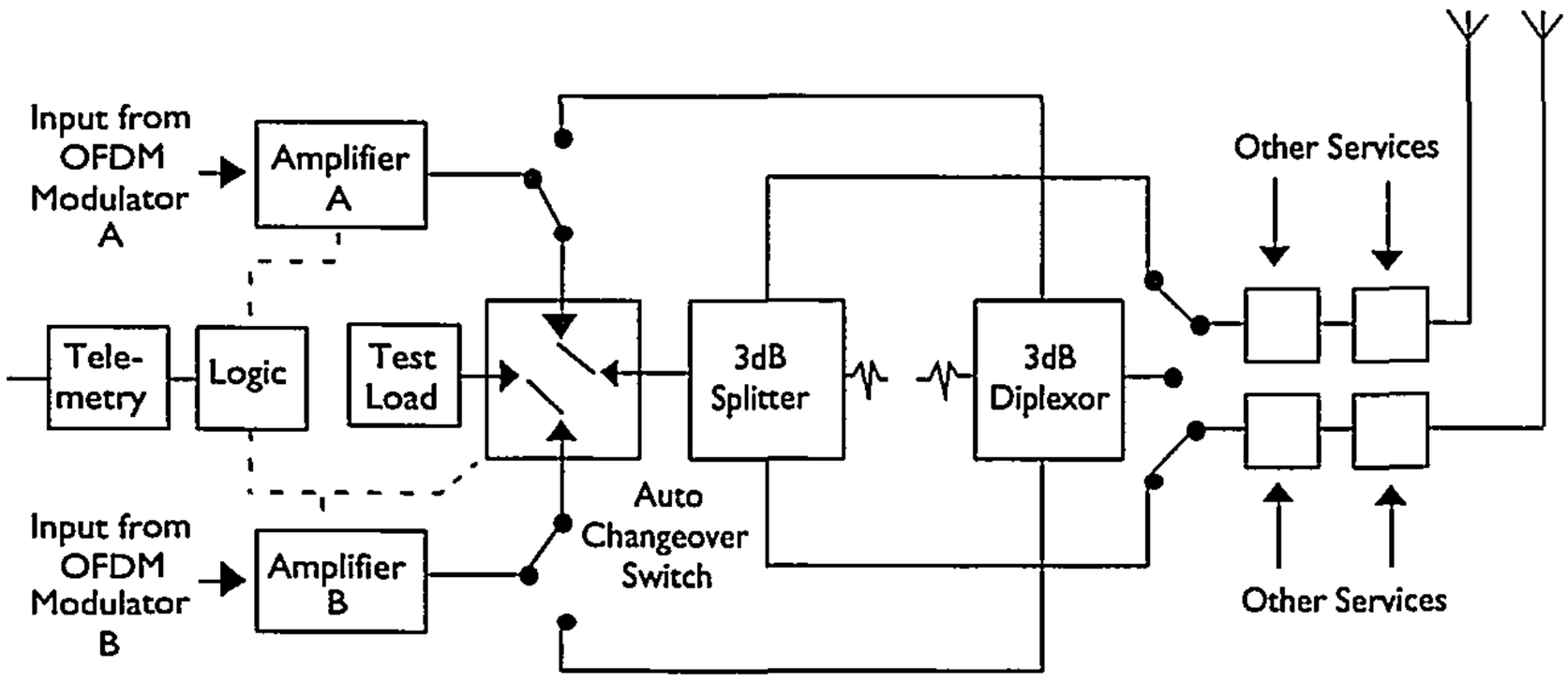
***Modulators***

Main and standby modulators will be fitted as standard and will incorporate an automatic changeover and control system which can select either modulator under local or remote control. Modulation parameters will be in accordance with the DVB-T specification for a COFDM system.

***High Power Amplifiers***

The high power amplifiers will consist of a main and a reserve system. An automatic changeover and control system will be incorporated. In a fault situation, this will operate and perform a changeover to the reserve system within several seconds. It is expected that in the large majority of stations, multi-module solid state amplifiers will be used for reliability and ease of maintenance. In the unlikely event of a failure of a combining unit or half the antenna, facilities will be available to manually combine the two high power amplifiers and feed them into the remaining half antenna. This novel feature will thus restore the service area as closely as practically possible. A block diagram is included in Exhibit A2.7 which shows how this will be realised.

**Exhibit A2.7: RF Amplification System**




The performance of the modulator/amplifier combination will conform to all the appropriate specifications. Correction circuitry will be incorporated to optimise the performance and the efficiency of the equipment.

***Combining Units and Transmission Feeders***

Channel combining units are required to combine the digital transmissions with either other digital channels or with the existing analogue services. Both the combining units and the transmission feeders are duplicated for reliability. The combining of several digital terrestrial television services is complicated and the solutions vary from site to

site. In most cases where they will be combined with the existing analogue services, it will be necessary to re-engineer the existing two or four channel combining units. Although the COFDM power for each digital service is relatively low, account must be taken of the fact that the combiners may have to handle both the sum total power of up to six digital and four analogue services and also withstand the total peak voltages which are created. NTL have operated and maintained combiners of this type for many years and are confident of providing the most cost effective solutions to meet the requirements.

### *Antennas*

The antennas for digital terrestrial television will consist of two separate halves so that even a failure of an individual half will not result in a total loss of service. Transmitter switching arrangements will be included to minimise the effect of half antenna working which is explained above.

Wherever possible, maximum utilisation of the existing analogue antennas has been made in order to minimise costs. However, frequency planning restrictions have, in many cases, dictated that new custom designed digital terrestrial television antennas must be installed. Antennas will be developed to fill the permissible maximum coverage in the most cost effective manner.

### *Telemetry*

A telemetry system is already being developed for use with the existing NTL trial system at Croydon. The system is designed to interface to the equipment via an ethernet link and a single telemetry system will be able to handle all multiplexes. A typical arrangement is shown in Exhibits A2.8 and A2.9.

**Exhibit A2.8: Telemetry**

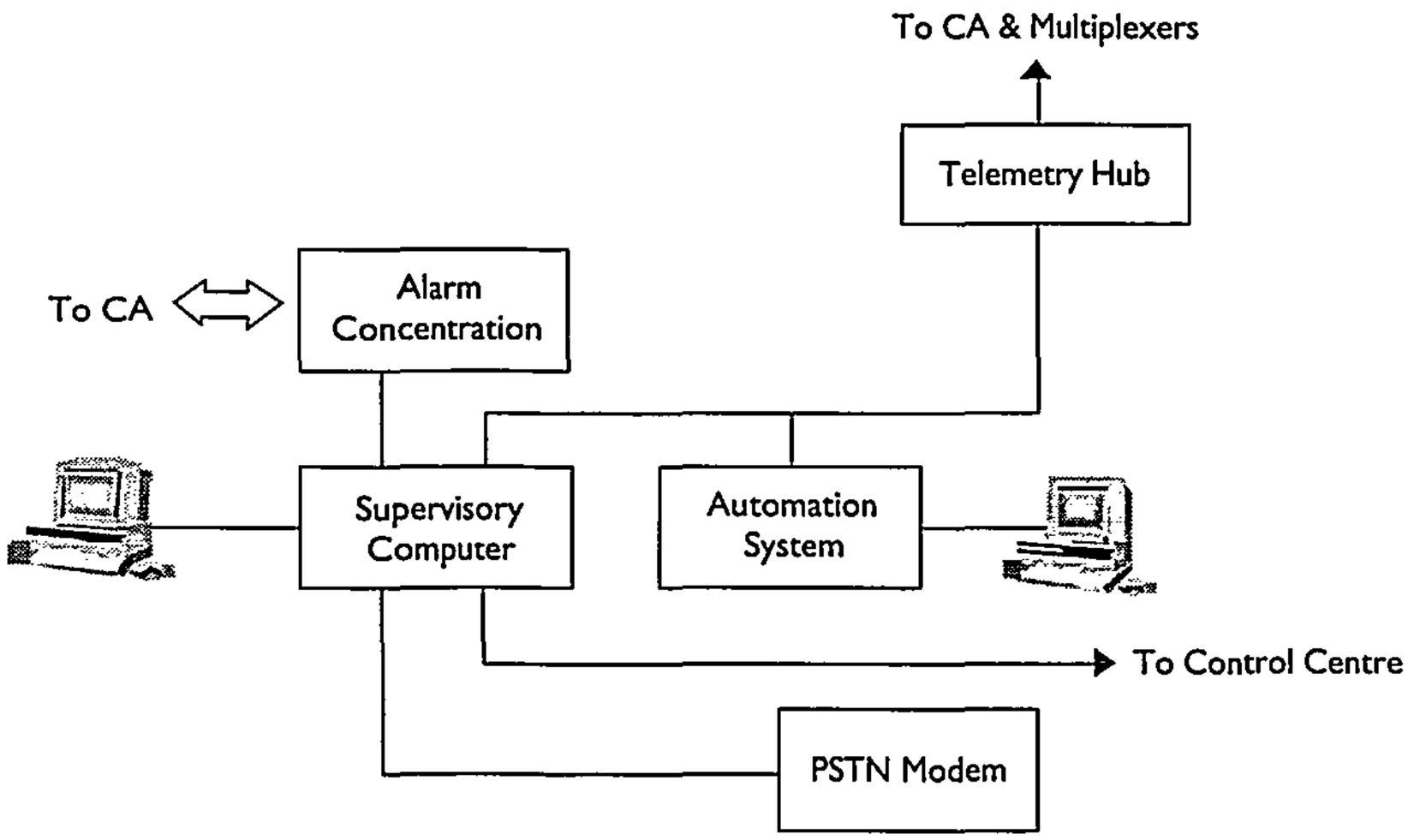
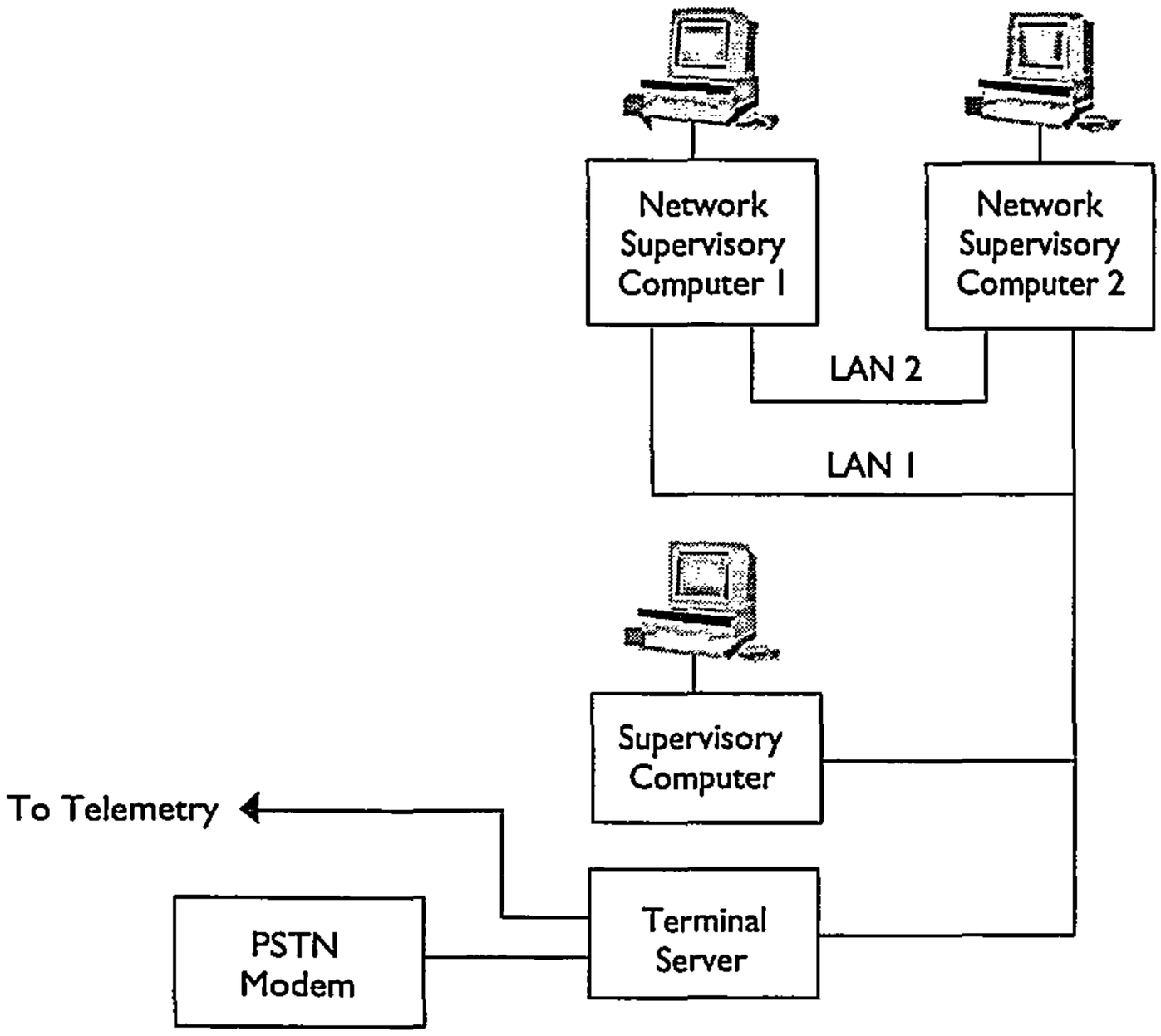


**Exhibit A2.9: Control Centre**




The Network Management System (NMS) talks to the Management Control Computer (MCC) via the ethernet link and passes data on to the supervisory computer. The supervisory computer also takes in alarms from miscellaneous equipment via the data concentrators. A fixed link to the remote control centre is provided, with a PSTN line as back-up.

***Conventional Telemetry***

Where telemetry is required for a site that does not include an MCC or equivalent, then a conventional telemetry system will be used. This will be connected back to NTL's Network Control Services Centre (NCSC).

***Relay Stations***

It has always been assumed that the 30 relay stations will re-broadcast the signals received from their parent station and that they will be relatively simple (hence there is no need for multiplexers, SI injection or COFDM modulators).

However, current frequency planning work, just commenced at NTL, indicates that probably less than 50% of the relay RBL paths will be useable because of co-channel interference or interference from adjacent channel on-site analogue transmissions. In these cases, it will be necessary to derive the programme feed by other means and to install the additional hardware required. This is also likely to have significant implications for the need to procure extra land to provide space for additional

accommodation and perhaps satellite dishes. Work to evaluate this aspect in more detail is well progressed.

### Service Information (SI) Management

The information required to decode an MPEG2 Transport Stream (TS) can be derived from the Program Specific Information (PSI), as detailed in the MPEG specification. However, in order to improve the ease of service selection and to shield the viewer from the complexities of the packet structure of the TS, additional SI can be added.

In order to co-ordinate the use of this SI, the European Digital Video Broadcasting (DVB) project has produced a set of standard formats (known as Tables) for the way this information is structured. This allows a DVB compliant receiver to operate with any system organised in this way. These Tables are now set down in an international standard ETS 300 468 and expanded upon in the guidelines for use, ETR 211.

Even then, there is scope for individual variation (as several options are frequently listed) and, whilst none of the variants will prevent operation within a TS, they could produce difficulties in swapping between multiplexes in the UK if different formats are used. The UK Digital Terrestrial Group (DTG) has attempted to produce a set of standards for transmissions and these are contained within the DTG D-Book. As part of this structure, it is necessary to transmit information relating to the other multiplexes.

It is important to note that none of the above organisations have any regulatory powers and it has fallen to the ITC to specify what SI must be carried within a UK digital terrestrial television transmission.

In general, the mandatory SI is limited to that required for basic operation within the licensee's own (actual) multiplex. However, the ITC has proposed the use of between 25 and 30 SI insertion points (locations to be decided) where certain SI will be required to be inserted, including information relating to other multiplexes (these are listed in the draft ITC Rules of Operation on the use of the DVB-T Specification, Revision 1). This will enable a receiver to be aware of other services available from the same emitting point, which may be specific to that point.

It is important to note that, whilst not mandatory at the moment, this situation may change and the proposed distribution allows for a simple upgrade path to incorporate the necessary modifications should a minimum compliance solution be chosen.

For minimum compliance, all mandatory Tables would be generated at the playout centre and distributed to all terrestrial sites in its complete final form. This means that at each transmitter site the minimum of equipment would need to be installed.

Once the decision is made to move to a more comprehensive SI structure, the proposal also contains a further upgrade path to allow for the insertion and carriage of

more complex (and constantly changing) SI, in the form of Event Information Tables (EITs) which will require interaction with other services at the same site.

It is important that these upgrade paths meet several objectives:

- they are cost effective
- they avoid disruption to the service if installed at a later date
- they are not yet dependent on specified information exchange protocols
- they allow a progressive failure mode, such that failure of the exchange mechanism does not prevent ITC compliance
- where possible, they are based on currently available technology with any new equipment likely to be available in the required timescale.

The NTL proposals meet these criteria.

At a non SI insertion point (SIIP) transmitting site, the distributed signal is received by an integrated receiver decoder (IRD), converted to a TS and passed on to the OFDM modulator unaltered. This means that the SI carried from such a site will not reflect the local services available.

However, in order to provide a corrected service list descriptor, the IRD can be replaced by a transcoder. This unit demodulates the incoming QPSK from the satellite and converts it to a baseband MPEG TS. However, it differs from an IRD in its ability to perform basic SI manipulation. Within its NVRAM is programmed the local static elements of the SI that are required for ITC compliance at an SIIP. The transcoder replaces the incoming NIT and replaces it with its own local version complete with (if required) the other frequencies list descriptor.

The final stage of SI manipulation is to add in the EITs from the other multiplexes being radiated from the site. At the site, a bank of terrestrial IRDs tuned to the other multiplexes produce a series of complete transport streams. These are passed to an MPEG2 decoder board fitted in an SI "fixer" computer which extracts the EIR actual from each stream and converts it into a format that the transcoder is able to handle. The transcoder then inserts this data into the relevant EITs for transmission.

**Accommodation**

New buildings will be constructed, since there is insufficient space in the existing NTL buildings to accommodate the new transmission equipment. Outline designs have been produced and planning permissions sought for these and also for the new antennas and satellite dishes.

At some BBC Landlord sites there may be sufficient space available in their existing buildings. If this proves to be a more cost effective solution, then the opportunity to avoid the construction of a new building will be investigated.

**Power Supplies**

All the main stations have duplicated power supplies. The switch boards are designed so that maintenance can be carried out without interruption to programme services. This philosophy will be continued for the digital services. Where appropriate, equipment will be supported by UPS units.

# Satellite Distribution System

## Overview

This section addresses the distribution of the three MPEG multiplexes from our Broadcast Operations Centre to the terrestrial transmitter sites. The first part describes DTN's solution and the second is a functional description of each of the main elements of the system.

## DTN's Solution

The arrangement to be adopted for Satellite Distribution will support the transmission of three multiplexes via satellite and allow reception of each multiplex at each of the 81 terrestrial transmitter sites.

The twin satellite solution proposed will provide total resilience to the failure of a single satellite or transponder:

- all three multiplexes will be provided continuously on two satellites at different orbital locations
- all signals will be available continuously at each of the 81 receive sites on two separate antennas where possible.

By necessity, though also conducive to the system's overall availability and security, two uplinks will be provided. Receive sites will be provided with two antennas and fully duplicated receive subsystems.

The space segment capacity provided aboard both spacecraft is fully restorable and any failure of the satellite capacity will be restored, either by satellite reconfiguration or by redeployment.

During any restoration manoeuvres or payload reconfigurations, the three multiplexes will always be available at the terrestrial transmitter sites from the alternate satellite.

This option will provide resilience against non-availability of a single transponder due either to satellite operator preventive maintenance, investigations/tests or sun outages.

DTN have contracted with NTL to provide distribution services.

## Functional Description

### *At the Broadcast Operations Centre*

Three MPEG compression hubs are to be located at the BOC, each of which will encode up to eight video services and provide an MPEG2 Transport Stream with embedded Reed Solomon Coding.

The current distribution system is based on the assumption that the MPEG equipment will be manufactured by DMV, the leading manufacturer of video compression equipment.

Each of the compression hubs will provide 24, 24 and 18Mbps signal to Multiplexes B, C and D respectively with Reed Solomon Coding resulting in a 26.04 Mbps signal.

***Baseband Equipment***

The three MPEG Transport Streams will each be split to feed two DVB QPSK modulators located in the vicinity of the compression equipment.

The modulators will produce a QPSK signal with Forward Error Correction at 70MHz. The 70MHz feeds will be switched and split to provide input signals to the earth station subsystems. Each of the 70MHz signals will feed one of the two uplink chains.

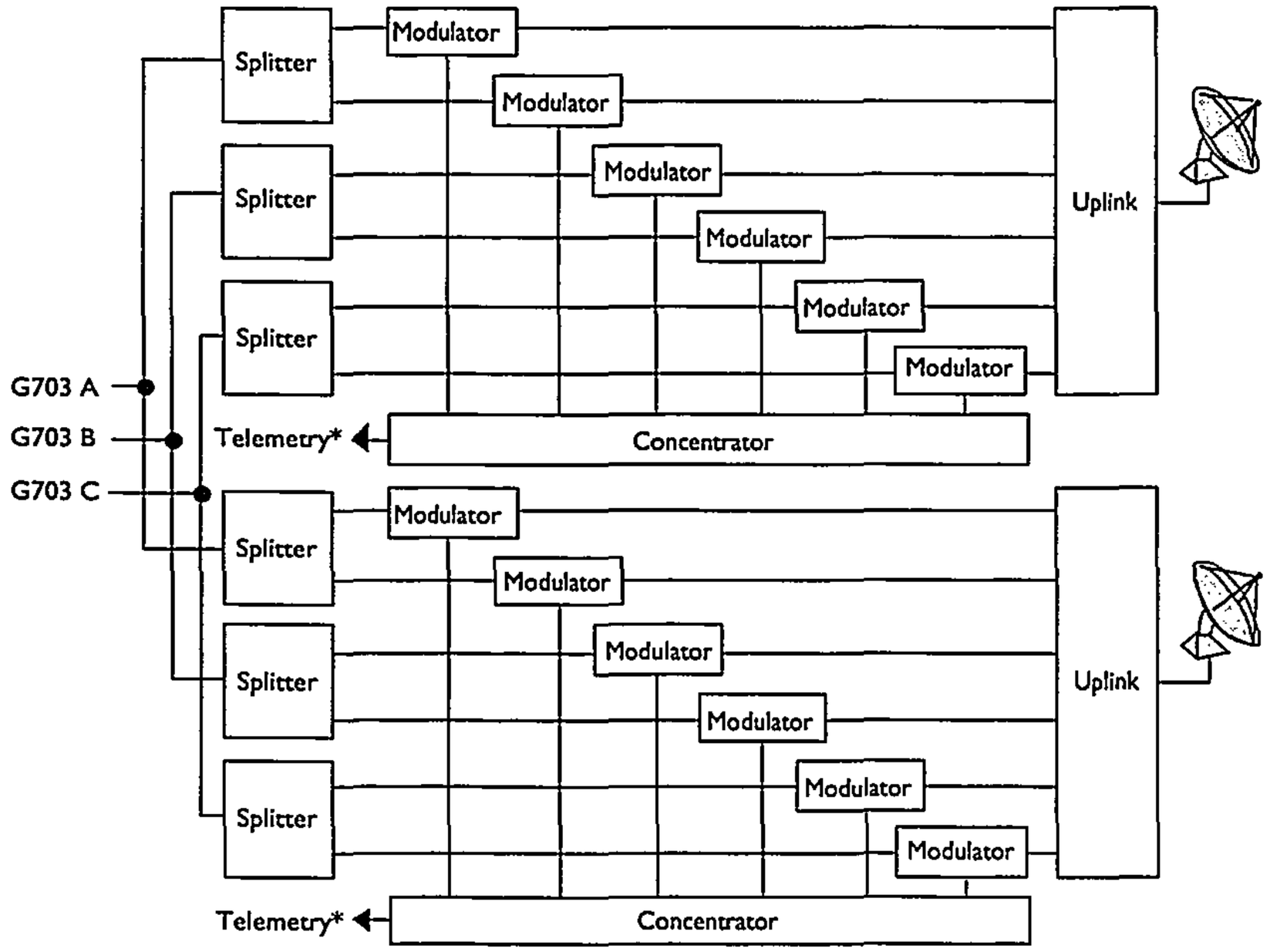
***Satellite Earth Station***

A self-contained uplink earth station will be provided for each of the satellites. By physically separating the two uplinks, we will ensure that a major problem such as an equipment fire does not affect the high reliability of the service. The earth stations are currently proposed to be situated at our Broadcast Operations Centre and will therefore not require the provision of terrestrial circuits to a remote uplink site as might otherwise have been the case. NTL will operate and maintain the station and provide a fully managed uplink service similar to that already provided to MBC at their Battersea studio site in London.

If, for logistical or regulatory reasons, it is not feasible to locate the required uplinks at our Broadcast Operations Centre, NTL will provide terrestrial links to its manned Crawley Court Teleport where the new satellite facilities would be constructed.

The schematic for the uplink is shown in Exhibit A2.10.

**Exhibit A2.10: Satellite Uplink**




** To Drake rack if uplink at playout centre. Otherwise to telemetry unit*

An uplink will be provided at the BOC for each of the two satellites to be accessed. Each earth station will be based on the use of a 5.6 metre (or equivalent) antenna served by a 3+1 KPA and RF Subsystem which will be located at the Broadcast Operations Centre. The uplinks will nominally be configured as follows:

- 5.6m Ku-band Antenna fitted with:
  - four port heated feed
  - rain deviator
  - full satellite tracking capability
- Standalone RF Cabin complete with:
  - fire protection system
  - intruder alarms
  - fully redundant air-conditioning subsystem
  - uninterrupted power supply with 20 minutes autonomy
- RF Subsystem including:
  - redundant 3 x (1+1) 70MHz group delay equalisers
  - redundant 3 x (1+1) Ku band upconverters

- redundant 3+1 Ku band Klystron power amplifiers
- cross site 70MHz cabling.

Each earth station will accept three separate 70MHz feeds, upconvert these signals to the satellite transmission band and amplify the resultant signal to a level so as to allow the appropriate EIRP to be radiated towards the satellite to maintain the correct flux density at the satellite transponder receive subsystem.

Group delay equalisers will also be provided at the input to the transmission subsystem to allow the adjustments required by the satellite authority to take place during system testing. These will offer continuously adjustable group delay and amplitude equalisation.

All RF equipment will be contained within an air conditioned cabin in the vicinity of the antenna. Power will be UPS and generator protected. The Antenna Subsystem will be similar to that used by NTL for the transmission of other services. As a result it will be equipped with full motorisation and tracking capabilities and be fully compliant with all recognised and relevant CCIR recommendations.

***Space Segment***

We have investigated several options with respect to space segment and currently propose NTL would provide satellite capacity on either or both the Intelsat and Eutelsat constellation of satellites. It should be noted that space segment is always subject to availability and NTL will provide a space segment which can fulfil the system distribution requirements.

Intelsat currently has 3 x 36MHz Ku-band Spot beam capacity which could serve receive only terminals across the UK with a high degree of availability. In order to provide transmission of the three multiplexes, three transponders will be required. Eutelsat currently has 72MHz capacity available in which we will insert 3 x 24 MHz carriers into one transponder. NTL have secured First Rights of Refusal (FRR) on a proportion of the required capacity on Intelsat.

***Receive Only Terminals***

We will install Receive Only Terminals at the 81 Terrestrial Transmitter Sites. Systems will be provided comprising high quality professional receive only antennas, with either partial or full anti-icing, and fully redundant 1+1 LNB subsystems. It may also be necessary to provide terminals at many of the relay sites too, since recent NTL predictions indicate that around 50% of the RBL paths will not be useable. The potential need for these is discussed below.

Space segment is currently proposed to be on medium power satellites which will necessitate the use of receive antennas in the 2.4 metre to 3.7 metre range to achieve 99.98% overall availability. The sites will use 3.7 metre antennas at all marginal sites in order to reduce any possible signal degradation and maintain the highest possible

overall availability. Each site will have two receivers each of which will be provided with 1+1 LNB subsystems on either a single or on both polarisations as required. Antennas will be provided with de-icing systems to enhance performance during adverse winter weather conditions.

The main terrestrial transmission sites at which reception will be required are as follows:

| | | | |
|---|---|---|---|
| Angus | NTL | Knockmore | NTL |
| Beacon Hill | NTL | Limavady | BBC |
| Belmont | NTL | Llanddona | BBC |
| Bilsdale | BBC | Mendip | BBC |
| Black Hill | NTL | Midhurst | BBC |
| Blaen-Plwyf | BBC | Moel-y-Parc | NTL |
| Bluebell Hill | BBC | Oxford | BBC |
| Bressay | BBC | Pontop Pike | BBC |
| Brougher Mountain | BBC | Presely | NTL |
| Caldbeck | NTL | Redruth | BBC |
| Caradon Hill | NTL | Ridge Hill | NTL |
| Carmel | BBC | Rosemarkie | BBC |
| Chatton | NTL | Rowridge | BBC |
| Craigkelly | NTL | Rumster Forest | NTL |
| Crystal Palace | BBC | Sandy Heath | NTL |
| Darvel | NTL | Selkirk | NTL |
| Divis | BBC | Stockland Hill | NTL |
| Dover | NTL | Sudbury | BBC |
| Durris | NTL | Sutton Coldfield | BBC |
| Eitshal | BBC | Tacolneston | BBC |
| Emley Moor | NTL | The Wrekin | BBC |
| Fremont | NTL | Torosay | BBC |
| Hannington | BBC | Waltham | BBC |
| Heathfield | BBC | Wenvoe | BBC |
| Huntshaw Cross | NTL | Winter Hill | NTL |
| Keelylang | BBC | | |

In addition to the above, current theoretical studies indicate that the satellite feed may also be necessary at several "relay" sites where RBL is expected to be unsatisfactory: Exhibit A2.11 shows the site where RBL may be required.

**Exhibit A2.11: Analogue Relays where Digital Terrestrial Television RBL is Likely**

| Station | Multiplex B | Multiplex C | Multiplex D |
|---|---|---|---|
| Salisbury | yes | no | no |
| Tunbridge Wells | no | no | no |
| Guildford | yes | no | no |
| Hemel Hempstead | yes | no | no |
| Reigate | no | - | - |
| Brierley Hill | yes | no | no |
| Bromsgrove | yes | no | no |
| Fenton | yes | no | no |
| Larkstoke | no | - | - |
| Malvern | no | no | no |
| Nottingham | no | no | no |
| Hastings | no | yes | no |
| Lancaster | no | no | no |
| Pendle Forest | yes | yes | yes |
| Saddleworth | no | no | no |
| Storeton | no | no | no |
| Bristol I.C. | yes | no | no |
| Bristol K.W. | yes | no | no |
| Kilvey Hill | no | no | no |
| Aberdare | yes | no | no |
| Pontypool | no | no | no |
| Rosneath | no | no | no |
| Fenham | yes | yes | yes |
| Plympton | yes | yes | yes |
| Chesterfield | no | no | yes |
| Idle | yes | yes | no |
| Keighley | yes | - | - |
| Olivers Mount | no | no | no |
| Sheffield | yes | yes | yes |
| Whitehawk Hill | no | no | no |
| **No. of RBL Sites** | **15** | **7** | **5** |

***Monitoring and Control***

NTL will provide full monitoring and control facilities with respect to the above items from the Satellite Control Centre at Crawley Court Teleport.

The system will accept three 24Mbps MPEG2 digital multiplexes with Reed Solomon Coding at our BOC premises and present each of the three signals as a QPSK modulated L-Band signal with FEC to signal processing and terrestrial transmission equipment at each of the 81 Terrestrial Transmission Sites.

The satellite distribution system is therefore bounded by three RS422, 24Mbps (plus Reed Solomon Coding) baseband signals at the input and three QPSK L-Band signals at the output.

# Regional Contribution Network

## Introduction

DTN are planning to provide a number of local services. These are described in detail in Section A5. This section describes the technical system that will support these services:

- *Local Facilities* describes the production studio, edit suites, graphics and acquisition camera crews that will be implemented at each local centre
- *Signal Integration* explains how the SI and CA will be inserted and output transmission format used
- *Transmission to BOC* describes the network that will be implemented to draw back the local services to the BOC.

## Local Facilities

The first local studio site in Manchester will be equipped with a production studio, edit suites, graphics and acquisition camera crews.

This studio will have three CCD cameras with conventional pedestals and teleprompters. Full sound and communications facilities will be provided including microphones and talkback. The lighting system will be a fixed rig with an area lit for chroma keying.

The production control room will be equipped with a digital vision mixer which will include mix effects with programmable wipe and a downstream keyer. Digital effects will be integrated with the mixer. A Panasonic SmartCart with DVCPRO VTR machines will be used in the production studio control area. This will enable not only normal studio VTR operations but create an additional edit suite to be used during downtime in the studio. The use of this format will allow us to playback Mini DV material when necessary.

An analogue stereo audio mixing console with 24 inputs, 8 groups, 2 reverberation returns and main/standby outputs will form the core of the studio audio facility. Peripheral equipment to provide audio effects, stings and music will be included. Telephone balance units will provide for interviews on the public telephone network.

Acquisition in the local area will be recorded by PSC crews equipped with Panasonic DVCPRO range of cameras. Each of the four crews will have sufficient equipment to record interviews and events in the local area. We will also have "Video Journalists" who will be equipped with Panasonic Mini-DV camcorders.

A number of fixed cameras will be sited in key positions to interact and encourage participation with the local community, for example, in police control rooms. These

cameras will be controllable from the local studio control room. Mini-cameras will be available for fitting into vehicles.

A tape transfer area will be available so as to transfer any third party Betacam SP or Betacam SX material onto DVCPRO.

Five edit suites at the local studio will be used for packaging programme stories or documentaries. These suites will be equipped with DVCPRO VTRs. Pictures from the graphics system will be available for adding to the edit.

A voice-over booth beside the edit suites will be used to contribute local vocal pieces into an edit session. Comprehensive audio facilities including effects processing, DAT, CD, and DigiCart will be included in each edit suite. A library of sound effects will be available to the editors.

Stills will be created and processed within two personal computer based graphics systems. A rostrum camera will be used for importing artwork where necessary. Completed stills will be transferred to still stores in the studio and the edit suites by a network.

A network of some 45 personal computers will be used for the generation of programme schedules and news stories.

We have allowed in our long term budgets for the replacement of all VTRs after a period of four years, and for the refitting of the local studios after a six year period. This will allow us to develop our operation in line with the fast changing pace of broadcast technology.

## Signal Integration

Programme services will be created at our local regional centres. Each of these services will be carried on digital terrestrial links to the BOC. The programme material will then be integrated with our national services at the BOC multiplex. Also, service information, conditional access codes and any data services supporting local programme services will be added within the BOC. This arrangement eliminates the significant technical problems associated with injecting local services at the regional transmission sites. To accommodate these additional services, the satellite distribution network will be extended beyond the nominal 66Mbps data rate. At each regional transmitter site a transcoder will be pre-programmed to pass through only the local services relevant to that region, thereby restoring the transmitted datastream to 66Mbps.

Each local regional studio will initially provide one programme service in a compressed MPEG2 format which may be re-processed at the BOC. In order to optimise the use of the leased lines (and to minimise the degradation that takes place during MPEG to

baseband to MPEG processing), these programmes will be MPEG2-encoded, including audio, to fill a standard G703 8Mbps circuit.

## Transmission to BOC

A contribution network will be established in order that up to eight different regional studios can provide simultaneous programme services to the BOC for transmission.

As the number of local regional services expands, the 8Mbps lines will be upgraded to 34Mbps or more to enable all of our local regional services to be carried simultaneously. With eight circuits incoming from the regions to the BOC, we have the future capacity to extend our local studio programme feeds to 32.

# Broadcast Operations Centre

## Summary and Introduction

The Broadcast Operations Centre (BOC) effectively co-ordinates the total service providing comprehensive facilities for the transmission of a high quality and reliable multi-channel television service. The BOC will need to manage four principal programme feeds:

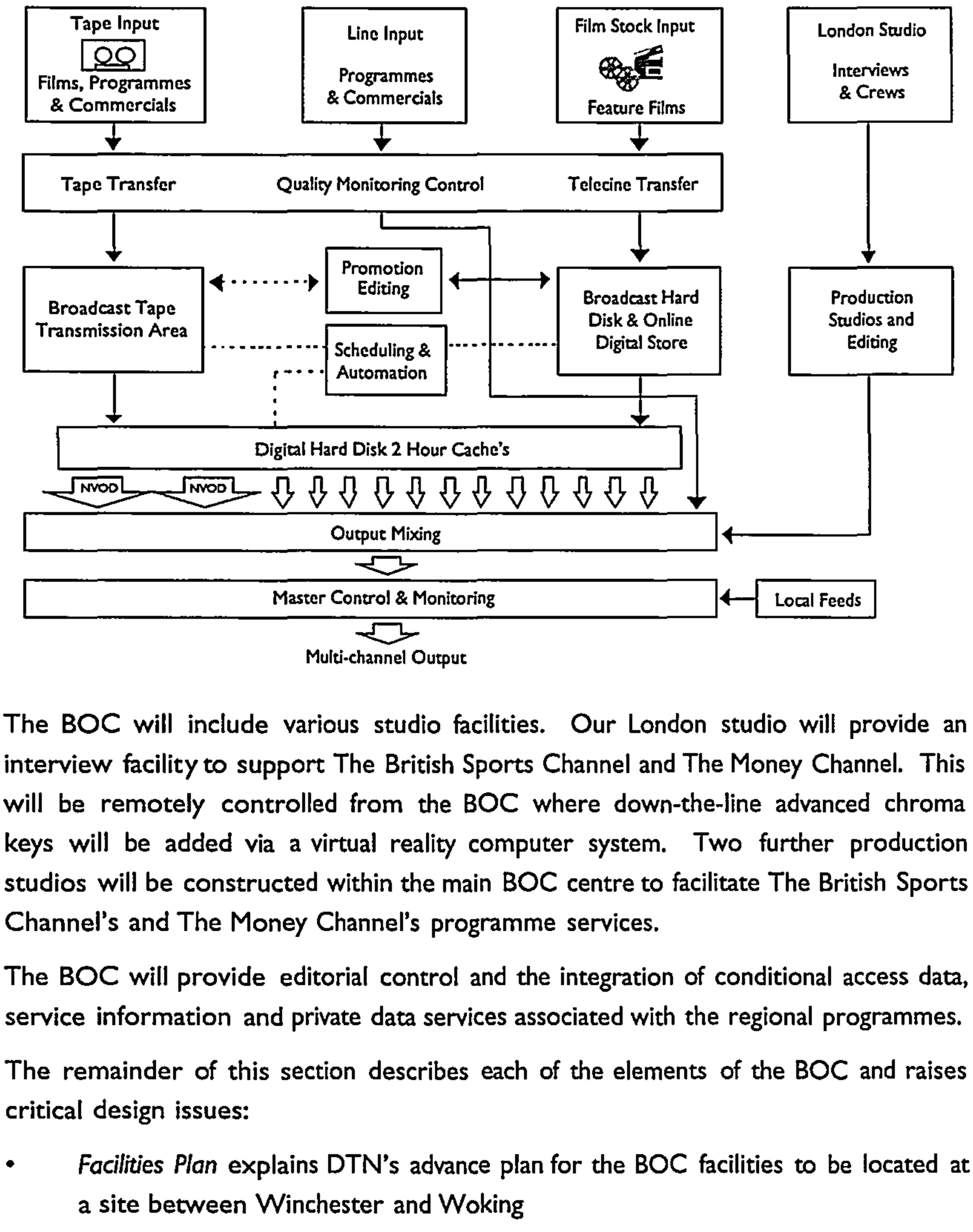
- continuous live programmes
- a mixture of pre-recorded and live programmes
- the replay of pre-recorded programmes only
- near video on demand (NVOD).

International live and post recorded material will be routed into DTN's BOC through NTL's satellite teleport stations in either Oxford Street, Croydon or Crawley Court. Programmes pre-recorded on film or video tape will be delivered to the BOC for processing, from the distributors. Regional local services are fed to the centre by digital fibre circuits.

The BOC will handle all of these programme streams with flexible up to date facilities based upon a mixture of server technology and digital video tape in order to maintain the highest quality levels. The latest technological advances in hard disk servers provide an ideal platform for material used across all programme channels which is frequently repeated.

Exhibit A2.12 illustrates the proposed flow of programme material within the BOC.

**Exhibit A2.12: BOC Overview**




The BOC will include various studio facilities. Our London studio will provide an interview facility to support The British Sports Channel and The Money Channel. This will be remotely controlled from the BOC where down-the-line advanced chroma keys will be added via a virtual reality computer system. Two further production studios will be constructed within the main BOC centre to facilitate The British Sports Channel's and The Money Channel's programme services.

The BOC will provide editorial control and the integration of conditional access data, service information and private data services associated with the regional programmes.

The remainder of this section describes each of the elements of the BOC and raises critical design issues:

- *Facilities Plan* explains DTN's advance plan for the BOC facilities to be located at a site between Winchester and Woking
- *Technical Formats* describes the standards that DTN will adopt for the flow of programming into, through and out of the BOC
- *Input and Storage Facilities* explains how DTN will accept programmes into the BOC and store them following our quality check procedures
- *Studios, Editing and Graphics* describes the facilities that DTN will implement to handle these key functions

- *Programming Scheduling and Automation* outlines the range of facilities that DTN will implement to provide accurate and well planned schedules which will easily interface with the promotions and airtime sales teams
- *Playout* describes the playout formats and facilities that DTN will use
- The last part, *Other Systems*, describes a number of the other elements of BOC such as the central technical area.

Issues such as staffing and training are discussed in Sections A11 and A16.

**Facilities Plan**

The Broadcast Operations Centre will be located between Winchester and Woking. Two sites have been identified and we are currently negotiating contracts. After much consideration, we have decided to locate the BOC in close proximity to our technology suppliers. This, we believe, is essential to secure the ongoing development of the system beyond the initial start-up phase. Our vision for the digital network requires the BOC to be able to respond quickly to changes in the market place and the development of new services and software. It is therefore essential that we have a close and ongoing relationship with our technology partners, all of whom are located in this area. We must also effectively manage our networking costs and to this end the BOC will be located within close proximity to the NTL BRT fibre network which has been laid alongside the main railway line between Winchester and London.

DTN have already identified two buildings that meet the principal requirements outlined above. One of these buildings has 7,000 square metres of useable space across three floors. A basic layout drawing has been included for each floor, shown at Exhibits A2.13 to A2.15.

**Exhibit A2.13: Broadcast Operations Centre - Ground Floor**

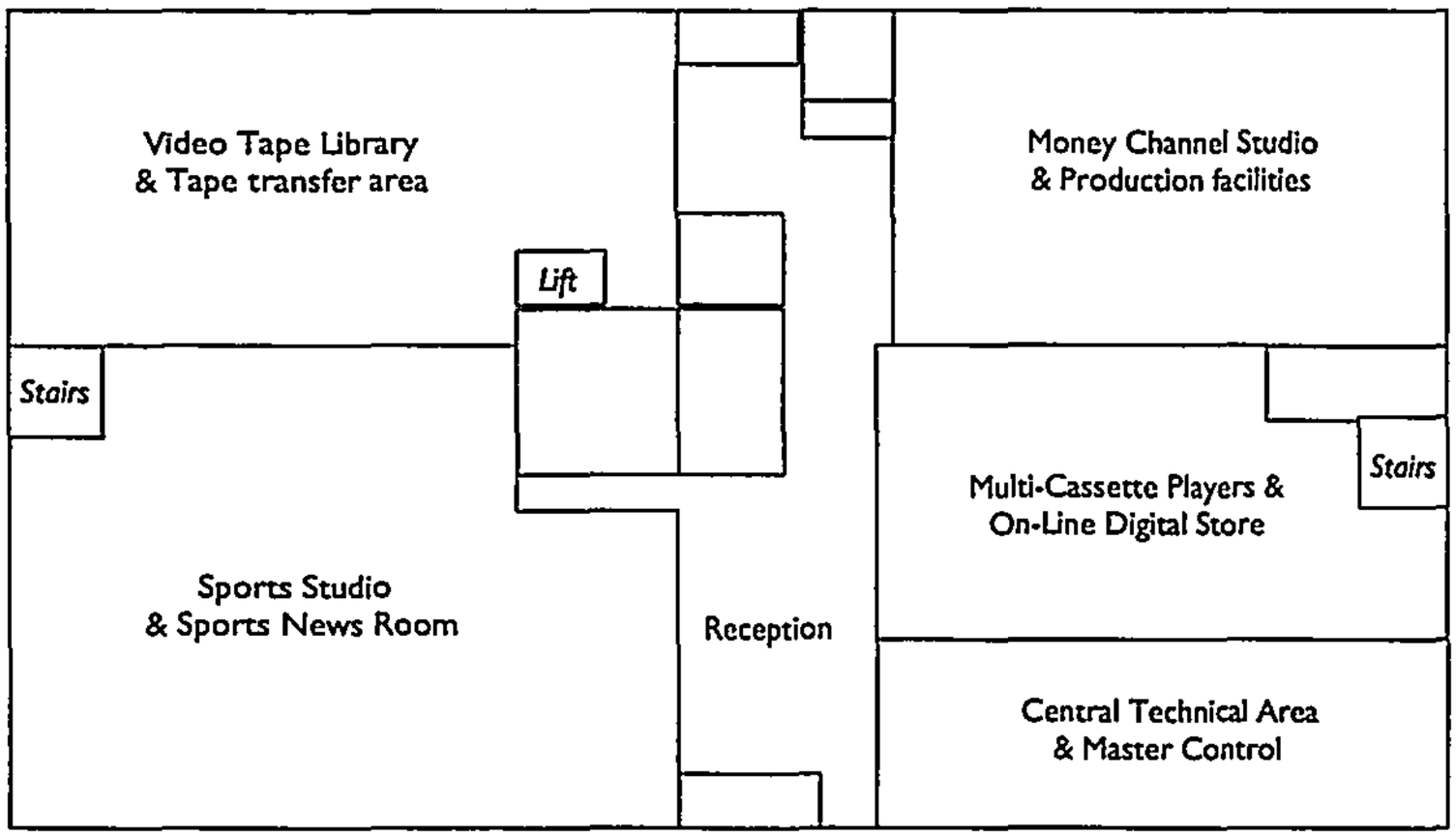



**Exhibit A2.14: Broadcast Operations Centre - 1st Floor**

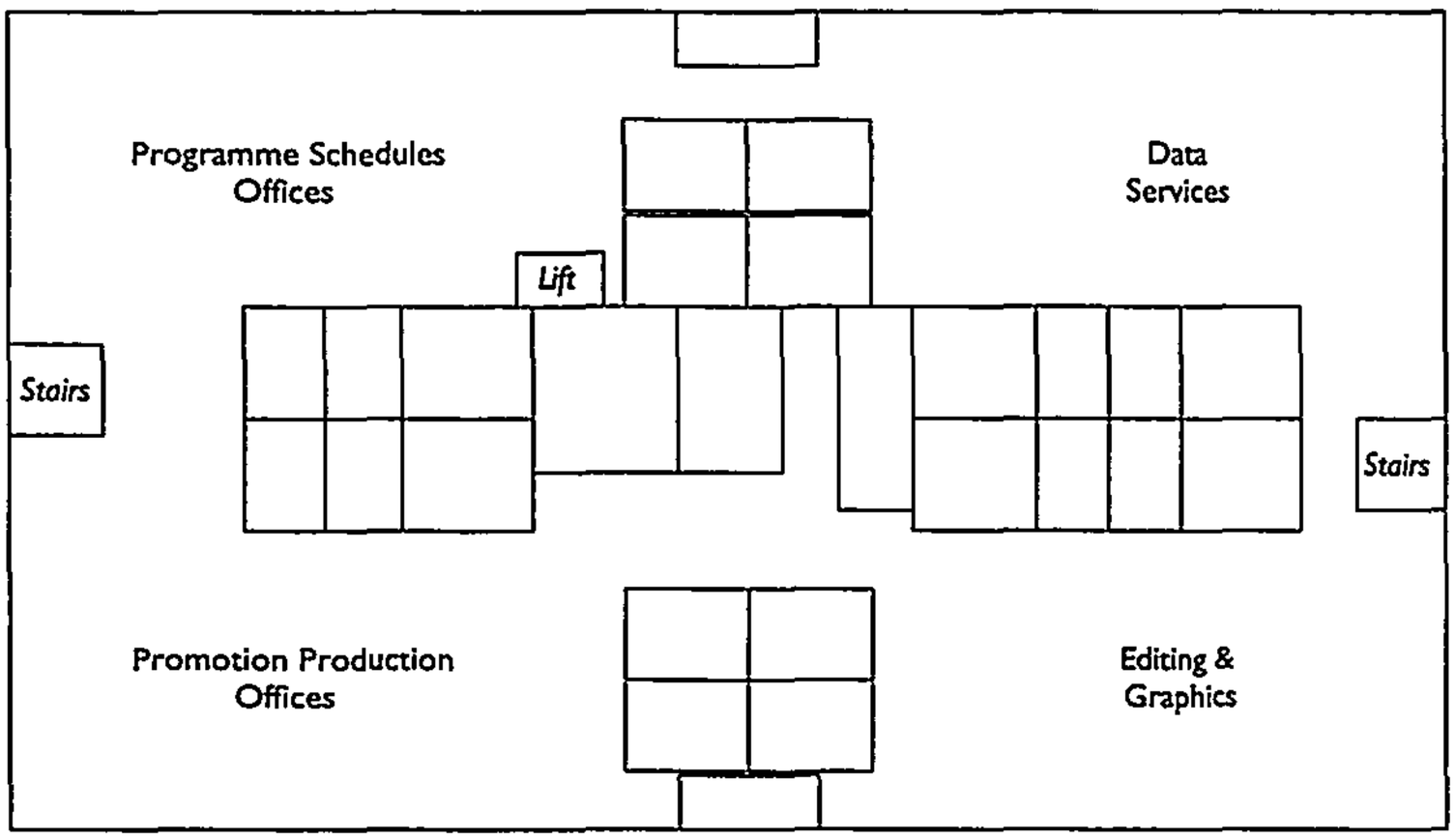
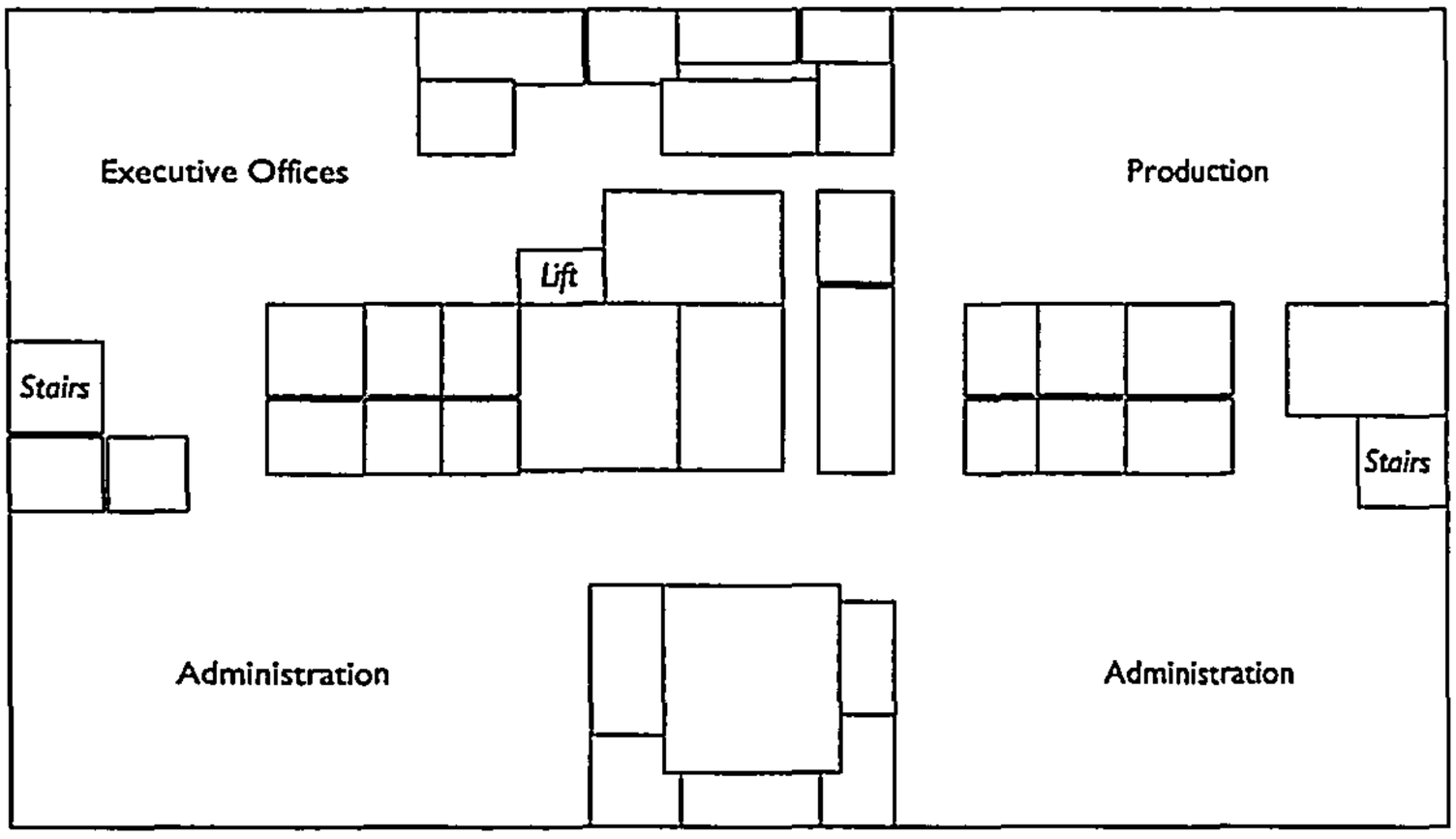



**Exhibit A2.15: Broadcast Operations Centre - 2nd Floor**



## Technical Formats

The BOC will be equipped with serial digital component video systems capable of processing 16:9 and 4:3 formatted programmes. The signal format will be to CCIR 601 with an interface standard of CCIR 656.

Audio will be digital stereo to the AES/EBU standard with a sampling rate of 48KHz/s.

Where vision and sound are held within a digital store, the compression algorithm will be at 20Mbps MPEG2 4:2:2 Profile at Main Level. This compression algorithm includes I and B frames. Predictive frame processing (P frames) are not used at the store level.

The video tape format will be Digital Betacam® with machines being capable of replaying analogue Betacam SP® as required.

## Input and Storage Facilities

### *Tape Acceptance*

There will be 12 tape acceptance rooms where incoming material will be graded prior to entering the library or being forwarded directly for transmission. Each room will be equipped with a picture monitor, waveform monitoring, audio monitoring, and a bar coding station. Three of the rooms will be designed to a very high environmental specification for subjective audio and video assessment.

A full quality check will be performed using the ITU-R five point grading scale. Bar code labels will be added to each video tape to ensure clear identification of all material held in the library.

The bar codes also supplement the programme scheduling database which supports the transmission automation system.

Audio level control relies on accurate measurement of relative loudness during the transfer process. The information regarding audio level will be entered into a database. During transmission the presentation automation system will extract the audio level data and use this to adjust the level of the programme output.

Any subtitle disks will be checked during the acceptance process and held in the subtitle store.

### *Telecine Transfer and Storage*

There will be two telecine transfer suites for copying film material to the archive store or to digital video tape. To ensure the highest technical quality available, the very latest digital telecine machines will be installed. It is essential when processing film material for use on a digitally compressed transmission system that gate instability is kept to an absolute minimum. The new digital telecine machines have excellent gate weave characteristics.

Both telecines will be capable of handling 35mm and 16mm film. Each film transfer suite will be equipped with a picture monitor, waveform monitoring, audio monitoring, and a bar coding station. Colour correction and grading will be performed within the suite.

All widescreen format material will be processed in a 16:9 aspect ratio and subsequently converted downstream to a letter box presentation for 4:3 displays. The 16:9 format will appear full screen on appropriate receivers.

All feature films which are transferred from the digital telecine machines will be held in the digital online archive store. This will enable easy access to the material for creating promotions via the editing suites. Once material is held within the store we can easily create a series of NVOD programme outputs.

Material will be stored in a compressed form at 20Mbps MPEG2 4:2:2 Profile at Main level. As this store will be capable of holding many thousands of hours of material, hard disk stores are not currently a viable proposition. Mass data stores using a combination of data tapes and robotics are planned to be used to store this material. Access to this mass storage will be via a server. Through the material control system, any piece of material can be made available for transmission.

***Tape Library***

All programme material on video tape cassettes will be stored in the tape library. A high capacity tape storage system will hold material due for transmission. Post transmission material will be held in stock until the programme rights have expired.

All tapes will be identified by a bar code added during tape acceptance. The automation system will know the location of every cassette in the library for fast and efficient tracing. Library staff will be responsible for extracting the day's cassettes and loading them into the appropriate multi-cassette machines ready for transmission.

We envisage that with future advances in technology, a greater portion of programme material will be stored within the digital online store described above, rather than on video tape.

***Programme Information Entry***

When a programme is purchased, the information about the programme is entered onto the system. Once entered, rights and costing information can be attached to the existing programme information on the database. This information is then available to other users such as accounts giving financial control over the product and producing sophisticated audit trails. The use of this information is described in the part of this section which addresses scheduling.

***Tape Transfer***

The programme that has been purchased will physically arrive at the studio centre, be booked into the system database and bar coded information will be attached to the tape. This information will have been previously generated in the database. The fact that the programme material is now physically within the tape library ready for transmission is held within the database.

The schedules can now be downloaded to the transmission system for the production of a 'play list' and the tape can be physically transferred to the 'play out' hardware for transmission.

***Commercials***

With the latest developments, computer technology has proven to be both a practical and a cost effective way of handling broadcast video and audio. The programme material can be stored on hard disks, manipulated in a variety of ways and reused, over and over again without degradation.

Many commercials will be shared by all channels. This commonality is the ideal application for disk based, random access playback servers. All commercials can be stored on one device and be made available to many channels. Servers are ideal partners to work with automation systems. This technology offers a reliable, efficient and fully integrated means of producing high quality commercial breaks. It is also a stepping stone into larger servers for holding even greater amounts of programme material.

A server's reliability will be protected by a redundant array of independent disks (RAID). These drives will allow us to 'hot swap' a disk drive and rebuild its data while the system remains on air, with no reduction in system performance.

All commercials will be recorded onto a hard disk server with a capacity of about 60 hours. These commercials will be recorded directly off an incoming line from the facilities houses, or from video tapes supplied to us. The commercials will be checked and logged as they are recorded into the server.

## Studios, Editing and Graphics

***Production Studios***

Facilities will be required to produce The British Sports Channel and The Money Channel. Two production studios with edit suites and graphics facilities will be provided at the BOC to produce these programme streams: A small remotely controllable studio in London will be provided for interview contributions to both channels.

*The British Sports Channel*

For The British Sports Channel, an open plan production office will be integrated with the studio set to produce a warm and involved programme atmosphere. Direct access to the production control rooms from the office will support the integration of the sports journalists and production teams.

This studio floor will have three widescreen digital CCD cameras with triax and digital outputs. Each camera will be remotely controllable from the studio production gallery and include control of pan, tilt, focus and zoom. Multiple channels of radio microphones, radio talkback and a teleprompter will all be provided. The studio lighting system will be a fixed rig and will include an area lit for virtual reality chroma keying.

The production control room will be equipped with a digital vision mixer which will include mix effects with programmable wipe and a downstream keyer. Digital effects will be integrated with the mixer and will include warp effects and memory options. Three Betacam SX VTR machines will be permanently located in the production studio control area. This will enable not only normal studio VTR operations but create an additional edit suite for use during downtime in the studio.

A stereo audio mixing console with 32 inputs, 8 groups, 2 reverberation returns and main/standby outputs will form the core of the studio audio facility. Peripheral equipment to provide audio effects, stings and music will be included from CD players, digicarts and digital cassettes.

*The Money Channel*

For The Money Channel, a conventional studio floor of some 100 square metres will be used. This studio will have three CCD cameras with triax and digital outputs. Each camera will be remotely controllable from the studio production gallery and include control of pan, tilt, focus and zoom. Full floor facilities will be provided including multiple channels of radio microphones, radio talkback and teleprompting. The studio lighting system will provide comprehensive facilities to allow a number of sets to be lit from the studio floor.

The production control room will be equipped with a digital vision mixer which will include mix effects with programmable wipe and a downstream keyer. Digital effects will be integrated with the mixer and will include Warp effects and memory options. Three Betacam SX VTR machines will be permanently located in the production studio control area. This will enable not only normal studio VTR operations but create an additional edit suite to be used during downtime in the studio.

A stereo audio mixing console with 24 inputs, 8 groups, 2 reverberation returns and main/standby outputs will form the core of the studio audio facility. Peripheral equipment to provide audio effects, stings and music will be included. Telephone balance units will provide for interviews on the public telephone network.

*London Studios*

A studio in London will provide contributions to the two studios at the BOC. This studio will have two digital CCD cameras. Each camera will be remotely controllable via control lines from the BOC studio galleries. A remotely controlled digital mixer will select cameras and feed a vision circuit to the BOC. The preview output of this mixer will be routed to the BOC for monitoring via a highly compressed portion of the vision circuit. The set lighting system will be a fixed lighting rig with an area lit for chroma keying. Chroma keying will be processed by the studio mixers at the BOC.

A remotely controlled audio mixer will be used to select and adjust presenter microphones. The main output of the mixer will be sent to the BOC along with the vision. Comprehensive talkback will provide excellent communication between the production staff at the BOC and the London studio.

*Other Facilities*

Field acquisition for The British Sports Channel and Money Channel will be recorded by four crews equipped with the Betacam SX range of camcorders. Each of the crews will have sufficient sound and lighting equipment to record interviews and events as required.

At the BOC, a bank of Betacam SX VTR's will be used for recording incoming material for editing and later transmission on the two channels.

Four edit suites at the BOC will be used for packaging programme stories. These suites will be powerful digital nonlinear editing systems based on the Betacam SX format. The use of this format will give the added advantage of being able to contribute Betacam SP material to an edit session that may be contributed by freelancer camera crews without Betacam SX.

Stills will be created and processed within personal computer based graphics suites. A rostrum camera will be used for importing artwork where necessary. Completed artwork will be transferred to still stores in the studios and the edit suites by a network.

***Promotions Editing***

Interstitial promotions will be edited in one of the facilities' digital nonlinear online edit workstations. These workstations will fulfil the high demands of online post production.

Speed, flexibility and creativity are the key features of our editing systems. Interactive source material will be available from both the online digital video store as well as the video tape library.

The nonlinear suites will use computer techniques and a large hard disk store to produce edited masters by combining raw material recorded onto the hard disk and a complex playlist or schedule held on a computer workstation. This technique allows

the edited master to be created at random, in any order. Complex transitions and effects can then be generated by passing the signal through a real time processor running in software on the computer workstation. Pictures from the Graphics system will be available for adding to the edit. Upon completion, the promotions will be held within the broadcast hard disk store in readiness for transmission.

Voice-over booths alongside the edit suites will be used to contribute local vocal pieces. Comprehensive audio facilities including effects processing, DAT, CD, and DigiCart will be included in each edit suite. A library of sound effects will be available to the editors.

### *Graphics*

Graphical items required for promotions and for transmission stills will be created and processed within the powerful graphics suites. A number of paint stations will be used to create the channel image and identity. Enhanced paint stations will also be included for creating complex moving graphical effects. A rostrum camera will be used for importing artwork where necessary.

The entire system will be networked so that material can be exchanged between the archive store, graphics stations, edit suites and the main transmission outputs.

### *Subtitling (Closed Captioning)*

Programme subtitles purchased with the acquired material on floppy disk will be downloaded to a central subtitle store. Work stations will also be installed at the BOC to create locally produced subtitles. When required for transmission, the subtitles will then be replayed and sent to the private data system for onward transmission to the viewer. The subtitles will be carried in closed caption form.

Further details of our subtitling proposal plus information on DTN's approach to audio description and signing services are provided in Section A7.

## Programme Scheduling and Automation

### *Programme Scheduling & Automation*

Our programme playout automation system will reflect the very latest in the development of television technology. The system will provide us with a very efficient and reliable operation.

Automation for its own sake has little relevance in a television operation. However, through careful planning, a transmission automation system allied to an on-air programme scheduling system can provide significant staff savings, minimise transmission errors and enable effective co-ordination of programme and commercial material. Our automation system will embody all of these benefits as well as enabling

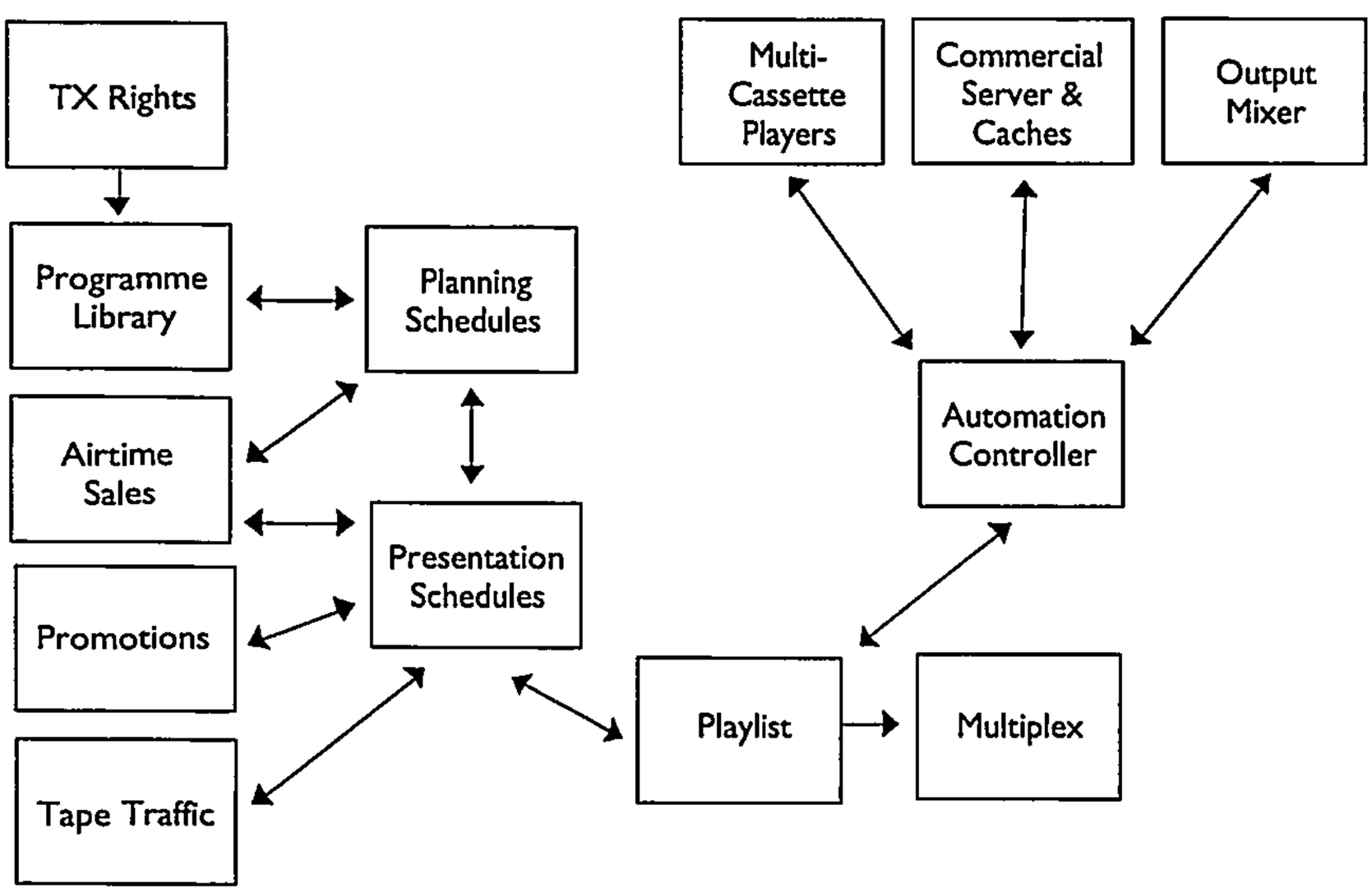
late changes to the commercial break running order and automatically providing an 'as run' transmission log for later analysis.

The automation system's features are summarised in Exhibit A2.16. It will control the flow of the programme material from the tape library all the way through to the BOC outputs. The system will control all multi-cassette machines, video servers, output video caches, output video mixers and the data carousel.

There will be routines within the system that will ensure that all necessary transmission material is available for the day's schedule. The system will automatically check that all cassettes and server locations are available and alert management to any gaps in the schedules. Programme transfers from archives into transmission servers will be controlled and monitored. By adopting a computer controlled system, we will achieve the twin goals of consistent on-air presentation with minimum staffing levels.

The programme schedules are to be generated on a computerised system linked into the commercial sales system. These schedules will be stored within the automation file server. Near to transmission time, the schedule will be copied into the automated playback system which controls the multi-cassette players, commercial servers, caches and output switchers.

**Exhibit A2.16: Scheduling and Automation**




The running status will be fed back from the automation system to the automation file server to report to the exact programme timings.

***Transmission Automation System Software***

The transmission automation system is a series of software modules that with the appropriate windows networking software and hardware will provide the complete package for the running of the transmission facilities.

The software system is a powerful tool which will allow for the efficient scheduling and handling of station material with full integration between commercial sales staff, programme schedulers, tape facilities and business management groups such as accounts and facilities manager.

When material is acquired, information about it will be entered into the programme planing library which is described below.

***Programme Planning Library***

This library contains the database of programme and contractual information, such as titles, durations, cast lists (if appropriate), costings and contractual information, programme rights, repeat fees, certificates and any other relevant information.

The system allows users to interrogate other modules within the system directly from the programme library so users will be able to view quarterly, daily, presentation and actual transmission schedules as well as specific programme and tape information.

There is also a sophisticated system for programme evaluation so that when a programme is viewed, specific information can be recorded such as trade marks, language and violence content.

The system maintains records of music used within the programme or sub programme which can then be used to report back to the Performing Rights Society and other bodies. Contractual information can be held for both acquired and commissioned programmes. This will give information on financial control, stock valuation and write-off. Equally important, it will provide information to the data and EPG services.

***Planning Schedules***

There are two types of planning schedule:

- quarterly for advanced scheduling;
- daily which will produce the daily schedules and promotion requirements.

The quarterly and daily schedules are interactively maintained so that changes made in one schedule will be automatically reflected in the other schedule.

Detailed audit trails of alterations to the schedule are maintained. This trail will reflect all the changes made. For instance, if a programme is scheduled that has a repeat performance fee to be paid and this is taken out of the schedule at the last minute, then this change will ripple throughout the system to ensure that the fee is not paid.

The planning schedules can be downloaded to a word processing package to allow programme guide listings to be provided.

***Transmission/Presentation Schedules***

Presentation schedules are automatically created upon request from the information held in the daily schedules. This part of the software will produce the play list based on transmission times and actual tape durations.

The system will provide the use of skeleton schedules containing default events to minimise schedule creation. Also, excellent facilities are provided to automatically create an initial draft schedule from the daily schedule with junction defaults, including commercial breaks and presentation items. Part day schedule downloads can be provided from sales to presentation and from presentation onto transmission.

***Tape Traffic***

The system creates a tape traffic work list from the daily schedule. The tape traffic work list controls the generation of tape information within the system and will also track the progress of the material from when it arrives in the building to being accepted and bar coded. Also, feedback from the transmission system is available for confirmation of play-outs.

***Promotions***

This is a module which helps to control the planning, creation and scheduling of promotional material. The system will provide script editing facilities that can be associated with specific trailers. The system will maintain records of music used within a trailer which can then be used to report back to the Performing Rights Society and other copyright bodies.

***Airtime Sales***

The airtime sales system is fully integrated with all the other modules within the system. The system will allow sales staff to reference directly programme information entered by programming staff and link airtime to programme schedules. Commercial traffic staff can slot commercials directly into breaks being scheduled by presentation staff thereby avoiding duplication of data and effort.

***Financial Ledger***

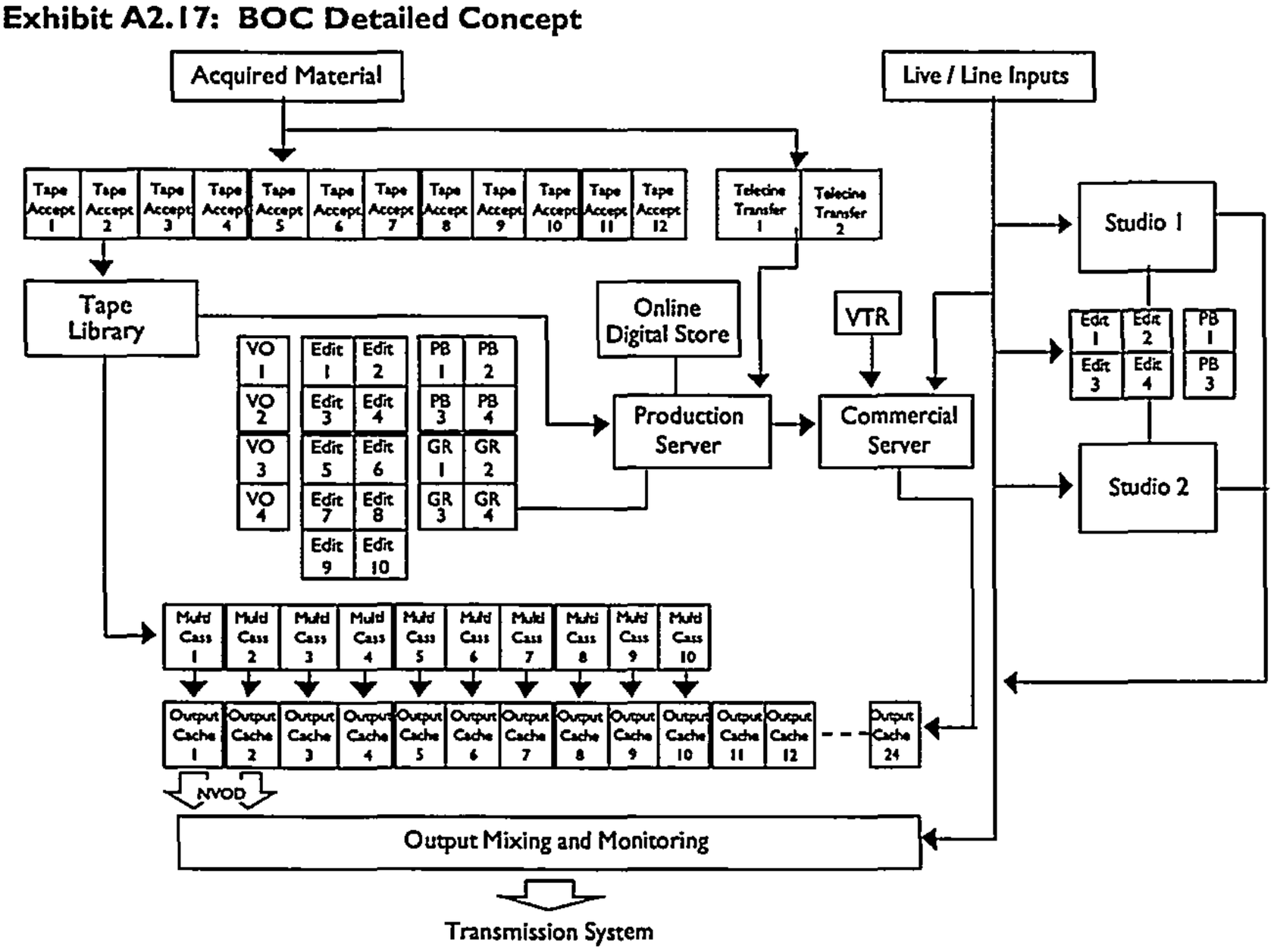
Once the programme has been transmitted 'on-air' the database will receive feedback from the transmission system of this event so that contractual rights and accounting information can be updated. An online fully integrated accounting system consisting of purchase, sales, general ledgers and fixed assets will be incorporated within the overall system. A comprehensive set of tools with which the accountant can control both day to day accounting and also financial management.

## Playout

### *Programme Playout*

Programme material held on video tape cassettes will be played to air by multi-cassette playout systems, each dedicated to a single channel. Programme material held in the online digital store will be transferred through an output server to the appropriate channel.

**Exhibit A2.17: BOC Detailed Concept**




Librarians will load each multi-cassette playout system with the day's video tape material. The automation system will select the video tape required from instructions provided by the scheduling computer and play to air at the specified time. Material held within the online digital store is also under the control of the automation system. All programme material will be buffered before transmission via a digital hard disk cache, giving a delay of two hours for breakdown protection. Commercials and interstitial promotions will also be transferred into the cache from the server, so as to be inserted into the transmission feed at a time instructed by the automation system. The data services carousel is under the control of the scheduling system computer which instructs data transmission relevant to the programme service.

Each channel has a final presentation mixer. This enables the output from the cache or any live input to be switched through for transmission. Fading across material and fading to black will be processed by this mixer under the control of the automation system. Audio levels will be automatically adjusted with reference to data stored during the tape acceptance process.

The relationship between the different elements of the playout system is shown at Exhibit A2.17.

***Near Video On Demand Services***

The feature film based video on demand (NVOD) service will be produced using digital hard disk caches with multiple outputs.

A film held on tape will be outputted from the multi-cassette playout system or from the online digital store into a cache. Each of the cache's eight outputs will be capable of reading from its own internal memory at times specified by the control system. A typical delay of 15 minutes between each output will give a capacity of 135 minutes of NVOD on a maximum of 9 channels. Delay times and the number of channels will be dynamically variable. It should be noted that our programme plans, detailed in Section A4, do not envisage a NVOD service playing films at 15 minute intervals - however, we are keen to build in this capability.

***Commercials***

In advance of a commercial break being required for transmission, the hard disk server will play the compiled breakdown to the appropriate output cache. The cache stores the commercial break in readiness for it being required to be outputted for transmission. All these steps are to be controlled by the automation system.

Control of the commercial audio levels is important, as commercials tend to be highly compressed. They will be limited to a maximum output level of 0dBu (PPM4).

***Station Output Equipment***

The video, audio, and data components of a service will be presented to the station output equipment in three groups of 10 services, corresponding to the groupings of services within each of the final multiplexes.

Each of the three identical output systems will have its own input router, which loops the incoming components to the 10 video encoders. There will be an additional spare encoder per system to provide 10+1 encoder redundancy, and the input to this will be selected by the input router, in response to commands from the Management Control Computer (MCC).

In addition to the video encoders associated with each service, there will be an additional data encoder, which will handle the pure data services, (the Carousel etc.) in each multiplex.

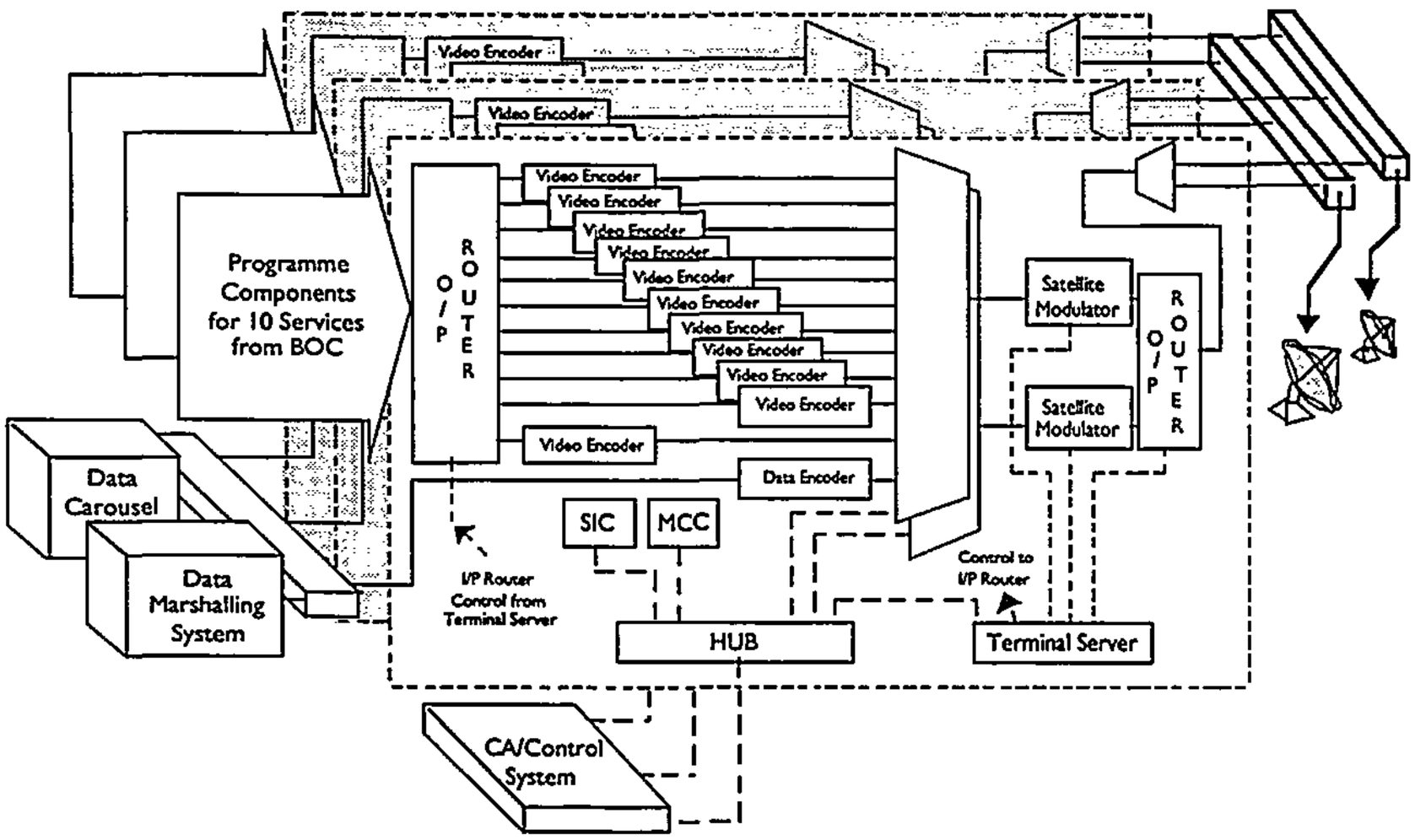
Each encoder has two outputs which will be connected to two multiplexers, in a fully redundant configuration. Only one multiplexer will be active at any time, the active unit being determined by the MCC. This can either be selected automatically, as a result of a failure, or manually, to allow maintenance to take place. Each multiplexer

will have a QPSK modulator on its output, so in the event of a failure, the whole chain will be switched by the output router.

The configuration of the multiplexers will be determined by the MCC. This includes bit rate allocation (either fixed rate or statistically assigned across multiple services) PID allocation, conditional access keying and SI insertion. DTN's approach to statistical multiplexing is described in Section A11.

The MCC will also determine the "health" of equipment in the chain and, if necessary, select the spare unit, including the downloading of all relevant operating parameters where appropriate (i.e. for encoders, multiplexers and modulators).

**Exhibit A2.18: Station Output Equipment**




All "single points of failure" in the chain will have dual power supplies to minimise the possibility of failure. Each supply will be monitored internally, and have alarms visible on the front panel, plus output to an alarm unit, as well as being reported back to the MCC.

The SI will be collated in the SI Computer (SIC) from data sent to it from the AFS/ESS (part of the CA/Control System) and MCC. Communications will be by ethernet, using TCP/IP protocols. External inputs will travel via a fully redundant switched network, whilst each of the three systems will be equipped with its own hub, enabling operation to continue independently in the event of total network failure. A terminal server fitted to each system will convert ethernet messages to RS 232 with regard, for example, to connection to serially controlled switchers.

The output from the output router will be split and fed to up-converters, HPAs, and combining units for feeding to the dual satellites.

## Other Systems

### *Central Technical Area*

A central technical area houses the main core equipment used by all the other areas of the BOC. It also acts as a central point for routing signals between areas.

Video timing, test signals, reference audio, timecode, and clock signals will be distributed to all areas. References for time will be taken from the GPS satellite system.

### *Talkback and Communication*

Excellent communication between operational staff will be provided by a flexible, high quality talkback package.

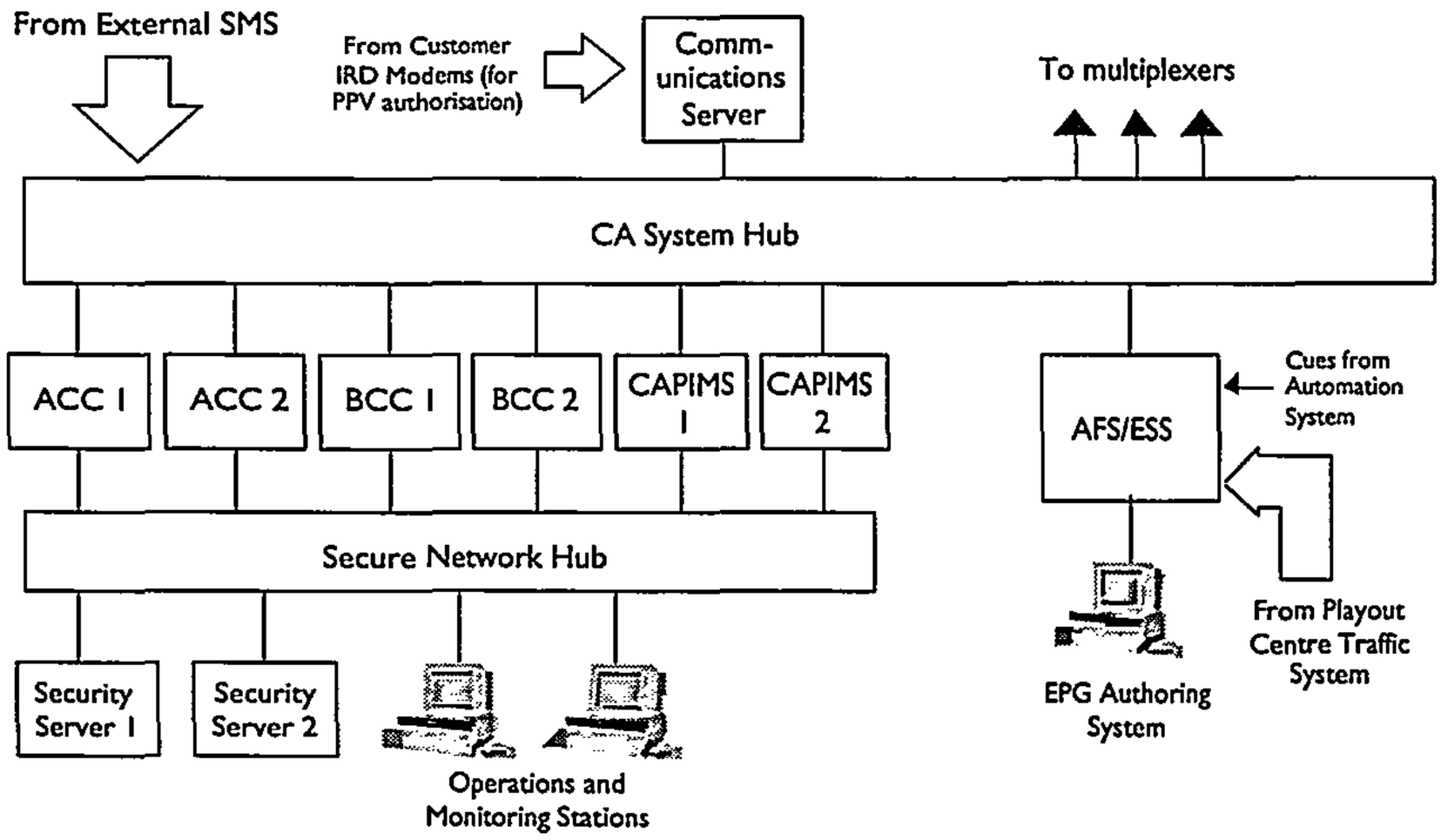
Talkback panels will be provided in all operational areas. Open talkback and group calling will be included together with comprehensive audio level controls for many external communications circuits.

# Conditional Access/Control System

## Conditional Access

The heart of the CA system will be the Broadcast Control Computer (BCC). The BCC uses programme information from the CA Programme Information Management System (CAPIMS) to generate the Control Words (CW) used to scramble data in the multiplex, and assemble Entitlement Control Messages (ECMs). The CAPIMS itself will derive its information on the programme schedules from the Automation File Server/Event Synchronisation System (AFS/ESS).

**Exhibit A2.19: CA/Control System**




The CW will also be made available to other CA systems to enable Simulcrypt operation.

ECMs will be encrypted before transmission by a security server.

The Authorisation Control Centre (ACC) will create Entitlement Management Messages (EMMs) for broadcast to the subscriber's smartcard, in response to information sent to it from the Subscriber Management System (SMS).

The ACC will contain a database of valid cards, and generate EMMs only for those cards it recognises. This database will be updated when a new batch of cards is manufactured. EMMs will also be encrypted before transmission by a security server.

Communications within the elements of the CA system need to be extremely secure, as the data flowing between these elements will contain all of the information required to decode the scrambled broadcast, in unencrypted form. To this end, a separate secure network will be built physically separated from the main CA System network. This will provide separation from the communications server, which will handle

requests from subscribers' receivers for pay-per-view events, which need to be handled by the ACC. If this precaution were not taken, this gateway could form a weak point in the CA operation.

## Control System

The main element of the control system will be the Automation File Server/Event Synchronisation System (AFS/ESS), which will provide the link between the CA system, the Station Output Systems, the Programme Playout Equipment, and the Traffic/Scheduling Systems.

The AFS will contain a central database of all the elements present in the output multiplexes. These will not just be limited to the standard video channels, but will include NVOD events, data services and ESG/EPG information.

This database will be the master record for all systems, including automation, scheduling and compression systems. In this way, all elements of a transmission will be cohesively planned, so that a change necessitated by one system will be echoed at all points in the chain. For example, a problem over bit rate at the transmission output will be flagged at the point of scheduling, rather than when it is too late, when the system is actually configured at transmission.

The ESS will provide a cache system of up to six hours to cover a central database failure. However, this will not be its only role.

In any broadcast system there will have to be a degree of flexibility in a schedule to cover, for example, live events. The ESS will allow timing to be slipped (advanced or retarded), channels to be frozen, or the whole system forced into a pre-determined configuration. It will be able to achieve this in response to cues from the automation system, Master Control or from the control console.

The final element of the AFS/ESS will be the EPG Authoring System, EPAS. This will enable the elements of the EPG, additional to those required for the generation of standard EITs, to be input for outputting as data to receivers. The EPG description is included in Section A7.

# Data Services

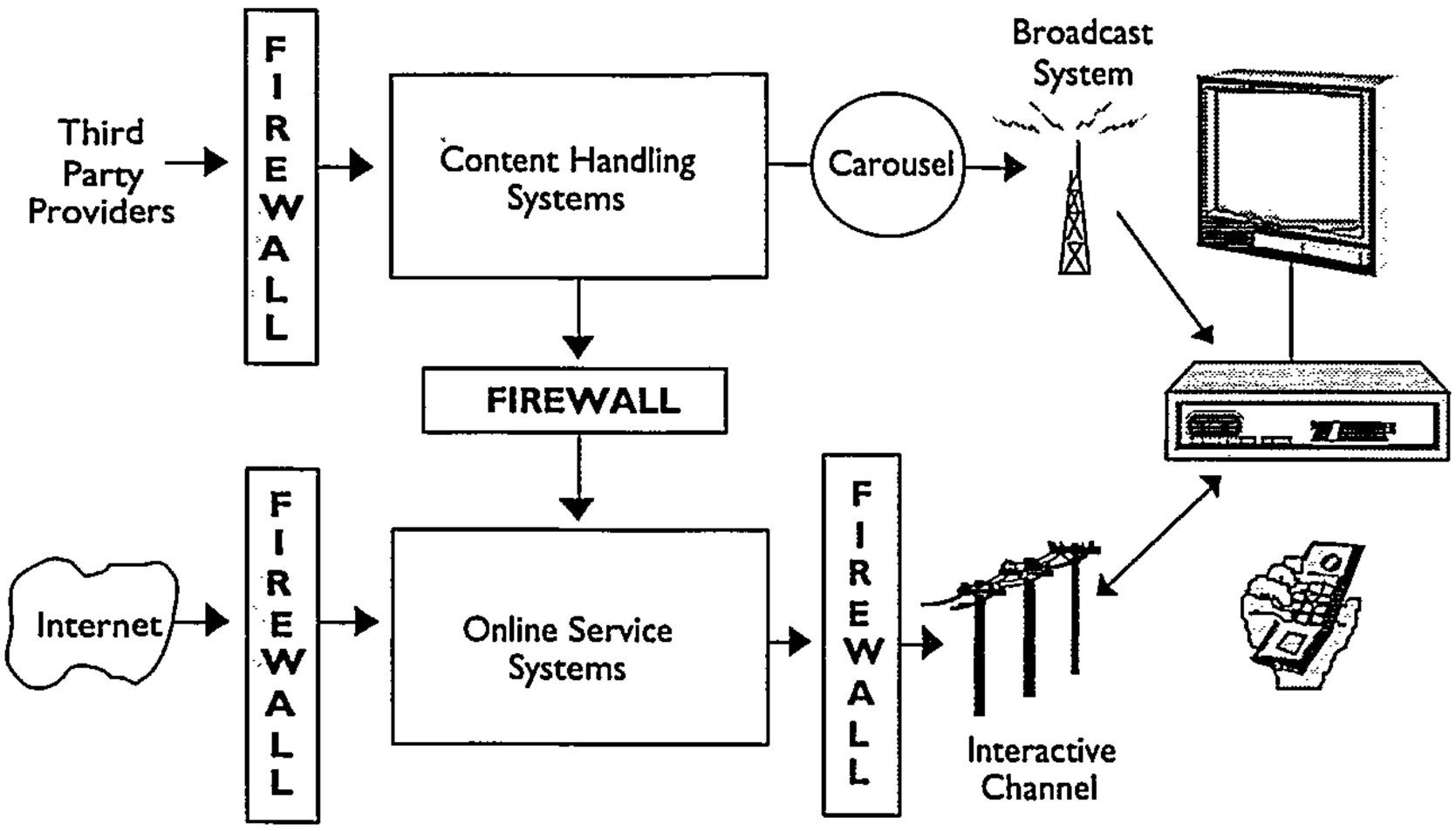
## Summary

DTN's exciting range of data services is described in Section A7. This section presents a clear picture of the technology and processes which will support the provision of these services.

DTN is working closely with ICL to specify and develop their content management system. ICL are a leading IT systems and services company with considerable experience in designing and implementing systems to support the management and delivery of data content and have completed many successful projects across a broad range of industries. Details of ICL's experience is provided in Section B.

Exhibit A2.20 provides an overview of the overall data management system.

**Exhibit A2.20: Overall System**




The data management system comprises several elements which together allow users to access a wide variety of exciting broadcast and interactive services.

Content will be taken from third parties and formatted to be appropriate for viewing through the receiver and the TV. The content will need to be categorised, either automatically from the source or manually from the actual content. Appropriate content will then be placed on the Carousel for broadcast, and all content will be housed in the Data Store. When users connect to the Grid (online material accessed via a modem in the set top box - see Section A7 for more details), they will either be following a link from a Carousel page, in which case they will go straight to the relevant page, or simply browsing. In the latter case, they will be presented with a personalised home page which has links to the areas they have selected as of interest

to them (such as tennis, cricket, share prices, weather, etc.) and a search engine which gives them access to the whole archive.

Not all of the content will be free and so an access control system is required with a link to the SMS. Some areas will be on a subscription basis while others will levy charges for each access (pay-per-view), depending on the nature of the content and the commercial arrangements with the supplier.

The remainder of this section describes in greater detail DTN's proposal:

- *User Perspective* explains how DTN aims to allow users to access information
- *Functional Architecture* describes the high level processes that the system performs
- *Technical Architecture* describes the objectives that DTN will meet in designing the system to allow flexibility and high performance and the specification of some elements.

## User Perspective

There are several methods of accessing the data content once it has been processed and loaded into the system. These are explored here to help clarify the way that the system will be used.

### *Switching into Data Mode*

This will involve browsing in a way familiar to users of teletext on televisions which have the four coloured buttons function. In the teletext environment, the user switches to text mode, using the remote control, and then navigates around the pages by selecting one of the options shown on the page. They can also type particular page numbers if they know them.

The data service environment will allow the user to switch to data mode, again using the remote, at which point a page will be displayed which has links to the range of services available to them. This page can be customised to show links to the pages which the user selects as being of particular interest. The user can then navigate through the pages using the links, navigate to a search engine to locate information on a specific subject, or move directly to a page by typing an address. The Carousel will contain approximately 12,000 pages which will spin every 30 seconds, meaning that there will be a considerable amount of information available within this time. However, to improve the performance further, the receiver will use the links on the current page to identify the likely next pages and store them ready in the cache while the user is still reading. In addition, those pages which the user has designated as of interest will also be cached.

Whilst 12,000 pages is a considerable improvement on current teletext services, there will be much more information which the user will have access to via the central content store, the Grid. Many of the links on the Carousel pages will point to pages stored centrally, and interactive applications such as search engines, online games and transactions also require use of the interactive capabilities.

### *Accessing Data from Television Services*

Currently, several television programmes have related teletext pages, and the digital environment will enhance this by allowing the user to view additional information relating to the current television programme or advertisement by clicking a single button on the remote. The information could be either overlaid on screen or completely replace the television picture with a full page of text and graphic including links to other related pages.

The latter would be used to provide supplementary information on documentary programmes, additional information on advertisers' products and services and any other information relating to the current programming. Clearly, not all of the detailed information relating to all of the television programmes and advertisements can be carried in the 12,000 pages of the Carousel; consequently, some of the links will point to pages stored at the Grid. The process for this is described below.

### *Accessing the Grid*

When the user selects one of these links, the receiver will inform them that they are about to use the modem line (if available), allowing them to cancel. Thereafter, the connection will be entirely transparent to the user. Should either the receiver not be connected to the phone line, or the phone line already be in use, the user will be informed and the last page left on screen.

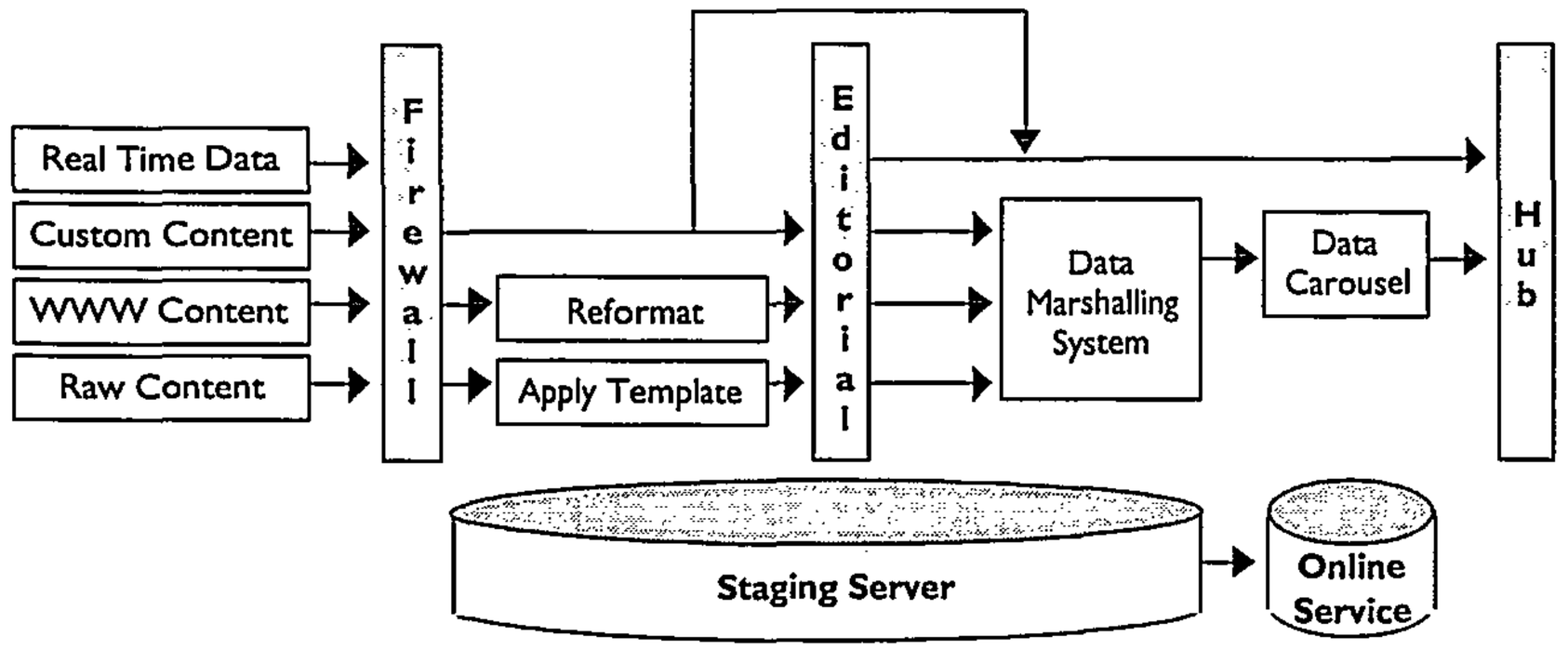
## Functional Architecture 

The architecture of the system can be broken down into two primary sections isolated by firewalls to provide maximum security. The two sections, Content Handling and Online Services, are described in more detail below.

### *Content Handling*

The function of this set of systems is to manage the content as it is delivered from third parties and prepare it for public access via the broadcast system and the online service. The functions are summarised in Exhibit A2.21.

**Exhibit A2.21: Content Handling**




The process for receiving and processing content from third parties involves several stages, most of which will be automated. All information relating to the content, such as the source, content type, date of arrival, any modifications made, and other details of what happens to it within the service will be recorded and stored along with the content itself.

1. All content will have to pass through the security firewall which will authenticate the content source and perform virus detection.

2. Once through the firewall, the content will be housed in a secure staging server.

3. The Intellectual Property Rights (IPR) associated with the content will be recorded at this point and will be used all the way through the system as content is modified.

4. The type of content and its expected format will then be determined automatically, if possible. Any unrecognised content type or variations from an expected format will cause the content to be brought to the attention of an operator.

5. The content will be indexed by the search engine.

6. Where required, automatic processes will then modify the format of the content, using DTN's predefined templates to ensure that it is suitable for viewing in this environment.

7. Using the source or type of the content as determined above, or the particular content itself, the content will be categorised along several axes:
   - which of the services offered this content applies to;
   - what conditional access should be applied to it;
   - whether or not the content will be broadcast via the Carousel and when;
   - whether or not the content should be archived.

8. Where there are already navigation links to other pages these will be checked, and, where there are none, a manual or semi-automated process may be required to add them.

9. For the majority of content, the next stage will be examination by an editor to approve both the content and format. Exceptions will only occur where there is a very high level of trust in the supplier and the nature of the content requires a minimum of delay. Where content is unacceptable, this will be recorded, along with the reasons, so that appropriate action can be taken.

10. Where content has been approved by the editor (or it does not require approval) content will be passed onto the next stage in the flow. This may include:

    – notifying the data marshalling system and copying the information onto the Carousel;

    – passing the information into the content store that can be accessed via the Grid;

    – archiving.

In the case of real-time data broadcast services, some of these stages will be not be followed.

***Online Services***

The function of this set of systems is to provide users of the system with online access to content through the receiver. The content which will be available through this service will include the pages which have been broadcast through the Carousel and a much larger number of pages which are only available online. The online nature of the access method allows interactivity such as searches for specific subjects or content, online games and online transactions.

In addition to content received through the content handling system, there will also be access to information from the Internet.

There are several processes involved in this section which are described in detail below.

*Content from Content Handling*

Content which has been processed and released from Content Handling will be copied to the online system through the internal firewall along with the metadata. Thereafter the following process will apply and once again the stages will be automated wherever possible:

- content categorisation and access conditions will be used from the metadata to determine the availability of the content within the service

- the search engine will index the content so that entitled users can find it

- IPR and usage of the content will be tracked and recorded to ensure that all rights are upheld
- links to other related pages will be put in place and checked.

*Content from the Internet*

Content brought in from the Internet will include email. This will come through the firewall. The system will also be copying information for storing and making available content from other Internet sites should this be considered advantageous. The subscribers will be given an electronic mail account which allows them to exchange email with other people around the world. The email server manages the process of mail being sent and received to the Internet. Users will have been authenticated when they connect to the server to ensure they can access their own, and only their own, email account.

*User Authentication*

Users of the online service will need to be authenticated before being allowed access, and the content which they are allowed to access will be controlled by a content management system using information from the SMS [redacted]

- once the user has been authenticated, the content management system will send them the page to which the selected link points. This page will be received to be shown on screen. This may be a page related to one which was broadcast via the Carousel or one to which they have navigated directly
- some pages will allow the user to purchase products or services online. The system supports a number of different methods of conducting transactions described below
- any link to a page for which the user is not authorised can be either hidden or altered so that the user is aware that they may not have access to it
- some pages will be available on a pay-per-view basis. In this case the user will be notified of the terms and charges, and asked to accept them before being granted access. The charges may be levied in a number of different ways described below.

*Online Transactions*

The system will support three main methods of conducting online transactions which are outlined below:

- for small items such as some of the pay-per-view pages and items with ticket values of a few pounds or less, a credit system run within the service (probably through a purse system contained in the receiver, similar to the Mondex System being trialled by NatWest Bank) would be used. For these items the user will

be asked to confirm that they accept the charges at the time and once they have signified acceptance, their purse will be debited

- items for which supply is limited require a system which will complete the transactions immediately. Examples where this applies include holidays, coach and plane tickets, theatre tickets and limited offers. The process involves:
  - establishing that the item is available and temporarily reserving it
  - debiting the user's credit card online or applying a pre-authorisation via our partner bank and confirming that this is accepted
  - permanently allocating the item and passing the delivery details on to the delivery agent who may be the original supplier or an external agency.

  If the item was unavailable or the credit card was refused, then the user will be informed on screen that the transaction has not taken place and why

- purchases of items by credit card where supply is not limited will employ a simpler system. Details of each transaction (including the retailer, user, item, date and time, purchase price, payment method and delivery details) will be recorded and stored. Periodically these will be batched up for each retailer and sent on to them electronically. The retailer will then complete the transactions and dispatch the items. Should there be a problem with any transaction then the retailer will contact the user directly via the telephone, the post, or through an email message which they will then see on screen.

ICL is currently running several live commercial online systems which use each of these methods on behalf of their customers.

The user would have the option to enter their credit card details on the screen. Alternatively, there are three methods by which a customer can store details and avoid re-entering them every time they make a purchase:

- in the SMS system
- on the receiver's EEPRUM
- on the customer's smartcard.

The system would allow the user to assign a PIN or password to prevent any unauthorised transactions. Where credit card details are sent over a telephone line, they will be encrypted. The mixture of these different systems will be adjusted to ensure full compliance with relevant regulation.

## Technical Architecture

### *Introduction*

The technical architecture that will be used is based on existing systems and experience drawn from building and running those systems. In designing this system, DTN and ICL considered each of the following qualities and how to achieve them:

- *Security* - preventing users from gaining unauthorised access to existing content, preventing unauthorised content from entering the system and preventing unauthorised users from causing the system to be shut down. Security of transactions and how this is perceived will be very important in ensuring the commercial success of the service
- *Availability* - ensuring that users have access to the content when they need it. This requires designing the system to be resilient to power and hardware failures and to allow maintenance work to take place without impacting on the service
- *Performance* - this will have a strong impact on the perceived quality of the service and determine whether users will explore and exploit the full extent of the service
- *Usability* - this service is not aimed at strongly technical users. A significant proportion of all video cassette recorders in the UK have never even had the clock set, let alone been programmed to record automatically. This service is designed to be both easy and rewarding to use
- *Potential for Change* - the system must be able to evolve and adapt to meet changing demands as both technology and the habits of the users change over time.

ICL and DTN have invested considerable effort in detailing the design for the data services system. The content of the design has been included in Section B, since it is considered to be commercially confidential.

# Subscription Management System

## Introduction

DTN, through its sister company CableTel, has extensive experience of subscriber management systems. To augment this existing capability we have been working closely with ICL to specify and cost the subscriber management system that will form the heart of our customer acquisition and customer care strategy. The following pages describe the detailed work that we have already completed on the requirements and specification of the system. It is split into two sections

- *System Requirements* explains the multiple functions that the system will need to perform and how the different modules will need to interface to deliver a truly superlative level of customer service
- *System Specification* outlines the overview of the design of the system that has been prepared in close co-operation with ICL

## System Requirements

### *Introduction*

In order to meet our very high customer service standards and to manage the business effectively, DTN knows that it is vital to have the necessary customer service and support system to support our business operations. From CableTel's experience we know that efficient and effective customer management, billing and support systems ultimately determine whether or not an operator can live up to its performance goals. Furthermore, having leading-edge systems can offer a major source of differentiation.

We will locate the digital terrestrial television Subscriber Management System operation adjacent to CableTel's existing SMS centre in Cardiff.

This document sets out the high level functions of a Customer Information System (CIS) to support the Customer Service and Billing applications of digital terrestrial television.

### *High Level Application Overview*

Information systems are the core of DTN's operations, forming the main infrastructure, supporting decision making and being essential to efficient management of the company. In other words, the information system is a prerequisite for supplying the user with a high quality service.

Broadly defined, the customer information system is the link between customer and company, tracking every interaction between the two. The information system consists of a set of layered activities. The major activities include:

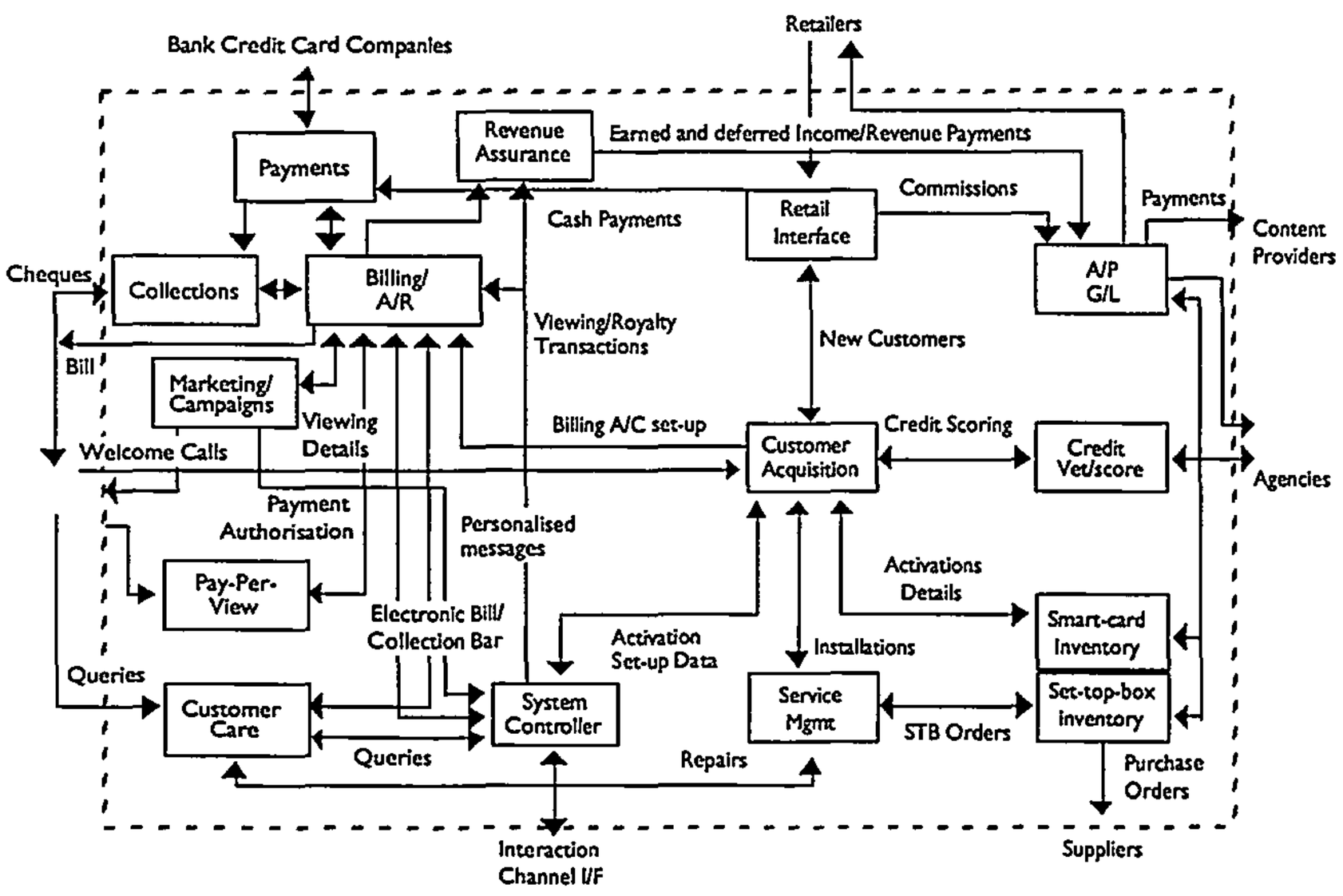
- customer acquisition

- activation/point of sale activity
- service management
- billing and collection
- customer service
- reporting
- external interfaces.

Each of these activities can be viewed separately, but the key to a successful operation is in the integration of the functions, forming a valuable management information tool.

The Management Information System (MIS) that DTN will utilise provides an integrated, full-featured information management system and an efficient billing package. The system is designed in a modular fashion to allow future enhancements and growth. The information system can be schematically represented as in the following diagram.

**Exhibit A2.22: SMS System Overview**




### *Application Overview*

This section provides a brief description of the applications which form the overall Customer Service and Billing systems.

***Customer Acquisition***

Before anyone becomes a customer, he or she is a "prospect". Prospects can be identified from numerous sources including mailing lists, referrals and cold calls. The CIS should be equipped to accept data entry on prospects from these multiple sources, effectively beginning a potential subscriber record which is updated as the prospect moves chronologically from prospect to subscription. In this manner, a subscriber's history of contact with the company is developed from the earliest possible moment, and further data entry is minimised. The lead tracking element is initially captured manually as the various sales organisations fine-tune their approach to the market. Lead tracking can thus start as a paper process and gradually move to a PC based implementation for the sales organisation. As activation rates grow, however, this important element of the CIS needs to be integrated into the main body of the system in order to maintain responsiveness.

The lead tracking system consists of a prospect profile, substantially in the form of the permanent subscriber record, supplemented by free-text and coded descriptions of each contact. Elements such as "tickler" notices and automatic follow-up letter generation can be implemented to facilitate the sales process. The lead tracking system interfaces directly to the Activation/Point of Sale system.

This application provides the major system for processing new customers to digital terrestrial television. Customers will either telephone in to the DTN call-centre direct, or through third-party retail centres. Retailers will have an online connection to the DTN call-centre for processing customer details. Different customer types will be supported, for example:

*Solo subscriber* - a residential or commercial customer, with one set top box and viewing smartcard.

*Hotel* - commercial customer, in relation to whom the billing takes into account the number of rooms, services provided and occupancy rate.

*Block Occupancy* - where one antenna/mast serves a number of subscribers, for example an apartment block.

The major functions of this application are:

- to set up the customer account, with personalised customer, credit limit and payment billing details
- authorisation of the viewing smartcard/set top box
- activation of services/products on viewing smartcards
- revision and upgrade of service options
- where required, the booking of an engineer to instal equipment at premises.

***Retail Interface***

The second critical element of the CIS is the Activation/Point of Sale element. When a customer subscribes for the digital terrestrial television service, he or she engages in a simple transaction which must initiate a complex series of events throughout DTN. Service activation involves a choice of receiver equipment, selection of a service package, scheduling of installation or equipment set-up, possibly a check of the customer's creditworthiness, and capture of information for billing and future marketing. If the subscriber was previously a "prospect" in the lead tracking element, this latter information capture becomes a simple transfer and update of the prospect's record. Most often, however, the selections described above are raw data entry. Initially, this data entry process is captured on a paper application form and manually entered into the system. In the advanced mode, the CIS provides an "entry frame" where all of the above information is entered directly to the system without the need for a transfer from a paper application. Once completed, the entry frame record is automatically separated and the data contained therein automatically updates various subsystems. In sequence, an automated call is made to the credit bureau, a subscriber billing profile is generated and stored, an invoice is created for the receiver equipment if necessary, any required equipment is provisioned, such as modems for the return path, and installation and equipment set-up are scheduled. Once installation and set-up have been completed, an activation message is sent to the subsystems and service is initiated.

The entry frame methodology allows the company to implement complex changes to our offerings without the need for substantial retraining of the workforce and thus in a much more timely fashion. For example, if a new promotion or service plan is developed, a simple promotion or service code is implemented in the entry frame. In processing, the new code is translated in software to the numerous functions necessary to update the various subsystems. In this manner, spontaneous changes can be made in the company's service offerings simply by the promulgation of simple data entry codes, rather than the more cumbersome process of training data entry personnel on the complex keystrokes required in each subsystem. Bar coding of equipment, promotion codes, and service applications can further facilitate this rapid activation process.

This application also supports the management of third party retailer outlets as agents of DTN. Retailers will have limited access to the Customer Service System through customised application screens and the customer functions supported will be:

- the processing of new customers
- customer payments
- customer queries/changes
- analysis of customer information by retailer.

### *Customer Care*

The subscriber management portion of the CIS is its largest and most complex element. The subscriber management system is composed of data files which link the subscriber's profile, with all of the history of that customer's interaction with the company. The customer care application supports the DTN customer service centre, handling all telephone queries on services, products and billing issues. This application interfaces heavily with the billing and system controller applications in support of handling the customer queries. The call-centre will be highly automated and customer queries scripted and therefore this application will be directly linked with Telephony tools, such as Caller Line Identification and Automatic Call Distribution (ACD).

The most important part of that history is the billing information, including current usage and billed amounts, as well as past usage information. In addition, the subscriber management subsystem tracks all customer inquiries and responses, include those that are equipment related, for example, upgrades, replacements and repairs. The two primary users of the subscriber management subsystem are the customer care organisation and the collections organisation.

Customer care uses the subsystem to answer enquiries and make changes to the customer's profile. Examples include the recording and resolution of service complaints, changes in service plans, tracing payments, and dispensing advice and information. The subsystem can be used by customer care to contact subscribers to check their satisfaction with the service, for higher level management contact to customers who have had a history of trouble reports and for add-on marketing campaigns.

The collections organisation uses the subscriber management subsystem to contact customers whose bills are overdue, to make adjustments and give credits, and track payments. Aged receivables balances form the core of the collections subsystem and these balances can be prioritised for collection calls each day. In advanced implementation, the prioritised balances are automatically formed into "campaigns" and loaded into an auto dialler subsystem. The auto dialler automatically dials subscribers based on the prioritisation scheme and, when it receives an answer, instantly presents the subscriber information to the next available collector. In this manner, collectors have far less "down time" since non-productive phone dialling and information retrieval time is eliminated. Auto diallers have been shown to at least double productivity versus semi-automated alternatives.

### *Service Management*

This application allows the booking and allocation of engineers to service, installation and maintenance calls through an electronic diary booking system. It maintains links with the inventory management system for customer premises details.

***Marketing/Campaigns***

This application supports the marketing effort in the determination of products and pricing and also in the direct marketing to customers. The main functions are:

- product and pricing
  - product details, for example, availability, dates, price, customer type etc.
  - commercial pricing, for example, price bands according to volume
  - pro-rata charges
  - tiered product/packages/service levels
- customer marketing/campaigns
  - welcome telephone calls for new subscribers
  - pro-active telephone marketing of selected services, based on customer viewing habits
  - 'over-the-air' electronic programme guides, messages and advertising
  - personalised 'over-the-air' electronic marketing messages.

***System Controller***

The system controller is the centre of the access control security system. It supports the communications between the subscriber's set top box and the SMS. It maintains links with SMS for service activation, change or deactivation as well as performance and maintenance support.

***Credit Vetting***

This application will maintain a credit score-card for each customer type. New customers will be credit vetted using their name and postcode details. An individual credit limit will be set for each new customer vetted, based on external credit vetting agency details and the DTN credit-score. This application will also carry out fraud checks and validate the customer bank and direct debit details.

***Billing***

The bill is the main means of communication between DTN and its customers. It is thus fundamental that the bill be easy to read and understand, as well as always being correct. As well as maintaining trust, correct bills reduce costs - when customers are used to receiving correct bills, then they are less likely to request explanations concerning a particular bill.

From this it follows that the billing system must be:

- efficient, in order to keep costs low while ensuring fast response times, even though the quantity of work involved is very high
- accurate, so as to always supply correct information

- clear and detailed so that the bills are both easy to read and understand but also comprehensive in the level of detail required by the customer.

It is also fundamental that the billing system be flexible, so as to allow DTN to continuously improve the level of service provided to the customer, and to evolve as the business needs of the customer change.

These differing requirements are not easily reconciled and are satisfied through sophisticated techniques that have been developed over many years, and which make use of an Information System structure which has a high degree of modularity, fault-tolerance and resilience.

The billing function maintains all subscriber information including data for the supporting customer service functions. In particular, interfacing with the system controller application, the billing function will receive and maintain the subscriber viewing and transaction records, providing error checking and the management of transaction processing errors through the Revenue Assurance application.

Details on subscriber viewing habits, services selected and products bought are passed through to the marketing application for product revenue analysis and on-going subscriber marketing campaigns. The amount of subscriber information held will be in accordance with all relevant legislation.

The major functions of this application are:

- to produce an accurate bill, detailing all the customer transactions for that period including subscription charges, any payments in advance for services taken and pro-rating any services paid and not taken
- apply discretionary credits/discounts to customer's accounts
- set impulse pay-per-view purchase limits by customer
- provide up-to-date customer balance for 'over-the-air' electronic broadcasting to the customer's screen
- hold the geo-demographic details for each customer, for example:
  - preferred written/spoken language
  - nationality
  - interest groups
  - gender
  - marital status, number of children
  - spending habits
- maintain a credit limit for each customer and notify Customer Service when this limit is reached
- deactivation of viewing cards for default accounts.

***Payments***

The major function of this application is to provide highly automated streamlined customer payment processing.

Payments for services can be made by:

- cheque
- direct debit through a bank
- credit/Switch card
- electronic purse (such as Mondex or VisaCash).

The system will receive direct debit payments electronically and process against the customer accounts, re-cycling any failed direct debit payments, with the appropriate default code being set against the customer's account.

Credit card payments will be authorised in real-time, particularly for impulse pay-per-view, with the customer's credit card details being kept electronically for future reference to minimise re-entering the details.

Cheques and cash will be processed and accrued against the customer's account.

***Collections***

The major function of this application is to support the arrears management of customers and reduce the incidence of overdue and bad debt. The system will be highly pro-active in tracking customers using predictive dialling techniques to telephone defaulting customers and take immediate payments. Examples of the type of credit control measures are:

- send an 'over-the-air' message for screen display
- issue debt chasing letters
- suspend or cancel services on the customer's viewing card
- downgrade the subscription services.

When a customer account reaches a defined level of insolvency, it will be automatically selected by the system and reminder procedures initiated. These include sending messages to the customer, calling him and so on. As a general policy, DTN will only discontinue service as a last extreme. In these cases, after checking with a supervisor, the account will be sent together with the customer history to a debt collection agency. The choice of the agency will depend on the geographical location, kind of contract and amount of the debt. The insolvency level of the customer is maintained in the customer file, together with special system codes that are automatically assigned depending on his past history of payments. During debt collection, the system will continuously monitor the progress of the collection agency. As a general rule, when a collection agency is involved, all service to the customer is suspended and he is noted

as being unreliable. The debt collection programme will maintain a record of the files supplied to the agency, and keep statistics concerning their effectiveness. Customer insolvency statistics are also used to evaluate the long-term performance of the sales organisation.

***Revenue Assurance***

Revenue Assurance audits all subscriber transactions and ensures that all payments, (for example, royalties) are made and that all customer transactions are billed.

This function is responsible for calculating the revenue due to other network operators and service providers whose services have been used to provide DTN products. Depending on the actual service and the tariffs applicable at the time, appropriate system counters will be added in to record the usage. The counters are maintained in a table in a database and a report is generated for the Financial Administration group.

***Pay-Per-View***

Two methods of PPV will be supported:

- order ahead pay-per-view, by any of the supported payment methods with pre-authorised viewing rights
- impulse pay-per-view (IPPV), where the customer can buy one-time events 'on impulse' from the EPG.

The system will also support the sale of either individual PPV events or block of PPV events by theme, time or number.

Payment is made either to an existing account, within the customer's credit limit or by real-time credit card authorisation through the payment application module.

For customers who automatically select an IPPV event through the EPG, a flag will be set on the customer's account to determine whether they first need to be credit checked. This can be done either automatically or by the Customer Service team calling out to the customer.

***Inventory Management***

The inventory management system maintains the logical link between the set top box, smartcard and customer account to ensure no fraudulent misuse. The system maintains set top box serial numbers, manufacturer and model details and can identify particular combinations of serial numbers, manufacturer and model details should swapping of a set top box be necessary. The inventory management system holds stock for distribution to the retail outlets and also for swapping or replacement of smartcards.

### *External Interfaces*

The CIS must interface with numerous external systems. These range from real-time networks for fraud control, credit verification, and call delivery, to the less time-sensitive financial and accounting packages. In order to interface with the real-time networks, the CIS acts as a buffer, receiving information in real-time and repackaging, in the proper formats, for communication to the external networks. This buffering process is typically the same as that used for capturing call records from the switch in real-time for billing purposes. In addition, the call records and switch data are communicated to the network control system for alarm monitoring, maintenance, and performance measurement.

Simpler interfaces are used by the CIS to download revenue and receivables data to the accounting system on a daily, weekly and monthly basis. For equipment sales or rental, inventory and fixed asset systems can be similarly updated through these download type of interfaces.

The CIS must also interface to banking systems for payment recording and direct debiting of customer bank accounts. An automated lock box system which uploads payment data into the CIS is a relatively simple yet crucial application. Direct debit and credit card billing can usually be implemented over the same banking link.

This application provides the interfaces to a standard General Ledger and Accounts Payable system, for the management of payments to suppliers, retailers and content providers, using either cheque or electronic means.

## System Specification 

ICL have prepared the system specification based on the system requirements described above. ICL are able to provide a complete integrated solution including, project management, software development, supply and maintenance of all hardware and systems software and the management of delivery, installation and system testing.

ICL have a proven track record in developing the business processes associated with Subscription Management and pay-per-view and enabling the solution to be implemented rapidly, effectively and efficiently to meet DTN's business needs.

This part is laid out as follows:

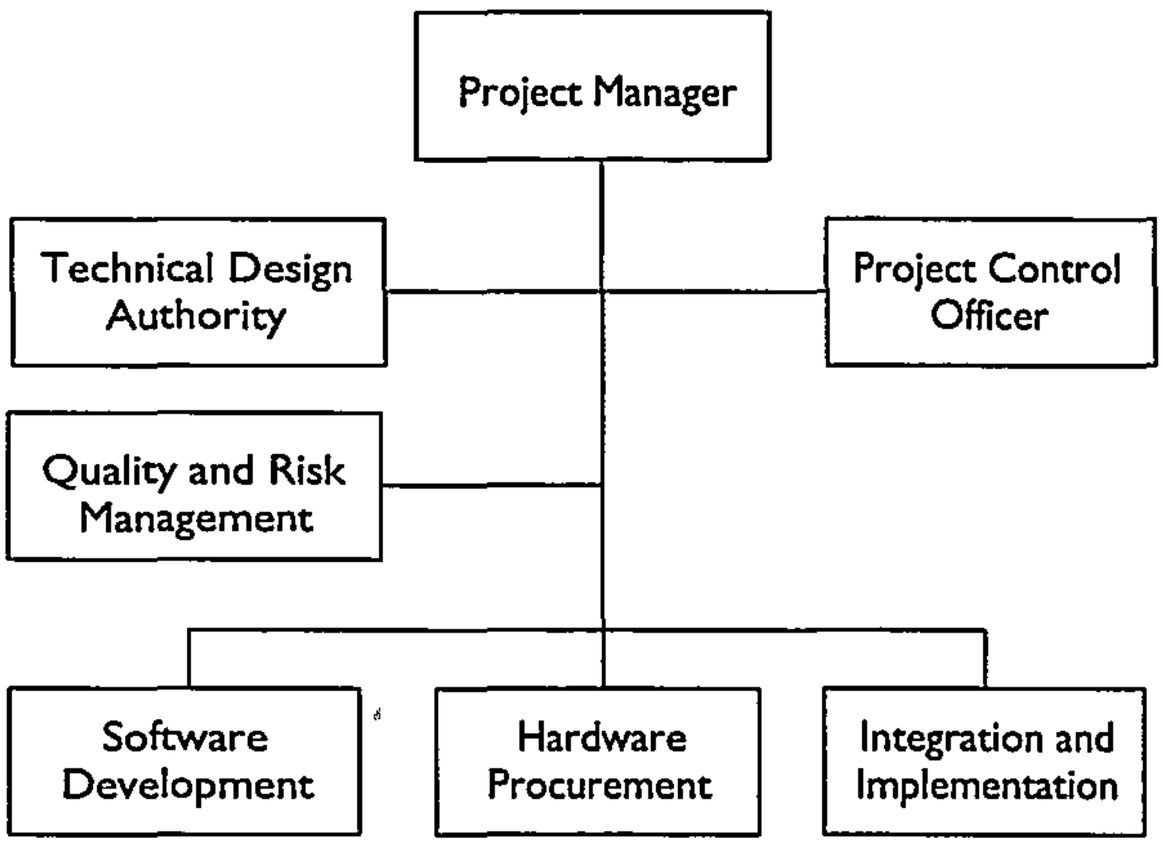
- *Project Management* describes the organisation and processes that ICL will use to ensure that the system is delivered up to the highest standards
- *User Interfaces* describes how DTN's operators will interface with the system and the range of interface forms that will be used
- *ICL Solution* provides a basic outline of how ICL will design the system

## Project Management

### *Introduction*

SMS project management [redacted]

**Exhibit A2.23: Project Team Structure**




The proposed project organisation is specifically geared to achieve four main objectives:

- to ensure that the project is conducted according to BS5750 principles with a strong thread of quality assurance and management control visible in all its activities
- to ensure that the systems can be designed, developed, and implemented to specification in the required timescales
- to ensure all areas of risk are addressed and managed to ensure the success of the project
- to ensure that the designated staff are kept fully informed on all matters of mutual project importance.

For reasons of internal efficiency, and so as to contribute to the success of the project in the most practicable way, ICL will conduct the project in accordance with ICL's Corporate Project Management Methodology, PM3. The PM3 manuals present a set of proven professional methodologies and standards and are supported by a series of internal training programmes. They are available for inspection at ICL offices.

ICL will conform to any DTN required procedures where they affect the formal interactions between ICL and DTN.

Before the project start-up, ICL will produce a Project Management Plan, which gives details of the way the project will be structured and organised to ensure project success. The plan is a working document, intended to be updated and maintained throughout the project implementation period.

***Risk Management***

ICL recognises the importance of formal risk management to the success of all major projects. The risk management process consists of qualitative and quantitative risk assessment.

The qualitative aspect involves the identification of risks and documenting them in a Risk Log held with the project plans. These risks are then considered and actions put in place to eliminate, contain or provide contingency against them. This process is reviewed and repeated throughout the life of the project.

An open policy is deliberately adopted to the identification of risks. Anyone who might have identified an issue worthy of consideration is encouraged to document it, whether it falls in their immediate area of responsibility or not. Each issue will become a Risk Log entry as it is raised.

Quantitative analysis processes are based on a Monte Carlo simulation, which is used to aggregate the information about uncertainty in the components of a project into a coherent view of the uncertainty in overall targets. The results of this analysis are used to make informed decisions about budgets, schedules and other commitments.

ICL is represented on the Association of Project Managers' Specific Interest Group on Project Risk Management.

***Quality Management***

Quality is a prime consideration in all ICL activities. The company's policy is to provide products and services which meet the requirements "first time, on time and every time". An ongoing company wide total quality management scheme trains staff to ensure that requirements are established, as required by policy, and met as a result of this. ICL applies the same high standards to all its projects.

ICL was the first company in the UK to achieve company wide registration to ISO9001.

ICL Enterprise Industries, the business unit within ICL which is responsible for the SMS systems, has individual ISO9001 accreditation and is also accredited to TickIT, the software development standard.

## User Interfaces

### *Overview*

All of the user interfaces will be combined into a single application, with the access to each part being controlled by a user name and password.

Access via the username and password will be protected by forcing regular password changes, disallowing passwords which are too short or resemble user names, and by checking that no username is employed twice concurrently.

### *Application Functions*

*Customer Acquisition*

This function is responsible for the capture of customer details, and either the booking of an engineer, or the enablement of subscription services.

This will provide access to the following user interface forms:

- create customer details
- select customer details
- authorise smartcard/set top box
- book subscription service
- request engineer appointment.

*Retailer Interface*

This function is responsible for providing all the facilities required for a retailer. It is a superset of the Customer Acquisition function. This will provide access to the following user interface forms:

- create customer details
- select customer details
- authorise smartcard/set top box
- book subscription service
- request engineer appointment
- accept customer payment
- update customer details
- view retailer commission payments
- view customer details.

*Service Management*

This function is responsible for the booking and allocation of engineers to service, installation and maintenance calls. It will implement an electronic diary into which engineers appointments will be booked. This will provide access to the following user interface forms:

- create engineer details
- update engineer details
- delete engineer details
- select engineer details
- associate workbill with diary
- disassociate workbill from diary
- set engineer availability
- unallocated workbill prompt screen
- complete workbill.

*Billing*

The billing user interface maintains customer billing details and accounts so as correct billing may be performed. This will provide access to the following user interface forms:

- select customer details
- update customer details
- apply one-off discount or credit
- de-activate smartcard/set top box
- credit limit warning prompt screen.

*Collections*

The collections user interface supports arrears management and debt collection. This will provide access to the following user interface forms:

- select customer details
- cancel subscription service
- cancel PPV service
- issue debt chasing letter
- credit limit warning prompt screen.

*Customer Care*

The customer care user interface provides all functions for the DTN customer service centre. This will provide access to the following user interface forms:

- select customer details
- update customer details
- disable customer
- apply one-off discount or credit
- de-activate smartcard/set top box
- credit limit warning prompt screen
- cancel subscription service
- cancel PPV service.

*Marketing and Campaigns - Product and Pricing*

The marketing and campaigns user interface provides the facilities to support the marketing of products and services and particularly for the setting up of subscription and PPV services, the pricing and discounting of these services.

This will provide access to the following user interface forms:

- create schedule details
- delete schedule details
- transfer schedule to live
- create service details
- update service details
- select service details
- delete service details
- price service
- define service availability
- create event details
- update event details
- delete event details.

*Customer Marketing and Campaigns*

This user interface provides facilities to enable the marketing of services to customers. This will provide access to the following user interface forms:

- service marketing prompt screen

- market service via 'over-the-air' message.

*Pay-Per-View*

This user interface provides facilities to support the sale of order ahead pay-per-view (OPPV) services. Impulse pay-per-view (IPPV) is supported automatically by the callback interface. This will provide access to the following user interface forms:

- select customer details
- select service details
- view customer details
- book PPV service
- cancel PPV service
- re-enable PPV service.

*Inventory Management*

This user interface provides facilities to maintain the links between the set top box, smartcard and the customer accounts.

This will provide access to the following user interface forms:

- select customer details
- update customer details
- unallocated inventory prompt screen.

*Administrator Control*

This user interface contains all the facilities which are required for the administration of the digital terrestrial television Subscriber Management and Billing System. This will provide access to the following user interface forms:

- create/update user
- create/update role
- system table amendment.

**The ICL Solution**

As outlined above, ICL have worked closely with DTN to define a solution to meet the demands of our subscriber management system based on the system requirements and user interface forms. The solution provides detail on the client server relationship, various data stores, processing techniques and interfaces with other systems. This work is deemed to be of a commercially confidential nature and has, therefore, been included in Section B.

# Differences In DTN's Proposals Under Section A2 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplex licences our proposals would differ from those set out above. These differences are set out below.

## Contingencies if DTN was Awarded Two Licences

The most fundamental problem that would arise in this circumstance is that DTN would have to agree the specification of the set top box and of the idTV set with other digital terrestrial television broadcasters. In addition, a number of other associated issues would need to be resolved - the extent of the set top box subsidy, for example. The consequence of this would be that DTN's ability to drive the marketing of digital terrestrial television would be reduced. This carries the clear risk that BSkyB would find it easier to secure a strong lead in the market place and, in consequence, would be in a much stronger position vis-à-vis the manufacturers.

Our detailed explanation of the consequences of being awarded two licences only describes, first, the effects on the Broadcast Operations Centre (BOC) and then describes other effects.

DTN's programme plans for a joint multiplex would reduce the technical facilities in the BOC. Our programme line up would be:

- The ITN Living History Channel would be played out from the new site at Crawley Court, Winchester
- Animal Planet would originate from a London facilities house and be linked to Crawley Court
- Travel would originate from a London facilities house and be linked to Crawley Court
- The Box would originate from a London facilities house and be linked to Crawley Court
- TCM: Turner Classic Movies would originate from a London facilities house and be linked to Crawley Court
- Cartoon Network would originate from a London facilities house and be linked to Crawley Court
- MGM Gold would be played out from Crawley Court
- Digital Box Office would be played out from Crawley Court
- If we were awarded Multiplexes B and C, The British Sports Channel would originate from a London facilities house and be linked to Crawley Court. There would be no British Sports Channel on any other joint multiplex.

The BOC would operate as for the three multiplex option detailed in Section A2 but in a reduced form. There would not be a requirement for the studios and associated post production systems. The British Sports Channel studio facility would be outsourced from an independent company, such as ITN. However, most of the promotions material would be created in-house. The London studio and the local regional studio in Manchester would not be required.

Data services would be reduced to fit a 4.8Mbps data transmission space or 4.2 Mbps when multiplex D is included. DTN would provide an SMS system but only following agreement with the other licence holders.

Six of the programme services would originate from the programme suppliers' facilities and linked to the (reduced) BOC via 8Mbps digital circuits. The Living History Channel, MGM Gold and the Digital Box Office service would be processed through the transfer system, editing and playout facilities as described in Section A2 for the three multiplex operation. A promotions editing, graphics and commercials traffic system would create all of the interstitial material for the 14 programme services or 13 programme services when multiplex D is included. The technical operations staff would be reduced from 162 staff (three multiplex staff level) to 74 staff for the dual multiplex operation.

Some delays in implementing the BOC would be inevitable compared to our three multiplex plan in order to accommodate the requirements of the other licence holder.

Other consequences (i.e. aside from those affecting the BOC) of being awarded two licences would be as follows:

- DTN's local regional service would be eliminated, taking out the regional studio and terrestrial circuits
- DTN's increased transmitter roll-out plan would need to be agreed with the other non-gifted licence holder and may be reduced; our intention however, assuming reasonable arrangements can be made with other licensees, is to adhere to the plans described in detail under our proposals for the scenario in which we were granted three multiplex licences - we would hope to achieve therefore the same start date, final coverage and coverage plan
- DTN's subscription management system would need to be agreed with the other non-gifted licence holder and may result in funding difficulties for the software development of our SMS
- DTN's international position will be reduced and therefore our ability to influence the world receiver set top box price may be affected.

The overall effects are summarised at Exhibit A2.24.

**Exhibit A2.24: Variations**

| Facility | B | C | D | BC | BD | CD | BCD |
|---|---|---|---|---|---|---|---|
| Technology Team | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Transmitter Roll-out | (1) | (1) | (1) | (1) | (1) | (1) | ✔ |
| Satellite Distribution | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Local Regional Service | ✖ | ✖ | ✖ | ✖ | ✖ | ✖ | ✔ |
| BOC | | | | | | | |
| – Sports and Money Channel Studios | ✖ | ✖ | ✖ | ✖ | ✖ | ✖ | ✔ |
| – Other facilities | (2) | (2) | (2) | (2) | (2) | (2) | ✔ |
| Conditional Access | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Data Management System | ✖ | ✖ | ✖ | (3) | (3) | (3) | ✔ |
| Subscription Management System | ✖ | ✖ | ✖ | (4) | (4) | (4) | ✔ |
| DTN's International Position | (5) | (5) | (5) | (5) | (5) | (5) | ✔ |

✔ *As described in Section A2 above* ✖ *Would not be included*

*Notes:*

*(1) DTN would need to agree roll-out with other operators*

*(2) The BOC would be scaled down to handle the lower amount of programmes*

*(3) The data management system would be scaled down in line with services*

*(4) DTN would need to agree the system with other multiplex operators*

*(5) The position would be weakened*

### Contingencies if DTN was Awarded One Licence

If DTN was awarded a single licence, inevitably its influence over digital terrestrial television's technology strategy would diminish even further. It would be highly likely that DTN would have no option other than to accept the receiver and idTV specification adopted by the largest digital terrestrial player. This could affect many other crucial decisions - the level of set top box subsidy and the speed of roll-out, for example.

As was the case with the award of two licences, we first of all explain the effects on the BOC and then itemise other effects.

DTN's programme plans for a single multiplex would significantly reduce the technical facilities in the BOC. Our programme line up would be:

- the ITN Living History Channel would be played out from the NTL site at Crawley Court
- Animal Planet would originate from a London facilities house and be linked to Crawley Court
- Travel would originate from a London facilities house and be linked to Crawley Court

- The Box would originate from a London facilities house and be linked to Crawley Court
- TCM: Turner Classic Movies would originate from a London facilities house and be linked to Crawley Court
- Cartoon Network would originate from a London facilities house and be linked to Crawley Court
- MGM Gold would be played out from Crawley Court.

The programme line up listed above is specific for Multiplexes B and C. The other Multiplex, D, would not carry the Cartoon Network or MGM Gold.

The BOC would operate as for the three multiplex options detailed in Section A2 but in a much reduced form. The Living History Channel and MGM Gold programme services would be processed through the transfer system, editing and play out facilities as described in Section A2 for the three multiplex operations.

Subtitles would accompany the programme feed from the suppliers. Commercials would be added at the teleport station for all six channels. Promotional material would be produced by the programme supplier. A master control function would oversee transmission. The BOC studios, London studio and the Manchester facility would not be required.

Data services would be reduced to fit a 2.4Mbps data transmission space or 1.8 Mbps when multiplex D is included (further details in Section A7). It would not be practical to provide an SMS system for a single multiplex and therefore DTN would make arrangements with the other multiplex licence holders.

All of the programme streams would originate at each of the programme suppliers' facilities. These signals would be routed via 8Mbps digital circuits to Crawley Court where a seven channel master control system would be installed. Commercials would be inserted at Crawley as required. The technical operations staff would be reduced from 162 staff (three multiplex staff level) to 38 staff for the single multiplex operation.

Inevitably, it would take longer to implement a single multiplex operation. This is because arrangements would need to be made to share SMS facilities, decide on the CA system, make compromises on the set top box and the transmitter roll-out programme. The extent of the delay would be dictated by the speed of decision-taking of the slowest multiplex operator.

The other effects of being offered a single multiplex licence would be as follows:

- DTN's local regional service would be eliminated, taking out the regional studio and terrestrial circuits
- DTN's increased transmitter roll-out plan would need to be agreed with the other non-gifted licence holder(s) and would most likely be reduced; our

intention however, assuming reasonable arrangements can be made with other licensees, is to adhere to the plans described in detail under the proposals for the scenario in which we were granted three multiplex licences - we would hope to achieve therefore the same start date, final coverage and coverage plan

- DTN's subscription management system arrangements would need to be agreed with the other non-gifted licence holder (or holders); agreeing these may result in funding difficulties and delay
- DTN's international position will be severely affected and we would abandon the world receiver concept.

# A1 The Licence Applied For

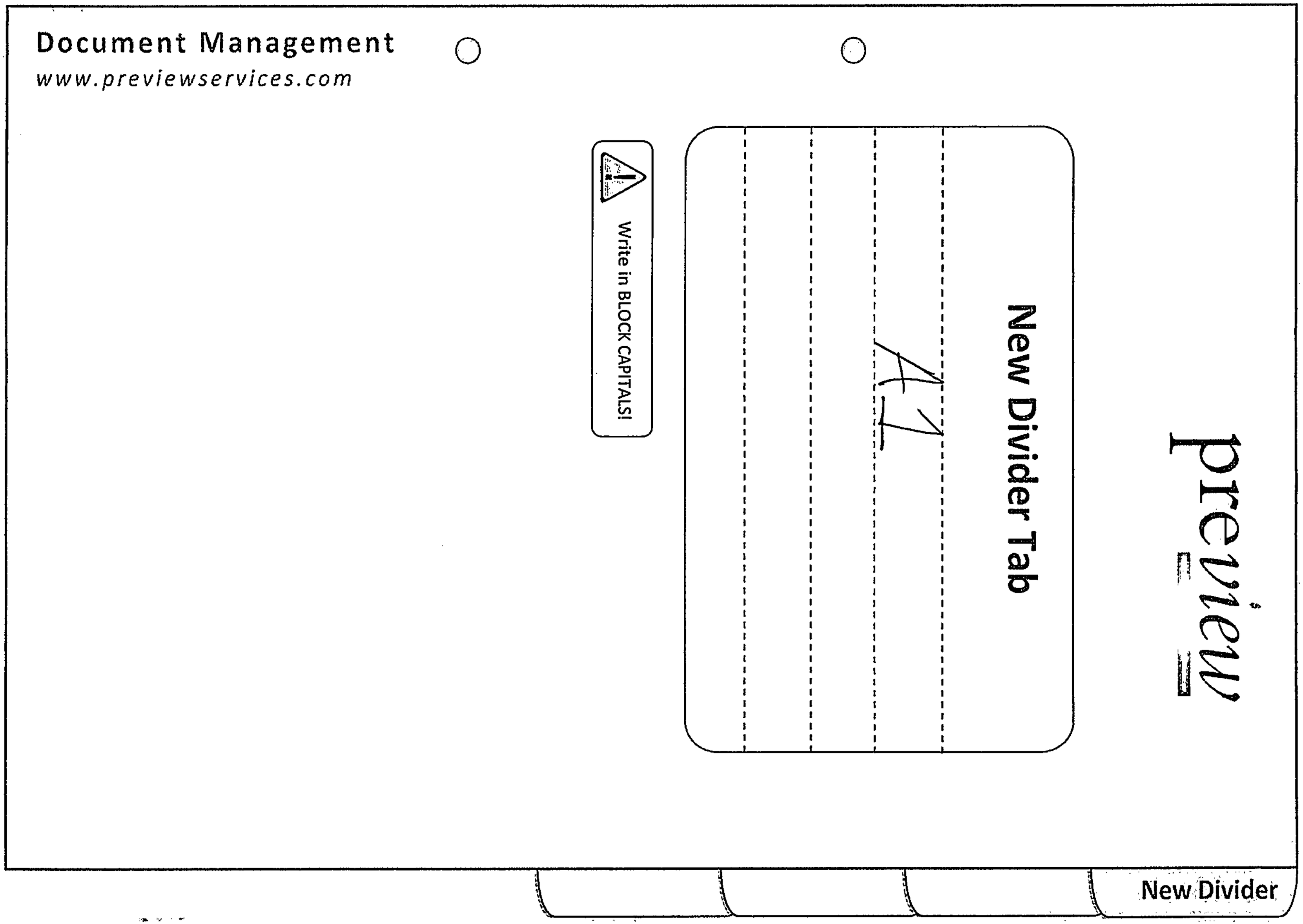
*The applicant should state which multiplex licence he is applying for by means of this application. If the applicant is applying for more than one licence, and if this application contains supplementary proposals which would be implemented only if he were awarded more than one licence, then he should specify the other licences to which these supplementary proposals apply. If the applicant is applying for more than the number of licences he would be permitted to hold under any requirement imposed by or under Schedule 2 to the 1990 Act, he should state his preferences in relation to these licences (see paragraph 22).*

## The Licence Applied For

This is an application for Multiplex Licence B.

DTN is applying for the three individual licences: B, C and D. This application contains supplementary proposals for the ownership of all these licences together as well as supplementary proposals for the ownership of licences B and C, licences B and D, and licences C and D. This number is within the limits for multiplex ownership as set in the 1990 Broadcasting Act.

The Introduction to Section A explains the way this document has been written to describe how the licence would be operated either if DTN were to win this licence alone or if DTN were also awarded one or more of the other licences for which we are applying.



# Introduction to Section A

The purpose of this Introduction is to help the reader of this application to understand the way this document is structured. This structure has been chosen, after considerable thought, as the most effective means of both meeting the ITC's requirements and setting out Digital Television Network's (DTN's) case for the award of this multiplex licence in a way that is clear and relatively concise. In addition, this Introduction briefly describes the consumer research DTN has undertaken in support of our proposals.

## Structure and Layout of this Application

Section A is set out in the order specified in the Invitation to Apply. Each section is separated by a divider. At the end of this document there is an Appendix to Section A containing supporting material referred to in the main part of the section. A glossary of key terms used in this section is included in the Appendix.

In setting out our proposals, we have adopted a common format. The requirements of the Invitation to Apply are restated at the start of each section, followed by a summary of DTN's proposals. The remainder of the section then covers our proposals in detail.

The Introduction to Section B outlines the different way in which that part of DTN's submission is laid out.

## Proposals for the Single Licence and Combinations with Other Digital Terrestrial Television Licences

The ITC's Invitation to Apply requires that, while applicants are permitted to apply for more than one licence, each licence must be applied for separately. Applicants are also prohibited from making an application for one licence wholly conditional upon securing one or more other licences. The Invitation to Apply states that, "*In the event that an applicant applies for more than one licence, each application should include a set of proposals which would be implemented in the event that the licence applied for, and that licence only, were awarded to the applicant.*"

The ITC has foreseen that it is likely an applicant's proposals for operating any individual licence may alter if it is awarded more than one and has, therefore, invited applicants to submit supplementary proposals for the operation of combinations of different licences. The Invitation to Apply states that, "*A licence application which contains supplementary proposals will be considered as one entity.*"

DTN is applying for three multiplex licences: B, C and D. One of the main reasons for this is that we are convinced that one of the most fundamental determinants of the

success of digital terrestrial television in the UK will be the degree to which there is a single approach to the marketing of the services and receiver equipment and that this can only be achieved if there is one player who operates three multiplexes - the maximum number of licences permitted under regulation. This conviction is independent of DTN's specific credentials to run the three licences. Digital terrestrial television is a major technological step forward and involves a new order of complexity within the television industry. We are extremely sceptical that a disparate group of licensees could come together effectively to overcome the marketing, funding and new service development challenges that lie ahead.

For this reason, our proposals are based on a vision of British digital terrestrial television which envisages its operation as an integrated, focused business. Our applications for each individual licence, therefore, also make the case for being awarded all three multiplexes.

In the course of developing our proposals, we have given a great deal of thought to the clearest way of presenting them, knowing that we would need to describe our proposals for each single multiplex as well as the various combinations of two or three. The solution we have chosen is to begin by describing how we would operate the multiplex in question if we were awarded all three licences. We then describe how our proposals would change if we were only awarded a total of two multiplexes or solely the multiplex which is the subject of this application.

The format of each section is, therefore, as follows:

- the main proposals for the operation of the multiplex on the basis that it was one of three licences owned by DTN
- following this, clearly marked, the differences that would apply to these proposals if DTN were awarded either the single multiplex licence applied for or the licence applied for here and one other.

This approach makes it very clear what our proposals for the operation of this multiplex licence would be on a stand-alone basis. In addition, it gives a clear picture of DTN's more ambitious plans, should it be awarded several multiplex licences.

## References to Consumer Research

During the course of developing our proposals for this application, DTN commissioned BMRB International to undertake a major piece of original consumer research. The research involved:

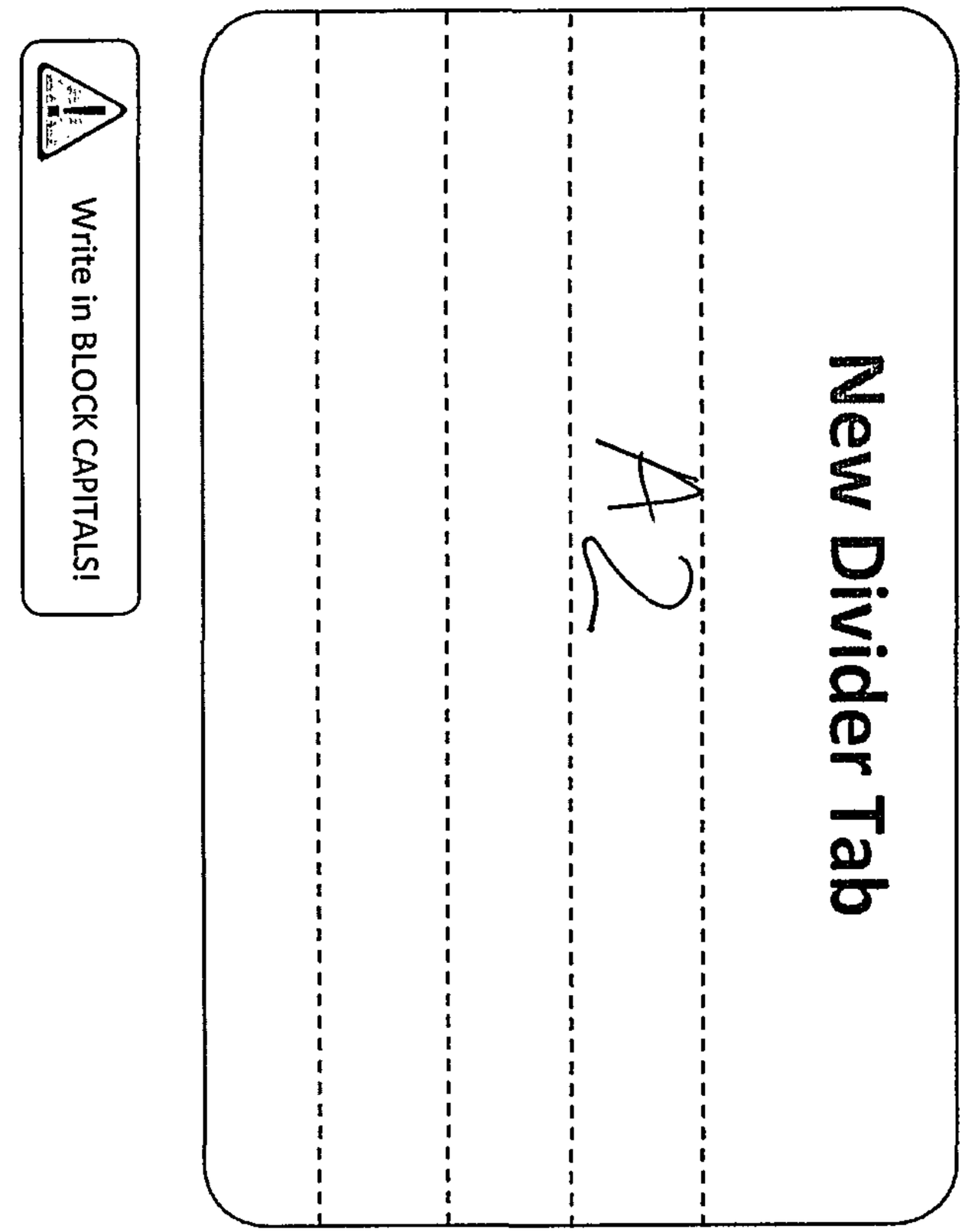
- over 1,000 face-to-face interviews with randomly selected members of the public
- twelve focus groups, as part of a qualitative survey

- two telephone surveys, as part of BMRB's regular omnibus surveys, each covering over 1,000 individuals specifically on the subjects of local programming and the Internet

This has helped confirm many of our views on the key criteria for the success of digital terrestrial television and has also shaped DTN's plans so as to maximise our appeal to consumers.

BMRB's report on its approach to this research, the results of the qualitative survey and the two omnibus surveys are included in Volume 1 of the Appendix to Section B. The full results of the quantitative survey, plus the questionnaire used, are included in Volume 2 of the Appendix to Section B.

Consumers were asked to respond to the question, "*Looking at all (its)... features, how interested would you be in digital terrestrial television?*". This question was asked after DTN's entire proposition, including receiver equipment, programming, data services, telephony and pricing had been discussed, as had the alternatives of digital satellite and digital cable. We have used the results of the consumer research throughout this application as evidence of the appeal of our proposals. The key statistics used are the percentages of respondents who said they were either "very interested' or "quite interested" in digital terrestrial television, on the basis of our plans.




New Divider

# A2 Transmission Coverage, Roll-Out and Total System Overview

*Noting the information provided in paragraphs 4, 79 to 83 and 110 to 113, the applicant should describe in detail his proposed arrangements for the transmission, distribution and multiplexing of the proposed multiplex service, including a start date, build programme and final coverage.*

*Note:*

*"Start date" means the date of start of transmissions of the multiplex service. "Build programme" means the timetable by which progressive coverage might be achieved by the successive implementation of transmitters within the multiplex service transmitter plan. "Final coverage" means the extent of the coverage available under the transmitter plan which the applicant intends to implement. This should be expressed by means of predicted coverage figures based on specified transmission sites, aerial heights and power levels. Applicants for Licences B, C or D should also state their policy concerning the possible extension of coverage were further frequencies to become available.*

## Summary

DTN's technology is the foundation on which its aspiration to bring pay-TV to the mass market in the UK is based. The technology will be absolutely critical to delivering easy to use, low cost and high quality services to the largest possible audience in the shortest timeframe. The points below summarise the elements of DTN's technical strategy which we consider central to our vision.

- DTN is the only licence applicant to have secured the services of NTL as "end to end system integrator". While other applicants will use NTL for transmission, our intention is to exploit the depth of NTL's digital experience by making it responsible for the entire technical aspect of DTN's business
- DTN will create a purpose built Broadcast Operations Centre, local TV facility (Manchester) and a satellite distribution network
- DTN will provide its own Subscription Management Call Centre in Cardiff adjacent to the existing CableTel facility. This centre will also provide a vital customer care facility for our subscribers
- DTN will radically simplify access to data services for its subscribers, bringing the Information Society within reach; it will do this by providing simple access via the TV set to data services including Intranet and Internet services
- DTN has instructed the NTL Broadcast Division to provide an accelerated roll-out plan for the transmitter network build programme to include 40 main transmitter stations by 1 May 1998 giving wide national coverage (our 'start date'

is therefore 1 May 1998). This will enable DTN to double the number of transmitters available from the start of service beyond previous broadcast industry projections. Our intention is to provide a further 41 main and relay stations by the end of 1999. Our "build programme", therefore, envisages 40 stations by 1 May 1998 and the gradual addition of a further 41 stations by the end of 1999

- In terms of the UK's population, these plans translate to 71% coverage by 1 May 1998 and 87% coverage by the end of 1999
- DTN's plan for coverage provides for all 81 transmitting stations contained within the ITC plan described within the document, ITC Note for Applicants on Coverage for Digital Television. This means our final coverage is 100% with respect to Multiplexes B and C. As DTN plans to operate Multiplex D at 16QAM, the effective final coverage for Multiplex D is 110% of the ITC plan. DTN would wish, as a matter of policy, to expand all three multiplex coverage areas as new frequencies are made available in the future
- DTN propose to reduce the data rate of Multiplex D to 18Mbps to ensure that more viewers in fringe areas are able to receive the service.

DTN's technical strategy is backed up by a world class team of British technology companies who are committed to continue to invest millions of pounds in research and development on digital technology through DTN and its sister company, NTL. The NTL team has already spent over 50 man years developing the various products that will be used in this project.

DTN is confident that it will deliver a technology system that will remain at the leading edge of digital developments with respect both to the UK and the rest of the world.

## Introduction

This section outlines DTN's overall technology strategy and detailed plans encompassing not only the transmission system but also the wider systems that will be critical. These include data management, subscriber management and the heart of the system, the Broadcast Operations Centre (BOC). The various sub-sections cover the following ground:

- *DTN's Technology Team* explains the importance of technical excellence in delivering a world class technical solution. It also underlines the experience and capabilities that DTN's sister company, NTL, and its other strategic partners bring to DTN. It also explains how this team will lead developments outside the UK in order to improve digital terrestrial television in the UK
- *Outline of the Broadcasting System* provides an overview of the main elements of the system and how they interface

- *Transmission, Coverage and Roll-out* describes DTN's plan for rolling out the network including the arrangements for, and design of, the transmission and distribution systems, the start date, build programme and final coverage
- *Satellite Distribution System* explains the strategy for UK-wide distribution by satellite, including the design and arrangements to ensure maximum reliability and control
- *Regional Contribution Network* describes the arrangements for providing feeds from regional studios into the BOC and the facilities at each local centre
- *Broadcast Operations Centre* outlines the detailed design and plan for the BOC including the facilities plan, technical formats, studio facilities, scheduling and playout arrangements and station output equipment
- *Conditional Access/Control System* describes the technical elements of the system that DTN will use
- *Data Services* explains the process and architecture in the data management system which DTN will use to deliver our exciting range of data services
- *Subscriber Management System* explains the overview of the functionality of the system and the detailed technical plan that DTN has arranged [redacted] to meet these key requirements.

Our detailed approach to conditional access and Simulcrypt is discussed in Section A13. Operational matters, quality, transmission standards and reliability are addressed in Sections A10, A11, A12 and A13. The full details of our technical staff resource, training programme and recruitment plan are contained in Sections A11, A16 and B7.

## DTN's Technology Team

### Overview

The ITC licence to create a digital terrestrial television service will pose greater technical challenges than any other licence granted in this country. We believe that it is critical to the future success of the services for the licensee to have detailed experience of digital technologies and the technical capability to implement a fully integrated digital system. The team we have assembled brings a formidable capability in digital television and has actually implemented similar systems in this country and in other parts of the world.

NTL, a sister company of DTN, has been the driving force behind the development of the digital terrestrial television system. NTL's commitment to this technology has been amply illustrated through a multi-million pound research and development programme. This has included fundamental work researching video compression

technology and, more recently with Digi-Media Vision (a spin-off company from NTL), the development of large scale integrated circuit chip sets for the home receiver set top box.

The NTL team was responsible for designing and building the very first end to end digital terrestrial television system. A demonstration of the whole digital terrestrial television system was given to an audience of leading British broadcasters and journalists in London last October. The demonstration was a major success in proving the digital terrestrial television technology and the technical leadership of a British company in a vital new sector.

A project of this complexity needs broad ranging skills. To this end we have reached out beyond NTL to bring together a group of world class British technology partners. The capabilities of this group are described below.

DTN firmly believes that we are the only licence applicant with the necessary vision and depth of technical expertise to create the new digital terrestrial service in a manner which will be a credit to this country and its technology companies.

## The Members of the Team

DTN has brought together a formidable technology team. The main participants are shown in Exhibit A2.1.

**Exhibit A2.1: Team Members and Responsibilities**

| | |
|---|---|
| **NTL** | • Broadcast Operations Centre design, implementation and operations<br>• Transmitter network design, implementation and operations<br>• Satellite distribution design, implementation and operations<br>• Network maintenance and service operations<br>• Regional programme service carrier<br>• Data services integration<br>• Digital fibre network for interactive service carrier<br>• Spectrum planning support<br>• Integrated receiver chip set development with DMV<br>• Receiver API software specification<br>• Overall project management<br>• Overall system integration |
| **NTL CableTel** | • Telephone network integration<br>• Telephony return path interactivity<br>• Subscription management service operations |
| **DMV** | • Compression products<br>• Receiver core software |
| **NDC** | • Conditional access (provisional) |
| **ICL** | • Data services system<br>• Subscription management and billing implementation |
| **National Westminster Bank** | • Subscriber retail transaction computer management system<br>• Interactive banking services |

## The Team's Experience

This section highlights the most relevant experience of the major players in DTN's technology team. With this detailed hands-on experience behind us, we have a high degree of confidence that we can successfully roll out the service on time.

### *NTL*

The principal member of the Technology Team will be NTL. NTL is a company whose core business is the transmission of television signals but which has recently developed a series of successful and increasingly important businesses in addition to transmission.

The comments below highlight some of NTL's more recent major project experience and supports our practical understanding of the end to end requirements for a fully integrated digital television service:

- the most advanced digital television project, to date, was managed on an end to end basis by NTL for STAR TV in Hong Kong over a two year period. This project included the design of compensation products and software plus overall project management. The crucial video compression equipment was developed at that time by the NTL research laboratories for STAR TV. This project gave NTL a crucial insight into the complexities of launching a major new digital television network. The work for STAR TV broke new ground in the development of multi-channel digital television, receiver design and the complexities of conditional access systems. As a consequence of this and other projects, NTL now has a detailed understanding of the key issues associated with the functionality of the whole system and, in particular, issues associated with the digital receiver and the timescales necessary to develop a working product. This experience also developed NTL's understanding of the systems integration issues when setting up the multiplexer, conditional access systems, data services and the subscription management system. The skills built up in this process now reside within NTL's International Group

- NTL was chosen by the international community to design and construct a new independent television network in Bosnia following the signing of the Bosnian Accords in Dayton, Ohio. The company was approached because of its capabilities in studio design, satellite engineering and transmitter network implementation. The project timescale was 12 weeks to construct and test the studio centre and network. The project was completed a week ahead of schedule, enabling the Bosnian elections to be televised by an independent body of broadcasters

- for Channel 5, NTL has provided the complete new terrestrial broadcast network in record time. This has involved the creation of a fully integrated system from playout to distribution and transmission. Apart from the

construction and setting up of 33 new transmitters and antenna systems, it also included the provision of MPEG2 compression capability for four programmes, a new fibre link from the playout centre, uplinking to two satellites and provision of TVROs with over-air control capability. All of this has been achieved within 12 weeks of being awarded the contract.

In the UK, NTL has already taken several crucial steps in the area of digital technology that will ensure the successful roll-out of DTN's system:

- as has already been mentioned, in October 1996 NTL demonstrated a complete end to end digital television system broadcast over the whole of Greater London. Two half multiplexes - one assembled in NTL's headquarters at Crawley Court, the other at Channel 4's studios in central London - were combined into one datastream at Croydon. The multi-channel broadcasts included widescreen pictures, data services, a conditional access system for pay-TV, an on-screen electronic programme guide (EPG) and small integrated decoders all working to DVB-T specifications. NTL was also able to demonstrate a subscription management system and Internet capability via its telecoms and satellite network

- full system monitoring, testing and telemetry is currently being added to the installation to complete the world's first fully operational end to end digital television system. Other members of our technology team played a crucial part in supporting the demonstrations, in particular, DMV and NDC

- in the summer of 1996, NTL began the building of a digital terrestrial television transmission system at its main London site near Croydon.

It should be noted that NTL has offered to provide transmission services to other licence bidders. However, the project management and end to end system integration skills inherent within NTL are specific to this licence bid. This position also applies to the services provided by NTL CableTel.

***Digi-Media Vision (DMV)***

DMV is the UK's leading manufacturer of video compression systems and associated products. It has provided equipment for projects in many parts of the world. STAR TV (Hong Kong), Foxtel (Australia), Shinawatra (Thailand) and FilmNet (Europe) are examples of its major clients. DMV was part of NTL up until the end of 1995 and much of the fundamental video compression development took place during the early 1990s when it was owned by NTL. Even after the sale of DMV, NTL has continued to fund DMV's research into various digital issues.

***ICL***

ICL is a leading UK information technology company supplying integrated systems and services with over 23,000 employees. The company has extensive experience both in data management systems and subscriber management systems.

In 1996, ICL formed a dedicated division, ICL Interactive, which focuses on providing design, content and subscriber management systems (SMS) for new online and Internet services. ICL has been very successful in developing innovative and high quality solutions for clients including the BBC, National Westminster Bank, Nationwide Building Society, Online Media and Innovations.

ICL Enterprises provides the SMS capabilities of the group. They have considerable experience and a proven track record in digital subscription management and PPV systems.

A fuller description of ICL's capabilities is included in Section B.

**Building Digital Terrestrial Television Outside the UK**

There are considerable opportunities opening up to exploit this technology in other parts of the world. DTN along with its technology team will look to be a major player in these developments. NTL are already in discussions with a number of other major international broadcasters who are interested in providing digital terrestrial services alongside their existing analogue television channels. These discussions are leading NTL towards taking up a joint venture position to provide the technology, system integration and operational know how. Given the opportunity, DTN and NTL plan to create a substantial export position for the UK as the leader in digital broadcast technology and service operations.

The service operation openings may well lead to opportunities along the lines of the UK multiplex operator model. This could in turn prise open new markets for UK programme makers.

Securing these international opportunities will involve both a reactive and proactive approach. Current discussions are reactive - responses to approaches made to NTL, based upon its international reputation in the field of digital broadcasting. In parallel, NTL, is well advanced in putting in place a proactive approach. It has just completed a scoping study to filter 160 countries into a list of 20 to 30 key target countries for digital terrestrial television development. If DTN is successful in the UK multiplex operator application, we will follow this up with a global digital terrestrial television initiative.

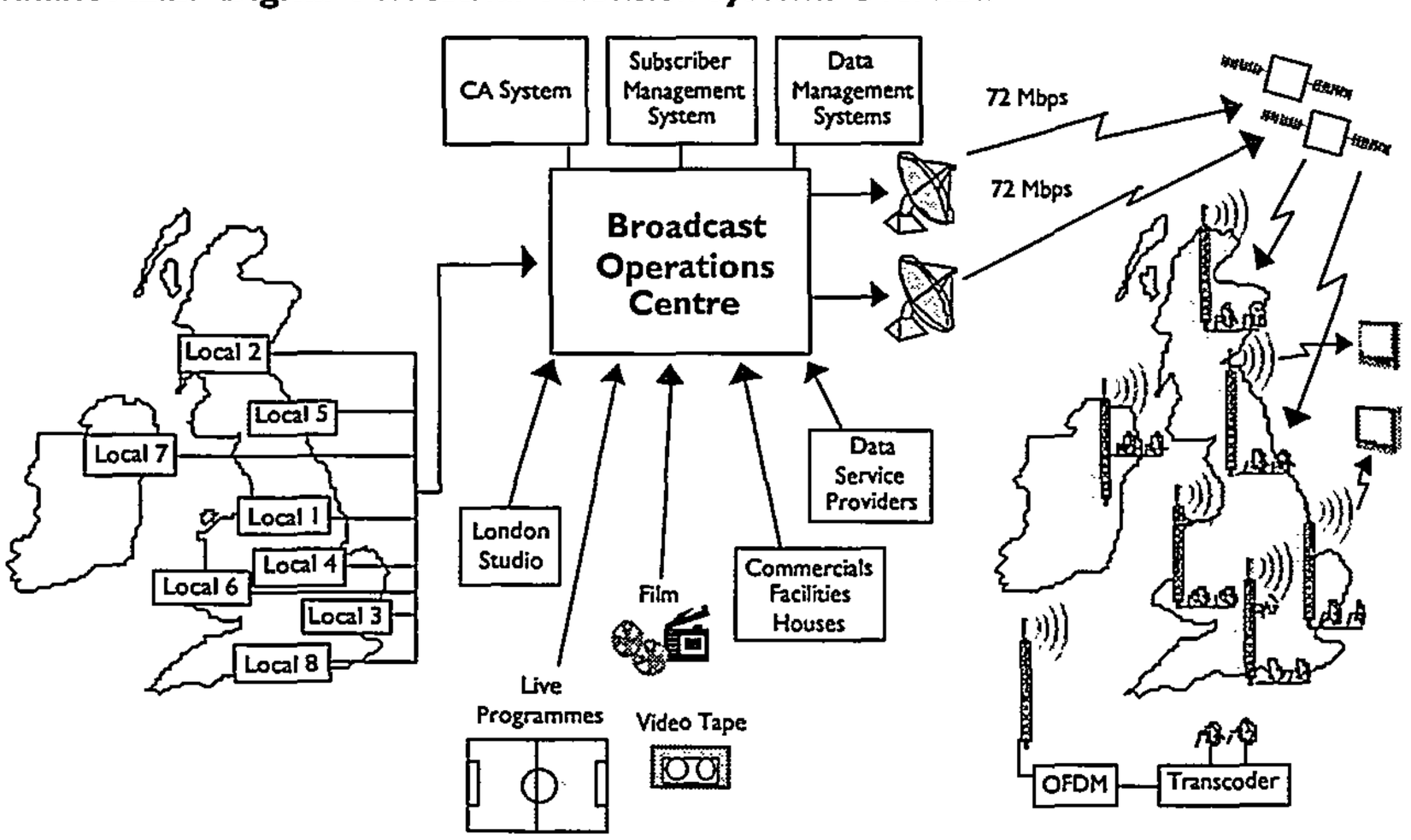
Our capability and that of our technology team to promote digital terrestrial television in other parts of the world will benefit the UK directly in a number of ways. Securing overseas service opportunities will directly enhance our technical strengths as a UK multiplex provider. It will also have a direct bearing on the economics of digital

terrestrial television transmission and reception in the UK. This is a key point and is developed more fully in Section A9.

## Outline of the Broadcasting System

The broadcasting systems for digital terrestrial television will be far more complex that any system previously implemented for UK television. An overall schematic of the system is shown in Exhibit A2.2.

**Exhibit A2.2: Digital Terrestrial Television Systems Overview**




A wide range of channel and data sources feed into the BOC from local studios and data providers.

The BOC will integrate all of these services and add conditional access data (CA), the electronic programme guide (EPG) and service information (SI). Following the multiplex process, the transport streams will be passed to the satellite modulators for uplinking. (DTN has detailed its approach to transmission data rates and the use of statistical multiplexing in Section A11).

The two identical data streams are then separately uplinked to two independent satellites (eliminates sun-out problems and transponder failure) and are then separately received on TVRO's at each terrestrial transmitter site. Local transcoders then integrate SI signals from other multiplex operators and also discriminate our local programme services on a region by region basis.

The domestic digital receiver will then decode the signal under the control of our conditional access device. There will be sufficient flash memory included within the receiver to ensure that our EPG and private data services can function effectively. The EPG and data services are detailed in Section A7 and the equipment specification in Section A13. A navigator software system is under development to provide the viewer with a high level of functionality. A high speed modem will be included in the receiver for interactivity with our telephone network return path and for receiving

down the line data. A second port can be added for interconnection with personal computers and other external storage systems.

Another key area in a successful digital terrestrial television system is the Subscription Management System (SMS). DTN plans to build its SMS operation in Cardiff, South Wales, on a site adjacent to the SMS operation of CableTel. The experience CableTel has gained from establishing their centre will prove invaluable as we work [redacted] to develop our systems. The recruitment processes which are in hand at CableTel's operation would be able to support our own requirements.

In the fullness of time, it may be desirable to combine operations with CableTel in Cardiff to benefit from improved efficiencies and economies of scale.

The data services will be supported by one of the largest data management systems ever implemented in the UK. The system takes data streams from a number of providers which will be stored and marshalled at the BOC prior to being multiplexed onto the transport stream for onward transmission. The system will also include firewalls against illegal entry by "data hackers". The system will also enable DTN to monitor these services to provide editorial control for accuracy, taste and decency.

Each area described in outline above is considered in more detail within the remainder of Section A2.

## Transmission, Coverage and Roll-Out

The following information describes our proposals for transmission, distribution and multiplexing. This section also includes our roll-out plan for the transmitter network. DTN's coverage figures will be based both on the data rates that it plans to use and the build rate as well as the frequency clearance situation. Each of these is discussed below.

### Data rate for Multiplex D

The transmission coverage maps produced by the ITC, BBC and NTL are detailed in the ITC Invitation to Apply document and based on 24Mbps. The coverage potential for Multiplex D can be improved considerably by adopting a 16QAM approach, thereby reducing the available data rate to 18Mbps as compared with the ITC proposal to use 24Mbps. By reducing to 16QAM the total coverage for Multiplex D becomes similar to Multiplex C. DTN have investigated the set top receiver specification to ensure full compliance and compatibility. This change in the Multiplex D data rate will ensure that our viewers receive a level of service comparable with Multiplexes B and C. Without this change, a significant number of viewers in fringe areas would lose Multiplex D services whilst still being able to receive those in Multiplexes B and C areas.

### Roll-out Timing

DTN have adopted a roll-out plan which is considerably faster than that originally proposed. This is to maximise the revenue opportunities and build a direct-to-home (DTH) competitive position against BSkyB. The roll-out of the network will be in two phases.

DTN plan to go on-air from 1 May 1998 with 40 main transmitter stations. Our transmitter build programme will continue up until the end of 1999 by which time a further 41 transmitting stations will have been added to our network. This will fully meet the ITC's published final coverage plan of 81 stations.

DTN's population coverage prediction plan is, therefore, described in Exhibit A2.3. It implies a percentage population coverage of 71% at the end of Phase 2.

**Exhibit A2.3: Population Coverage, Phases 1 and 2**

| | Phase 1 (complete 1/5/98) | Phase 2 (complete 12/99) | Total |
|---|---|---|---|
| Multiplex B | 41,279,000 | 9,329,000 | 50,608,000 |
| Multiplex C | 34,088,000 | 10,496,000 | 44,584,000 |
| Multiplex D | 31,033,000 | 11,407,000 | 42,440,000 |

The coverage figures by sites in Phase 1 are shown in Exhibit A2.4.

**Exhibit A2.4: Population Served by Multiplexes B, C, D (by 1 May 1998)**

| Station | Landlord | Mux B . 64QAM | Mux C . 64QAM | Mux D . 16QAM |
|---|---|---|---|---|
| Crystal Palace | BBC | 9,856,657 | 8,430,243 | 5,896,042 |
| Sutton Coldfield | BBC | 3,769,042 | 2,892,514 | 2,799,615 |
| Winter Hill | NTL | 4,171,212 | 4,232,432 | 4,245,837 |
| Wenvoe | BBC | 1,397,660 | N/A | N/A |
| Pontop Pike | BBC | 2,386,570 | 2,405,764 | 2,282,763 |
| Sandy Heath | NTL | 1,367,574 | 739,611 | 645,519 |
| Emley Moor | NTL | 3,291,716 | 2,932,023 | 2,329,064 |
| Belmont | NTL | 2,833,753 | 1,006,407 | 1,042,023 |
| Caldbeck | NTL | 262,424 | 260,459 | 276,109 |
| Waltham | BBC | 1,939,272 | 1,661,124 | 1,839,250 |
| Fremont Point | NTL | 80,000 | 50,000 | 50,000 |
| Durris | NTL | 256351 | 243,144 | 259,032 |
| Mendip | BBC | 1,968,884 | 617,451 | 557,046 |
| Rowridge | BBC | 1,218,388 | 371,291 | 671,704 |
| Hannington | BBC | 728,811 | 684,474 | 540,646 |
| Black Hill | NTL | 2,121,149 | 2,050,663 | 2,046,516 |
| Craigkelly | NTL | 1,011,873 | 1,110,554 | 1,160,321 |
| Bilsdale | BBC | 1,472,362 | 1,302,920 | 1,349,609 |
| Divis | BBC | 880,536 | 977,661 | 765,360 |
| Caradon Hill | NTL | 269,293 | 270,270 | 284,359 |
| Angus | NTL | 630,338 | 604,457 | 495,490 |
| Stockland Hill | NTL | 442,482 | 429,057 | 509,789 |
| Nottingham | NTL | 444,762 | 396,441 | 527,729 |
| Darvel | NTL | 444,425 | 432,511 | 504,230 |
| Ridge Hill | NTL | 321,529 | 291,716 | 329,315 |
| Saddleworth | NTL | 465,301 | 229,632 | 135,062 |
| Pendle Forest | NTL | 269,483 | 248,254 | 268,760 |
| Moel-y- Parc | NTL | 481,773 | 98,812 | 101,701 |
| Plympton | NTL | 231,764 | 231,764 | 215,730 |
| Lancaster | NTL | 250,932 | 155,688 | 199,695 |
| Beacon Hill | NTL | 203,104 | 180,638 | 178,000 |
| Rosneath | NTL | 171,375 | 171,375 | 187,837 |
| Keighley | NTL | 144,435 | N/A | N/A |
| Idle | NTL | 159,343 | 133,083 | 176,388 |
| Dover | NTL | 142,824 | 118,680 | 163,009 |
| Huntshaw Cross | NTL | 118,880 | 102,841 | 109,913 |
| Chesterfield | NTL | 106,480 | 106,480 | 122,655 |
| Rumster Forest | NTL | 89,749 | 92,096 | 99,808 |
| Chatton | NTL | 146,141 | 68,265 | 61,100 |
| Presely | NTL | 73,368 | 68,920 | 83,518 |
| **NET TOTAL** | | **41,279,000** | **34,088,000** | **31,033,000** |

*Note: Detailed planning has not yet been carried out for Fremont. The figures for the population served by Fremont are only estimates and not predictions*

Half the proposed sites are with NTL as the landlord, while the others are with the BBC. Where new common facilities are required such as antennas, combiners and buildings, the Landlord will reserve the right to provide those facilities. The intended construction rate and sequence at the BBC landlord sites has been difficult to establish during the negotiations concerning the sale of BBC Transmission.

As a consequence we have decided to roll-out 20 of the stations in line with the Multiplex 2 (ITV/Channel 4) requirements and to add a further 20 stations using NTL Landlord sites to be completed by 1 May 1998.

The transmitters that will be completed in Phase 2 are listed below.

- Tacolneston
- Rosemarkie
- Llanddona
- Brougher Mountain
- Bluebell Hill
- Tunbridge Wells
- Reigate
- Fenton
- Bressay
- Knockmore
- Bristol I.C.
- Mynydd Machen
- Olivers Mount
- Torosay
- Sudbury
- Blaen Plwyf
- Heathfield
- Limavady
- Redruth
- Guildford
- Brierley
- Larkstoke
- Eitshal
- Tay Bridge
- Bristol K.W.
- Pontypool
- Sheffield
- Whitehawk Hill
- Oxford
- Carmel
- Midhurst
- Wrekin
- Salisbury
- Hemel Hempstead
- Bromsgrove
- Malvern
- Keelylang Hill
- Storeton
- Kilvey Hill
- Fenham
- Selkirk

Our intention is to build the stations in accordance with the parameters given in the ITC Plan and to achieve those parameters as practically as is possible. We will work closely with the BBC transmission group, under its new ownership, to ensure that facilities located at BBC sites will be constructed within our roll-out plan.

The construction of the relay sites will be dependent upon whether the RBL path will be useable or whether it will be necessary to provide an alternative method of feed. This has not yet been determined; initial predictions only just having been completed by NTL. Until this study is complete, we will plan to use TVRO's at every transmitter site.

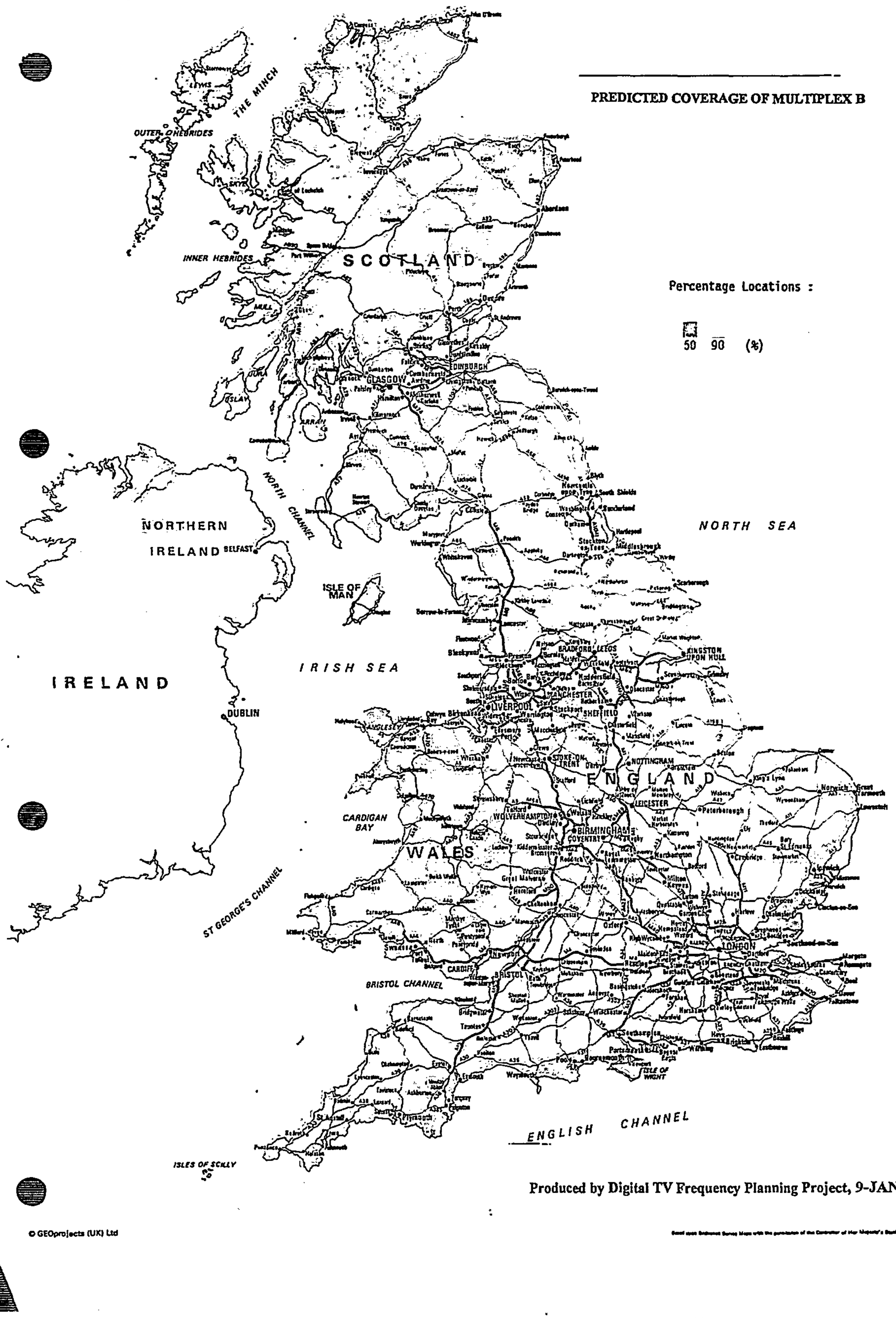
A series of coverage maps have been included in the pages that follow to illustrate the service area for each multiplex from the 1 May 1998 start up and also the final coverage following completion of the whole plan. In addition we have included a map which shows the number of multiplexes which consumers will be able to receive in various parts of the UK.

**PREDICTED COVERAGE OF MULTIPLEX B**

**by 1st May 1998**


**Produced by Digital TV Frequency Planning Project, 9-JAN-1997**

## PREDICTED COVERAGE OF MULTIPLEX B



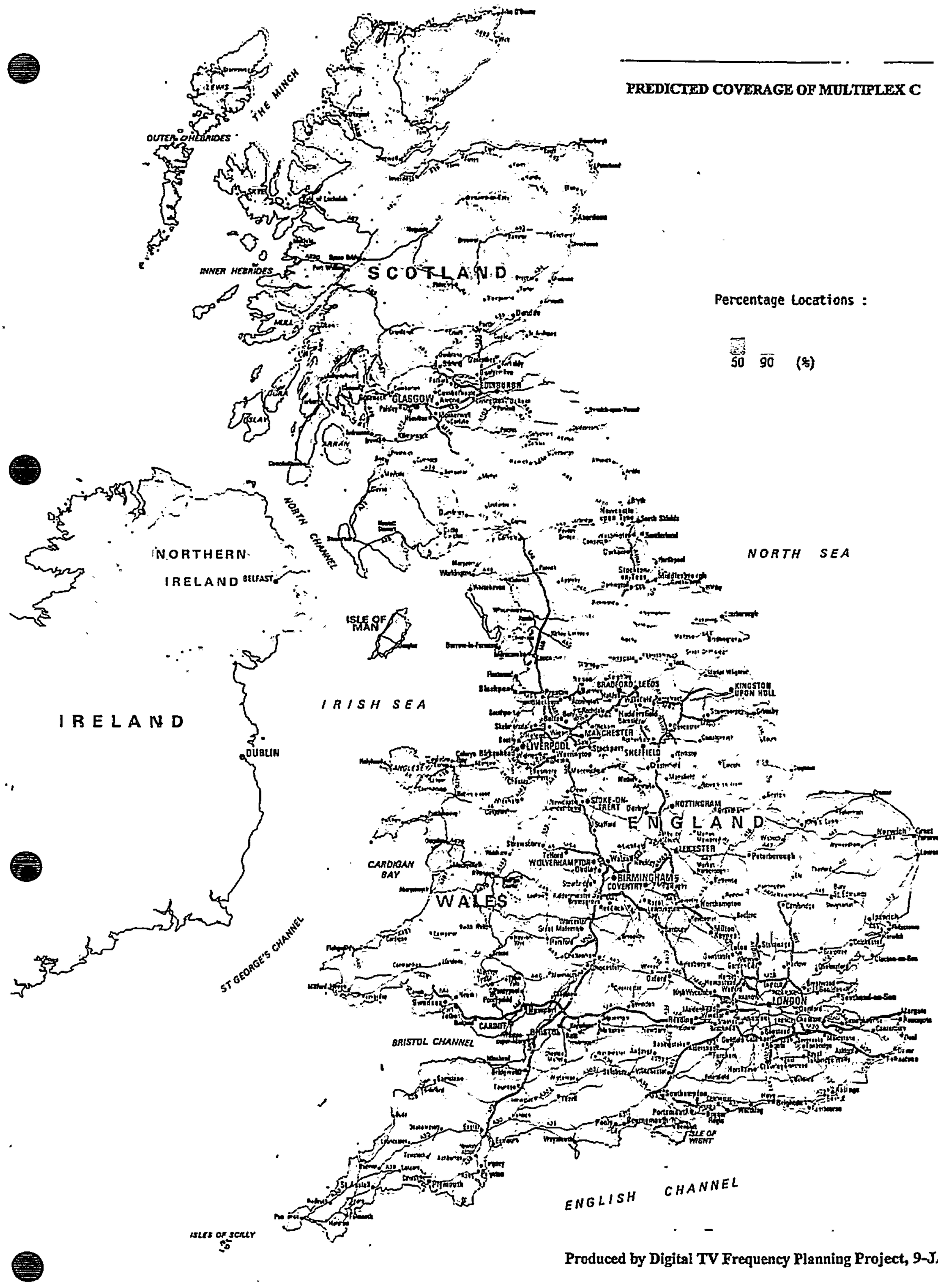

Produced by Digital TV Frequency Planning Project, 9-JAN-1997

# PREDICTED COVERAGE OF MULTIPLEX C

**by 1st May 1998**


**Produced by Digital TV Frequency Planning Project, 9-JAN-199**

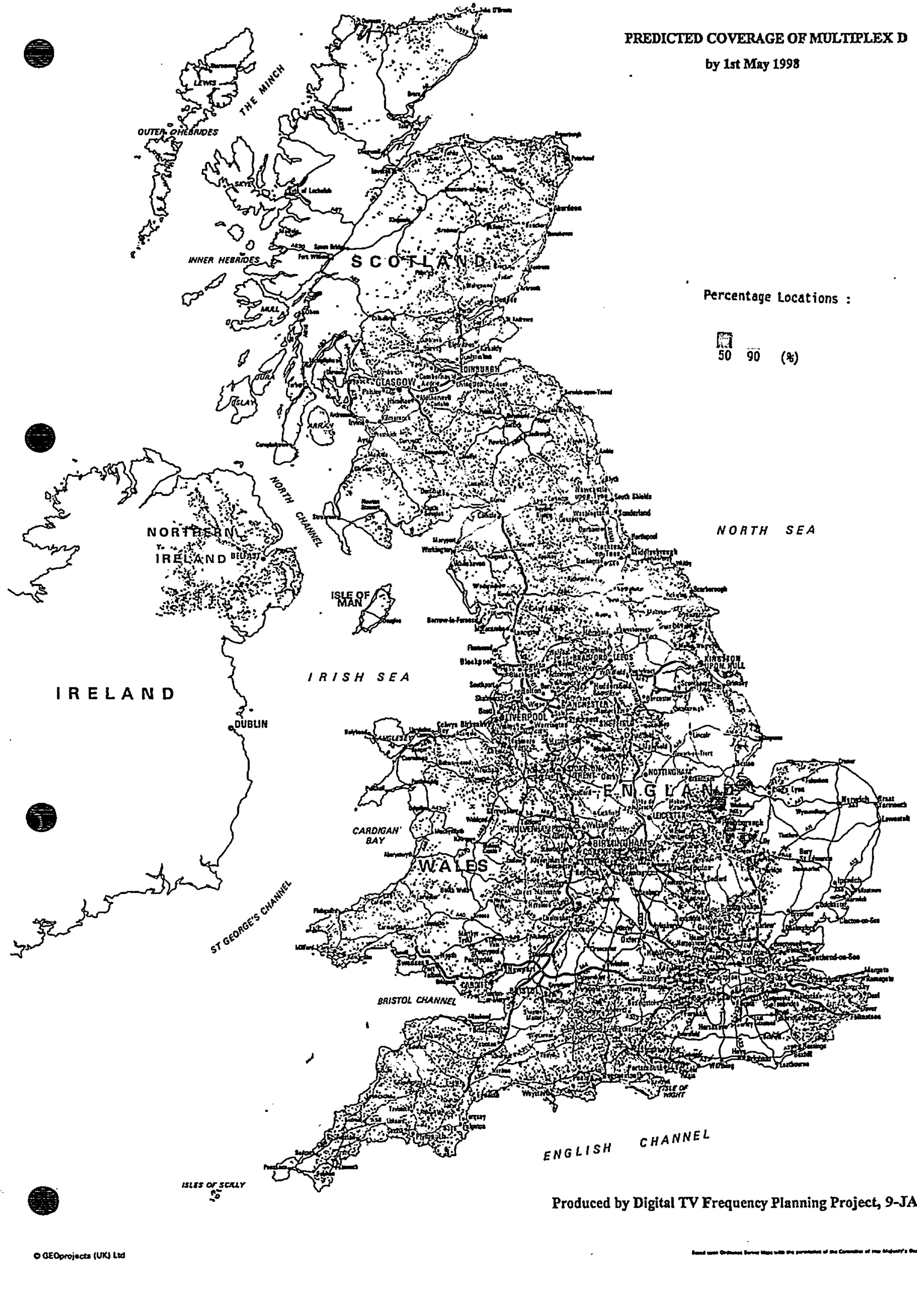
# PREDICTED COVERAGE OF MULTIPLEX C




Produced by Digital TV Frequency Planning Project, 9-JAN-1997

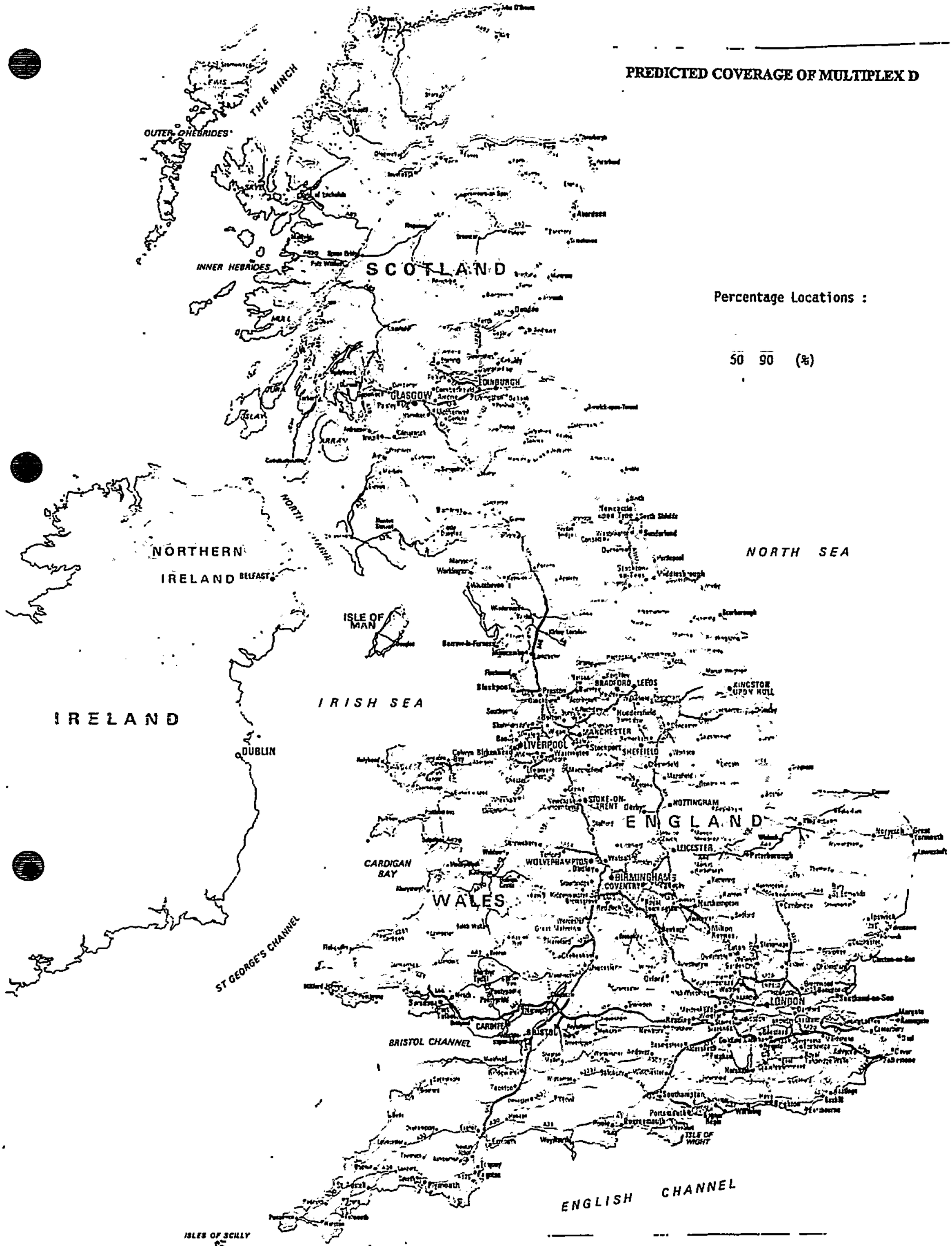
# PREDICTED COVERAGE OF MULTIPLEX D

**by 1st May 1998**




**Produced by Digital TV Frequency Planning Project, 9-JAN-1997**

# PREDICTED COVERAGE OF MULTIPLEX D



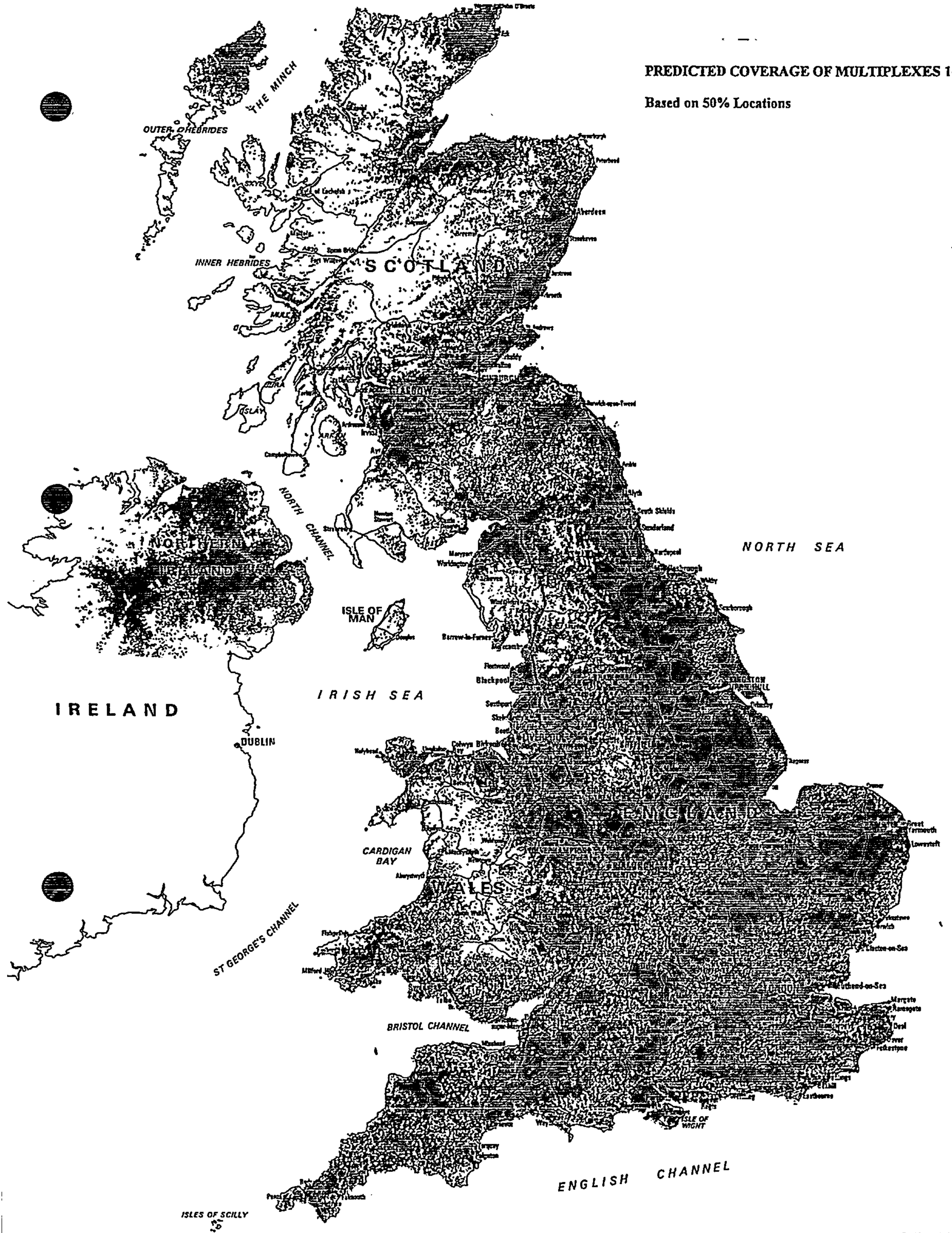

Percentage Locations :

50 90 (%)

Produced by Digital TV Frequency Planning Project, 9-JAN-1997

**PREDICTED COVERAGE OF MULTIPLEXES 1-6**

**Based on 50% Locations**




**Produced by Spectrum Planning Group, NTL : 11-NOV-1996**





## Multiplex Availability DTV1-5 S3 / DTV6 S2

1 2 3 4 5 6 **No. of Multiplexes available**

NTL will use proven technology for its roll-out. Digital terrestrial television involves the use of many new technologies and techniques. Although a number of companies are now working to develop hardware and software, the majority do not expect to have products, even to demonstrate, until well into 1997. We consider this to be too late for the UK launch and, therefore, propose to use suppliers who have already been able to successfully demonstrate working products. By minimising the amount of new development required, our ability to meet a fast build programme is enhanced.

DTN's coverage prediction plan will provide 100% of the full coverage on offer described within the ITC document, Coverage for Digital Television, on Multiplexes B and C.

As discussed above, DTN plan to operate Multiplex D at 16QAM thereby increasing the effective coverage to 110% of the ITC plan.

DTN would wish, as a matter of policy, to expand the coverage areas for each of the multiplex licenses awarded to it, as new frequencies are made available in the future.

## Frequency Clearance

Although a proposed frequency plan for 81 sites has been produced jointly by the ITC, NTL and the BBC, as yet none of the six multiplexes has received national or international frequency clearance. This is a procedure which is not within DTN's control and is potentially a lengthy process. The implication is that changes may have to be made which could affect antenna characteristics, transmitted power and frequency. The risk of change is largest at those sites which affect neighbouring countries such as France and Belgium. It may be preferable to re-schedule the construction plan such that work does not begin at a particular site until its parameters have been confirmed. Notwithstanding the ITC's advice in paragraph 79 of the Invitation to Apply (that "the Technical Plan should be proposed on the assumption that all necessary frequency clearances are obtained"), we would like the opportunity to discuss this issue in more detail with the ITC before finally confirming our construction plan.

We have conducted a risk assessment of the network on a station by station basis. The results of this work are included in the Confidential Annex.

NTL have conducted considerable research on the development of techniques to extend coverage. These include the use of single frequency relays operated in a non-coherent mode. We have estimated that it will be economically viable to use relays to extend service provided that a sufficient bouquet of programme services can be delivered. We will continue to support further work both in the development of technology and in frequency planning to seek further extension of the digital terrestrial network coverage.

# Transmission System

## Design Philosophy

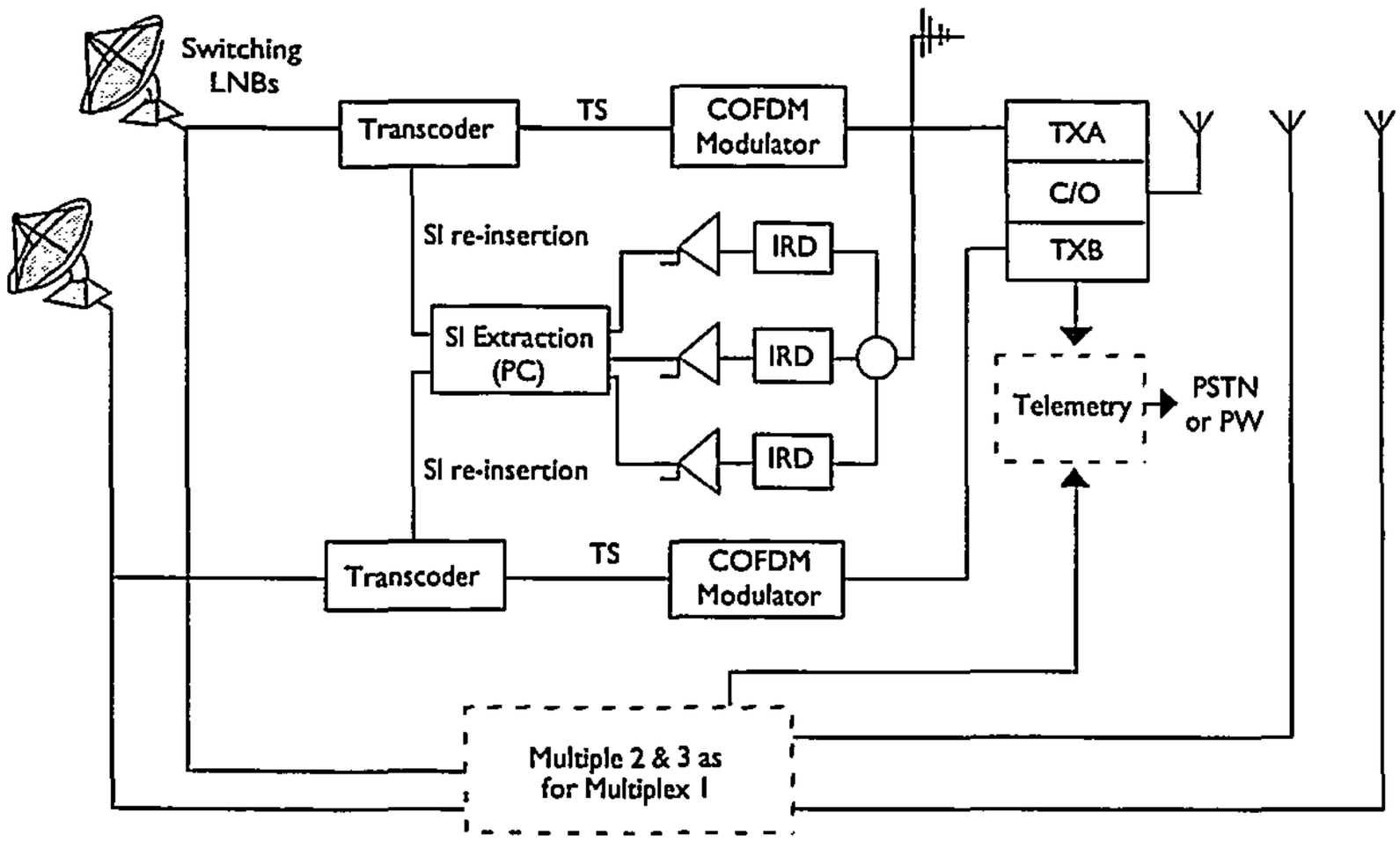
In the design of the system, the following fundamental principles have been adopted:

- to achieve the proposed on-air dates against an accelerated build programme
- to optimise practical antenna patterns and transmitter powers to achieve the best possible coverage and minimise the cost of operation
- to ensure an excellent reliability of programme service which will exceed a 99.96% reliability level
- to meet the requirements of the DVB-T specifications
- to exceed regulatory requirements
- to use transmitters which will meet all legal obligations to which UK Transmission Agents must comply, including the Wireless Telegraphy Act and the Health & Safety at Work Act
- to select suppliers of proven capability in this field and to use products which wherever possible have a track record so as to minimise risk in delivery and cost.

DTN have made arrangements with NTL to provide transmission services.

A typical Main Station block schematic is shown in Exhibit A2.5.

**Exhibit A2.5: Main Transmitter Site**



## ITC Requirements

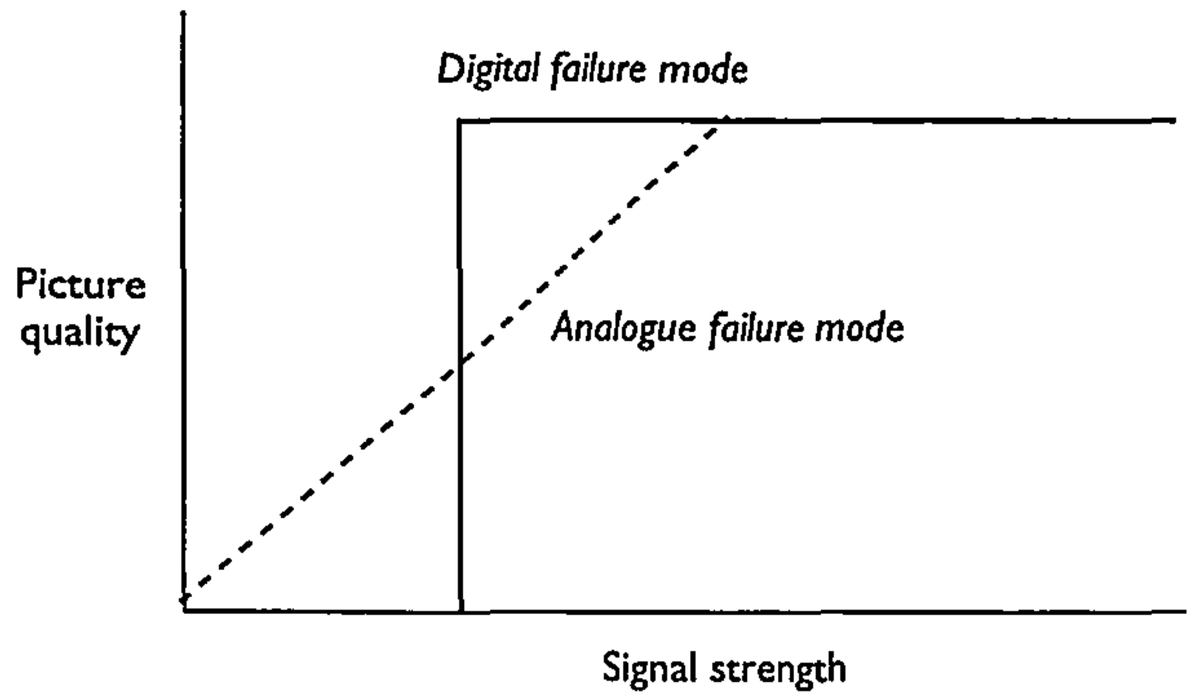
The system proposed is for a complete end to end terrestrial digital system using 64QAM 2000 carrier for Multiplexes B and C and 16QAM 2000 carrier for Multiplex D using COFDM modulation for broadcasting as defined in ETS 300744.

Construction of the transmitting stations will be in accordance with the ITC Note for Applicants on Coverage for Digital Television, dated 31 October 1996. Monitoring will be provided at each transmitter site to enable faults to be rapidly detected and appropriate corrective action taken. This will include monitoring of the transmitter itself and monitoring of the transport stream to ensure that it is properly formatted.

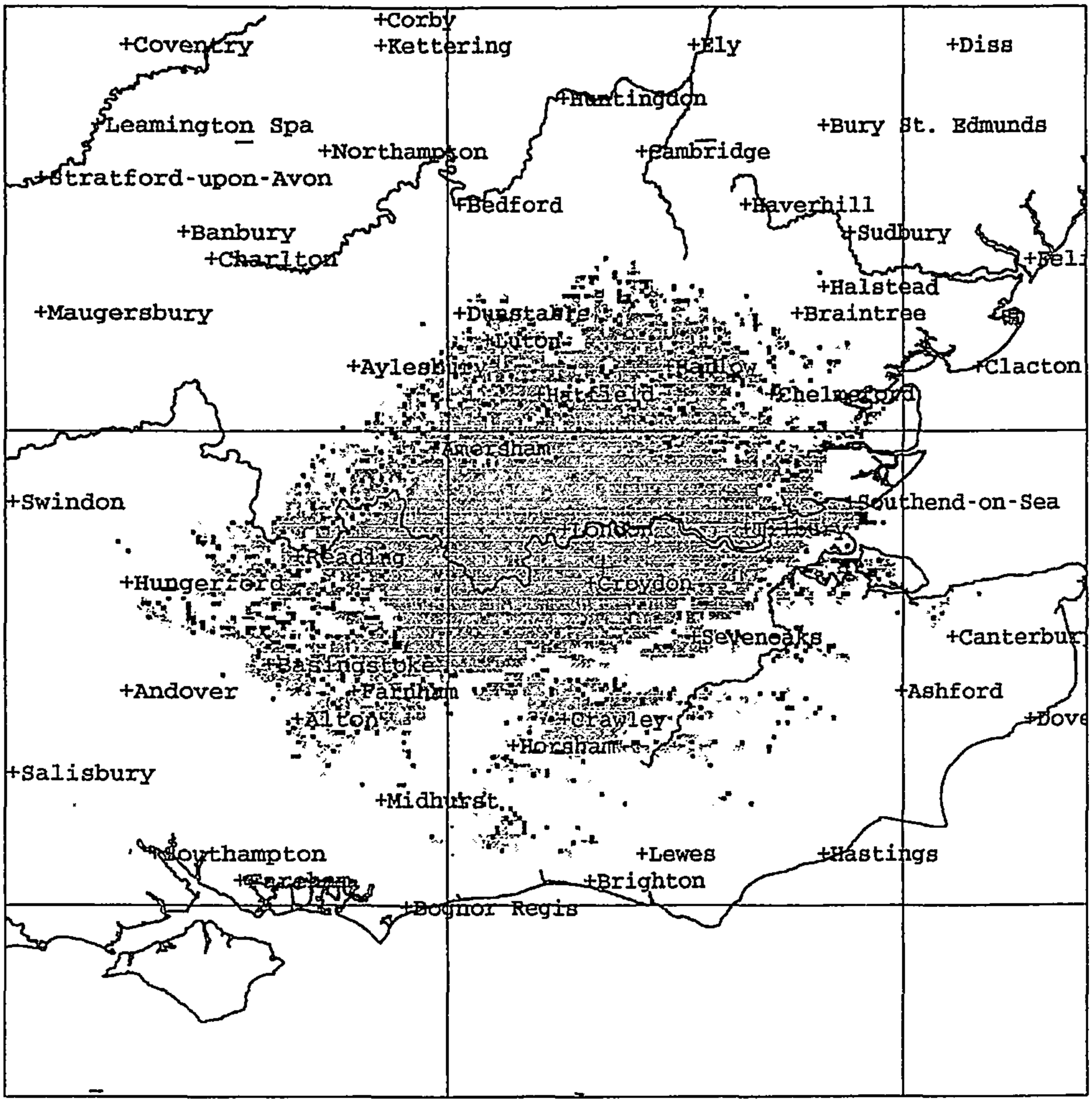
## Transmission

We believe that it is most important to maintain a constant coverage area from each transmitter even in a fault situation. It can be seen from the diagram below that the failure mode of an analogue system results in a gradual worsening of the picture quality with a reducing field strength. The failure mode of a digital system is more abrupt with no intermediate state between a perfect picture and a blank screen.

**Exhibit A2.6: Digital and Analogue Failure Modes**




Pixel plots for the London area, as an example, are shown on the following pages. These indicate the areas where viewers could lose picture with power decreases of 1, 3 and 6 dB. These exhibits confirm our belief that conventional paralleled transmitters, as used for the analogue services, would not be a satisfactory solution for a digital system.




CRYSTAL PALACE -1dB

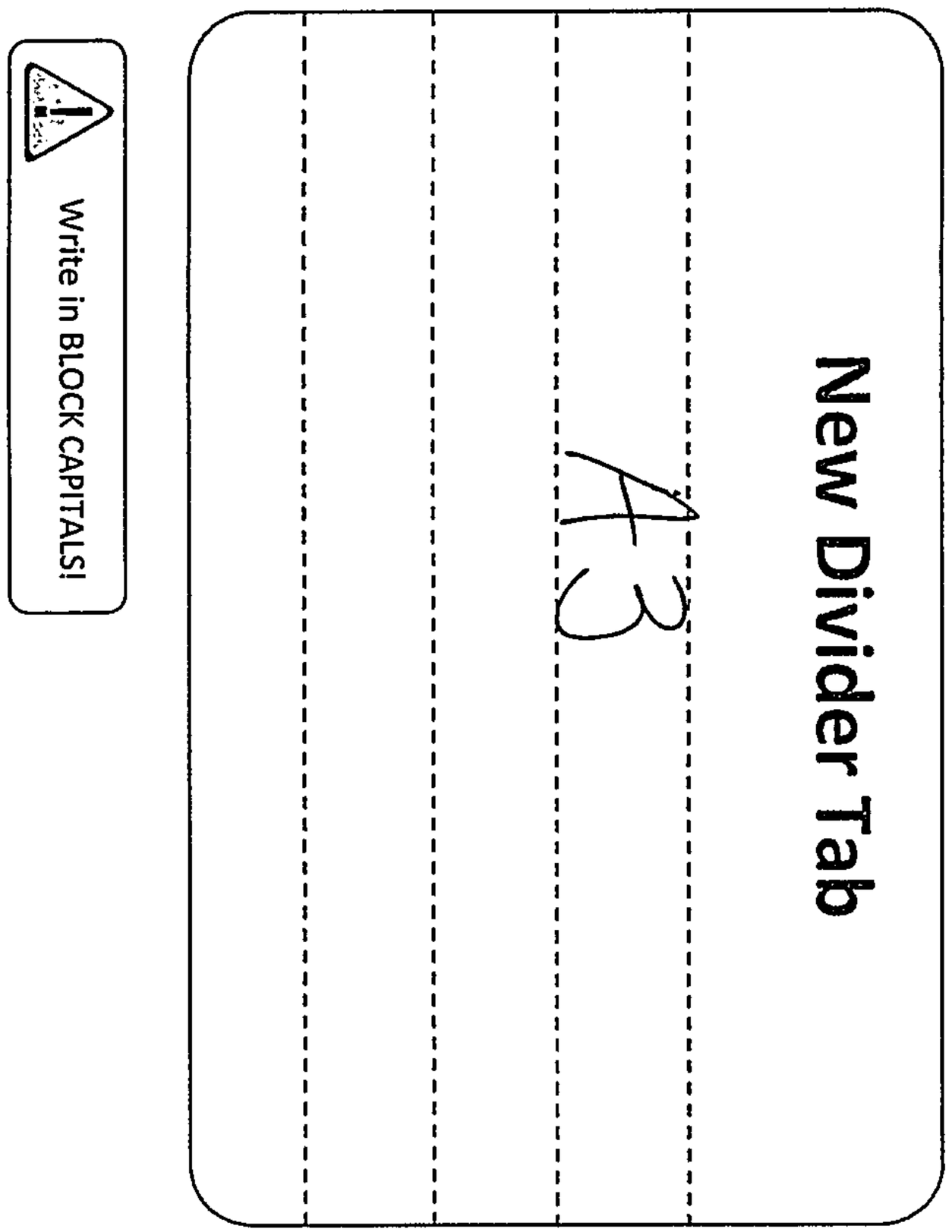
Field Strength (dBuV/m)

1

2

3

| | |
|---|---|
| File: | CTEMPCP3.fs |
| Tx NGR | TQ339712 |
| Site height | 110.0 metres |
| Aerial height | 211.0 metres |
| Max ERP | 6.500 kW |
| Frequency | 479.300 MHz |
| Bottom left ngr | SZ100600 |
| Top right ngr | TM400900 |






New Divider

# A3 Promoting or Assisting the Acquisition of Equipment

*Noting the information contained in paragraphs 16, 36, 84 to 88 and 131, the applicant should state in detail what arrangements he has made to promote or assist the acquisition, including on hire or loan, of equipment capable of receiving all the multiplex services available in the coverage area of the proposed service. Confidential financial information, including details of expenditure underpinning these arrangements should be provided separately in Section B of the attachment to Part III. Without limiting the information to be supplied, applicants should cover the following issues:*

- *what arrangements, if any, exist with manufacturers to support the development and production of the equipment, e.g. technical expertise, direct or indirect financial support (including subsidy), etc.*
- *what arrangements, if any, exist with retailers to support the sale, hire or loan of equipment, e.g. marketing assistance; direct financial support*
- *details, and the number of, retail outlets which will offer equipment for sale, hire or rent in the transmission coverage area*
- *is it intended to offer equipment direct to households? If so, please provide details of the associated marketing and sales strategy, including the number of people to be employed in this area, should be provided*
- *details of marketing and publicity plans, identifying separately those to be undertaken jointly with manufacturers and/or retailers, including proposals for advertising on television, radio, in the press, by direct mail, etc. (Applicants should identify the target audience in each case. This information may be provided in Section B if wished)*
- *the extent to which the range and characteristics of the services to be offered will promote or assist the acquisition of receiving equipment by viewers.*

## Summary

DTN does not see the process of building an installed base of suitable receiver equipment as simply one of launching a new consumer electronics product. While this is certainly one part of the task facing DTN, the overall challenge is far greater.

DTN believes that consumers will make their decisions about whether to acquire digital terrestrial television receivers on the basis of a complex set of criteria. Furthermore, they will judge digital terrestrial against the competing propositions of digital satellite and digital cable. They will assess all of the following issues in coming to their decision:

- the appeal of the programming that will be available to them

- the appeal of the additional services that will be included in the package
- the cost of the service and the receiver equipment
- the nature of the hardware which they will need
- the ways in which they can acquire receiver equipment
- their degree of confidence in the quality and reliability of the services and equipment, and their own ability to master the technology involved.

Consumers' perceptions of each of these will also be guided by the communications strategies of the key players. The size and quality of the advertising campaigns of the competing digital platforms will inevitably play a significant part in deciding the winners and losers.

This section describes DTN's strategy to meet each of these challenges. We believe we have a coherent, integrated strategy that meets the needs of consumers and the realities of the competitive market place for digital broadcasting.

This section contains DTN's approach to ensuring that the maximum number of consumers acquire equipment capable of receiving all of the multiplex services available in the coverage area. The key points are as follows:

- demand for DTN's services
  - our programming is carefully designed to have enormous appeal to a broad audience and complement the other digital terrestrial services that will be available
  - our additional data services will provide a wide range of valuable, user-friendly information, entertainment and transactional services
- DTN's service pricing strategy
  - the pricing of our services will be dramatically different to the existing pricing models of satellite and cable. We will make digital terrestrial television affordable to a mass audience by offering a low entry price and by not requiring customers to buy a broader package of channels than they actually want
- Receiver price, specification and sourcing
  - we have struck a balance between functionality and price for receiver equipment that reflects the need to be competitive with rival platforms
  - we are making a considerable investment in subsidising the cost of our set top boxes and also ensuring a high specification of idTVs by financially assisting manufacturers to include certain key components
  - we have a clear vision of the roles of both set top boxes idTVs; we have worked closely with manufacturers to specify a high-functionality box that will be extremely attractive in comparison to rival systems, and, because it

is sourced from leading manufacturers, it will reassure customers about reliability

- – our commitment to offering programmes in widescreen format will help stimulate the market for new widescreen sets which will, in return, help drive DTN's penetration

- Solutions for distribution: retail and rental
  - – DTN's approach to distribution is based on proposed partnerships with the leading retailers of consumer electronics equipment
  - – DTN may also provide set top boxes to consumers on a direct rental basis
  - – our strategy is to incentivise existing retailers to do the best possible job in distributing receivers to customers
  - – we will also provide additional support to retailers in the form of training for staff, dedicated retail helplines and information packs.

- Establishing a reputation for reliability and customer support
  - – we are conscious that many consumers will feel confused by the choices that the competing digital platforms will offer. In such a highly competitive environment it will be essential to engender a high degree of confidence in DTN's services, receiver equipment and responsiveness to customers needs. This is partly an issue of branding and effective advertising (see below), but DTN will also focus on:
    - -- providing programming and data services from existing organisations which command a high degree of consumer confidence
    - -- sourcing set top boxes from leading manufacturers
    - -- explaining the benefits of digital terrestrial television in a way that attracts consumers rather than baffles them
    - -- investing heavily in customer support systems to answer questions and solve problems

- DTN's communications strategy
  - – we will ensure that all the strengths of DTN's approach to digital terrestrial television described above are communicated effectively to our target market
  - – we have worked closely with a leading advertising agency on an innovative communications strategy which will include a massive advertising and direct marketing campaign
  - – DTN will invest heavily in this vital area to ensure success

– we will work closely with the gifted multiplex operators to maximise the value of cross-promotional minutage on analogue broadcasts.

## Introduction

DTN will launch its services in the spring of 1998 into one of the most competitive and dynamic television markets in the world. The British consumer will be able to choose between three successful analogue media (cable, satellite and terrestrial), all of which plan to launch digital offerings during the next two years. BSkyB's position in the market for analogue pay-TV is commanding, established through a combination of its unprecedented freedom of operation and its marketing effectiveness. It dominates the market for premium programming and can build on this dominance to launch digital satellite services, probably within the next twelve months. The cable industry, on the other hand, has enjoyed mixed fortunes, its ability to develop a profitable television business impeded by its fragmented structure and by BSkyB's success. However, it is enjoying increasing rewards from its telephony services and can look forward to growing revenues from the provision of Internet access and other value added services.

Meanwhile, and despite the dynamism of the cable and satellite operators, the majority of viewers still prefer to spend the majority of their time with the established terrestrial broadcasters. Over three-quarters of UK households have not so far subscribed to multi-channel television.

This is clearly not through lack of awareness. BSkyB has spent more than £100 million in above the line advertising over the last seven years and cable marketing expenditure, while lower, has not been trivial. As a result the vast majority of British consumers, more or less, know that additional pay channels are available.

To gain an insight into the motivation of the 75% who do not subscribe, DTN has commissioned extensive consumer research to identify the barriers that prevent the growth of multi-channel penetration. Two overwhelming reasons for not subscribing to multi-channel television emerged from our research:

- the first reason is price related: 18% of respondents believe that they could not afford to subscribe; another 17% consider multi-channel television is not worth the money
- the second reason is the lack of a perceived need for more than four channels. Almost half the population (46%) believe that four channels are enough for anybody and a similar number claim to be uninterested or not in need of multi-channel television.

The British feel that their television is already the best in the world, with a wide range of genres and high quality programmes on offer. They respect and trust the existing

terrestrial broadcasters to continue to provide high quality services which they will want to watch.

However, on probing further, it is clear that many people would welcome more *high quality* television. Consumers complain about times when there is nothing on (or at least nothing on that they want to watch) and they can willingly suggest other channels or programmes which they would enjoy. DTN's advertising agency, Ammirati Puris Lintas (APL), a top ten agency and part of the Interpublic Group, commissioned its own research which indicated that over 70% of people are interested in more *terrestrial* television.

What UK consumers are worried about is the prospect that more channels mean more poor quality television. While Sky and BSB were launched on a platform of choice, offering many more channels to consumers, the market has moved on. Our research shows that the vast majority of people - 79% - would prefer a small number of really good channels to lots of channels through which they have to search to find something they like. 73% of our respondents said that they wished it was not necessary to subscribe to so many channels on cable and satellite when they are only interested in a few of them.

Viewing patterns in multi-channel homes show that the amount of television watched when additional channels are added does not significantly increase. Viewers still watch a small set of their favourite channels, which for a multi-channel viewer may well include Sky Sports. However, few viewers regularly watch more than about eight channels, regardless of the number of additional channels which are added to the system. Many viewers, even those who subscribe to multi-channel television, complain of television overload - and this feeling appears likely to be exacerbated by the launch of digital satellite and digital cable packages. Consumers appear to feel overwhelmed by the prospect of 200 channels.

As a consequence we believe that it is important for DTN to assure the majority of the population that the introduction of digital terrestrial television will not mean the loss of Britain's envied broadcasting quality and its replacement by tabloid television. Digital terrestrial television needs to communicate that it provides the viewer with more quality television - the best way to do this is to offer television from broadcasters that consumers know and trust.

The other element of the digital terrestrial offering is the access it can provide to innovative new data services. However, the majority of the UK public are still uncomfortable with the rapid advance of technology. The research DTN commissioned from BMRB indicated that 85% of the population do not currently have access to the Internet, for example, either at home or at work. And consumers who currently only have the four terrestrial channels are even less likely to be familiar with technology - 5% of satellite subscribers have Internet access at home, compared with only 1% of terrestrial-only households. While the excitement of the Information

Society will be implicit within DTN's marketing messages, we believe that over-emphasising technology will only serve to confuse the majority of consumers.

Consumers are also concerned whether any new technology will last the course. A key element of DTN's communications message will be to reassure consumers that digital terrestrial television is future-proof. The involvement of the terrestrial broadcasters will help to reassure consumers that digital terrestrial is the future of British television.

It is also essential for all marketing and communication about digital terrestrial television to be consistent, presenting the overall benefits of the new platform in the same way, and for the marketing for all of the multiplexes to support these generic benefits. Without this, the whole offering is likely to become confused and consumers may either delay becoming subscribers or reject digital terrestrial television entirely. There needs to be a clear, coherent and consistent message for the whole of digital terrestrial television. As digital terrestrial television becomes established and accepted, differentiation of the individual services can develop within the umbrella of the overall proposition.

To succeed and thrive in this environment, a digital terrestrial television licensee will need to take a fresh approach to pay-TV. It will need to present viewers with an unequivocally attractive proposition, positioning digital terrestrial television as the next evolutionary step for British broadcasting. The offer to consumers must be succinct: digital terrestrial television is the future of the television that they know and love, a successful fusion of the mass market, predominantly British character of terrestrial television and the niche programming and channels of the pay-TV operators.

Having set out the background to our strategy, the rest of this section explains our proposals in detail. It is structured as follows:

- demand for DTN's services
- DTN's pricing strategy
- receiver price, specification and sourcing
- solutions for distribution: retail and rental
- establishing a reputation for reliability and customer support
- DTN's communications strategy.

## Demand for DTN's Services

Although pay-TV has found a market in the UK, it has also been ignored by the majority of consumers. BSkyB, the dominant provider of analogue pay-TV services, has built its business on the provision of premium programming to a minority of

households. The key to its success has been the acquisition of an expensive collection of exclusive rights which it has used to assemble a package of high-priced premium programming. This package appears to be of limited appeal to many households, in part because of a pricing strategy which requires customers to buy broad packages of services to get to the ones that they really want. Its predominantly American character is only partly moderated by the inclusion of many major UK sporting events, many of which were previously available on free-to-air television. The cable is constrained by the terms of its programme supply deals. Its ability to market an unbundled package is limited and it pays high prices for BSkyB's channels. This forces operators to work either on very slim margins or to charge significant price premiums over satellite. CableTel's experience of launching smaller tiers and lower prices for each tier has shown that alternative approaches will drive penetration

DTN's intention is to transform the UK market for pay-TV by offering consumers a revolutionary package of low-priced high-quality British programming, innovative data services and cheap telephony.

DTN's content proposition therefore includes:

- a diverse range of high quality programmes, consisting of new channels from the terrestrial broadcasters that viewers already value and trust, unique services created specially for digital terrestrial television by DTN, and a selection of the best television from Britain and around the world
- innovative data services and interactive capabilities which exploit the full potential of DTN's digital terrestrial platform to deliver the advanced capabilities that consumers will expect from the next generation of British television
- a telephony service, utilising NTL's unique national full-service telecommunications network, to offer DTN's subscribers substantial savings on their long distance and international telephone calls, and without the inconvenience of having to change their telephone number
- enhanced picture and sound quality, including generous use of widescreen, which will dramatically enhance the viewing experiences of DTN's subscribers.

## DTN's Programme Package

Our package of programme services has been designed by a team of experienced broadcasters, representing some of the most respected professionals working in British television today, and drawing on extensive consumer research carried out by BMRB. The respondents we spoke to during our research (included in the Confidential Annex) were unequivocal in describing the sort of service they wanted: 80% of our respondents told us that they would rather have a small number of really good channels than a lot of channels through which they would have to search to find something they wanted to watch. As one respondent told us, "*What appeals to me is the quality of a programme. Two hundred channels, it doesn't mean anything to me. Most of the new channels they're introducing ... are absolute dross*". Another respondent said "*I think forty channels at the moment is too much, they haven't got enough to fill it. I mean, no-one wants to see mud wrestling*".

The main problem with terrestrial television that our research revealed is that sometimes there is not enough of it, while at other times there are several good programmes on at the same time: "*Some evenings there's nothing on and then another evening there's something good on ... three channels*".

DTN's approach is to combine high editorial values, access to the best programme libraries in the world and innovative programme formats. By doing this we can provide viewers with channels which will be genuinely interesting and entertaining - combining the increased choice that multi-channel television allows with a look, tone and feel that audiences associate with existing terrestrial programming.

DTN's channel proposals are described in detail in Section A4 and A5 but are briefly summarised here:

- DTN has focused its creative and financial resources on producing four brand new channels that are not available on satellite:
  - the Money Channel will bring light, colour and relevance to a traditionally sombre subject, providing a genuine extension of choice for viewers by addressing the concerns of every segment of society at a different time of the day
  - The Knowledge Network will address the concerns of every parent who's ever worried about their child's education, every employee who's worried about being left behind, and anyone who wants to know a little bit more about a wide range of subjects
  - The British Sports Channel, for the viewer who knows there's more to British Sport than Premier League football, will offer British and

international sport, live and much in widescreen, as well as a 24-hours-a-day sports news service

– Metro TV will exploit the capabilities of digital technology to bring a new sort of city-based service to DTN's subscribers, carrying programming material directly related to the needs and interests of viewers, starting in Greater Manchester, before reaching other cities.

- DTN's specialist channels will bring new ideas and concepts:
  – the Living History Channel will be a unique exploration of the 20th Century as seen through the eyes of ITN, one of Britain's most respected broadcasters
  – Animal Planet will bring the wonders of the animal world to family audiences
  – The Box, Britain's first truly interactive music channel
  – Travel, for people who want to spend time sitting in front of a television in order to help them get away from it.
- The Best of the World will bring DTN's viewers some of the best libraries from around the world, including:
  – TCM: Turner Classic Movies, from Turner Broadcasting, whose films include classics like *The Wizard of Oz* and *Casablanca*
  – Cartoon Network, Britain's most successful children's channel
  – MGM Gold will bring entertainment from one of the most famous studios to British screens in a brand new channel.
  – and coming later, The Movie Experience, a brand new movie channel being developed by Hollywood's biggest studios
- DTN's Digital Box Office will bring the best movies, sports and events to our subscribers in widescreen, providing British terrestrial viewers the opportunity to pay for what they watch and to watch when they want to
- DTN will also provide, as a special Premium service, The Hindi Channel, providing a quality-driven Hindi general entertainment service to our viewers.

More information about DTN's programming services is provided in Section A4 and Section A5.

DTN is committed to making increasingly generous use of the 16:9 widescreen format. Our BOC has been specifically designed to accommodate the requirements of this exciting medium. All films available in widescreen will be shown on DTN's pay-per-view service in widescreen format, and a large proportion of The British Sports Channel will also make use of widescreen.

Further details of our plans for widescreen television are provided in Section A11.

The strength of DTN's programming services will be complemented by ensuring that receiver equipment supported by DTN will be capable of receiving all of the multiplex services available in the coverage area. This will give DTN's subscribers the ability to view free-to-air programming available from the gifted multiplexes and, should they choose to subscribe, any pay-TV services available on these multiplexes. DTN believes that the availability of the existing terrestrial services on digital terrestrial television will provide consumers with significant additional reassurance.

***DTN's Innovative Data Services***

Digital terrestrial television provides the opportunity to combine the mass acceptance of television with the power of the digital medium to bring the next generation of data services to consumers. These services will bring an extra quality dimension to viewers, exploiting the full potential of the digital medium to bring something startling and new to our subscribers. They will demonstrate to consumers that digital terrestrial television is a meaningful step forward from analogue television.

Our intention is to provide a service which combines the power of the Internet with the relevance and ease of use of teletext, while transcending the limitations of both. We propose to provide our subscribers with services from organisations and companies including the Press Association, Bloomberg, the RAC, the Consumers' Association, Hansard, National Express and Railtrack.

Unlike much of the Internet, DTN's data services will be truly relevant to British viewers, providing rapid and easy access to local, regional, national and international news and information created specially for DTN's viewers. The services we propose to offer include:

- a personal daily electronic newspaper
- local and national news headlines
- a sports result service
- financial news and information
- train and bus timetables
- traffic information
- local and national weather reports
- classified advertisements
- home shopping
- home banking.

Unlike teletext, DTN's digital data services will escape the frustrations of the analogue medium, providing fast-moving and attractively designed pages incorporating graphics, full-colour pictures, text and animated elements.

DTN's data services will add an extra dimension to its programme services, radically differentiating them from traditional analogue programming and dramatically enhancing the quality of the viewing experience. Programming of all sorts will benefit from being supplemented by invaluable additional and interactive information. The distinction between viewers and users will begin to blur.

Further information about DTN's additional services is provided in Section A7.

***Savings on Telephone Calls***

In addition to our commitment to offering high quality programming and innovative data services to our subscribers, DTN will also offer telephony to its customers. The high take-up rate of cable telephony demonstrates that offering telephone services at a considerable discount to established providers can greatly stimulate take-up of services. DTN intends to use NTL's national full-service telecommunications network to make discounted long distance and international telephone calls available to its digital terrestrial subscribers. A smart socket connected to the usual telephone port will automatically dial a short access code to the NTL network whenever the user wishes to make a long distance or international call. This service will be available to subscribers without any of the inconvenience of a changed home telephone number, and all calls above a threshold of £0.25 will, if so requested, be itemised on the subscriber's digital terrestrial television bill.

Adding telephony to our compelling programming and innovative data services will considerably enhance the overall appeal of DTN's proposition and help drive uptake for the whole platform. We expect CableTel's experience of successfully offering telephony services in its cable franchises to be invaluable in operating, marketing and administering this telephony service.

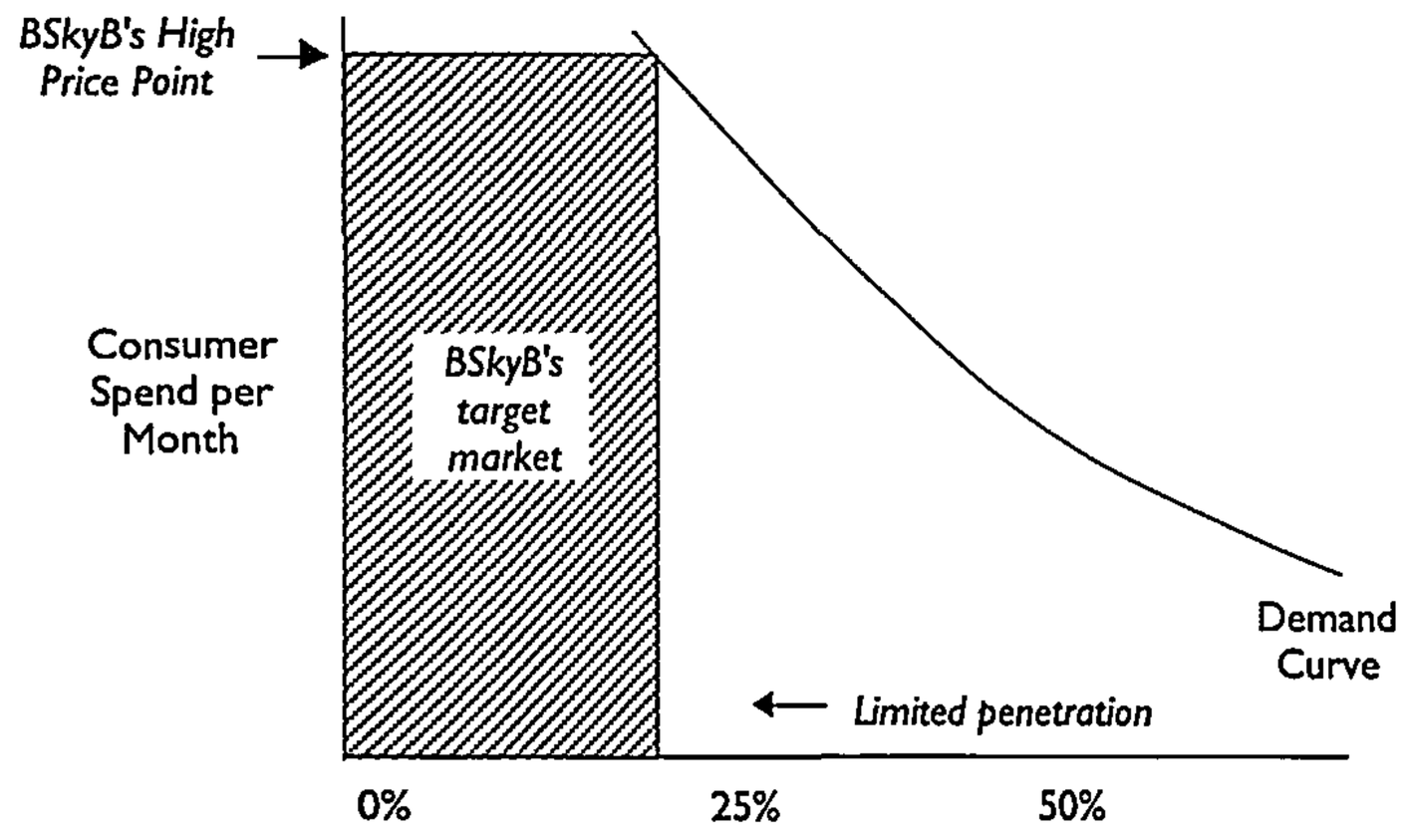
## DTN's Service Pricing Strategy

The existing market for pay-TV is circumscribed by the high prices charged by BSkyB for its premium programming. The current entry price for BSkyB's basic package is £11.99 per month. However, the majority of subscribers want sports and films and so "buy through" to the top level of premium programming costing £26.99 per month. BSkyB's powerful position in UK television has been achieved through a business model based principally on the purchase of expensive exclusive rights to films and sports and the subsequent sale of a high priced programming package to a minority of households. Although this model has made BSkyB the most valuable pay-TV operator in the world, we consider that there is a limit to the size of the market that can be created with such high prices. BSkyB appears to be drawing near to that ceiling now, with growth slowing down to less than 40,000 subscribers per month compared to over 100,000 per month during the best months of 1994.

The December 1996 OFT report on BSkyB's position in the wholesale pay-TV market acknowledged that the effect of these pricing policies is to lose many customers to pay-TV completely, placing a ceiling on the size of the market for pay-TV. This perception was confirmed by our consumer research. As one of the respondents to our consumer research told us, "*I think it's vastly overpriced. It's overpricing itself to the point where I'll reconsider next year*".

This impact of BSkyB's pricing policies on the market for pay-TV in the UK is shown in Exhibit A3.1.

**Exhibit A3.1: BSkyB's Pay-TV Niche**




This analysis was confirmed by our consumer research. 73% of all our respondents did not want to subscribe to so many cable and satellite channels when they were only interested in a few of them; 68% of those respondents who subscribed to cable and satellite agreed. One respondent summed it up: "*People should be able to pick their channels a bit more, maybe just have five or six channels and not have to pay for the ones you don't want*".

DTN's aim is to revolutionise the UK pay-TV market by dramatically differentiating ourselves from BSkyB's business model:

- we will offer our services to consumers at a substantially lower price than those currently charged by BSkyB, thereby dramatically expanding the size of the pay-TV market
- we will have no buy-through policy of tiered services, instead offering consumers a small core group of channels constituting a basic package and a range of small packages, each of a few channels covering a different programming theme. Subscribers to our basic package will be free to pick and mix, choosing as many or as few of these additional channel packages as they want. Subscribers

to the basic package only will also be able to access the entire pay-per-view film and sports offering without having to purchase additional programme tiers.

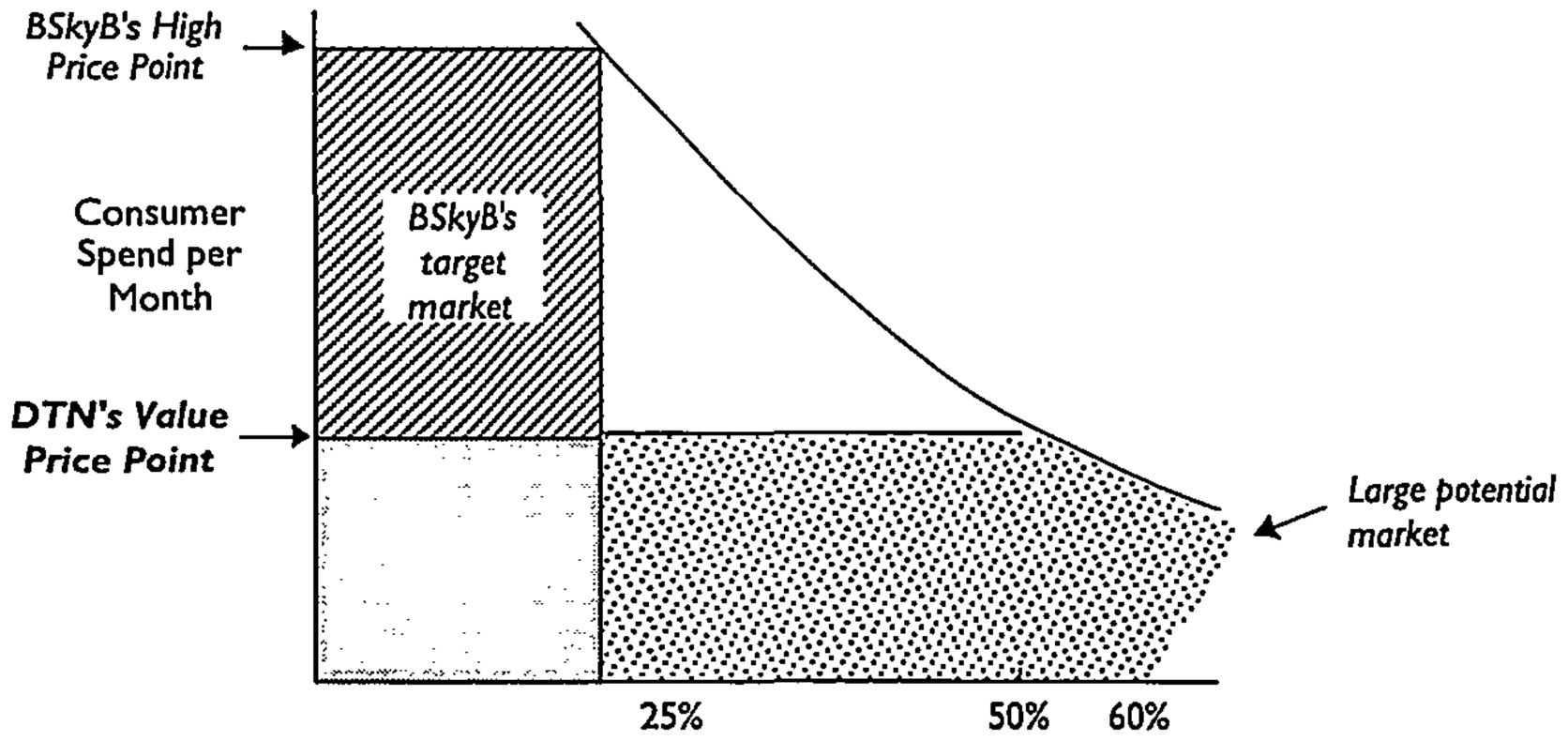
We believe that this commitment to providing good services at sensible prices is essential if digital terrestrial television is to succeed in establishing itself as the next generation of commercial television, changing the perception of what UK pay-TV is and can be. Pay-TV will no longer be restricted to that minority of households with enough money to buy through expensive tiers until they reach the programming they want. DTN's strategy is therefore to move pay-TV from a niche market to a mass market.

This commitment to offering consumers real value for money extends to all aspects of our services:

- DTN's subscribers will pay only for the services they want, with our services charged at considerably less than the current prices of other pay-TV operators
- our innovative broadcast data service (the "Carousel") will be free to air
- our user-friendly online service, the Grid, will be available to all DTN subscribers for the cost of nothing more than a local telephone call
- charges for many services, including some movies, sports and events and some data services will be on a pay-as-you-go basis, with our advanced technology warning customers each time they pay for a service. This will allow consumers to take control of their spending
- email and Internet access will be offered at well below the current market rate, allowing consumers to access the Information Superhighway more easily than has ever been considered possible
- our telephony service will give DTN's subscribers the opportunity to save substantial sums on their long distance and international calls.

Our belief is that this approach will create the next generation of commercial terrestrial television and will considerably broaden the market for pay-TV in the UK, as shown in Exhibit A3.2, thus promoting the acquisition of receiving equipment by viewers.

**Exhibit A3.2: DTN's Pay-TV Revolution**




This structure is in line with what consumers have told us they want, both existing multi-channel subscribers and current terrestrial-only households. At the proposed entry price, more than 50% of respondents said they would subscribe to DTN's basic package, nearly double the percentage of households that currently subscribe to multi-channel television.

The success of DTN's approach to channel packaging has already been proven by CableTel, the most innovative marketer of pay-TV services in the UK cable industry. Its 'Choices' package, combining a small and cheap basic package of channels, a pick and mix selection of seven mini-tiers, and a discount telephony service, has produced penetration rates of 44%, more than double the average for the cable industry, and has reduced levels of churn to as little as 12%, about half the industry average. This has helped CableTel gain a remarkable 95% satisfaction rating from its subscribers.

DTN believes, on the basis of its extensive consumer research and CableTel's experience, that these pricing proposals represent the best and most attractive proposition for the consumer.

Further details of our pricing proposals are contained in Section B.

## Receiver Price, Specification and Sourcing

To launch our service successfully, we will need to ensure that consumers are able to acquire as easily as possible the necessary receiving equipment for digital terrestrial television at a competitive price. The price of this equipment is a core part of our entire consumer proposition.

At present, consumers face two options in the market for analogue pay-TV receiver equipment:

- consumers wanting to receive BSkyB's satellite pay-TV services typically purchase set top boxes and satellite dishes from retail outlets, with a small number of consumers choosing to rent their equipment. Retail prices have fallen dramatically over the last five years, from nearly £200 in 1991 to under £100 in 1996. In general, equipment is heavily subsidised. Special promotions have taken prices below £80 on occasions, with one recent promotion giving receivers away for free with purchases of £299 or more of consumer electronics items. Despite these falling equipment prices, rates of growth are still slowing, largely because many consumers are deterred by the high prices charged for BSkyB's premium programming

- consumers wanting to receive analogue cable pay-TV services typically rent their equipment from their local cable company, paying a single bill covering the cost of the services they subscribe to and the cost of renting the set top box. Many cable companies also offer services that are currently unavailable on any other platform, such as telephony and Internet access. For a consumer subscribing to the top tier of premium programming, made up primarily of sports and films, the monthly bill is typically in the region of £30-35. At present, consumers cannot purchase cable set top boxes in retail outlets, although some cable companies have experimented with offering purchase options to their subscribers.

In the analogue market, consumer choice is constrained by high prices, incompatible platforms, and different service options. In addition, many consumers are deterred by the perceived unattractiveness of installing a satellite dish and the limited portability and in-house wiring requirements of cable and satellite television.

In the digital era, the complexities of the market for receiver equipment may increase. Consumers may adopt a wait-and-see attitude towards new television equipment and services, preferring to delay any purchase until they are confident in the operator, in the sustainability of the service, and in the durability of the receiver equipment.

However, as we have stressed above, digital terrestrial television is not just another pay-TV platform. The introduction of digital terrestrial television will be like the introduction of colour television, representing a revolution in the quality of the viewing experience, as well as the introduction of a range of new services. Like the introduction of colour, the transition from analogue to digital broadcasting will be accompanied by the introduction of a new sort of television, the integrated digital television, or idTV. These televisions, incorporating the necessary receiver equipment for digital broadcasting, are the next generation of television set. DTN is convinced that idTVs will account for the majority of receiving equipment in the medium and long term. However, in the early phase of digital terrestrial television,

set top boxes form a vital part of DTN's strategy for ensuring the success of digital terrestrial television.

In this difficult market, the chances of digital terrestrial television succeeding will be dramatically reduced if different multiplex licensees attempt to launch into the market with different and incompatible receiver specifications. DTN believes that it is essential for all receivers in the marketplace to be capable of receiving the services of all digital terrestrial multiplexes. Unless there is a single common receiver across all multiplexes consumers are likely to be extremely wary of buying receiver equipment,

## The Importance of Set Top Boxes

Set top boxes are a vital part of DTN's strategy, particularly in the early phase of digital terrestrial television. This view is shared by DTN's manufacturing and retailing partners who view this product as a critical component in the next phase of British broadcasting.

We firmly believe that a strategy which relies solely on idTVs will fail. This is because idTVs will sell at a price premium to analogue televisions and this will mean that anyone who is not willing to replace his current television and pay this premium will be disenfranchised from digital terrestrial television.

The letters of support we have received from manufacturers and retailers alike recognise and support our proposals for a two-product strategy.

If digital terrestrial television is to succeed, receivers must be made available at a competitive price that offers consumers real value for money from the moment that DTN launches. We believe that this can only be achieved by placing a firm order with selected manufacturers for the production of set top boxes as soon as possible after the award of the licence, and by subsidising the cost of the receiver equipment to ensure that it is available in retail stores at a competitive price.

We have reviewed existing pay television services around the world and we have found that in every single case the broadcaster has taken the initial risk of ordering the receiving equipment. Only a strong player willing to assume the risk of an initial order will be in a position to ensure the success of the digital terrestrial platform. If no firm order is placed, the necessary equipment will not be available in the market at the right time.

Unless manufacturers have confidence in the digital terrestrial television market, the market will be still-born. DTN is committed to placing a firm order for set top boxes to ensure that equipment will be available when we launch our services.

This initial order represents a considerable investment, constituting one of the largest elements of cash expenditure in the early years of the launch of our services. We

believe that this is both necessary and justified in order to ensure that our vision for digital terrestrial television becomes a reality.

***Set Top Box Pricing and Subsidy***

After extensive consultation with both retailers and manufacturers DTN has developed the following simple proposal for the introduction of subsidy into the supply chain:

- DTN will place an initial seed order for set top boxes with a small number of high quality manufacturers and will provide the subsidy for these receivers direct to the manufacturer
- subsidised set top boxes will be delivered through manufacturers' normal distribution channels to retailers who have agreed to sell these receivers with subscriptions to DTN's services. Set top boxes will incorporate a smartcard paired to that receiver and not capable of operating with any other receiver
- the arrangements between the retailer, the manufacturer and DTN will require that subsidised set top boxes are only sold with subscriptions to DTN's services
- retailers will make a margin on the sale of receivers
- retailers will be paid a commission upon the sale of the subscription
- retailers will place subsequent orders for set top boxes directly with our manufacturing partners, and DTN will provide the subsidy for these receivers to the manufacturer
- equipment will be to DTN's specification, as discussed in Section A13
- non-subsidised set top boxes will also be available to retailers.

The precise terms and conditions of these proposals will be agreed with our retail and manufacturing partners following the award of the licence.

DTN will also consult directly with Oftel on our proposals to ensure that the arrangements agreed with retailers and manufacturers are compatible with the relevant Oftel guidelines and requirements and with those of other relevant regulatory authorities.

***Integrated Digital Television Sets***

As we have discussed above, DTN shares the view of retailers and manufacturers that idTVs will comprise the bulk of receiving equipment for digital terrestrial services in the medium to long term. We also believe that idTVs represent a tremendous opportunity for retailers and manufacturers and that when idTVs become available at the right price they will be a highly attractive proposition for consumers.

We have discussed ways of working with manufacturers to bring the launch date for idTVs forward. We propose to assist manufacturers financially to include certain key

components in the idTV. This will incentivise manufacturers to start development of the product. It will also ensure that idTVs incorporate the necessary level of functionality both to enable subscribers to enjoy the full range of services available on DTN's digital terrestrial platform and to ensure that idTVs are capable of receiving services from all multiplexes. Given the commercial sensitivity of these discussions, we are unable to provide further details of these arrangements in the public section of this document. Greater detail, as well as letters of support from manufacturers and retailers, is included in Section B of this application.

Subsidy constitutes one of the largest financing requirements for DTN, but we are convinced that subsidising the cost of the receiver is necessary to ensure the rapid take-up of digital terrestrial television.

***DTN's Receiver Specification***

DTN has developed a receiver specification that will help ensure a flow of high quality consumer-friendly receiver equipment into the market at a price that can reasonably be expected to decline over time. The details of this specification are included in Section A13 and in Section B. The highlights of this specification are:

- DTN's receivers will be capable of receiving all multiplex services available in the coverage areas of all digital multiplexes. DTN is committed to achieving this by working in close collaboration with the DTG group
- DTN's receivers will be upgradeable to receive 200 or more channels and to receive digital cable and satellite services
- DTN's receivers will be specified to support the full range of digital terrestrial services and will therefore be equipped with a high speed modem and sufficient memory to support the interactive and data services that we will offer
- DTN's receivers will rely extensively on existing technology that has already been proven to work
- DTN's receivers will be "plug and play". This will be in stark contrast to those for satellite or cable. Consumers will be able to use their receivers for a large number of services as soon as they take possession of it.

DTN is convinced that the specification of the receiver will be high enough to reassure the consumer that his purchase is "future proof" and capable of being of service for many years without requiring any expensive upgrades.

Further details of our receiver specification can be found in Section A13 and in Section B.

***DTN's Partnership with Manufacturers***

DTN intends to work with leading suppliers of digital receiving equipment to ensure that reliable, high quality equipment is available in the market when it launches its services.

We have held extensive discussions with the leading suppliers of digital receiving equipment and television sets to ensure that sufficient volumes of reliable and high quality receiver equipment will be in the market when DTN launches its services

Our discussions have focused on the manufacturing costs of set top boxes and idTVs, on the distribution of receivers, and on the promotional and marketing activities that will be necessary to support this equipment. We have also reviewed the specific technology expertise of all of our selected manufacturing partners.

The manufacturing companies we plan to work with are all experts in the field of digital receiver equipment manufacture:

- they are all leaders in the development and production of digital receiving equipment, television sets and integrated receiver decoder equipment
- they enjoy considerable brand recognition amongst British consumers
- they have the resources and capacities to manufacture, distribute and promote the product in the necessary volumes.

NTL has demonstrated true commitment to the development of digital terrestrial technology by investing substantial sums in the development of core components for the receiver. Without this early commitment, it is almost certain that digital terrestrial services would not be able to launch in early 1998.

## Solutions for Distribution: Retail and Rental

We have outlined how our proposals for digital terrestrial television will offer enormous benefits to the consumers. We have also discussed how our proposals create an opportunity for manufacturers to work with us to create a market for an innovative new consumer product that represents the future of television around the world.

Digital terrestrial television also represents an enormous opportunity for retailers. If it is to succeed, it will require their full support to ensure that consumers are encouraged to become subscribers as persuasively as possible. DTN believes that obtaining this support is essential.

The task for retailers will not be an easy one. Digital terrestrial television is a new platform and it will be launching into a highly competitive market. The complex and overlapping coverage areas of the multiplexes will create special difficulties for retailers, requiring them to communicate complex information concerning the

availability, or otherwise, of services to consumers. Moreover, the possible launch of BSkyB's digital satellite service prior to the launch of DTN's digital terrestrial service will create a market in which two digital services are competing through many of the same retail chains for subscribers.

This challenge is not insurmountable. In other markets, broadcasters have proved that new services can be launched into highly competitive markets and, with the assistance of powerful marketing, strong retail partners, and effective distribution, thriving and prosperous businesses can be built. DirecTV, the US digital satellite services provider is an example. It launched its service into one of the most mature multi-channel environments in the world, and created the fastest moving consumer electronics product in US history.

## DTN's Retail Strategy

To help DTN determine how best to make our services available to consumers we completed a comprehensive programme of consumer research as well as conducting discussions with a large number of retailers. This has allowed us to develop what we believe is a coherent and sensible approach.

When we asked respondents who had expressed an interest in buying a set top box where they go to make the purchase, two key findings emerged:

- first, a majority of consumers would seek to purchase equipment from one of the major electronic equipment retail chains
- however, the remainder would seek to buy their set top boxes from a wide range of retail outlets, including independent electronic equipment stores, electricity company showrooms, department stores, mail order catalogues, discount stores and local stores. A significant number of respondents would either shop around for the cheapest set top box they could find or simply did not know where they would go to.

When respondents who had expressed an interest in idTVs were asked the same question, a similar pattern emerged: although the majority would expect to buy an idTV from one of the big multiples, significant numbers of consumers would look to other retail outlets.

These findings have convinced us that DTN must ensure that its services can be purchased from the widest possible range of retail outlets if we are to satisfy the demands of consumers. This approach is consistent with our vision for digital terrestrial television as the future of British television - to succeed, digital terrestrial needs to become near ubiquitous at a retail level, in the same way that today's analogue televisions are.

DTN has held extensive discussions with retailers on all aspects of our proposals for digital terrestrial television.

These discussions with retailers have focused on the following issues:

- ensuring the support of retailers for our overall approach to digital terrestrial television
- DTN's strategy for receiver equipment
- DTN's proposals for subsidising equipment
- the sale of accessories and auxiliary services
- co-operation over in-store advertising and marketing activities.

We have found widespread support amongst the retail community for our approach to digital terrestrial television. We have also received support for our strategy for receiver equipment, particularly with regards to our approach to set top boxes and idTVs. A number of retailers have also confirmed that they share our view regarding the need for a common CA system across the entire digital terrestrial platform.

Our plans create a tremendous opportunity for retailers. If digital terrestrial succeeds and becomes to analogue as colour was to black and white, the market for idTVs in the medium to long term and set top boxes in the short term will be enormous. The size of the eventual market is at least equivalent to the size of the installed base of analogue television sets and probably larger. Retailers can expect to make attractive margins on the sale of digital terrestrial receiver equipment.

Digital terrestrial will also create a thriving market in auxiliary and peripheral products. Keyboards will be available for use with DTN's receivers and will be sold separately. DTN will operate and market services such as email that will require the use of keyboards. We expect this to create a substantial opportunity for retailers.

idTVs will incorporate a common interface port, allowing additional CA modules to be attached. As new operators launch services, a market for these modules is likely to develop.

Retailers will also have the opportunity to provide extended warranty packages and financing terms. Sales of these additional products and services will create significant additional revenue opportunities for the retail trade.

Moreover we have discussed with a number of retailers the prospect of selling entitlements to programming packaged as software. This has been enthusiastically endorsed by retailers.

Our discussions have enabled us to develop an approach which we believe will attract widespread support from the retail community and will help ensure that DTN's services are available in the greatest possible number of retail outlets. The core of this approach is an extensive retailer support programme which we believe will

encourage retailers to sell DTN's services with confidence and commitment. The key features of this programme are as follows:

- *DTN will ensure a reliable flow of high quality receiver equipment from manufacturers to retailers.*

  DTN intends to place a seed order with manufacturers to kick-start the market for digital television receiver equipment. We propose that DTN's manufacturing partners will supply high quality subsidised receivers manufactured to DTN's specification to retailers who have agreed to sell these receivers with subscriptions to our services. The arrangements between the retailer, the manufacturer and DTN will require that these subsidised set top boxes are only sold with subscriptions to DTN's services. Subsidy will be paid direct to the manufacturer of the receiving equipment. Non-subsidised set top boxes will also be available to retailers.

  The precise terms and conditions of these proposals will be agreed with our retail and manufacturing partners following the award of the licence and discussed with Oftel.

  DTN's Director of Marketing & Subscriber Management, a DTN Board member, will take ultimate responsibility for the co-ordination of the distribution chain. DTN will have a senior staff member dedicated to monitoring the day-to-day operation of the distribution chain.

- *DTN will incentivise retailers for the sale of receivers and subscriptions.*

  As an indication of our commitment to the success of digital terrestrial television, we propose to pay a generous commission for the sale of each subscription to DTN's services. Subscriptions will be sold with each subsidised receiver. The level of commission will be proportional to the nature of the subscription sold. Further details of the commission are provided in Section B

- *DTN will provide retailers with the necessary support and information they need to sell our services.*

  DTN will provide considerable support to retailers in the form of information, staff training, in-store advertisements and marketing support. Such a programme is essential to ensure that customers are well served at the point of purchase:

  - DTN proposes to conduct a series of retail conferences prior to launch to ensure that the retail network are fully informed about digital terrestrial television and about DTN's package of services. Conferences will be operated regionally and will be attended by store managers and area managers from all retail outlets. We will also provide training manuals for each store manager to train their own staff, incorporating a

comprehensive information pack and a video demonstrating the key features of the services that will be available

- a retail motivation scheme has been developed to generate loyalty, enthusiasm and support from the retailers within this competitive market place. We need to ensure that DTN's services are recommended by retail staff over those of other operators. The aim of this scheme will be to provide "top of mind" status for DTN and to drive sales by attracting in-store retail recommendations
- DTN proposes to set up a Retail Careline to provide additional support for the retail network. Retail staff will be able to request additional information, order additional point of sale material, or have their questions answered. This will be set up prior to launch but will continue to be offered as part of an added value investment by DTN for the retail network. The consumer will also benefit as most queries will be handled at the point of sale
- DTN proposes to make a substantial investment in providing point of sale material to the retail network, with the objective of providing impact and focus in an increasingly cluttered and competitive retail environment. DTN will also provide comprehensive information that can in turn be passed on to the end consumer, which will help to answer queries and overcome barriers to purchase, thus driving sales. This material will include information packs, demonstration videos, shelf cards, floor stickers, leaflet dispensers, window banners, product cards and so on.

We also plan to have a presence at the Electronics Retailing Show and to provide sponsored "advertorial" supplements in the trade press.

It is possible that some consumers may require assistance from a professional installation service in order to successfully set up their receiver equipment. DTN believes digital terrestrial television will be the first 'plug and play' platform. Consumers will be able to purchase their receivers and begin using them immediately, without having to wait for a satellite dish to be put up or a cable connection to be wired in. Nonetheless, there are circumstances in which a consumer might require assistance. We have discussed this issue with retailers, many of whom already have arrangements with installation companies or may decide to put such arrangements in place before the launch of digital terrestrial television. However, we believe that DTN must also be in a position to recommend professional, courteous, prompt and value for money installation services to consumers, if it is asked to do so.

As such, we have entered into discussions with a body representing providers of professional installation services. This body has indicated its support for DTN's specific approach to digital terrestrial television and has also provided an

indicative quotation for a framework agreement for the provision of installation services. We propose to make this facility available to consumers at cost so that they can benefit from the bulk purchasing power of DTN.

The provision of a telephone return path is essential for many of DTN's interactive services. DTN is committed to working with manufacturers, retailers and other relevant organisations to devise appropriate procedures for ensuring that all consumers connect to a telephone return path. Our proposals include:

- the active exploration of wireless connectivity solutions, such as infrared, GSM and mains ring
- the establishment of suitable arrangements with qualified installers, supervised by DTN controllers
- the provision of suitable extension cables for consumers to self-install.

***The Sales Transaction Process***

The complex overlapping coverage areas of the six multiplexes create a unique role for retailers. Retail staff will be on the front line, responsible for communicating clearly and simply information about service availability, pricing and receiver prices to consumers at the point of sale. This role will be made a great deal easier by the substantial investments outlined in DTN's proposals for retail support and marketing, much of which will be focused on communicating the key messages about digital terrestrial television to consumers.

However, despite these investments, the role of the retailer will remain a demanding one. DTN believes that it is essential for the purchase process to be as simple and easy as possible. Equally, retailers are concerned that the purchase process should be highly efficient. In particular, it must be quick to complete, must not require extensive sales time and must be simple for the consumer to understand. After consultation with retailers and manufacturers, DTN has developed the following simple proposal for the transaction process:

- DTN's subsidised receivers will be delivered through manufacturers' normal distribution channels to retailers who have agreed to sell these receivers with subscriptions to DTN's services
- each receiver will be paired with a unique smartcard that will operate with that receiver only. This will greatly simplify the authorisation process for retailers
- when a consumer wishes to purchase a receiver from the selection available and become a subscriber to DTN's services, the retailer will be able to consult DTN's dedicated database which comprises information matching multiplex coverage areas with postal codes. This database, developed with the expert assistance of NTL, will be made available to retailers free of charge in a variety

of different formats, including CD-ROM, on the Internet, and as a printed directory. It will allow the retailer to confirm quickly and simply which of DTN's services are available within the consumer's coverage area

- the retailer will then take the necessary details from the consumer, will obtain payment for the receiver and will record the receiver's unique identification number
- if at any time the retailer requires further information, a call can be made to DTN's dedicated Retail Careline
- once the retailer's transaction with the consumer is completed, the consumer will receive a welcome pack from the retailer and can now plug the receiver in and begin watching DTN's programme services
- the subscription details will now be forwarded by the retailer to DTN's SMS at DTN's cost
- DTN will then, upon confirmation of the consumer's credit status, complete the subscription process, entering the relevant entitlements. This will limit the subscriber's access to the range of services for which he has subscribed
- commission payments covering sales of subscriptions will be made to retailers. DTN's proposals for commission payments are discussed in Section B.
- after DTN's initial seed order, retailers will order set top boxes directly from our manufacturing partners, and DTN will pay the subsidy for the equipment direct to the manufacturer.

Subsidised receivers will be to DTN's specification, as discussed in Section A13.

Non-subsidised receivers will also be available to retailers, and DTN plans to issue smartcards for these receivers if they are requested.

The precise terms and conditions of these proposals will be formulated in accordance with applicable consumer, data protection and other legislation and regulations and agreed with our retailing and manufacturing partners following the award of the licence.

DTN also plans to consult with the appropriate regulatory authorities on these proposals.

We believe that this approach will enable retailers to complete transactions relating to DTN's services as quickly and as efficiently as possible.

***The Range of DTN's Retail Outlets***

We have held discussions with a wide range of retailers whom we would like to sell DTN's services. We believe it is essential that DTN's services are available in a wide range of different outlets, reflecting the demands of consumers.

*Major electronic equipment retail chains*

As our consumer research indicates, a significant proportion of consumers would expect to buy receiving equipment from one of the major consumer electronics multiples. We have had successful discussions with the major electronic equipment retail chains and share the same vision as them of the opportunity that digital terrestrial television represents.

*High Street Rental Companies*

We believe consumers should have the option to rent as well as buy equipment on the high street. On the basis of our discussions, we are confident that we will be able to distribute a high volume of receivers to consumers via high street rental stores.

*Department Stores*

We have held discussions with one of the UK's leading chains of department stores and believe that, given the relatively high market share enjoyed by department stores in the television sector, most would be prepared to stock and promote DTN's receiver and services.

*Mail Order Operations*

Mail order also represents an important channel for the sale of television and other consumer electronics products. We have held discussions with a major mail order operator and expect to work with mail order companies to make DTN's receivers and services available.

*Independent Retailers*

Our research has indicated that many consumers would want to obtain DTN's receivers and services through an independent consumer electronics or satellite outlet. Independent stores account for a considerable share of the market for television sets and set top boxes, in particular when market share is analysed by value. Our consumer research also showed that a considerable number of consumers would expect to acquire their receivers and services from an independent retailer.

We believe it is essential to enlist as much support as possible from the independent trade and we have held discussions with the major independent electronic retailers' trade association and with one of the key buying-groups used by independent retailers. We have received indications of support for our proposals from both of these organisations. In addition, our manufacturing partners have reassured us regarding their ability to distribute product into the independent trade.

Given this widespread support we feel confident that our receivers and services will be available in the independent trade.

Details of the letters of support we have received are contained in Section B.

***The Number of Retail Outlets Offering Equipment***

In total, the retailers that we have held discussions with account for the bulk of the UK's consumer electronics industry.

The ITC requests that the applicant indicate the number of retail outlets within the transmission coverage area that will offer equipment for sale, hire or rent. This is shown in Exhibit A3.3.

**Exhibit A3.3: Number of proposed retail outlets for DTN within the transmission coverage areas of each of multiplex B, C and D**

| Multiplex | Multiplex coverage area | Number of retail outlets within the transmission coverage area |
|---|---|---|
| B | 88% | 5,352 |
| C | 77% | 4,683 |
| D | 75% | 4,562 |
| **Total number of retail outlets in respect of which we have held discussions** | | 6,082 |

Multiplex coverage areas are as detailed in the ITC's Invitation to Apply, with the exception of Multiplex D. DTN has chosen to operate Multiplex D at 18 Mbps as compared to the ITC proposal to use 24 Mbps. By reducing the available data rate, the total coverage area becomes similar to that of Multiplex C. Further details are provided in Section A2.

There are a number of important points to note with regards to these figures:

- the total number of retail outlets noted covers only those retailers from whom we have received letters of support, noted in Section B. We are confident that DTN's receivers and services will be available in a considerably larger number of retail outlets when our service is launched
- we have calculated the number of retail outlets in the coverage area of each multiplex by taking the relevant coverage area and multiplying it by the number of retail outlets, calculated on the basis noted above. It is likely that the resultant figure underestimates the number of retail outlets contained within the coverage area of each multiplex. In particular, retail outlets are not uniformly distributed across the country but tend to be concentrated in urban areas. As urban areas of the UK are better covered than rural areas by the transmission from each of the multiplexes (see Section B), it is likely that a larger number of retail outlets than the stated figure will be included within the coverage area

- we have had discussions with retailers who do not operate from retail outlets but instead sell products and services by mail order and over the Internet. As such, the number of retail outlets within the coverage area does not accurately represent the full range of channels through which DTN's services will be available

- the retail outlets included in the above figures are of a wide range of sizes, from small independent outlets to superstores. We have obtained letters of support from retailers accounting for the majority of sales of colour television sets in the UK, and believe that we will have reached agreement with retailers accounting for the overwhelming majority by the time we launch our service. In particular, we have received letters of support from members of each type of retail outlet that the respondents to our consumer research indicated they would expect to be able to purchase receiver equipment and services from.

***DTN's Direct Rental Strategy***

Many consumers we spoke to during our consumer research expressed a desire to rent receiver equipment rather than purchase it. Consumers appear to be concerned about buying in to new technologies and see rental as an attractive way of limiting their financial exposure. Others may simply prefer the flexibility that renting provides. Nearly three-quarters of respondents expected to be able to rent the set top box directly from DTN, in the same way that the majority of cable subscribers rent equipment directly from their local cable company.

Our analysis of successful pay-TV launches around the world suggests that the direct provision of receiver equipment for rental by the broadcaster has, in many cases, complemented the retail distribution route and successfully assisted in driving rapid take-up of the service:

- shortly after launch, Sky set up a direct rental operation to drive penetration of its services. A significant proportion of early subscribers to the service rented directly from Sky. However, as soon as the service had matured, BSkyB re-focused its marketing effort on the retail trade

- Primestar, the US digital satellite operator, rents equipment directly to its subscribers. In a crowded market, it has successfully acquired 1.3 million subscribers by making equipment available for rental directly and through retail outlets.

In our discussions with retailers and other relevant players we have found that considerable common ground exists between our aims and the expectations of retailers regarding the digital terrestrial market. We believe that relying on the retail trade will substantially enable us to meet our objective of ensuring that our services and the associated receiver equipment are both widely available. DTN expects retail to be the primary route by which consumers will acquire set top boxes.

However, our consumer research and our analysis of other pay-TV operators lead us to believe that there is considerable merit in establishing an operation that would rent receiver equipment directly to consumers.

We believe strongly that the consumer segment that might opt to rent equipment directly from DTN is distinct from the segment that would prefer to rent or purchase equipment directly from high street outlets. 'Early renters' are likely to be slightly more circumspect about the new technology; they would prefer to make small monthly payments for the receiver rather than a large up-front payment, thereby minimising their financial exposure; many will buy set top boxes when prices fall or will purchase idTVs in a few years time. This profile does not match that of 'early buyers', who are likely to be excited by the new digital technology. They would prefer to buy receiver equipment and will migrate to idTVs as and when they become available at the right price. DTN's aim is to make its services available to both of these segments.

Having identified that a segment of the market would like the option of rental, we have incorporated an approach within our marketing strategy that meets this need. However, we equally recognise the importance of ensuring that we do not inhibit the retail market in any way.

We view the establishment of a direct rental operation as complementary to our retail activities, not competitive with them. We believe that this operation may be essential to the success of digital terrestrial television in the early phases of launch, when we believe that consumers must be given the option to become 'early renters'. This would ultimately benefit all players involved in the establishment of the digital terrestrial platform. We propose to enter into discussions with our retail and manufacturing partners to develop an approach that will ensure that the separation between these two segments of our target audience is maintained and reflected in our sales and marketing campaign and subsequent activities. Above all, the existence of our rental option would not be allowed to deflect our commitment to both incentivising and supporting retailers.

As the digital terrestrial platform becomes established, we believe that the number of consumers fitting the 'early renter' profile will decline, which would allow us to scale down our direct rental operation. We would not make idTVs available through our direct rental operation.

Staff for DTN's direct rental operation would be based in our subscriber management centre in Wales, as discussed in Section A2. Staff would be trained in general marketing, equipment marketing and subscription sales and support and would be re-assigned to other activities as DTN's direct rental operation reduces its level of activity. We have calculated the approximate full-time equivalent number of staff needed to handle calls relating to the direct rental of equipment. This has been calculated on the basis of the number of impacts created by the direct rental

advertisements and marketing campaigns, response rates and average call lengths. Further detail on this calculation can be found in Section B3. We have estimated that 130 call centre operators would be required on a full-time equivalent basis to deal with all sales, marketing and customer support activity related to the direct rental of equipment during the first year of operation. These individuals would spend about half their time on sales and marketing activity specifically. In addition, four management level staff would be employed in our direct rental operation. These numbers would decline over the course of the first five years of the licence as the digital terrestrial platform becomes established.

DTN intends to support its direct rental operation through its general communications plan. We will make clear to consumers that there are both rental and retail operations available for DTN's services. As such, DTN will place considerable advertisement and marketing support behind the operation.

Direct rental will be featured in our full communication programme, but will be emphasised most within our direct marketing activity. All advertising will contain a call to action, but it will not be designed to sell the benefits of direct rental in particular. Once a prospective customer has made an enquiry, they will either be sent an information pack (including details of how they can rent equipment) or be asked by the customer service advisor on the phone if they wish to consider a direct rental offer. It is important to stress that this offer will be made in the context of a full list of options.

We will also utilise an element of outbound marketing to prospective customers who have visited retailers but still not purchased equipment. As part of the subsequent outbound activity, the rental option will be offered.

To ensure the efficient delivery of the rented receiver equipment, we propose to make an agreement with a national fulfilment agency. Details of the arrangements we intend to put in place can be found in Section B. The agency will collect receiver equipment from the warehouses of our manufacturing partners and will ensure its delivery at a specified time to the rental customer. Installation services, where required, will be provided under the framework agreement we propose to put in place with the body representing providers of professional installation services.

## Establishing a Reputation for Reliability and Consumer Support

In a competitive marketplace, flooded with new technologies and services, many consumers will inevitably feel overwhelmed by the choices available to them. It will therefore be vital to gain a very high degree of consumer confidence in a very short timeframe. While our advertising campaign will play a vital role in ensuring this, there is a limit to what can be done by advertising on its own. DTN is clear that the best way to generate the high degree of confidence required is to devote considerable

planning and resource to every point or means by which consumers came into contact with DTN. These include the following:

- exposure to DTN's advertising campaign (dealt with in greater detail later in this section)
- efficient, courteous and responsive helpline
- clear and informative pack, mailed to households
- prominent sales information at retail outlets
- well trained retail staff who understand and believe in the value of the receiver equipment and subscriptions they are selling
- reliable broadcast signal and picture quality, receiver equipment and electronic programme guide.

The other way in which DTN can build consumer confidence is by being associated with other strong and respected brands. These will include:

- leading consumer electronics manufacturers
- the major high street retailers
- respected and valued programme providers
- major commercial and other organisations providing data and transactional services.

DTN's philosophy will be to "get it right first time", in the knowledge that if any consumer is disappointed in their dealings with DTN it will make our task of convincing others to subscribe that much harder.

**Subscriber Support**

We have designed a customer support programme that will provide consumers with the information they require to make an informed decision about DTN's proposition. The programme will offer:

- comprehensive information
- support for queries
- arrangements for low-cost installation services,
- ongoing backup and follow-up calls to identify any problems or questions.

DTN will provide these services directly through our call centre in Wales and retail outlets. Our call centre will employ a considerable number of fully trained staff who will service customer queries and provide the following services:

- an information line which will arrange to send information packs to consumers. The information packs will include the following details:
  - which services the consumer can receive at his address
  - types of services offered
  - prices of services
  - where receivers can be obtained and at what price
  - information on the option of renting set top boxes directly from DTN
  - other relevant information
- consumers will be able to phone the same number or give their initial orders for the service and, potentially, rented receiver equipment
- once consumers have become subscribers, a welcome pack containing relevant information will be mailed to them
- new subscribers will receive a welcome call from DTN, during which we will reassure ourselves that they are satisfied with the service they are receiving
- DTN will provide a technical helpline with a dedicated team of experts on hand to deal with any technical queries subscribers may have
- we will also provide a subscriber helpline manned by dedicated staff, which will deal with all customer enquiries. This would include, for example, requests to order additional channels or services, billing queries, suggestions or complaints. DTN is planning to make this service available on a 24 hour basis.

We believe that this comprehensive support package will allow us to exceed consumers' expectations for customer service. Our approach will also open a constant dialogue with our customers, which will provide DTN with the information necessary to refine our proposition to meet the changing demands of subscribers.

## DTN's Communications Strategy

We have set out above a strong argument for DTN's ability to drive the penetration of digital terrestrial television in a highly competitive market. However, unless we can successfully communicate the compelling nature of the proposition we are offering consumers, we will be unable to achieve our aims.

We have used the terms "communications" to refer to what is termed "publicity" in the Invitation to Apply. This is because a major component of the plan involves establishing an interactive dialogue with consumers.

To assist us in this task, DTN has retained the services of the advertising and communications agency Ammirati Puris Lintas (APL), a top ten agency and part of the Interpublic group.

The principles guiding our proposals are:

- the need to provide high levels of product marketing spend to drive consumer desire for take-up
- the desire for close collaboration with the gifted multiplex licensees to ensure a common marketing platform for digital terrestrial television
- the need to provide an ongoing dialogue with consumers
- the need to differentiate digital terrestrial television from other competitive multi-channel platforms.

Our specific communications objective is to achieve over 90% awareness of digital terrestrial television and of DTN's services by the end of our first year. Awareness, however, is only the starting point. The total programme is designed to stimulate response, enabling us to build a dialogue with consumers, creating demand for DTN's services, converting that interest into the acquisition of receiver equipment and subscriptions, and then maintaining loyalty to DTN and the digital terrestrial platform over time.

We have set out our detailed communications strategy proposals as follows:

- our overall approach
- our target market
- the branding of digital terrestrial television
- the timing of DTN's communications programme
- media strategy.

## Our Overall Approach

Our approach to promoting both digital terrestrial television in general and DTN's services in particular is:

- DTN will allocate a significant proportion of its investment to promoting the digital terrestrial platform generically. We believe it is only by focusing our investment on this in the early years of launch that digital terrestrial television will be established as a viable platform for the long term
- our strategy for promoting digital terrestrial television has been based on identifying its distinctive benefits in both the current and future competitive environment, and on overcoming the primary barriers to take-up, as identified by extensive market research. The strategy is based on communicating digital terrestrial television as being:
  - mainstream

- the future (i.e. safe, long term, "future-proof")
- the future of the television that viewers already know and love
- a service that provides quality rather than simply quantity of programming (and additional services).

- DTN intends to co-operate closely with the gifted multiplex licensees to develop and promote a common digital terrestrial platform to the consumer
- we have developed proposals for branding which will achieve co-ordinated and consistent promotion of digital terrestrial television generically, and will also allow individual multiplex services to be promoted. Please note that DTN is the "working title" for our business, rather than the brand name under which our services will be launched
- we have devised a strategy that will target early adopters, but will be inclusive of late adopters and will assuage their reservations about multi-channel television
- DTN proposes to make a significant investment in customer support, building a dialogue with consumers from launch onwards to encourage the rapid take-up of subscriptions to our service, as well as building loyalty with our subscribers through ongoing customer service
- we will communicate a series of consistent messages across all elements of the marketing mix, integrating them across all advertising, point of sale material, information packs, customer service and all other forms of media.

Detailed media plans and investment proposals are clearly commercially sensitive and are outlined in detail in Section B.

## Our Target Market

DTN has proposed levels of investment in both above the line media and relationship marketing which are not only comparable to the spend required to launch satellite television in the UK, but are also believed to be higher than those that any other broadcaster has ever spent on a launch in the UK. This will help ensure that digital terrestrial television creates the maximum impact at launch and maintains a substantial presence thereafter.

The ultimate consumer target for digital terrestrial television is of course the entire UK population. However, some consumers are more likely to be attracted to the digital terrestrial offering early on, and DTN has undertaken extensive consumer research, as well as analysing the adoption profile of satellite and cable in the UK, to understand who the likely early adopters will be. The communications plan is based on these early adopters, to optimise the effectiveness of the investment, but will continue to be refined as the digital terrestrial platform matures.

However, as our ultimate aim is to maximise the appeal of digital terrestrial across the whole population, we have developed our messages with late adopters in mind to enable us to overcome the widest possible barriers to take-up. We believe that DTN's brand proposition and consumer identity must be appealing to and inclusive of the widest possible target group.

As mentioned, in defining the target for our communications investment, we have conducted extensive research to define the likely early adopters of digital terrestrial television. Factors which we believe will drive early adoption are:

- an interest in high quality television
- enthusiasm about the digital future and early adoption of technology generally (e.g. early adopters of VCRs, CDs, PCs, CD-ROMs, etc.)
- the presence of children (which tends to increase household viewing and drive interest in additional channels).

Ultimately, however, we seek to broaden our appeal. Adults who want more television represent the core target audience for digital terrestrial television. TGI data suggests that over 10 million adults have the propensity to purchase more television if the offer is right. This group provides the critical mass necessary to make digital terrestrial television succeed.

The profile of these consumers in many instances matches the profile of those that claim not to want more television. However, there are a number of areas where there are distinct differences. Those wanting more television when compared to the rest of the population, tend to have more children, be slightly older and to buy more high-tech gadgetry.

It is extremely important to note that, although our media targeting has been prepared with the above definitions in mind, the very nature of the mass media being used will ensure a heavy-weight campaign targeted at the whole population, and thereby include effective exposure to all interested parties. Our campaign, therefore, will deliver a message that is both specific to our key target group and attractive to the mass audience.

Over and above this, we have assumed that interest in take-up will be driven by interest in specific channel content - as with sports fans for Sky Sports, for example. While DTN's proposals for channel services have been based on content with the broadest possible appeal, some elements of our target groups will naturally be attracted by specific services. We have therefore included in our plans for promoting specific services, for example, the Hindi-speaking population for the Hindi Channel, Manchester residents for our local channel proposals, and so on.

## The Branding of Digital Terrestrial Television

Creating a brand for digital terrestrial television and for each of the services it encompasses could potentially be extremely complex. This complication is exacerbated by the issue of equipment branding. DTN's objective is to simplify the consumer offering as far as possible, to enable us to communicate simple and powerful messages to consumers.

To this end, we have worked with our advertising partners to develop a model for branding which will guide all our communications proposals. While we have a clear view of how digital terrestrial television should be branded, DTN is keen to work closely with the gifted multiplex providers to develop and communicate a consistent message about the whole digital terrestrial platform to the British public.

Each level of communication about digital terrestrial television is designed to complement the other and lead the consumer through the decision process to the point of equipment take-up. To achieve take-up, communication has to:

- create awareness
- generate an understanding of what digital terrestrial television is (i.e. what the overall service is and how it works, what specific channels are available and what they are, and what is involved to get it)
- create appeal
- translate that appeal and intent into action, via tactical messages, incentives and offers.

The proposals outlined in the media plans in Section B and in our branding strategy demonstrate how each of these objectives will be achieved:

- *There is a clear need to create a strong, distinctive and appealing digital terrestrial brand which should guide all communications about digital terrestrial television products, services and equipment.*

  The overall digital terrestrial television brand should provide the framework for all communications for specific channels, services and equipment. DTN proposes to work with the licence holders of gifted multiplexes to develop a brand identity which encapsulates a simple, relevant and motivating expression of the consumer benefit of the entire digital terrestrial television platform. This is what DTN refers to as the "Masterbrand" and a significant proportion of DTN's early expenditure will be allocated to funding communication of this generic digital terrestrial brand.

  We plan to create the Masterbrand in a way which is reminiscent of "Intel Inside" or "Dolby". The brand will be carried on all equipment and on all promotions across all multiplex services. It will serve to reassure the public that digital terrestrial is the mainstream future of British television, it will

convey the message that digital terrestrial is where the consumer will find all the familiar programming plus the new. We have discussed this plan, in outline, both with equipment manufacturers and some of the gifted multiplex operators and we have received an enthusiastic endorsement of it.

We envisage that the creation of a strong, distinctive and appealing digital terrestrial Masterbrand will require the co-operation, and co-ordination of the communications activities, of retailers, manufacturers and multiplex licensees. We anticipate that marketing and communications plans conducted jointly with manufacturers and retailers will be predominantly in this area. In addition, DTN expects to conduct specific tactical promotions for its services jointly with manufacturers and retailers.

- *DTN will dedicate substantial investment to the promotion of equipment*

  DTN will work closely with manufacturers to promote receiving equipment. We will focus our investment particularly on the promotion of the Masterbrand on all digital terrestrial equipment in order to reassure the consumer that the purchase he is making will be a safe long term investment.

  In addition to brand advertising, our communications plan will be strengthened by direct tactical promotions of receiver equipment via direct incentives or offers (some of which will be executed jointly with our retail and manufacturing partners. This will translate the desire for action created by the brand advertising, into purchase. These tactical promotions will provide the final incentive to acquire equipment once the appeal has been created, and are vital to translate intention into action. They will be communicated via a range of media such as promotions and direct mail.

- *We will also establish a consumer identity for the newly created DTN brand, both to ensure that it can support the appeal of digital terrestrial overall and to create acceptance of DTN's channels and services.*

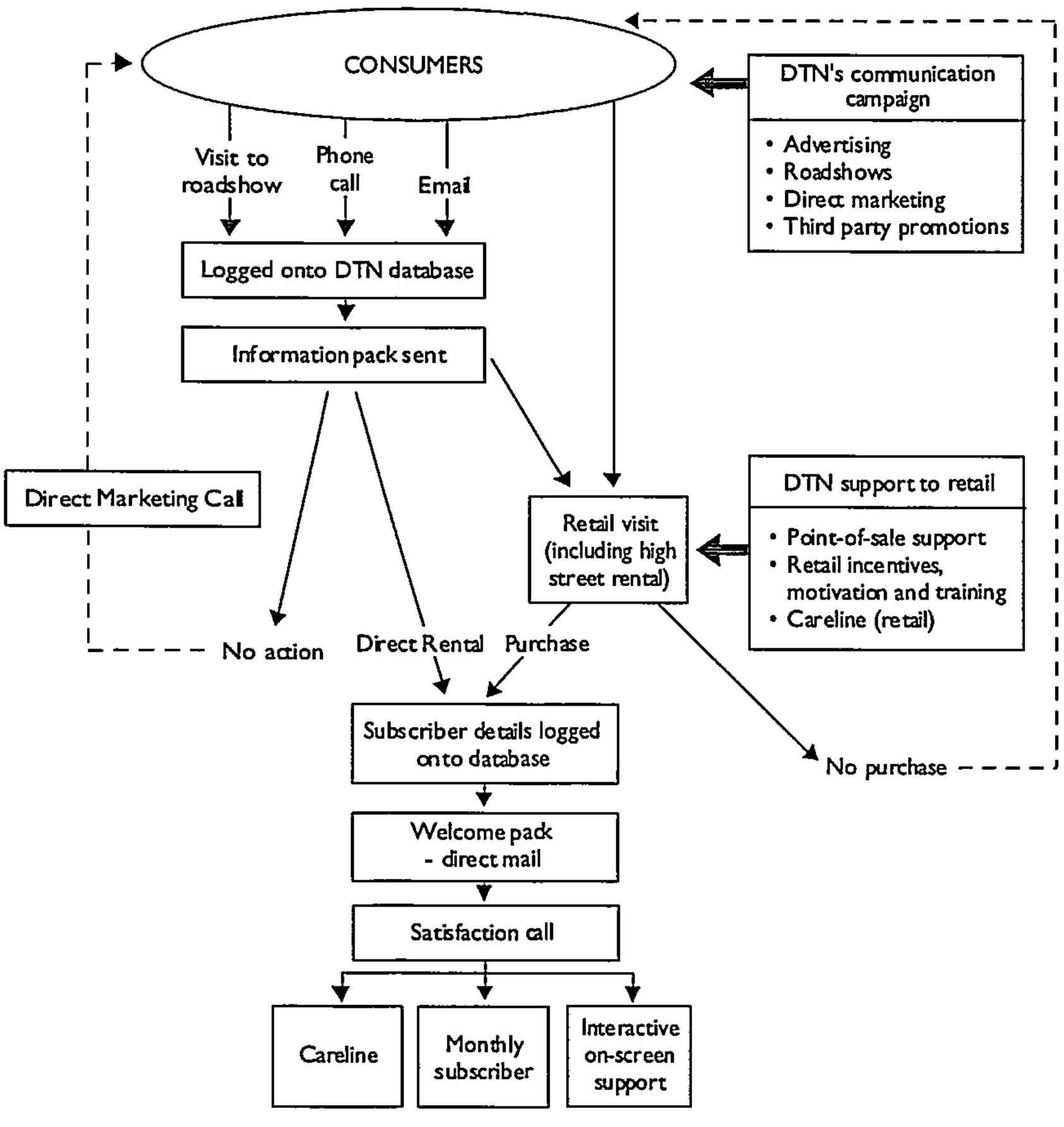
  DTN itself will have a very powerful branding which will be designed to distinguish it from rival pay-TV operators as well as integrate well with the Masterbrand. It will be closely associated with the individual channel brands included in our package.

  We believe that within this framework, the promotion of specific content (channels, individual programmes or services) should constitute a large part of the communication, as this will be the primary driver of consumer take-up. It will be important both to communicate the range of services (via widespread promotion of a large number of channels) and to target distinct audiences who will be interested in specific content. The media plans detailed in Section B again illustrate how DTN plans to achieve this.

All of DTN's advertising will be aimed at stimulating requests for additional information, either via an 0800 freephone telephone number, or a coupon included in press advertising. This will help to stimulate uptake and will help provide consumers with the information they require to make an informed purchase decision. It will also allow DTN to request details about potential customers. Analysis of this database will then enable us to refine our communication strategy, and focus the media spend on the key target audience.

DTN has set out a process for integrating its active sales and marketing approach. This is illustrated in Exhibit A3.4.

**Exhibit A3.4: DTN's Integrated Sales and Marketing Process - Illustrative**



## The Timing of DTN's Communications Programme

The communications programme we have developed has been designed to build awareness and interest in digital terrestrial television and in DTN's services, while establishing an interactive dialogue with consumers. A broad range of communication channels will be utilised, all carrying a call to action to drive and facilitate the acquisition of equipment. Certain communication channels will however by their nature be more specifically response-focused.

Relationship marketing driven by the Call Centre represents a significant element of our programme. Comprehensive customer service is key to DTN's plans - it creates competitive differentiation, supports the purchase decision, builds trust and loyalty, allows interaction with consumers and ultimately drives sales.

Broadly, the programme consists of three phases:

***Pre-launch***

Activity designed to generate awareness and interest in the arrival of digital terrestrial television. Importantly, details of those who make enquiries at this pre-launch stage can be held for the digital terrestrial television launch and an ongoing dialogue established - an essential element, we believe, in the face of the likely competitive offer from digital satellite.

***Launch***

DTN has developed a programme to continue the build of awareness and interest, stimulating enquiries and beginning to develop the customer relationship. All enquiries generated by the responses mechanisms in the advertising will feed into the database and drive subsequent direct marketing and prospecting activity.

***Post-launch***

This phase of activity has two key tasks: building customer loyalty via ongoing customer service and introduction of new services, and identifying the profile of additional prospects, thus focusing the continuing marketing and communications programme.

Communications plans and investment have also been outlined for years 3-12 in Section B, but DTN's programme recognises that the overall speed of digital terrestrial television take-up in this country will be achieved more rapidly by significant investment in communication with consumers in the early years.

## Media Strategy

Overall investment levels have been set to ensure that digital terrestrial television dominates communication in 1998, a year which we believe will see the greatest levels of advertising support ever for the broadcast sector. It is our objective to generate

maximum awareness for digital terrestrial television as quickly as possible, and our plans are upweighted in the early years accordingly. Specifically we aim to achieve 90% awareness of digital terrestrial television in the first year after launch. We believe this will accelerate penetration of digital terrestrial television and establish it as a viable delivery platform.

Our media plans have been designed to achieve three primary tasks:

- generation of awareness and understanding of digital terrestrial television generically
- support of the DTN brand and services
- tactical equipment promotions.

It utilises all of the main media channels to create maximum impact and generate high levels of response, creating the dialogue with consumers outlined above. The majority of our advertising investment will be allocated to the generic promotion of digital terrestrial television and related receiver equipment, by means of the Masterbrand benefiting the gifted multiplex operators and the entire platform. The remainder will support DTN's programming and services, which we believe represent a compelling proposition to the consumer.

Given our desire to build a dialogue with consumers, DTN's plans have been developed not only to generate mass awareness, but also to employ the most effective vehicles for maximising response.

***Television***

Television delivers immediate communication, has high impact and enables us to bring the new programming to life in a way no other medium can. Television will be used at key periods to deliver information about the services. It will be used to support both digital terrestrial television generically and the DTN offering, whilst at the same time inviting a response for more information and/or specific offers.

***Press***

Press is the most powerful medium for generating direct response, and hence a key component of the campaign. Continuous activity will utilise national and regional press, and relevant sections within this medium such as listings pages and reviews. Magazines also feature strongly in our plan: TV listings magazines and mass circulation titles will be used to build awareness, and specific journals will highlight relevant special interest programming. Local press will be used to support our local channels, and also ensure flexibility depending on the geographical coverage of the license.

***Outdoor***

Outdoor has been chosen to drive awareness, and is planned to reach 90% of the population. It will be up-weighted in regions where our potential is greater and used

to support our local offering, thus driving awareness. It is a shared medium, it is newsworthy and provides heavy branding and stature.

***Cinema***

Cinema and video advertising will be placed to create a short but powerful presentation of our brand experience and will be particularly relevant for our film and children's channels. We will use these media to create high impact at launch, during holiday periods and across the autumn, building to the crucial Christmas purchase period.

***Radio***

Radio has been planned, at this stage, as a tactical device to support promotions, to target specific local areas such as support for local TV, and to add emphasis to retail and manufacturer activity. Investment planned in this medium is at a level that allows us to react to circumstances and promote specifics as and when necessary.

We believe that DTN's comprehensive approach will ensure that digital terrestrial television is launched authoritatively, reassuringly and conveying the excitement of the digital era on a massive scale. We are convinced that this plan will secure the digital terrestrial platform's position at the centre of British broadcasting.

# Differences In DTN's Proposals Under Section A3 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplexes our proposals would differ from those set out above. These differences are set out below.

## Demand for DTN's Services

- Details of the numbers and characteristics of the programme services which DTN proposes to operate if we are awarded less than three multiplexes are set out in Section A4 and Section A5. Details of the additional services we propose to operate if we are awarded less than three multiplexes are set out in Section A7

- DTN will seek to collaborate with the other multiplex licensees to ensure that a diverse range of high quality programming is available across all of the multiplexes, individually and across the entire platform.

## DTN's Pricing Strategy

- Details of the prices at which DTN proposes to make its services available in the event that we are awarded fewer than three multiplex licences are contained in Section B

- DTN believes that digital terrestrial television must offer consumers a diverse range of high quality services at the right price if it is to succeed. In particular, we believe that consumers should be offered a small basic package of core channels and a range of mini themed packages or a la carte channels. We would propose to collaborate with the other multiplex licensees to enable the services available on the digital terrestrial platform to be made available to consumers in this way, with a basic package consisting in a combination of channels from each multiplex licensee. We believe that this approach offers the most attractive approach for the consumer. We would oppose any attempt to impose a buy-through policy of tiered services.

## Receiver Price, Specification and Sourcing

- If DTN is awarded Multiplexes B and C we would still intend to subsidise our specified receivers. We would also plan to place a seed order for receiver equipment, although it may be reduced to reflect the anticipated lower take-up of the service. Further details of the level of subsidy we would introduce are included in Section B.

- If DTN is awarded only one multiplex or Multiplexes B and D or C and D, we do not propose to subsidise receiver equipment and would not place a seed order for receiver equipment with manufacturers. We believe that this is an inevitable consequence of the business case involved in the operation of these combinations of multiplexes
- If DTN does not subsidise receiver equipment, we will not be in a position to ensure the availability of receiver equipment compatible with the specification set out in Section A3, Section A13 and Section B. However, we will seek to encourage manufacturers and other licensees to adopt the specification as we believe, for the reasons noted, that it represents the optimal solution for digital terrestrial television
- It is likely that the absence of a seed order for receiver equipment will significantly delay the availability of equipment in the market
- As discussed in Section A13, DTN believes that digital terrestrial television stands the best chance of succeeding if cost duplication between the multiplex licensees is minimised. DTN would seek to collaborate with the other multiplex licensees to ensure the adoption of a single CA system across the entire digital terrestrial platform.

**Solutions for Distribution: Retail and Rental**

- DTN believes that it is essential for a single common receiver to be available across the digital terrestrial platform. DTN will seek to co-operate with the other multiplex licensees to ensure that a single common receiver is adopted. This will permit subscriptions to DTN's services to be sold in retail outlets for reception in the common receiver
- If DTN is awarded Multiplexes B and C, we would propose to offer to retailers the full support outlined in Section A3
- If DTN is awarded Multiplexes B and D or C and D, we will offer a more limited level of support to retailers including the retailer helpline, some retailer training and liaising, more limited point of sale material
- If DTN is awarded only one multiplex, we would not be in a position to offer retailer support
- If DTN is awarded Multiplexes B and C, it proposes to establish a direct rental operation. However, DTN does not propose to establish a direct rental operation in the event that it is awarded only one multiplex or Multiplexes B and D or C and D.

**Establishing a Reputation for Reliability and Customer Support**

- If DTN is awarded any combination of two multiplex licences, we will establish an SMS operation and we would seek to collaborate with other licensees to establish reasonable commercial terms to share the facility

- DTN will not establish its own SMS in the event that it is awarded only one multiplex. We will seek to co-operate with the other multiplex licensees in developing an SMS facility. As a result, DTN will not operate a substantial direct marketing campaign and will be unable to distribute information packs in response to direct enquiries from the public.

**DTN's Communication Strategy**

- DTN's investment in above the line and below the line advertising will be substantially reduced in the event that we are awarded one or two multiplex licences. Details of our levels of spending on these bases are provided in Section B

- In the event that DTN is awarded Multiplexes B and C we will promote the entire digital terrestrial platform by means of the Masterbrand, albeit at a reduced level. We will also promote the individual channels on our platform and the Digital Box Office and would provide support for the promotion of equipment

  In the event that DTN is awarded Multiplexes B and D, or C and D we would not be in a position to promote the digital terrestrial television Masterbrand. We would focus communication spend on the promotion of DTN's services and provide limited support for equipment promotion

- In the event that DTN is awarded only one multiplex, the emphasis of DTN's communications plan will be on promoting and selling subscriptions to its own package of services. We would seek to establish these channels as successful services in the multi-channel environment. The focus of our communications plan will be on television in the first two years and then on the press. Our press advertising will target publications whose subject matter matches that of our programme services, and we would exploit the regional press to ensure that our efforts are focused within the coverage area of our services. We will be prepared to co-operate with the other multiplex licensees, manufacturers and retailers in promoting digital terrestrial television and related receiver equipment generically, but our business case would be such as to limit our financial contribution to such marketing.

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New Divider Tab

A-Z

1-4

preview

New Divider

# A4 Number and Characteristics of Services

*Taking account of the guidance given in paragraphs 98 to 105 above, the applicant should state the number of digital programme services which he intends to broadcast and for each service he should describe:*

*(i) the date when the service will commence*

*(ii) the hours of the day and days of the week during which the service will be broadcast*

*(iii) the coverage area*

*(iv) the type of programmes which will be broadcast, the style of programme service and the target audience*

*(v) the average proportion of total programme hours that will consist of original productions or commissions, i.e. programmes which have been made specifically for the digital programme service*

*(vi) the average proportion of total programme hours that will consist of first-run material, i.e. material which has not previously been shown on the digital programme service.*

*Notes:*

*1. An ITC Guidance Note on Programme Definitions is available which explains how programmes should be classified.*

*2. Applicants may wish to refer to audience research findings which support the belief that the proposed services will appeal to a variety of tastes and interests and/or that different elements will appeal to particular target audiences.*

*3. Applicants should note that it will not be sufficient to describe programme services in general terms without explaining what types of "entertainment" or "sport" for example will be provided in different parts of the schedule (evening, daytime etc.), for whom the programmes are intended and how they will be sourced (see Section A.14 of the Invitation to Apply).*

*4. Applicants for Licence A should note the requirement to provide Gaelic language programming in Scotland, as described in paragraph 120 of the Invitation to Apply.*

## Summary

While developments in technology enable a digital terrestrial service to be launched, it is the content of the service that makes people buy it. DTN's service content comes in two forms - this array of data services described in Section A7 and the new channels described here.

If DTN is awarded all three multiplexes, we plan to launch a range of exciting new channels and a pay-per-view service. DTN itself plans to produce three national

channels, one local, and others will be provided by a range of suppliers. In a little more detail, the characteristics of DTN's programme services are as follows:

- DTN's own channels are designed to cater for changes in society which we believe British broadcasters have failed to fully recognise. The Money Channel will deal with an interest we all share - but from a diverse perspective. The Knowledge Network will reflect the increasingly widespread perception that in an Information Society knowledge is power. And the British Sports Channel sets out to serve our passion for sport in a radically different way from that of BSkyB.

- our other channels also contribute to the diversity and variety of our programming offer. With the help of existing and new British and international players, we intend to offer drama and comedy, documentaries, the arts, music and many other strands that will appeal to all of us

- in addition, we will be innovating - in a variety of ways. We will be offering strands of programming in greater depth than is possible with conventional TV - youth programming and channels themed around leisure and recent history. We will also be offering new types of channels - including a pay-per-view offering, much of it broadcast in widescreen format (16:9)

- a totally different type of innovation is represented by our local TV initiative - Metro TV. Market research always shows that people want television more immediately relevant to their community - but the traditional structure of television in the UK has meant that it is difficult to offer a service that does this. Digital changes the position entirely. We have planned a service for Greater Manchester in detail - and, if it works, we will launch similar services elsewhere.

Behind this channel line-up, there is a whole new view of television's potential. Its starting point is a rejection of the notion that an abundance of channels leads inevitably to a vulgarisation of the medium. It has become a commonplace that pay-TV needs sport and movies - and that other categories of programme must be (above all) cheap and (if possible) popular. Our view is different. We see the dominance of blockbuster sports and movies as a temporary phenomenon - very much in line with past shifts in the television environment, the first generation of pay TV has changed the balance of broadcasting economics. The second generation will do so again. Specifically, with the advent of digital, the viewer's control of the schedule increases markedly - and the job of the traditional schedular changes fundamentally. Instead of making a programme available at the time it will obtain the maximum audience, his job is to make it available throughout the day. Television is no longer marketing a one-off event, but is a resource that can be called on repeatedly - like a library book, except accessible by everyone at the same time.

This change in the nature of television will not happen all at once - it will happen gradually as we move to fifty channels and then to a hundred an eventually to five hundred. As it begins to happen, however, broadcasters will have to make a clear choice. Either they will persist with traditional notions of broadcasting and, as we describe later in this section, cut their cloth to fit smaller audiences. Alternatively, they will make a determined effort to build the commitment of their target audience by maintaining or even increasing the perceived value of what they are sharing. This latter course is, we believe, both the more viable and much the more creative option. How this work in practice is best illustrated by the approach we take to The British Sports Channel, described later in this section.

Apart from home shopping which we are only offering on our data services, our specific programming proposals mean that DTN scores well on all the dimensions of serving a variety of tastes and interests itemised by the ITC in the Invitation to Apply.

Our programme services are, we believe, commercially attractive and will also make a substantial contribution to the variety and interest of British television. However, obviously the breadth of our proposed programming offer would diminish if we were granted not three multiplexes but one or two. It may be that, in these circumstances, the other licensees would offer programming that complemented ours in a way that met both consumer and ITC demands. Obviously we cannot control this. More important, however, is the point that investment in new channels requires confidence and commitment. As is laid out at the end of this section of our application, we would take a more cautious attitude towards programming if we were awarded a joint or single licence - in our view, such prudence is justified by the greater risks inherent in splitting the multiplex licences.

## Introduction

This section describes each of the programme services to be offered by DTN. It is arranged under six headings.

| | |
|---|---|
| Original channels created by DTN | What we are going to produce ourselves, including The British Sports Channel, The Money Channel, The Knowledge Network and Metro TV, a local network |
| The Best of British | The potential of eight new channels from the BBC |
| Specialist channels | Services dedicated to particular customers including The ITN Living History Channel, The Box and Travel |
| Digital Box Office | Our pay-per-view service for movies, sport and events |
| The Best of the World | Quality programming on services from around the world such as TCM: Turner Classic Movies and Cartoon Network |
| Future Plans | Our plans for future services |

At the end of Section A4, we also show two crucial exhibits.

The first gives the information requested by the ITC in points: (i), (ii), (v) and (vi) above. Points (iii) and (iv) are answered elsewhere in the text of this section.

The second exhibit illustrates coverage areas, the number of services and variations in programme services for different multiplex combination.

## Original Channels Created by DTN

Each of our brand new channels responds to an aspect of our national life which is in radical change.

Over the last 20 years there has been a steady erosion of the old barriers between "money people" - accountants, stock brokers, industrialists, the rich - and the rest of us. Shareholder democracy, sizeable numbers of people with redundancy money to invest, the growth of the two-income family have forced large sections of the population to take control over their financial affairs for the first time. Traditional age and class barriers to the City and to company boardrooms have started to crumble. The shrinking welfare state is beginning to hand financial responsibility for basic economic provision for people's lives back to individuals. Pensions have to be chosen and bought instead of taken for granted. Pay is becoming a matter for private contract. Income tax requires self assessment and Sainsbury's is becoming a bank. *The Money Channel* enlarges the bounds of financial journalism to allow viewers to better understand and manage their business and family affairs.

The coincidence of the digital revolution and the vast changes in the patterns of work and education in Britain has made learning one of the brightest areas of opportunity both commercially and in the public service. But with the opportunity for more interesting and sophisticated learning methods, available to individuals throughout life, comes the danger of a growing divide between the information-rich and the information-poor. *The Knowledge Network* will address both the opportunities and the dangers.

The revolution in the ownership, status and value of some top sports, notably football, has changed the social and cultural role of sport in British life. More and more international sport will be a feast of pay-per-view and premium subscription television. But with the advent of subscription-only clubs and high ticket prices, football is no longer the great national pastime for ordinary families on a Saturday afternoon. British sport is having to reinvent itself to find new and vigorous life below the level of mega-million pound contracts and satellite exclusives. Sport remains an important and growing part of the fabric of our local and national communities. All existing sports still need to be developed and promoted. Furthermore new sports, new talent and new players will emerge that will all need access and promotion to the British public. *The British Sports Channel*, much of it transmitted in widescreen format, will give all these sports exhibition and encouragement.

Throughout the UK there is a growing sense of a need for localism and cultural expression. As the regions of the UK become overwhelmed by the cross-currents of globalisation and European unity, it is more important than ever to provide a voice for the local community. Questions about Scottish nationalism, identity and the sense of belonging will not disappear and are likely to continue well beyond the next general election. Channel 3 has carried the torch for regional broadcasting for many years but

its role is changing. Digital technology makes it possible to rethink local television from the beginning. There are many difficulties. We must go slowly but *Metro TV* will hammer out a template for local television that comes closer to peoples lives as never before.

The digital age is full of opportunities - for audiences, for commercial investors, for global programme distributors, but also for the creative talent which Britain possesses in such abundance. Digital terrestrial television, with its themed channels, its ability to speak to specialist audiences and its new technological possibilities will be a major boost to the production industry both in the metropolitan centres and in the regions. The product will be different in many ways from that of the past. The biggest opportunities may come to the new, small, innovative companies rather than to the established centres of high cost excellence. With real investment going into programming for the new digital multiplexes, we will see significant opportunities for those with the wits and the entrepreneurial energy to exploit them.

DTN intends to apply for a Digital Programme Licence to cover the following services:

- The Money Channel
- The Knowledge Network
- The British Sports Channel
- Metro TV.

Each of these channels is described below.

## The Money Channel

This section contains the following:

- Introduction
- The Audience
- Programme Highlights
- High Quality
- Programme Supply
- Compliance
- Data Services
- Training
- Future Plans.

***Introduction***

The traditional journalistic distinctions between business programming, industry and personal finance no longer correspond to the reality of our lives. It is time for The Money Channel - a new idea in television and a genuine extension of choice for viewers.

What is it about?

- getting money
- keeping money
- spending money
- using money
- giving money
- value for money.

***The Audience***

*Who Will Watch It?*

In an 18-hour service we have room for everyone at different times of day.

There are money interests for young people (Radio 1's biggest Social Action campaign response was from a series on debt and student grants), CEOs , people moving in and out of the job market at various levels, charity fund raisers, commodity traders, grannies making wills, international investors, people borrowing for mortgages or cars, fantasists, penny shareholders, people planning, topping up or drawing pensions, young entrepreneurs, people insuring different circumstances of their lives. They will

not all want the same programmes but they are all interested in programmes about money.

*Why DTN?*

A money channel will benefit significantly from DTN's unique features especially the capacity for sophisticated data services: the Carousel and the Grid.

The new Code of Practice which will govern multi-channel digital services also makes possible a new relationship between the broadcaster and existing specialist service providers in other media. The Money Channel will have a close partnership with the Consumers' Association for part of its output bringing the quality and expertise of the Which? brand to a wider audience.

Access to the Grid for people without the courage, the skill or the equipment to get online themselves offers an important window for the information poor. A recent survey (the Sixth World Wide Web User Survey by the Georgia Institute of Technology, December 1996) shows that almost 70 per cent of Web users are male. The Money Channel will offer programmes specifically targeted to encourage women at home to get to grips with the options emerging from the new technologies and the Information Society.

*What Is Our Distinctive Appeal?*

- profile and critical mass from being an 18 hour broad-based money service
- direct addressing of the money interests of every segment of society at different times of day
- a wide range of forms and styles not usually applied to this area of programming
- original programming not found on any orthodox business or finance programmes
- access to the Grid without a computer
- data services.

*Audience Research*

The Money Channel is a ground-breaking venture which no broadcaster looking for safe or easy options would dream of tackling. Existing business and money programmes on British television get modest audiences. The Money Programme on BBC2 has an average TVR of 2.3, Dosh 2.8 and Scrimpers 3.3.

The question "Would you be interested in a channel about money" produced a response of very/quite interested from 45% of those responding. Such research, however, is of limited use since it asks people to offer an opinion on a choice they have no experience of and it fails to reflect the reality of digital broadcasting. Digital television will offer its wares in ways that are fundamentally different from the

channels of analogue television. Few people will sit in front of one specialist channel in the way that they watch general interest channels. Specialist digital channels like the Money Channel will be available 18-hours a day but each viewer will go to it only for what he/she wants - the idea of a "Money Channel" will therefore need to be carefully marketed to potential audiences.

***Programme Highlights***

The Money Channel was inspired by the ambition to offer British viewers a television service that has never before been available. Recently business news services of various kinds have begun to serve the sectional interests of the business community and we do not neglect them. But we believe there exists a wider variety of tastes and interests in the area of money. We therefore also cater for every other section of the community in that part of their lives. In particular we believe that the 55+ age group would enjoy money programming tailored to their particular needs. We also see the young - even the very young, but more obviously student age groups - as a neglected group in this field.

We realise that we face a challenge in reaching some audiences who would not naturally turn to a money channel and therefore we shall deploy all our skills as programme-makers and all the variety of forms and styles which television offers to attract new audiences. Some of our programming will of course be highly serious. But we shall also include game shows, light hearted features and the best graphics we can muster to encourage a wider audience that money issues matter to them.

The proposed schedule for the Money Channel is shown in Exhibit A4.1. Descriptions of the programmes are described below.

## Exhibit A4.1: The Money Channel - Illustrative Schedule

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| *06.00 am* | Money Morning | Money Morning | Money Morning | Money Morning | Money Morning | Company Zone | Company Zone |
| *07.00 am* | | | | | | | |
| *08.00 am* | | | | | | Saturday Value | Go For It |
| *09.00 am* | | | | | | | |
| *10.00 am* | Homebase Money | Homebase Money | Homebase Money | Homebase Money | Homebase Money | | |
| *11.00 am* | | | | | | | |
| *12.00 noon* | | | | | | | |
| *1.00 pm* | Business Lunch | Business Lunch | Business Lunch | Business Lunch | Business Lunch | | |
| *2.00 pm* | Mature Money | Mature Money | Mature Money | Mature Money | Mature Money | Saturday Value | The Community Channel |
| *3.00 pm* | | | | | | | |
| *4.00 pm* | | | | | | | |
| *5.00 pm* | Metro Money | Metro Money | Metro Money | Metro Money | Metro Money | | |
| *6.00 pm* | Prime Rate Money | Prime Rate Money | Prime Rate Money | Prime Rate Money | Prime Rate Money | Saturday Value Highlights | Go For It |
| *7.00 pm* | | | | | | | |
| *8.00 pm* | | | | | | | |
| *9.00 pm* | | | | | | | |
| *10.00 pm* | | | | | | | |
| *11.00 pm* | | | | | | | |
| *12.00 pm 06.00 am* | Company Zone | Company Zone | Company Zone | Company Zone | Company Zone | Company Zone | Company Zone |

***Monday - Friday***

***06.00-10.00 - Money Morning***

Target audience : business and professional people going to work.

Live studio with inserts. Sharp young host(s). More colour and pace than current TV business programming. A 60-minute package repeated three times with updates.

Segments include:

*Money Morning Briefing c.15 mins*

News wrap/weather/travel/world markets/international press including financial press.

UK markets scene setter and analysis.

CEO profile of the day

*Money Morning Style c. 10 mins*

Business lifestyle package

Travel, restaurants, hotels and events round Europe, Convention diary

*Money Morning Lobby c. 15 mins*

Business or finance-related political briefing. EU directives brewing. Parliamentary bills going through committee. Profiles of key MPs/Eurocrats. The Regulators.

*The Hot Share Show c. 15 mins*

Market analysis. Penny shares. Directors' share watch.

Source: In-house, independent production companies, ITN, Bloomberg

***10.00-12.30 - Homebase Money***

Target audience: at home, pensioners, young childcarers, students, unemployed or early retired people i.e. not business or finance specialists but consumers increasingly interested in how to keep and spend their money. The traditional personal finance territory is expanding with private health care, private pensions and share ownership becoming routine for many more people

Personality-led magazine including tape packages, phone-in, education slots, game show and an interactive element. All specially produced/commissioned. High quality material will be repackaged heavily over time. A good opportunity to deploy the use of the "L for Learning" button (see Knowledge Network).

Elements include:

*"How To" Packages*

How to draw up a budget/make a will/read a balance sheet/be a shareholder/pick a health policy/select a Unit Trust/understand pensions etc.

Short high quality packages to be rotated over time. Text backup.

*Phone-in Clinic*

On the subject of that day's "How To" package

*Shopping Sleuth*

Best buys, travel bargains etc. with audience contributions.

*Me and my Business*

Short documentary profiles of small business people on how they got started, the thrills and spills, how you could do the same, what to avoid etc.

*Beginners' Money/Student Money/Her Money/Kids' Money etc.*

An advice strand tailored to a different section of the audience every day. Repeated over time.

*Market Places*

Occasional OB series from all sorts of trading places - Covent Garden/dealing room/car boot sale/MIP etc.

*Rate for the Job*

Game show - panel guesses the rate for a job. Audience joins in.

*Who's Afraid of the Internet*

A helping hand to understand the digital superhighway for the information-poor - people without a computer at home or who are cut off by age, economics or techno fear. We pull 50 pages off the Internet and simulate the Internet experience for viewers at home using their digital televisions.

Source: Independent production companies, in-house, ITN

***12.30 - 14.00 - Business Lunch***

Updated and reversioned Money Morning. Same sources. Same host. Same content. Different audience profile.

Extra element:

*Odds On*

The day's best odds - the lottery, racing, pools, rain tomorrow etc.

***14.00 - 17.00 - Mature Money***

Target audience: retired 50+ men and women, semi-retired, active or not.

Personality-led studio/magazine show covering all aspects of pensions, leveraging your freehold, Late Starter profiles of people who began new careers after 50 etc.

About one hour of new production plus repackaged and reversioned segments from Homebase Money.

New elements include:

*Late Starter*

Profiles of people who started new ventures later in life

*Old Money*

Financial advice targeted at the 50+ audience

Source: Independent production companies, Consumers' Association.

***17.00-18.00 - Metro Money***

Target audience: Local and regional audience. Pilot in Manchester, roll out with Metro TV.

The money life of your region. Local shopping, local business profiles, local employment.

Source: Regional independents, Job Centres, Local Enterprise Initiatives e.g. Stockport

***18.00-00.00 - Prime Rate Money***

Target audience: for the general, intelligent audience wanting a choice of specialised factual viewing notably at 21:00 hours when there is drama on most mainstream channels.

The focus will be a mainstream studio-based current affairs format with Serious Money as its centrepiece. There will be room for discursive, opinionated discussion, for the exposition of complex economic or business ideas and for expert and vigorous challenge. This will be the place for new, young thinking about business, the corporate sector and their role in a post-welfare state society.

But this is peak time evening viewing and it will also have light and shade in its range of styles and formats. Documentary, entertainment and advice segments will provide variety. A strand of US money programming, live or as live, will lead a section of international business and economic information. The evening will probably fall into two parts with a host presenter to hold each together.

Elements include:

*Serious Money*

An hour-long heavy-weight studio show - Newsnight but with a focused business/industry/fiscal remit.

*Tax clinic*

Tax advice from leading professionals as self-assessment starts to bite. Text back-up.

*Young Entrepreneurs*

Short documentary features on the next generation of wealth creators

*Earning Money*

Careers advice for the young - mainly, but not exclusively, in "money" areas.

*We Won the Lottery*

Successful Good Cause projects explain how they wrote a winning application, raised the matching funds, spent the cash, realised their plans. Handy hints for other hopefuls (brass bands, wasteland reclamation projects, the Tate's Bankside etc.).

*It May Never Happen*

Insurance advice and information

*Good Business*

Segment on ethical arguments in the business and industrial world, supported by EcoSourcing International and other such organisations.

*Wildcat Days*

Businessmen and industrialists on their early days, the passion and excitement of business, the dream rather than the balance sheet. Occasional short documentary feature.

*The Money Channel £1000*

A school leaver, an investment analyst, [redacted] and a young businesswoman compete to maximise the return on a £1000 stake. We follow their progress weekly/monthly. Viewers join in.

US money programming

Source: Independent production companies, international acquisitions.

***00.00-06.00 - Company Zone***

In addition to the guaranteed 18 hour a day schedule we will offer air time for clearly labelled corporate-sponsored programming - the AGM of the air. Chairman's statement, corporate videos, PR etc. This will be principally of interest to shareholders/consumers/prospective investors but also another window for a general drop-in audience to see British business as it would wish to present itself. This could be closed-user programming but that seems a wasted opportunity so long as the distinctive nature of the editorial control is made explicit to viewers throughout.

Sensitive issues of editorial and quality control are posed by this proposal. It will be important to have an experienced broadcaster to exercise overall control of the slot to ensure proper labelling and sourcing of programmes, the maintenance of a quality threshold and legal compliance. We are in discussion with CTN in this regard.

We believe that with the great plurality of choice offered by digital television, the time has come to respond to the express desire of some of Britain's great industries to speak directly to their customers via broadcast television. When British Airways decides on a drastic restructuring of the company, it is a matter of vital interest to millions of passengers. Elsewhere in our schedule, BA's plans will be subjected to normal journalistic scrutiny and interpretation. We would like, in this overnight zone, to permit BA to offer its own account of its plans and policies mediated only by the general law. So long as the audience is made clearly aware of the rules that apply to this zone of our output, we consider that this is a cleaner, more honest approach than to attempt some half-way house on the road to impartial journalism. Companies publish their own annual reports for all to read. We think midnight on digital terrestrial television is an appropriate place to enable them to provide an electronic version.

We are assured of the enthusiasm of major corporations for this initiative. We believe there is a real public interest in its realisation.

***Saturday***

***08.00-14.00 - Saturday Value***

A free-form consumer area, produced in collaboration with the Consumer Association and repeated twice that day. Hosted live studio with inserts. Informal style. Huge potential for data information back-up. Target audience: general audience, families, all consumers.

Including the following elements:

*Price Patrol*

Six best value household goods in shops around the country. Viewers/stores phone in.

*Which? Money Clinic*

Individual advice on savings/insurance/pensions/investments

*Money's Worth*

Bargains or best value for holidays, houses, new cars, sports facilities, leisure activities, kids' kit, special offers, travel, health schemes and mail order goods etc.

*Earning Money*

(see Prime Rate Money )

*Kids' Money*

Financial advice for children - pocket money/clothes etc.

*The Best £100lEver Spent*

Celebrities reveal pet purchases

*The Matchbox Game*

Kids compete for the number of individual items they can buy for £5

*Stakeholders*

An AGM for customers instead of shareholders. Directors explain policy, pricing, future plans. Customers answer back. This is an OB event - in the Brent Cross M&S/the Edinburgh Tesco etc. Quarterly.

***Sunday***

***08.00-14.00 - Go For It***

Co-production with The Knowledge Network and repeated once on the same day.

Management School of the Air. Every business school gives us a module.

Marketing, Managing Change, Team Building, Finance for Managers, Interpersonal Skills etc.

Target audience: MBA training for those who cannot get to LBS or who do not need such specialism.

***14.00-18.00 - The Community Channel***

The Media Trust show for the 21 million people who take part in structured voluntary activity every year and for the millions more who donate money regularly.

The voluntary sector is eager for access to information, good practice, interactive debate and training along with a chance to see this hidden side of British life depicted on broadcast television.

The audience would vary from items attracting general interest - mainstream news and documentary - to narrowcasting in the manner of VSTV on the BBC's Learning Zone.

The National Trust could broadcast to its million volunteers. The Salvation Army to its supporters. The Big Issue to its vast readership. The Channel would encourage volunteering and could be a vital fundraising tool for voluntary organisations. It could broadcast the Voluntary Sector Open Learning programmes which provide structured management and vocational training in partnership with BTEC and key universities, linked to qualifications and multimedia training packages.

The Community Channel would be sponsored via The Media Trust, a registered charity set up in 1994 which brings the British media and the voluntary sector together. The Media Trust would commission and produce the programmes. Preparations are in hand for a lottery bid to support a plan for a London communications centre which would provide the hub of the project.

Data service back-up would contain information on voluntary organisations and volunteer exchanges.

***High Quality***

Our measures of quality will come from the accuracy and usefulness of the information we convey, the freshness of our approach to a traditionally sombre subject, the originality of our programme ideas and our substantial investment in first run programming from a range of providers including independent producers. We can and will acquire good programming about money from around the world but that can only supply a small part of our vision. The idea of The Money Channel can only be realised by original programme makers working afresh to this new brief with its focus on Britain, locally, nationally and in the context of the European Union.

***Programme Supply***

The substantial volume of new production needed for this channel will require contributions from some major suppliers but also from a wide variety of independent companies all over the UK. We have held detailed discussions with an indicative range of suppliers (see Confidential Annex) but do not wish to close commissioning options too far ahead of transmission for the whole of the output. We are confident that the now well-established British independent sector can meet our needs both in terms of quality and quantity. This is a major opportunity for development in the sector both in London and the regions.

***Compliance***

This will be a live 18-hour a day channel often dealing in serious and sensitive information for both programming and data services. Editorial control issues are therefore of great importance. For that reason we have structured the staffing to provide for three very senior editorial figures in overall responsibility with specialist editors reporting directly to them. The non-executive chairman (named in the Confidential Annex) is a well-known British journalist and broadcasting executive of

wide experience both in factual journalism and at the highest levels of management. The channel will be run day to day by an Editor in Chief and two executive producers who will bring proven experience in management, UK broadcasting regulation, television programme making and specialist journalism to the team. Section editors will take responsibility for different day parts ensuring constant editorial supervision by senior staff reporting directly to top management. They will all have a detailed understanding of the various programme codes of the ITC.

***Data Services***

Behind most money programmes, whatever their nature and focus, lies some fairly detailed and sometimes complex information. Traditional broadcasting, which has had to rely on paper back-up or limited teletext pages, has found it difficult to satisfy the audience's need for follow-up or reference data in some form which they can absorb at their own speed.

The marriage of television and data services in digital broadcasting is therefore a particularly fruitful one for The Money Channel.

Every programme and most programme segments will have a data back-up, freely available on the Carousel. The value of this information - from comparative pension terms to biographical details of a CEO in the news - is clear.

We can offer people a huge selection of links to different types of information, the links being specified either by the user himself or by the suggestion of the content editor.

We can "mail" information to selected user groups, for example, those interested in programmes about tax or house purchase could be told about forthcoming programmes.

In the money arena, the quality and control of the editorial operation in the data area is as critical as it is in the programme output. A dedicated Money Channel data team, headed by a specialist Data Executive, will ensure that high standards are maintained and there is full compliance with all relevant regulatory legislation. Links have been established with specialist organisations (see Section A7) to ensure data input of the highest quality.

Data services in the digital era, however, offer more than just a simple substitute for paper. To extract the full value from the new technology, our programme makers will have to think of data possibilities as an integral part of the creative process and we shall encourage experimentation and innovation in this area. *Who's Afraid of the Internet?* for instance, is a television programme which is itself made out of the convergence between television and computer technology, using the familiar "front door" of afternoon television to tempt technophobes into the new age.

***Examples of Data Services***

*Money Morning Briefing*

- Carousel pages, broadcast for duration of programme, incorporating:
  - news headlines for UK, USA, Europe, Asia, Rest of World
  - weather map
  - near real-time figures from world markets (Nikkei, Dow Jones, FTSE, etc.)

*Money Morning Style*

- Carousel pages:
  - restaurant of the day offering a special lunchtime discount to Money Channel viewers
  - Daily Diary highlighting key events
  - forthcoming events

*Money Morning Lobby*

- Carousel pages:
  - business and financial headlines for UK, USA, Europe, Asia, Rest of World
  - today's Parliamentary timetable
  - forthcoming EU Directives
- Grid pages:
  - profiles of key MP's and MEPs

*The Hot Share Show*

- Carousel pages:
  - market movements for previous week
  - share movements and histories for company tips

*Homebase Money*

- Carousel pages:
  - *How To* guide for the day
  - top daily travel bargains
  - travel tip of the day
  - *Rate for the Job* viewer competition, audience participation
- Grid pages:
  - *How To* guides archive

*Local Money*

- Carousel pages:
  - today's dream job
  - local shopping bargains by category (*today's cheapest tin of beans...*)
  - local employment opportunities

## Training

The digital revolution will multiply the demand for qualified people in every area of television. Every broadcaster must play their part in training those people. We welcome the opportunity which our three-multiplex proposal offers to give young people a rounded and systematic training across the range of our programming. We therefore intend to take on three trainees each year to work across The Money Channel, The Knowledge Network and The British Sports Channel alongside the even more extensive training plans set out in Metro TV.

### *Future Plans*

As compression techniques improve, The Money Channel could consider the potential for spinning off the Consumers' Association programme area or the Community Channel.

## The Knowledge Network

This section contains the following:

- Introduction
- The Audience
- Programme Highlights
- High Quality
- Programme Supply
- Compliance
- Data Services
- Training.

***Introduction***

The success of independent television has been to deliver a public service without recourse to public subsidy. DTN will apply the same ethos to its channels, using the new opportunities provided by digital television to address the needs of more specific audiences which cannot be addressed through more conventional analogue television. Whilst education has always been a core component of public service television, broadcasters have historically been constrained by the limitations of the delivery mechanism (a one way system) and the need to address broad audience interests rather than specific audience needs given the limitations of available frequency. DTN will create a new paradigm with The Knowledge Network.

We know there is tremendous interest in education. Education is now top of the political agenda, but it also features in people's personal agendas much more prominently. We know that a desire to help a child's education is the key driver in household decisions to purchase personal computers. Our understanding of the research trials on pay-per-view (e.g. in Cambridge) has indicated that education is one of the key priorities expressed by potential viewers. Our own market research indicated that two-thirds of respondents would be interested in subscribing to an education channel.

For this reason there may be two complementary learning offers. Our own The Knowledge Network proposes sustained partnerships with well known leading UK educational institutions. Learning will build on traditional BBC strengths to encourage both children and adults to take that first step on the educational ladder.

Similarly, The Knowledge Network is specifically designed around our digital capacity, whilst Learning will migrate to this over five years.

In addition, using the interactive capacity of our digital technology, we intend that The Knowledge Network will offer viewers the chance to become accredited learners

acquiring academic, professional and vocational qualifications. The Learning offerings (such as *How To ... In a Week)* will on the other hand target those who are still thinking about specialist interests.

Finally, our proposed links with universities (including the new services being proposed with The Open University) offer a new model of partnership using the mix of programming and text to create a new seamless robe of learning.

We will have detailed discussions with the BBC to ensure that we have complementarity in scheduling so that viewer choice is extended. This is particularly important in areas such as early years' education where our respective schedules give parents the widest range of timing choice.

We thus believe that the inclusion of a learning offer as part of the core offering will considerably enhance take up of the overall service. However, we believe that we can progress beyond the electronic equivalent of the coffee-table book to effective use of the channel by building the channel around offers which meet real life change points. We will thus bring offers to people at the key points in their lives - prospective parents going through the experience of giving birth, children facing their first exams, teenagers trying to make the right choice about which college to go to or which career to enter, adults facing redundancy or the prospect of a new career.

Put simply, the principle behind The Knowledge Network is the same behind the best of independent television, we will do good by doing good. This view is being increasingly shared by others. Michael Ovitz is on record as saying that the new megastars of the twenty first century will not be the superstars of Hollywood but a new breed of international learning champions.

The principle of encouraging learning is central to the DTN proposition. For all the DTN original channels we will have an " L for Learning" facility - the press of a button option which will guide the prospective learner to the next stage of knowledge. Thus, on the British Sports Channel, if the viewer would like to learn how to play the sport being watched, or improve their standard of play, the " L for learning" button will guide the viewer through a "tips on better play" section, to our series on better play and then to information on where to join a local club. Similarly, on The Money Channel, we will promote various training options which may, for example, be targeted at small businesses. With the British Film Institute we hope to develop a learning loop to accompany our film channels.

However, the Knowledge Network is the centrepiece of this strategy. It will be a channel dedicated to encouraging learning. We will bring learning to the learner, where and when he wants it.

DTN will use the full potential of the digital network to create an integrated learning offer. Each element of programming will be coherent in its own right but will also

signpost the interested viewer to further learning opportunities. These steps will include:

- cross reference to other relevant programming
- supporting text information (learning loops)
- potential to enrol in courses
- 'virtual classrooms' in which students can interact with teachers
- use of online services for students to interact with tutors

In addition, wide screen capacity would allow us to offer split screen facilities for text and picture, or graphic presentations to accompany lectures.

For each of these services, we will be working in close collaboration with leading educational and training bodies. The Knowledge Network will become a hub of learning opportunities extending to people's homes, their workplaces and to local learning centres. It will play its part in both widening participation in learning and inspiring demand for learning. In addition, through its commitment to appropriate use of technology, it will play a key part in the modernising of the supply of learning.

***The Audience***

*Is There a Need?*

The Millennium challenge for Britain is to create and sustain a learning revolution that will sustain economic growth. The rapid transformation of the world economy means that, as a society and as individuals, we can no longer rely on education only at the early part of life but must look to life-long learning, whereby we renew our skills and refocus as we go through life. Phrases such as "learning organisation" or "learning society" are now commonplace in economic discussion. The skills revolution is one we ignore at our peril, illustrated by the fact that today in the USA more than half the jobs created are for knowledge workers.

Whilst a number of large scale employers have created exemplary in-house training operations (e.g. Rover) it is clear that to support the majority of UK businesses, predominantly small firms, we need a range of learning opportunities easily accessible to their workforce.

However, the need for more educational support is not merely confined to workplace requirements. Parents are taking an increasing interest in the education of their children. Similarly, the demographic changes which have led to the growing number of active retired people have created the need to support and stimulate people through their third age.

*Is There a Demand?*

Each year, one in four British adults are involved in some form of education and training. In the UK, the majority of enrolments in higher education establishments are now accounted for by "mature" students who have had some break from continuous education after school. In January 1996, the University of Sunderland opened its Learning World at the Metro Centre in Gateshead. Today it has over 2,600 enrolled students and many times that number have completed courses. Thus in less than one year, Sunderland has created an institution bigger than many colleges of education. In other words, if learning is brought to the prospective learner, the response is positive.

The Open University is now Britain's largest university with over 150,000 enrolled undergraduate students and thousands more pursuing other courses. Since its inception only 25 years ago, over 2,500,000 students have been involved with the university. Moreover, new technology is now also transforming the scale of the opportunities. By 2000, it is estimated that European spend on multimedia education and training will have increased to $8.4 billion.

We are also seeing a major change in the way people perceive education and training. We are moving away from the model of the passive consumer of education (it is something they do to you) to one of the active investor. The Knowledge Network is there to strike the investment partnership. As a flag ship provider, we will be a guarantor of quality.

*Is There an Opportunity?*

Britain has a proud record of educational achievement. Our premier academic institutions are second to none. We have led the world in pioneering new forms of vocational training. We have some of the best educational publishers in the world. The elements of the educational jigsaw are there.

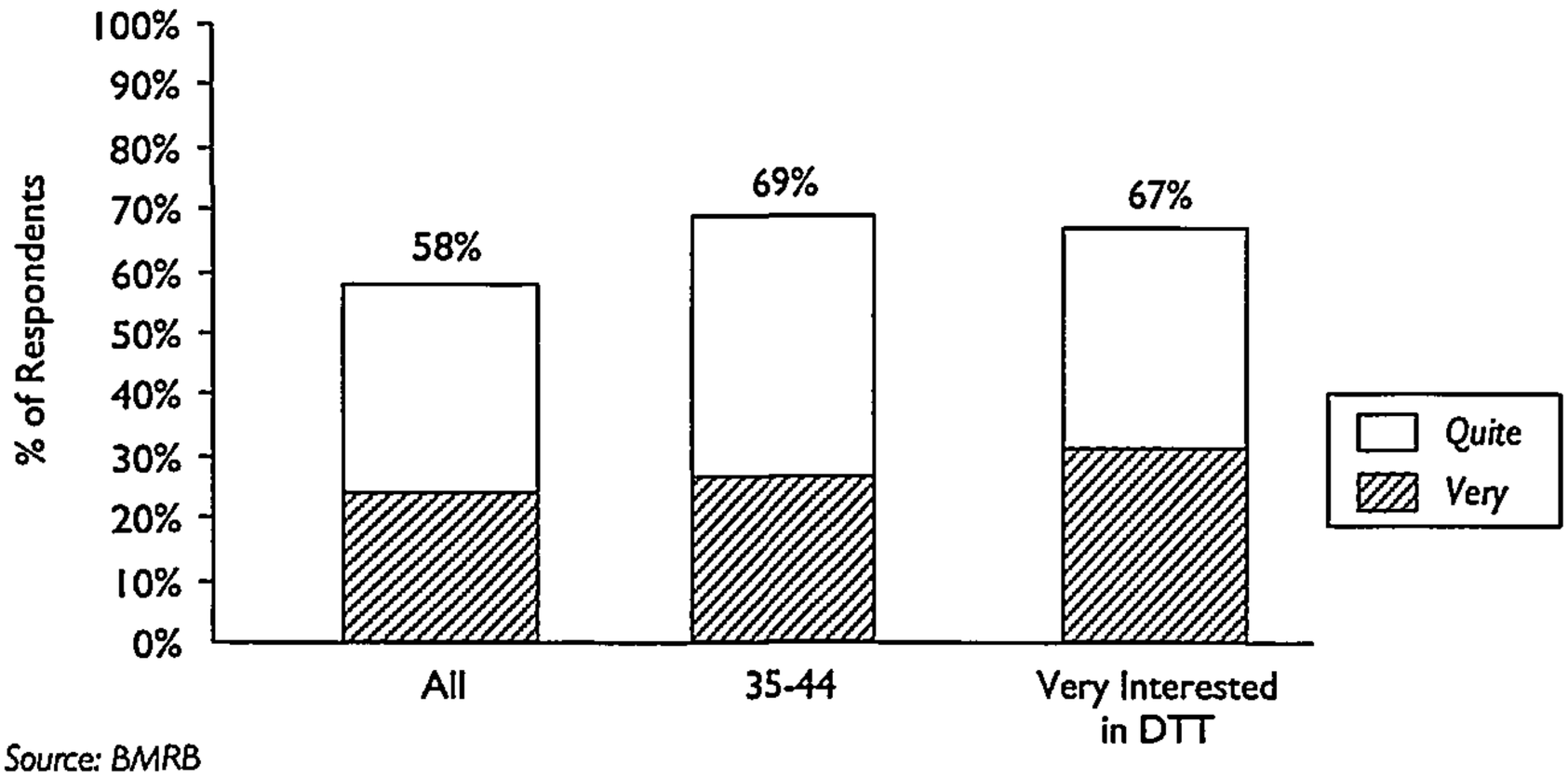
*"The jigsaw pieces are lying around, at least in prototype form and often a good deal more than that. The task now is to put them together. What better Millennium project could there be for this country? If we set to it with a will, before the turn of the century we could surprise ourselves."* Sir Geoffrey Holland, Vice Chancellor, University of Exeter and former Permanent Secretary at the then Department for Education and also at the then Department of Employment

The Knowledge Network will play its part in creating that vision.

*Audience Research*

As already referred to, we have undertaken audience research to test consumer interest in the proposition. When we asked people whether they were interested in a channel about learning, 58% were very or quite interested as illustrated in Exhibit A4.2.

**Exhibit A4.2: Knowledge Network**




*Source: BMRB*

That figure rose considerably in different age groups with 69% in the 35-44. Finally, 67% of those respondents who were very interested in digital terrestrial television were interested in a channel about learning.

CableTel's own research on its new pick and pay channel line-up found that the education offering received the highest response from both current and potential customers. Because the philosophy of the channel involves us targeting key points in peoples lives, we will be able to address promotional information to those audiences. Our target audiences are thus both those with a general interest in learning and also those who may or may not be generally interested but who have a specific need and whose immediate need is such that they will seek out the best available help and information. Whilst in the former there will be a minority of the population, in the latter we reach the total population (albeit for a minority of the time).

***Programme Highlights***

The Knowledge Network will cater to a wide variety of tastes and interests by targeting a number of different audiences through addressing people's different learning requirements at the crucial stages of their life. Whilst the daytime will follow a common weekday schedule structure (e.g. our languages at lunchtime strand) each weekday evening will have a theme - Science Night, Arts Night etc. Some of the strands will feature every week of the year (e.g. our birth and pre-school strands), whilst others will tie in with the education cycle (e.g. our college campaign or our virtual summer camp). The key elements of the schedule are as follows in the text and also as illustrated in Exhibit A4.3.

## Exhibit A4.3: The Knowledge Network - Illustrative Schedule

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| *12.00 am* | Encrypted Training Packages for Specialist Audiences | | | | | "Immersion" Seasons for Languages<br>All Night French | |
| *06.00 am* | Learning To...<br>*(Vocational Training Series x 4)* | Executive Business Club | Understanding Multi-media Technos Guide | RI Lectures Earth Revisited | Vol Sector Open Learning | Birth<br>The First Year | The Early Years |
| *07.00 am* | | | Internet Class Net Surfing | Farming Tomorrow<br>Science For All | The Media | | |
| *08.00 am* | Birth Month 5<br>First Year | Birth Month 6<br>First Year | Birth Month 7<br>First Year | Birth Month 8<br>First Year | Birth Month 9<br>First Year | Skills Training<br>Vocational Training<br>10 x 30 of Different Vocational Training Packages<br>(=10 Vocational Training Slots on Monday) including ELT for Non-English Speakers | Sports Training<br>Rotate<br>20 Sports<br>10 each week (30) |
| *09.00 am* | Pre School Strands | | | | | | |
| *10.00 am* | Distributed University Network | | | | | | |
| *11.00 am* | | | | | | | |
| *12.00 noon* | University of the Third Age | Open University | Open University | WEA<br>The Virtual Course | WEA<br>The Virtual Course | | |
| *1.00 pm* | Languages for Lunch<br>Spanish/French | Languages for Lunch<br>German/Italian | Languages for Lunch<br>Turkish/Chinese | Languages for Lunch<br>Italian/Spanish | Languages for Lunch<br>Chinese/German | Skills Training<br>(Mgmt NVQs 8 x 30)<br>of Different Vocational Training Packages<br>e.g. Accountancy Teaching (with QU) | House & Garden<br>Stronds<br>Great Buildings<br>Redesign your House<br>Choosing Colours<br>Furniture Guide<br>Gardens & Plants<br>House Doctor |
| *2.00 pm* | Learning To...<br>*(Vocational Training x 4)* | Learning To...<br>*(Management Training x 4)* | Learning To...<br>*(Vocational Training x 4)* | Learning To...<br>*(Management Training x 4)* | Our House<br>Michelangelo University of Third Age | | |
| *3.00 pm* | | | | | | | |
| *4.00 pm* | After School Club, After School Strand and Open Technology | | | | | | |
| *5.00 pm* | Math's Revision Line | Science RL | Languages RL | History RL | Geography RL | Writers of the World | Gardening Year<br>Gardening Book |
| *6.00 pm* | Learning Jobs Hotline<br>New Business for Women | Businessman's Guide to the Law<br>Start Your Own Business | Net Surfing<br>Life on the Net | Farming Tomorrow<br>My Greatest Lecture | Voluntary Section<br>Open Learning | | |
| *7.00 pm* | Writers of the World | | | | | Once More<br>Unto the Breach<br>Poets Corner | (Arts Night)<br>Academy<br>Tate Guide |
| | Jobs Night | Management Night | Technology Night | Science Night | Active Citizen | | |
| *8.00 pm* | Learning Jobs Hot Line<br>Health & Safety | Executive Business Club | Technophiles Guide | Royal Institution Lectures | Health for all<br>Senior Citizen | Great Lectures/<br>Royal Institution | Once More Unto the Breach Michelangelo |
| *9.00 pm* | OU Doc | OU Documentary x 2 | Similar Doc | OU Doc | Similar Doc | Window on the World | The Media |
| | Similar Doc | | OU Doc | Similar Doc | OU Doc | | |
| *10.00 pm* | X is Your Business | Marketing for Business<br>Women's Guide to Mgmt | Internet Class | Science Archive<br>Oxford Science | University of the Third Age | Guide to the Planets<br>Great Scientists | Write Right<br>Health For All |
| *11.00 pm*<br>*12.00 pm* | Vocational Training x 2 | Small Business for Women<br>Steps to Better Mgmt | Nite on the Net<br>Understanding Multimedia | Weather Works<br>Guide to the Planets | Write Right<br>Our House | Academy | Poets Corner |

*The Young Child*

Starting with Britain's first ever regular series targeted at the expectant mother we plan to give a daily slot for educational programmes to help support and develop the pre-school child. In addition with the National Extension College we plan to offer a Diploma in Pre-School Practice, a qualification recognised under the Children's Act and targeted at mothers taking an active voluntary role in playgroups.

*After School Club*

From 16.00 to 17.30 every week day we will run an after school club targeted at children coming home from school. In contrast to the mainstream television children's offer of entertainment we will focus on programming where parent and child can watch together and learn together. In so doing, we help parents take an active part in their child's learning and also provide a clear complementary channel offering real choice to viewers. We propose working closely with the Prince's Trust who are establishing a network of a thousand study support centres to help children with their homework. We also plan to offer NICAS (National Inter-Action Awards Scheme). NICAS is a unique RSA accredited award scheme whose hands-on subject areas include media and IT. We also intend to commission Britain's first children's education consumer strand produced by the consumers themselves. We would want to work with Children's Express, the innovative Children's News Agency to offer a regular consumers guide.

*Revision Club*

Each summer term, we will run major revision club seasons aimed at secondary school children taking their exams. We will run special blocks helping children to review their courses and prepare for their exams. In addition, we will also carry programmes targeted at secondary school children in the early evening throughout the year.

*University of the First Age*

Every summer we would plan, in conjunction with the newly established University of the First Age, to run the 'virtual summer camp' giving schoolchildren a window on the world and the opportunity to use the digital network to share their experiences of the world with each other. We will also jointly develop a number of open learning packages for children.

*College Guide*

For UCAS, we would offer a service on the Grid supporting their student placement and clearing house operations. Every August/early September this will be complemented by a two week major campaign to help students going through the clearing system find the right course for them. During the autumn term, our regular

*Rough Guide to Colleges* strand will help students make their choices about which colleges they should choose.

*Languages*

We will have a regular languages strand. We will use the full digital capacity to allow students the opportunity to listen, practice and talk with other prospective students. We will also run special language blocks overnight in the summer season as full immersion sessions for people prior to their holidays (Monday is Spanish, Tuesday is Greek etc.). We will be aiming to work with major language training organisations such as Linguaphone, The Communicaid Group and with Learning Media as a production company. We will target both home-based viewers and also work-based viewers who need more effective business communication skills. We believe that it will be possible to develop data services material which will link this programming with a range of levels within the National Curriculum in schools, and more widely within the National Standards for Language accreditation, defined by the Languages Lead Body.

*Literature*

*Writers of the World* will be a daily strand on the channel. Each day, we will feature a prominent writer and use archive and other material to produce an insight into him or her, then enabling the viewer to delve further if desired. We hope to persuade publishers to allow every viewer to read free the first chapter of novels on our text service whilst then offering viewers the option of buying the book. We will also encourage viewers to join readers' clubs so that they can share their experience of reading with each other.

In America, Oprah's Book Club has become the most popular part of her programme and it has encouraged many thousands of "virgin" readers. This impact has been similar on France 3 with *Un Livre un Jour*. We too will aim to produce a dramatic impact on Britain's reading habits.

We would also wish to mount a "book of the day" strand, trying to encourage viewers to extend their range of reading. Again, the full digital capacity will be used to extend the learning opportunities.

In another strand, we will plan to work with the Royal Shakespeare Company with the members of the company bringing their favourite Shakespearean characters alive (*Once More Unto The Breach*).

*Art*

We will be keen to work with the Tate Gallery to stimulate greater public appreciation of art, from the great masters to modern art. Each new Tate exhibition at any of its venues (London, Liverpool or St Ives) would be featured in a regular strand where we will allow prospective or retrospective study of the exhibition. We also

wish to explore a regular strand on the core exhibition material. In addition, we plan to work with Phaidon Press (Britain's leading art publisher) to construct a guide to the history of art ranging over all periods of Western art.

With the Royal Academy of Arts, we are planning an ongoing series of high quality art documentary films. The series will have two principal strands. This first will be on major exhibitions and the second will feature the lives and works of major contemporary artists. The films will combine the freshness of news print with the authority of an arts magazine to provide longevity of appeal.

*Science*

Sir Harry Kroto has just been awarded the Nobel Prize for Chemistry. He has created the Vega Science Trust to help increase public understanding and discussion of science. With Vega, BUFVC and the British Association for the Advancement of Science, we will aim to create Science Night, a weekly block of programmes designed to increase public awareness and interest. The evening will cover a wide range of science topics, from physics and astronomy, to archive science to our weekly guide to how weather works ( is red sky at night a shepherds delight?). Altogether this will be the largest amount of science exposure ever seen on British television.

*General Adult Education*

We plan to establish partnerships with the WEA and other national educational bodies so that we can cross promote their courses in connection with all our programmes. For example, with WEA, we would have a regular "virtual course" to encourage greater participation. With the National Extension College we would mount various open learning courses on subjects as varied as GCSE English and Mathematics (essential pre-requisite qualifications for adults wanting to re-start careers) to driving for life. We will also make a major commitment to meeting basic skills. A recent study by the Organisation for Economic Co-operation and Development (OECD) reveals that nearly 50% of British 16 to 65 year olds failed to reach level three in a five level scale measuring functional literacy. Similarly, a further international report has placed Britain bottom out of a twelve country study of numeracy levels. With the National Literacy Trust, we would mount regular access courses for adult learners. The National Literacy Trust will be able to contribute to our response to such concerns by providing advice, and access to its national network in order to help facilitate access courses for adult literacy, support for parents, and the encouragement of reading and writing for pleasure across the whole community. All three approaches will help make a substantial contribution to national literacy standards. We will also make this link to other parts of the output. For instance, we know that a key driver for parents literacy is the need to help their children.

*Voluntary Sector Open Learning*

With the Media Trust we plan to develop a regular strand of training targeted at the members of the literally hundreds of thousands of charities and voluntary organisations in the UK. Today, it is estimated that 21 million people take part in voluntary activity each year. Because of the disparate nature of participation, only through the medium of television can all these people be reached (see The Money Channel).

As a second stage, we will develop mechanisms to enable voluntary organisations to have direct interaction with their members and those they are trying to serve 'similar to the Talking Books service of the RNIB. Two such services could be with the Leonard Cheshire Foundation for a major user-empowerment project targeted initially at over 10,000 users of their services and also with Mencap.

*Small Businessman's Guide to the Law*

For some years, the College of Law has been running a subsidiary television company, Legal Network Television, principally to enable lawyers to keep abreast of developments in law. We plan to work with them to take this a stage further, readapting their output for a wider audience. This will be a weekly part of our schedule, produced by the leading legal education body which is now also a quality TV producer with over 200 hours of broadcast output and a capacity to supply at least one hour per week. We are also exploring with the College a wider legal strand aimed at the general public.

*Finance at Your Fingertips*

We intend to work with ATC (a leading accountancy training organisation) to produce a regular finance training package aimed at the non-specialist. This will be particularly targeted at small businesses. In addition, we will also produce a regular taxation strand aimed at those needing to complete taxation self-assessment forms. Again, we will utilise the interactive potential to produce text guides on completing applications. This will be developed in conjunction with the Money Channel. We will also offer a practical book keeping course.

*Sports Training*

Another DTN originated service, the British Sports Channel, will feature many of Britain's popular sports not otherwise securing regular broadcast coverage. This proposal has received enthusiastic support from all the relevant sports bodies. Every Sunday morning, we will have a four hour block dedicated to sports training. We will utilise the material developed by the British Sports Channel to produce training packages designed in conjunction with the relevant national sports body. We will thus play our role in building up Britain's future sporting talent. Again, this will utilise the digital capacity to enhance the learning opportunities and to encourage viewers to evolve from viewers to participants.

*Health for All*

With the Health Education Authority we plan to establish a regular "health for all" strand providing advice and information on health. It will link with the campaigns being launched by the HEA and we intend to establish relationships with health promotion bodies throughout the UK (e.g. *Fit to be Fit* on The British Sports Channel).

*New Technology*

As a new technology network, we will encourage greater understanding of new technology. Research has indicated a strong class and sex bias in use of the Internet and of computers generally. We believe that the accessibility of the television can play a key role in extending the understanding and appreciation of the technology and we will develop a regular technology strand to extend this awareness. We will work with leading IT training bodies to establish user friendly learning programmes. In particular we are planning to work with CREATEC the new arm of the National Film and Television School to produce open learning modules on new technology.

*Cultural Studies*

We would want to work with the British Film Institute to create a multi-media cultural studies strand bringing together key elements of British cultural life during the last century. The project would cover a wide range of cultural activities, print, film, theatre as well as television. In addition, it will use the digital capacity of the system to enrich the learning opportunities for the prospective student.

*Window on the World*

We will aim to establish sustained links with other organisations, utilising television for learning to create a learning exchange - a block of programmes giving everyone a window on the world and an opportunity to gain insight into other cultures. We will want to establish collaborative links with Canadian Learning Television, Open Learning Australia, ACCESS Alberta and the EBU Educational Broadcasting Centre. In addition we would want to work with a consortium of European broadcasters to participate in a major magazine series to bring greater understanding of the Third World. It would be produced by the award winning French producer Patrice Barret and the series would launch a regular strand trying to increase understanding of the wider world.

*House and Garden*

We will not compete with general DIY strands so prevalent elsewhere, but will target specialist audiences aimed at viewers wishing to make specific improvements. Again, we will use the interactive capacity of the network to offer specialist services, such as a room design service. In addition, with RIBA (The Royal Institution of British Architects), we are planning a collaborative project on architecture and design. We also hope to offer the chance to develop your own colouring scheme, literally creating colours on the screen to see if they mix and match.

*House Doctor* will provide practical advice on all activities associated with the house from purchase to renovation and eventual sale. We will also have a regular *Great Buildings of Britain* segment. *The Gardening Year* will be our weekly guide to this week's tasks whilst *Gardening Nation* will illustrate gardening tips with the video camera.

*Third Age*

We would work with the University of the Third Age and with Third Age Challenge to create networks to encourage older people to take more active roles and to take up learning and work. With REACH and RSVP we would plan to offer a clearing house service to find active volunteer roles for older people - the programming will highlight all these opportunities.

*Religious Studies*

The Open Theological College is a collaboration between the major teaching institutions studying theology. With them, we propose offering a BA course in theology. With Cheltenham and Gloucester College of Higher Education we also hope to offer an MA in Religion and Society. Both these offers would use the digital capacity to enhance student/tutor interaction beyond that available through more traditional distance learning systems.

*From Job Centre to Learning Centres*

We will offer the Employment Services and other bodies with a brief to transform Britain's workforce, the opportunity to provide a regular skills training update service. This will run through the basic skill requirements for a wide range of jobs and also the career opportunities associated with those skills and jobs.

On Metro TV, we will run variations of this material targeting the particular skill requirements of that locality. In addition, we will offer text services detailing local job centre vacancy details.

With Manpower, we will aim to develop various PC and IT training packages. We will also develop a customer care training offer.

*Management Training*

With Executive Business Club, we are planning to feature a weekly strand of management training targeted at small businesses (see The Money Channel). The programmes will parallel modules in both the Certificate and the Diploma in Management offered by Nottingham School of Business. Students would be able to use the Carousel and the Grid and the interactive capabilities of the set top box to gain access to course material and interact with tutors. We are also exploring a link with Liverpool Business School and Blackwell Publishers (Oxford). The Business School has its own telematics facilities and a suitable network and technological infrastructure with which it can support advanced technological delivery modes of open learning.

Blackwell is currently supporting preparation of a complete distance learning undergraduate programme for business studies. They are also the exclusive publisher of the most sophisticated technological multimedia in Economics, Marketing and Accounting.

With the University of Plymouth, we plan to participate in RATIO, a major EU funded project delivering business information and training through telematics networks.

*Vocational and Technical Training*

The Knowledge Network will play its part in assisting Britain's skill revolution. With the Open College, we intend to develop EASE, an online learning network, providing a highly interactive resource which uses the channel to provide the centrepiece of a total learning environment linking broadcast and published resources. Amongst the initial courses planned are Principles of Engineering and Manufacturing (linked to HNC and ONC), Health and Safety (leading to S/NVQ), Assessor Training (S/NVQ). With the EBS Trust, we will run regular series targeted at specific vocational training skills.

We will also offer a series of programmes aimed at "want to be " managers, those people already in work who wish to start on the promotion ladder but who need help e.g. with presentation skills. We will also look towards partnerships with sectors of employment with distributed workforces (e.g. health care) helping them to offer supported learning packages.

*The Distributed College Network*

We would aim to establish a partnership comprising Thames Valley University, the University of Sunderland, the University of Wolverhampton and Wirral Metropolitan College to create Britain's first distributed university. Students would be able to enrol for specified modules at any of the four institutions whilst undertaking any of the other modules at their nearest institution. Courseware will integrate television programming and texts, with students being able to use the interactive capabilities of the box to interact with tutors. The Knowledge Network will thus be a learning resource enhancing the choice of courses and learning methods.

Once established in four major centres of population, we would plan to extend the network to give everyone reasonable access to a partner centre. Over time and as technology allows, we believe that this network would sustain a channel in its own right.

Meanwhile, with EBS and the Teaching and Learning Technology Programme (backed by the Higher Education Funding Councils), we hope to share some of the best educational material from universities throughout the UK.

*Open University*

The Open University is Britain's largest university. Its partnership with the BBC is a demonstration of the value of a long term sustained partnership between broadcaster and educator. Our aim is to complement that partnership by developing new ways for the Open University to use the media. In particular, we intend to work with the University to use the particular potential of digital technology to extend the offer available on analogue systems.

We will feature two major Open University broadcast strands. The Open University Documentary will be a weekly slot in peak time. Its aim will be to give an insight into some aspect of knowledge and encourage people to enrol in Open University courses provided through our interactive systems). Secondly, we will have a regular strand for in-service training for teachers. Again, this will allow Open University access to a specialist audience not available through analogue systems. In addition, we will also make available the interactive capacity of the system to allow Open University to use Intranet services and text services to support student learning.

*Proactive Campaigns*

The above are all long running regular series. However, the Knowledge Network will be a living network constantly looking for the educational angle on the issues of the day. Because DTN will be offering an integrated digital service we will be able to cross promote across channels. So viewers in an area of high job losses will be signposted to specific skill training opportunities, whilst the success of a Bristol athlete in one sport may be the trigger for a specialist coaching series designed to capitalise on public interest.

*Note on Programming Mix*

80% of all programmes will have been specifically commissioned for the digital programme service. Of this, 50% will be completely original material and 50% will involve major reversioning whereby our commissioned producers will have trawled all available sources to provide the learning elements which will then be created into coherent formats and programmes. This will include, for instance, searching news libraries to secure source comments, or adapting elements of other series to produce brand new formats. Some of these series will be co-productions with rights holders or with other European partners to produce material with cross country relevance.

Our principle will be to make material available when it is relevant to the viewer. Some series will thus have a high repeat pattern e.g. the two series on birth, *From Conception to Birth* and *The First Year* will have regular repeats throughout the year to enable parents and prospective parents to follow the series in real time. Whilst other campaigns such as the August campaign with UCAS, will be annual.

The test is thus educational relevance. As a working assumption we will assume that the core material will have a maximum four year life. However, all the programming

will be continuously reversioned to ensure relevance and to maximise audience participation.

Other than the 20% of programmes acquired under licence, the balance will be original to the digital programme service.

*Overnight Service*

Between midnight and 06.00 we will seek to establish partnerships with organisations with distributed workforces/members to allow them dedicated training networks. We will also mount occasional overnight "immersion" seasons of programmes (see e.g. languages).

***High Quality***

Our test is fit for purpose. This network will be the first ever learning service on television with the learner or prospective learner solely in mind. On this channel, we will not aim for mass general audiences but will focus exclusively on meeting the specific needs of people at particular stages of their lives. Secondly, every part of the offer will be developed with educational partners. We will thus offer a seamless service. Thirdly, for the first time, viewers will be able to participate in a community of learners, sharing their experiences and learning together. To make this happen we have partnered with the leading educational bodies in this country. We have also linked with the best educational programme makers to create a consistent range of quality learning products.

The following programme strands are expected to secure a wider public appreciation beyond those directly involved in learning:

- *One More Unto the Breach* will bring alive the key characters in Shakespeare at a time when he is enjoying a period of heightened popularity
- *A Journey Through the World of Plants* will tap into the public's enthusiasm for exploring the wonders of the world of botany
- *Poet's Corner* will bring to life every famous poet buried in Westminster Abbey, capitalising on the success of a new generation of poets and various innovative publishing initiatives in bringing verse to the attention of a wider audience
- Our series of *Personal Lectures* will recreate the excitement of A. J. P. Taylor's lectures with a series of unique personal lectures on a wide range of subjects appearing throughout the schedule
- *The Best of the Open University* will re-version programming from this unique library of material to create a fascinating series of stand alone documentaries
- *Academy* is our proposed joint series with the Royal Academy of Arts.

***Programme Supply***

We will establish long term relationships with a limited range of key suppliers. In choosing those suppliers we have chosen production companies with a reputation for excellence in educational production and with a commitment to using the potential of new technology to enhance learning opportunities. In addition, we will work with specialist suppliers for relevant strands. Sustaining our principle of always working in partnerships, DTN itself will not be a primary producer. Rather, we will act as a commissioner and then as a reversioning house, refreshing material with significant pedagogic life which needs referencing for contextual and other impact.

Our proposed key suppliers are detailed in the Confidential Annex and by working with a limited number of nominated suppliers, we will establish creative conveyor belts of educational excellence, each with dedicated staff teams.

***Compliance***

The responsibility for editorial control and compliance across both broadcast and data services will ultimately rest with the Chief Executive/Editor-in-Chief of the Channel (named in the Confidential Annex). He is well versed in the requirements of the ITC and will ensure that all executives will have a detailed understanding of the various programme codes of the ITC. He has been prominently involved in education and social action broadcasting for over twenty years and is well known in both the broadcasting and educational worlds. His most recent work has specifically focused on the potential for new technology to transform the opportunities for new learning businesses.

***Data Services***

Data services are not an adjunct of the channel but an integral part of the whole offer. All the learning offers will involve both broadcasting and data services. Two senior members of the core team will be data executives, under whom will be data programming staff. This will enable us to work with all our providers to develop a coherent style and format to our data services, making them accessible to audiences who do not necessarily surf the net before making breakfast. We see as a key distinguishing characteristic of the service that we will particularly target those who feel uncomfortable with some of the technological developments. In particular, we see our services extending to find ways to provide access for women and for older viewers to start using the system, along with *Who's Afraid of the Internet* (see The Money Channel).

***Training***

As a channel committed to the principle of learning we will make our own commitment to it in our staffing. We will have three trainees as part of the core staff - shared with our other original channels. Their training programme will be worked out with one of the major industry training organisations to ensure a full rounded

training over the course. We will encourage all our core providers to commit to training schemes. In addition, new media training is one of the offerings which we will be making to the wider public. We believe that the culture industries are key to the future of Britain and the channel will play a key part in offering open learning opportunities, allowing individuals to upgrade their skills to take account of new technology.

## The British Sports Channel

This section contains the following:

- Introduction
- The Audience
- Programme Highlights
- High Quality
- Compliance
- Data Services
- Training.

### *Introduction*

The introduction of digital television is going to lead to a dramatic change in the way the medium of television is exploited. Until now, viewers have had the choice of a few channels to watch and the expertise of the channel scheduler has been of paramount importance in ensuring that a particular channel carried a skilfully selected range of programmes to keep as wide a cross-section of the general public entertained. With the introduction of a vast number of new channels through the digital television revolution, this role will be eliminated. The viewer will have a mass of programmes available at any one time and, through each viewer's personal use of the EPG, they will become their own programmer. Broadcasters are now going to have to address the greatest challenge to their approach to programming since the inception of television. There are two clear choices.

The first is for broadcasters to continue to operate within the "old" approach to broadcasting and simply "cut their cloth" to fit the smaller viewing audiences that will emerge, with an inevitable decline in programming standards.

The second is to fundamentally change the rationale of the broadcaster's approach by maintaining high standards of programme quality with the intention of securing committed small viewing audiences for each programming strand. This new approach will be financially viable as highly focused viewing audiences will be considerably more valuable (generating, as they do, advertising and sponsorship revenue) than an increasingly diverse and disparate audience that lower quality programming will attract.

### *The Audience*

It is with this dramatic change in viewing habits in mind, that the concept of The British Sports Channel has been developed. Our concept covers both aspects of anticipated viewing habits by mixing focused programming of the highest quality with an ongoing live studio format including news and interviews which will be entertaining to any viewer interested in sport.

The British Sports Channel stands up to the challenge of sport on television which has changed dramatically over the past 5 years:

- The BBC is no longer the brand leader for sport on television
- Premier League soccer has now become the prime driver of subscription television to the benefit of top football clubs
- Channel 3 ceased to be a regular sports contributor since the demise of World of Sport in 1985
- Channel 4 has promoted a few minority or new sports like American Football and cycling only to see its mantle taken on by Sky Sports. It has recently acquired the rights to some British athletics but regular coverage is still missing
- Channel 5 proposes regular sport for only one hour on Saturdays and has acquired sport throughout the night. It has however purchased one or two key events so far
- Sky Sport, now operating on three channels is unquestionably the leading sports channel on television. 84% of satellite homes pay extra for Sky Sports. Of the Sky Sports 1 adult audience, 29% is aged 16 to 34. The quality and depth of coverage of the top events, like soccer, is first class.

So what is missing? The simple answer is that the viewer is missing range of options:

- favourite sports
- "second division" sport
- sports participation
- sports news
- minority sports.

The British Sports Channel will help fill this vacuum by bringing:

- live British sport to the viewers, commissioned by The British Sports Channel and produced by Britain's best and brightest independent sports producers
- live international sport, tailor-made for the British viewer, through our unique relationship with Eurosport
- sports news to the public when it happens, live, 24 hours per day
- the opportunity for so-called minority and second division sports, to reach a small but dedicated audience of supporters
- a huge range of new, different and unusual sports to the public in packaged watchable formats

Above all we will be bringing sport home to British television viewers throughout the country.

*Audience Research*

At present the major driver for BSkyB is sport. As shown above, a disproportionately large percentage of the Sky Sports audience is made up of 16 to 34 year olds. It was an interesting finding from DTN's own research that a majority of respondents (53%) who already had Sky Sports were very/quite interested in our "Best of British" sports format. Given that 84% of BSkyB subscribers purchase Sky Sports, the conclusion that one can draw from our own research and that generally available, is that The British Sports Channel will be an equally popular alternative to Sky Sports and a major driver in subscriber uptake, securing DTN's position in the market place.

***Programme Highlights***

*Rights Acquisition*

The world of major sporting rights is complex and changes frequently. The escalation in the value of major sporting rights has been driven by the need for terrestrial broadcasters to focus on the most attractive events in order to secure the large audiences they require. However, with the change in viewing habits anticipated in the digital era, as sports rights are purchased in the future, they will be in the context of an increasingly specific audience. The British Sports Channel is committed to developing a wide range of dedicated minor sports audiences. These rights are available as is a substantial amount of other live and recorded material. As with all our programming, we plan to enhance the quality this material with our own informed and expert commentators both from the event and in the studio. However, no discussion about sporting rights would be complete without addressing football.

*Football*

It is clear that Premier League football has been the major "driver" in BSkyB's success. It is our belief that whilst Premier League football is the main "driver" in subscriber take-up there are large numbers of the viewing public who will want to subscribe to a service that covers their particular sporting interest, subject to the coverage being of good quality and of the best events in that particular sport. In other words, we plan to carry a large number of sports with each one acting as a "mini-driver" in facilitating subscriber take-up for The British Sports Channel. We do not, therefore, believe that The British Sports Channel has to carry football to succeed. We will purchase prime rights with a view to these being a "driver" for The British Sports Channel when they become available. In the intervening time, we will pursue the purchase of rights from clubs directly for competitions such as the UEFA cup as part of our overall programming service. The purchase of these rights will be made within the context of our overall programming strategy, this being that The British Sports Channel's

programming should be complementary to, rather than competing against, that carried by analogue terrestrial broadcasters.

We are, however, very interested in the rights (when they become available) for the other British football leagues, as we would be keen to carry a number of these games. Our premise is that the disenfranchised local football supporter should be able to watch his home team when playing away. There are more than 500,000 regular supporters of football teams in the 1st, 2nd and 3rd divisions. Whilst these games would not command the large audiences required by today's broadcaster, they would be financially viable on DTN given our capability to broadcast to small specific areas of the country (thus protecting home gates). In essence we believe these rights would be of great value to us as they are prime examples of the type of "mini-driver" we wish to acquire.

*The Format*

The British Sports Channel will move quickly to ensure we broadcast the majority of our live events in widescreen format (see Section A11). It will have a distinctive look that separates it from television broadcasters operating today. The intention is to create the sports newspaper of television coupled with the editorial integrity and accurate reporting of Radio 5.

The British Sports studio will be live 24 hours per day. Every event, news package, highlight tape and news feed will pass through the studio for comment throughout the broadcast day. Sports news headlines will be carried on the hour with updates every half hour and in special 30 second slots when relevant.

Graphics will be an essential part of The British Sports Channel's look. The style will be state-of-the-art and distinctive. Presenters and commentators will be expert and youthful.

The attached schedule (Exhibit A4.4) details a typical week in the life of The British Sports Channel - but it is only a snap shot in time. Rights change hands every year but the following is achievable through our sources (see Section A14 and Confidential Annex) and our partnership with Eurosport. There are five types of sporting presentation:

## Exhibit A4.4: The British Sports Channel - Illustrative Schedule (Sports news headlines every hour)

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| 07.00 am | News<br>News Update | News<br>News Update | News<br>News Update | News<br>News Update | News<br>News Update | Reruns | Reruns |
| 08.00 am | News Update | News Update | News Update | News Update | News Update | | |
| | Racing Preview | Racing Preview | Racing Preview | Racing Preview | Racing Preview | Racing Preview | Sports Politics |
| 09.00 am | Newspapers | Newspapers | Newspapers | Newspapers | Newspapers | Newspapers | Newspapers |
| | Alpine Skiing | Alpine Skiing | UEFA Cup Highlights | Speedway Highlights | Alpine Skiing | Sports Exchange | Sports Exchange |
| 10.00 am | Motor Sport | Badminton | Fit to be Fit | Fit to be Fit | Cup Winners Cup Goals | | |
| 11.00 am | Super Seven Horseracing | Super Seven Horseracing | Super Seven Horseracing | Super Seven Horseracing | Super Seven Horseracing | Super Seven Horseracing | Alpine Skiing Live |
| 12.00 noon | | | | | | | |
| 1.00 pm | | | | | | | Karate |
| 2.00 pm | | | | | | | |
| 3.00 pm | Tennis | Tennis | Tennis | Tennis | Tennis | Basketball | New York Marathon |
| 4.00 pm | | | | | | Results Service | |
| 5.00 pm | Euro Goals | UEFA Cup Preview | Champions League Preview | Cup Winners Cup Preview | Boxing Highlights | Eurogoals | Goals of the Week |
| 6.00 pm | News | News | News | News | News | News | News |
| | Tennis | Swimming Highlights | Tennis | Speedway Highlights | Soccer Preview | Tennis | Tennis |
| 7.00 pm | | UEFA Cup Preview | | Tennis | Racing Preview | | |
| | News/Interviews | UEFA Cup Live | | | News | | |
| 8.00 pm | Badminton | | Speedway | Boxing | Netball | | |
| 9.00 pm | | | | | | | Super Bikes |
| 10.00 pm | | Tennis | Tennis | | Tennis | | Sports Politics |
| | News | News | News | News | News | News | News |
| 11.00 pm | News Update | UEFA Cup Highlights | Champion League Highlights | Tennis Update | Soccer Preview | After Dark Sports | New York Marathon |
| | Euro Goals | | | Euro Goals | Racing Preview | | |
| 12.00 pm to 07.00 am | Reruns | Tennis | Reruns | Reruns | Tennis | | Tennis |
| | | Reruns | | | Reruns | Reruns | Reruns |

*Live - Commissioned by The British Sports Channel*

Our main strand of broadcasting will be live coverage of British sport. With the advent of the digital era, audiences will be smaller but highly specific in their viewing habits. At the moment there are a vast number of disenfranchised sporting viewers. There are two primary reasons for this. First, exclusive rights agreements which are vigorously enforced by the broadcaster e.g. BSkyB's exclusive rights over the Premier League football, and secondly, the limited capacity on other terrestrial analogue networks to show anything other than major sporting events. However, with the introduction of digital television there will be scope to cover a large number of sports that have previously only been covered, at best, spasmodically. We anticipate covering two British sports events per week with an average of seven hours live transmission per event. To allow the viewers flexibility in scheduling their viewing we will repeat this coverage at least once.

We intend to facilitate this coverage by forming close working relationships with sports associations who are interested in developing and exposing their sport on television. The following sports have confirmed their willingness to participate and the details are contained in the Confidential Annex.

- angling
- archery
- snooker
- bobsleigh
- crown green bowling
- bowling
- cycling
- darts
- sport for the disabled
- gymnastics
- horse trials
- horseracing
- ice skating
- lacrosse
- motor bikes
- pentathlon
- sand and land yachting
- skiing
- speedway
- squash
- swimming
- tennis
- table tennis
- triathlon
- windsurfing
- amateur wrestling
- yoga

[redacted]

[redacted]

*Live - Purchased*

We plan to purchase live sporting footage from around the world when there is British interest. We have explored the availability of rights in this area and we are satisfied that there is ample live material available. To add further to the quality of the live material we can offer, we intend to work with Eurosport to gain access to their live and recorded material as well. It is our belief that quality coverage of sport is dependent, in part, on expert and entertaining commentary. We will, therefore, whenever possible, send our own commentators to events we plan to carry (including those covered by Eurosport) to ensure continuity of coverage for each sports category. To allow the viewers flexibility in scheduling their viewing, we will repeat this coverage at least once.

*Sports News*

The British Sports Channel will run for 24 hours per day, linked live from a dedicated studio, in the style of a busy sports desk. We plan to have a number of expert presenters and will be flexible in our scheduling when covering sports events to maximise audience appeal i.e. we will stay with a tennis match of sufficient interest until it has reached its conclusion or, on another occasion, we may move between events on a regular basis to ensure maximum interest and coverage for the viewer.

One element that will remain a common theme during the sporting day on The British Sports Channel will be an hourly update on all sports news sourced from Eurosport and others (see Confidential Annex). This will be backed-up by edited news pages on our data services. We will also use the flexibility of the live studio and its presenters to bring any major news story to the viewer immediately.

*Recorded/Packaged Programmes*

We plan to purchase a number of recorded items. These will breakdown into the following types:

- packaged by The British Sports Channel - an example of this would be a programme entitled *Euro Goals* where we will select and edit highlights of the goals that week of special interest to the British viewer
- packaged ready for transmission - we will purchase programmes packaged by Britain's leading independent sports producers
- technical/coaching programmes - these will be supplied by participating British sports and will be an integral part of their overall transmission package. For instance, we have discussed with the Lawn Tennis Association a number of coaching programmes to be made in association with The British Sports

Channel. These will be promoted by The British Sports Channel's team when tennis is being broadcast and in addition will have detailed back-up pages and information on our data services. Additionally, we plan to have an exchange of information and programming, where suitable, with our sister channel, The Knowledge Network. These two services will cross promote each other and share information via the relevant data services pages

- sponsored - sponsored programming is an evolving market. In our financial projections we have, by necessity, been cautious as to how much of this type of programming we will obtain. However, we believe that within the guidelines laid down by the ITC, the sponsored sports programme market has a number of viable opportunities ranging from sponsored live programming to sponsored packaged highlights. We further believe that there will be opportunities in the coaching, technical and leadership content of our proposed sports coverage which will help provide quality programming to both The British Sports Channel and The Knowledge Network as well as financially supporting the detailed data services pages that these types of programmes will generate

- highlights from Digital Box Office - DTN has ambitious plans in the area of pay-per-view. However, as part of our policy to enfranchise the disenfranchised sports viewer, we are pledging to show a recording, or highlights thereof, of any sporting pay-per-view product carried on the DTN network. It is our belief that whilst the economics of sport dictate that pay-per-view will be required to secure the rights to some sporting events, it is fundamentally wrong to exclude the sporting viewer from watching a recording after the event.

*Special Live Programming*

In addition to the live British events, the live bought-in events and the recordings from DTN's live pay-per-view events, we have also budgeted to purchase extra sports rights. These will be rights to events purchased specifically for The British Sports Channel which do not warrant a pay-per-view slot but are more expensive than our standard hourly rate for live purchased product or for sporting events that we believe are of such national interest that they should be available live to the whole nation. This policy reflects the basic rationale of The British Sports Channel which is that, in the long run, it is neither commercially sound nor in the interests of British sport as a whole, to dis-enfranchise the sporting viewer at every opportunity as part of a marketing strategy to increase subscribers.

*Other Programme Formats*

In addition to our high quality dedicated sports programmes, we also plan to carry a number of entertaining new programme formats, some examples being:

*What the Papers Say*

On a daily basis a review of the newspapers with a sporting personality in the studio. This discussion will not be limited to sports news but will attempt to expose the relationship of sport in the changing nature of Britain today.

*Sports Exchange*

On a Saturday and Sunday, this show will be broadcast live from our studio. It will include a wide variety of content chosen, in conjunction with our dedicated production team, by a selection of youth editors for the week. Items might include special reports from the youth news team of the week, their own interviews with sporting stars, a football fanzine type quiz, interviews with pop stars and other personalities including politicians about their interest in sport. Other features will include a sports equipment exchange and an interactive vote for sports personality of the week.

*Fit to be Fit*

A regular health hour live from the studio concentrating on exercise, diet and lifestyle management.

*Sports Quiz Shows*

We will commission quiz programmes, from independent production companies, to find the top sports expert in the country, both in the studio and interactively.

*Conclusion*

We believe that in structuring our channel and its content in this way we will serve the British sporting public effectively. At present, there is no service similar to that proposed by us. Given the enormous and growing interest in sport in the UK today, a 24 hour service linked live from a dedicated studio with excellent quality of programming and accompanied by an efficient and regular sports news service will succeed. Given our partnership approach to developing British sport with the UK Sports Council and sporting associations, we believe that our success as a channel will be inextricably linked to the increased success of British sport in the international arena accompanied by an ever growing number of people playing or belonging to the sporting community.

***High Quality***

It is a fundamental requisite in our pursuit of viewers that all our programming is produced to a high standard. This will be achieved through our relationship with

Eurosport, commissioning live coverage of events from a selection of the top independent producers in the UK, the availability of our dedicated live studio 24 hours per day and our in-house production facilities.

The British Sports Channel will stand up to the challenge of taking television sports into the digital era. Created by sports fans for sports fans, it will use a combination of its dedicated live studio and in-house production facilities and highly focused programming of the highest quality to entertain any viewer interested in sport. In particular, it will focus on expanding the range of sports coverage on television, bringing a huge range of unique and unusual sports to the public, many of them for the first time, as well as providing an opportunity for so-called minority sports to communicate in an innovative way with their small but dedicated audiences of supporters. As such, the key measure of the British Sports Channel's commitment to quality will be the extent to which it succeeds in proving that there is more to sports than just watching Premier League football.

***Compliance***

The non-executive chairman (named in the Confidential Annex) is a well known TV executive of wide experience in this area. The channel will be run on a day to day basis by a Chief Executive and Director of Programmes who will have ultimate responsibility for compliance. All executives will be made familiar with the various ITC codes of practice.

***Data Services***

There will be a 24 hour sports news service available on the Carousel. This will give brief news stories along with a results service (see Section A7). We plan to develop in conjunction with the sports associations, an extensive network of information pages on both the Carousel and the Grid. A number of these sporting associations have expressed an interest in this area and have put forward their ideas for utilising this facility (see Section B). In the main, these range from results services and future schedules of events to detailed coaching and technical support, including diagrams analysing "plays" that have just been seen on the Channel. In time we hope a number will use this service interactively as part of their membership support service.

***Training***

We see training of a variety of people in the many skills required in the new broadcasting environment as an exciting part of our operations. There will be three general trainees employed across all three of our original channels working with our dedicated sports news and production teams and we will give work experience to the young people involved in our live Saturday and Sunday *Sports Exchange*. We also plan to operate detailed training programmes for our presenters and commentators.

## Metro TV

The unique technology of digital terrestrial television opens up a huge vista of opportunities for local television. DTN's plans for Metro TV are discussed in Section A5.

# The Best of British

## Introduction

The BBC is using the technical breakthrough of digital to offer an array of the best of British television. On its own multiplex, digital versions of BBC1 and BBC2 will be presented along with an exciting new 24 hour news service backed by the huge national and international resources of the BBC.

But the BBC has much more to offer than the services on their own Multiplex. In the event that all three multiplex licences are granted to DTN, we are confident of being able to work with the BBC to bring our Best of British to DTN viewers with the eight new services announced by the BBC.

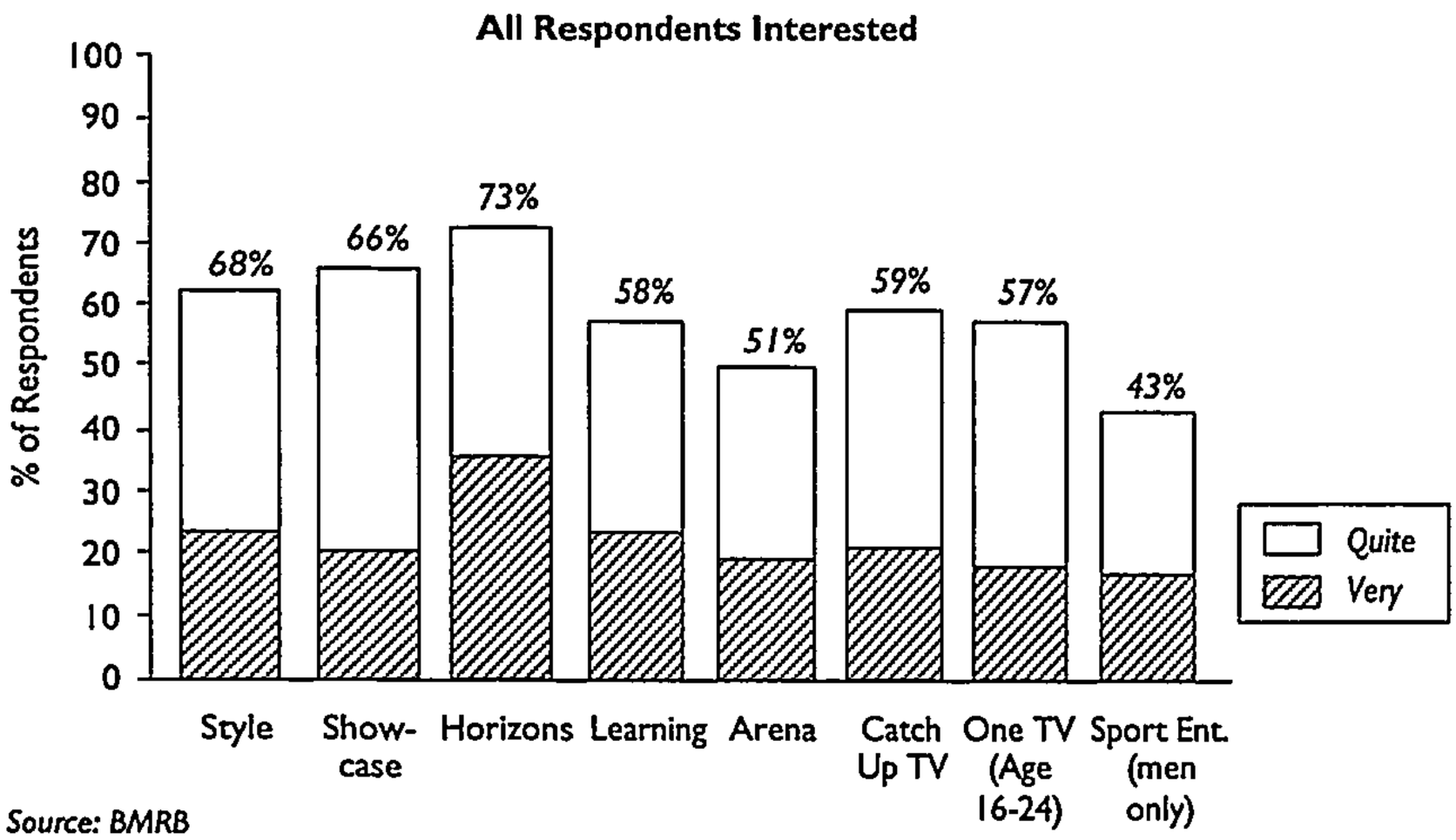
The type and style of these channels, as outlined by the BBC, is described in an overview which includes the target audience. The service availability is contained in the Confidential Annex. This section describes the following:

- Style
- Showcase
- Horizons
- Learning
- Arena
- One TV
- Sports Entertainment Network
- Catch Up TV

## Audience Research

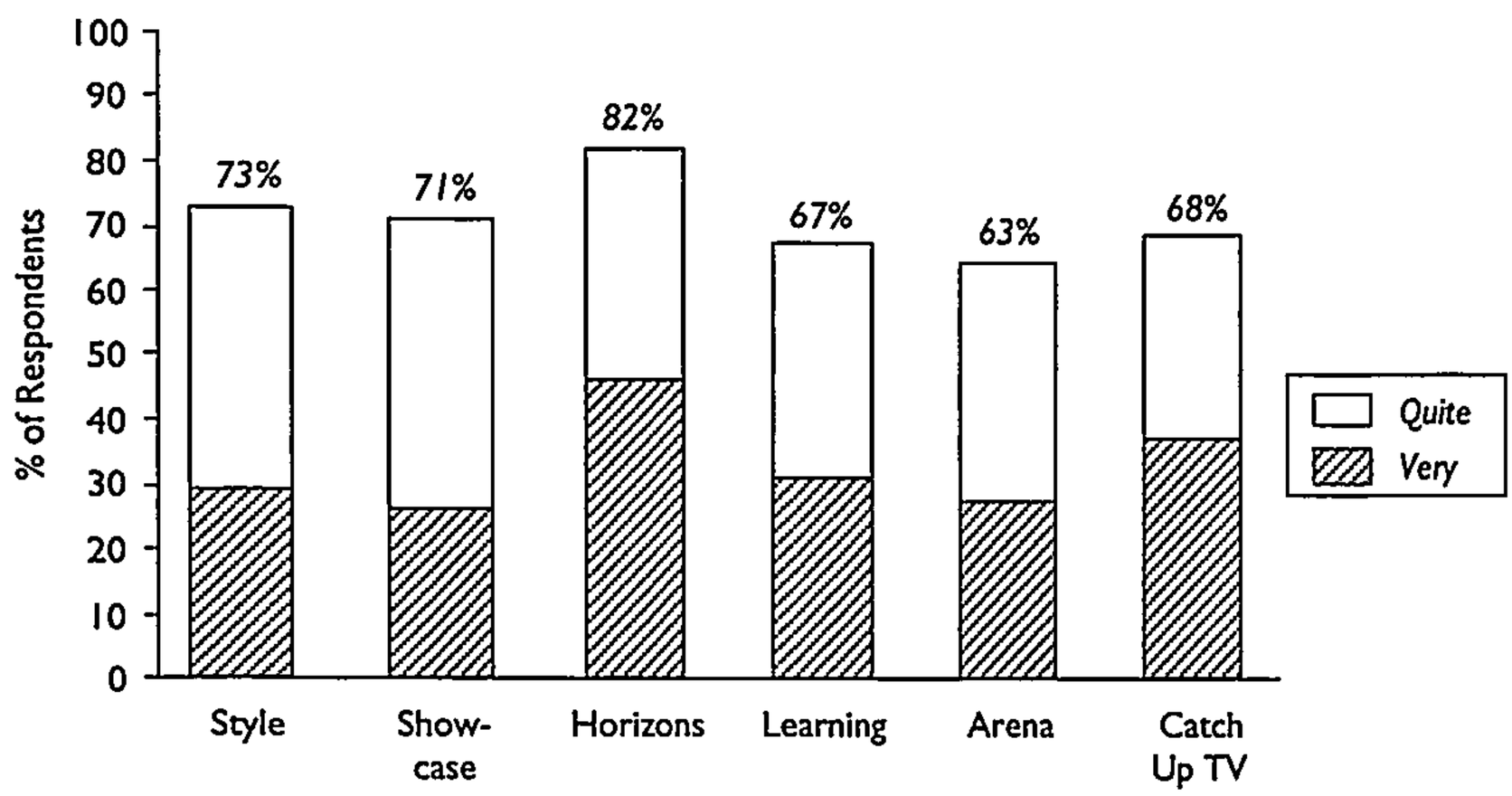
Our market research on the above channels is illustrated in Exhibit A4.5. Across all programme concepts, it shows a clear interest in the proposition which rose considerably amongst those very interested in digital terrestrial television.

**Exhibit A4.5: Potential BBC Channels**




*Source: BMRB*

**Respondents who are Very Interested in Digital Terrestrial Television**




*Source: BMRB*

# Style

## Overview

Style will offer intelligent, useful, entertaining and accessible programming to enhance viewers' lives. From antiques to aspidistras, cooking to collecting, gardening and gastronomy, what to wear and what to drive, BBC experts have been style guides to the nation for decades. [redacted] will come together for the first time on one channel.

- Style will be aspirational television, reaching out to a key audience demographic in multi-channel homes.
- First-time home owners, empty nesters and viewers in their thirties with disposable income will be drawn to the channel.
- It will carry exclusively British programming, popular and trusted BBC brands hosted by trusted and knowledgeable presenters.
- Style will deliver BBC editorial quality and production values to an audience who value leisure and lifestyle.

Style will appeal to people who care about where and how they live, active and aspirational viewers who like the good things in life. It would bring a unique package to DTN audiences, top BBC presenters doing what they do best, helping the audience to deliver their dreams. It will bring the editorial quality and production values of popular and trusted BBC consumer programmes like Holiday and Top Gear - programmes for viewers who love life and intend to live it to the full.

Style will stand out in the market because of its exclusively British product, providing fresh and first rate leisure and lifestyle programming, both archive and original production, hosted by famous BBC faces. Designed to promote accessibility for viewers, Style's schedule will be structured around demographic availability. Regular weekend stunts will be used to promote new series and will also offer specific advertising opportunities, with feature ideas including DIY days at Easter, Christmas Cookery and a Holiday Season. Competitions will be organised around programme zones offering direct interaction with viewers.

# Showcase

## Overview

Showcase will celebrate the best of BBC drama and comedy.

It will feature the highest quality and most popular programming from both BBC1 and BBC2. Packed with top TV stars and hit shows, Showcase is being designed to satisfy audience demands for a channel offering the best of British entertainment. This demand is supported by DTN's own audience research.

- Showcase means quality - the very best of BBC entertainment on a channel packed with viewers' favourite shows.
- Top contemporary shows, like *Ballykissangel* and *Absolutely Fabulous*, plus classics from the past.
- Featuring TV's brightest stars, [redacted].
- Celebrity introductions, special seasons and 'event' screenings will be a Showcase hallmark.
- Like the best contemporary drama, Showcase will be edgy and challenging.

Showcase will stand for excellence in entertainment, a channel packed with top performing British programmes. From classic to contemporary, drama to comedy. Showcase will delight viewers with consistently high quality, British programming, presented in an innovative and refreshing format. Showcase will invent its own unique strands from the BBC hall of fame, in addition to producing feature length versions of timeless favourites. 'BBC Classic' will be the best of the period costume drama that the BBC is so famous for. 'BBC Mystery' is where Hetty Wainthropp will meet George Smiley - an irresistible nightly bill of crime stories and thrillers. The 'Comedy Zone' will bring the outrageous humour of BBC2's Friday night line-up to the screen every night of the week. 'On the Edge' will have the best of adult drama - dangerous, sometimes disturbing but always enthralling, from the *Buddha of Suburbia* to *Cardiac Arrest*, *This Life* and *A Very Peculiar Practice*.

The Showcase schedule will regularly feature special events and stunts. A *Pride and Prejudice* weekend will run previous versions of Jane Austen's classic back-to-back with the 1990s production. The Redoubtable Routledge season will bring Hyacinth Bucket face-to-face with Alan Bennett's *A Woman of No Importance*; and comedy stars of the day will choose the ten greatest sitcoms ever written.

# Horizons

## Overview

Horizons is a brand new service from the BBC, the world's leading producer of documentary programming: nature, history, science and technology.

Horizons will bring the unparalleled richness of the BBC's factual archive in a concentrated and accessible form. It is a blue chip concept with an impeccable pedigree and broad appeal.

- Horizons, a uniquely British factual channel, will play an important role in attracting BBC heartland viewers.
- Parents will choose Horizons to inspire and educate their children.
- Women will be drawn to the richness of the documentaries.
- Men will be attracted by the adventure, technology and science.
- Horizons will provide an exclusive channel magazine.

The BBC is a world leader in factual programmes, whose quality and consistency is internationally respected and renowned. Horizons will offer classic natural history, unrivaled science documentaries and powerful human-interest stories. This will be armchair travel at its best, world-beating history and biographies of the famous and infamous: plus natural history spectaculars, epic series and outside broadcast specials.

Understand who we are, where we've come from and what the future holds with Horizons. [redacted]

Horizons will uncover beautiful and astonishing images of life on Earth, reach the cutting edge of science and technology and explore the past through vivid history and biography.

Viewers will be invited to journey with Horizons to the wildest places on the planet, where they will observe the incredible variety of human experience captured by the BBC's documentary makers.

Horizons will be unique in the UK in its breadth of subject matter and consistent quality of programming. It will offer viewers an amazing window on the world, accompanied by well-known presenters and authoritative reporters who will provide exclusive introductions and unparalleled access to the BBC's factual archive.

# Learning

## Overview

Viewers will get more out of their TV's with Learning, a dedicated educational channel for all ages and sectors of the community, that is entirely complementary to the Knowledge Network. BBC experts will offer a unique package of programmes in a new approach to learning which will be enjoyable and useful.

- Strong community elements including 'cable in the classroom'.
- Viewer registration' scheme will increase subscriber loyalty and turn viewers into users.
- Strong, simple programme strands will help viewers fulfil their learning potential.
- Learning will offer new skills to everyone, every viewer will have something to gain from exploring the channel.
- Innovative and creative use of the whole BBC library for educational purposes.

Learning will have a broad appeal reflecting important consumer trends in learning - parents taking increased responsibility for their children's education, adult concerns about future employability and a growth in home-based personal development.

Learning will help children to learn and parents to teach. The channel will form strong partnerships with major national and regional learning institutions, working closely with schools to develop 'cable in the classroom'. The Learning schedule will feature strong programme strips which will maximise viewer involvement in the channel. Parenting, early learning and programmes to support school education will be major zones. There will be a series of comprehensive guides to everything from the arts and crafts to music, languages and personal finance. Lifeskills covered will include IT, business and management, history and the modern world. Programming will be linked by appropriate and charismatic presenters in the style of the successful night-time compilations produced for BBC2's The Learning Zone.

# Arena

## Overview

Arena will present music, theatre and the arts, when the viewer is free to watch. Its upmarket, discriminating audience, will treat it like a club, bringing them the best in British culture: sometimes surprising, but always pleasurable.

- Targeted at 30-plus ABC1's with disposable income who seek to be informed, involved and entertained
- Unrivaled access to the greatest archive of arts programmes in the world.
- BBC faces and prestigious programming will attract an audience not currently served on TV.
- Music - from the *BBC Proms* to *Later with Jools*.
- Theatre - BBC productions of classic stage plays with all star casts.
- The arts - high quality documentaries like *The House*.
- The critics - every day, the channel's team give viewers their verdict on the latest books, plays, CDs and films.

Aimed at key, affluent subscribers whose diverse cultural interests are not currently satisfied within the multi channel universe, Arena will cast an eye across the world of culture with programming that offers quality, pleasure and beauty. The BBC's archive of arts programming is one of the greatest in the world and represents buried treasure for the cable and satellite market. Every night, seven days a week, Arena will provide classic BBC concerts, plays, interviews and profiles, plus special event screenings of musical theatre, opera and ballet. The daily *Arena Review* will provide an authoritative, opinionated guide for cable and satellite viewers to what's new and worth catching in books, music, theatre and the arts, binding the channel together and giving it a strong personality. There will be great musical performances of all kinds - rock, jazz, country, chamber music and vocal performance by some of the finest musical talents.

Viewers will be treated to special seasons of programming built around great stars of stage, screen, and music. Much more than a channel, Arena viewers will belong to a club offering unrivaled access to the world of classic and contemporary culture. Arena will be for lovers of music, the arts and literature: for the enthusiast and the novice. Anyone who loves the arts will want to subscribe to this unique service.

# One TV

## Overview

One TV will bring contemporary music television for a young audience. The spirit and essence of BBC Radio 1 comes to the screen in a new and exciting form - bringing the cutting edge of British music to 15-24 year olds. Featuring the *Official UK Top 40* - with its massive 30% listening share - live every Sunday.

- One TV springs from the successful renaissance of Radio 1.
- Targeted at 15-24 year olds - Radio 1 now reaches one in two of this age group.
- Credible presenters who have solid profile in marketplace through Radio 1.
- Unique presentational style - visual 'jingle' packages, sweepers, etc.

Like its parent station, One TV will stand for Music, Values, New Talent, Youth, even Anarchy. Presenters will be selected from the Radio 1 ranks, chosen for their ability to reflect the channel's young and credible brand values - home grown stars familiar to listeners across the nation for helping to make Britpop the young musical phenomenon of the 90s.

One TV will have both national and regional elements, featuring events and live packages during the summer months from the hugely successful Radio 1 Roadshows. The core programming will be back-to-back music videos drawn from One TV's own playlist, focusing on current and future hits from established and emerging artists. It will rely heavily on the new playlist created each week by Radio 1, an industry leader, using the universal scheduling software 'Selector' to create competitive running orders. One TV will benefit enormously from Radio 1's relationship with the music industry and will enjoy unparalleled access to the artists.

# Sports Entertainment Network

## Overview

The Sports Entertainment Network is for viewers who like their sport spiced with entertainment, intelligence and wit. Complementing the British Sports Channel, The Sports Entertainment Network will present exclusive entertainment shows, live phone-ins for the fans and up-to-the-minute comment from the BBC's renowned team of experts. This is the channel where the fans will have their say.

- A new concept in sports viewing which will let the fans have their say.
- Bringing viewers pure treasure from the biggest sports library in television - almost 50,000 hours of athletic endeavour, agony and fulfilment.
- The channel will combine the wit of *They Think It's All Over* with the relaxed style of *Radio Five Live*.
- For die-hard sports fans there'll be exclusive, live analysis and comment from BBC experts.

Despite the proliferation of live sport on television, research has uncovered a high level of enthusiasm from potential viewers for a channel which will take them behind the sporting scenes, provide entertainment and a forum for the fans. Sports Entertainment Network will provide a new concept in sports viewing, with a regional, as well as national focus and a broad platform for viewer involvement and interaction.

Programming will include live and lively previews and reviews of sporting action with celebrity guests and a selected audience of viewers, Radio Five Live style phone-ins and competitions. The schedule will include plenty of great sporting clips, Sports News on the hour every hour throughout the schedule, with graphics, league tables, statistics and trails for the sporting week around the nation. *European Express* will feature the best action from the weekend of European soccer, plus clips from other games and leading scorers. *Football Crazy* will use the *Mastermind* chair to find out how much the 'fanorak' knows about his team - and about sport in general.

# Catch Up TV

## Overview

Catch Up TV is today's top TV tomorrow, the TV everyone's talking about.

Another chance for viewers to see the BBC's most talked about TV - at their convenience.

- Designed to suit the busy lifestyles of television viewers.
- Uniquely scheduled for convenience, giving viewers another chance to see the most popular BBC programmes.
- High profile, high rating, high production value programming from the current week's schedule on BBC1 and BBC2.
- Schedule will include drama, entertainment, factual and sports programming - if it's talked about, it will be on BBC Catch Up TV.

Busy lifestyles, work and family commitments reduce the audience's availability to view. BBC Catch Up TV is designed for viewer convenience. Using a unique format, programmes will be repeated on a high rotate schedule, which will allow alternative opportunities to catch up with popular series, extraordinary events and new television experiences. The top rated programmes from each week will appear on BBC Catch Up TV straight after their first transmission on BBC1 or BBC2, offering viewers another chance to see the programmes that everyone's talking about.

In addition to regular timeslots for popular series, reactive slots such as 'Did you see...?' will focus on programmes from the previous week on BBC1 and BBC2 which have received particular attention or critical acclaim. Primetime 'event' programming will appear throughout the schedule whilst series will be screened on BBC Catch Up TV shortly after their network transmission and again immediately before the next episode airs on the terrestrial network.

# Specialist Channels

## Summary

Frustrated by limited access to satellite TV, limited by the slow growth of cable, the creative community is alive with new ideas and concepts for channels either not previously seen or not widely available. DTN has been offered services by a range of suppliers (see Confidential Annex) and spectrum will be made available to other new services on comparable terms. Access will be open and fair. Each service is described in an introduction, and the type and style of the channel is contained in a section on Programme Highlights. The services offered will be as follows:

- The ITN Living History Channel
- Animal Planet
- Travel
- The Box
- Rapture
- The Food Channel

# The ITN Living History Channel

### *Introduction*

The 20th century has been the most momentous in history. The speed of change in every facet of life has been breathtaking: in science, in social change, in communications and in politics. For the first time in history, the highs, the lows, the good and the bad have been documented on film and video. Our proposal is to exploit ITN's name and archive to create a high quality, low cost 20th century history channel.

The principal resource of The Living History Channel will be ITN's archive - one of only two complete television archives in the UK of the last 40 years. It contains nearly a million stories covering every aspect of our century, be it political, military, scientific or social.

It is a living history channel, because of ITN's huge investment in news gathering around the world, which means there is a continuous stream of new programming constantly being added.

ITN's experience of, and investment in, digital production techniques will ensure that original programming for the channel can be delivered at an unrivalled price.

The ITN brand name is one of the most recognised and respected in British television. The audience knows that ITN is a reliable and credible quality broadcaster.

In addition to the archive, ITN has a number of other unique assets to enable it to produce a cost effective, quality history channel:

- the reporters: we will feature eye witness accounts from reporters who witnessed history being made first hand.
- the cameramen: they saw history happen through their viewfinder and can talk about the pictures.
- the participants: ITN's contacts with the people who played a leading role in shaping the 20th century will enable us to get them to relive their experiences and give a fresh perspective.
- the experts: ITN has an unrivalled network of contacts with historians, journalists and experts in all spheres of life, who will add their authoritative analysis.

This channel will also be of interest to the pupils, students, schools and colleges also tapping into The Knowledge Network.

### *Audience Research*

ITN's own research suggests the channel would attract an audience of over 35 year olds who are affluent ABC1's with high disposable incomes.

In their viewing habits they will be relatively heavy, loyal viewers who increasingly will be unable to find the kind of programming they want to watch on terrestrial channels.

***Programme Highlights***

Drawing from ITN's unique archive of close to a million stories, we will be able to supply a broad range of historical programming - history recorded as it happened (see Exhibit A4.6).

We will look in depth at some of the major wars of the 20th Century: Vietnam, The Gulf, The Falklands, where ITN has day-by-day, first hand coverage.

There will be biographies of the era's most influential characters, from The Beatles to Saddam Hussein.

A daily chat show will ask *Where Are They Now?,* featuring those people who made the news for a brief fifteen minutes of fame, then disappeared back into obscurity. Also for the daytime audience, there will be programming that looks at some of the greatest moments of music, fashion and the arts. We will tell, for example, the story of the social changes that took women from the home to the boardroom.

We will include the great scandals of the century: Profumo, Maxwell, OJ Simpson, the Hitler Diaries as well as the great crimes and criminal trials, from the Great Train Robbery to Cromwell Street.

It has been a century of great inventions and great adventurers. We will capture the excitement of the pioneers and their exploits - the men behind the jump jet and microchip; the exploits of risk takers from Edmund Hillary to Richard Branson.

The Living History Channel will use the unique and exciting nature of our archive - moments captured as they occurred - to create a channel that will fascinate, entertain and educate. It will bring the history of our century to life, with the added perspective that comes from being able to tell the stories behind the headlines and analyse in a compelling and entertaining way the historical significance of the events the cameras covered.

## Exhibit A4.6: The ITN Living History Channel - Illustrative Schedule

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| 08.00 am | ← | | | This Day in History | | | → |
| 09.00 am | | | | This History Quiz<br>A Good Idea at the Time! | | | |
| 10.00 am | | | | Royal Tours | | | |
| 11.00 am | | | | Where Are They Now? | | | |
| 12.00 noon | | | | Diary of an Edwardian Lady<br>Disasters | | | |
| 1.00 pm | ← | | | Historical Drama | | | → |
| 2.00 pm | | | | This Year in History | | | |
| 3.00 pm | | | | 20th Century Adventures | | | |
| 4.00 pm | | | | A Good Idea at the Time!<br>The History Quiz | | | |
| 5.00 pm | ← | | | Diary of an Edwardian Lady<br>Disasters | | | → |
| 6.00 pm | | | | 20th Century Adventures | | | |
| 7.00 pm | | | | Historical Drama | | | |
| 8.00 pm | | | | Wars of 20th Century | | | |
| 9.00 pm | ← | | | The History Feature Film | | | → |
| 10.00 pm | | | | The History Feature Film | | | |
| 11.00 pm | | | | Where Are They Now? | | | |
| 12.00 pm | | | | Great Inventions of the Twentieth Century | | | |
| 1.00 am | | | | Disasters | | | |
| 2.00 am | ← | | | Closedown | | | → |

# Animal Planet

### *Introduction*

Animal Planet will be a new service of non-stop family entertainment for animal lovers of all ages. With a target audience of families, it will bring viewers face to face with the most fascinating creatures on earth.

It is of particular appeal for families: 90% of the characters in pre-school children's language and counting books are animals and objects of nature. Children can learn about and appreciate the natural world while giving parents a child-safe viewing environment (see Exhibit A4.7).

Animal programmes are amongst the most popular on terrestrial television with shows such as *Animal Hospital, Back to the Wild, Survival Specials* and *Wildlife on One* regularly achieving high ratings. Furthermore, Britain is a nation of animal lovers and in UK cable households, for example, 25% have cats, 31% have dogs, 29% have fish and 11% have birds!

**Exhibit A4.7: Animal Planet - Illustrative Schedule**

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| *6.00 pm* | Animal Planet Family Pack | | | | | A.P. Live | Close Encounters |
| *6.30 pm* | | | | | | | |
| *7.00 pm* | | | | | | | |
| *7.30 pm* | | | | | | | |
| *8.00 pm* | Animal Passions | | | | | Animal House | |
| *8.30 pm* | Close Encounters | | | | | | |
| *9.00 pm* | Animals A-Z | | | | | | Animal Champions |
| *9.30 pm* | | | | | | | |
| *10.00 pm* | | | | | | | |
| *10.30 pm* | | | | | | | |
| *11.00 pm* | Close Encounters | | | | | Beastly Behaviour | Beastly Behaviour |
| *11.30 pm* | Animal Planet Classics | | | | | | |

***Programme Highlights***

- Animal Planet Family Pack: family dramas starring animals or people who work with animals such as *Skippy, Lassie* and *Kratts Kreatures*
- Animal Passions: programmes featuring people who are passionate about their pets or have a fascination with animals in the wild. Programmes include *Dogs with Dunbar, Human Nature* and *Those Incredible Animals*
- Close Encounters: reality series such as *Crocodile Hunter* and *Queen of the Elephants* which features a 300-mile trek across India revealing the plight of the Asian elephant through the eyes of a conservationist and Asia's only woman elephant trainer
- Animals A-Z: documentary series such as *Orang-Utans - King of the Swingers,* filmed in the rain forests of Borneo and Sumatra; *Gorillas-Tender Giants,* filmed in the dark heart of the Congo Basin and *Dragons of Komodo,* filmed in a remote corner of south-east Asia and focusing on the carnivorous, fork-tongued monitor lizard which grows up to 13 feet and can kill buffalo and tigers
- Animal Champions: a strand focusing on people who have dedicated their lives to working with animals, whether they be scientists, photographers or environmental activists. *Keiko's Story*, for example, tells the powerful story of Keiko the killer whale featured in the film *Free Willy* and the people working to return him to his original home in the North Atlantic
- Other strands include Animal Planet Classics, Animal House and Animal Planet Theatre which features top quality nature feature films or family drama.

# Travel

### *Introduction*

Travel, currently a cable only service, will be dramatically enhanced by coming to DTN. The existing schedule illustrated in Exhibit A4.8 will be supplemented by original productions from the UK; acquired programming from around the world; and a clear connection to data services. Travel targets a widespread audience of all ages.

Viewers will be able to access an up-to-date database of information about the events, journeys and holidays featured in the programmes. Data services will include the following:

- *In Our Opinion*: what the resident team of journalists, travellers and experts think of a resort or activity
- *In Your Opinion*: what viewers think of the same resort
- *Cost of Living*: a shopping list of what different things cost to buy and to do
- *Cost of Packages*: the cost of the relevant holiday and what you get for your money
- *Activities*: what you need to know to get started and the costs involved
- *Getting There*: flight, road and travel information (see Section A7).

### *Programme Highlights*

New original programmes will include:

- *Travel Live*: a live hour every week night at 19.00. The programme features a panel of outspoken unbiased travel experts who answer viewers questions on every aspect of holidays and travel. Famed for its frank speaking and honest advice, *Travel Live* tells it like the brochures never do
- *Best Foot Forward:* a series featuring some of Europe's greatest walks from the Spanish pilgrimage to Santiago del Compestela to a walking holiday in the steps of Hannibal.
- *Head for the Med:* a look at the Med's popular holiday resorts, filmed in high season, and seen through the eyes of the holidaymakers
- *You Won't Find This in The Brochure:* a warts-and-all series featuring the backroom staff in holiday resorts- the barman, the waitress, DJs, timeshare sellers, shopkeepers and locals who tell you what the resort is really like
- *Don't Just Lie There, Do Something:* each week this programme spotlights a hobby or sport, talks to fans and experts, analyses the costs and risks and sends a novice to see how easy it is to learn from scratch

- *Mind the Gap:* following the travels and adventures of different teenagers as they 'do the world' in their gap year
- *Travels with My Family:* following the highs and lows of real families as they tackle their summer holidays
- *In the Steps of Captain Bligh:* [redacted] follows the life and travels of Captain Bligh

Acquired programmes will include:

- *Betty's Voyage:* a series featuring a young team of four travellers who drive a 36 year old red double decker bus called Betty from London to Hong Kong
- *Path Finders:* [redacted] a series of celebrities tackling different adventure sports

Current programme highlights include:

- *Floyd on Spain:* the much loved chef and his camera crew travel around Spain dispensing bonhommie, chaos and recipes
- *Stepping the World:* specially commissioned for Travel, these off-the-wall holiday trips feature Richard Hall in places as diverse as Kyoto, Bombay and Antalya
- *Across the line:* two Dubliners backpack their way from Dublin to Darwin on a budget of £25 a day
- *Scandinavian Summers:* [redacted] takes on Scandinavia. Her quirky offbeat programmes include a look at the Finnish sport of wife throwing and how to cook a puffin!

## Exhibit A4.8: Travel - Illustrative Schedule

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| *12.00 noon* | Travel Live | Travel Live | Travel Live | Travel Live | Travel Live | A-Z Monaco | Dining in Sydney |
| | | | | | | Floyd on Italy | Australian Gourmet |
| *1.00 pm* | Wildest Africa: Ungava | Amazing Races | Aeolian Islands | Fork in Road: Argentina | County Limerick | Taste for Travel | North of Naples |
| | Fork in Road: Argentina | My Riviera | Zanzibar | A-Z: Nice | Switzerland | Singapore | Sanyati |
| *2.00 pm* | Across the Line: Thailand | Horizon: Italy | Great Outdoors | Dominika's Planet | Stelvio Natl. Park | Travel Live | Travel Line |
| | Floyd on Italy | Australian Gourmet | Italy: Pasta | Restaurant Show | Miami Beach | | |
| *3.00 pm* | Australian Train Journey: The Ghan | Fork in Road: Argentina | Hard Water | Ocean World | Whicker's World | Southern Bell | Pearl River |
| | | Ungava | Thailand | Postcards | Fork in Road: Argentina | | Ocean World |
| *4.00 pm* | Hard Water | Tonga | Horizon: Italy | Holiday Australia | A-Z: Nice | Rhine Valley | Swiss Railways |
| | Southern Bell | Southern Bell | Southern Bell | Hot Air | Hot Air | Amazing Races | |
| *5.00 pm* | Horizon: Northern Italy | Emerald Sea | Amazing Races | Grand Cayman | Ungava | Sanyati | Singapore |
| | Postcards | County Limerick | Fork in Road: Argentina | Horizon: Italy | Tonga | Chiang Mai | A-Z: Monaco |
| *6.00 pm* | A-Z: Nice | Zanzibar | Postcards | Fork in Road: Argentina | Amazing Races | Burma | Chiang Mai |
| | Stepping: New Zealand | Thailand | Whickers World | Dominika's Planet | Stepping: New Zealand | | Rhine Valley |
| *7.00 pm* | Travel Live | O Canada! | O Canada! | Orient Express | Travel Live | Rolph's Workout | Australian Trains |
| *8.00 pm* | Postcards | My Riviera | Ungava | Thailand | Switzerland | South Africa | Travel Trails |
| | Amazing Races | A-Z: Nice | Great Outdoors | Ungava | Horizon: Italy | Zanzibar | Amazing Races |
| *9.00 pm* | Earth Quest: Russia | Asia Highway: Burma | Dominika's Planet | Swiss Railways | Australian Train Journey: The Ghan | Yellowstone Natl. Park | Venezuelan Plains |
| *10.00 pm* | Floyd on Italy | Australian Gourmet | Italy: Pasta | Restaurant Show | Miami Beach | Dining in Sydney | Floyd on Italy |
| | Stepping: New Zealand | Southern Bell | Southern Bell | Amazing Races | Thailand | North of Naples | Dominika's Planet |
| *11.00 pm* | Hard Water | Ocean World | A-Z: Nice | Tonga | Fork in Road: Argentina | Heritage | |
| | Under Sea Adventures | Brazzaville | Aeolian Islands | Atlantic Challenge | Paris | Galapagos Islands | Sanyati |
| *12.00 pm*<br>*12.00 noon* | Repeat Schedule | | | | | | |

## The Box

### *Introduction*

The Box is a 24 hour a day interactive music video channel.

Its target audience is 16-34 year olds. Cable versions of The Box are now available in 1.4 million cable television households across the UK. It is not distributed by satellite. The channel achieved an audience share of 1.52 in the RSMB September 1996 Cable Households Survey, making it by far the most popular cable-only channel. It is also the most popular music channel, ahead of MTV, VH1 and CMT in cable households.

### *Programme Highlights*

The Box will provide a laserdisc machine in key DTN television areas. Each machine will hold some six hundred music videos and will be pre-programmed to play continuous music videos and feature programmes. Viewers in each area can dial a telephone number and select a video they wish to see by punching in a three digit code. This selection is queued, pre-empting the pre-programmed tracks.

The Box will provide a channel which is unique to digital terrestrial television households. Through its interactive capability, it will broadcast programming specifically catering for the tastes of DTN viewers in separate parts of the country. Production values are of the high quality expected by popular music fans.

In addition to music videos, programmes produced by The Box include Box Tops - the top ten video chart show; Box Fresh - the newest videos available; Box Talk - an interview programme revealing the character of an artist.

### *Note on Programming Mix*

Original programming will comprise the programmes produced by The Box listed above. For first run programming, popular music videos are selected or programmed repeatedly, with 25 new music videos and four new station features being introduced each week.

# Rapture

### *Introduction*

Rapture is the first national channel for teenagers, the householders and viewers of the future. It is not a pop music channel but a complete channel of diverse programmes from entertainment to education to current affairs, with 75% original UK productions. The target audience of teenagers represents 6 million people, 71% of whom are still studying. It is an audience which is not served by traditional television and there is a clear gap in the market in multi-channel homes.

Rapture will employ a dedicated senior education expert to liaise between schools and colleges and the production teams co-ordinating the educational activity and output. The integration of education into the channel with revision and homework hotlines will create a strong franchise with parents. Rapture will offer enormous potential for DTN's data services with competitions, teen tips, young job search and programme notice boards.

### *Programme Highlights*

*17.00-18.00 - You TV*

Teens set the agenda in this schools based news programme. Produced live, visiting over 1000 schools per year and targeting a 12-15 age group.

*18.00-19.00 - Pumped Up*

A sports show featuring anything from school sport to extreme sport, from soccer to rollerblading. Creating tournaments throughout the country and targeting a 14-20 male audience.

*19.00-20.00 - Dear Rapture*

Interactive, issue based programme with debate, advice and conflict. Aimed at a 12-16 female audience.

*20.00-21.00 - A & R*

The music show of the future with new unsigned bands shot anywhere from studios to bedrooms with specials, club and DJ features. Targeting a 15-20 audience.

*21.00-22.00 - Arts strand*

The slot that treats its audience intelligently, featuring items associated with the national curriculum, student films, and creative competitions. Targeting a widespread 12-20 audience.

*22.00-23.00 - K-OS*

A late night live chat show where anything can happen. With a nightly performance slot and aimed at a 16-20 target audience.

Specials: constant refreshment of the schedule with attention-grabbing and quirky one-offs such as the Phoenix Festival or the Schools Soccer Festival. Also featuring teenage movies, comedies and soaps from around the world.

# The Food Channel

### *Introduction*

The Food Channel is a brand new service being developed for DTN. It would offer high quality entertainment and quality food programming. The target audience would be working men and women, aspiring chefs as well as those interested in a career or setting up a new business in the new British culture of cuisine. The service would offer audience participation in The Food Club. The Club would give its members money-off discounts for a whole range of food, household and entertainment services along with a Food Club Guide. There would also be numerous opportunities for supporting additional data services.

### *Programme Highlights*

The Food Channel would cover everything from cooking classics to new British cuisine. Other informative series would feature health, budget planning, restaurants, special recipes from around the world and unusual tips on entertaining. There will be food themes on vegetables, spices and oriental dishes as well as special reports on diets for those suffering from illnesses such as diabetes. Programmes might include:

- *Foodamentals*: studio based programme providing practical and topical information, advice and demonstrations on every aspect of food and cooking
- *Regional Delights*: three new TV chefs demonstrate the regional delights of three major food centres of the world - *Best of British*, *Flavours of France* and *Accent on Asia*
- *A Fork in the Road*: weekly tours around the UK sampling local cuisines and supplies
- *Tastes of the States*: the very best of American TV food programmes
- *Food for a Fiver*: economic but tasty meals for the budget conscious family
- *Pub of the Year*: a national competition to find the best pub grub
- *Meal in a Moment*: how to create a meal in under 30 minutes
- *Wot No Meat*: the versatility of vegetarian recipes.

# Digital Box Office

## Summary

Digital Box Office is DTN's pay-per-view service. This section contains the following:

- Introduction
- Programme Highlights
- Audience Research
- Note on Programming Mix.

### *Introduction*

For the first time in the UK, digital terrestrial television offers the opportunity for the customer to pay for just what they want to watch when they want to watch it. DTN will apply for a Digital Programme Licence to offer a range of pay-per-view movies, sport and events on our exclusive Digital Box Office service. This is also a major opportunity to develop our widescreen capability which will be used as extensively as practical (see Section A11).

### *Programme Highlights*

*Movies*

We are continuing to negotiate agreements with a range of major film suppliers and the terms of the proposed deals are included in the Confidential Annex. Films will be supplied by US distributors, UK distributors and suppliers from Europe and the rest of the world.

These films will be available to DTN customers no later than 6 months after they first appear in the video shops but the price will be less than rental - and you do not have to take it back!

Digital Box Office will operate a programme service with five movies per day starting at different convenient times (see Exhibit A4.9). There will be two to three new movies each week or ten to twelve per month. Customers will be able to find out what to watch and when to watch on our EPG (see Section A7) and preview the film on our "barker" capacity. Just press the button and go.

The EPG also controls the "certificate" of the film to prevent children from watching inappropriate programmes. It is detailed in Section A7.

**Exhibit A4.9: Illustrative Digital Box Office Daily Schedule**

| Time | Digital Box Office | | | | | |
|---|---|---|---|---|---|---|
| *06.00 am* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *07.00 am* | | | | | | Barker |
| *08.00 am* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *09.00 am* | | | | | | Barker |
| *10.00 am* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *11.00 am* | | | | | | Barker |
| *12.00 noon* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *1.00 pm* | | | | | | Barker |
| *2.00 pm* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *3.00 pm* | | | | | | Barker |
| *4.00 pm* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *5.00 pm* | | | | | | Barker |
| *6.00 pm* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *7.00 pm* | | | | | | Barker |
| *8.00 pm* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *9.00 pm* | | | | | | Barker |
| *10.00 pm* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *11.00 pm* | | | | | | Barker |
| *12.00 pm* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *1.00 am* | | | | | | Barker |
| *2.00 am* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *3.00 am* | | | | | | Barker |
| *4.00 am* | Movie A | Movie B | Movie C | Movie D | Movie E | Barker |
| *5.00 am* | | | | | | Barker |

*Hollywood Movies*

Hollywood has proved over the past few years that it can supply high quality and a range of presentations to suit all tastes and ages, from thrillers and blockbusters to romance and adventure. From children's tales to family viewing, Hollywood films will always find an audience.

*British and European Movies*

Britain's film industry really needs a couple of dozen Weddings and half a dozen Funerals every year. Three hopes are on the horizon:

- one, the contribution of *Four Weddings* and a range of movies based on classical works has had a real impact on even the home of movies - Hollywood. California is alive with British writing, directing and on-screen talent. Most Hollywood studios now have divisions dealing with "classic" or "independent" films such as Disney/Miramax, Sony Pictures Classics. Many of these films came from the UK and the trend has not stopped.

- the second major cause for optimism is the Arts Council Lottery Film Fund. Our plan is to give capacity and promotion on our channels for British independent film producers who have been given individual lottery grants and to the four film franchise winners. The franchising process is only just beginning as this application is being submitted and many of the groups are in their early stages of development and have lined up distribution with analogue terrestrial broadcasters free television rights. UK pay-TV and PPV rights are as yet undefined. It is DTN's policy to allow access to our pay-per-view channels for quality British films and we welcome that opportunity. Over the next five to six years, the lottery franchising process will create a slate of over 150 new films representing more than £600 million in new production budgets. These will be seen and promoted on our digital terrestrial network.

- The third element in increased film production has come from British television. The impetus has originated from Channel Four whose enthusiasm and finance brought about *Four Weddings*, *Trainspotting* and a host of new talent. The BBC and Granada are both expanding their interests in film production. If this is good for the industry, then DTN offers a real chance for emerging talent to exhibit their creativity. It is DTN's intention to invest directly in the production of high quality feature films when financial resources allow.

*Sport*

It is DTN's intention to secure a number of premier sporting events on a pay-per-view basis and then repeat them on The British Sports Channel. We are confident that we

will be able to compete effectively for pay-per-view rights and the details are contained in Section B.

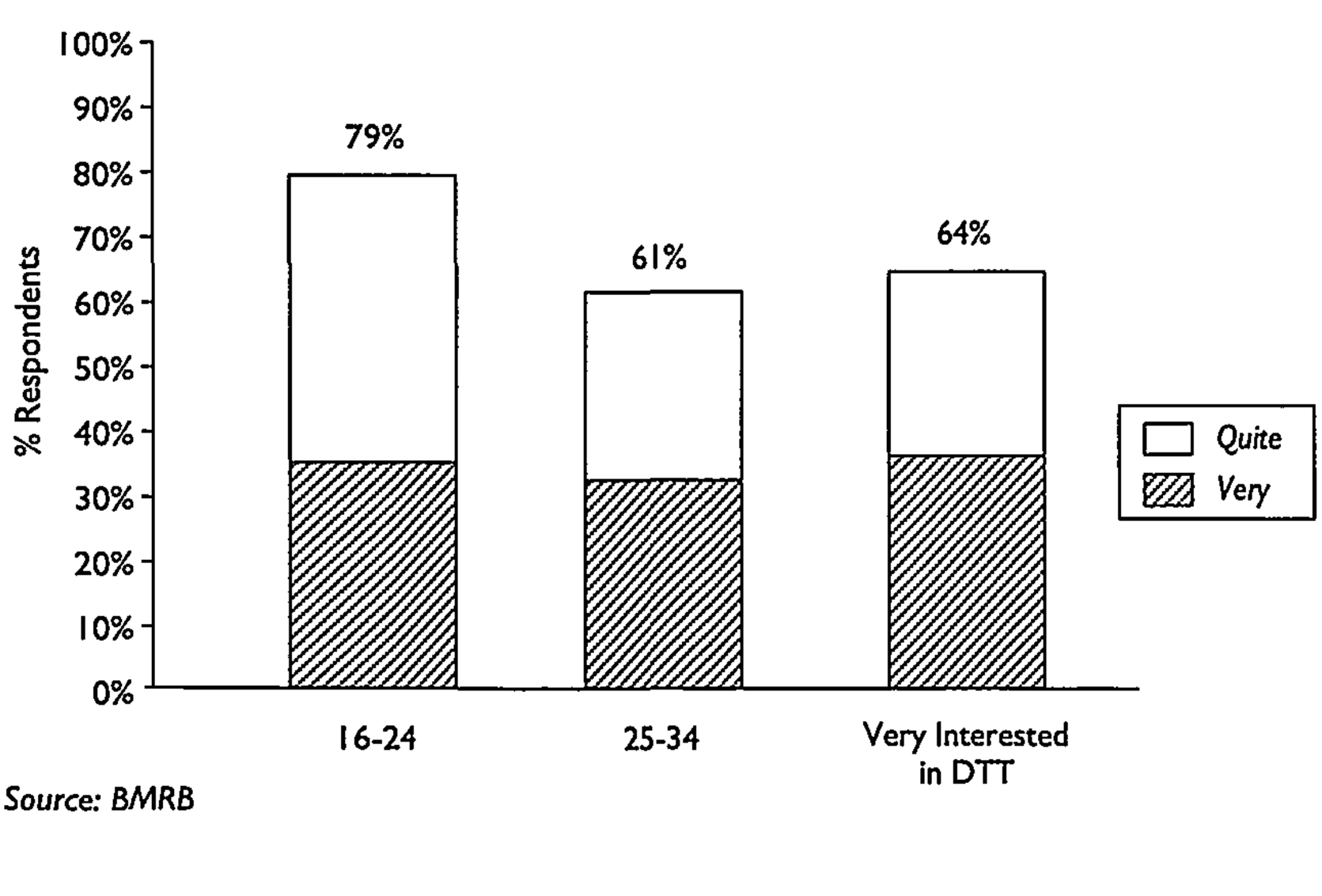
*Events*

As with the British film industry, it is DTN's policy to allow access to our pay-per-view channels to showcase British talent. We intend to use our barker channel to promote both television events and live events. We would, for example, promote a limited run from a regional opera company whilst alerting viewers to the live televising of the opera at a certain date.

***Audience Research***

Pay-per-view movies were particularly attractive to younger audiences which confirms our findings for general film channels. 79% of respondents in the 16 to 24 year old category and 61% in the 25 to 34 year old category were interested in channels of recently released movies where you pay for each movie you watch, as illustrated in Exhibit A4.10. Overall 64% of those very interested in digital terrestrial television showed interest in pay-per-view movies.

**Exhibit A4.10: Digital Box Office/PPV**




*Source: BMRB*

***Note on Programming Mix***

We would assume that all the movies would not be made specifically for the programme service but the proportion of first run material will be 100% for sports and events. Movies would vary according to their appeal, but we would envisage multiple showings at different times for the convenience of the customer over the first month of availability. The movie would then be rested for a month before returning for less frequent showings.

# The Best of the World

## Summary

This section details our international services. It includes an introduction and each channel contains the following:

- overview
- programming highlights.

## Introduction

Movies are clearly one of the key drivers of multi-channel television. Our own research showed maximum interest in general film channels. Similarly, the competition between children's channels on satellite and cable has shown the proven demand for the these services. DTN has met this demand and has been offered services by the following channels (see Confidential Annex) and the type and style of the service is described below:

- TCM: Turner Classic Movies
- Cartoon Network
- MGM Gold
- The Movie Experience.

## TCM: Turner Classic Movies

***Overview***

Backed by the library of MGM and the Golden Age of Hollywood, comes a movie channel targeted at movie buffs, women and movie lovers of all ages. (Exhibit A4.11).

***Programme Highlights***

The main library boasts over 3,500 movies with classics like *The Wizard of Oz* and *Casablanca* which will be available to DTN subscribers.

Turner catalogues include an A-Z of the greatest years of Hollywood.

- the main library featuring over 700 titles from *Above Suspicion* (Joan Crawford) to *Ziegfeld Follies* (Fred Astaire and Gene Kelly)
- the Warner Brothers library of over 700 titles from *The Adventures of Robin Hood* (Errol Flynn) to *You Can't Get Away with Murder* (Humphrey Bogart)
- TCM will endeavour to add to this collection by broadcasting movies from the golden age of British film making from Ealing comedies to classic British war movies
- TCM will also explore European cinema. Only when the Academy awards the Best Foreign Language Oscar do the public notice the strength of European cinema. Local film making is a very important dimension of the French and Italian box office. In Italy, for example, RAI are starting a new cultural and heritage channel with money available for major film makers.

## Exhibit A4.11: TCM: Turner Classic Movies - Illustrative Schedule

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| *6.00 am* | The Only Way | A Time to Kill | Marilyn | The Angel Wore Red | Adventures of Tartu | Down Among the Z Men | Tomorrow We Live |
| *7.30 am* | The Barretts of Wimpole Street | Moonfleet | Cold Sassy Tree | Lady L | The Glass Bottom Boat | Viva Las Vegas | Waterloo Bridge |
| *9.00 am* | Conspirator | The Secret Partner | The Day they Robbed the Bank of England | Signpost to Murder | A Southern Yankee | Across the Pacific | 42nd Street |
| *10.30 am* | BF's Daughter | Girl Crazy | Look for the Silver Lining | Design for Scandal | The Great Lie | The Sea Hawk | The Shoes of the Fisherman |
| *12.00 noon* | Kill or Cure | The Safe Cracker | Dames | I am a Fugitive from a Chain Gang | Hot Millions | Across the Wide Missouri | Ivanhoe |
| *1.30 pm* | A Christmas Carol | The Blackboard Jungle | Riff-Raff | Miracles for Sale | | Mrs. Brown You've Got a Daughter | |
| *3.00 pm* | Zeigfeld Follies | Yankee Doodle Dandy | Love Me or Leave Me | The Strawberry Blonde | Night of the Iguana | Clash of the Titans | Around the World Under the Sea |
| *4.30 pm* | The Barretts of Wimpole Street | Moonfleet | Cold Sassy Tree | Lady L | The Glass Bottom Boat | Viva Las Vegas | Waterloo Bridge |
| *6.00 pm* | The Berkeleys of Broadway | Captain Blood | The Naked Spur | The Picture of Dorian Gray | Kisses | The Prisoner of Zenda | Operation Crossbow |
| *7.30 pm* | Jailhouse Rock | Love Me or Leave Me | Night of the Iguana | A Life in the Theatre | Marlowe | Around the World Under the Sea | Madame Bovary |
| *9.00 pm* | Diner | The Naked Spur | Murder She Said | Lolita | Dark of the Sun | The Last Run | On an Island with You |
| *10.30 pm* | Beat Girl | What a Carve Up | The Citadel | The Loved One | The Magnificent Seven Deadly Sins | The Hill | The Last of Mrs. Cheyney |
| *12.00 pm* | Jailhouse Rock | Love Me or Leave Me | Night of the Iguana | A Time to Kill | Marlowe | Around the World Under the Sea | Madame Bovary |
| *1.30 am* | | | | | | | |
| *3.00 am* | | | | | | | |
| *5.00 am* | | | | | | | |

## Cartoon Network

### *Overview*

DTN plans to offer something for everyone within its spectrum limitations. Our research showed a need for children's programming and thus we plan to enter into a partnership with Britain's most successful children's channel: Cartoon Network.

The satellite and cable market has become crowded of late with rival children's channels entering into direct competition with each other such as Disney, Nickelodeon, TCC and Fox Kids. All of them have failed to match the audiences of the Cartoon Network.

However, Nickelodeon proved that an American produced channel will not work as effectively in the UK as a tailor-made service. DTN therefore intends to pioneer a totally new service for DTN viewers: Cartoon Network.

Using the backbone of the Cartoon Network, Turner Broadcasting System, in conjunction with DTN, will present, produce and acquire a whole raft of new product for longer hours.

### *Programme Highlights*

New graphics, links and presentation techniques will make the Cartoon Network stand out over the opposition. Highlights will include the *Flintstones, Tom and Jerry* and newly commissioned animation exclusive to Cartoon Network. The schedule appears as Exhibit A4.12.

Over time, additional revenue from DTN will go into developing co-productions of new British and European animation. Meanwhile, Cartoon Network will endeavour to acquire the very best of British and European productions.

Although Cartoon Network is currently on Astra, it shares analogue transponder space with TNT and is thus limited to 16 hours per day. Now, Cartoon Network, through its partnership with DTN, will become a 24 hour digital terrestrial channel with evening programming targeting an 18-34 audience.

## Exhibit A4.12: Cartoon Network - Illustrative Schedule

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| *06.00 am* | Omer and the Starchild / Spartakus | | | | | | |
| *07.00 am* | The Fruitties / Thomas the Tank Engine | | | | | | |
| *08.00 am* | Pound Puppies / Tom and Jerry Kids | | | | | | |
| *09.00 am* | Scooby-Doo: Scooby-Doo, Where Are You? / The Real Adventures of Jonny Quest | | | | | | |
| *10.00 am* | Cow and Chicken / Dexter's Laboratory / World Premiere Toons / The Mask | | | | | | |
| *11.00 am* | Tom and Jerry / 2 Stupid Dogs | | | | | | |
| *12.00 noon* | The Pirates of Darkwater / Ivanhoe | | | | | | |
| *1.00 pm* | The Addams Family / Little Dracula | | | | | | |
| *2.00 pm* | The Jetsons / The Flintstones | | | | | | |
| *3.00 pm* | The Real Story Of... / Thomas the Tank Engine / Droopy | | | | | | |
| *4.00 pm* | Tom and Jerry Kids / The Bugs and Daffy Show / Scooby-Doo: Scooby-Doo, Where Are You? | | | | | | |
| *5.00 pm* | Hong Kong Phooey / The Jetsons / Super Secret Secret Squirrel | | | | | | |
| *6.00 pm* | Cow and Chicken / Dexter's Laboratory / World Premiere Toons | | | | | | |
| *7.00 pm* | The Mask / Tom and Jerry | | | | | | |
| *8.00 pm* | The Flintstones | | | | | | |
| *9.00 pm* | The Real Adventures of Jonny Quest / Dumb and Dumber / 2 Stupid Dogs / | | | | | | |
| *10.00 pm* | Scooby-Doo / The Addams Family / Swat Kats | | | | | | |
| *11.00 pm* | Top Cat / Scooby Doo: Scooby Doo, Where Are You? | | | | | | |
| *12.00 am* | Wacky Races / Wait Til Your Father Gets Home | | | | | | |
| *1.00 am* | Little Dracula / Spartakus | | | | | | |
| *2.00 am* | Omer and the Starchild / The Real Story Of ... | | | | | | |
| *3.00 am* | The Fruitties / Spartakus | | | | | | |
| *4.00 am* | Omer and the Starchild / The Real Story Of... | | | | | | |
| *5.00 am* | Little Dracula / The Frutties | | | | | | |

## MGM Gold

***Overview***

With Metro Goldwyn Mayer's extensive library of movies, series and entertainment programming, DTN plans to offer a brand new service - MGM Gold. It will use the MGM brand name and the highly recognised roaring lion logo to appeal to an audience of entertainment lovers.

***Programme Highlights***

MGM Gold will offer three types of programming:

- movies
- series
- entertainment segments.

*Movies*

The MGM library offers a wide range of movie genres to suit any movie lover's tastes including thrilling action adventures, side-splitting comedies, compelling dramas, memorable romances, action packed westerns, spine tingling science fiction and horror, show stopping musicals and quality family films.

*Series*

Appealing to every audience, MGM is home to a wide variety of series. From current dramas and situation comedies to classic favourites, reality shows, animation and family series, MGM Gold will offer the best in quality entertainment television.

*Entertainment Segments*

MGM Gold will take DTN viewers directly to Hollywood for exciting movie premiere parties, exclusive interviews and a behind-the-scenes look at the Hollywood of yesterday, today and tomorrow.

## The Movie Experience

### *Overview*

DTN has entered into discussions to create a brand new movie channel supported by one of Hollywood's biggest studios.

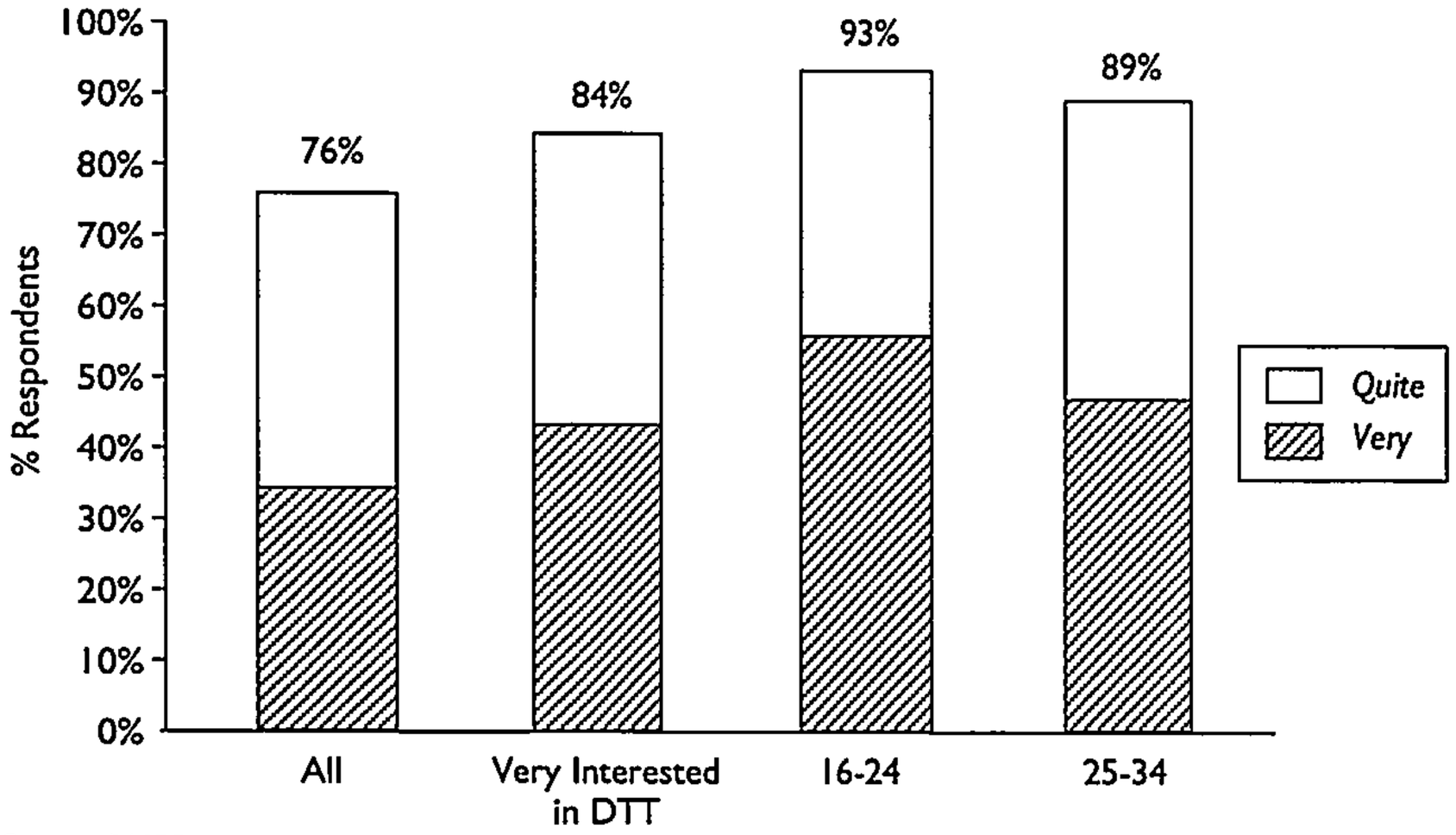
The selection of movies will be available after pay and terrestrial windows and will feature "evergreen" titles from a range of suppliers.

The details appear in the Confidential Annex.

### *Audience Research*

As Sky's own figures show, film channels are still an important part of pay television. Our own research showed that 76% of respondents were very/quite interested in a general film channel. This was the highest level in all our research and is illustrated in Exhibit A4.13. These figures were significantly higher with younger audiences: 93% in the 16 to 24 group and 89% in the 25 to 34 range. 84% of those very interested in digital terrestrial television showed interest in a general film channel.

**Exhibit A4.13: Movie Experience/General Films**




*Source: BMRB*

## Future Plans

Digital technology is going to change rapidly, thus allowing improved data rates and hence the potential of additional programme services. DTN's policy of operating a fair market for new programme services will open up a range of opportunities for the creative community. There are three scenarios:

- existing services currently exclusive to other digital terrestrial television licence applicants will be offered capacity when available
- new services still in the concept or development stage will be given an opportunity to present their ideas
- we will be exploring ways in which independent producers will be able to gain access to the market without going through an artificially created channel structure. Obvious examples are one-off plays, films and events but we will try to go further with original ideas for high quality series production.

## Programme Service Details

Exhibit A4.14 illustrates the following information for programme services contained in Sections A4 and A5:

- the date when the service will commence
- the hours of the day during which the service will be broadcast. All services are seven days per week.
- the average proportion of total programme hours that will consist of original productions or commissions
- the average proportion of total programme hours that will consist of first run material

**Exhibit A4.14: Programme Service Details**

| Programme Service | Start Date | Hours | Times | % Original | % First Run |
|---|---|---|---|---|---|
| The Money Channel | 1 May 1988 | 18(24)† | 0600-0000 | 90 | 49 |
| The Knowledge Channel | 1 May 1998 | 18(24)† | 0600-0000 | 80 | 28* |
| The British Sports Channel | 1 May 1998 | 24 | 24 | 52 | 62 |
| The ITN Living History Channel | 1 May 1998 | 18 | 0800-0200 | 70 | 12 |
| Animal Planet | 1 May 1998 | 6 | 1800-0000 | 0 | 35 |
| Travel | 1 May 1998 | 24 | 24 | 33 | 12 |
| The Box | 1 May 1998 | 24 | 24 | 0 | * |
| TCM: Turner Classic Movies | 1 May 1998 | 24 | 24 | 0 | 35 |
| Cartoon Network | 1 May 1998 | 24 | 24 | 0 | 35 |
| MGM Gold | 1 May 1998 | 24 | 24 | 0 | 20 |
| Digital Box Office | 1 May 1998 | 24 | 24 | * | * |
| Metro TV | 1 May 1998 | 18 | 0700-0100 | 100 | 53 |
| The Hindi Channel | 1 May 1998 | 18 | 0800-0200 | 0 | 35 |
| Style/Showcase | 1 May 1998 | Δ | Δ | Δ | Δ |
| Horizons | 1 May 1998 | Δ | Δ | Δ | Δ |
| Learning/Arena | 1 May 1998 | Δ | Δ | Δ | Δ |
| The Movie Experience | 1 Oct 1998 | 24 | 24 | 0 | 20 |
| Rapture | 1 Oct 1998 | 6 | 1700-2300 | 0 | 50 |
| One TV | Δ | Δ | Δ | Δ | Δ |
| Sport Entertainment Network | Δ | Δ | Δ | Δ | Δ |
| Catch Up TV | Δ | Δ | Δ | Δ | Δ |

** See Note on Programming Mix in relevant service*
*† Available for overnight service*
*Δ See Confidential Annex*

Exhibit A4.15 illustrates the following information.

- coverage areas for the services contained in A4 and A5
- the allocation of programme services to each multiplex
- the number of services on each multiplex.

**Exhibit A4.15: Multiplex Allocation at Launch**

| Channel | B | C | D | BC | BD | CD | BCD |
|---|---|---|---|---|---|---|---|
| The ITN Living History Channel | B | C | D | B | B | C | D |
| Animal Planet | B | C | D | B | B | C | B |
| Travel | B | C | D | B | B | C | B |
| The Box | B | C | D | B | B | C | D |
| TCM: Turner Classic Movies | B | C | D | B | B | C | D |
| Cartoon Network | B | C | | B | B | C | D |
| MGM Gold | B | C | | B | B | C | D |
| Data Services | B | C | D | B | B | C | B |
| CA/SMS/EPG | B | C | D | B | B | C | B |
| The British Sports Channel | | | | C | | | B |
| Digital Box Office | | | | C | D | D | C |
| Data Services | | | | C | D | D | C |
| CA/SMS/EPG | | | | C | D | D | C |
| The Money Channel | | | | | | | B |
| The Knowledge Network | | | | | | | B |
| Metro TV/Hindi Channel | | | | | | | C |
| Horizons | | | | | | | B |
| Style/Showcase | | | | | | | B |
| Arena/Learning | | | | | | | D |
| Data Services | | | | | | | D |
| CA/SMS/EPG | | | | | | | D |

*Coverage figures assuming complete build out ('000)*

| | | |
|---|---|---|
| Multiplex B | 50,608 | |
| Multiplex C | 44,584 | (NB: Metro TV Coverage = 4,232, Hindi Channel = 40,352) |
| Multiplex D | 42,440 | |

## Differences In DTN's Proposals Under Section A4 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplex licences our proposals would differ from those set out above. These differences are set out in Exhibit A4.15.

Write in BLOCK CAPITALS!

New Divider Tab

A5

New Divider

# A5 Local or Regional Services

*Taking account of guidance given in paragraph 102 the applicant should state what plans he has, if any, to provide local or regional services. He should state in particular (i) the proposed location of any such services together with their start dates, (ii) the type and content of the programmes, and (iii) the period of the day for which such services would be provided.*

**Summary**

This section sets out our plans for local services, beginning with Metro TV in the Greater Manchester area. It details the nature of that service and the roll-out of Metro TV in other areas. In addition, it covers The Hindi Channel, which could be made available initially in all areas except those serviced by the Winter Hill transmitter. Details of broadcast hours and coverage are contained in Exhibits A4.14 and A4.15.

## Metro TV

**Summary**

This section contains the following:

- Introduction
- The audience
- High quality
- Programme highlights
- News
- Compliance
- Data services
- Training
- The commercial equation.

### *Introduction*

Digital terrestrial broadcasting offers the opportunity to expand the range and diversity of UK television by introducing city-based or local television services. These can carry programme material and advertising directed at the needs and interests of viewers in communities now only partially served by existing broadcasters.

The current position in most towns and cities in the UK is that the primary means of disseminating news and information is the daily or weekly local newspaper.

The ITV Channel 3 companies offer limited outlets for miscellany news and feature programmes in their regional services. Although dual regions exist in some areas of the UK and some Channel 3 companies have established offices and small studios in their principal towns, their programme service is weighted heavily towards a national network. Volumes of regional programmes vary from just over 10 hours 30 minutes per week in each of Anglia's East and West Regions down to just over 6 hours per week in Border TV.

Channel 4 Television commissions regionally based independent producers to make programmes for a network service with a specific programme remit. It does not offer a regional opt-out service.

Channel 5 Television has yet to determine its programme policy but has announced a spend of £100,000 on a limited number of feature programmes from regionally based independent producers. It shows no sign of pursuing a local television strategy.

The two BBC channels offer limited autonomy and airtime to a comparatively small number of regions in the UK, although satellite delivered digital TV may change that for some viewers.

Local cable networks have argued that production costs prohibit the operation of a wide range of programming on a local channel. It is arguable that priority has been given to the development of the telephony and carriage systems and that local programme excitement and innovation has yet to be demonstrated.

Digital terrestrial broadcasting provides the best opportunity yet for a determined investment in local programming. Its technology allows for a multiplicity of services targeted at most of the principal towns and cities in the UK. This is its primary distinction from other existing and developing services relying on films, sport and special events to build their audiences. Its difference from the Channel 3 regional services will be that its programmes will be predominately of local interest; network programmes will play a secondary, back-up role.

DTN recognises the need to provide an innovative approach and identity to its proposed service. We see that the proliferation of channels is putting programme choice, once the preserve of the TV scheduler, into the hands of the viewer. We believe that his freedom should now be extended by offering viewers a greater involvement in programme making and seeking their assistance in reflecting a community and its people back to themselves.

This will require a commitment to developing and sustaining a critical mass of talent within the localities to support programme making and the understanding of the new mix of skills required for digital systems.

DTN is prepared to make that commitment by starting in one community and enlarging the service to a number of other cities and localities during the life of our licence. The speed of the roll-out will depend on its attractions for consumers coupled with its commercial viability.

Greater Manchester has been chosen as the model for this local service. The criteria used in the selection of the area include population size; homogeneity of its citizens; access to existing cable networks; advertising and consumer spending; pride in local heritage and institutions and access to partnerships with university media training establishments. Our relationship with the University of Salford, detailed later under "The Commercial Equation", shows the benefit of cost effectiveness and adequate training.

The intention is to launch the Greater Manchester service on 1 May 1998. It will be the pilot project for further services located in areas matching the Manchester criteria and those targeted by the "small ads" data services referred to in Section A7. As the technology develops and further compression allows increased transmitter capacity, DTN will replicate its Manchester service in three other areas in the North West served by the Winter Hill Transmitter namely north Cheshire, Merseyside and central and north Lancashire (Preston, Blackpool, Lancaster). It is also DTN's intention to replicate the Manchester model in other transmitter areas, most probably those in Greater Glasgow/Strathclyde; Birmingham; South Yorkshire (including Sheffield); Nottinghamshire; Hampshire; Tyne and Wear and West Yorkshire.

The timing of the expansion will depend on the Manchester experience.

***The Audience***

Greater Manchester has a population of 2.5 million people, living in ten distinct cities or towns - Manchester, Salford, Wigan, Bury, Bolton, Rochdale, Oldham, Tameside, Trafford and Stockport. Each can boast its successes; each resents the other. Municipal pride rubs shoulders with municipal envy. In the good old days, the boroughs belonged to Lancashire and there are many people who would like to return it that way.

Although the common bond of the county title may have been lost it has been replaced by the Metro Link or, as Mancunians say, they have brought back the trams. Greater Manchester is a homogenous community of northern people of diverse ethnic background but many shared experiences and values. A love of sport, music and the unorthodox unites the population. Within a fifty mile radius there are eight professional football teams, five rugby league teams, nine world class music venues, a national cycling arena, four universities, an Olympic standard swimming pool, more than a hundred night clubs, 150 cinema screens, three evening newspapers, four local radio stations and the fastest growing airport in Europe. What was an administrative

blot has become a socially cohesive region of economic growth and the leisure capital of the north.

The greatest opportunity which digital terrestrial television affords is to target directly communities where there is a palpable set of shared experiences and attitudes. Until now, terrestrial television has offered a limited local service to regions which sometimes defy geography, history and anthropology. Local opt-outs to channels scheduled and controlled from London are not the complete answer. But digital terrestrial television coupled with cable television has the potential to provide a truly local service.

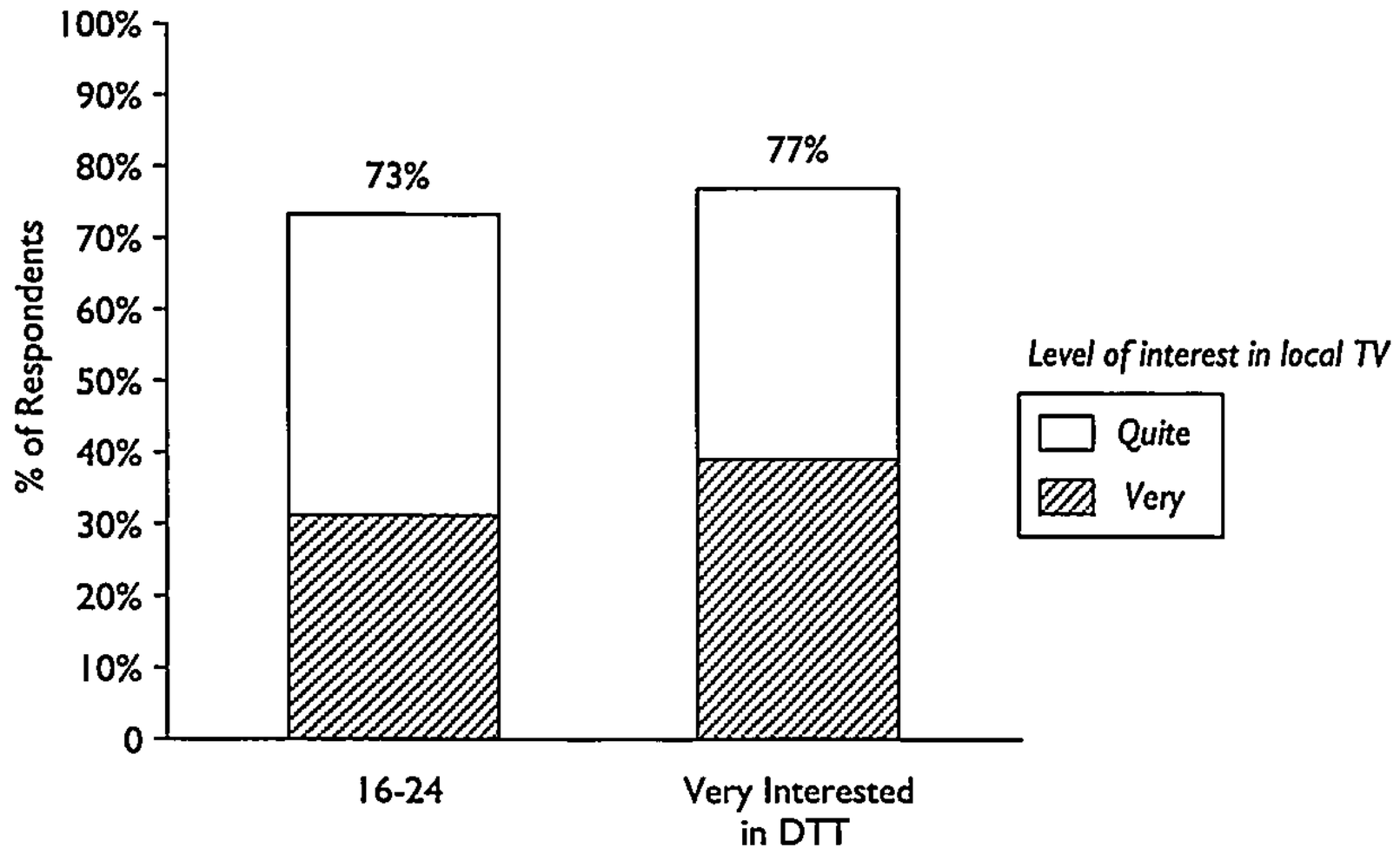
Greater Manchester provides a great opportunity to demonstrate the value of local television. The area is large enough to be financially viable while being small enough to warrant a truly local service. The A666 will receive as much attention as the M6. Gigg Lane will not be lost in the shadow of Old Trafford. The Octagon Theatre can be seen across the stage of The Palace. Oldham's Civic Centre will be seen as much as Manchester Town Hall. Only the weather forecast need remain the same: rainy with some sunny intervals.

*Audience Research*

Audience research shows that many people regard the prospect of local television as the most attractive aspect of multi-channel viewing.

When we asked people whether they were interested in a new local channel in their area with news, current affairs, events and general information, 73% said they were interested as illustrated in Exhibit A5.1. This was one of the highest figures attained by all our programme research and rose to 77% amongst those very interested in digital terrestrial television.

**Exhibit A5.1: Metro TV**




*Source: BMRB*

An ITC survey of viewing habits in cable homes (1996) also demonstrated that local television would be popular if it existed in large enough volume and was of *high quality*. Viewer awareness of local television was highest in those cable franchises which offered the most hours of new programming each week. Respondents expressed particular interest in local sport, news and music. The Metro TV schedule reflects this audience research while also paying its due to other interests which are specific to the Greater Manchester area.

***High Quality***

DTN plans to bring truly local television services to the UK for the first time. Our audience research demonstrates that viewers have a desire for information, news and entertainment from, about and for their own towns and boroughs that is simply not being met by existing services. At a national level, Greater Manchester represents a tightly defined niche audience with a strong set of shared interests and value. Within this niche, Metro TV will embrace the vast majority of the available audience, providing something for everybody some of the time. More importantly, Metro TV will bring to local television the high quality standards of our national television services. Metro TV will succeed by proving that local television can be synonymous with quality. Its commitment to producing high quality programmes includes the following initiatives:

- appointing highly experienced senior programme makers with an unrivalled knowledge of the area. Metro TV will be television made for the Manchester community by members of the community, not by a distant metropolitan elite
- establishing a close working relationship with the International Media Department at the University of Salford. This will allow us to tap into a

reservoir of enthusiastic local young talent eager to develop programming about the area

- forming alliances with local organisations - arts boards, theatres, music venues - which can demonstrate a real commitment to enriching the cultural life of the local community through quality and innovation. The North West Arts Board have expressed interest in exploring ways, in which the excellence, range, diversity and innovation of the arts activity in Manchester can be exhibited in the service by performance, serious debate and creative use of digital technology
- recruiting and retaining the best of the next generation of programme makers and providing full relevant training to them and all of our other employees
- investing in the best and most innovative local independent production companies to create a thriving local network of creative programme makers
- investing in the best and most practical forms of new technology, enabling the creators of Metro TV's services to work with state-of-the-art equipment
- fully funding the service to the level required to realise the potential of its ambitious technology.

To succeed, Metro TV will need to prove to its viewers that it is their station, the button on their remote control which will take them to the one place where they can be sure to find something of interest to them personally at some point in the day. The active involvement of the public in contributing to programmes and providing feedback and comment will be vital if Metro TV is to succeed in its aspirations and sustain the high levels of quality to which it is committed.

To achieve this aim, Metro TV will appeal to a wide variety of tastes and interests. On occasion this goal will be best met by commissioning programmes from those local independent companies which can demonstrate a genuine expertise in a particular field, genre or style of programming. Most production companies have been unable to contribute to the new wave of channels which are now available in the UK. Metro TV welcomes the opportunity to commission programmes from Greater Manchester's vibrant independent sector.

As digital compression technology develops and as digital terrestrial television grows in popularity, Metro TV will have the opportunity to target viewers in other parts of the North West. This is an exciting prospect and will allow an expanding circle of people to participate in the success of local television. Such developments lie in the future and will only be possible if the original service is deemed to be a success. This in turn can only be achieved by producing programmes of the highest quality.

***Programme Highlights***

Our schedule focuses on six main programme areas:

- sport
- young people
- entertainment
- local niche audiences
- community programmes
- home learning.

The first four programme areas are targeted directly at sections of the population where there is already a demonstrable need and interest. Community programming draws upon the unique localness of digital terrestrial television to give viewers the opportunity to participate in making programmes about and for their neighbourhoods. The Home Learning schedule is a unique means of tapping in to those members of the population who, for a variety of reasons, have been unable to pursue training and higher education outside the home.

All these programmes are scheduled at points of the day to maximise audience availability - the morning, early evening and post 21.00 hours. They have been devised to offer a real alternative to the programmes on analogue terrestrial television and there is nothing like it on satellite or cable. Above all, they all draw on the strength of digital terrestrial television to deliver local programmes with a high level of local involvement.

The content of the service and its on air presentation will set out to engage the loyalty, trust and enthusiasm of its audience. The schedule will include regular fixed points for comprehensive broadcasts of news, weather, road, rail, air traffic conditions, crime, health, educational reports, shopping, business, financial, sports, entertainment, and other arts and leisure information (see Exhibit A5.2).

## Exhibit A5.2: Metro TV - Illustrative Schedule

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| 07.00 am | Cracking Toast | Cracking Toast | Cracking Toast | Cracking Toast | Cracking Toast | Cracking Toast C | Cracking Toast C |
| 08.00 am | Home Life | Home Life | Home Life | Home Life | Home Life | | |
| 09.00 am | Bulletin Board | Bulletin Board | Bulletin Board | Bulletin Board | Bulletin Board | Telly Mart | Telly Mart |
| 10.00 am | | | | | | | |
| 11.00 am | | | | | | | |
| 12.00 noon | Master Course | Master Course | Master Course | Master Course | Master Course | Referee!!! C | No Longer Private C |
| 1.00 pm | Home Life R | Home Life R | Home Life R | Home Life R | Home Life R | | |
| 2.00 pm | Telly Mart | Telly Mart | Telly Mart | Telly Mart | Telly Mart | Motormania | Master Cource C |
| 3.00 pm | | | | | | | |
| 4.00 pm | Referee!!! | Referee!!! | Referee!!! | Referee!!! | Referee!!! | | |
| | Wait For It | Wait For It | Wait For It | Wait For It | Wait For It | | |
| 5.00 pm. | Sports Day | Sports Day | Sports Day | Sports Day | Sports Day | Sports Day | |
| 6.00 pm | A Close Call | Mad About You | And Another Thing | You're Nicked | A Close Call | A Close Call | From Time To Time |
| 7.00 pm | Telly Mart | Telly Mart | Telly Mart | Telly Mart | Telly Mart | Telly Mart | Telly Mart |
| 8.00 pm | | | | | | | |
| 9.00 pm | No Longer Private | CFU Documentary | It's My Life | CFU Documentary | Music Maestros | Music Maestros R | CFU Documentary R |
| | | Canal Street | Black Night | Bloody Students | Now Showing | CFU Documentary R | NW Business |
| 10.00 pm | TonightAtTen | TonightAtTen | TonightAtTen | TonightAtTen | TonightAtTen | TonightAtTen | TonightAtTen |
| 11.00 pm | | | | | | | |
| 12.00 pm 01.00 am | A Close Call R | Mad About You R | And Another Thing R | You're Nicked R | A Close Call R | A Close Call R | From Time To Time R |

**Weekday *Mornings: 0700-0830 - Cracking Toast***

A live breakfast programme aimed at a broad local audience with a high level of viewer participation. The presentation is fast, cheerful and occasionally chaotic with brief but regular news, weather and traffic updates. Content includes:

- Rolling news, weather and traffic service presented with the use of permanent remote camera points at Greater Manchester Police Headquarters, the regional Met. Office in Stockport, Manchester Airport, the M62 services at Milne Row, football grounds, fire stations and town halls. The feel of the service is immediate, widespread and economical with the minutage. The programme will reflect a hard news agenda only on those days when it is justified; it will not reflect the morning diet of assaults, burglaries and road traffic accidents beloved by some news media
- Features on forthcoming events at schools, youth clubs, Guides and Scouts Associations, leisure centres, community centres, amateur theatres and self-help groups
- Birthday and anniversary dedications particularly for young people, supported by submitted stills and camcorder footage
- The latest music video releases, family film and video previews, celebrity interviews and video game releases
- Competitions
- Sunny Side Up - a daily surprise presentation to an individual, of any age, who has been nominated by his or her neighbourhood for unsung acts of kindness, charity or patience
- Sport. Overnight sports news and reports, plus regular features on young sportsmen and women who are making a mark in their chosen sport.

***Weekdays: 08.30-09.00 - Home Life***

A programme aimed primarily at women with young families. As well as practical advice on bringing up children - from babies to adolescents - Home Life also highlights adult medical issues, issues affecting part-time workers, entitlement news and a comprehensive guide to the best places to go, swimming pools to visit, activity centres to enjoy and family-friendly places to eat.

The programme is scheduled twice in the same day to maximise reach.

***Weekdays: 09.00-12.00 - Bulletin Board***

A free service featuring regularly updated public information - chemists rosters, health centre information, carelines, PTA news, charity events and local group activity - supported by paid for advertising and public notices.

***Weekdays 12.00-13.00 (repeated on Sundays 14.00-18.00) - News/Master Course***

A unique home learning course which allows viewers to gain points towards an HND, NVQ or degree standard qualification. Key lectures are televised each day, supplemented by additional data services and home learning education packs. Some courses will be specifically targetted at meeting known skills requirements within the local labour force. Close liaison with local employers and collaboration with the University of Salford's Jobs For Industry initiative will give added value to Master Course.

This is the country's first local Open University, presented in collaboration with the University of Salford in association with the Knowledge Network.

***Weekdays: 13.00-13.30 - Home Life***

Repeat of 08.30 programme

***13.30-16.00 - Tellymart***

A further opportunity for the public to gain free publicity for forthcoming events - amateur dramatic productions, charity events, cub nights etc. - supported by text, stills and submitted video. Tellymart will also feature classified airtime in which viewers can advertise goods for sale, again using submitted text, stills or video. Repeated and updated 19.00 - 21.00.

***16.00-16.30 - Referee!!***

Inter-schools football competition run throughout Greater Manchester at four different age levels and for both sexes. The programme features team interviews, match highlights and touchline analysis/advice at the end of play from a local professional footballer. Made in association with local football clubs, FA organisations and The British Sports Channel.

***16.30-17.00 - Wait For It . . .***

Inter-schools sports quiz featuring teams of four who must compete in physical as well as general knowledge examination. Rounds include:

- Dunkin' The Basketball
- Beat the 'Keeper
- Butter Fingers
- Spot the Puck
- The History of Swinton RLFC
- The Life and Times of Uwe Rosler.

Produced in studio. An independent commission.

***Monday to Saturday 17.00-18.00 - Sports Day***

Live sports programme covering all types of local sport.

Overlooked sports such as local snooker, badminton, darts, crown green bowls, squash and rugby union will be featured in depth.

As well as news and reports from local clubs, there will also be tutorials from established sports performers and a regular update on sports fashion. Sports men and women of all ages will be encouraged to make their own Camcorder films to highlight the joys and sorrows of pursuing their particular obsession.

***Mondays, Fridays and Saturdays at 18.00 - A Close Call***

Sports phone-in programme reflecting the viewers' insatiable desire to talk sport.

A Close Call will also feature video tape highlights of local sports events, studio guests and competitions.

***21.00-22.00 - News/No Longer Private***

Many decisions affecting the lives of everyone in the UK are taken behind closed doors or in circumstances where members of the public are not allowed to speak.

No Longer Private recreates the circumstances of the committee or full council meeting at which a controversial decision was taken. All the same papers and supporting documents will be distributed. The meeting will be chaired by an independent assessor who will ensure that the usual council protocols are observed. But the speakers will be members of the public. The vote they take will be their vote; it will not reflect the political make-up of the real council or committee. They may just arrive at a better decision.

***Weekdays 22.00-24.00, (compilation programmes weekends 22.00) - Tonight at Ten***

The channel's flagship programme, on air seven days a week.

Greater Manchester has one of the most vibrant entertainment scenes in Europe - from nightclubs like the Hacienda and Home, to the Gay Village, Paradise, Nynex arena and Atlas. New restaurants and cafes are opening each week. As befits the former capital of the cotton trade, there is also a thriving rag trade with nationally known brands Joe Bloggs and Cotton Traders. Add to this heady mix more than 200,000 pleasure seeking students and Greater Manchester deserves its reputation as the leisure capital of the north. Tonight At Ten, presented in a live free-form manner which defies television grammar, will reflect the full range of cultural and entertainment activity across the area. Features will include:

- every good new band that can fit on a stage
- every good new comedian to pick up a microphone
- every good new writer to read from a book

- every good new club to employ a happy bouncer
- every good new joke about Manchester City
- every means possible of interviewing [redacted]
- every new fad on the Internet
- every which way of involving the public
- every Thing But The Girl.

***Tuesdays 18.00 (repeated at 24.00) - Mad About You***

A romance and relations show which balances a light hearted celebration of love with serious advice about the ways in which relationships can survive in the 1990s. Presented by locals, and drawing on the experiences of local people, Mad About You will be closer to the reality of everyday life than many comparable programmes on television.

***Tuesdays 21.00-21.30 - News/CFU Documentary***

The Community Film Unit is the country's first local television production unit supported by the community. Profits from the channel's Telly Mart classified advertising will go towards setting up an autonomous unit of programme makers, under the umbrella of the University of Salford, making programmes for this channel and others. Each week the CFU will produce two documentaries for transmission on the channel.

***Tuesdays 21.30-22.00 - Canal Street***

Greater Manchester has the fastest growing gay and lesbian community in Europe. The Canal Street area of Manchester hosts an annual Mardi Gras festival which attracts more people than the Opera House. The "pink pound" has transformed a derelict area of the city into a thriving economic concern. But there's also concern that the gay village phenomenon has gone too far.

Canal Street is a weekly magazine programme made by, and for, the gay and lesbian population. As well as celebrating the strengths of the community, the programme will also examine the resentments, medical issues and moral questions which the success of the gay village has prompted.

An independent commission.

***Wednesdays 18.00-19.00 - And Another Thing***

Many people feel frustrated that their communities are being undermined by various social problems but no-one appears to be able to help or even listen. This programme highlights the way in which people can campaign successfully to get change; whether it be for a new and safer swing in the park or a complete rerouting of traffic around an accident blackspot. By using local case studies from the past and by providing practical

advice, the programme will demonstrate that where there is a collective will there can often be collective success.

This programme will be commissioned from the Community Film Unit.

***Wednesday 21.00-21.30 - News/It's My Life***

There has been television for viewers with disabilities for many years but the problems, if anything, have got worse. In addition to the funding problems facing people with physical disability, the care in the community campaign has created many new problems and issues for those with mental disability. These are national issues but the hurt is felt locally. It's My Life will adopt new and refreshing ways of conveying a message that few people want to hear or watch.

An independent commission.

***Wednesdays 21.30-22.00 - Black Night***

10% of the population of Greater Manchester is from a black or Asian background. Black Night is a generic title for a number of different series, commissioned from independents, which will reflect the interests and ambitions of the area's Afro-Caribbean, Pakistani, Chinese and Indian communities.

***Thursdays 18.00-19.00 - You're Nicked***

Many people are frightened by crime statistics and worried by the level of crime reporting on television. But they are also keen to help the police to clean up crime, particularly when it's in their own neighbourhood. You're Nicked gives them that chance. Each week, with the use of reconstruction and interview, Greater Manchester police will appeal to the public to help them in the fight against crime. Crimes, and the real incidence of violent crime, will be put in context. The programme is deliberately scheduled for the early evening, so as to be available for younger viewers.

***Thursdays 21.30 - Bloody Students***

Greater Manchester has the highest concentration of students in Europe. During term time the resident population swells by more than 200,000. And despite the financial rigours imposed by means testing and bank loans, the students still know how to enjoy themselves to the general annoyance of everyone else. Bloody Students is their weekly guide to events occurring throughout the area on campus and outside. As well as being a hedonistic diary for pleasure seekers, the programme will also address pressing issues of finance, accommodation, job prospects, curriculum changes, lecturer abuse and Vice Chancellor stubbornness.

The programme will be made by a core editorial team based at the University of Salford who will commission reports from media students at all the area's universities and colleges.

***Fridays 21.00-22.00 (repeated on Saturday at 21.00) - News/Music Maestros***

Manchester is justly famed around the world for the work of bands like Oasis, Happy Mondays and Simply Red. But the area also has a fine reputation for classical music, with several fine schools, university music departments and the Royal Northern College. Music Maestros is a weekly concert from the best young musicians in the area, ranging from chamber music, concerto and choral through to modern jazz and brass band.

An independent commission.

***Fridays 21.30-22.00 - Now Showing***

A weekly guide to the music, theatre, cinema, comedy and performance appearing in the area. As well as touching the heights of Oasis at the Nynex, Now Showing will also show [redacted] at the Davenport and Altrincham Girls at the Wythenshawe Forum.

***Saturdays 14.00-17.00 - Motormania***

Weekly coverage of motorsport in the region from Formula Ford at Oulton Park, to go-karting at Three Sisters and off-roading in the Pennines. Motormania will also include acquired footage from international race meetings and news on the latest car and bike releases.

***Sundays 18.00-19.00 - From Time to Time***

A programme for elder viewers, drawing on the films of the North West Film Archives, and hearing at first hand from the people who have lived in the area from the earliest years of the 20th Century. As well as describing the physical changes to the community, the social and moral mores of society then and now will be discussed in an frank and entertaining way.

***Sundays 21.30-22.00 - NW Business***

85% of the employed people in Greater Manchester work for small or medium sized businesses. It is the fastest growing sector of the British economy but few if any programmes deliver news and practical advice to small businesses. The threat of Bundesbank hegemony is all very well but what about my cashflow problem? North West business aims to give useful, local advice to the small business sector. Modules of the programmes can be built up over weeks to provide a useful video manual on different aspects of running a small business.

Although the programme is scheduled on a Sunday night when it is hoped the relevant audience is available, the programme is devised so it can be recorded to be seen later.

A co-production with the Money Channel.

***News***

News should be the lifeblood of any local television channel. But in defiance of conventional biology, it will not run through the Metro TV schedule all day unless there is news which warrants such blanket coverage. Too often, on quiet news days, the media resort to filling bulletins with a litany of traffic accidents, minor assaults and inconsequential court appearances. Metro TV will run bulletins at fixed points in the day but it will not labour the news when there is none to tell. On days when it is justified, the channel will be prepared to drop the whole schedule to bring viewers the fullest and most well informed coverage. Senior journalists and producers will be employed to ensure that the area gets the broadest and most accurate news service available. Contracts will be entered in to with local and national news agencies to ensure nothing escapes the producer's attention. The channel should be recognised as the source for local news, but only when there is real news to report.

***Compliance***

Metro TV is committed to a comprehensive compliance mechanism at all levels of the organisation. The non-Executive Chairman (named in the Confidential Annex) is a well known broadcasting executive with many years experience of the various ITC codes. The Chief Executive/Editor-in-Chief (named in the Confidential Annex) has contemporary experience of both regional broadcasting and multi-channel television. He will take ultimate responsibility for complying the channel and every member of staff will receive full training on all areas of compliance. In addition to distributing the ITC Codes of Practice, Metro TV will also produce a House Style and Compliance handbook which must be adhered to. It is also envisaged that there will be frequent, formal and informal, meetings with the ITC's local executive officer.

***Data Services***

DTN's data services will be the spade with which Metro TV digs its way in to the hearts and minds of Greater Manchester. Up until now, the standard of text and programme support information on British television has varied widely. Metro TV will underline its commitment to programme support by employing four full-time data service programmers who will collate and update data concerning many aspects of local life. For example, the service will provide detailed information on traffic delays, forthcoming events, cinema billings, birthday dedications and news headlines. In addition, viewers will be able to access information on a host of retail products and new/second hand goods available in their area.

The information will be carried on the Carousel and the Grid system (described in Section A7), providing an unprecedented level of viewer-friendly information with text, graphics, video and sound. For example, Cracking Toast will be supplemented by local news headlines, traffic blackspots, a local diary of forthcoming events, sports headlines, the top ten record charts on the Carousel, while the Grid will include competitions, birthday and anniversary dedications and listings for local cinemas.

***Training***

Training will be an essential element to the success of Metro TV, as detailed later in The Commercial Equation. In addition, new recruits will undergo an intensive in-house training programme, covering most aspects of the production process, prior to the channel launching. This will be devised and run by a qualified trainer with many years' experience of training in British television. Subsequently, there will be a series of refresher courses for existing staff and tailor made courses for new recruits and programme makers from the Community Film Unit. Over a period of time, staff will emerge with two core skills, plus a useful working knowledge of one other discipline.

***The Commercial Equation***

Metro TV is a creative vision backed by a hard nosed commercial approach. These proposals have been written by practical television professionals identified in confidence to the ITC. But it has been made commercially viable by looking at different streams of revenue and costs.

Revenue will come from five sources detailed in Section B:

- subscriptions from DTN customers
- subscriptions from cable customers
- national advertising revenues
- newly created local advertising revenues
- classified advertising revenues.

On the costs side, a detailed breakdown has been supplied in Section B. But the Metro TV service has been designed to be cost effective. Cost savings have been made in a number of unique ways:

- Original hours and repeat patterns: Over the year, the schedule is broken in to four cycles of 13 weeks. This allows for a high level of new production to be concentrated in six months of the year, with a higher level repeat pattern in the remaining months. In weeks 1-13 and 27-39, there is an average of 46.5 hours of original production each week. In weeks 14-26 and 40-52, the average is 36 hours. Total production hours (i.e. excluding Bulletin Board and Telly Mart) averages 78.5 hours per week
- The Community Film Unit: To emphasise the channel's commitment to local television, it is proposed that a Community Film Unit should be set up under the auspices of the University of Salford. The unit will be funded by proceeds from Telly Mart classified advertising airtime, allowing members of the public, without prior experience or knowledge, to make more than an hour of television each week

- The International Media Centre: DTN has entered into discussions to create a strategic education and training partnership with the International Media Centre based at the University of Salford. The terms are outlined in the Confidential Annex.

  The University has a well established reputation as a major provider of media education and training and has an outstanding track record as a centre for research, development and innovation in local and regional programming, media technology and music performance.

  It founded the annual Television from the Regions Conference in association with PACT. Its involvement in local programming innovation dates back to the Waddington Village experiment and continues through experiments in community television on cable and through production partnerships with both Granada and the BBC in the north.

  The service to be based in Salford University will be the model to be replicated in partnership with Universities or training establishments nationwide.

  Unique to the Greater Manchester proposal will be the following:

  - the studio, post production and presentation centre will be based in the IMC at Salford University
  - graduate trainees will work alongside the core broadcasting teams in all areas of production and administration
  - DTN and Salford University will jointly mount a one year full time Post Graduate Diploma course in digital terrestrial television/City TV Production. The course will be based on existing Post Graduate Diploma models in providing a six months production experience module
  - student placements in all disciplines will be structured into the programme service, enabling student access to the latest facilities and equipment
  - the University's links with its wider community, academic, business, creative and professional will support Greater Manchester TV's own community links and programming.

  University research expertise can be allied to TV developments and projects.

  DTN believes that local TV via digital terrestrial television and cable will require an innovative and flexible approach to production methods, a variety of programme styles and strands and a dynamic and interactive approach to its audience. The partnership with Salford University and subsequently with other Universities and Colleges nationwide offers a unique strategy for developing a new medium with a new generation of programme makers. It also offers its audience a fresh and exciting approach to a new opportunity and technology

- Staffing Levels and Pay: The number of staff employed by Metro TV and their remuneration is based on a sound knowledge of the labour market in the North West and first hand experience of setting up and running a new television channel. Senior staff - producers, directors, presenters and news editors - are paid an industry average. More junior staff, entering television for the first time, are paid less. It is Metro TV's experience that young recruits to television are most concerned to receive full training and be employed over a significant period of time. The deskilling of the industry and the prevalence of short term contracts is a greater threat to the quality of television than starting rates of pay. Most young people recognise this and seek jobs which provide them with broad based experience and long term prospects.

# The Hindi Channel

## Summary

This section contains the following:

- Introduction
- The audience
- Programme highlights.

### *Introduction*

The Hindi Channel is based on a successful Indian service owned by a joint venture of Sony Pictures Entertainment Inc. The following description of the current service, which is under discussion, is illustrative of the availability, sourcing, practicality and workability of the concept. DTN's technology will allow us to broadcast this service into areas where there is a large Hindi speaking population.

### *The Audience*

The Hindi Channel will target the 1.26 million people in the UK who speak or understand the Hindi language (source: Kalchas).

### *Programme Highlights*

The Hindi Channel will provide:

- a quality driven, 18 hour a day, Hindi general entertainment service
- a channel which attracts upscale, young adult viewers with families
- an innovative channel which features a wide variety of first run Hindi language programming, from comedies and game shows to thrillers, dramas and mythologicals
- a channel which delivers an unbeatable line-up top Hindi feature films from yesterday and today
- a channel with over 1,500 hours of original programming in Year 1.

## Exhibit A5.3: The Hindi Channel - Illustrative Schedule

| Time | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| 8.00 am | YK Baraat | KK Chand | Rangeela Re | YK Baraat | GJ Maane | KK Chand | Dubbed Amerian Programme |
| | Dubbed American Programme | | | | | P Mulakat | |
| 9.00 am | Dubbed American Programme | | | | | Jaadugar | GJ Maane |
| | Dubbed American Programme | | | | | Chamatkar | Dekh Tamasha Dekh |
| 10.00 am | Hindi Wheel of Fortune | | | | | GJ Maane | Dekh Tamasha Dekh |
| | Faasle | Ghaav | Jaadugar | O Maria | JKMJG Ji | Sunday Ke Sunday | J W W Sikander |
| 11.00 am | 10 Civil Lines | ZB Gaya | Pehchaan | Apne Jaise Types | Apne Jaise Types | Premiere | Sunday Ke Sunday |
| | Jaadugar | Premiere | Nirlep Rasoi Show | GJ Maane | Humse Badkar Gong | Faasle | Humse Badkar Gong |
| 12.00 noon | Cover Story: Hostel | Good Shot | Aahat | Chamatkar | Siddhi | Anarth | P Mulakat |
| | JKMJG Ji | P Mulakat | Humse Badar Gong | Anarth | Y S N H Sakti | Ghaav | Good Shot |
| 1.00 pm | GJ Maane | Kaash | Bindas Bol | J W W Sikander | Good Shot | Pehchaan | Pehchaan |
| | Premiere | | | GJ Maane | GJ Maane | Nirlep Rasoi Show | Y N S H Sakti |
| 2.00 pm | Hindi Feature Film | | | | | | Dubbed American Programme |
| 3.00 pm | | | | | | | GJ Maane |
| | | | | | | | O Maria |
| 4.00 pm | | | | | | | Nirlep Rasoi Show |
| | | | | | | | Faasle |
| 5.00 pm. | Dubbed American Programme | | | | | Baat Ek Raaz Ki | Cover Story: Hostel |
| | Dubbed American Programme | | | | | Bindas Bol | Baat Ek Raaz Ki |
| 6.00 pm | YK Baraat | KK Chand | Rangeela Re | YK Baraat | GJ Maane | | Aahat |
| | Premiere | | | | | Siddhi | Bindas Bol |
| 7.00 pm | Dubbed American Programme | | | | | | |
| 7.30 pm | Hindi Wheel of Fortune | | | | | | |
| 8.00 pm | 5 Star Express (Film Songs) | Hindi Feature Film | Faasle (Women's Soap) | Chamatkar (sitcom) | Hindi Feature Film | | |
| 8.30 pm | O Maria (Womens' soap) | | Boogie Woogie (Dance Comp.) | Siddhi (Thriller/Drama) | | | |
| 9.00 pm | YSNH Sakti (Sitcom) | | Anarth (Thriller) | Cover Story: Hostel (Drama/Anthology) | | | |
| 9.30 pm | Chamatkar (Sitcom) | | Bindas Bol | Aahat (Thriller) | | | |
| 10.00 am | Ghaav (Women's Soap) | | O Maria (Women's Soap) | JKMJG Ji (Upscale Soap) | | | |
| 11.00 pm to 2.00 am | Late Night Schedule | | | | | | |

*Serial Drama*

- O Maria: Maria is one of four sisters raised in a convent. This serial follows her struggles, successes, loves and losses as she follows her dream to become a famous singer
- Ghaav: Focuses on the story of two sisters, each trying to succeed. One sister will do anything to achieve a luxurious lifestyle; the other refuses to compromise her moral beliefs
- Faasle: Follows the intricate relationships of one troubled family - a husband desperately trying to win the affection of his wife; a wife, unhappy with her marriage, who prefers to cling to the past romances; and two growing daughters who now have to make their own choices about love and romance
- Jaane Kahan Mera Jigar Gaya Ji: Offers a fictional inside look at the fascinating characters and political machinations of the Hindi film industry. Scripted by a former editor of the film magazine Stardust.

*Drama Thrillers*

- Siddhi: Amidst the intrigue of the corporate jungle, a divine spirit with special powers is able to jump inside the bodies of different characters - but only for seven days
- Cover Story: Hostel: Anita and Vivek are two crusading journalists for News Today. Each season they go undercover - this year exploring a deadly racket of kidnapping and prostitution behind the scenes at "charitable" women's hostels
- Baat Ek Raaz Ki/Aahat/Sannata: Spine-chilling anthologies in the best and scariest tradition of Rod Sterling and Alfred Hitchcock.

*Comedy*

- Right Choice: Follows the hilarious antics of a single man (played by the famous comedian Laxmikant Berdi) who opens up a marriage bureau to help himself and others find the perfect mate. More chaos ensues when a divorce bureau opens up right across the street
- Chamatkar: Prem is a simple man with a problem - his bad hearing causes him to misunderstand everyone he meets. The answer to his problem is an operation that not only gives him back his hearing, but gives him the ability to hear other people's thoughts as well as their voices
- Yeh Shaadi Nahin Ho Sarti: Tracks the story of a rich man looking for the perfect tax write-off - he'll invest his money in producing the world's worst movie. In the process, the inept cast and crew spoof many Hindi blockbusters.

*Lifestyles and Games*

- Pehchaan: This "make-overs" talk show updates women on the latest beauty secrets
- The Nirlep Rasoi Show: This is a cooking show with a difference, exploring top dishes from around the world, as well as kitchen ergonomics and hygiene
- Hindi Wheel of Fortune: This series is a popular Hindi rendition of the world's most famous puzzle-solving game show
- Boogie Woogie: In this dance based competition, contestants answer question about dance scenes from famous movies before taking to the dance floor themselves, as their fancy footwork is evaluated by the judge.

*Film and Film based Programming*

- Five Star Fan Club: Allows the audience to ask questions of their favourite film stars.
- Bsa Star Ki Pasand: Lets celebrities choose film clips of their own favourite film scenes and songs.
- Pehli Mulakat: Adds a twist to the traditional film based show, by showing only fascinating "first meetings" between boy and girl, villain and hero, etc.
- Cine Prime: Features the best films of Bollywood, from vintage classics to recent blockbusters, including Anand, Guddhi, Bawarchi and Chupke Chupke, just to name a few.

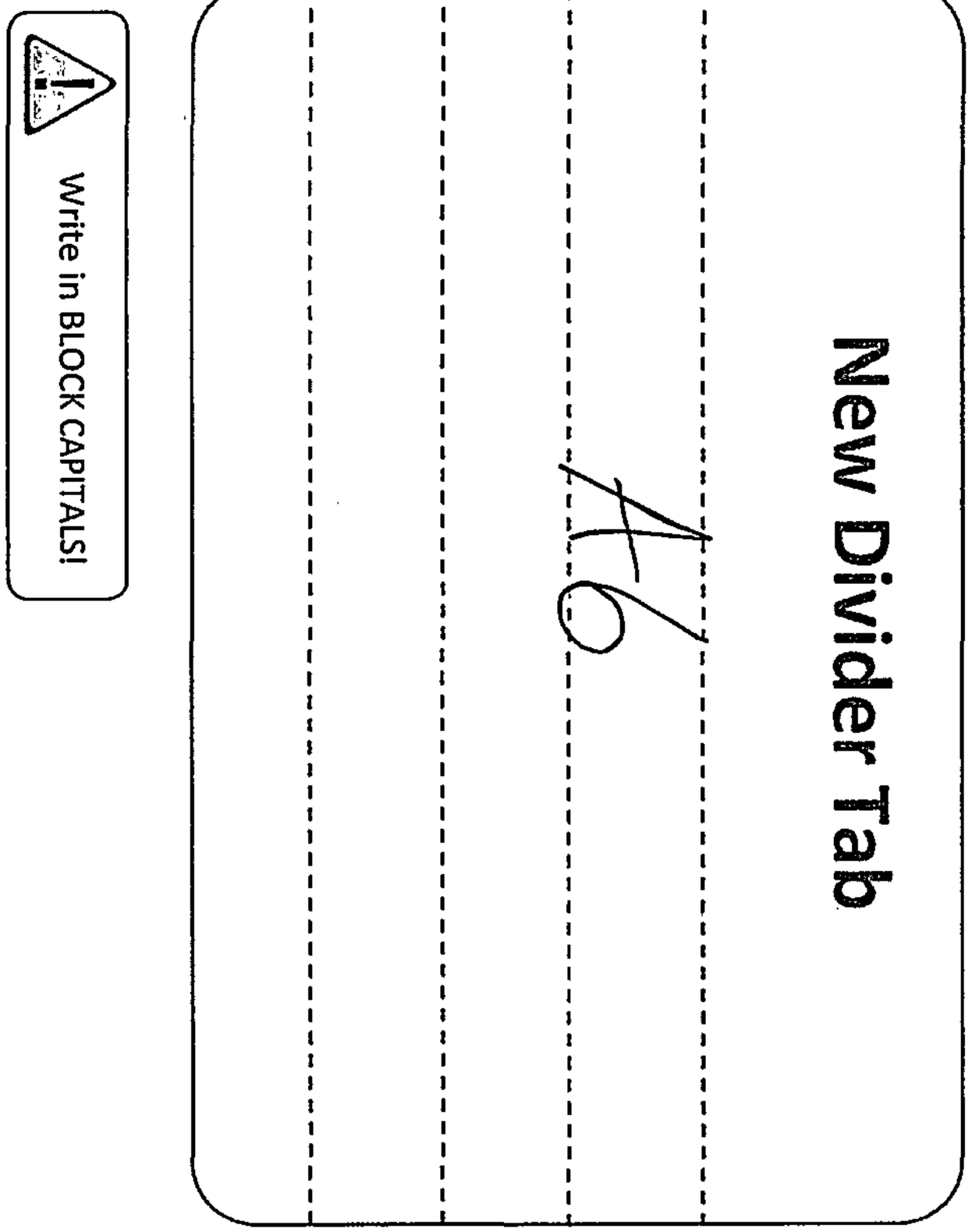
*American Programming*

For the first time, The Hindi Channel offers viewers a look at classic American television hits dubbed into the Hindi language.

## Differences In DTN's Proposals Under Section A5 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplex licences our proposals would differ from those set out above. These differences are set out below.

If DTN is awarded this licence on its own or this licence and one other, no local services will be provided for broadcast.



# A6 Programmes of High Quality

*Taking account in particular of the guidance given in paragraph 101, the applicant should give details of the types of programmes of high quality which will be included in the programme services to be provided on the multiplex.*

## Summary

Sections A4 and A5 highlight each of DTN's impressive range of services including descriptions of innovative and quality programming. To deliver high quality programming, both at launch and in the future, will require a clear vision and strategy, excellent resources and a clear understanding of the audience. DTN has all these critical elements.

Digital terrestrial television represents a revolution for British broadcasting, more so than any other innovation since the introduction of colour television sets. It offers a step change in the quality of picture and sound, a leap forward in television and set top box functionality, and an opportunity for a new generation of consumers to access online services.

However, these improvements, dramatic though they may be, will not in themselves be sufficient to ensure the success of digital terrestrial television. The undoubted technical sophistication of the service will be an irrelevance if we fail to deliver to viewers superior programmes that educate, inform and entertain. In a market where content is king, it is the quality and breadth of the programming experience that will determine the success or failure of digital television.

The need to deliver programmes of high quality is of paramount importance to DTN, representing the keystone of our vision for the future of British television. We have devoted considerable effort to creating a line up of programmes and services that represents the best traditions of British television, as well as exploiting all the possibilities of the new digital broadcasting medium to provide innovative new experiences for our viewers.

To meet these ambitious goals, DTN has created an organisation staffed and backed by organisations and individuals with formidable track records in delivering high quality programmes. We have assembled an equally impressive group of partners with proven experience in producing programming of the highest quality and with expertise in digital broadcasting technology.

## Introduction

There are five elements to DTN's strategy for delivering programmes of high quality:

- creating a vision for the future of British broadcasting based on the provision of high quality programming
- developing a detailed content strategy which reflects this vision
- building an organisation with the right management, the best resources and the appropriate ethos to implement our content strategy
- establishing relationships and partnerships with organisations and individuals that share our commitment to excellence
- utilising the interactive capabilities of the digital terrestrial television platform to create a unique dialogue with our viewers, whose opinions will serve as an invaluable guide to quality.

## Creating a Vision of Quality

DTN will deliver a diverse range of high quality programmes that will attract both broad-based and niche audiences. The services we offer will appeal to a wide variety of tastes and interests, providing something for everyone across the range of multiplexes. However, our vision for digital terrestrial television involves the creation of more than just another multi-channel service. It is our belief that digital terrestrial television represents the next generation of British broadcasting, an opportunity to take all that is best about British television and transport it into the digital era. Our intention is to create a service that innovates within the traditions with which viewers are familiar, taking advantage of the potential of digital terrestrial television to offer viewers the best of the television they know and love as well as offering the excitement of the new.

The commitment to quality that will bind this service together will be familiar to our viewers. It will create a bridge between the popularity and appeal of the great British terrestrial broadcasters and the dynamism and novelty of the new multi-channel cable and satellite services. DTN's aim is to integrate the best practices of both sets of broadcasters, binding them together with an assurance of high quality that will appeal to the mass of British consumers. We believe that such an approach is essential if digital terrestrial television is to appeal to more than a minority of viewers.

Maintaining a commitment to quality across a full range of services is a task for all broadcasters. The challenge is to ensure that the quality of programme offerings intended for small or niche audiences is not below that of programmes intended for mass audiences.

DTN believes that, in the digital era, this challenge must be met head on. The expansion of spectrum capacity made possible by digital technology will allow small

segments of the audience to be served in a way never before possible. Although many of DTN's programmes will achieve high audience ratings, others will seek to satisfy only a small number of viewers. Our aim is to create quality programming for audiences of all sizes, steering clear of the assumption that small audiences equal small budgets equals low quality television.

A key measurement of our success in applying this ethos across the full range of our output will be audience appreciation and satisfaction evaluations. It is our belief that all programmes should strive to create high levels of viewer satisfaction, no matter how large the total viewing audience. This is essential if a viewing audience, whose expectations of quality have been primarily set by the undoubtedly high standards of the terrestrial broadcasters, is not to be disappointed by its first experiences of niche television. If digital terrestrial television is to succeed, the services it offers must build on the British tradition of quality broadcasting rather than try to reinvent them. The interactive capabilities of DTN's receivers will provide it with an enormous opportunity to obtain feedback from its viewers. This opportunity must not be allowed to go to waste.

DTN's vision of programming quality will reflect the context of the services on the gifted multiplexes. The simulcasting of the five existing analogue terrestrial channels will provide DTN's viewers with the quality benchmarks against which they will measure the new services. Undoubtedly, the new digital channels that these broadcasters will create on their gifted multiplexes will be of the high quality that would be expected from the established British terrestrial broadcasters. These channels will play a vital role in shaping viewers' expectations of digital programming quality. The services proposed by DTN will be complementary to them, not only in terms of content but also in terms of quality. This is essential if digital terrestrial television as a whole is to maximise its chances of success.

## Developing a Content Strategy Based on Quality

Quality cannot be guaranteed through large budgets. Rather, it requires a detailed understanding of the audience combined with an ability to convert production budgets into programming that truly meets viewers' perceptions of quality. Quality must offer the viewer diversity, something that is fresh, innovative and with the ability to surprise on occasions.

The digital programme services described in Sections A4 and A5, taken both individually and as a whole, demonstrate DTN's ability to put its aspirations of programming quality into practice. The original channels created by DTN and developed by leading producers in the UK, will be made to the high standards we believe are essential if digital terrestrial television is to succeed in establishing itself as the next generation of British television service. DTN will also carry the services of

the UK's and the world's leading producers and broadcasters, including services comprising the best of British television and the best programming from around the world.

These channels have been designed to meet several objectives. To the extent to which we succeed in meeting these aims, we will have created programme services which successfully reflect our vision for the future of British broadcasting based on the provision of high quality programming.

### Designing Services to Meet Changing Viewer Demands

First, we have considered the likely mix of services that will be available across the full range of multiplexes, conducted extensive research on audience demand and created channel concepts which we believe will increase the variety of services on offer to British audiences on digital terrestrial television.

Second, we have created services which reflect the changing cultural role of television in Britain, focusing on aspects of our national life which are undergoing radical transformation. DTN's own channels will function as invaluable resources for our viewers in a time of uncertainty and change. In this, they will reflect the changing nature of the relationship between broadcaster and viewer as it changes from a one-to-many monologue into a many-to-many conversation.

### Meeting a Need with Our Own Production

For our original channels, we will use measures of quality such as the accuracy, usefulness and relevance of the information we convey. The originality of our programme ideas and our substantial investment in first run programming from a range of providers including independent producers will bring a freshness of approach to a wide range of subjects. Our intention with our original channels is to bring light and colour to topics that, in the past, have been painted only in the most sombre of tones. In so doing, we will breathe life into subjects of real relevance to our viewers. In addition, we plan to produce high quality one-off productions of events as and when these become possible. More details of our proposals in this area are provided in Sections A4 and A5.

The Editor-in-Chief of each channel will work hard to guarantee that DTN's vision becomes a reality.

## Acquiring the Best Sources

We will, on occasions, acquire high quality programming for our channels from around the world, so long as such material genuinely adds to the diversity and appeal of the digital terrestrial platform. However, such material will be used only judiciously. The vision for our channels will be predominantly realised by original programme makers working afresh to uniquely demanding briefs whose focus is on Britain, locally, nationally and internationally.

## Exploiting the Full Potential of Digital Television

We have sought to leverage the opportunities of the digital era and to exploit the creative potential of the new medium. Our new services will lead the way in demonstrating how digital technology will change the way we use television and the way we think about it. They will show how digital technology enables us to do things that analogue services are simply incapable of achieving.

The new channels that will make up DTN's digital terrestrial offering will be highly differentiated from those of analogue services and satellite through the provision of specially created digital additional services or data services. These services, described in Section A7, will dramatically enhance the quality of the viewing experience that we are able to offer viewers. Much of DTN's programming will benefit from being supplemented by invaluable additional information, creating an entirely new sort of television experience:

- viewers of The Money Channel will benefit from being able to access fast-moving headline news, share prices and market information when they want it, not when the broadcaster decides to give it to them
- The Knowledge Network will provide an invaluable resource for Britain's learning revolution. People of all sorts will have access to vocational training, "How To" guides, learning support material, revision aids and online learning, all at the touch of a button
- The British Sports Channel will offer the dedicated sports-enthusiast a comprehensive results service, sports news and information database. This will be a sports service unlike anything else on offer today

- our local services will aim to generate a sense of belonging within each region, with data services acting as a local bulletin board of the airwaves. Viewers will be able to access information about local events, cinema listings, local organisation news and other such items.

It is not only DTN's original channels that will be able to exploit the potential of the new medium. DTN is committed to working with all digital terrestrial television broadcasters to offer this extra dimension of quality to all digital programme services across the full range of multiplexes. This extra quality dimension will add the extra value needed to take British television into the digital era.

DTN will ensure that its channels comply with all relevant ITC programme codes.

## Creating a Quality Organisation

Our commitment to quality is demonstrated by the individuals and organisations who are closely involved with DTN. These are explained below. However, this commitment is not something that will simply be set in stone at the commencement of our licence and ignored thereafter. The maintenance of quality will be built into the management controls and processes of each and every part of DTN's business.

DTN's Director of Programming will take overall responsibility for programme quality. Working in the programme team are a group of experienced broadcasters who represent some of the best and most innovative talent in the UK. The names and experience of these individuals are detailed in Section A16, in the Appendix to Section A and in the Confidential Annex. Together, these individuals have over 200 years of experience in broadcasting.

The senior staff will be supported by a large team of experienced producers and programme makers. To ensure that this team can support DTN's broader goals, DTN has committed to a large training programme for all of its channels as well as encouraging its independent producers to develop new programmes. One innovative programme will be launched by Metro TV who are developing a specialised programme with Salford University. The details of training are outlined in the relevant parts of Sections A4 and A5.

The Director of Resources and Technology, supported by the team of Master Control Directors at the BOC, will constantly monitor the channels and services provided to us by our programming partners, ensuring that their output is of a consistently high standard. Should any deviation from these standards occur, they will report them to the Director of Programming, who will take the appropriate steps. DTN's Channel Liaison Executives will also work closely with our programming partners to help them maintain the quality of their output. Section A11 contains further details about DTN's technical quality strategy and the staff and training that will support it.

DTN's shareholders have a good track-record in managing quality and will bring the benefit of their considerable experience to DTN. DTN will bring together a world class team of British technology companies to implement digital terrestrial television:

- NTL has been a major driving force behind the development of digital terrestrial television in the UK, as well a leader in the development of digital broadcasting around the world. It has engaged in a multi-million pound research and development programme to produce new and innovative technologies in this field and is one of the few organisations in the world with experience in implementing end to end digital television solutions. Together with CableTel, NTL offers a unique national full-service telecommunications network, believed to be the first of its kind anywhere in the world

- CableTel is the third largest operator of local telephone, television and information networks in the UK, employing state of the art fibre optic technology in franchises covering 10% of the UK's population. Its performance is leading the UK cable industry, with the lowest levels of churn and the highest levels of penetration of any cable company, largely as a result of its innovative pricing policies and marketing expertise - 95% of CableTel's subscribers are satisfied with its services. Other parts of the CableTel group include Cable Online, a major new UK Internet service provider and Secure BackUp Systems, which has pioneered the development of off-site data back-up services in the UK for protecting business-critical computer data.

DTN has explained its vision of programme quality to all the potential channel providers we have talked to. DTN will closely measure and monitor all of the services it broadcasts to ensure that they meet the exacting terms of programme quality we will agree with every channel provider. If any channel fails to meet the strict conditions DTN has set for programme quality, DTN will act swiftly to remedy the situation.

## Working with Organisations that Excel

The DTN digital vision combines the close support and commitment of a wide range of companies that can demonstrate their excellence across disciplines including programming and technology. DTN has drawn together a formidable group of suppliers who share our vision for digital terrestrial television and are committed to assisting DTN in building the digital future of British broadcasting. The main players in this team are described below.

Many of the services described in this document will be brand new, specially created for DTN's digital terrestrial offering. Clearly, if DTN is to succeed in establishing a platform which offers a diverse range of high quality programming to viewers, it needs to ensure that the proposals described in Sections A4 and A5 are fulfilled in reality.

DTN has every confidence that these services can be implemented. Indeed, one of the most important criteria in DTN's selection of its digital programme service partners has been the degree to which these suppliers can demonstrate their ability to implement channel and service proposals to the standards of excellence we believe will be necessary for digital terrestrial television to succeed.

DTN is working with leading producers, library-owners and broadcasters - both in terms of the individuals and the organisations from Britain and around the world. Together, they contribute years of experience in producing a vibrant and diverse range of programmes.

The success of American shows such as *ER*, *NYPD Blue* and *Frasier* has proved that the US television industry is no longer a wasteland of lowest common denominator programming. Instead, it has become an originator of award winning quality programming that attracts vast audiences throughout the world. Used selectively and prudently, DTN believes that material from around the world can enrich and enliven British television, offering viewers an increased spread of high quality programming. A wide range of programming from other countries will be important for Britain as it moves into the multi-cultural 21st century.

A commitment to excellence will be evident not only in our relationships with programme providers, but with all the partners who work with us to take British broadcasting into the future. If we are to build an enduring and sustainable service focused on the provision of programmes of high quality, this commitment to excellence must run through our relationships with each and every company involved in the implementation of digital terrestrial television. We will work with companies who have a proven ability to innovate and excel within their fields: Details on two of our partners are given below:

- ICL is a leading UK information technology company supplying services to companies in more than 80 countries around the world and with technology partners such as Microsoft, Netscape and Sun Microsystems. Its clients and partners include the BBC, with whom it is developing a commercial online service, and NatWest Bank, with whom it built the first UK Internet site to perform complete credit card transactions online. It provided the video server and system implementation, from the server to the set top boxes, for the Cambridge Interactive Television trial and is part of the Camelot National Lottery consortium, with responsibility for the Lottery's information systems, for the installation of 10,000 Lottery terminals in retail outlets across the UK and for training 37,000 staff in their use

- News Digital Systems (NDS) is a worldwide company with its headquarters in the UK, providing end to end solutions for digital broadcasting through its research, development and manufacturing subsidiaries: DMV is a world leader in MPEG-2 DVB digital video compression and a pioneer in the development of

digital terrestrial television; News Datacom is a world leader in conditional access, and its proven systems integration and global support capabilities. Through its DMV and News Datacom subsidiaries, NDS works with many of the world's leading information technology and media companies including

- BSkyB, Reuters and British Telecom in the UK
- NetHold in Europe and South Africa
- DirecTV, PanAmSat, NetSat and Galaxy in the Americas
- Foxtel in Australia and both STAR TV and Shinawatra on the Pacific Rim

News Digital Systems is part of the News Technology Group, responsible for News Corporation's high technology companies. NDS companies have won many awards for technology, the most recent being the receipt of an Emmy by News Datacom for its Outstanding Achievement in Technological Development. In April 1996, DMV received two Queen's Awards, one for Technology and one for Export.

## A Dialogue with Our Viewers

Digital terrestrial television means more than simply "more or better television". It represents a fundamental change in the relationship between broadcasters and their audiences. The key force driving this change is interactivity, the ability of the viewer to assume far greater control of his or her viewing experience and of the broadcaster to respond more fully than ever before to the preferences of the audience. In essence, this change represents the opening up of a conversation or dialogue between broadcasters and viewers.

It is our belief that the interactive capabilities of DTN's digital television platform provide an opportunity to monitor, adjust and control quality as perceived by our viewers. Rather than relying on crude ratings statistics, DTN will be able to observe the many paths our viewers take as they navigate through our services. In addition to using third party audience surveys, DTN will gather its own information on audience viewing through technology that will identify which channels and programmes are being watched and the manner in which the audience moves between the services spread across the multiplexes.

In the digital era, audience size will be just one measure of quality. Audiences will take advantage of the vast expansion of choice afforded by digital technology to dip in and out of our schedules at their own convenience. Our channels have been specifically designed to reflect this fundamental change in viewing patterns, making judicious use of repeats to maximise the utility of the schedule. In this environment, a key indication of the quality of our services will be the extent to which they encourage audience participation and interaction. The interactive services we provide to viewers will include provision to make comments on the programmes as well as allowing sample

groups to complete structured surveys on a wide range of issues such as programme quality, diversity of services, customer support and pricing. This feedback will be an essential guide to DTN as it charts a course through the new digital broadcasting environment.

Finally, and most importantly to DTN, a dialogue with the viewers of our services will constitute the subject matter of many of our services. Digital terrestrial television will play a role in creating the communities of the 21st century, bringing people together to share interests, experiences and information:

- *Saturday Value* on The Money Channel will present viewers' tips on the best value goods around, while *The Community Channel* will bring together many of the millions of people who take part in structured voluntary activity every year to share information on good practice, lottery funding and volunteer exchanges
- The Knowledge Network will serve as a hub of learning opportunities, bringing together students and instructors of all ages to learn from one another. For example, *The Distributed College Network* will enable students to interact with each other
- The British Sports Channel will develop close working relationships with sports associations, enabling them to communicate with their members. It will also put viewers in touch with their heroes through phone-ins and question and answer sessions
- Metro TV will run a *Bulletin Board* service, transmitting a mixture of paid-for advertising and public information along with subsidised community notices. *Tellymart* will be the classified pages of the airwaves, consisting purely of information provided by our viewers.

## Differences In DTN's Proposals Under Section A6 For Less Than Three Multiplex Licences

This section explains how the high quality programming that will be included in DTN's services will differ if DTN is awarded fewer than three multiplex licences.

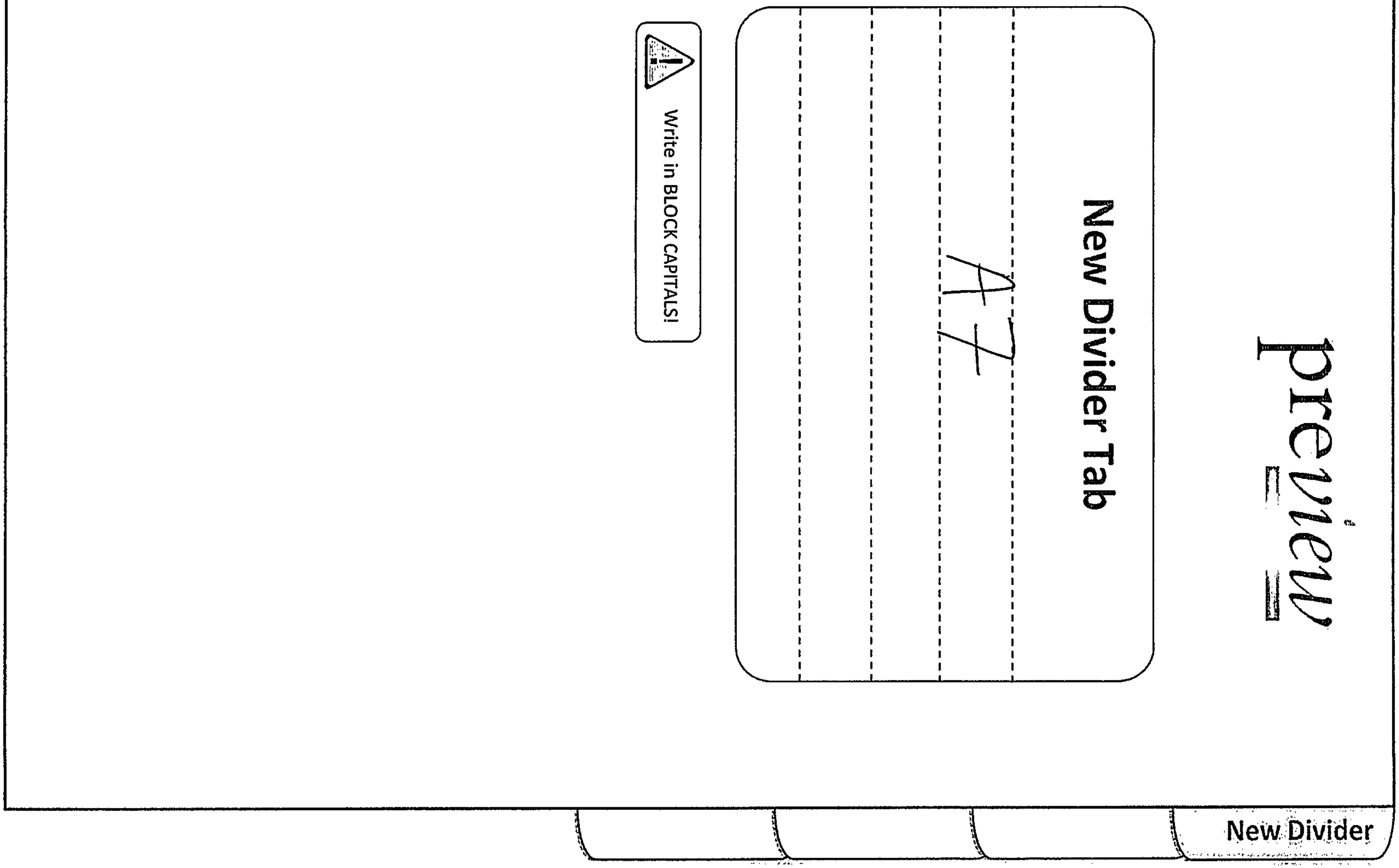
As we outline in Section A9, DTN firmly believes that the success of digital terrestrial television and our ability to deliver high quality programming will be qualified by the number of multiplex licences we are awarded. Although our vision for delivering high quality programming will remain resolute, it is likely that the market which will develop if DTN does not receive three multiplex licences will be one in which fragmentation, confusion and cost duplication limit the range and diversity of high quality programming available on digital terrestrial. In particular, co-ordination of the services on offer will be more difficult to achieve, and the collaborative infrastructure that we envisage will be more difficult to implement. This will limit DTN's ability to commit to such an ambitious approach to quality. In particular, DTN will have less original programming and will be less able to ensure the diversity of the services available on the digital terrestrial platform. This is shown in Exhibit A6.1. More details of our plans for programming in the event that we receive one or two multiplex licences are provided in Section A4.

**Exhibit A6.1: Multiplex Allocation at Launch**

| Channel | B | C | D | BC | BD | CD | BCD |
|---|---|---|---|---|---|---|---|
| The ITN Living History Channel | B | C | D | B | B | C | D |
| Animal Planet | B | C | D | B | B | C | B |
| Travel | B | C | D | B | B | C | B |
| The Box | B | C | D | B | B | C | D |
| TCM: Tuner Classic Movies | B | C | D | B | B | C | D |
| Cartoon Network | B | C | | B | B | C | D |
| MGM Gold | B | C | | B | B | C | D |
| Data Services | B | C | D | B | B | C | B |
| CA/SMS/EPG | B | C | D | B | B | C | B |
| The British Sports Channel | | | | C | | | B |
| Digital Box Office | | | | C | D | D | C |
| Data Services | | | | C | D | D | C |
| CA/SMS/EPG | | | | C | D | D | C |
| The Money Channel | | | | | | | B |
| The Knowledge Network | | | | | | | B |
| Metro TV/Hindi Channel | | | | | | | C |
| Horizons | | | | | | | B |
| Style/Showcase | | | | | | | B |
| Arena/Learning | | | | | | | D |
| Data Services | | | | | | | D |
| CA/SMS/EPG | | | | | | | D |

*Coverage figures assuming complete build out ('000)*

| | | |
|---|---|---|
| Multiplex B | 50,608 | |
| Multiplex C | 44,584 | (NB: Metro TV Coverage = 4,232, Hindi Channel = 40,352) |
| Multiplex D | 42,440 | |



# A7 Additional Services

*Noting the information contained in paragraphs 106 to 108, the applicant should state the nature of the digital additional services which he intends to include in his multiplex service, and (where known) the dates when they would commence, the hours of the day and days of the week during which they would be broadcast, the coverage area for the services (if restricted to less than the full multiplex coverage area), the digital capacity they would occupy and who would supply them. In particular details should be given of any Electronic Programme Guide to be provided by these means.*

## Preface

This section is divided into three parts. Each part is laid out separately in this Section with a page break between.

### Data Services

In the first part of this section we outline the groundbreaking data services that we propose to provide to our subscribers, describe the information medium that these will create, and explain the technical approach we propose to take in order to deliver these services.

### EPG

In the second part of this section we describe the Electronic Programme Guide that DTN proposes to operate, providing information to our viewers about the services operating across the full range of multiplexes.

### Provision for Hearing and/or Sight Impaired People

In the third part of this section we describe the provisions we will make for subtitling, signing and audio description, aimed at promoting the understanding and enjoyment of programmes on digital terrestrial television by persons who are deaf or hard of hearing or blind or partially sighted.

### Variations in Section A7 with Different Multiplex Combinations

The first three parts of Section A7 detail our plans in the event that DTN is awarded Multiplexes B, C and D. The fourth part of this section details how our proposals would vary if we were awarded one or two multiplex licences.

# Additional Services - Data Services

## Summary

The ITC was the first broadcast regulatory body to recognise the potential contribution that data services could make to the new digital era. In 1994, the ITC commissioned a major study on the data services that digital television would enable. The ITC recognised that there was already demand for information services delivered over the television but that digital terrestrial television could vastly improve on these by increasing the amount of content available, expanding its usefulness and linking the data services into programme channels.

At the same time that teletext has been growing, another revolution has been taking place. The Internet is becoming a growing force in schools, universities, businesses and homes around the UK and the rest of the world. The result is a change in the way we interact with the world outside our homes that may in the future become as profound as those caused by the advent of the telephone and the motor car. The Internet is improving consumers' skills with interactive media and raising their expectations of what it can deliver. It is moving them into an "on-demand" world where they can call up information and images as and when they are required.

This creates an environment where there is a substantial commercial opportunity for DTN. Whereas only 6% of consumers have access to the Internet today, 30% are interested in a connection to the Internet if it is delivered on a television set. Also our market research indicates that more people will be interested in subscribing to digital terrestrial if data services are offered.

DTN has invested considerable time in understanding the likely needs of users in the digital environment. We believe that there are two crucial elements which will affect users' enjoyment of digital terrestrial television data services and ultimately drive its success. The first of these factors is the content of the services - the information that users can access, its usefulness and relevance. The second and equally important factor is the ease of use of the information and services. For example, the Internet has lots of information but it is difficult to use; teletext is relatively easy to use but the amount of data is limited.

DTN plans to bring together the quality of the best of broadcast television with the immediacy and impact of the new online services to give subscribers access to a vast range of public service and commercial information, telephone listings, home shopping services, and online magazines. Our receiver technology will make many of the functions of the personal computer available to the television viewer in a simple, affordable and easy to use way. DTN's vision will thus bring the Information Society within reach of all viewers, many of whom do not currently have the time, the money,

the enthusiasm or the technical know-how to become connected to the Internet. This will be the online service that anyone can use.

DTN will not simply be creating the infrastructure to deliver these services - it will promote their use by making the data services an integral part of its programming offer and by encouraging viewers to explore the many other information and transactional services. At first, we expect that most viewers will be drawn to our data services through their association with our programme services. For example, *Money* will offer consumer advice, business and finance news, telebanking, company press releases, financial and charity services - and be promoted by the Money Channel; *Metro* will offer local news and information, The Town Hall public information and classified advertising - and be promoted by Metro TV; and *Travel* will offer information on holidays and adventures, weather, reservations and the ability to buy tickets online. It also will be promoted by our channel, Travel.

The services will be designed in such a way as to allow users to get the information they need when they need it. Television programmes, continuity features and the EPG will all draw viewers' attention to specific content and to the services which are available. Coloured icons will appear on screen during programmes on each of DTN's owned and operated channels, indicating the button on the remote control which the viewer should press. For example, a viewer wishing to move into the data services will click on the blue information icon to get more information about an item in a programme. They will click the yellow "L" button to find out about educational opportunities relevant to The Knowledge Network or any other channel. More detail on the interface that the viewer will use is given in Section A7 - EPG.

DTN will fully exploit the combined potential of digital terrestrial broadcasting plus online services accessed over the NTL Telecommunications Network to allow users to delve into DTN's online service or onto the Internet, providing more depth than the broadcast data service can offer.

**Exhibit A7.1: Data Services - Digital Terrestrial Television - The Vision**

Television

The Carousel

The Grid

Internet

- Television programming and commercials will be broadcast with accompanying screen based information, accessed via the remote control. These pages will effectively pull viewers through to the broadcast Carousel
- A carousel of pages of core information services will be broadcast. Pages will look similar to HTML Internet pages containing pictures, graphics, sound or small computer programs called 'applets'
- The size of the Carousel will be limited by bandwidth constraints. Users will be able to access huge amounts of additional information via a dial up connection to our online service
- Full Internet will be available for users who pay a monthly charge of around £10, giving them access to the full range of Internet websites

Data services will be critical to the success of digital terrestrial television, offering viewers an extra quality dimension that will differentiate our services from analogue media. Our aim is to launch a profitable service that will keep the UK at the forefront of the Information Society.

## Introduction

This section includes detailed information on the nature of the data services which we will include in our multiplex service as well as a description of the service availability and compliance. The section is laid out as follows:

- *The Opportunity for Digital Terrestrial Data Services* describes the features of a number of existing services and how DTN will develop its service to meet the dual demands of range of information and ease of use
- *DTN's Services* provides detailed examples of the services that we propose to offer viewers and indicates how some of these will be linked to our programming services
- *How it Works* explains in more detail how the various elements of the service function, including the remote control, payment methods and access control
- *Compliance and Staffing* describes how DTN proposes to ensure that our data services are compatible with the relevant regulations and guidelines, and the staff that will support these services

- *Additional Service Details and Coverage* explains which services will be available, when they will be available and where.

## The Opportunity for Digital Terrestrial Data Services

This part identifies the opportunity for digital terrestrial data services and explains how DTN will exploit the potential of the digital medium:

- *Background* explains the history of data services in the UK and the factors that will determine the success of DTN's service
- *Range of Services* discusses the type of services we propose to offer and how many of them will be linked into our programme channels
- *Ease of Use* describes how the services will be structured to make it easy for users to get the information they want when they want it.

### Background

As mentioned in the Summary, the ITC was the first broadcast regulatory body to recognise the potential contribution that data services could make to the new digital era. In 1994, the ITC commissioned a major study forecasting the data revenues that might be generated by digital television. The ITC recognised that there was already huge demand for information services delivered through the television - for example, over 17 million people use Teletext every week and over 20% of all UK holidays reserved at the last minute are booked on the basis of advertising seen on Teletext. Since 1994, demand for Teletext has continued to increase.

At the same time that Teletext has been growing, the Internet has become a growing force in society. There are already one million households with access to the Internet in the UK, according to BMRB and NOP surveys. The viewing public are learning to use email, search databases, browse through information sourced from all over the world and to participate in financial, commercial and home-based transactions. The result is a change in the way we interact with the world outside our homes. The Internet is improving people's skills and expectations of media, and moving them into a non-linear "on-demand" world where they can call up information and images instantaneously. However, the Internet still has complex problems to overcome if it is to become a truly mass market phenomenon.

A previous experiment with online services in the UK was Prestel, BT's (or strictly the Post Office's) videotext service. Prestel was burdened with several disadvantages - high subscriber charges, limited promotion of the access technology, slow data speeds and little useful content. Not surprisingly, it failed. The Internet and other online services such as CompuServe avoid many of these failings but remain dogged by slow access speeds and relatively high entry costs.

In creating the digital additional services licence, the ITC has recognised that digital terrestrial television creates a tremendous opportunity for the creation of services which combine the best features of teletext and the Internet. Unlike the personal computer, the television is near ubiquitous in the UK, with consumers comfortable with and experienced in its use. Digital television allows broadcasters to create a new sort of service, one that takes advantage of the potential of the digital medium and the familiarity of television to bring innovative new services into the home. These services will exploit the capabilities of data broadcasting and of the online world to vastly improve on analogue teletext, offering dramatic increases in capacity, processing power and transactional capabilities.

In creating these services, DTN will draw on the experience and expertise of our sister companies NTL, a leader in the development of digital broadcasting around the world, and CableTel, which provides experience of telephone network integration, return path interactivity and subscription management. Together, NTL and CableTel operate a unique and advanced national full-service telecommunications network, believed to be the first of its kind anywhere in the world. Through its subsidiary Cable Online, CableTel has substantial experience in creating online services, and is a partner in the branded online offerings Which? Online and Virgin.Net.

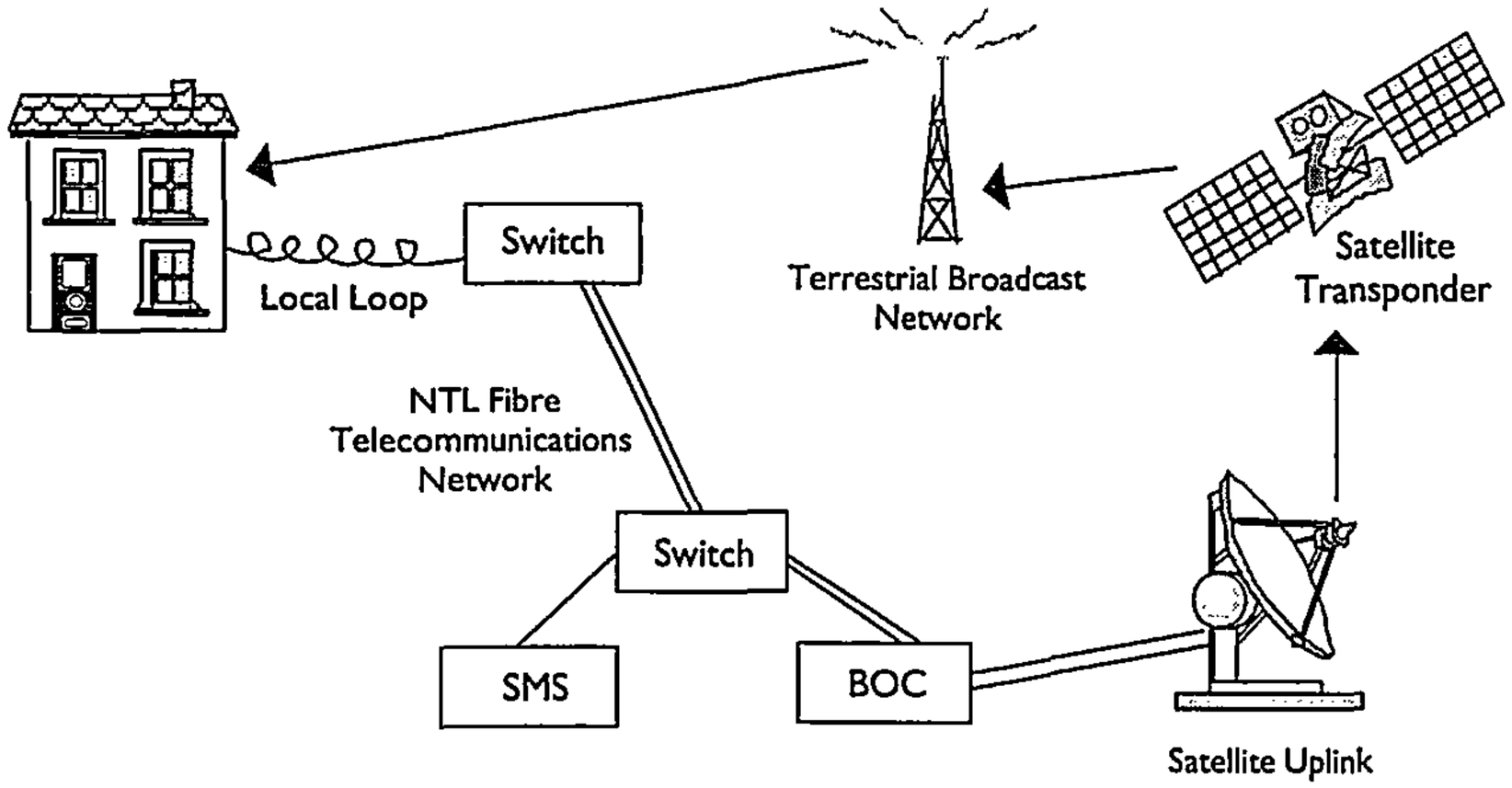
DTN is uniquely placed to deliver a complete end to end system for interactive data services. No other company combines all of the required assets for a complete network.

DTN's core competencies and assets include:

- expertise in broadcast operations
- satellite uplinks
- transmitter network
- a national least-cost routed telecommunications network.

The assets are shown in Exhibit A7.2.

**Exhibit A7.2: DTN's Infrastructure for Data Services**




DTN has researched in detail both the demand for and the availability of the data services we propose to supply. We have commissioned four separate pieces of market research through BMRB, and have consulted with a wide variety of potential service providers, nearly 100 of whom have forwarded letters of interest to us. These letters are included in an Appendix to Section B.

DTN's technology team, including Digi-Media Vision, News Digital Systems and ICL, will contribute further expertise in these fields.

Further details of our technology team are provided in Section A3.

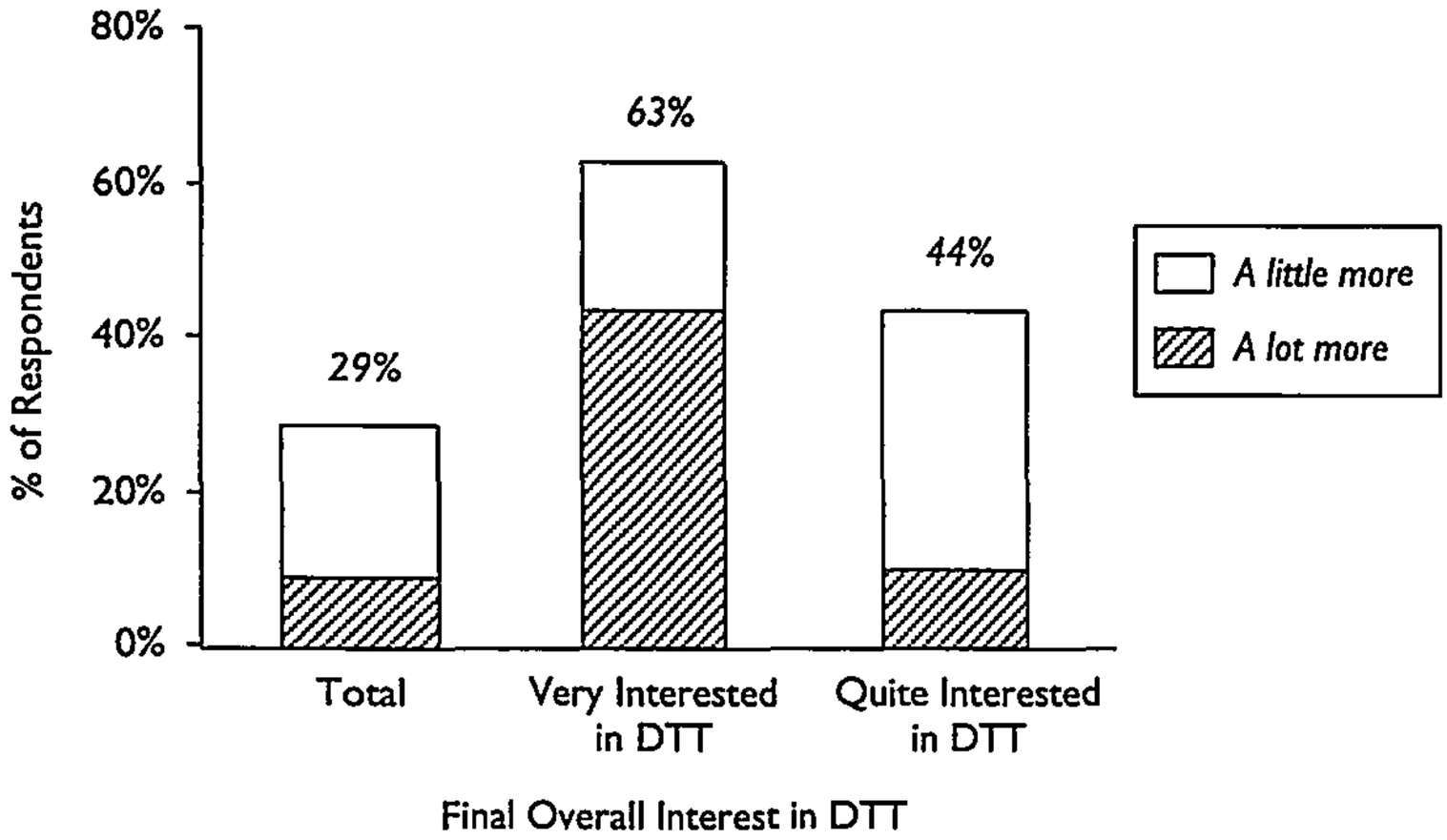
DTN will focus on ensuring that content is provided to users in easy to use formats. Current broadcast and online data services fall short far too often in these areas. This will enable us to steer a path between the Internet, which has lots of information but is difficult to use, and teletext, which is relatively easy to use but can only make a limited amount of data available.

DTN plans to bring together the quality of the best of broadcast television with the immediacy and impact of the new online services to give subscribers access to a vast range of public service and commercial information, telephone listings, home shopping services, games, and online magazines. Our receiver technology will make many of the functions of a computer available to the television viewer in a simple and easy to use way. DTN's vision will thus bring the Information Society to all viewers, many of whom do not have the time, the money, the enthusiasm or the technical know-how to become connected to the Internet. This will be the online service that everyone can use. As such, our intention is to narrow dramatically the gap between the information rich and the information poor.

A crucial point is that these services work commercially. Our consumer research confirms that the public is interested and enthusiastic about such services. Although

only 6% of respondents claimed to use the Internet at home, 30% of respondents expressed an interest in accessing the Internet through their television sets. Moreover, as Exhibit A7.3 shows, data services will help attract consumers to the digital terrestrial platform.

**Exhibit A7.3: Impact of Data Services on Level of Interest in Digital Terrestrial Television**




*Source: BMRB Research for DTN*

## Range of Services

The full range of services available to users is one of the two features that will affect uptake of our offering. DTN has invested considerable effort both in market research and other analysis to understand what information and services viewers really want. We have studied the Internet and its usage patterns and examined how and why people use other media, such as newspapers and magazines. From this analysis we have derived a service package that, when combined with the ease of use of the service, will be very attractive to our user base and help to promote the full DTN service. The main areas of service that DTN will provide are listed below:

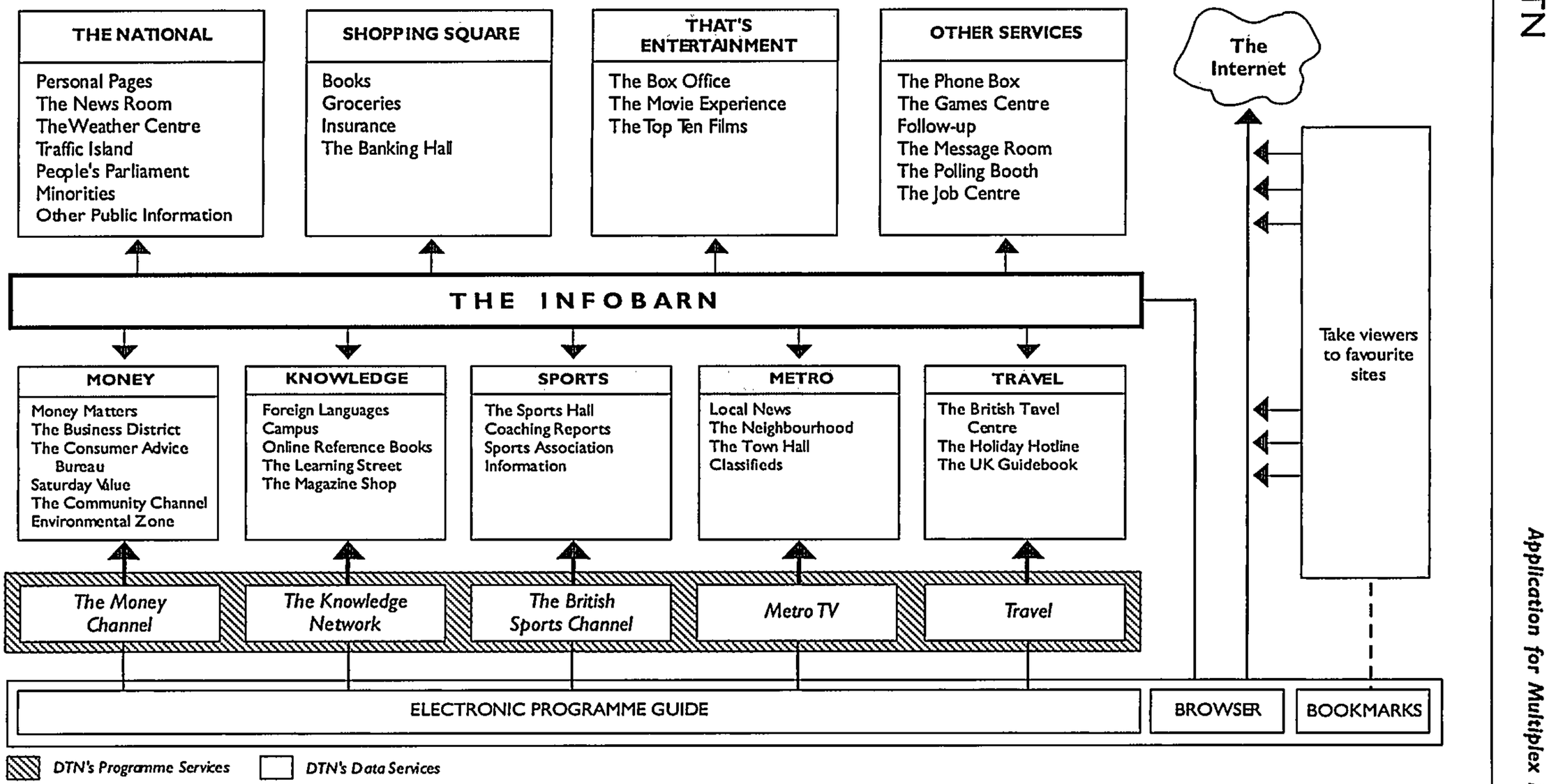
- information of general interest in text and graphic format, including local, regional and national news, sports, finance, weather, traffic and public transport
- information related to television programmes such as a readout of the speedometer in a racing car, or stock market information linked to The Money Channel
- information that supports television advertisements
- transaction facilities allowing home shopping and banking
- email and Internet access provision on a subscription basis.

DTN has recognised that one of the main difficulties that the Internet has experienced is that there are few mechanisms capable of indexing and guiding the viewer to specific information. Many search engines deliver large numbers of largely irrelevant Web sites to users, making location of the information that users want time-consuming. DTN will not succumb to the fallacy of "If you build it, they will come". DTN will intensively promote the world behind the television screen by making the data services an integral part of the programming offer. It will also encourage viewers to explore other non-programme specific information and transaction services. In time, users will learn to move more freely within the various services, as they become more familiar with them. At first viewers will be drawn into our data services through branded areas, most of which will be familiar from our channel line-up. The main groups are highlighted below:

- *The Infobarn* will help viewers find the information they want
- *Money* describes the services that will be grouped under the Money Channel. They include a wide range of topics related to money and finance such as consumer advice, business and financial news, telebanking, company press releases, financial and charity services
- *Knowledge* will offer a wide range of educational services such as distance learning programme support, Ofsted school reports, university application information and local further education course listings
- *Sports* will include a range of services related to sport in the widest sense, including not only up to date national and international sports news and results, but also competitions and information on how to learn new sports
- *Metro* will provide a range of local news and information including services specific to a local area such as community news, local advertisements, events and entertainment listings
- *Travel* will include a wide range of travel related services from destination ideas to bookings
- *The National* will include a range of national news and information services
- *That's Entertainment* will include a range of What's On features
- *Shopping Square* will include DTN's shopping and transaction services that are not included in the other areas.
- Other services, such as The Games Centre, The Polling Booth and Follow-up will be grouped into a separate area.

A map of these services is shown in Exhibit A7.4.

## Exhibit A7.4: Data Service Architecture



We have included screen shots from a selection of Web sites in the Appendix to Section B. These give an indication of the wide range of content we will be able to make available to our viewers, and indicate the quality of presentation we expect to be able to achieve.

### Ease of Use

Ease of use is the second critical feature that will drive the growth of DTN's data service. Ease of use not only includes the ability to get where you want to go very quickly but also the speed at which the services arrive.

We intend to design an attractive and easy-to-use screen format that will allow the user to find information and carry out tasks quickly and simply, entering the service either directly from a television programme or through the EPG. It will be possible for viewers to move between the different levels of the service with one click on their remote control. Programme producers, advertisers and information providers will be able to create material which exploits these unique features of the DTN digital terrestrial platform.

Other features we propose to make available include:

- text and graphics pages relevant to a programme can be stored in the receiver, allowing the viewer to explore them at a convenient time
- television programmes and channels can signpost their events and schedules on the relevant third-party information pages - for example, The British Sports Channel can promote events on the relevant sports news pages
- the response and transactional capabilities will allow viewers to order merchandise or services related to programme services with just a few clicks of the remote.

Another key attribute of our proposed service is that users will be able to access information from a range of sources. The first of these, which we call the Carousel for the purposes of this Application, is equivalent to teletext - a bank of information which will broadcast in cycles or 'spins'. Although conceptually similar to teletext in some respects, the Carousel will offer viewers access to far more information than can be made available on the analogue medium.

In addition to the Carousel, we propose to develop our own online service, which we call the Grid for the purposes of this Application. This will allow subscribers access to a much wider range of information than can be offered on the Carousel. In addition, the Grid will permit online transactions to be completed, for example money to be moved from one account to another securely and email to be sent and received. This will be accessed at the cost of a few pence or by Freephone number.

The final information source is the Internet itself. Although unwieldy and slow, our most adventurous subscribers will use the Internet to access a still larger pool of information. We propose to share facilities for Internet access with CableTel's subsidiary Cable Online which is already an established Internet service provider.

These are different sources of information. However, we will present this information to viewers through a single shared interface. Users will be able to move quickly from a programme about Barbados to the Carousel page quoting flight availability and then to a Grid-based service which will allow them to book the holiday.

## DTN's Service Description

We outlined above a brief summary of the types of services that DTN plan to offer and how we will focus many of these around the programme service brands to encourage users to test out the vast array of information at their fingertips. In this part of Section A7 we outline in more detail examples of these services and explanations of how they link into specific programmes. Although in reality a user could easily move from one area to another, we have described it in this way to be able to highlight the array of services we have developed and how they have real relevance to our programme services.

### The Infobarn

Although some users will enjoy exploring our data services, many will want to use them to locate a particular piece of information or a service. The Infobarn will help viewers find the information they want when they want it.

The area will contain an indexing system which will allow viewers to go straight to the information or service they want, with a single click of the remote control. DTN proposes to work with Yahoo!, perhaps the best known of the Internet search engines, to develop this site.

### Money

Money is a topic that touches on everyone's life. The Money Channel will provide programming focusing on a range of important money matters. The channel will be complemented by an array of data services that can be accessed either through the channel itself or directly through the Carousel and the Grid.

This will offer six services:

- Money Matters
- The Business District
- The Consumer Advice Bureau

- Saturday Value
- The Community Channel
- Environmental Zone.

The following sections illustrate our proposals in each of these areas:

***Money Matters***

When The Money Channel makes a programme about how to choose a PEP, the viewer can click through to a full menu of related pages. On the Carousel, there is a summary of the points discussed on the programme, including the key pitfalls in selecting a PEP, a page listing out the key legal aspects of taking out a PEP, and a long list of providers with links to the sites of those who are advertising on the Grid. On the Grid, there are further product information databases, a form the viewer can send in electronically to get a quick response to the question "Am I the sort of person who should take out a PEP?", and reference material on the relative performance of managed PEPs.

Alternatively, existing equity investors can retrieve share prices plus market summaries from London, New York, Singapore and Hong Kong provided by Bloomberg.

***The Business District***

DTN will provide access to up-to-date business and financial news, features material, company press releases and financial information. Bloomberg and The Press Association have expressed a strong interest in supplying information for this service. Letters are attached in the Appendix to Section B.

***The Consumer Advice Bureau***

We will work closely with the Consumers Association to develop an information service offering access to a database of features and other information on a wide variety of consumer interest topics, drawn from the family of Which? magazines. The Consumers Association is a highly respected organisation with a long history in the area of consumer information provision. Which? Ltd is the trading arm of the Consumers Association. It has an existing membership of some 740,000 with a total of over a million magazine subscriptions.

We plan to offer Which? information on both a 'pay as you go' and a subscription basis. Which? is already available in Internet form on a subscription basis through Which? Online, a service that has been developed by the Consumers Association with DTN's sister company, Cable Online. We would expect to offer a similar subscription service to DTN users and additionally we plan to make individual articles available on a pay-per-view basis as a means of accessing a new market segment: that of the occasional user. For example, someone who needs to buy a washing machine can pay

to see the most recent Which? survey through DTN's digital platform. A letter of support is attached in the Appendix to Section B of the application.

***Saturday Value***

On Saturdays, The Money Channel broadcasts 'Saturday Value' in association with the Consumers Association/Which? We plan to provide data services backup to this programming in the form of text and graphical material. This will provide further detail on subjects featured in the programming, for example product comparisons, retailer availability listings, prices and test data explanations.

***The Community Channel***

Every Sunday, The Money Channel broadcasts the 'The Community Channel', a segment of voluntary service programming. This programming will be commissioned and produced in association with The Media Trust. The Media Trust would like to use DTN's data services capability to offer a range of text and graphical material giving information about issues such as what different voluntary organisations do and how exactly to go about volunteering. This will allow The Media Trust to follow through its programming activities with material aimed directly at persuading members of the public to participate in volunteer work themselves. The work of many charities is inhibited by the difficulty and high cost of making the public aware of their existence and activities. DTN will make bandwidth available for charitable organisations to post information about their activities, to raise funds and to recruit helpers. Content can be changed at very short notice to respond to crises, and can even be linked to news or other relevant programmes. The featured charities will vary periodically, though information about all registered charities can reside on the Grid, the online part of the system.

Other ways in which charities will be able to use DTN include:

- allowing consumers to make donations online
- acknowledging donations in a cheap and environmentally-friendly manner
- giving information on how to recoup income tax on donations
- promoting and selling Christmas cards which form a substantial part of the funding of many charities.

***Environmental Zone***

We will provide data services back up to The Money Channel consumer affairs television programmes which feature information provided by EcoSourcing International (see the Appendix to Section B of this application). EcoSourcing International is a UK-based organisation which consolidates the output of a broad range of certification, accreditation and ecolabelling bodies onto a series of certified product databases.

The information service that we plan to provide in association with EcoSourcing International will take the form of text and graphical material describing the wide range of environmental, ethical and social standards covered by their database and listing the products that meet these standards across a variety of product areas.

## Knowledge

The Knowledge Network will be one of DTN's central channels. It will be complemented by a range of data services that will help the user to find out and learn more about the study topics, source support material and participate directly in courses.

We describe six examples below:

- Foreign Languages
- Campus
- Online Reference Books
- The Learning Street
- The Magazine Shop.

### *Foreign Languages*

The Knowledge Network will broadcast a language teaching programme based on French news bulletins. On the broadcast Carousel, the student can access vocabulary lists, related questions and answers, suggestions for further reading, excerpts from popular French magazines and contact numbers for local conversation groups. On the Grid, there will be additional reading material, 'tasters' of teaching materials which can be purchased online, information about email "conversation groups" and contact numbers for language teachers and classes in the area. Communicaid International, one of the UK's leading language schools, has indicated its interest in working with DTN to develop this service for other languages.

### *Campus*

The Knowledge Network has described a blueprint in Section A4 for the use of television to bring educational material to a wider audience. Data services will be critical to the creation of a new educational medium.

We have identified two specific national opportunities where we can use data services to make a contribution to the activities of key organisations working within the educational sector: UCAS and the Open University.

UCAS is the national university admissions service, handling over 400,000 applications per year. Most university places are offered on the basis of examination results, and every year some 150,000 students fail to achieve the grades required by their

institution of first choice. There is therefore a frantic period of 'clearing' each August/September during which these students try to find available university places. We would provide Carousel pages for UCAS during this time which could give up-to-date details of course availability in a highly user-friendly way. Screens would be organised to allow users to search by course subject. Prospective students who discover a course of interest will be able to use the Grid to contact the institution directly or via UCAS.

We also plan to work with UCAS to offer year round information on university applications procedures. We will offer access to the Web sites of UK higher education institutions as a means of helping students make their choice of university. In the long term, applications could be submitted through the DTN network. A letter of support from UCAS is attached in the Appendix to Section B of this application.

The Open University is the largest provider of higher education in the UK, at any one time serving 120,000 students and offering over 150 undergraduate courses. Through the work of its subsidiary, the Knowledge Media Institute, the Open University is recognised as being a world leader in the application of technology to education.

DTN is engaged in detailed discussions with the Open University to develop a new distance learning medium that will increase the effectiveness of the Open University's interaction with students. DTN television channels and data services together offer the Open University a low cost means of developing interactive access to a wide cross-section of the population. Using data services, the Open University could provide course notes to back up programming, give users access to databases of educational material via the interactive return path and provide a mechanism for students to contact other students and lecturers. Students would need to pay for an infra-red keyboard and perhaps a small connection fee, but the cost of these and of a receiver would still be much less than that of the alternative route of a PC and an Internet connection.

The above services could be rolled out in a limited form immediately. However, the best service will be achieved by replicating the "Network Computing" model with all course work and other material being held in a student's personal storage area on a DTN computer at the BOC. The student will access this material through the Grid. This service will be priced at an affordable level. This and the organisational task of setting up the service mean it is unlikely that a Network Computing service would go "live" in 1998.

### *Online Reference Books*

Publishers of reference books are just starting to explore the potential for using online services. Encyclopaedia Britannica recently started the "Britannica Online" service, which gives users access to all 44 million words in the printed version, but for much lower cost and with constant updating. They have written to express their interest in

making this service available to DTN's subscribers. (See the Appendix of Section B of this application).

***The Learning Street***

We have outlined above how we will use the DTN's data services and The Knowledge Network to assist national educational institutions. However, most education is local and we intend to use the Grid both to promote the use of local educational offerings and to give students and parents more and more up-to-date information about what is happening in local schools and colleges.

We have identified two specific local opportunities where we can use data services to contribute significantly towards the activities of key organisations working within the educational sector: Ofsted and the Workers Educational Association.

Ofsted is the government agency responsible for inspecting schools and producing school reports. We plan to provide parents with access to the results of these surveys for schools in their area. This will help parents significantly when choosing a school for their children. We attach a letter from Ofsted expressing interest in this idea (in Appendix to the Section B of this application).

One in every four adults is thought to take part in some kind of further education each year. DTN will make information available on courses in each region. The Workers Educational Association (which puts on about 9,000 courses annually for some 90,000 students across the country) already has an Internet site which carries course information and has expressed an interest in putting its course information onto our data services.

At a more general level, we will investigate the possibility of posting school league tables, and information on the availability of school places on the Grid. Finally, National Curriculum learning materials could be transmitted to every school in the country - for example, science data sets and programmes for computing classes.

***The Magazine Shop***

DTN can deliver information to viewers at very low cost and in a number of formats, such as text, graphics, pictures and video. We propose to establish co-operative agreements with content providers including magazine publishers (allowing us to access their reformatted material), providers of premium rate telephony services and directory services operators. Revenue will be generated by advertisements, subscriptions and usage charges collected through a smartcard.

The cost of delivering material to viewers is very low, though putting content into the correct format may be expensive initially. Through this service many specialist publications will be able to substantially enlarge their audiences.

## Sports

Delivering up to date and relevant sports news and information will be a core part of the British Sports Channel's offering. However, the amount of sports information will be far more than could be broadcast on a single channel. The sports information service will allow viewers to go into greater depth than the channel will allow. The following paragraphs describe three of the services that we propose to make available to DTN's viewers:

- The Sports Hall
- Coaching Reports
- Sports Association Information.

### *The Sports Hall*

The Sports Hall will provide access to constantly updated national and international sports news and results. There will be pages dedicated to particular sports, with information about forthcoming fixtures, league standings, and "home pages" for sports teams. Many leagues will gain for the first time a medium for the communication of up-to-date information. The content will have strong links to The British Sports Channel.

A number of Sports Associations have indicated their interest in contributing towards this service. The Press Association has proposed a comprehensive news and results service (see the Appendix to Section B of this application).

### *Coaching Reports*

The British Sports Channel produces a series of programmes in which leading athletes give coaching advice on their respective sports. Related Carousel pages give references to the location of centres where further coaching can be obtained, lists of forthcoming coaching events in that sport and tasters of books or videos accompanying the series. With a further click of the remote, users will be able to contact a coaching centre, or make a purchase.

### *Sports Association Information*

A range of national Sports Associations have indicated their interest in using the data capabilities to develop new services, such as merchandising and competitions, specific to their particular sports (see the Appendix to Section B of this application). For example, if the viewer is watching motor racing on the British Sports Channel, they will be able to call up performance data from the car itself delivered by the car's real-time telemetry.

## Metro

DTN proposes to launch local data services in twelve major urban areas during the first four years of the licence period. The roll-out plan is shown in Exhibit A7.5.

**Exhibit A7.5: Proposed Roll-out of Metro Services Locations**

| Location | Year of Roll-out |
|---|---|
| Greater Manchester | 1998 |
| West Midlands | 1998 |
| Strathclyde | 1998 |
| Lancashire | 1999 |
| Tyne & Wear | 1999 |
| Hampshire | 1999 |
| Avon | 2000 |
| Staffordshire | 2000 |
| West Yorkshire | 2000 |
| South Yorkshire | 2001 |
| Merseyside | 2001 |
| Nottinghamshire | 2001 |

Metro will launch in Greater Manchester, the West Midlands and Strathclyde as shown in Exhibit A7.6.

**Exhibit A7.6: Metro Services will be carried on Multiplex C beginning in 3 areas:**

| Metro Area | Coverage ('000) |
|---|---|
| Greater Manchester | 4,232 |
| West Midlands | 2,892 |
| Strathclyde | 2,050 |

Local services will include:

- Local News
- The Neighbourhood
- The Town Hall
- Classifieds.

Many of Metro's services will cross-promote The National's services (such as The Weather Centre).

### *Local News*

The Press Association will supply local news and features for each Metro location.

### *The Neighbourhood*

Social commentators have bemoaned the loss of the community in recent years and have forecast a further decline as it becomes easier for people to communicate across the world than to the next town. There is another view: as penetration of online services increases, communications links to anywhere in the world will become better, but most people still spend the majority of their working and leisure time in one area and will use their time to talk to others who live near them. One of the greatest advantages of the Grid will be the way it can group local information together. On the Internet there may be large amounts of original content about a user's local area and users may be able to find some of it, but it will not generally be grouped together. The Grid will make it easy to know when new sites go online, which will encourage new content providers.

DTN will use the data services as a whole to create electronic communities which bind together real communities. The Carousel will carry some local information – news, weather, traffic information, sports results, "What's On" guides – but the Grid will offer more comprehensive listings of local events, services and interest groups in the larger cities of the UK. If somebody wants to find out what's on at the local theatre, where to rent a cement mixer for the weekend, whether there is a local Esperanto society, or indeed wants to found one, they will turn to DTN.

### *The Town Hall*

DTN's discussions with local government and community groups have revealed a high level of interest in using new media to disseminate information. A number of city councils have already developed extensive Internet sites. Birmingham City Council, for example, has developed a site with 1500 pages of information that attracts some 100,000 visits per week. In Manchester, the Manchester Community Information Network (MCIN) project is active in bringing community service providers (Citizens Advice Bureau, education facilities, City Council, etc.) online. Manchester City Council provides a comprehensive directory of local council services and contact details and has ambitious plans to develop its online presence.

With careful signposting, DTN could provide easy access to a wide range of local information on council services (libraries, rubbish disposal, etc.), local attractions, events, and even local history – the most popular sections on the Birmingham Web site are those containing the What's On guide, the tourist pages and the photo archives.

In addition, DTN will help breathe some life into local government by making it easy for voters to find out what is happening on issues of interest to them. The Grid will carry the minutes of council meetings, details of public finance, planning applications, and other information about how local government works. For councils with an established Internet presence already, the incremental effort to package a service for

digital terrestrial television data services will be small and the increase in potential users of the information enormous.

Letters of interest and support are attached from Manchester City Council, Manchester Community Information Network, Birmingham City Council, Cardiff County Council, and Belfast City Council.

***Classifieds***

By publishing such a wide variety of news and events listings, the Carousel is set to take on some of the roles of both national and local newspapers. One of the other roles of a newspaper is to carry classified advertising and thus to create a marketplace in which individuals can find jobs and buy and sell cars. However, whilst newspapers have the advantage of wide reach, it is relatively wasteful to print 50,000 or 2 million paper copies of an advertisement which will only be of interest to a very few people.

As DTN builds up local followings through Metro TV and the Metro data services, we will also offer a local classified advertising service. Capacity considerations will militate against making extensive use of the Carousel for classified ads, but it will carry "home pages" which direct viewers to areas of the Grid with relevant advertising. Using the capacity of the Grid, DTN can provide classified advertising in a medium superior to newsprint because more information can economically be placed in the advertisement; advertisements can be instantly updated, or removed when an item is sold or a vacancy filled; the browser software will pick out advertisements of interest on request - for example, Ford Sierras under ten years old and priced under £2,500. Future generations of the receiver may have "intelligent agent" software which can periodically search all classified ads for a hard-to-find item.

We propose to commence classifieds in a limited way in the three Metro services locations and be rolled out over three or more years. It will take some time to build significant revenues, as few advertisers will be attracted until potential reach within the catchment area is high. The first service offered will be a house search service which pools all advertisements from the various estate agents in a city. The viewer will enjoy all the benefits outlined above, will be able to save money on the purchase of multiple newspapers, and will be able to manage a house-search from another part of the country. A number of estate agents have indicated their interest in this service to us.

**Travel**

The success of Teletext's travel services demonstrates the large demand for this type of information. DTN proposes to introduce a comprehensive range of travel-related services, allowing viewers to find out about holiday destinations and even to book their holidays.

Travel will offer three services:

- The British Travel Centre
- The Holiday Hotline
- The UK Guidebook.

***The British Travel Centre***

Planning a journey in the UK can be a headache. Timetable information can be hard to find and making a booking, particularly outside normal office hours, can be difficult. DTN aims to help by creating The British Travel Centre, a service that will provide viewers with up-to-date UK travel information and booking facilities, available 24 hours a day.

DTN's proposed service will allow members of the public to access up-to-date information on public transport services, find out about service problems on the networks, and buy tickets from their living room. Our first partner is London Transport.

Local transport companies will be able to place their timetables on the Grid, with a search facility allowing viewers to access services quickly. Viewers may be charged a few pence to look at the information. National Express has indicated its interest in working with us to develop an online service for its coach operations, incorporating timetables, inquiries about seat availability, confirmed reservations and ticket purchases. Tickets will be dispatched by post or collected at the point of departure. National Express has already invested to develop comparable systems for the Internet, but it is keen to access a wider user base (see the letter of intent in the Appendix to Section B of this application). We do not anticipate any significant difficulties in transferring this established service on to our network.

Railtrack has expressed its interest in working with us to place rail timetables on our network. Railtrack launched an Internet timetable enquiry service on 1st January 1997 for Internet users, which incorporates an on-screen form for customers to enter details of planned journeys. We understand that the launch has been successful, and that Railtrack plans to expand the capabilities of the service over the coming months.

Finally, we anticipate that the Grid will be attractive to airlines and tour operators some of whom are currently developing similar online booking services. Some airlines are also considering the opportunity for ticket auctions to be held over Internet services, though DTN does not expect these to be viable on our service in the first couple of years of operation.

***The Holiday Hotline***

The Holiday Hotline will provide all of the information that viewers need to book a holiday abroad, and in particular will broadcast detailed information on destinations featured in Travel. During transmission, viewers will be able to access an up-to-date multimedia database of information about the events, journeys and holidays featured in

programmes. By way of example, the information may be accessed under the following indicative categories:

- *in our opinion*: what Travel's resident team of journalists, travellers and experts think of a resort, attraction or activity
- *in your opinion*: what viewers think of a resort, attraction or activity
- *cost of living*: a shopping list of what different things cost to buy and to do in the resort/destination
- *cost of packages*: the cost of relevant holidays and what you get for your money
- *activities*: what you need to know to get started, the costs involved
- *getting there*: flight, road and travel information
- *best value*: the best value-for-money things to do and buy and the best value-for-money holidays and/or ways to get there
- *country/region profile*: relevant historical and political information
- *thermometer*: climate and best times to visit
- *safety*: Foreign Office guidelines and opinions and advice from Travel's experts
- *eating and drinking*: costs and suggestions
- *bookings*: direct connections to holiday companies and travel agencies for potential buyers.

Analogue teletext services already give viewers holiday information, up-to-date reports on weather conditions and on late-availability bookings. Information is limited however and, if customers wish to act on it, they must make a telephone call within the working hours of a vendor. If they wish to learn more about a particular holiday, they must visit a travel agent or wait for a brochure to arrive in the post. Despite these potential drawbacks, it is a popular service, and industry sources estimate that 22% of all package holidays in 1996 were sold to customers who first learned about them via teletext.

The purchase of travel has certain similarities to that of financial services – multiple purchasing criteria are used, there is a wide range of potential suppliers and several distribution channels, and fulfilment of a purchase is cheap when the ticket is sent to the customer by post. Travel/holiday providers pay handsomely to sell late tickets prior to a particular date. This profile suggests that online purchasing will prove highly attractive to customers and providers alike.

Potential holidaymakers will be able to use the browser to search on our Carousel for holidays of the kind they are interested in and on the date they want them. Should they wish to view pictures or a video clip of the resort, they will be able to access them

from the Grid with the click of a button. It will be possible to check prices and availability automatically and to make a booking online.

We expect to do business with a wider range of holiday companies than the analogue teletext providers due to the much greater quantity of information we can present to customers in an attractive format. We have held initial discussions with several operators. Based on our conversations with them, we are confident that we will be able to use the combined DTN services to capture at least 10% of our subscribers' holiday purchases.

***The UK Guidebook***

Getting information about attractions in the UK can be even harder than finding out about foreign destinations. We aim to rectify this by using signposts on the Carousel to direct viewers to more detailed information on the Grid. Although we will be dependent on tourism organisations for information (and they are at varying stages of development in the field of electronic information) we expect to be able to offer users access to information about different regions in the UK, with details of tourist sites (access, opening times, prices etc.) and potentially information about accommodation and facilities.

Local tourist organisations will be able to participate in the service, for example by posting information on local hotels and room availability or by publicising events and attractions. It will even be possible for customers to make bookings online, once local organisations acquire the necessary equipment.

Letters of interest from the English, Wales and Scottish Tourist Boards and the British Tourist Authority are contained in the Appendix to Section B.

**The National**

We propose to make the following national services available:

- Personal Pages
- The News Room
- The Weather Centre
- Traffic Island
- The People's Parliament
- Minorities
- Other Public Information.

***Personal Pages***

News remains at the heart of most people's daily life. DTN has developed a range of news, weather and other information services that will supplement the service provided by television and newspapers.

The first thing most people want to do each day is to see what the latest news is, both national and local, what the weather forecast is and whether there are any major traffic or public transport problems that need to be avoided. DTN will offer a free "personal newspaper" service. Subscribers will give details of the areas of interest for which they would like to see regular news coverage. The receiver will then pick up those pieces of information from the Carousel early in the morning and will make them available to customers on a few standard pages which they can access through their television screen. The pages will carry some advertising, which will be tailored to the interests of the customer. Comparable services are already offered by several companies over the Internet - the best-known of which is PointCast - but they are not yet available by broadcast means. As the range of information available to DTN's services widens and as the software for providing these services becomes more sophisticated, we will offer a more refined service. Autonomy, an innovative Cambridge-based software house, is discussing the potential of operating these services with DTN. A letter is contained in the Appendix to Section B.

***The News Room***

The Press Association has offered to provide a comprehensive news service with in-depth articles complemented by background information, fact files and graphics. The news service will provide the viewer with constantly updated national and world news; this service will provide tailored access to 'breaking news' backed up by extensive fact-file and graphical information in a way that existing print, television and teletext based media cannot.

A letter from The Press Association is attached in the Appendix to Section B. This sets out in greater detail the range of services that we propose to offer.

***The Weather Centre***

Detailed weather information will be available on the service: short and long range forecasts, weather maps, satellite images and rain radar images. Viewers will access these by browsing through the Carousel pages, while also being able to select particular pages to be added to a personal newspaper. The Weather Channel, International Weather Productions (the commercial arm of the Met Office) and The Press Association have all expressed interest in providing information for this service. Letters of intent are attached in the Appendix to Section B of this application. We will also be able to offer users access to a pay-per-view or subscription weather information service similar to current premium rate telephone and fax forecasting services, such as Airmet and MetFAX. Our service will use high quality colour

graphics, making it more visually arresting than current offerings, and it will be cheaper to access.

***Traffic Island***

This will show national and regional blackspots in map form, supplemented by detailed text information. In addition to road traffic information, the system will also advise on train, underground and flight delays. Viewers will set up their "personal newspaper" so as to include travel information on their local area, which will be updated on demand. The RAC has expressed initial interest in supplying information of this kind in its capacity as a member of the RAC Travel News consortium, which also includes ITN and Trafficmaster. It is envisaged that this area would be advertiser supported. However, more detailed and real-time information might be available on payment of a small usage charge. The service will also be linked to other paid-for information services. For example, route-planning software will be placed on the Grid, allowing viewers to look up information in advance of a journey for a small fee.

***The People's Parliament***

We also hope to use our data services to give the public a true window on what is happening in public affairs. Although Hansard has published the proceedings of the Houses of Parliament for over two hundred years, narrow distribution, high costs and the sheer volume of material have meant that few members of the public have ever had easy access to its contents. The existing Parliamentary Channel on cable television represents a laudable attempt to provide the public with access to parliamentary politics. But cable does not permit access to debates of particular interest to the viewer. Hansard recently launched an Internet site which includes a search capability, but Internet penetration is currently low in the UK. Hansard has indicated to DTN that we will be able to obtain parliamentary information, allowing us to bring up-to-date text reports of recent parliamentary activity directly into the homes of millions of viewers.

Our search capabilities will allow viewers to look up what their own Member of Parliament has been saying recently, or statements made on particular topics of interest to them. We plan to broadcast daily transcripts from Hansard; some viewers will choose to set their personal pages to pick these up.

Current access to parliamentary activity for most people is via news bulletins and newspapers, whose coverage is highly selective, focusing on a handful of issues of broad interest to their readers. DTN's proposals to bringing reports of parliamentary activity to millions of viewers will be a major step in the direction of wider public access to parliamentary debates.

### *Minorities*

Cost considerations make it difficult for minority groups to deliver up-to-date information to members dispersed across the country. DTN believes that digital terrestrial television will be an effective news, information and commercial medium for ethnic minority groups. Several minority publishers have indicated their interest in developing a service in conjunction with DTN data services.

### *Other Public Information*

There is a lot of useful public information that does not reach its potential audience because there is no targeted "interest group" of recipients or because there is no cost effective medium by which the information can achieve broad distribution. Examples might include information on tax issues, updates on public health issues, events at local schools, opening times of local facilities, and environmental plans.

Although the Internet provides the technology to disseminate this sort of information, it will not be available in the foreseeable future to a sufficient percentage of most non-commercial interest groups to be an effective medium for disseminating information. DTN's digital terrestrial television offering will, however, be focused on consumers and is likely to achieve a relatively high penetration within a few years.

Where there is a large group of potential users for information, we will put it on the Carousel, allowing instant access. Using NTL's transmission capabilities, DTN will also be able to broadcast information to each region. When the Carousel is at full capacity, DTN will place the information on the Grid.

## That's Entertainment

DTN proposes to offer three entertainment services:

- The Box Office
- The Movie Experience
- The Top Ten Films.

### *The Box Office*

The Carousel's "What's On Guide" will allow the user to search for events that they are interested in by genre (Jazz, Comedy), by date, location or by review rating. Viewers will be able to access reviews of shows and venue details. We have discussed the development of the concept on a national level with The Press Association and on a local level with a company called London Calling Internet, which compiles listings and independent reviews of events in the London area.

Once the user has looked at the listings, they can move on to check availability and book seats using their remote control. Tickets can be posted or the user can collect

the ticket at the door. We have discussed this concept with leading ticket agency Ticketmaster.

The Guide can show last-minute special offers. Changes of details can be sent by email to people who have booked using the system and regularly viewed listings can be included in the Personal Newspaper.

We aim to cut out much of the cost and inconvenience of buying tickets to events. Initial contacts with entertainment providers as varied as the Hallé Orchestra, Opera North, the Everyman Theatre and the Comedy Store have revealed substantial interest in the service. After the award of licences, we will launch a long-term drive to secure the most comprehensive coverage possible of events around the country.

### *The Movie Experience*

Most subscribers will be interested in watching films on television. An easy link from the EPG to the Carousel will offer detailed information on the kind of films you are interested in (comedy, action etc.), a list of the stars with autobiographical details, notes on other films by the director, critics' reviews, and even – for the person who decides they do not want to see the movie but would like to pretend they have – a plot synopsis.

### *The Top Ten Films*

European and American top ten film lists with competitions for film fans to guess next month's winning titles. In the USA, Paul Allen's company Starwave has developed a successful Internet site along these lines. Here in Europe a similar concept could be developed with the film institutes and trade press from each country

## The Shopping Square

The Shopping Square will be the focus of DTN's wide range of shopping services. This is an important service and we describe it in some detail. This section is arranged in three parts:

- the benefits of electronic shopping
- the current state of the market
- illustrative examples of the services that will be offered.

### *Background to our Service and Benefits of Electronic Shopping*

The dominant method of acquiring goods in this country and everywhere else in the world is expensive and time consuming - keeping shops open is a substantial fixed cost for retailers. Visiting them takes up consumers' time and resources. High street shopping is of course a leisure activity and well-suited to buying items such as clothing - which need to be seen or tried out before purchase. It is not however the best way to

make bulky repeat grocery purchases or to find items where a range of information about multiple suppliers is required before making a decision - for example, when buying a holiday or motor insurance.

DTN will create an area on the Grid which acts as an online shopping centre. It will include destination sites (sites that the user visits for the specific purpose of making a purchase), as well as sites which are linked to advertisements elsewhere on the DTN service. It will offer the consumer the following benefits:

- convenience and a wide range of merchandise and service options
- lower prices in many cases than in the high street
- a high level of security when making payments.

DTN will typically act as the landlord of the sites. Most importantly, we will put resources into promoting the concept of online selling to retailers and encouraging experimentation to find attractive formats.

DTN will derive income from the transaction sites by taking a commission from all sales. This is analogous to the turnover-related rents charged in some bricks-and-mortar shopping centres or to the concessions charged by department stores to other retailers for 'store-in-store' shops. By creating an attractive environment which is heavily cross-promoted by the television channels and the Carousel, we expect to tempt millions of consumers to enter who would not normally consider using the Internet.

The value of bringing consumers to a site can be illustrated by the case of the largest Internet retailer of books, Amazon.com. They give owners of other Web sites a commission of 8% on any purchases resulting from a cross-referral. The new Internet Service Provider set up by CableTel, Virgin.Net, is achieving a commission on sales made through its site.

It will undoubtedly take some years to build up a large supplier base for the Shopping Square, though we will aim to gain a head-start by placing copies of UK retailers' existing Internet sites inside the Grid. DTN will also instigate and promote new sites.

***Market Background***

Online shopping has the potential to considerably reduce the distribution costs of consumer products and services with the following characteristics:

- known concepts, typically regular purchases
- products and services which need highly detailed information so that consumers can compare individual products or ranges from different suppliers
- bulky goods, posing transportation problems for consumer.

Products we will consider offering through this service are:

- financial products such as insurance
- CDs and books, both of which can be offered cheaply by retailers without a high street presence
- groceries.

DTN does not purpose to establish itself as a retailer. Instead, we propose to facilitate the establishment of branded services by existing retailers who are known and trusted by consumers. However, established retailers in some sectors may not succeed in transferring high-street leadership to the online environment.

Online shopping services should not be compared to shopping channels on television. The latter broadcast to a large number of people and tend to offer a restricted range of goods with broad appeal. Because of the haphazard nature of television viewing, they concentrate on impulse purchases of telegenic products, such as jewellery. Online transactions are likely to be planned and allow the customer to review choices and product information at any time of day. They will not always even involve the customer in seeing the product.

The attractions of carrying out transactions online have long been apparent, and have been cited as the primary source of future income from the Internet. For example, Cap Gemini Sogeti has projected that by 2006, 10% of all sales will be made online.

Shopping from home is instinctively attractive. However, online shopping remains a relatively immature market. Trade sources estimate that just under 25,000 UK households have spent an average £40 each via Internet shopping services. We believe that past failures are explained by factors which will be mitigated or removed entirely in the Carousel and Grid:

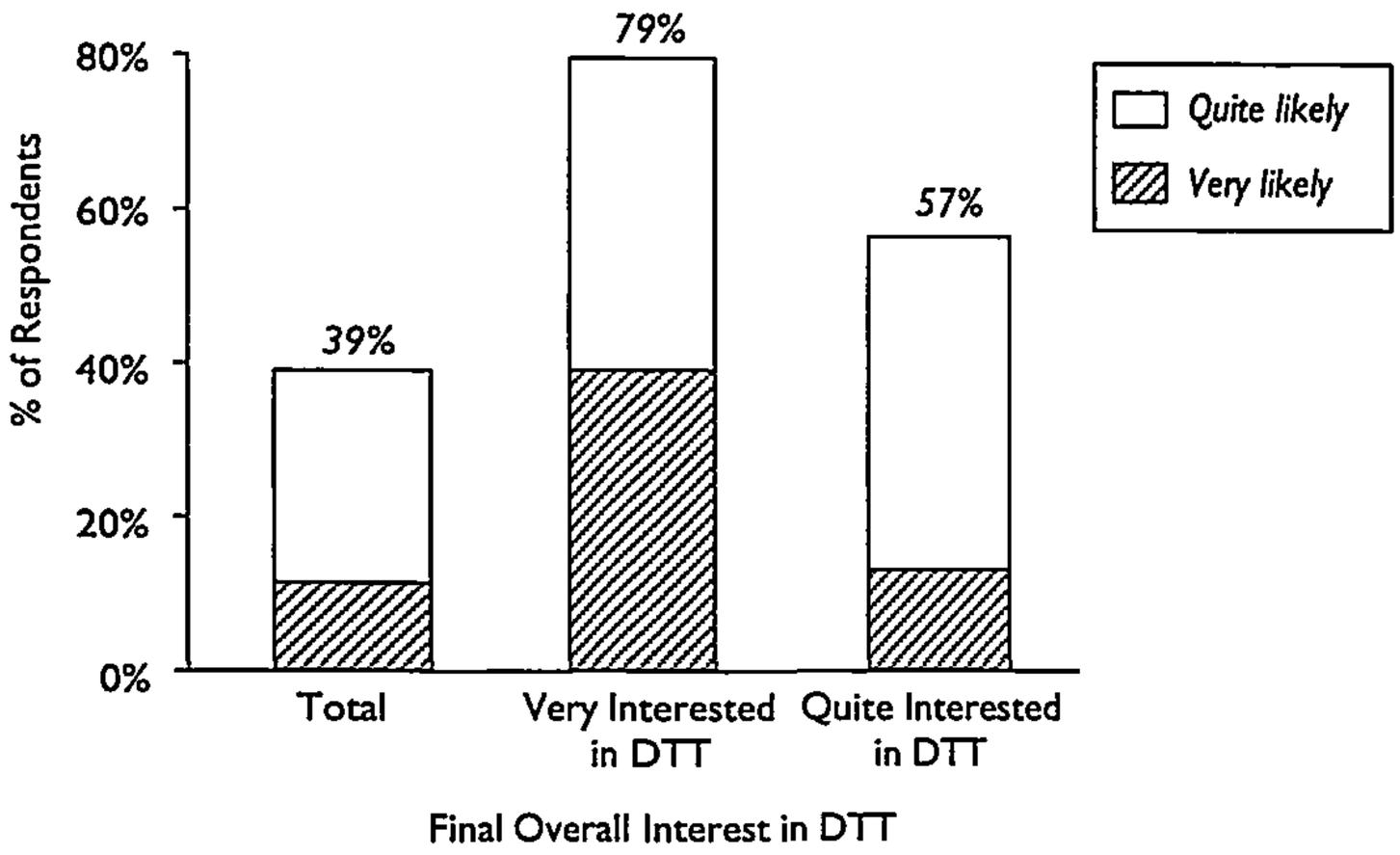
- many Internet pages are ill-suited to selling products with strong visual appeal
- the Internet is not easy to use. Software houses are only just starting to develop applications which make it quick and easy to look at product information and carry out transactions
- retail trials have not offered sufficient choice. Online shopping malls which contain only a single retailer for any one product category do not allow customers to compare range and price. This situation results in part from the lack of a large user base for any existing online offering compared with the potential universe of digital television homes
- payment has been difficult. Older online shopping systems tended to require a separate telephone call to a vendor in order to give a credit card number
- security remains a worry for many consumers and vendors. Payments can be made through the Internet, but many consumers still worry about losing their money or their credit card number. This concern is exacerbated by the

virtuality of online shopping - consumers cannot touch or handle goods, cannot seek advice from a shop assistant or return the product to the store if it is faulty.

DTN's shopping area will over time be able to attract many more vendors than existing systems due to its large user base. DTN will, however, put a great deal of energy after the licence is awarded into signing up existing retailers to become start-up traders. All vendors will be vetted by DTN, giving customers the assurance that there are no fraudulent traders.

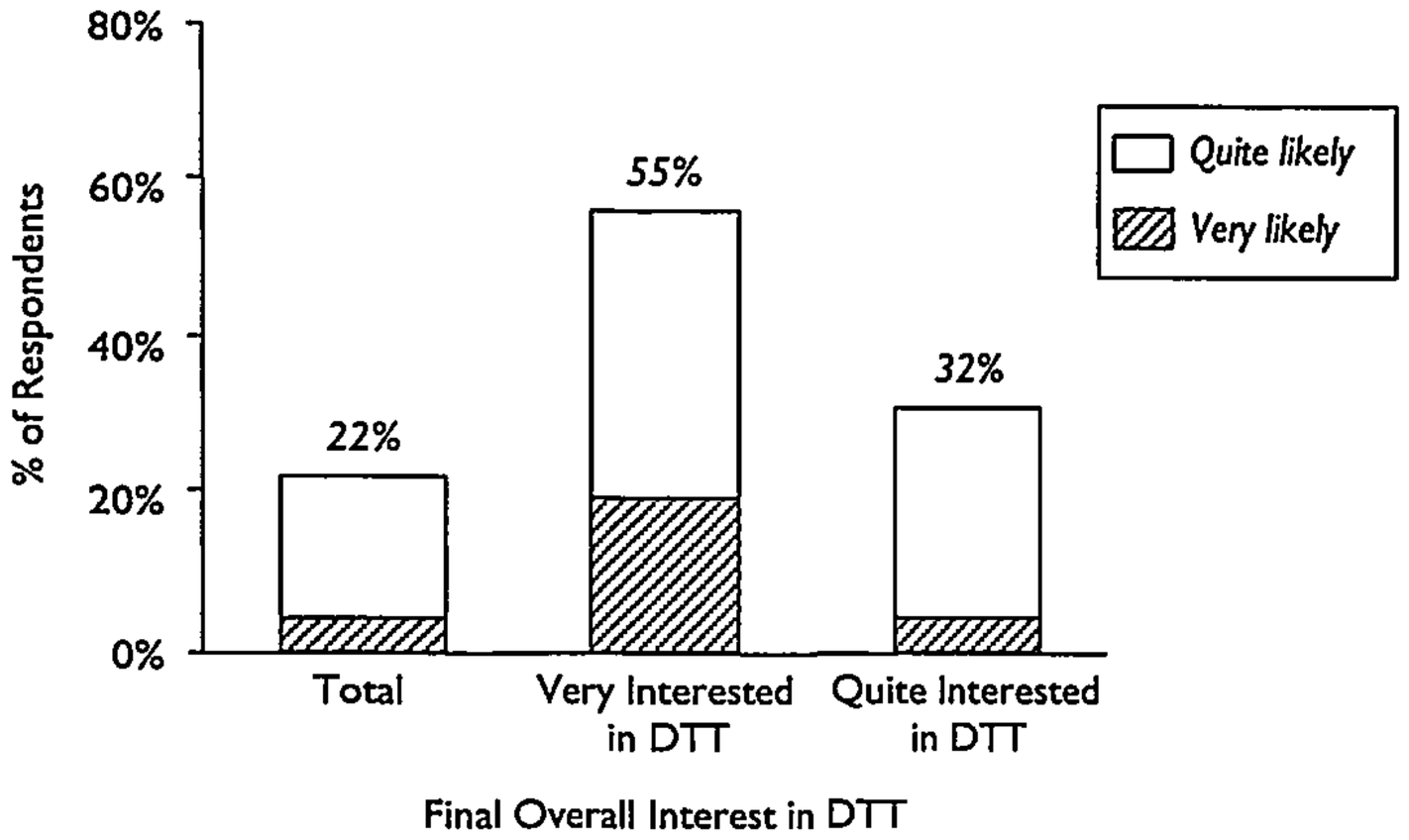
We are confident that a well-managed, easy to use and secure shopping area will attract consumers, Our consumer research confirms this view, and is shown in Exhibit A7.7 and Exhibit A7.8.

**Exhibit A7.7: Service Usage: Likelihood of using data services to get information about a product/ service advertised**




*Source: BMRB Research for DTN*

**Exhibit A7.8: Service Usage: Likelihood of using data services to order a product/ service**




*Source: BMRB Research for DTN*

### *Sample Retail Offerings*

*Books*

Books are ideally suited to Internet retailing as their covers and reviews can be displayed on a screen almost as attractively as in a shop. In addition, the utility of a book shop in the eyes of many customers lies largely in having a huge range such that the customer can find whatever title he or she wants. No physical shop can offer an exhaustive range without incurring ruinous stockholding costs, but an online book shop can, provided it has efficient links with book wholesalers and publishers.

Amazon.com in the USA is the leader in this field, though it has been established for only two years. It claims to offer all the books in print in the USA with a three to four day lead time and at a discount from list prices. Although the business is at an early stage of development, it is achieving extremely rapid sales growth.

Amazon illustrates some of the creative services which can be offered to online customers – it mails customers with notices and reviews of forthcoming books likely to be of interest to them and invites customers to email in reviews of books, which can be accessed by all shoppers.

We believe there is an opportunity to create an online bookstore geared to the national market. Waterstone's has written to express interest in the concept. DTN will also consider hosting a celebrity book review programme in The Knowledge Network (rather like the successful Oprah Winfrey book reviews and with links to our online book service).

*Groceries*

Tesco already has a retail site on the Internet, where it is trialling the development of online grocery sales and direct home deliveries. We would expect to be able to offer online supermarket shopping organised by one or more of the leading UK chains.

*Insurance*

Several US companies are developing products for the Internet allowing users to search for the best motor insurance rates quoted online. Brokers will also establish online businesses in the near future. Progress in this area is particularly rapid at present, and Commercial Union have already indicated their interest in DTN's service.

*The Banking Hall*

We have held initial discussions with several of the leading High Street Banks about providing home banking services to customers.

Customers will be able to find out the balances of their accounts, look at a statement and make payments for the cost of a local telephone call. We do not think this is likely to be a revenue generating activity, but rather an additional factor in persuading customers to buy a digital receiver.

**Other Services**

The services we have listed above will be closely linked to programme services. We expect that they will be the first offerings to draw most viewers into the Carousel and the Grid. Once viewers become more familiar with the services, they will start to explore other services. A selection of those we propose to establish are detailed below:

- The Phone Box
- The Games Centre
- Follow-up
- The Message Room
- The Polling Booth
- The Job Centre.

***The Phone Box***

In the UK there has historically been a monopoly in the area of directory enquiry services. BT charges customers 25p per call whilst refusing to license residential directory information. OFTEL has indicated to DTN in a letter that it would like to encourage the development of competition in this area.

We propose to develop a number information enquiry facility on the Grid. There is a clear analogy with the French Minitel service. "France Télécom Directories" is the most frequently used information source generating 784 million calls per year and accounting for 23 million hours of online time. French users pay on average £0.14 per call excluding VAT. This equates to about £50 million of revenue for Minitel itself.

Our service will allow users to enter the name and address of an individual or business into the receiver, using their keyboard or remote control. The Phone Box will then access our central database on the Grid and quickly give a list of possible matches. Reverse searching (entering a telephone number and searching to determine the associated name and address) will not be allowed. Users will not be limited to two numbers per call, as with the BT service, but will pay the cost of a local call to access the Grid. We plan to significantly undercut the current BT price for the service.

We have been in discussion with several potential providers of information for this service. BT has indicated that it may start to license residential number information in the future. However, they are not the only potential provider. TopWare is a company that is currently developing a database of UK telephone numbers using a variety of sources. Product launch is planned for March or April of this year. TopWare has an established history in the field of number information, is active in a large number of countries including the USA and is known in the UK for its attempts to break the BT residential number information monopoly. TopWare has expressed its interest in working with us to provide a number information service as part of the DTN's data services.

We hope to complement our number information service with a business services directory. This would be supplied in a similar way via the interactive return path, allowing users to input the service and geographic location required.

We have had discussions with a potential provider of this service and would expect these to continue following the award of a licence.

***The Games Centre***

Viewers will not just want to use DTN's data services for the serious things in life, like buying insurance and looking for jobs. We intend to offer a games facility as well. There are two kinds which could be offered:

*Programme related*

For example, a quiz can be run alongside a TV show or as an integral part of it. The viewer pulls a questions and answer form from the Carousel, views it at the same time as the programme and enters answers. After the show ends, the answers can be sent off via the Grid, perhaps for a small fee, and the viewer will be told his score and how he did compared to other viewers.

*Computer games*

The Grid opens up opportunities for DTN to provide software downloads to consumers. It also allows us to explore the provision of simple multi-player games. Customers might take out a subscription or make a one-off payment to play. Comparable services are already being offered to Internet subscribers, giving DTN confidence that there will be a business in this area. DTN intends to explore these possibilities.

***Follow-up***

Advertising is more valuable to retailers and consumers if it is well targeted and if consumers are able to get more information about a product, or even purchase it.

Exhibit A7.9 illustrates the premium charged by media which are more targeted and more likely to stimulate a response.

**Exhibit A7.9: Premiums for Targeted Media (Cost per Thousand £)**

| National Press | ITV | Regional Press | Internet | Direct Mail |
|---|---|---|---|---|
| 4 | 6 | 10 | 30 | 460 |

*Source:* *Advertising Association* | *Media Centre* | *Advertising Association* | *Electronic Telegraph* | *DMIS*

Advertisers are constantly looking for ways to achieve a response from consumers of advertising material. Thus, an estimated 22% of television advertisements currently have some form of response mechanism built in – a telephone number, mailing address or Web site address. However, response rates are low – most achieve a response rate of less than 0.1% because contact information appears on the screen for just a short time.

The volume of direct mail has increased by 8% annually in the past decade, yet here too, response rates are often low: 1.6% for door drops. Direct mail using names and addresses achieves higher response rates (6.7%), but is correspondingly more expensive – an average of perhaps 50p for every household contacted, or £8 or more per response achieved – and that includes free offers.

DTN proposes to offer advertisers the facility to give viewers information which supplements a television advert and is designed to elicit a response from them. The key attribute of the service for both advertiser and consumer is the ease with which a consumer can respond.

It will typically work in the following way: the viewer sees an advertisement on a digital television channel and is told that more information can be found on the text pages. The first of the relevant pages is automatically stored in the Carousel for two hours after the showing of the advertisement, and can be accessed by the viewer with one

click. The high capacity of the Carousel will allow the advertiser to present a substantial amount of text, graphical and pictorial information to the consumer. In certain cases where a very large amount of information/processing power is required, the viewer may be forwarded to the advertiser's site on the Grid (with the modem dialling a Freephone number in most cases so there is no telephony cost to the viewer).

When the viewer has finished reading the material, he or she will be offered more information by mail, a quotation or the chance to be contacted by a salesperson. If appropriate, they will be asked whether they wish to make a purchase. If the answer is in the affirmative, a standard form will appear, showing address and other information on the subscriber which is stored in the receiver. Once this is confirmed as being correct, the request will be actioned through the online system.

Clearly, a customer who responds positively to an advertisement of this kind is very valuable to an advertiser. We have indications from advertising agencies that a number of advertisers would eagerly take up such a proposition. Rover have demonstrated particular interest.

In some cases, this approach will lead to the viewer making a purchase online. DTN will be paid via a handling charge. Details of the operation of the service are given in Section B of the application.

***The Message Room***

Within ten years from now, the growth of electronic information usage will ensure that the ability to send and receive emails will be seen by most households in the UK as a basic requirement.

DTN will be able to send messages to its subscribers through the receiver, alerting them to new programmes, pay-per-view movies, and so on. Over time, many customers will see the potential benefits of being able to send email messages from home to commercial organisations, friends or colleagues. For a small fee, in the region of £1 per month, DTN will allow its subscribers to send and receive email messages to anyone with an address, either within the Grid, or anywhere on the Internet. Users will need to purchase a keyboard to make effective use of the service.

***The Polling Booth***

The return path for interactive applications opens up an opportunity to conduct subscriber polling. Because the viewer will be able to vote using his remote control, there is a much stronger link than having a telephone survey poll.

The main polling service would be in relation to television programmes and commercials, with viewers asked to respond to issues, cast votes, request programme content, or rate advertisements. We will also run longer surveys to a closed "sample population", though this will be constrained in the early years by the fact that early

adopters of digital terrestrial television may not be representative of the population. Both Gallup and MORI have expressed interest in setting up polling services on our service for a sample population.

### *Job Centre*

National newspaper advertisements are a proven means of attracting applicants for middle-to-high-ranking employment positions. DTN will explore the opportunity to co-operate with broadsheet publishers in giving advertisers value for money.

Advertisements placed on the Grid can carry more information than could be fitted into a standard newspaper advertisement. In addition, the reader can respond directly to the advertiser. At a later stage, advertisements could also be placed in a subscriber's Personal Newspaper.

We anticipate that this service will only reach a small proportion of readers of broadsheets in the near future, but that towards the end of the licence period, it could attract substantial numbers of readers.

## Internet Access

About one million households in the UK currently have Internet access, typically paying between £120 and £180 a year to an Internet service provider. Although prices are falling fast, the costs of access, when combined with the entry cost of a personal computer and modem and the costs of long telephone calls, can make Internet access an expensive business.

DTN proposes to offer Internet access to its subscribers at a cheap price. This will bring the Internet to consumers for whom access would previously have been too expensive or for whom a computer would cost too much.

DTN will share facilities with its sister company CableTel's subsidiary Cable Online.

DTN's full range of data services and suppliers is shown in Exhibit A7.10.

**Exhibit A7.10: Carousel (C) and Grid (G) Data Services and Suppliers**

| | Service | C | G | Supplier |
|---|---|---|---|---|
| **The Infobarn** | | | ✓ | Yahoo!; Autonomy |
| **Money** | Money Matters | ✓ | ✓ | Bloomberg |
| | The Business District | ✓ | ✓ | Bloomberg; Press Association |
| | The Consumer Advice Bureau | | ✓ | Consumers' Association |
| | Saturday Value | ✓ | | Consumers' Association |
| | The Community Channel | ✓ | ✓ | Charities Aid Foundation; Media Trust |
| **Knowledge** | Foreign Languages | ✓ | ✓ | Communicaid |
| | Campus | ✓ | ✓ | Open University; UCAS; National Extension College; Warwick Business School |
| | Online Reference Books | | ✓ | Encyclopaedia Britannica |
| | Environmental Zone | ✓ | ✓ | EcoSourcing International |
| | The Learning Street | ✓ | ✓ | Ofsted; Workers' Educational Association; Plymouth University; University of Sunderland; |
| | The Magazine Shop | | ✓ | Manpower; Consumers' Association; Mencap |
| **Sports** | The Sports Hall | ✓ | | Press Association |
| | Coaching Reports | | | 11 national sports associations |
| | Sports Association Information | | ✓ | 11 national sports associations |
| **Metro** | Local News | | | The Press Association |
| | The Neighbourhood | | ✓ | Manchester Community Information Network |
| | The Town Hall | | ✓ | Manchester, Belfast, Birmingham City Councils; Cardiff Country Council |
| | Classifieds | | ✓ | Scott's Estate Agents |
| **Travel** | The British Travel Centre | | ✓ | Railtrack; National Express; London Transport |
| | The Holiday Hotline | ✓ | ✓ | |
| | The UK Guidebook | | ✓ | English, Wales, Scottish Tourist Boards; British Tourist Authority |
| **The National** | Personal Pages | ✓ | | Press Association; Bloomberg |
| | The News Room | ✓ | | Press Association; Bloomberg |
| | The Weather Centre | ✓ | | Weather Channel; IWP; PA; Met Office |
| | Traffic Island | ✓ | | RAC |
| | People's Parliament | ✓ | ✓ | House of Commons |
| | Minorities | | ✓ | |
| | Other Public Information | | ✓ | Department of Health |
| **That's Entertain-ment** | The Box Office | ✓ | ✓ | Press Association; London Calling Internet; Halle Orchestra; Opera North; Everyman Theatre; Comedy Store |
| | The Movie Experience | ✓ | | |
| | The Top Ten Films | ✓ | | |
| **Shopping Square** | Books | | ✓ | Waterstone's |
| | Groceries | | ✓ | |
| | Insurance | | ✓ | Commercial Union |
| | The Banking Hall | | ✓ | Mondex |
| **Other Services** | The Phone Box | | ✓ | TopWare; BT |
| | The Games Centre | ✓ | ✓ | Fantasy League |
| | Follow-up | ✓ | ✓ | APL; Rover Group |
| | The Message Room | | ✓ | |
| | The Polling Booth | | ✓ | Gallup; MORI |
| | The Job Centre | | ✓ | Manpower; Guardian/Observer |

In addition, we have received written expressions of support from the following:

- Oftel has confirmed to us in writing that it intends to increase availability of directory information

- Rover Group has expressed interest in writing in the potential of interactive advertising via DTN
- HMSO has confirmed in writing the availability of crown copyright material
- APL has expressed in writing interest in interactive advertising and separately in designing the consumer interface for the Carousel and the Grid.

All letters of support are included in Volume 1 of the Appendix to Section B.

### Other Opportunities

Developments in the field of data broadcasting and online services are moving rapidly. DTN believes that these developments will open up new revenue-generating opportunities during the period of the licences. We intend to monitor developments and to introduce new services if we believe they will be of interest and value to our viewers.

## How it Works

As we stated at the beginning of this section, good content is only part of what is needed to make our data services successful. We also need to have a service that is easy to use. The technical components of our service are described below. We cover the following:

- receiver and controls
- software
- the Carousel
- the Grid
- payment methods
- transaction infrastructure
- payment security
- access control.

### Receiver and Controls

As mentioned in Section A3, DTN will promote the sale of receivers which include modems. These will be plugged into the customer's telephone socket enabling access to the online service (the Grid) and facilitating the collection of information about viewing of programmes and data services.

In nearly all cases, data services will be accessed through the television set. However, we believe it will become possible in the near future for DTN's subscribers to receive

our broadcast and online services on their PCs, either by hooking up to the television receiver or through a separate PC broadcast card and aerial.

The receiver will have sufficient short- and long-term data storage capacity for the services offered. This will be vital to many of the innovative new services proposed and to optimise both the speed and quantity of content available from the Carousel.

It will be possible to access any of the data services with the remote control only. However, some subscribers will be interested in buying a keyboard or joystick in order to maximise the speed at which tasks can be carried out or to play games. Infra-red keyboards are currently on sale in the USA at $50-$70 retail. DTN intends to ensure that keyboards are compatible with its receiver specification and that they are available when the service launches.

### Software

A description is given later in A7 of the functionality of the Electronic Programme Guide (EPG) used for choosing television channels. Just as the EPG presents a mass of television programme information in an easy to use format, so there will be "browser" software included in every receiver which allows the consumer to find all the available data services.

Browsers are best known for their role in making it possible for users to navigate around the Internet. They do this by retrieving information stored at given locations on request and displaying it on the user's computer.

In the past year, several companies have produced browsers which allow use of the Internet through a television screen, the best-known being Web TV. DTN will use a similar product for the Carousel and Grid and have made initial contact with potential suppliers. The aim is to commence work with one supplier by May 1997.

DTN will provide a browser which is designed for someone who has never used a computer and who has only a television remote control. When the viewer selects the browser, a "home page" will appear with a menu of options. Clicking on a "button" will take the viewer to a sub-menu or directly to a page of content.

Navigation through DTN's data services will make use of four simple principles:

- *A Root and Branch Structure:* When a user arrives on, say, a local council's home page, he or she will be faced with a choice of areas to look at - for example, cultural activities, council services or political activities. A user choosing cultural activities will then be faced with a choice of several different venues or types of activity; if a certain theatre is chosen, he or she will be able to explore a list of forthcoming productions, reviews of the current production, ticket availability, and so on

- *Hot Links:* When a user arrives on a Bloomberg financial page carrying share prices, he or she may also find an advertisement for a stockbroker. If the user clicks on the advertisement, he or she will be taken to the broker's site
- *Search*: Software "search engines" allow users to search by key word, assisting in the location of information for the first time
- *Bookmarks*: The user will be able to gradually build up a portfolio of frequently-visited sites or particular pages within a site. Rather than remembering the exact location of every place of interest and navigating down the tree to reach it, the user can instruct the browser to "bookmark" a particular site. The next time the user wants to visit that site, he or she has simply to click on the bookmark to be taken directly there.

Since most users of the data services will be looking to carry out a standard task in the shortest time possible, there will be ample capacity for a user to customise the browser to go straight to certain Carousel or Grid pages. It will also be possible to programme in information for which the user would like to receive a regular update - for example, a share price or football news, so the browser can store them in the receiver's cache in advance. Further, the first menu seen by the user when he or she switches to the EPG can be customised to show frequently accessed areas and pages related to a television programme which has just been watched.

Customer convenience will be further enhanced by the creation of a carefully signposted environment in which it is easy to explore new information sources or services. All areas will be designed as far as possible to have a common look and feel, ensuring that viewers only have to learn once how to carry out a particular function such as sending off an information request to an advertiser. Guidelines will be issued to content providers on the DTN format, though it will not be economical for them to make all individual pages conform to this.

It takes the novice Internet user some hours of online time to learn how to find information efficiently. DTN will make it possible for less technologically astute new users to start gaining value from its service within minutes.

All information is likely to be made up originally in the HTML format used on the Internet. It will have to be re-formatted for the television screen. A couple of companies already have software which allows an information provider to reformat Internet pages for the television, notably WebTV and Viewcall. The Application Programme Interface (API) that we will specify for our receiver is designed to integrate with software required to reformat HTML pages on the television.

### Carousel

We plan to dedicate a full 10% of the capacity of each multiplex to data services. The total 6.6 Mbps capacity across the three multiplexes would allow DTN to broadcast far more information than current analogue services, with far better visual qualities. The capacity and coverage areas allocated to data services at launch on each multiplex is shown in Exhibit A7.11.

The large cache on the set top box combined with the high frequency of transmission of individual information pages will allow users to gain very rapid access to the information they require.

**Exhibit A7.11: Data Service Capacity Allocations**

| Multiplex | Digital Capacity | Coverage ('000) |
|---|---|---|
| Multiplex B | 2.4 Mbps | 50,608 |
| Multiplex C | 2.4 Mbps | 44,584 |
| Multiplex D | 1.8 Mbps | 42,440 |

We will provide a comprehensive information service. Text and graphics will be formatted far more attractively than is possible on existing services. Other types of information broadcast will include full screen colour photographs and small software applications, offering features such as search facilities or animated graphics sequences. Other information may be broadcast separately from the Carousel. Exhibit A7.12 shows an illustrative mix of the services which could be carried.

All services will begin on 1 May 1998 and will operate 7 days a week, 24 hours a day.

**Exhibit A7.12: Data Services - Carousel Capacity**

| The Carousel's capacity can be used in many different ways. One configuration is as follows: |
|---|
| • 12,000 screens, each comprising 150 words and a graphic covering 1/6 of the screen<br>• 120 full screen colour photographs<br>• 840 kbps of data and applets* |

*Note: *Applets are small computer programs that allow users to manipulate the data 'interactively'*

Repeat rates will vary for different pages, but the system will be designed to give the viewer rapid access to information. The most frequently used pages will be repeated every five seconds. A scrolling facility will make it possible to pack several screens-worth of information onto a page where relevant. The browser and set top box cache will begin downloading ensuing pages ahead of the viewer, picking up and storing these predicted page selections in the memory cache while the user is still reading the current page. As a result, most of the time the service will give users the impression

that selected pages are available instantly. By comparison, users of analogue teletext services have to wait for 15-20 minutes for some screens to be repeated.

A valuable local dimension will be added to the Carousel with the help of NTL's expertise and infrastructure. Content of primarily local interest such as news, listings and local government information will be forwarded to the BOC for multiplexing with programme channels and other data services. Regional transmitters will broadcast the multiplex version designed for their part of the country.

Since it will take several seconds for the receiver to switch between multiplexes and many households will not be able to receive all three, the services for each multiplex will have to be somewhat distinct – in other words, two closely related pages will be on the same multiplex and programme-related pages will always be on the same multiplex as the television channel.

## The Grid

The Carousel's capacity clearly surpasses that of analogue terrestrial services by a large margin. However, it is finite and the desire of information providers and advertisers to use colour graphics and photographs could progressively constrain capacity. The Grid will act as a reservoir of content, although the telephony cost and time-delay involved in gaining access to it will make it highly desirable to put as many services as possible on the Carousel itself.

The online part of the information will be held on a number of computers ("servers") linked through the telephone network both to the Subscriber Management System and to customers who dial in for information.

Customers will typically access the service by making a local-rate call to a BT switch. DTN will use the NTL national telecommunications infrastructure to provide trunk capacity to our operations centre.

In some cases, advertisers will want to pay for customers to have Freephone access to their online site. In others, a customer using a premium service will incur a charge for access to particular information. Such a cost will always be clearly advised before charging.

Access to the services on the Grid will be high-speed relative to current Internet access, both because of the 28.8 kbps modem used in the receiver and because data will be transferred using NTL's high-capacity trunk network and the Grid's plentiful server capacity.

DTN is unique in having access to all of the necessary assets to create a full end to end system for data services. To our knowledge no other company could achieve this vision in Britain without relying on a complex set of joint ventures.

Although Internet access will be provided for a subscription, the Grid will be separated from it by a "firewall" to ensure security.

ICL have produced a specification for the Grid which is included in Section A2 and in the Appendix to Section B.

## Payment Methods

There will be times when a customer needs to pay for something online, whether it be a premium information service costing a few pence, or the purchase of a holiday costing many pounds. Large payments will be carried out using credit/debit cards. Smartcards or 'electronic purses' will be used for small payments – these will store credits worth a few pounds, making it possible to carry out many small transactions before a "top-up" of credit is required from a bank or credit card.

To encourage consumers to make online transactions, we will need to create an online environment that is flexible, convenient, and relevant. In addition, consumers must be given confidence that making payments via DTN is as secure as any existing methods. On the retailer side, we must provide an infrastructure that means retailing via digital terrestrial television is an attractive proposition.

The last year has seen enormous progress on the creation of electronic methods of payment and computer systems specifically designed for processing on-line retail transactions. These efforts are attracting the involvement of leading world-wide players such as Master Card and Visa with respect to payments, and Oracle, Microsoft and Netscape with respect to system design and architecture.

DTN is working in partnership with one of the UK's largest banking institutions to develop a sophisticated, secure and convenient transactions system to be available from launch. We will use as far as possible standard transaction architectures and payment methods, which will allow us to benefit from developments in Internet commerce and enable Internet retailers to adapt their systems to digital terrestrial television with minimal incremental cost.

There are three main payment methods currently used in the retail sector:

- credit card
- debit (debit cards, cheques)
- cash.

In the online environment, credit or debit card information can be transmitted as encrypted data, allowing cards to be used for larger transactions, while smaller transactions will use cash stored on smartcards ('electronic purses').

Smartcards or "stored value" cards and electronic purses are methods of making payments online with lower processing costs than for credit and debit cards. Stored

value cards hold money on an electronic chip and can be used in shops and online, whereas electronic purses store values as computer files, and can only be used online. Both use secure encryption software to transfer money from one account to another. Stored value cards can be topped up in cash point machine, in shops with the appropriate terminal and online, if the user has the appropriate equipment.

Developments in this field are moving rapidly, with no single standard yet established. DTN will aim to support those electronic payment technologies which are in widespread use by its customers. DTN believes that stored value cards will achieve broad adoption by UK consumers during the lifetime of the licence. It is anticipated that there will be two stored value card schemes in the UK, both backed by one of the international card associations - Mondex (developed by NatWest and now 50% owned by MasterCard) and VisaCash. VisaCash will be trialled in the UK during 1997, while Mondex is already operating in 3 locations in the UK (Swindon, Exeter and York) as well as Hong Kong, Canada and the USA.

When used to purchase goods or services, the stored value card is placed in a reader and debited with the relevant sum, while the terminal in the retailer's till is credited with the same amount. Every hour or every day, the retailer "downloads" the cash into a bank account and pays a small commission.

The advantages of stored value cards include the following:

- it is not necessary to have a bank account or a credit rating to use one
- it will soon incorporate debit and credit card accounts on the same piece of silicon.

We propose equipping DTN's receiver with a special slot into which stored value cards can be inserted. It will be possible for each member of the household to have a card, and for balances to be topped up online – a quick and painless method of distributing pocket money! Credit card details can be stored on the card, allowing viewers to make larger purchases online without having to key in long card numbers every time.

Three features will make the payment process more streamlined still:

- an "electronic shopping basket" will allow the online shopper to "carry" selected items around the store and only pay once at the end, even if more than one shop is visited
- our partner bank will organise pre-authorisation of credit for subscribers, so payment can be guaranteed to the retailer even before a credit card transaction is processed
- very small transactions, for example to retrieve paid-for information services, can be stored up in the receiver for a period of time, avoiding the need for the modem to dial up the payment facility every time.

Finally, it will be possible for customers to pay their monthly DTN subscription with a stored value card, though payment by traditional means will of course also be available.

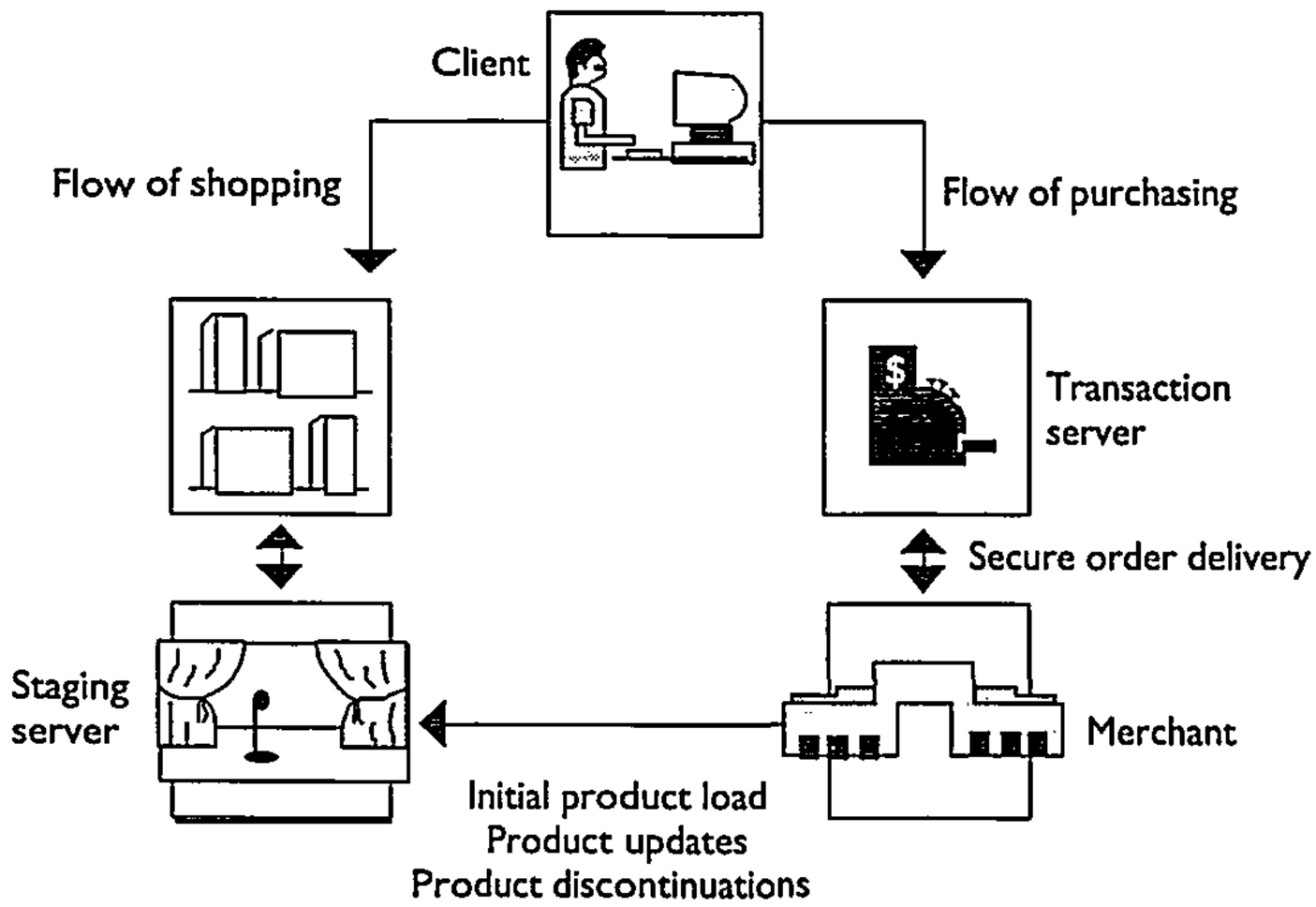
### Transaction Infrastructure

The systems needed in order to provide on-line retail services can best be explained using Netscape's schematic diagram reproduced below in Exhibit A7.13. The retailer or merchant at the bottom right, supplies product information to the on-line system. The information is passed through a staging server where the information is checked for authenticity, then placed on a "merchant server", which is an electronic shop. The client looks at the products on offer in the merchant server, then places an order. This is passed through the online service's transaction server, allowing the retailer to receive both payment and the order for dispatch.

Larger retailers will provide their own hardware to our specifications, but for some smaller retailers, the investment (likely to be in the range £30,000 to £50,000) may be too large. They will be placed on DTN's servers alongside other smaller retailers.

While merchant servers for credit and debit cards need to be operated by a banking institution, transactions using stored value cards will go directly from customers to retailers. A proposal from our banking partner for handling transactions will be included in the Appendix to Section B.

**Exhibit A7.13: Netscape Merchant System Architecture**




*Source: Netscape*

DTN is pleased to be working with a banking partner which is experienced in the field of online retailing, and with ICL, which created the architecture for several existing systems.

## Payment Security

Security is critical for any non-cash payment method, and we must in particular demonstrate to consumers that not only can they can make payments online without them being altered or copied, but that this is the safest method of making payments yet devised.

Oracle's Electronic Commerce White Paper emphasises the requirements for secure electronic commerce installations:

- *Confidentiality* - ensuring that data is not improperly disclosed
- *Integrity* - protecting data against corruption or unauthorised change
- *Authentication* - having confidence in the identity of all parties
- *Assurance* - that security mechanisms are robust and correctly implemented.

All hardware suppliers will have to demonstrate to DTN that they can meet all these requirements. The payment system will be under the control of our partner bank.

## Access Control

DTN is excited at the prospect of opening up new worlds to subscribers of all ages through the Carousel, Grid and Internet access. However, we share the widespread concerns about the potential for exposure to indecent material via online means. Fortunately, leading figures in the online industry are now collaborating to create workable controls over the dissemination of unsuitable material. DTN will actively monitor developments in this field during the initial design period of the system and thereafter.

DTN does not plan to introduce adult material to any part of the Carousel or Grid. We will retain the right of editorial control over all content introduced by service providers to the Grid and Carousel. All material from new suppliers will be vetted, while periodic monitoring of regular suppliers will be enforced. Any customer complaints about the propriety of material will be followed up promptly.

Subscribers to the Internet will be given a password or PIN number, allowing control over which members of the household can use the Internet.

The industry appears to be standardising on the use of a code for rating the type of content contained on individual Internet sites. DTN will examine the available access control options created by the code at the individual household and total network levels.

Finally, as an Email facility provider, DTN is, like a telephone service provider, not in control of the uses made of it by customers and their correspondents. It will, however, withdraw Email service from any customer known to be using it for illegal purposes.

# Compliance and Staffing

## Compliance

Subject to any subsequent order made by the Secretary of State as to the proportion of multiplex capacity which can be devoted to digital additional services, DTN will ensure that no more than 10% of the capacity on each multiplex will be taken up by additional services, excepting certain programme-related services and during certain periods of the night.

As noted in Section A16, the DTN compliance procedures will ensure that all of our data services conform to the guidelines and relevant codes. We are conscious of the rapid development of applications and technology in this field. The Director of Strategic Planning and Data Services and the Controller of Data Services will have immediate responsibility for compliance. The senior editorial staff will be familiar with the relevant guidelines and codes within which they will operate.

DTN also notes the particular guidance provided in the ITC Code for Text Services. We believe that our requirements for standards of journalism, presentation and taste and decency will fully reflect the requirements laid down in the ITC's Code on Sponsorship and Advertising. Any use of the Grid by advertisers to induce viewers to remit money will comply with the relevant regulations.

DTN intends to consult directly and regularly with the ITC and other relevant regulatory authorities to ensure compliance. This is likely to be relevant as new services and applications are introduced to DTN's platform.

## Staffing

DTN will be a lean company which aims to create and manage an environment in which data services businesses can thrive, rather than attempting to carry out every function in-house. It will also seek synergies within DTN and with DTN's sister companies.

For example, many of the news feeds used on the Carousel will be formatted ready for broadcast by Press Association staff. They will then be sent to BOC which will transmit them. Customer enquiries about how to access the pages (which should be relatively infrequent due to the simplicity of the user interface) will be handled by our SMS. Some aspects of provision of Internet access will be handled by Cable Online in South Wales. If a customer pays for something through the Grid, payment will be processed through a bank or a smartcard. Most of the online "shops" will be run by third party companies under our supervision.

Our estimated staff requirements are as follows:

- 31 staff will be required for collecting, collating and inputting content which has not been made available to us in broadcast format, rising to 50 by 2010
- 6 staff will assume editorial control over the Carousel output and will police content on Grid
- 12 staff will be responsible for Content Development and Design, rising to 20 by 2010
- we will employ 4 staff per city for local classified advertising sales, rising to 50 per city by 2010. However, we are also exploring the feasibility of outsourcing this operation.

Requirements in 1997 for the preparation of the service will be 20-30 people from the time that the multiplex licences are granted.

There will be many more jobs created amongst content providers and third party vendors who use the Carousel and the Grid.

# Additional Services - Electronic Programme Guide

## Introduction

The Electronic Programme Guide (EPG) is of crucial importance to the consumer acceptability of digital television services. It needs to strike a delicate balance between providing the user with an easy guide to the full range of services on offer without overwhelming him or her with the "shock of the new" or too much choice. For the unadventurous it needs to retain much of the functionality of existing remote control handset navigation with the most familiar channels in the place that the user would expect to find them whilst enticing the user to explore new services. For the more adventurous it must provide a range of more advanced features such as the ability to personalise the EPG to display services in the viewer's mode of choice, such as by genre, by time of day or by personal schedule. For all users it must have fail-safe controls to provide parental control over access to pay services or programmes unsuitable for children.

NTL has, in partnership with DMV, already demonstrated a working EPG with an Applications Programming Interface (API) in a digital terrestrial receiver. This EPG already incorporates features such as forward ordering of programmes and access to the broadcast carousel. It is also integrated with the conditional access technology. We are confident that we will be able to further develop our existing prototype to provide the full range of functionality required.

DTN notes the underlying principles laid down in the ITC's draft Code of Conduct on Electronic Programme Guides. DTN is in agreement with these underlying principles and will ensure that our EPG does not discriminate between free to air and pay-TV services, either in determining the services to be included on our EPG or in the operation of our EPG service. We will also ensure that our EPG does not hinder viewers from being able to access free to air services and does not give undue prominence to our owned and operated channels. We have stated elsewhere our belief that the presence of the existing terrestrial broadcasters on the digital terrestrial platform is a substantial benefit to the platform as a whole, and we would expect to reflect this belief in the presentation of channels on our EPG.

In this section we will describe some of the key elements of the functionality of the EPG and then describe some of the technical and operational aspects of implementation.

### Functionality of the EPG

The user will be able to surf channels to see what is on in the same way that many users today flick between channels. The EPG will therefore supply the user with an on screen prompt when he or she selects a programme which will supply him or her with basic information such as a channel identifier, the name of programme, the length of time remaining to the end of the programme, and if appropriate, information on when the programme will next be shown.

At the press of a button the user will be able to see what's on next on the channel that they are watching and what's on now and next on other channels. Similarly the user will be able to sort programmes easily by time windows to see what's on in the next two hours and be able to choose between conventional programmes and those which offer enhanced interactive services (such as quiz shows) or those which require payment on a pay per view basis. The user will also be able to sort programmes by genre and by sub genre (for example: education or history) as well as by star ratings by critics.

The EPG will be capable of extensive personalisation so that the user can select the manner in which programmes are listed.

The programme guide will also provide a number of security devices. These will include a parental lock with multiple levels to prevent children from accessing material without consent. It will also allow the user to access information about programme content on matters such as sex, violence, language as well as rating information.

The EPG will also allow the user to access the Carousel directly and will provide a link to the browser that will enable the viewer to search for areas of interest or simply to explore the data services.

Programming of the VCR will also be controlled through the EPG, enabling the viewer to instruct the VCR to record programmes of choice. The set top box or idTV will be directly connected to the VCR and will instruct the machine to start recording at the appropriate time. The user will also be able to select programmes in advance and be reminded when the programme of choice is on air.

A substantial amount of research will need to be done to ensure that the user interface is simple. This is both a software issue as well as a consideration in the design of the remote control. In respect of the remote control DTN will work closely with the consumer electronics industry to ensure that we avoid as many of the pitfalls as possible. In particular we will focus on the number of key strokes required to access a particular feature and will endeavour to limit this number as far as possible. Similarly we will provide features such as the ability to return to the previous channel at the touch of a button and a button to provide context sensitive "help" information.

The user will be able to determine whether the EPG displays text information in a translucent or solid format and whether information is presented as a full screen or as an overlay.

## Technical and Operational Aspects of the EPG

The EPG will rely on Service Information (SI) to ensure that the schedule information is accurate. This solution also has the advantage of optimising the use of bandwidth. Additional editorial information will be carried as private data.

We expect to offer information on programming a week ahead although we will have to consider the conflicting constraints of bandwidth and receiver memory in the detailed implementation stage.

The Broadcast Operations Centre includes a dedicated editorial and technical staff to run the EPG. This will ensure create editorial information as well as source it from third parties and ensure that this information is consistent with the SI.

We believe that the EPG will require continued software development to add new functionality and interoperability with other software (such as the browser and the transaction software). The EPG will therefore be upgradeable by means of controlled software downloads over air into the receiver. We will wish to specify an API which allows individual receivers to be addressed for such downloads. We will have a dedicated team of software engineers responsible for the development of the EPG on an ongoing basis and for maintenance of the software in the installed base of receivers.

Given the time constraints that we will be operating under we will use "off the shelf" solutions for significant elements of the software although these will of course require integration. Further development of our existing EPG is ongoing.

The EPG will be broadcast for 24 hours a day, seven days a week. The service will commence on 1 May 1998 and will occupy approximately 400 kbps. The EPG will be broadcast across the full coverage area of the proposed services.

# Additional Services - Provision for Hearing and/or Sight Impaired People

There are 8.4 million people in Britain who suffer from some form of hearing loss and nearly 1.7 million people who are blind or partially sighted. Together they form some 17% of the population.

We are concerned about this population and are eager to make as much of our broadcasting output accessible and enjoyable to them as possible and to bring them firmly and fully into the two-way dialogue we will have with our viewers. We regard this as an important aspect of our broadcasting responsibilities. In formulating the strategy and commitments described in this section, we have consulted with a wide range of organisations, including the Deaf Broadcasting Council, the Royal National Institute for Deaf People, the Royal National Institute for the Blind, the National Deaf Children's Society and the British Deaf Association.

Given that hearing and sight impaired people are often in lower income brackets than the overall population and that digital technology brings developments of particular relevance to their needs, we hope that all financial support for the take up of receivers will provide positive assistance in order to encourage the use of this new technology among the hearing and sight impaired.

## Provisions for Hearing Impaired People

### Subtitling

Subtitling is a vital means of enhancing hearing impaired people's understanding and enjoyment of television programming. The families and friends of the hearing impaired may also feel uncomfortable watching television with them when no subtitles are available.

We will aim to subtitle across all programming strands, and we will encourage the subtitling of commercials. Currently, around 20% of all commercials broadcast are subtitled. In so far as is possible, all public service announcements and emergency news flashes will be subtitled.

We plan to broadcast subtitles using our data transmission capability. The subtitles will appear at the receiver in closed caption form. A reveal button will be made available on the receiver remote control to enable access to the subtitles.

Our programme purchasing group will ensure that subtitles are provided by the originator in a suitable format with the programme material. Most international feature films are available with separate subtitles. Also, many of the BBC library programmes have an embedded subtitle track.

Where programme material is purchased without subtitles, we will produce the titles at our Broadcast Operations Centre or through a preferred supplier such as IMS or ITFC. Our subtitles will conform to the ITC Guidance on Standards for Subtitling, covering colour, formatting, speed, line breaks, synchronisation, on-screen positioning and other parameters including the European Broadcasting Union standards. In particular, the requirements to employ the DVB Subtitling System (as described in prETS 300 743) for the carriage of subtitling data intended for general reception and to implement subtitles using region based graphics with indexed pixel numbers will be met in full.

More than 60,000 children suffer from some form of hearing loss. Research by the National Deaf Children's Society has confirmed that hearing impaired children enjoy the same programming as their hearing peers. We will make it a priority to ensure that strands of children's television programming, including drama, information and entertainment, are subtitled. Subtitles help to develop literacy among hearing impaired children and even children without hearing impairment can find subtitles help to improve reading skills.

We are mindful of the research sponsored by the ITC which suggests that subtitles for programmes aimed at children under the age of eleven need to be simplified in recognition of the fact that the reading skills of many younger deaf children are often relatively less well-developed.

We are aware that there are sponsorship opportunities for subtitling. BT and Midland Bank have sponsored subtitling on programmes broadcast by S4C. We will seek such opportunities and use revenue generated in this way solely to fund an increase in the number of hours of subtitled programming.

We fully expect to be able to exceed both the interim targets and 10th anniversary target as laid out in the ITC Draft Code with regard to subtitling.

### Other Provisions for Hearing Impaired People

There are other means beside subtitling to improve the understanding and enjoyment of television programmes by hearing impaired people. We will make our programme providers aware that comprehension of programmes is improved when characters and presenters speak directly to camera. We will also encourage them to understand the sensitivity of this issue and to avoid thoughtless stereotyping in depictions of the hearing and sight impaired on screen.

We will make our programme providers aware that background noise and sound effects can easily overwhelm the spoken word and hamper the ability of hearing impaired people to follow programmes clearly.

We recognise that subtitling of foreign language films is preferable to dubbing for hearing impaired people. It is our general policy to subtitle rather than dub foreign language films wherever possible. The hearing impaired find it difficult to enjoy films at the cinema as there are rarely special facilities available. We will therefore make it a high priority to provide subtitling on films whenever possible.

We will make efforts to ensure that the hearing impaired are informed in advance of which programmes are subtitled. Our EPG will convey details of which programmes contain subtitles.

We will make sure the hearing impaired have full access to our viewer comments and complaints procedure, and that their views are included in ongoing audience research and monitoring. The hearing impaired will have access to our telephone customer relations office via a textphone, and we will ensure that Customer Relations Officers are trained in its operation so that textphone communication is possible seven days a week during our transmission hours. We will publicise the textphone telephone number on screen, and in Teletext magazines for the deaf. Our office computer network will be equipped with e-mail, and, as e-mail becomes more common, this will afford further opportunities for the hearing impaired to communicate directly with us.

**Signing**

We intend initially to focus our resources on subtitling. In balancing the needs of the 62,000 or so hearing impaired people, whose first or preferred language is sign language against the needs of the rest of the population, we feel that closed caption subtitling which is optional and called up by the viewer at will, is preferable to signing which cannot now be delivered as an optional service. The prevalence of regional signing languages also gives rise to dissatisfaction from some regions, such as Scotland, where people dislike the dominance of one particular regional variant.

There is no technical solution immediately available for broadcasting a closed signing picture. The receiver has only one audio video decode chip making it impossible to provide a simultaneous decode of the signing picture source. DTN will work closely with the ITC, and support the development of computer compressed signing signals by sponsoring aspects of the research programme in this area currently under review by the ITC. For example, research at Essex University has demonstrated the potential for computer compressed signing. We anticipate this compressed signal being broadcast through our data service and being presented either as a software switch in the receiver as a closed caption or the RS232 receiver port for external processing.

We have submitted a view to the ITC in response to their consultative Draft Code that the research work into providing a closed user application of signing through computer compressing the service, being conducted at the moment by themselves and

Essex University, should be completed before delivery parameters for the signing service are laid down.

However, should this view not be accepted, we would comply with the guidelines given in the Draft Code by supplying signing in clear transmission on the programme types suggested by the ITC, viz. news and factual. We would review the availability of an adjacent channel for the times of signing transmission if the service remains in clear, to help alleviate potential complaints from viewers who may find the signing service intrusive.

The decision to adopt either British Sign Language or Sign Supported English will be taken in consultation with representatives of relevant deaf organisations.

Our EPG will convey details of which programmes have in-vision signing.

## Provision for Sight Impaired People

There are 1.7 million blind or partially sighted people in the UK. RNIB research shows that more than 90% of blind or partially sighted people watch or listen to television and regard it as a principal leisure activity. We support the use of new broadcast technology to enhance the enjoyment of television by the blind or partially sighted. Using an audio description narrative soundtrack to describe vividly and succinctly the visual elements of a television programme during the silent intervals in commentary and dialogue can significantly enhance the viewing experience of the sight impaired. We believe there is a real opportunity to make audio description services widely available, and recognise that such services may also be of more general interest.

We plan to use four audio tracks with each programme when providing audio description. Tracks one and two will contain the left right stereo pair, tracks three and four will contain mono and the ADS service. A software switch will be provided in the receiver enabling the end user to select either the standard stereo output or the mono ADS service for a mixed sighted audience. This will enable normally sighted people and sight impaired people to enjoy the programmes together.

We will purchase ADS tracks where possible (e.g. international film material) or when necessary we will create the ADS track in-house at the BOC Centre or through a supplier such as IMS or ITFC. It is often a relatively simple matter to create ADS tracks during the programme production process. We will encourage our programme suppliers to make available ADS tracks on new productions, and will consult with other organisations, such as WGBH in Boston and NHK in Japan, that have long-standing experience in this area.

Not all types of programmes are amenable to audio-description; it is a creative medium that sits more naturally with, say documentaries and drama, than with news and quiz programmes. However, we will encourage the use of audio description

across as wide a range of transmissions as is possible and sensible within our programming plans.

We will consult with the RNIB about how they might finance the provision of advance information regarding our programme schedules to the sight impaired. This could take the form of an audio schedule via telephone, as well as large print and Braille versions on demand.

In similar vein, if funding is available, we will offer programme fact sheets and other supporting information in large print and Braille versions. This will require production companies commissioned by us to take their needs into consideration in the preparation of such information. We will also make production companies aware of the special needs of the blind and partially sighted, such as the need to avoid extensive use of captions.

We will also take measures to give the blind and partially sighted access to our viewer comments and complaints procedures.

We fully expect to be able to exceed both the interim targets and 10th anniversary target as laid out in the ITC Draft Code with regard to audio description.

Finally, the RNIB is looking for ways to make news, books and other information available to sight-impaired people across the country. DTN proposes to work with the RNIB to develop new ways of distributing information using new and innovative technologies.

## Differences In DTN's Proposals Under Section A7 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplexes our proposals would differ from those set out above. These differences are set out below.

### Data Services

The data services that DTN intends to operate if it is awarded less than three multiplex licences are shown in Exhibit A7.14.

**Exhibit A7.14: Data Services Operating on Different Multiplex Combinations**

| Service | B | C | D | BC | BD | CD | BCD |
|---|---|---|---|---|---|---|---|
| Carousel Services | ✔(1) | ✔(1) | ✔(1) | ✔(1) | ✔(1) | ✔(1) | ✔(1) |
| Grid Services | × | × | × | ✔ | × | × | ✔ |
| Metro Services | × | × | × | ✔ | × | × | ✔ |
| EPG | ✔(2) | ✔(2) | ✔(2) | ✔(2) | ✔(2) | ✔(2) | ✔ |
| Provision for Hearing and/or sight impaired people | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |

*Note: (1) The capacity DTN would allocate to the Carousel under each different multiplex combination is noted in Section A14*
*(2) DTN would seek to co-operate with the other multiplex licensees to provide an EPG*

#### *Variations for Multiplexes B or C or D singly*

If DTN is awarded the licence for either Multiplex B or Multiplex C, we do not intend to subsidise receiver equipment and, as a result, are unlikely to be able to ensure that all receiver equipment in the market will incorporate a modem or be loaded with a DTN browser. As a result, it will not be possible to operate the Grid or other interactive services envisaged in the application for the BCD multiplexes.

The proposed service would be a slimmed down version of the news, information and advertising services outlined for the Carousel in the BCD multiplex application. Links to television channels would include material of interest to young people to accompany The Box, and the Travel Facts service which accompanies Travel. There would be no local material, as we would be unable to support local advertising selling costs without the Grid.

DTN would of course, still be able to offer text and graphics pages with a picture quality far superior to that on analogue teletext services, though in the absence of the DTN receiver's page-anticipating feature, capacity will be confined to about 3,000

screens of information on either of Multiplex B or Multiplex C, and 2,200 screens of information on Multiplex D, to ensure rapid availability.

All services will cover the entire coverage area of the proposed services, will commence at the launch of the service and will operate 24 hours a day, 7 days a week.

***Variation for Multiplex B & C as a pair***

DTN will operate both the Grid and Carousel largely as in the application for Multiplexes B, C & D. However, due to the reduction in amount of multiplex capacity that would be available, DTN will reduce the amount of information placed on the Carousel. Where the displaced information is of particular value, it will be placed on the Grid. This is shown in Exhibit A7.15.

All services will cover the entire coverage area of the proposed services, will commence at the launch of the service and will operate 24 hours a day, 7 days a week.

***Variations for Multiplexes B & D and Multiplexes C & D***

If DTN is awarded Multiplexes B and D or Multiplexes C and D it will not be able to ensure that all receivers incorporate a modem or that they are loaded with the DTN browser. As a result, it will not be possible to operate the online and interactive services envisaged in the application for the BCD multiplexes.

The Carousel will include news, weather and travel information and some public service information. Links to television channels would include material of interest to young people to accompany The Box, and the Travel Facts service which accompanies Travel. There would be no local material, as we would be unable to support local advertising selling costs without the Grid.

DTN would of course, still be able to offer text and graphics pages with a picture quality far superior to that on analogue teletext services, although in the absence of the DTN receiver's page-anticipating feature, capacity would probably be confined to about 2,200 screens of information to ensure rapid availability.

All services will cover the entire coverage area of the proposed services, will commence at the launch of the service and will operate 24 hours a day, 7 days a week.

**Exhibit A7.15: DTN's Proposed Range of Services on Different Multiplex Combinations**

| | Service | B | C | D | BC | BD | CD | BCD |
|---|---|---|---|---|---|---|---|---|
| **The Infobarn** | | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| **Money** | Money Matters | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ |
| | The Business District | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | The Consumer Advice Bureau | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | Saturday Value | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ |
| | The Community Channel | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ |
| **Knowledge** | Foreign Languages | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ |
| | Campus | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | Online Reference Books | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | Environmental Zone | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | The Learning Street | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | The Magazine Shop | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| **Sports** | The Sports Hall | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Coaching Reports | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | Sports Association Information | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Metro** | Local News | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | The Neighbourhood | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | The Town Hall | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | Classifieds | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| **Travel** | The British Travel Centre | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | The Holiday Hotline | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | The UK Guidebook | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| **The National** | Personal Pages | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | The News Room | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | The Weather Centre | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Traffic Island | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | People's Parliament | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | Minorities | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Other Public Information | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **That's Entertainment** | The Box Office | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | The Movie Experience | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | The Top Ten Films | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Shopping Square** | Books | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | Groceries | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | Insurance | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | The Banking Hall | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| **Other Services** | The Phone Box | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | The Games Centre | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | Follow-up | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | The Message Room | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | The Polling Booth | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| | The Job Centre | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |
| **Internet Access** | | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ |

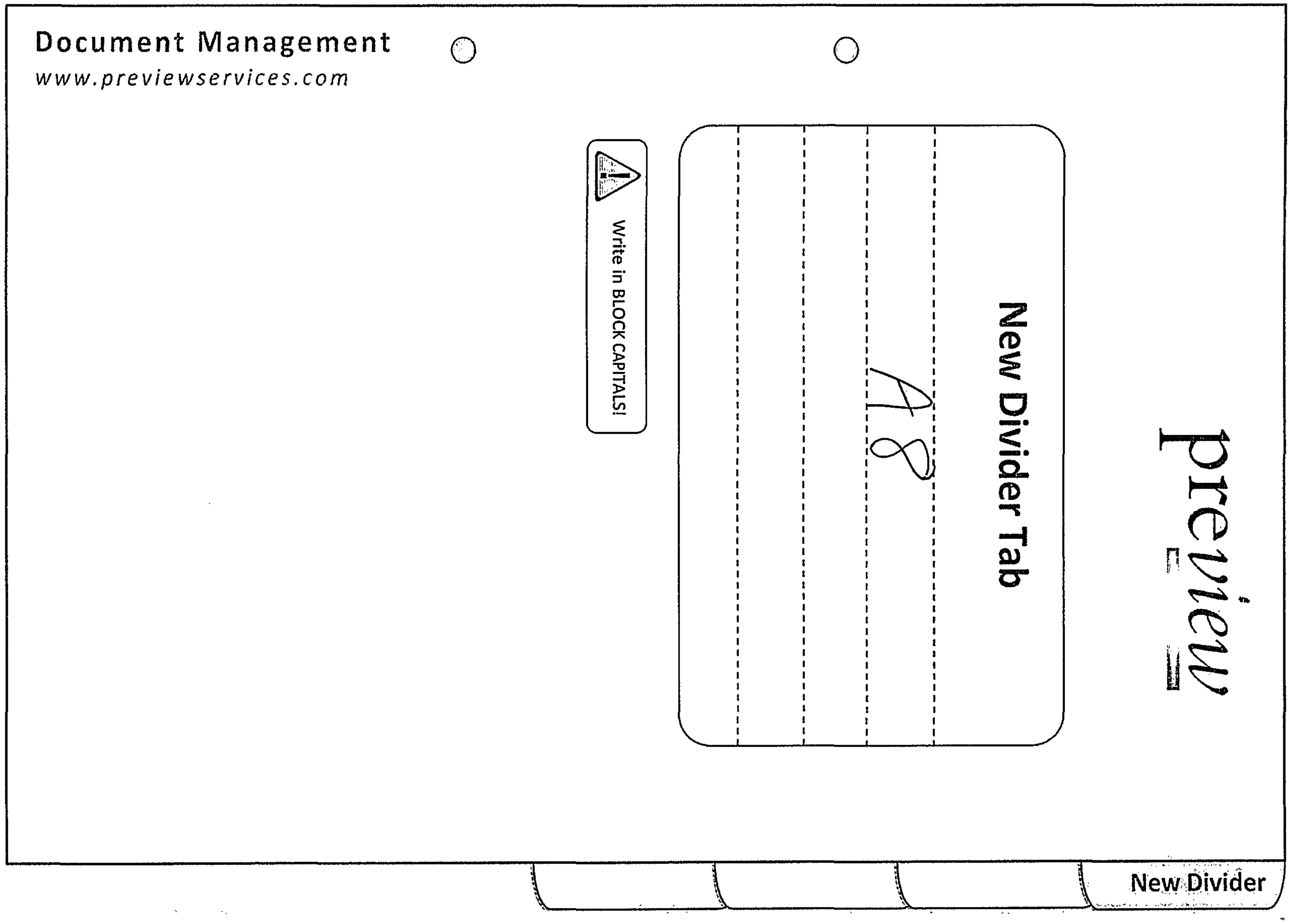
## EPG

DTN believes that it is essential for a common approach to the provision of data for EPGs to be agreed across all multiplexes and by all licensees. DTN will work hard to ensure that such an approach is adopted if it is awarded one or two multiplex licences, and believes that DTG is a suitable vehicle for achieving a co-ordinated approach. Further details of our approach to interoperability are outlined in Section A13.

DTN will operate the EPG at 0.4 Mbps on all multiplexes it is awarded, and will broadcast the service for 24 hours a day, 7 days a week.

## Provision for Hearing and/or Sight Impaired People

DTN expects that it will be able to exceed both the interim targets and the 10th anniversary target as laid out in the ITC Draft Code with regard to subtitling and audio description if it is awarded one or two multiplex licences, and with the targets for signing, subject to the reservations expressed above.



# A8 Licence A

*Applicants for Licence A should state their proposals for the broadcasting of Channel 5 in digital form and S4C Digital. They should also state which, if any, of the services proposed in response to questions A.4 to A.7 above would be provided on the capacity reserved for Channel 5 and for S4C.*

## Not applicable

This is not an application for Multiplex Licence A.

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# A9 The Development of Digital Television Broadcasting

*Taking account of specific proposals made in response to other questions, the applicant is invited to summarise any particular ways in which the award of a licence to him would promote the development of digital television broadcasting in the UK otherwise than by satellite.*

## Summary

The UK is amongst the most dynamic and progressive television markets in the world. It already has three competing analogue delivery media (cable, satellite, terrestrial) and within two years or so each of these media is likely also to have a digital offering.

The arrival of BSkyB from the merger of Sky and BSB has disturbed the delicate ecology of UK broadcasting. In a number of respects, it has offered benefits such as new channels and greater coverage of movies. However, it has also had some adverse effects, such as limiting "live" access to many major sporting events to all but the minority who pay and, in some respects, constraining the development of a profitable cable industry.

If awarded three multiplex licences, DTN would build on the excellent traditions of UK broadcasting and offer the benefits of multi-channel digital television to a much wider audience. We would also provide a bridge between the successful, mass market, predominantly British character of terrestrial television and the successful niche-orientated, predominantly American character of pay television. In doing so, we would promote the development of digital television broadcasting otherwise than by satellite.

The main ways in which DTN would achieve this goal are as follows:

- by offering new and high quality programming, differentiated from that of BSkyB
- by offering interactive services well-conceived for the UK marketplace
- by offering its services at a new price point for pay-TV, broadening the affordability of pay-TV to make it a genuinely mass market service
- by putting resources into customer care
- by devising an effective launch and marketing campaign
- by putting effort into developing an international strategy that will also promote digital subscription in the UK
- and by collaborating with the UK's cable and terrestrial industries.

Together, we believe that these elements of DTN's strategy will truly promote digital terrestrial television and provide the UK with a strong alternative to satellite.

If DTN were awarded a joint or single multiplex, these effects would be much diluted - in essence, DTN's confidence in our and the industry's ability to make digital broadcasting succeed in the UK would diminish.

## Introduction

In the first part of this section we explain the background and context to the potential for digital terrestrial television in the UK. In the following sections, we expand on the main aspects of our strategy:

- the appeal of our services to viewers
- our progressive pricing strategy
- our approach to customer care
- our approach to the technology issues
- the marketing push we will put behind digital terrestrial television
- the impact of our intention to develop overseas markets on our domestic business
- our relationship with cable and terrestrial television.

The final part describes how the plans described here would have to change if DTN was only to be awarded a single multiplex or two multiplexes.

The more confidential details of DTN's competitive strategy are elaborated in Section B2 of our application.

## The Context for Digital Terrestrial Television

The UK is amongst the most dynamic and progressive television markets in the world. It already has three competing analogue delivery media (cable, satellite, terrestrial) and within two years or so each of these media is likely also to have a digital offering. Today there are up to 60 channels available to viewers - this could grow by a factor of five within a decade. The UK has also fostered some of the world's most powerful and effective broadcasters - the BBC is unquestionably the leading public service broadcaster worldwide, ITV is Europe's most successful advertising funded station and BSkyB is the world's most valuable pay-TV operator. This is a remarkable performance for a country whose GDP is 15% of the USA's.

The dynamism of the British television environment is relatively new. Until the advent of BSkyB, new channels had emerged slowly and under the judicious management of

the BBC and the IBA. The shortage of spectrum and the under-development of cable meant that new channels were added gradually and, as each arrived, there was a careful rebalancing of programming obligations to enable the new arrival to flourish without undue disruption to the incumbents. On balance, this managed approach served viewers well.

BSkyB's arrival however had a more disruptive effect. Emerging as it did from two unprofitable businesses (Sky and BSB) and operating within a much less regulated part of the market, its freedom of operation was substantially greater than any preceding new entrant. This, combined with the fact that it was accessing a completely new revenue source, subscription, has meant that it has disturbed the ecology of British broadcasting. Like a forest fire, this disturbance has had both beneficial and harmful effects. British terrestrial television has become much more competitive and much less insular, largely as a result of BSkyB. At the same time, however, BSkyB has built a powerful position in UK television which is now, in some respects, constraining the development of a profitable cable television business. BSkyB's buying power, which derives from selling a high price service to a minority of British households, has also denied the balance of the population who do not subscribe the opportunity to see "live" many major sporting events and movies - which were often previously available on free-to-air television. Perhaps just as important is the more intangible point that BSkyB's programming character is to some degree at odds with the traditions of broadcasting in Britain.

By providing BSkyB with effective competition in the pay-TV market, DTN believes that we would reintroduce balance into the broadcasting environment. DTN's strategy for digital terrestrial television is designed to provide a bridge between the successful, mass market, predominantly British character of terrestrial television and the successful, niche-oriented, predominantly American character of pay television. Our bid will add to the diversity of the television environment in Britain and considerably enhance consumer choice. DTN aims to be the next evolutionary step for commercial television, our ethos will be recognisably that of British broadcasters. Our approach will innovate and improve on the existing traditions through introducing new channels and services available to the mass of British consumers at a reasonable price.

Arriving at this balanced outcome will be difficult - BSkyB has established a very powerful position within analogue pay-TV and it can build on this to launch its own digital offering. However, within the DTN bid, we believe that we have constructed an approach which is sufficiently robust to build a complementary and sustainable position to that of BSkyB. It is also our belief that the ITC will play a crucial role as effective and fair competition to BSkyB will not happen naturally. The ITC must make the digital terrestrial television licensees as strong as possible to give digital terrestrial television a chance to compete. This is why we argue throughout this document for a

single licensee operating three multiplexes - if there is a clear leader within digital terrestrial, there is a much greater chance of good decisions being made quickly and of digital terrestrial succeeding for the benefit of all the operators and the UK public. It would be disastrous for digital terrestrial television if its structure was similar to that of cable.

This view - that the potential of digital terrestrial television will only be realised if sound judgements are made both by licensees and licensor - runs through this entire section. At the risk of stating the obvious, our belief is that promoting the development of digital television broadcasting otherwise than by satellite is associated more than anything else with competitive strategy towards satellite. This applies strongly with respect to programming and marketing and most strongly of all with respect to the array of technical decisions facing DTN.

## Our Appeal to Viewers

Our programming will appeal to viewers because it combines the best traditions of broadcasting with novelty and innovation. While individual programmes may appeal strongly to niche audiences, the overall package will be of broad appeal. As an incidental point, it is intended that about 75% of the package will be British-originated. Although no-one watches a television programme because of its domestic origin, the most popular programmes in Britain and elsewhere are made in the home country. BSkyB's content, in contrast, is overwhelmingly originated in the USA. These points are expanded on below.

As described in Sections A4 and A5 we intend that the main elements of our channel offering will be three national channels developed and produced by DTN (The Money Channel, The Knowledge Network and The British Sports Channel), a local channel to be pioneered in Manchester and rolled out subsequently to other cities and over 20 further channels supplied by leading programme producers including the BBC and ITV.

The traditions of broadcasting in this country will be represented mainly by ITN, newly developing cable channels and, if possible, the BBC. Described in Section A4 are many other examples of the way in which DTN intends to collaborate with partners to make the best and most popular programmes available to viewers.

The appeal of repackaging old favourites should not be underestimated - UK Gold has long since established itself as the leading non-Sky channel currently available on pay-TV. However, we do not consider that such an approach is sufficient in itself to draw in subscribers, nor does it exploit digital terrestrial's potential. Our belief is that digital terrestrial television permits a new type of television to emerge - television which can serve small audiences with specific interests with good quality output. This is exemplified by The British Sports Channel which in close collaboration with the Sports Associations will pioneer new forms of sport on television. The Knowledge

Network, although appealing in a very different way, will have the same characteristics. Our plans for local television, by definition, also have to succeed with a small audience. Equally, the plans to open up our multiplexes to third parties (for example, the Hindi Channel) will present similar opportunities and challenges.

DTN is confident that these channels will meet UK viewers' demand for quality - DTN's key staff and shareholders have a formidable track record in delivering quality over many years and DTN's programme partners represent the very highest standards in British and overseas programming. A fuller description of DTN's drive for high quality is included in Section A6.

DTN will also create an innovative and exciting range of interactive data services.

Section A7 explains how we have developed a broad array of services which will offer both far greater depth than available on teletext and far easier to use than the Internet. This will, we believe, bring the Information Society into everyone's home and transform the way in which we use and interact with our televisions.

It is a widespread perception that pay-TV's success is based on movies and sport. Our contention, however, is that pay-TV as we will come to understand the term hardly exists today. The original form of pay-TV was created by the development of cable television in the USA and has been hardly changed by the advent of direct-to-home services. However, the emergence of an environment where hundreds of channels are possible, of EPGs and of the capability to integrate previously discrete delivery systems (broadcasting and telephony) will change the entire perception and reality of what pay-TV is. Instead of being the preserve of movie and sports enthusiasts, pay-TV in the future will offer something to all members of society as well as being within their reach. The programming and services we envisage is a vital first step towards this vision of the future.

## Pricing

An equally important step towards broadening the market for pay-TV beyond satellite is out intention to lower the price dramatically. The apparent entry price for BSkyB's pay-TV is £11.99 for DTH or even higher in some cable franchises. However, over 95% of BSkyB subscribers opt for a premium channel and since the basic pricing policy of BSkyB is a "buy-through" strategy these customers are forced to buy a bundle of other services to get the one they really want. As this bundle typically costs in the region of £25 and upward per month, BSkyB is inevitably only received in a minority of British households. The limit to this high price market is evidenced by a slowing in the rate of growth of BSkyB pay-TV services via DTH or cable.

DTN's pricing policy is radically different. Our services will be available for much less than the current price of BSkyB. Additional services such as pay-per-view movies, events and Internet access are available without having to "buy-through" a large number

of basic tiers. What this means in practice is that, with DTN, a movie buff would not have to pay for other channels which they might not want and would only pay for what they specifically want to watch. We believe that over the next decade the competition between BSkyB's service and our service will gradually broaden the base of subscribers so that the current penetration levels for pay-TV of just over 20% will grow to well above 60%.

## Customer Care and Support

An important part of DTN's vision to support digital terrestrial television is to provide a very strong commitment to customer support. DTN's view is that this is both an essential differentiator of the service and also an important way of establishing our rapid roll-out. DTN will achieve its objectives for customer care and support by focusing substantial resources on a superior subscription management system, on training and on the development of a technology platform and operational processes to support that strategy. This will include creating a network of retailers to promote, sell and rent both receivers and subscriptions. We will ourselves also rent set top boxes to subscribers directly in the early phases of the business. The subscriber management centre will be located in Wales and be manned by operators trained to help viewers book and buy the best mix of pay, PPV and on-demand services on the phone or online. Details of our approach are given in A3.

## Technical Issues

With the help of expertise provided by our sister companies, NTL and CableTel, DTN has developed a clear, workable strategy with respect to technical issues and one that gives the best chance of success. Technology is a vital area and one where the ITC's decisions will have a significant bearing on the practicability of what DTN proposes to do.

Much of the detailed approach to the technical issues is explained at length elsewhere in our application - primarily in Section A2 and A11. Our set top box strategy is at the core of how we hope to make digital terrestrial television an attractive consumer proposition. Therefore, we will provide here a summary of our approach to set top box issues - further detail is provided in Section B2.

The first point to make is that set top boxes are a vital part of our strategy, particularly in the early phase of digital terrestrial television when competition with satellite will be at its most intense. The importance we attach to set top boxes is explained as follows:

- firstly, without set top boxes, the launch of digital terrestrial television would be delayed by the limited availability of integrated digital television sets (idTVs).

This would add to BSkyB's lead by about six to nine months. We believe that this would cause digital terrestrial television similar difficulties to those experienced by BSB when trying to establish itself in competition to Sky in the very early 1990s

- secondly, the only way in which it is likely to be possible to make digital satellite and digital terrestrial price comparable is through an aggressive policy of promoting set top boxes. Without such a policy, consumers could face an entry price to digital terrestrial that would restrict the growth of digital uptake

- the final reason for supporting set top boxes is that there will be a substantial population with analogue televisions in the market for many years to come who do not wish to buy idTVs.

Having explained the importance of digital set top boxes, we will now briefly identify what the characteristics of this set top box must be. These comments generally refer also to the essential characteristics of idTVs, as they come into the market:

- the set top boxes should be capable both of receiving many more channels than would currently be feasible terrestrially and of interoperating with cable and satellite digital services so that digital terrestrial cannot be represented as a technically limited service

- the set top boxes must offer some control to an operator over the right of different broadcasters to access them. This is because, without such control, the set top box subsidy is difficult to envisage - the so-called "free-rider" problem

- set top boxes must be specified to support the full range of interactive services. This is because interactive services comprise an important part of the business plan for DTN and also becàuse we do not believe consumers in the television market will be interested in the progressive upgrade that has become frequent in the personal computer market

- the manufacturing cost of the set top box must be contained both to permit large initial orders to be made by broadcasters and to contain the necessary subsidy within reasonable levels

- the set top box must rely on existing technology. This is for a variety of reasons of which we will mention only two - first, it will contribute to limiting manufacturing costs as mentioned above; secondly, it will serve to minimise the development time needed. NTL's view, detailed in Section B2, is that these timescales have been wildly underestimated by many suppliers currently seeking to be active in the market.

These principles apply to the specification that we propose for our set top box. They are obviously difficult to combine - keeping manufacturing costs low is clearly difficult

given the strategic necessity for the box to accommodate, perhaps, 200 channels and interactive services. Regulators can play a key role in making the combination possible - Oftel, for example, could endorse the approach to the "free-rider" problem explained in more detail in Section B2; and the ITC can help by considering the implications of the technical challenges faced by DTN and others when making the overall licensing decision.

## DTN's Marketing Campaign

We have developed a detailed marketing campaign (see Section A3 for further details), the main features of which are as follows:

- consistent with the argument laid out under Technical Issues (above), we are prepared to make a heavy investment in subsidising the set top box
- we have developed detailed distribution strategies for both sale and rental of set top boxes
- we will invest heavily in advertising and in other forms of communication

## Impact of Overseas Markets

DTN and our sister company NTL have well-developed plans to take our digital terrestrial expertise to new markets overseas. Our contribution to the development of these markets will, if successful, materially aid the development of the UK digital terrestrial television business. This is explained briefly below.

The experience of digital, cellular telephony suggests that a pioneering role in developing a new technology taken by the UK can deliver substantial benefits to the UK. Vodafone, BT and Cable and Wireless have been successful in exporting their expertise in service and infrastructure management. During this process they have created opportunities for UK suppliers which they know and trust, have contributed strongly to the UK economy and also used their considerable experience to improve their service in the UK.

NTL has surveyed the market for digital terrestrial television globally and estimate that there is a £16 billion opportunity for services over the next decade and a manufacturing opportunity of about £2 billion.

If the international market develops in the way anticipated, it will deliver substantial cost and other benefits back to digital terrestrial television in the UK - specifically, it will:

- reduce set top box costs
- reduce the other system costs by sharing the development costs across several markets

- increase global research and development associated with digital terrestrial.

All of these are significant effects. The price of digital terrestrial set top boxes is crucially dependent on the price of silicon chips - about 80% of the cost of a set top box will be in silicon as the complexity of the chips is substantial. Thus, while sales of generic set top boxes will help reduce digital terrestrial set top box prices over time, by reducing the cost of common components, the speed of reduction in the cost of the key component (the OFDM chip) will be very dependent on the progress of digital terrestrial in the global marketplace.

Although "system" costs are less significant in the overall cost structure of digital terrestrial television than the cost of set top boxes, a global market will have real benefits in this instance also. The transmission system, the broadcast operating centre and other parts of the digital terrestrial infrastructure will have significant development costs which could be spread over a number of systems. The global market will be vital to increase volumes and lower costs.

Finally, digital terrestrial television and its applications need to be researched and to have development funding funnelled into them - this will enable the technology to develop and for its capabilities to evolve. This will never happen if the UK remains an isolated pioneer.

We firmly believe that DTN's and NTL's plans to exploit their expertise internationally will be instrumental in developing the global market for digital terrestrial television. This global market will deliver benefits to British consumers and promote the take-up of the British digital terrestrial service.

## DTN's Relationship with Cable and Terrestrial

An important issue affecting how DTN's activities will promote digital broadcasting otherwise than by satellite will be our relationship with other existing and potential players in the digital marketplace. This is addressed below.

Given the strength of BSkyB, DTN's main collaborative relationships will be with the cable and terrestrial television sectors.

DTN will collaborate with the cable industry in four separate ways:

- we will work with the industry to ensure interoperability across platforms
- we will co-operate with the industry with respect to programming and additional services
- we will share costs with CableTel and possibly other cable operators so that the costs of technical services are kept to a minimum
- we will co-operate with the industry on telephony.

These proposals are described more fully in Section B2. Their relevance to the promotion of digital broadcasting otherwise than by satellite is indirect, but important. The cable industry is currently devoting the majority of its investment funds to building out cable systems; its appetite for further investment - for example, in upgrading to digital - exists, but is tempered by caution. For cable to have the confidence to make the additional commitment, it needs other reasons - working with DTN is one such reason.

The interaction with the rest of the terrestrial industry takes two forms: firstly, the provision of programming to DTN and secondly, the absolutely pivotal collaboration with other multiplex licensees. The first of these has been discussed earlier in the parts concerning our Appeal to Viewers and Technical Issues. The second could become a debilitating area of weakness for digital terrestrial television unless it is handled with judgement and determination.

Multiplex licensees will have to co-operate on the following areas:

- marketing and promotion of the overall platform
- marketing of the subscription packages and additional services
- investing in the subsidy of set top boxes and idTVs
- distribution arrangements with retailers for receiving equipment
- rental of receiving equipment
- subscriber management services such as customer management, subscriber authorisation and billing
- marketing of the indirect access voice telephony service.

As we currently envisage it, the extent of the collaboration required necessitates the creation of a special vehicle to ensure that co-operation happens. We refer to this entity as "ServiceCo." which will be structured as a subsidiary of DTN. Our objective will be to become the single entity providing the common services (listed above) for all the licensees on a basis that is equitable to all concerned. Our conviction remains clear - that if this vehicle is not created (or some other performing a similar function), digital terrestrial television's potential will be significantly reduced. Although there is, quite rightly, competition between potential licensees now, there must be complete co-operation once the licences have been awarded.

## Differences In DTN's Proposals Under Section A9 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplex licences our proposals would differ from those set out above. These differences are set out below.

A number of the detailed answers to this have already been given in other sections - for example in Section A3 (pricing, sales and marketing) and in Sections A4 to A7 (programming and additional services). This part of our response will therefore be succinct and pick out the major issues relating specifically to the promotion of digital broadcasting other than by satellite. We will go through the issues in the same order as previously:

- The appeal to viewers

  As explained in Sections A4 to A7, DTN will have to cut back programming and additional services substantially if awarded a single multiplex and to a much lesser degree if awarded a joint multiplex.

  The effects of this on digital terrestrial television's success largely depend on the ability of the other licensees to replace the programming that has been lost. As the other licensees are likely to have a good programming track record, there is little reason to be overly pessimistic about this. However there will be two effects which will be damaging:

  – co-ordination of programming offered will be more difficult to achieve, possibly leading to less diversity

  – more important still, the co-operative relationships that we envisage will become difficult to implement. If DTN is in the position of being the licensee for three multiplexes and simply has to negotiate with the licensees of the gifted multiplexes, it can be confident of its ability to put these relationships in place; with a single or joint multiplex this will be more difficult and may incur delays

- How we will price the service

  Although our overall attitude towards pricing the service remains the same, we cannot guarantee that in practice the same policies will be implemented. This will depend on the attitudes taken by the other licensees.

- Our approach to customer care

  In a two multiplex scenario, DTN would operate an SMS in cooperation with other multiplex providers. Ideally, this would not result in any deterioration in DTN's customer care.

In a single multiplex case, DTN would not operate its own SMS, relying instead on other providers. In this case, elements of DTN's customer care strategy would be lost.

- Our approach to technology issues

  We will adopt exactly the same approach as for the three multiplex scenario. However, once again the problem will be that getting agreement to our set top box policy will be very difficult to achieve with multiple licensees. The other elements of our technical approach would stay largely the same.

- Our approach to marketing

  We would plan to subsidise set top boxes to some degree if we were awarded Multiplexes B and C; in any other combination of two multiplexes or with a single multiplex, we would not subsidise set top boxes. With respect to other marketing expenditure, we will only put in a proportionate investment in marketing if we arrive at a satisfactory understanding with other licensees on marketing and other policies.

- The impact of our intention to develop overseas markets on our domestic business

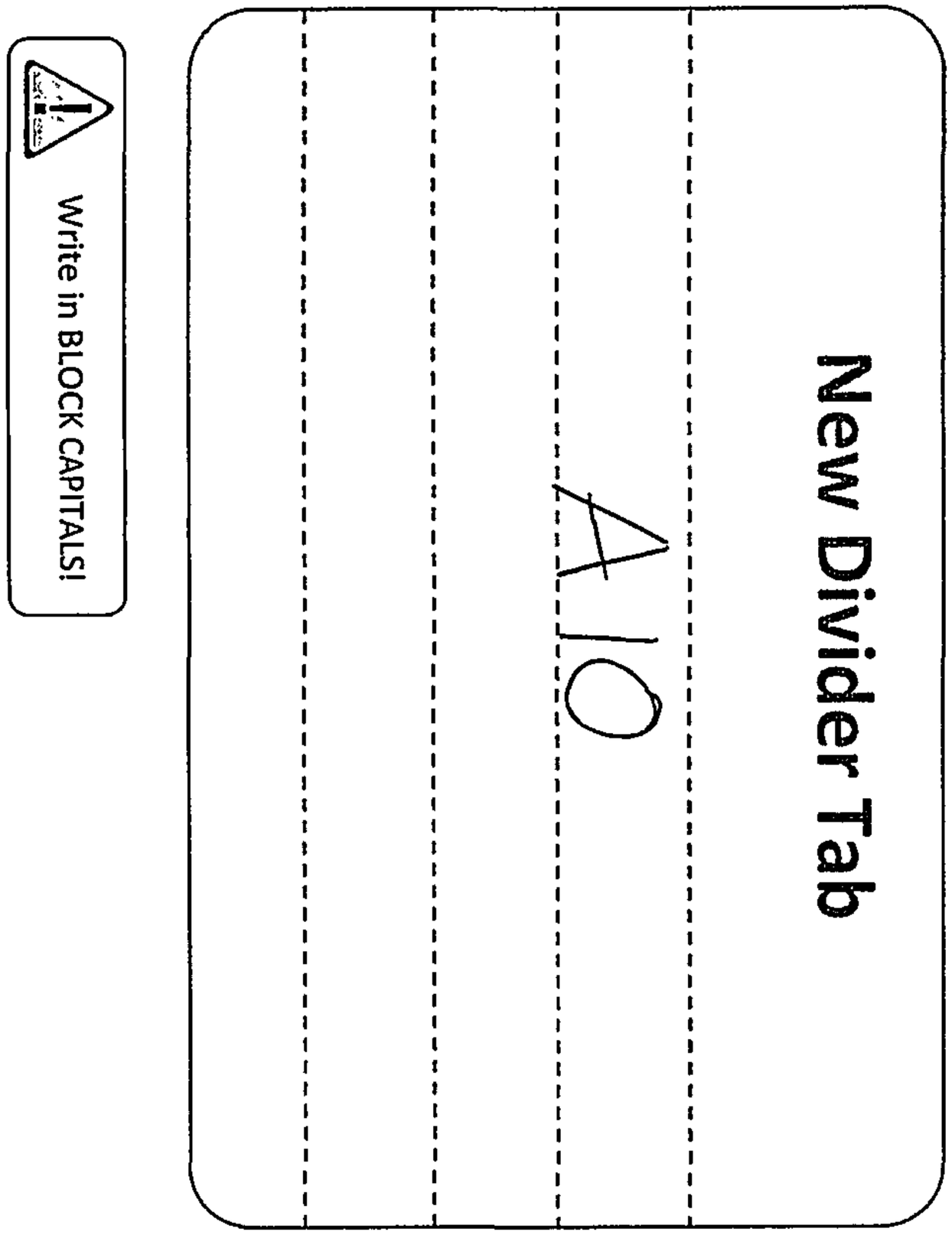
  DTN's and NTL's plans to develop its overseas digital terrestrial business would remain unchanged; however, it may be that we would be less successful in exploiting the global market and that other potential licensees are less interested in this role. This will have some eventual effect on the UK market, slowing down its development.

- Our relationship with cable and terrestrial television

  If we win a single or joint licence it will inevitably be more difficult to work with the cable industry - two fragmented groups would be negotiating with each other.

  The greater problems of dealing with the terrestrial players have already been itemised.

Overall, therefore, the effect of awarding DTN a single multiplex would be to make us much less confident of being able to promote digital broadcasting otherwise than by satellite. The same would be true of a joint multiplex, although to a lesser extent.



# A10 Transmission Standards

*Noting the information provided in paragraph 46 and in the draft ITC Rules of Operation on the use of the DVB-T Specification, the applicant should give details of his proposed transmission standard, including the following items:*

*(i) Modulation system and channel coding*

*(ii) Guard interval*

*(iii) SI data to be included*

*(iv) Scrambling system to be used, if any*

*(v) Subtitling system to be used*

*(vi) Video coding details (e.g. type of pre-processing, range of bit-rates possible)*

*(vii) Audio coding details*

## Introduction

This section describes the answer to each of the ITC's questions regarding transmission standards.

## Modulation System and Channel Coding

The terrestrially broadcast signals for Multiplexes B and C will use 64QAM 2000 (actual 1705) carrier COFDM modulation as defined in ETS 300744. For Multiplex D we propose to use a 16 QAM 2000 (actual 1705) carrier OFDM system with an outer coding rate Rc of 3/4.

## Guard Interval

The guard interval will be 7μs.

## SI Data

It is our intention to carry SI relevant to all multiplexes on site. The following paragraphs describe our proposal for its implementation and management.

The information required to decode an MPEG2 Transport Stream (TS) can be derived from the Program Specific Information (PSI) as detailed in the MPEG specification. However, in order to improve the ease of service selection and to shield a viewer from the complexities of the packet structure of the TS, additional Service Information can be added.

At a non-SI insertion point (SIIP) transmitting site, the distributed signal is received by an IRD, converted to TS, and passed on to the OFDM modulator unaltered. This means that the SI carried from such a site will not reflect the local services available.

However, in order to provide a corrected service list descriptor the IRD can be replaced by a transcoder. This unit demodulates the incoming QPSK from the satellite and converts it to a baseband MPEG2 TS. It differs from an IRD in its ability to perform basic SI manipulation. Within its NVRAM is programmed the local static elements of the SI that are required for ITC compliance at an SIIP. The transcoder replaces the incoming NIT and replaces it with its own local version complete with, if required, the other frequencies list descriptor.

The final stage of SI manipulation is to add in the EITs from the other multiplexes being radiated from the site. At the site, a bank of terrestrial IRDs, tuned to the other multiplexes, produce a series of complete TSs. This is passed to an MPEG2 decoder board fitted in a SI fixer computer, which extracts the EIT actual from each stream and converts it into a format that the transcoder is able to handle. The transcoder then inserts this data into the relevant EITs for transmission.

Further issues relating to SI are explained in Section A2.

## Scrambling System

We will use the DVB Common Scrambling algorithm as defined in ETR 289(13).

## Subtitling System

This is described in the additional services Section A7 as part of our response for services to the deaf. Subtitles will be DVB compliant, conforming to ETS 300743

## Video Coding

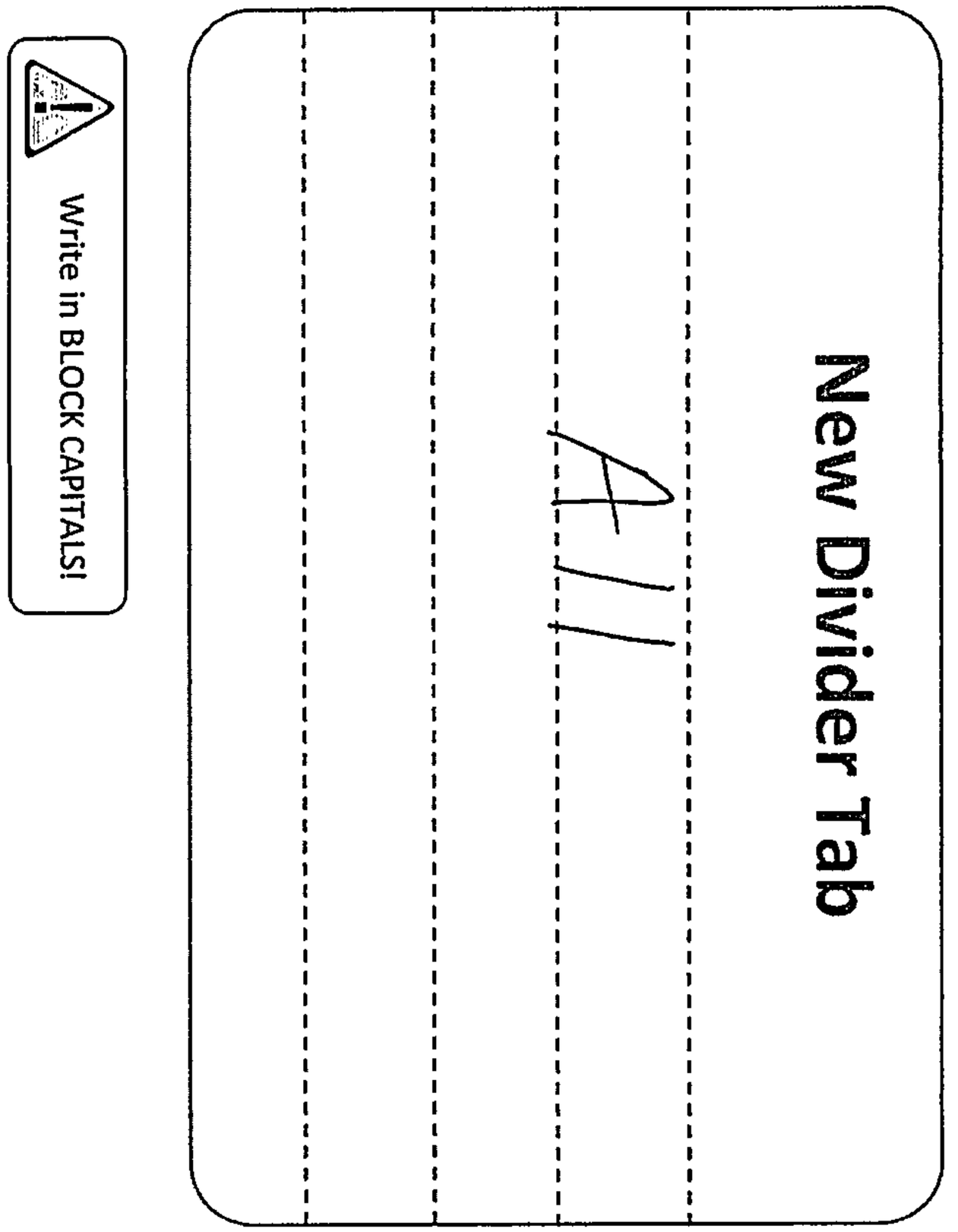
Video coding will be MPEG2 compatible to main profile at main level using bi-directional predictive coding. The algorithms used are constantly under development and as such, the bit rates used will vary depending upon the type of programme being broadcast and the source material. In addition, the DMV encoders proposed are capable of statistical multiplexing which will automatically re-allocate the available bandwidth between selected services according to operational choice. The video bit rates available are currently in the range 1.5Mbps to 15Mbps. The programme video transmission data rates are detailed in Sections A11 and A15.

## Audio Coding

Audio coding will be to MPEG2 audio layer 1 or 2. Resulting bit rates between 32kbps to 384kbps are possible. The programme audio data rate will conform to the AES/EBU 48Khz standard.

## Differences In DTN's Proposals Under Section A10 For Less Than Three Multiplex Licences

There would be no changes to our plans for transmission standards in the case of DTN not being granted licences in respect of all three multiplexes.






New Divider

# A11 Technical Quality and Reliability

*The applicant should state in detail what operational and staffing arrangements he proposes to have in place to ensure that the Licensed Service complies with the technical quality and reliability requirements of the ITC Digital Technical Performance Code.*

## Summary and Introduction

Setting and maintaining standards in operations and engineering is a fundamental cornerstone of the NTL broadcasting business. NTL's commitment to quality broadcasting stems from its background in the IBA. These disciplines developed over many years and, now incorporated in the DTN team, will form an implicit part of DTN's approach to digital terrestrial services. Digital television provides an opportunity to raise technical standards in UK broadcasting and we intend to exploit it fully to provide an excellent service to the nation's viewers.

Before outlining the strategy, it is worth outlining the backing for DTN's strategy. NTL, our sister company, has become well-known in broadcasting for its quality of service. Our Director of Resources and Technology, currently with NTL, was head of quality control regulation for ITV and Channel 4 during his period at the Independent Broadcasting Authority, now the ITC. Furthermore, DTN's detailed knowledge of video compression technology and its future development possibilities place us in a position to maximise the programme service opportunities, whilst ensuring high quality. This impressive platform will be further supported by a large training programme for all technical staff supplied by NTL's world-leading training group.

The main points of DTN's proposal are described below:

- the whole system - the local regional studios, the BOC and the distribution and transmitter networks - will be built in an uncompromising bid for reliability. We will exceed the 99.98% reliability currently achieved by the ITV and Channel 4 networks. The ITC will be informed of any outages of greater than 10 minutes
- DTN's minimum ITU-R target is grade 3. This provides higher picture and audio quality than current analogue services. The ITC will be informed in the unlikely event that the quality falls below this level
- DTN has a progressive approach to quality procedures for handling acquired material at every point through the system. DTN understands where the pressure needs to be placed to ensure we broadcast the best quality possible from our material

- DTN will adopt the digital video component standard contained within CCIR 601 and the AES EBU 48KHz digital audio standard across all our technical systems
- DTN, along with NTL, will put in place monitoring processes that will allow us to identify and address problems throughout the system extremely quickly
- in addition, viewers will be encouraged to call DTN's SMS with comments on quality. These will all be logged and the ITC will be informed of viewer feedback.

In this section, we describe our detailed approach to providing a digital television service of high quality and reliability:

- *Monitoring Systems* explains the monitoring process that will allow DTN to rapidly identify any problems
- *Programme Supply* explains the processes and quality levels that will be applied at the point of acceptance of material and its storage
- *Quality in the BOC* describes the quality procedures that will be used in the many elements of the BOC
- *Distribution and Transmission Reliability* explains the measures that DTN will take to ensure the highest level of quality and reliability in this downstream portion of the system
- *Resources Directorate* describes the staff and extensive training that will support DTN's overall commitment to quality.

The content element of programme quality is discussed in Section A6.

## Monitoring Systems

The first requirement for excellent quality is the ability to continually monitor and measure the performance of the whole broadcasting system. This section explains DTN's strategy to ensure that we have the best information available to us. Much of this information will also be made available to the ITC.

A team of master control engineers will provide the final check of transmission technical quality. The log book details each day's transmission activities. Programme material will then be held at the BOC for up to 14 days to enable further quality investigations to be carried out.

The master control and lines rooms will form part of a single large suite with high grade monitoring facilities for vision and stereo sound, plus the test equipment required for satellite path evaluation.

Using the appropriate test signals, daily checks will be carried out on all internal transmission paths, whilst network paths are to be routinely monitored using a range of digital test signals.

Regular contact will be made with the NTL Operations Centre at Emley Moor plus our other programme supply companies throughout the day to trace and isolate faults.

In addition, the daily log written by the master control supervisor will provide an event-by-event reference, giving the time, source, destination, picture and sound quality and any irregularities or relevant comments. A copy of this log is to be provided each morning for the Controller of BOC Operations and the Director of Resources and Technology, who may also be furnished with more in-depth reports where this is relevant, particularly with regard to the progress of ongoing fault conditions.

Routine test schedules will be generated which will monitor the performance of the whole system with particular emphasis on bit error count, digital headroom and video compression performance. A database will be set up to provide a system performance record which could be made available to the ITC engineers. We will use this database to help develop long term maintenance procedures.

Arrangements are being put in place to receive monthly technical reports, detailing the performance of the transmitter and distribution networks. These reports will include service availability, equipment failures, planned interruptions, electricity supply failures, response times to transmitter breakdowns and performance measurements. A summary of the reports will be forwarded to the ITC on a yearly basis.

Major transmission outages of 10 minutes or more will be notified to the ITC as soon as practical via facsimile. Also, if the subjective quality falls below grade three, then the ITC will be similarly notified. We are making the necessary technical arrangements to provide a thorough monitoring system of our main transmitters via the new NTL control centre at Emley Moor.

The output of each programme channel will be logged on a bank of VTR machines and the information is to be held for two weeks.

A viewer complaints procedure is being formulated which will address the specific problems associated with reception quality. On-the-day transmitter outages, or planned outages, are to be faxed to the Director of Resources and Technology from the NTL control centre at Emley Moor. The information is then passed to the presentation office for over-the-air announcements (as necessary) and our public affairs staff to handle calls directly from the public.

This information, plus any complaints received via our SMS, will be collated and actioned as appropriate. An analysis of this data will be reported to the ITC on an annual basis.

## Programme Supply

Because the standards that DTN will apply throughout the rest of its broadcasting system are so exacting, programme supply will be a major focus for DTN's drive to maximise quality. DTN will receive programming in several formats from multiple sources.

This section discusses both the obligations that DTN will place on its suppliers and the processes that DTN will apply to check the material and ensure that it is transferred to the BOC at the highest quality.

### Input Material Validation

Before the company places contracts with programme suppliers, the quality control staff will ensure that their production process meets DTN's standards as well as the ITC Technical Code. A Technical Requirements document will be issued to the programme suppliers which will cover video tape, disc and film formats, alignment procedures, track designations, the ITU-R five point grading procedures, picture stability requirements and digital concatenation matters. The quality control team will issue the document and police the procedures.

All programme material arriving at the BOC will be processed through our programme transfer area. At this level, any problematic material will be identified and reported to the Controller of BOC Operations who will arrange for a new programme tape/film copy to be made available from the distributor. Section A2 describes the facilities that will support this.

All acquired material will arrive at the BOC on either digital video tape, disc or 35mm film. A full quality check will then be performed using the five point grading scale (ITU-R CCIR) within a suitable listening and viewing transfer suite environment. Any material which is then considered to be suspect (below the quality expected for the type of programme) will be reported to the Controller of BOC Operations to decide on the suitability for transmission. Acquired material falling below grade three will be reported to the Director of Resources and Technology. The material supplier will then be pressed to provide a better quality tape or print. If this is not forthcoming, then either the programme will not be transmitted or provided the programme has an inherent value as described in the ITC performance code, a request will be made to the ITC Engineering Division to authorise exemption. In exceptional cases an announcement or caption will precede the programme transmission.

### Programme Transfer

The following parts explain the specific quality control issues and procedures relevant to the different formats. The technical specification of equipment that will support this is described in Section A2.

### *Film*

Most film prints are currently transferred on analogue telecines with unstable gate mechanisms. Poor horizontal and vertical edge definition within the picture can produce unsatisfactory compression encoding errors. On many occasions the film to tape transfer process goes through an analogue PAL encoder (and sometimes decode process) before being recorded on tape. Again, poor edge transitions are generated as a consequence of the filtering process. Some film tapes originating within the USA distributors are also subject to an NTSC/PAL standards conversion.

To eliminate most of the problems outlined above, we plan to transfer all of our major feature films within the BOC using digital telecine machines. These films will be transferred into our archive store at 20Mbps. During the film transfer stage, colour and gamma correction will be applied also in the digital domain. This high data rate will enable sequences of the material to be downloaded for in-house promotion production. All promotion editing and picture manipulation will also be handled at the 20Mbps rate and then transferred to the archive store.

Widescreen prints will be transferred in a 16:9 format and converted downstream to a letter box presentation for 4:3 displays. The 16:9 format will appear full screen on appropriate receivers.

We are currently investigating a bit rate allocation technique which is picture content sensitive. If successful, we will be able to lower the average bit rate allocation to an MPEG2 encoded film channel. This process will be applied during the film transfer stage on a sequence by sequence basis.

### *Video Tape*

Many of the major video tape programme libraries transfer material in digital form to the digital Betacam format for distribution. Practically all analogue material is distributed on the Beta SP format. Tape size and cost have been the major drivers for the distribution companies in adopting these formats.

As an end user of the material, there are distinct advantages of adopting compatible formats in that the analogue tapes can be played back from the digital VTR machines. The digital Beta VTR machine does use a low level JPEG compression algorithm but tests carried out at NTL on concatenation with MPEG2 proved satisfactory.

Our Technical Requirements document will commit the programme supplier to provide new programme material from a base standard of digital component CCIR 601 and a minimum interface level of CCIR 656 recorded on digital Betacam via an SDI. Where the material is only available in analogue or digital composite, we plan to transfer the material within the BOC via high performance digital comb line decoders and Snell & Wilcox (or similar) standards converters.

***Commercials Material***

In order to minimise our material handling time, we plan to record commercials directly from the London Facilities Houses via the bi-weekly network playout arrangements. The incoming material will be digital comb line decoded and recorded directly into our digital archive store at 20Mbps.

High levels of audio compression have been found to be prevalent within certain commercial and promotional material. The problem of large variations of audio level between programmes and commercials is not a new one. It has been with us since the start of ITV and is also experienced by broadcasters in other countries. Research carried out by the IBA shows that it is virtually impossible to find a conclusive answer to the matter because listeners differ so much in their tastes and in the conditions in which they may be listening to the material. However, having recognised the difficulties in controlling compressed sound, we will ensure that such material is controlled to a peak audio level of 0dBu (PPM4).

We will also use a sophisticated means of audio level control which relies on an accurate measurement of relative loudness during the transfer process. The information regarding audio level is entered into a database. During transmission the presentation automation system extracts this data and uses it to adjust the level so that the loudness of the programme sound will be set correctly.

***Promotions Material***

Most of the promotions material will be produced within the BOC. Extensive non-linear editing at 20Mbps will be interfaced directly to the archive store and our digital graphics area. Material which is bought-in will be produced at the digital 601 level or using the 20Mbps rate where possible.

***Local Programmes***

Our programme output will include an important contribution from a growing number of sub-regions across the country. Although many of the technical requirements outlined in this section will apply to the local services, we may allow, in certain cases, lower than normal standards in order to encourage a wider range of programmes from the city television level (such as video 'jockeys' or single operator units using light weight cameras). However, local programming will in all cases achieve at least the ITU-R grade three level requirement. Furthermore, where possible, we will use the new Sony digital SX format (or similar) cameras, VTRs and non-linear editing systems which produces better picture quality than the Beta SP analogue broadcast format.

Local services will be individually routed via digital bi-directional circuits to the BOC on 8Mbps MPEG2 compressed carriers as explained in Section A2. These services will be encoded at the 8Mbps MPEG2 main level with I, B and P Frame processing. Within the BOC a bank of local programmes will be stored within a digital Betacam video tape

library system. At the request of any local studios, material will be played out to them from the programme bank for inclusion within their local services.

***Widescreen Television***

The BOC video system has been designed to accommodate film, video tape and live material in a 16:9 format. All film prints arriving at the BOC will be transferred into the digital store in the widescreen format. A large proportion of our Sports Channel output will also be produced and transmitted in 16:9.

Within the MPEG specification are signalling bits which indicate to a receiver the number of pixels making up a horizontal scan. A receiver can then be instructed to display to a different resolution, applying scaling factors to the horizontal and vertical elements. This is part of the mechanism which informs a receiver how it should display source material of either 4:3 or 16:9 aspect ratio.

At the playout centre the traffic system will be informed of the aspect ratio of a source at the time of entry into the schedule. This information will be passed on to the Automation File Server, together with any other pertinent information regarding display characteristics. From here the aspect ratio information is extracted for inclusion in the EIT, component_descriptor, enabling a receiver to inform a viewer of the aspect ratio of the event. As transmisison approaches, this information will be lodged in the Event Schedule Synchroniser awaiting a cue for playout.

Just before the time of transmission, the MCC will be informed of the relevant parameters (together with bitrate allocation, etc.) which it will then pass, via the multiplexer, to the required encoder on receipt of a configuration change cue. At the same time the SI Compiler is informed of the change and the eit_actual_p/f is updated to reflect the change in running status of the event.

This change in configuration will be reflected in the video data of the MPEG2 data stream, containing a combination of the aspect ratio information, the sequence display extension, and the DTG aspect ratio extension flag.

At the receiver, this information will tell the unit of the source . The receiver will know its own display format (either inherently in the case of a wide screen television or the user will select the appropriate characteristics during installation of a set top box) and will therefore apply the necessary blanking or letterboxing to provide a sensible display.

# Quality in the BOC

## Data Rates in the BOC

All material will either arrive at the BOC, or be transferred, to the digital component standard recommended under CCIR rec 601 with SDI interfacing at the CCIR rec 656 level as described above. Audio will be digitally coded and either embedded with the digital video or processed separately at the AES EBU 48KHz sample rate.

The digital archive store will hold material at 20Mbps MPEG2 main level compressed with I and B Frames. Predictive Frame processing (P Frames) is not used at the digital store level. This enables material to be drawn out of the store and edited without having to go through an MPEG2 decode/code cycle.

Material leaving the store for transmission is transferred at the 20Mbps level into the buffer store. Programme material transfers between stores can be accomplished at four times the normal play speed. This significantly speeds up the handling of material through the BOC. On leaving the buffer store, the material is decoded back to the baseband level (CCIR 601) before being passed to the transmission MPEG2 encoders. Concatenation tests have revealed excellent results from processing the programme material through this type of system.

## Pre-Play Out

Programme material will arrive in the BOC at least three weeks ahead of transmission. This will enable us to check the material thoroughly and if necessary replace sub-standard copies. Once the tapes and film stock have been transferred into the digital archive store and library, hard copies will be held in stock until the programme transmission rights have expired. This policy will provide a full programme material back-up.

The archive store will have full RAID protection plus full duplication from a shadow store.

All programme channels are to be buffered before transmission via digital hard disk systems, ensuring a full two hour continuous programme service before any fault can manifest itself on the output. This technique has been used successfully by the NTL International Division on various projects around the world. Within the two hour safety window, our maintenance team will be able to either resolve the fault or switch to reserve systems.

The BOC will also house the compression equipment and multiplexer. Automated redundancy is built into the encoding system and there is full one to one redundancy for the multiplexers, network augmentation units and satellite modulators.

Our data services are collected in a database store with an output carousel selectively streaming the services to incorporate at the multiplexers. All private closed user group data will be fully protected.

The BOC is, of course, UPS and generator protected with the mains supply provided by an 11kV self-supporting ring.

**Transmission Data Rates**

We are working closely with members of our technology team to ensure that we fully exploit compression technology to deliver the highest quality programmes within the bandwidth we have available. To achieve this, we have already conducted a series of tests on both the current MPEG2 compression products and more importantly on the latest developments being undertaken by the NTL research group.

Two specific developments are well advanced; firstly, a new input processor which avoids sub-sampling; and secondly, statistical multiplexing of the output transport stream. It is estimated from recent tests that we should see a 30% improvement in effective data allocations by using statistical multiplexing alone.

Together, these two new techniques will reduce the quality threshold data rate by up to 2Mbps. In other words, by using these techniques, programmes can be transmitted to homes using a data rate 2Mbps less than previously required, whilst providing the viewer with the same picture and sound quality that was originally planned.

As a consequence of this work, we are confident of being able to run programme services at lower data rates than are possible today, whilst fully maintaining DTN's exacting programme quality targets. Typical data rates we believe will be as follows:

| | |
|---|---|
| Sport | 4 to 6Mbps |
| Feature Films | 3 to 5Mbps |
| Video Programmes | 3 to 5Mbps |
| Local Programmes | 3 to 5Mbps |

The bit rates described above are "virtual" in the sense that we plan to use statistical multiplexing to better distribute the available data across all the programme channels.

By using these techniques, any service operating at or above 3Mbps will be perceptibly better than analogue PAL as received in the home. The effects of these developments mean that the playout and transmission network will be almost transparent to impairments ensuring that the quality of the originating material will be the most significant factor in the final picture quality, as seen by the viewer. This is precisely the reason why much of DTN's effort will go into working closely with our programme suppliers to produce the very best pictures and sound within the production process.

The ongoing development of compression technology will inevitably continue to reduce the data rate necessary to support a high quality digital television service. We are seeing data rates as low as 700kbps in the research and development laboratories, producing pictures equivalent to those transmitted at 3Mbps only two years ago. This continued downward pressure on data rates bodes very well for the future of digital terrestrial services, allowing DTN to deliver more services within the same bandwidth. Clearly, the more programme and data services we can carry on the multiplexes, the more cost effective the business will be to compete with other means of broadcasting. We would welcome the involvement of the ITC Engineering Group in helping us evaluate the ongoing development of digital compression, particularly when we see an upcoming step change in data rates.

In order to minimise the amount of multiplexer space required for private data services, we plan to use statistical multiplexing across the whole service. This will enable us to change the data rate instantaneously against the data rate demand of our programme services. We are effectively creating a 'virtual' private data service channel, enabling better use of the available multiplex data capacity for programme services. Work in this area is continuing.

## Distribution and Transmission Reliability

### Satellite Distribution

We plan to uplink our multiplex services from the BOC site via satellite and then through TVRO's into each of the 81 transmitter sites - the description of this system is included in Section A2.

To achieve a high level of reliability over the satellite distribution network we are providing two independent uplink stations which will feed the full services into two separate satellites. Both uplink stations have double head arrangements up to the dish. The receive sites will be provided with two receive antennas and full duplication of the sub-systems prior to rebroadcast at the terrestrial transmitter site. This means that there is double redundancy at each link within the distribution chain.

The space segment capacity provided on board both spacecraft will be fully restorable and any failure of the satellite capacity would be restored either by satellite reconfiguration or redeployment. During any restoration manoeuvres or payload reconfigurations, the three multiplexers will always be available at each terrestrial transmitter site from the alternate satellite. This arrangement would also provide resilience against the non-availability of a single transponder due to preventative maintenance routines or sun outages.

## Transmission System

The NTL Broadcast Division will be contracted to provide a minimum service availability of 99.98%. This section explains the procedures and systems that will deliver this excellent service level.

NTL will provide a complete end-to-end digital terrestrial transmission system using a 64QAM 2000 carrier COFDM modulation for broadcasting as defined in ETS 700744. Construction of the transmission station will be in accordance with the ITC Note for Applicants on Coverage for Digital Television. Monitoring will be provided at each transmitter site to enable faults to be rapidly detected and appropriate corrective action taken. This will include monitoring of the transmitter itself and monitoring of the transport stream to ensure that it is properly formatted.

Every effort has been taken in the system design to ensure that a constant level of transmission is maintained at all times. The following safeguards have been incorporated to ensure the highest levels of quality and reliability:

### *Modulator*

Main and standby modulators will be fitted as standard and will incorporate an automatic changeover and control system which can select either modulator under local or remote control. Modulation parameters will be in accordance with the DVB-T specification for a COFDM system.

### *Amplifiers*

The high power amplifiers will consist of a main and a reserve system. An automatic changeover and control system, that in a fault situation will operate and perform a changeover to the reserve system within several seconds, will be incorporated. It is expected that in the large majority of stations, multi-module state amplifiers will be used for reliability and ease of maintenance. In the unlikely event of a failure of a combining unit or half the antenna, facilities will be available to manually combine the two high power amplifiers together and feed them into the remaining half antenna. This novel feature will therefore restore the service area as closely as practically possible. The performance of the modulator/amplifier combination will conform to all the appropriate specifications. Correction circuitry will be incorporated to optimise the performance and the efficiency of the equipment.

### *Combining Units*

Channel combining units are required to combine the digital transmissions with either other digital channels or with the existing analogue services. Both the combining units and the transmission feeders are duplicated for reliability. The combining of several digital terrestrial television services is complicated and the solutions vary from site to site. In most cases where they will be combined with the existing analogue services, it will be necessary to re-engineer the existing two or four channel combining units.

Although the COFDM power for each digital service is relatively low, account must be taken of the fact that the combiners may have to handle both the sum total power of up to six digital and four analogue services and also withstand the total peak voltages which are created. NTL have operated and maintained combiners of this type for many years and are confident of providing the most cost effective solutions to meet the requirements.

### *Antennae*

The antennas for digital terrestrial television will consist of two separate halves so that even a failure of an individual half will not result in a total loss of service. Transmitter switching arrangements will be included to minimise the effect of half antenna working.

### *Telemetry and Network Management*

A telemetry system is already being developed for use with the existing NTL trial system at Croydon. The system is designed to interface to the equipment via an Ethernet link. A single telemetry system will be able to handle all multiplexes.

The Network Management System (NMS) talks to the MCC via the Ethernet link and passes data on to the supervisory computer. The supervisory computer also takes in alarms from miscellaneous equipment via the data concentrators. A fixed link to the remote control centre is provided, with a PSTN link as backup.

Where telemetry is required for a site that does not include an MCC or equivalent, then a conventional telemetry system will be used. This would be connected back to NTL's NCSC.

### *Operations*

The operations of the DTN transmission network will be controlled from the new NTL National Customer Service Centre (NCSC) at Emley Moor. This centre is manned 24 hours a day, 365 days of the year, providing continuous monitoring and control of all transmission and distribution sites countrywide.

The NCSC will perform a number of functions relating to operations and maintenance. As well as monitoring the alarm status of the transmitting sites and the distribution system, the NCSC operators will be able to initiate remote actions to minimise the effects of any fault conditions and maximise the attributes of any built in redundancy. Their primary function is to ensure, wherever practical, that the transmission system remains transparent to the end user.

Additionally, NCSC operators will be able to alert NTL's maintenance teams promptly to any abnormal situation. As new software becomes available, the NCSC will have direct access to information regarding staff availability. This will enable NTL to respond in the most efficient manner at any time of day which will provide a further enhancement on our current levels of customer service.

### *Maintenance*

It is essential for any operator of a commercial television service that programme interruptions are kept to an absolute minimum and that any of the problems are processed as soon as possible. This is particularly the case when the service is a new one, trying to get itself established in a competitive environment. These points are well understood by NTL and have been used to inform the design of the maintenance aspects of this proposal.

NTL has a maintenance operation based on a network of well equipped, highly skilled and trained staff managed by 24 service managers at strategic points throughout the country. This infrastructure allows for a rapid response by staff who have demonstrated their ability to embrace new techniques and technologies within the maintenance environment, an ability that will be essential when confronted with the radical new concepts of digital terrestrial television.

These staff already provide the maintenance cover for transmitters and equipment associated with ITV and Channel 4, the local and regional independent radio companies, HM Coastguard and Customs and Excise communications infrastructure, various emergency services and a number of other transmitter operators. Additionally, NTL are currently holding to a schedule for the completion of the very tight timescale for the build programme of the new Channel 5 transmission network.

The level of response that this team will deliver will provide excellent services for DTN's station and transmission system.

### *Spares*

NTL has already built up a large amount of experience with regard to the maintenance of digitally compressed distribution systems and will ensure that by combining an adequate level of spares and second line maintenance contract with a rapid first line maintenance response, a high standard of overall customer service will be achieved.

NTL already holds a comprehensive spares stock for a number of transmitter systems. This stock will be reviewed and augmented as required to ensure adequate spares for the maintenance requirements of the new transmitter systems proposed.

### *Emergency Systems*

Should a catastrophic fault or incident occur (such as accident damage or fire), NTL hold a number of emergency transmission systems which may be of use to restore a temporary service whilst the permanent equipment is being repaired or replaced.

Arrangements are being put in place to receive regular technical reports detailing the performance of the transmitter and distribution networks. These reports will include service availability, equipment failures, planned interruptions, electricity supply failures, response times to transmitter breakdowns and performance measurements. A summary of these reports will be forwarded to the ITC.

## Resources Directorate

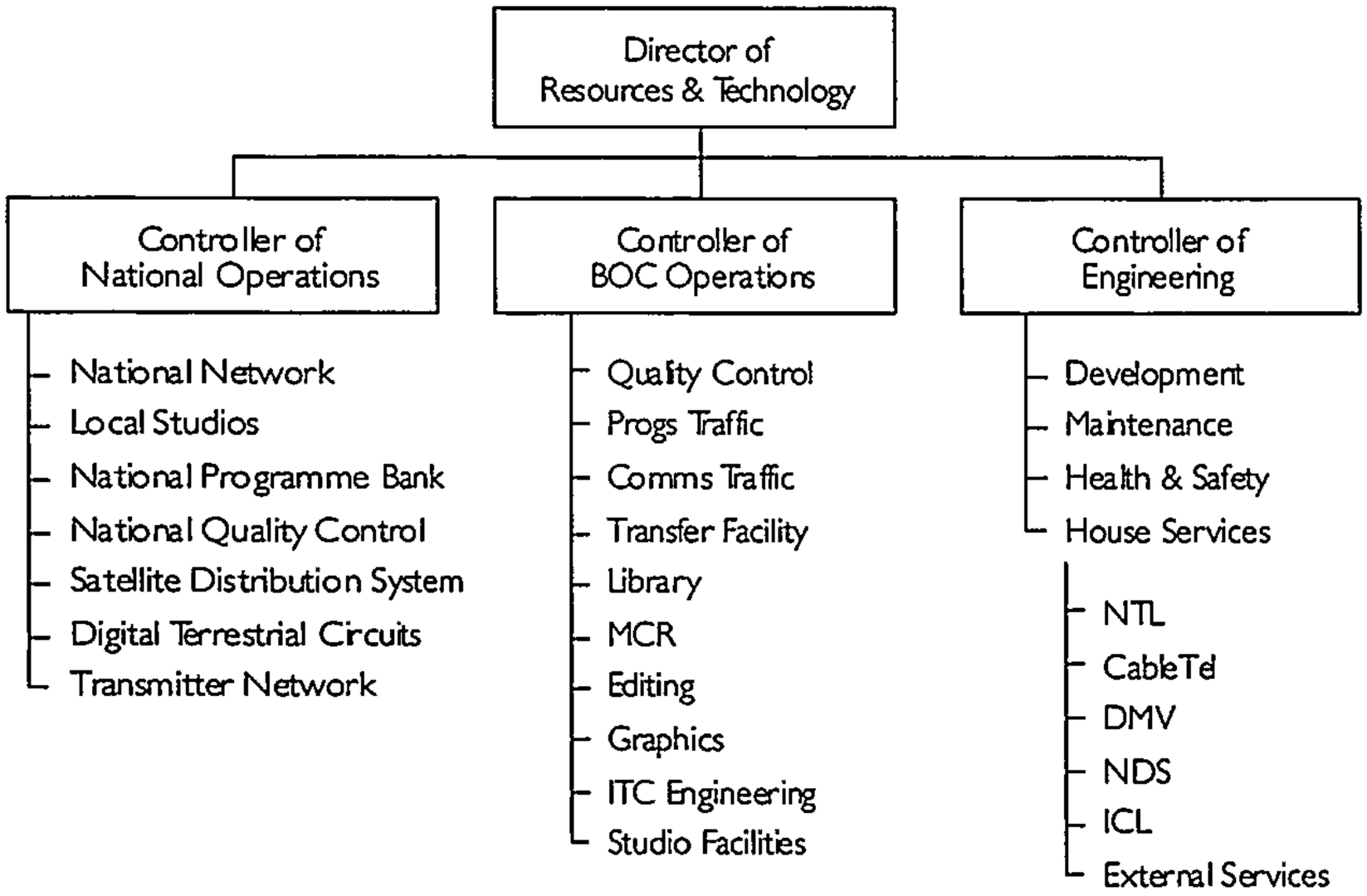
### Staffing

Responsibility for ensuring compliance with the ITC Digital Technical Performance Code ultimately lies with the Director of Resources and Technology. This will ensure that technical quality matters are given consideration at the very highest level within the Company. DTN's commitment to quality is evidenced by their choice of Director responsible for these areas. He is currently at NTL and was previously head of quality control regulation for ITV and Channel 4 during his period at the Independent Broadcasting Authority, now the ITC.

A Quality Control engineering team will be formed whose function is to maintain technical standards across our whole system. It will report to the Controller of BOC Operations but will be responsible to the Director of Resources and Technology on all matters which create exceptions to the technical quality procedures.

The Technical Resources group will have a senior structure comprising the Director of Resources and Technology and three Senior Managers, covering engineering, operations and national services. The organisational structure is shown in Exhibit A11.1.

**Exhibit A11.1: Resources Directorate**




***Controller of Engineering***

The Engineering Department will be responsible for managing our ongoing digital system development, electronic maintenance, house services including electrical, mechanical, and health and safety matters. It will also interface with our technology team, NTL and CableTel and our technology suppliers, ICL, DMV and NDS. All

external services contracts, including telecommunications and power, will also be managed by the Controller of Engineering. The digital system development group will include specialists in receiver design, data handling techniques and the MPEG compression standard.

***Controller of BOC Operations***

The controller will co-ordinate all operations at the BOC including the programme transfer facility, quality control, materials traffic, commercials traffic, central programme library, master control, promotion, editing and graphics. The BOC operations team will interface with the ITC Engineering Group for day to day activities.

***Controller of National Operations***

This group will be responsible for setting up the technical facilities of the various local programme groups and ensuring that they are staffed and operated to DTN's exacting broadcast standards. This will include ensuring that the quality of the material produced by the regions meets the necessary ITC Code of Practice. The post will also oversee the setting up and management of a national programme bank store which will be used to support our local services. This group will also be responsible for distribution and transmission, including the retuning programme, described in Section A12.

Within these groups there will be a substantial team responsible for all aspects of quality control and reliability. Key staff and Directorate structure is included in Section A16. Staff numbers are addressed in Section B7.

## Training

Extensive and effective training will be at the core of DTN's strategy to ensure the highest levels of quality and reliability. This section describes the training strategy that DTN will implement.

***The NTL Training Group***

The NTL Training Group will facilitate the training for technical and support personnel in the day to day operation and maintenance of the Broadcast Operations Centre (BOC). The following text presents firstly the background and modus operandi of NTLTG, and secondly, a suitable training profile for the BOC based staff.

The NTL Training Group is a well-established group of professional trainers with four fully-equipped training rooms and three training laboratories, together with the necessary staff offices and support. They conduct training both at Crawley Court and on site as appropriate.

NTL's trainers have a wealth of experience in the broadcasting and communications industries. Sometimes with the assistance of other NTL specialists, they provide

courses in leading-edge technologies covering all aspects of the communications and broadcast industries, as well as IT systems, management development, and personal development. All in-house courses have agreed training objectives which have to be met and, where appropriate, training targets are linked to external standards.

Through its Training Group, NTL has been accredited as an "Approved Employer" for the Institution of Electrical Engineers and the Institution of Mechanical Engineers Continuing Professional Development (CPD) schemes. NTL has registered for the Investor in People award and NTL's management development programme is currently being assessed by the University of Southampton for recognition as a route to its Certificate in Business Administration.

***Engineering Training***

In the modern broadcasting and communications businesses, it is essential that staff are able to meet the continuing and changing demands placed upon them. To this end NTL has produced a comprehensive series of technical courses dealing with all aspects of the Broadcast and Telecommunications businesses. Because of the changing nature of our business, this portfolio of courses continually changes.

Many of NTL's technical courses are specially designed to meet the specific engineering needs of staff already conversant with the principles involved. These courses are skills-based and are carefully targeted, usually with a focus on familiarity with new engineering systems. Often such courses are designed, delivered and evaluated for relatively small numbers of staff.

However there is also a considerable need to train new staff, or staff who change their post, in the theoretical and practical basics of some of the technical areas in which the company specialises. Such courses focus on fundamentals and techniques.

The following lists give a good sample of the technical courses provided by the group:

- fundamentals modules
  - TV signals and measurements
  - broadcast transmitters and transposers
  - RF measurements
  - digital communications
  - satellite communications
  - mobile communications
  - telecommunications
  - digital broadcasting
  - an introduction to fibre optics
- systems courses (general areas)
  - MPEG-2 compression systems

- digital microwave radio
- telecommunications networks
- satellite systems
- mobile communications systems
- television transmitters and transposers.

***Management Courses***

NTL Training Group provides, or works with others to provide, management courses to meet special needs within the company brought about by changes, reorganisation, and so on, as well as providing courses (usually external) to meet particular individual requirements.

In addition we provide a broad management development programme consisting of a series of courses specifically designed to meet NTL's management development needs. As mentioned above, this is currently being accredited by the University of Southampton as an alternative route to its Certificate in Business Administration.

***Personal Development***

NTL believes in the continual development of all its staff and that this development can reach beyond specific business needs. The Training Group offer a Personal Development Programme consisting of very short courses and available to all staff, covering a range of issues such as assertiveness, stress, values and goals, time management, managing change, and so on.

***Information Technology***

In recognition of the extensive use and importance of IT systems in the modern business environment, NTL provides a series of IT and software courses in-house. These specialise in the company's chosen suite of software: Microsoft Office, Word, Excel, Access, and Project. For more advanced or unusual applications, proven external suppliers are used. A more technical understanding is provided by the company's own Computer Technology course.

The internal courses are therefore as follows:

- Computer Technology
- MS Office
- MS Word
- MS Access
- MS Excel
- MS Project.

As well as delivering specific courses, the NTL Training Group is accustomed to managing and evaluating training programmes for new recruits, for new engineering systems, for projects, and for management programmes.

The NTL Training Group are therefore well placed to provide and manage the considerable training that will be needed by the engineers, technicians, management and support staff of a new and modern Broadcast Operations Centre. This will require a suitable mix of training covering specialist engineering and IT knowledge and skills, and possibly management and personal development. Some of this training may have to be specially designed, some can draw on the existing portfolio of the NTL Training Group and the proprietary equipment and systems courses offered by appropriate manufacturers.

***Training Profiles***

The following training profiles are matched to the expected skills required by operators and engineers and support staff in the Broadcast Operations Centre. In addition to the training elements listed, all staff would be required to attend a one day induction course and a one day customer care course.

***Operators:***

- function
  - operate proprietary VTR and transmission scheduling systems
- training
  - basic television fundamentals (5 days)
  - basic video signals
  - composite and component video
  - VTRs and monitors
  - television test signals and basic measurements
  - digital and analogue television transmission basics
- operation of proprietary BOC systems (5 day)
  - VTR operation
  - operating proprietary scheduling and multiplexing systems
  - signal routing and switching
  - monitoring
  - diagnostics of tape and video signal faults.

***Senior Operators:***

- functions
  - manage playout operations

- VTR operation and line up
- editing and mixing, quality monitoring
- customer liaison and scheduling, transmission multiplex management (bit rate control etc.)
- conditional access control

- training
  - digital television/broadcasting fundamentals (four days)
  - digital communications fundamentals
  - digital television interfaces
  - MPEG-2 video compression
  - MPEG-2 audio compression
  - MPEG-2 multiplexing
  - conditional access and programme management
  - video compression systems
  - digital terrestrial television broadcasting
- operation of proprietary transmission and distribution systems, monitoring and control systems and editing and graphics systems
  - transmission multiplex management systems ( one day)
  - VTR operation and line up (two days)
  - vision and audio mixers (one day)
  - edit controllers (one day)
  - signal routing and switching systems (one day)
  - monitoring and control systems (two days).

***Engineers:***

- functions
  - manage, operate and maintain all aspects of BOC systems
  - VTR/editing and mixing systems
  - MPEG-2 Compression systems
  - satellite uplink and distribution systems
  - transmission multiplex systems,
  - fault logging and monitoring,
  - local repair services
- digital communications (three days)
  - sampling and quantisation

- digital signal spectra and line coding
- source coding techniques
- channel coding techniques
- multiplexing
- digital modulation techniques
- distortions and measurements
- transmission media

• digital broadcasting (four days)
- fundamentals of digital video
- MPEG-2 video compression
- MPEG-2 audio compression
- MPEG-2 multiplexing
- conditional access and programme management
- video compression systems
- digital terrestrial television broadcasting

• satellite fundamentals (two days)
- satellite services
- standards and regulatory factors
- television distribution and broadcasting
- ground segment
- space segment

• operation and maintenance of proprietary transmission and distribution systems, monitoring and control systems and editing and graphics systems
- video compression and multiplex management systems (five days)
- VTR operation/maintenance and line up (three days)
- vision and audio mixers (one day)
- edit controllers (one day)
- signal routing and switching systems (one day)
- monitoring and control systems (one day)
- satellite distribution systems (three days).

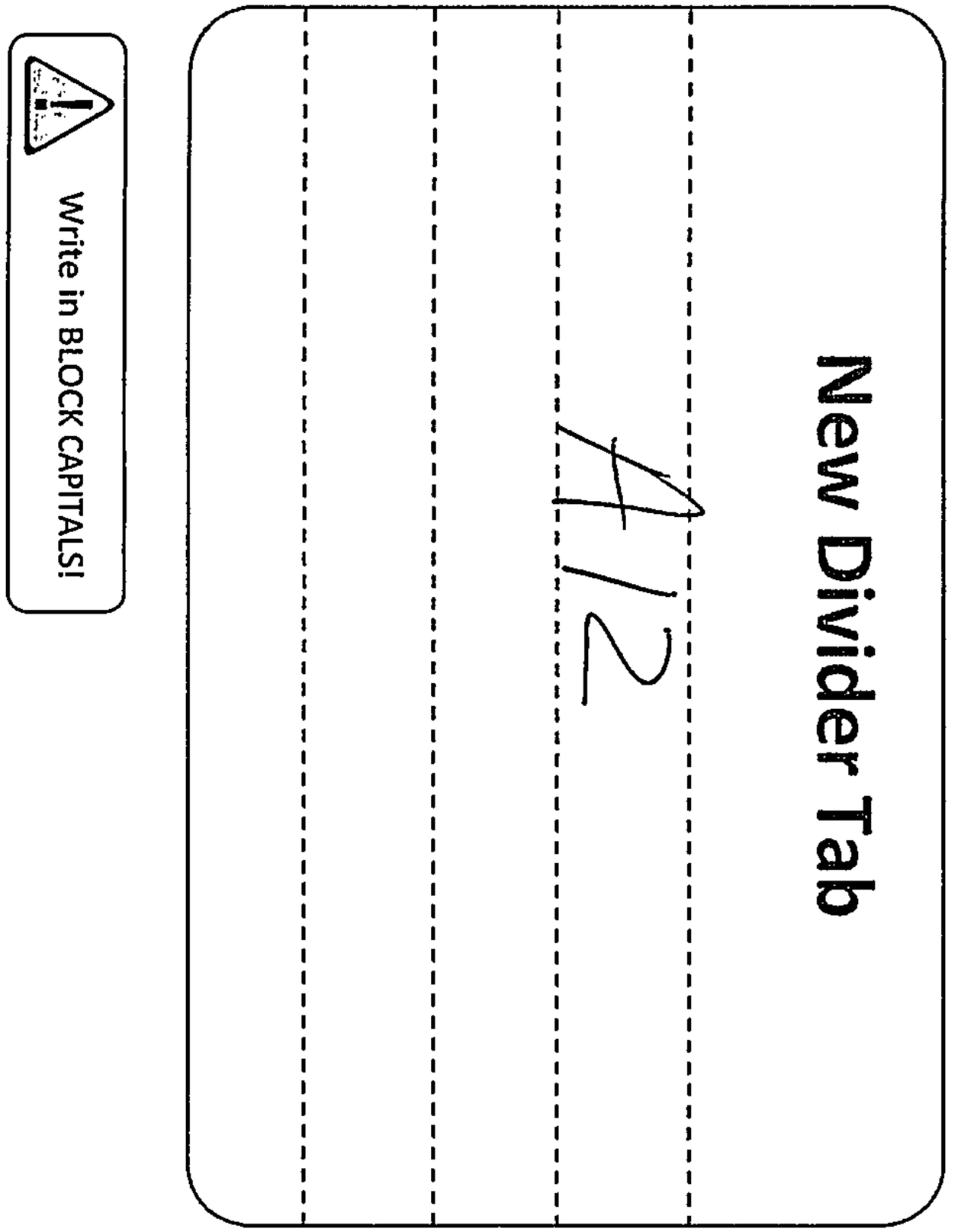
## Differences In DTN's Proposals Under Section A11 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplex licences our proposals would differ from those set out above. These differences are set out below.

*Under the joint multiplex options*, widescreen television would be provided as for the three multiplex combination for the Digital Box Office. In the case of where we are awarded Multiplexes B and C, we would also offer widescreen for the British Sports Channel. Our material handling procedures would remain the same as those laid out in our three multiplex proposal. The transmission data rate quality thresholds will also be applied in the same proportions.

*Under the single multiplex option*, we would not carry any widescreen programmes at the start of the service. In all other respects this option would conform with the joint multiplex arrangements.

The reliability criteria contained within our system design would be respected across all options. Training for our technical staff would be of a similar standard in all cases.



# A12 Changes to Existing Transmission and Reception Arrangements

*Noting in particular the information given in paragraph 48 and the provisions of the Code of Practice on Changes to Existing Transmission Arrangements which is referred to in Annex B, the applicant should state in the form of a fully worked out plan what arrangements he would make to implement the changes to existing transmission and reception arrangements required in order to accommodate the proposed multiplex transmitter plan. Information on the costs involved both on the transmission side (e.g. frequency changes or the inclusion of precision offset control) and on the reception side (e.g. house visitors or new receiving aerials) is required under Section B of the attachment to Part III.*

## Summary

In order to accommodate the DTN transmission plan for the digital multiplexes, there are certain changes which will need to be made to the transmission and reception arrangements for the existing analogue terrestrial television services including co-channel and adjacent channel disruption as well as the need to revise the existing RBLs. As a result of digital terrestrial television, several thousand homes will experience degradation of their current reception.

DTN have, together with NTL, completed a detailed review of the problem and designed an effective solution from our fully worked out plan. This review has provided DTN with a detailed understanding of the size and nature of the problem which has been used as the basis to develop a comprehensive model of the situation and the solution.

The main elements of DTN's approach are explained below:

- the first stage of DTN's approach will be to make a number of transmitter modifications including improving the stability of transmitters and changing the channel of existing services
- the second stage will be for optional engineering visits to affected homes - the programme of visits will be backed up by local publicity, mailshots and a viewer support line at DTN's subscriber management centre
- the whole process will be paid for, controlled and checked by DTN staff so that viewers will not bear any cost
- DTN is prepared to act as co-ordinator for *all six* multiplex operators and manage the resolution of the problems in order to minimise the disruption and confusion that might arise

## Introduction

This section explains the model that DTN have developed to address this problem, a description of the possible changes which demonstrates DTN's knowledge of the situation and lastly a proposed approach to solving this problem. The key headings are as follows:

- *The Nature and Scale of the Problem* explains how DTN has already developed a model to identify the detail of the problem
- *DTN's Solution* explains the approach that DTN will take including the transmitter modifications, arrangements for making changes to existing analogue receivers and how DTN proposes to co-ordinate a solution across all six multiplexes.

## The Nature and Scale of the Problem

The introduction of digital terrestrial television will result in a number of homes experiencing signal degradation for their existing channels. This problem will not be widespread but DTN is fully committed to ensuring that these problems are quickly rectified with minimal disruption to viewers. The first stage in solving this is to quantify the problem both in terms of where it will occur, how many homes will be affected, in what way they will be affected and identify where new relay transmitters are required.

To address this issue, DTN, together with NTL, have created a predictive model which calculates the likely interference to viewers. It also identifies the type of action that will be required to resolve the problems in each of the affected areas.

## DTN's Solution

There are two methods that DTN will use to solve reception problems - both will be necessary. Firstly, DTN will make modifications to the transmitter plan including improving the stability of transmitters and changing the channel of existing services. However, this will not totally solve the problem and additional work will be required both to retune homes to receive the new channels and also, in some cases, to redirect or replace aerials.

The type of solution to be used in each transmitter area, is shown in Exhibit A12.1 along with the cost by multiplex.

## Exhibit AI2.1: Retuning Cost

| Digital Terrestrial Television Station | Affected Station | Suggested Solution for Viewers | Affected Homes | Total Cost | Cost per Multiplex (£) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Multiplex BBC | Multiplex C3/4 | Multiplex A | Multiplex B | Multiplex C | Multiplex D |
| Crystal Palace | Haslemere | Provide replacement antenna for alternative services | 30 | £1,350 | £338 | £338 | £338 | £338 | £0 | £0 |
| Sutton Coldfield | Cefn Mawr | Build new relay | 16 | £50,000 | £12,500 | £12,500 | £12,500 | £12,500 | £0 | £0 |
| Sutton Coldfield | Winter Hill | Use The Wrekin instead | 615 | £27,675 | £0 | £0 | £0 | £0 | £0 | £27,675 |
| Sutton Coldfield | Emley Moor | Use Sutton, replace antennas | 512 | £23,040 | £5,760 | £5,760 | £5,760 | £5,760 | £0 | £0 |
| Winter Hill | Ramsbottom | Increase ERP at Ramsbottom; out-of-area viewers use alternative | 700 | £31,500 | £10,500 | £10,500 | £10,500 | £0 | £0 | £0 |
| Winter Hill | Douglas | Use alternative sources | 418 | £18,810 | £6,270 | £6,270 | £6,270 | £0 | £0 | £0 |
| Winter Hill | Whitewell | Use alternative sources | 209 | £9,405 | £0 | £0 | £0 | £0 | £4,703 | £4,703 |
| Winter Hill | Llanddona | Build new 2-channel relay. | 188 | £50,000 | £0 | £0 | £0 | £0 | £25,000 | £25,000 |
| Winter Hill | Conway | Use alternative source | 6 | £270 | £0 | £0 | £0 | £270 | £0 | £0 |
| Winter Hill | Sutton Cold | New antennas and retune | 1200 | £54,000 | £0 | £0 | £0 | £54,000 | £0 | £0 |
| Winter Hill | Stranraer | Check viewers & retune | 41 | £1,845 | £0 | £0 | £0 | £0 | £923 | £923 |
| Emley Moor | Sutton Cold | Should be using Belmont | 1000 | £45,000 | £0 | £11,250 | £11,250 | £11,250 | £11,250 | £0 |
| Emley Moor | Holmfirth | Channel change | 800 | £36,000 | £0 | £0 | £0 | £0 | £0 | £36,000 |
| Black Hill | Ardanam | Alternative sources | 70 | £3,150 | £788 | £788 | £788 | £788 | £0 | £0 |
| Black Hill | Bellshill selfhelp | Replace self-help; re-tune viewers | 86 | £8,870 | £0 | £0 | £0 | £0 | £0 | £8,870 |
| Wenvoe | Woodcombe | channel changes | 965 | £43,425 | £10,856 | £10,856 | £10,856 | £10,856 | £0 | £0 |
| Wenvoe | Carhampton | channel changes | 620 | £27,900 | £6,975 | £6,975 | £6,975 | £6,975 | £0 | £0 |
| Wenvoe | Kewstoke | channel changes | 476 | £21,420 | £5,355 | £5,355 | £5,355 | £5,355 | £0 | £0 |
| Wenvoe | Reddiff Bay | channel changes | 535 | £24,075 | £6,019 | £6,019 | £6,019 | £6,019 | £0 | £0 |
| Wenvoe | Easter Compton | channd changes | 418 | £18,810 | £4,703 | £4,703 | £4,703 | £4,703 | £0 | £0 |
| Wenvoe | Countisbury | channel changes | 188 | £8,460 | £2,115 | £2,115 | £2,115 | £2,115 | £0 | £0 |
| Divis | Caldbeck | Alternative sources | 188 | £8,460 | £0 | £0 | £0 | £8,460 | £0 | £0 |
| Rowridge | Haslemere | Alternative sources | 334 | £15,030 | £0 | £0 | £0 | £15,030 | £0 | £0 |
| Belmont | Olivers Mount | Alternative sources | 129 | £5,805 | £0 | £0 | £0 | £0 | £2,903 | £2,903 |
| Belmont | Batley | Alternative sources | 125 | £5,625 | £0 | £0 | £0 | £0 | £2,813 | £2,813 |
| Belmont | Bradford West | Alternative sources | 418 | £18,810 | £0 | £0 | £0 | £0 | £9,405 | £9,405 |
| Belmont | Hasland | Alternative sources | 1464 | £65,880 | £0 | £0 | £0 | £0 | £32,940 | £32,940 |

## Exhibit A12.1: Retuning Cost (continued)

| Digital Terrestrial Television Station | Affected Station | Suggested Solution for Viewers | Affected Homes | Total Cost | Cost per Multiplex (£) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Multiplex BBC | Multiplex C3/4 | Multiplex A | Multiplex B | Multiplex C | Multiplex D |
| Belmont | Heyshaw | Alternative sources | 175 | £7,875 | £0 | £0 | £0 | £0 | £3,938 | £3,938 |
| Belmont | Tideswell Moor | Alternative sources | 41 | £1,845 | £0 | £0 | £0 | £923 | £923 | £0 |
| Belmont | Kings Lynn | channel changes | 1255 | £56,475 | £0 | £56,475 | £0 | £0 | £0 | £0 |
| Sandy Heath | Sutton Coldf | Alternative sources | 4000 | £180,000 | £0 | £0 | £0 | £0 | £90,000 | £90,000 |
| Sandy Heath | Bluebell Hill | Alternative sources | 7112 | £320,040 | £0 | £0 | £0 | £0 | £160,020 | £160,020 |
| Sandy Heath | Welwyn | Alternative sources | 330 | £14,850 | £0 | £0 | £0 | £0 | £7,425 | £7,425 |
| Sandy Heath | Hannington | Alternative sources | 418 | £18,810 | £0 | £9,405 | £9,405 | £0 | £0 | £0 |
| Waltham | Birchover | Alternative sources | 2 | £90 | £30 | £0 | £0 | £0 | £30 | £30 |
| Waltham | Kings Lynn | Alternative sources | 50 | £2,250 | £2,250 | £0 | £0 | £0 | £0 | £0 |
| Durris | Rosehearty | Alternative sources | 146 | £6,570 | £0 | £0 | £0 | £2,190 | £2,190 | £2,190 |
| Dover | Lydden | change channel | 198 | £8,910 | £0 | £8,910 | £0 | £0 | £0 | £0 |
| Dover | Felixstowe | change channel | 3765 | £169,425 | £0 | £0 | £0 | £0 | £169,425 | £0 |
| Sudbury | Wivenhoe Park | change 1 channel | 1046 | £47,070 | £0 | £0 | £0 | £47,070 | £0 | £0 |
| Caradon Hill | Westward Ho! | change channel | 58 | £2,610 | £0 | £653 | £0 | £653 | £653 | £653 |
| Bilsdale | Sheffield | Alternative sources | 500 | £22,500 | £0 | £0 | £5,625 | £5,625 | £5,625 | £5,625 |
| Bilsdale | Idle | Alternative sources | 6276 | £282,420 | £0 | £0 | £70,605 | £70,605 | £70,605 | £70,605 |
| Bilsdale | Fenham | Alternative sources | 250 | £11,250 | £0 | £0 | £2,813 | £2,813 | £2,813 | £2,813 |
| Oxford | Brailes | Alternative sources | 125 | £5,625 | £0 | £0 | £2,813 | £2,813 | £0 | £0 |
| Hannington | Guildford | Alternative sources | 418 | £18,810 | £4,703 | £4,703 | £0 | £4,703 | £4,703 | £0 |
| Stockland Hill | Caradon Hill | Alternative sources | 1380 | £62,100 | £15,525 | £15,525 | £15,525 | £15,525 | £0 | £0 |
| Craigkelly | Darvel | Alternative sources | 200 | £9,000 | £2,250 | £2,250 | £2,250 | £2,250 | £0 | £0 |
| Ridge Hill | Washford | Alternative sources | 16 | £720 | £0 | £0 | £0 | £720 | £0 | £0 |
| Ridge Hill | Bristol K.W. | Alternative sources | 146 | £6,570 | £1,643 | £1,643 | £1,643 | £1,643 | £0 | £0 |
| Ridge Hill | Coleford | Alternative sources | 690 | £31,050 | £0 | £0 | £7,763 | £7,763 | £7,763 | £7,763 |
| Ridge Hill | Abergavenny | Alternative sources (English) | 5 | £225 | £0 | £0 | £0 | £75 | £75 | £75 |
| Ridge Hill | Oakley Mynd | Alternative sources | 25 | £1,125 | £0 | £0 | £0 | £375 | £375 | £375 |
| Ridge Hill | Presteigne | Alternative sources | 133 | £5,985 | £0 | £0 | £5,985 | £0 | £0 | £0 |
| Ridge Hill | Hannington | Alternative sources | 836 | £37,620 | £0 | £0 | £0 | £12,540 | £12,540 | £12,540 |
| Darvel | Twechar | Alternative sources | 10 | £450 | £113 | £113 | £113 | £113 | £0 | £0 |

## Exhibit A12.1: Retuning Cost (continued)

| Digital Terrestrial Television Station | Affected Station | Suggested Solution for Viewers | Affected Homes | Total Cost | Cost per Multiplex (£) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Multiplex BBC | Multiplex C3/4 | Multiplex A | Multiplex B | Multiplex C | Multiplex D |
| Darvel | Kelvindale | Alternative sources | 4184 | £188,280 | £0 | £0 | £0 | £0 | £94,140 | £94,140 |
| Darvel | Netherton Braes | Alternative sources | 5899 | £265,455 | £66,364 | £66,364 | £66,364 | £66,364 | £0 | £0 |
| Darvel | Kirkoswald | Alternative sources | 31 | £1,395 | £349 | £349 | £349 | £349 | £0 | £0 |
| Darvel | Rothesay | Alternative sources | 20 | £900 | £225 | £225 | £225 | £225 | £0 | £0 |
| Llanddona | Conway | Alternative sources | 3012 | £135,540 | £0 | £0 | £0 | £0 | £0 | £135,540 |
| Carmel | Pontardawe | Alternative sources | 104 | £4,680 | £0 | £0 | £0 | £0 | £4,680 | £0 |
| Carmel | Mendip | Alternative sources (Welsh) | 418 | £18,810 | £0 | £0 | £0 | £0 | £0 | £18,810 |
| The Wrekin | Fenton | Alternative sources | 418 | £18,810 | £4,703 | £4,703 | £4,703 | £4,703 | £0 | £0 |
| Presely | Wenvoe | Alternative sources | 200 | £9,000 | £4,500 | £4,500 | £0 | £0 | £0 | £0 |
| Presely | Arfon | Alternative sources | 800 | £36,000 | £18,000 | £18,000 | £0 | £0 | £0 | £0 |
| Presely | Tenby | Alternative sources | 41 | £1,845 | £0 | £0 | £461 | £461 | £461 | £461 |
| Presey | Woolacombe | Alternative sources | 50 | £2,250 | £0 | £0 | £563 | £563 | £563 | £563 |
| Blaen Plwyf | Bronnant self | New source | 50 | £2,250 | £563 | £563 | £563 | £563 | £0 | £0 |
| Blaen Plwyf | Pencader | Alternative sources | 8 | £360 | £0 | £0 | £0 | £0 | £180 | £180 |
| Beacon Hill | Tedburn StMary | Alternative sources | 4 | £180 | £180 | £0 | £0 | £0 | £0 | £0 |
| Huntshaw Cross | Burry Port | Alternative sources | 292 | £13,140 | £3,285 | £3,285 | £3,285 | £3,285 | £0 | £0 |
| Huntshaw Cross | Mendip | Alternative sources | 1548 | £69,660 | £17,415 | £17,415 | £17,415 | £17,415 | £0 | £0 |
| Huntshaw Cross | Carmel | Alternative sources | 677 | £30,465 | £0 | £0 | £0 | £0 | £15,233 | £15,233 |
| Huntshaw Cross | Ilfracombe | Alternative sources | 198 | £8,910 | £2,228 | £2,228 | £0 | £2,228 | £2,228 | £0 |
| Huntshaw Cross | Beacon Hill | Alternative sources | 677 | £30,465 | £0 | £0 | £0 | £0 | £15,233 | £15,233 |
| Moel-y-Parc | Bidston | New channels | 4184 | £188,280 | £0 | £0 | £0 | £0 | £188,280 | £0 |
| Moel-y-Parc | West Kirby | New channels | 2928 | £131,760 | £0 | £0 | £0 | £0 | £0 | £131,760 |
| Rumster Forest | Durris | Alternative sources | 543 | £24,435 | £6,109 | £6,109 | £6,109 | £6,109 | £0 | £0 |
| Chatton | Felling | Alternative sources | 836 | £37,620 | £0 | £0 | £0 | £37,620 | £0 | £0 |
| Chatton | Staithes | Alternative source if available | 52 | £2,340 | £0 | £0 | £0 | £0 | £1,170 | £1,170 |
| Chatton | Blaydon Burn | Alternative source | 58 | £2,610 | £0 | £0 | £0 | £0 | £1,305 | £1,305 |
| Chatton | Weardale | Alternative source | 12 | £540 | £0 | £0 | £0 | £0 | £270 | £270 |
| Chatton | Seaham | Alternative source | 313 | £14,085 | £0 | £0 | £0 | £0 | £7,043 | £7,043 |
| Selkirk | Angus | Alternative source | 3138 | £141,210 | £35,303 | £35,303 | £35,303 | £35,303 | £0 | £0 |
| | | | | £3,338,160 | £257,911 | £342,144 | £343,303 | £497,998 | £959,819 | £936,986 |

## Transmitter Modifications

DTN have contracted NTL to provide the transmission network. NTL were directly involved with the ITC in producing the ITC Code of Practice on Changes to Existing Transmission Arrangements. The changes required at each of the transmitter sites described in the DTN transmitter roll-out plan will be implemented in accordance with the ITC Code of Practice identified above.

The digital terrestrial television frequency plan depends upon a significant number of modifications being made at existing analogue television transmitters in order to minimise interference. These are summarised in the draft ITC Code of Practice on Changes to Existing Transmission and Reception Arrangements. DTN intend to use a number of methods to address the problems that will arise through this plan - each of these are described below:

***Improve stability of transmitters and transposers***

Many stations will be modified to become precision offset, whereby the carrier frequencies are adjusted and controlled to an accuracy of ± 1Hz. The effect of this is to achieve a substantial improvement in the subjective visibility of interference. The GPS satellites will be used to provide a common frequency standard which will become the reference for appropriate frequency synthesisers. This technique has recently been used at many existing stations for Channel 5 network construction so the method is well understood;

***Change channel of existing services***

In some cases an existing service will be required to move to a different channel. This has also been undertaken recently for Channel 5 and similar procedures for minimising the effect on viewers will be used for digital terrestrial television;

***Modifications to existing transmitters/filters/combiners to permit adjacent channel operation where required***

In several cases, modifications will be necessary to reduce the level of analogue sidebands falling in the digital channel;

***Construction of a new relay***

In a few cases, it would not be possible to maintain an analogue service simply by modifying an existing site or changing to another service. In these cases, we will construct a new relay to serve the affected area, assuming that planning permission is obtained;

***Replacement of an RBL***

Our work on this matter to date suggests that many RBL routes used for analogue transmission distribution will not be operable for digital services. Wherever possible we plan to use existing RBL's paths but where necessary, we will install TVROs.

Due attention has been taken of the draft Code of Practice on Changes to Existing Transmission and Reception Arrangements and all reasonable efforts will be made at the transmitting stations to minimise the disruptive effect by, for example, changing the channel of an existing relay, adding precision offset, or improving an RBL antenna. Precision offset will make use of the GPS satellites to provide a universal frequency reference. As many of the proposed new digital terrestrial television services will be utilising UHF channels adjacent to the existing analogue services, it will also be necessary to install high performance filter-combiner units in order for the two services to co-exist on the same antenna. Major modification or replacement of existing combiners will thus be required and modification of the analogue transmitter will then be necessary to compensate for the effect of these filters. This has been taken into account in the model. NTL has already undertaken extensive tests with different combinations of analogue and digital transmitters to establish the necessary requirements.

DTN have confirmed with NTL that these modifications will not alter the overall coverage outlined in Section A2.

## Reception Solution

Even with the extensive modifications made to transmitters some subscribers will still experience problems with reception. These include the need to retune their television in order to receive an existing analogue service that has moved channel and the need for a new aerial to avoid disruption or to receive an existing service on a new channel.

DTN believe that the best approach to solve these problems is through making the transmitter modifications and simulcasting the digital terrestrial television channels prior to full transmission. This is because it is impossible to predict accurately which homes will experience problems.

DTN's strategy is therefore aimed at ensuring that the problems created by simulcast are minimised. The main elements of this strategy are described below:

- prior and during simulcast, homes in affected areas will be informed through mail shots and localised publicity
- viewers will be invited to phone an 0800 number at DTN's call centre if they experience a problem which will offer both more advice on how to solve the problem (through a letter) or arrange a visit to resolve the problem
- a visit will be made to the home by a qualified engineer and rectification work will be completed free of charge

- to ensure maximum satisfaction and compliance, viewers will be invited to call our DTN help desk at the customer call centre with any problems of a technical nature.

Each of these stages is described below:

*Publicity*

The publicity for the reception problems will need to be localised. DTN will build a database of relevant names and addresses based on the prediction model. These homes will receive mailshots prior to simulcast informing them of the period of simulcast, the type of problems they may experience as well as advice on the steps they should take. This will include details of the channel they should retune their receiver to as well as details of the 0800 number available for advice and other assistance.

The mailshots will be supplemented with other local publicity to raise awareness.

*Call Centre Assistance*

Those viewers that call the 0800 number will be offered a range of assistance. This will include over the phone advice on solving the problem, sending a letter to the viewer giving more details regarding rectifying the problem or arranging a visit by an engineer. Where an engineer visit is required, the user will be given a reference number which will allow them to verify the identity of the engineer.

This database will be made available to DTN's engineering department so that they can monitor progress and take appropriate action.

*Engineering Visits*

Many problem homes will require a new aerial or retuning. We believe that the best method to solve these problems is by using an experienced engineer. Given the amount of local variation in problems and signal propagation characteristics, DTN believes that it would be optimal for local aerial installers to address these problems. DTN has already made arrangements with an antenna installation company (a letter from whom is included in Volume I of the Appendix to Section B) to visit and resolve the reception problems caused by the digital transmission services on a nationwide basis.

These engineers will complete the rectification work required including aerial replacement, adjustment or receiver retuning. This service will be provided free of any charge to viewers.

The engineers will be monitored by DTN through random calls to viewers to check satisfaction as well as encouraging viewers to call the 0800 number if they have any concerns.

*Simulcast Period*

DTN will simulcast the digital terrestrial television signal for two months prior to transmission which will ensure that the vast majority of homes will be able to resolve the problem prior to full transmission. However, to allow people who have not rectified their problem prior to simulcast to receive help and also to allow viewers to assess the solution and inform DTN of problems, the 0800 facility will be available for two months after full transmission.

DTN are confident that this solution meets the needs of both the ITC and viewers - the strategy satisfies the code of practice, ensures that viewers experience no loss of quality to their signal (and in many cases their signal quality will be improved), is at no cost to viewers, will allow any problems to be rectified prior to full transmission and imposes the minimum level of inconvenience on viewers since they are able to rectify the problem themselves.

## Organisation Between Operators

DTN firmly believes that resolving this matter will require a central co-ordinator to organise *all* six multiplex operators to ensure that digital services are brought on in a controlled manner and retuning done both cost effectively and with minimal confusion and inconvenience for the viewer. From our experience and work done, DTN is probably best placed to manage the whole process and will propose to all multiplex operators that we handle and manage the problem for them. The costs will be on the basis that the multiplex transmission causing the problem pays for the remedial work via DTN as the co-ordinator and implementer.

DTN would be happy to make this process open to both the ITC and other digital terrestrial television operators.

## Differences In DTN's Proposals Under Section A12 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplex licences our proposals would differ from those set out above. These differences are set out below.

DTN would not take a lead position in resolving the reception problems if we were offered either two or one multiplexes

However, we would work co-operatively with the other licence holders in attempting to achieve a sensible roll out of the transmitter network.

preview

New Divider Tab

A/Z

Write in BLOCK CAPITALS!

New Divider

# A13 Receiving Equipment

*Noting the information given in paragraphs 85 to 87 the applicant should state how he will ensure that the equipment covered by the arrangements set out in response to question A3 above will be capable of receiving all the multiplex services available in the proposed coverage area of his own service.*

## Summary

This section describes DTN's proposals for promoting compatibility of the receiver to support interoperability with all other multiplex services. DTN recognises that to achieve compatibility will require close co-operation between the multiplex licensees. The most important themes in this section are as follows:

- DTN believes there are three principal areas of compatibility which need to be addressed to assist interoperability: Programme Specific Information and Service Information; Conditional Access; and the Application Program Interface. A range of solutions are considered which, if adopted, would enable simple reception of all the digital services
- DTN proposes that an early release of set top box receivers into the market is reliant upon adopting, in the main, software and systems already developed for the "world box" receiver. This approach will also minimise the receiver development costs which would represent a significant saving to the purchaser of the set top box
- DTN's sister company NTL has invested significant sums in research and development to produce the necessary integrated circuits (chip sets) to enable the receiver. As a consequence, we are well placed to understand fully the key technology issues surrounding receiver compatibility
- DTN believes it is important that a significant holder of multiplex licences is created to provide the necessary leadership to ensure commonality across the digital receiver market. DTN is well qualified to fill this role and carry through the proposals contained in this section.

## Introduction

In formulating its approach to issues of compatibility DTN has drawn on the expertise of its sister company NTL, which has been actively involved in progressing digital television standardisation through involvement in the DVB project and the UK DTG. Many of NTL's solutions have been adopted by the rest of the industry, earning it respect for its ability to understand the problems and produce workable solutions. NTL intends to continue membership of these groups plus any new groups which

come about as a result of licence awards in order to actively seek a solution to the technical and commercial problems associated with digital terrestrial. We anticipate that if DTN is successful in its applications for one or more multiplex licences we will seek membership of the DTG and other relevant industry groups.

NTL has been involved for 12 months in an ongoing project to develop a digital receiver for the UK market. This project has included work on the receiver front end, hardware and software development and on the total broadcast system. A prototype digital terrestrial television receiver, compliant with the DVB specification, complete with conditional access, simple data services and an EPG running on a software API was demonstrated in October 1996. Further work has been ongoing to ensure interworking with other DVB-T transmissions. This work has also included the development of a single chip OFDM front end solution for which samples are expected in July 1997. A complete hardware specification for the receiver has been created and is available in Volume 1 of the Appendix to Section B.

This expertise gives DTN a head start in devising innovative solutions to the issues.

DTN believes that an early release of set top boxes (STB) into the market is reliant upon adopting in the main, existing solutions including software and systems developed for use in as many markets as possible, not solely for the UK digital terrestrial arena. This will minimise development costs and reduce risks, representing significant savings to the purchaser of the domestic STB.

DTN recognises that the future for digital terrestrial television relies upon co-operation between the licensed multiplex operators. If DTN is awarded Multiplexes B, C and D, we propose a leading position in resolving the outstanding compatibility issues.

## Background to Compatibility Issues

The issue of compatibility is one of some complexity. In the following pages we have highlighted the main issues that we have considered in arriving at our solution. We discuss in turn:

- Programme Specific Information (PSI) and Service Information (SI)
- Conditional Access (CA)
- the Application Program Interface (API).

### Programme Specific Information and Service Information

The reception of a UK digital terrestrial signal will be possible through the use of MPEG2 PSI and DVB SI and DVB-T RF specifications, as laid down in the ITC Draft Rules of Operation. The mandatory elements are intended to allow a basic ability to

receive and decode free to air services. However, origination equipment manufacturers have to make choices as to the subset of the MPEG2 PSI they use (an example is the PID location of the PCR information), so even at this basic level, incompatibilities can exist between multiplexes, unless care is taken over the design of receivers to allow for all valid interpretations.

In addition to the mandatory elements, we intend to enhance this functionality by exploiting other elements of the DVB specification.

The promotion of future events within the actual transport stream will be performed by transmitting the Event Information Tables (schedule). These tables will carry information relating to the events to be broadcast during a period of up to one month. This information will be derived from our own schedule computer and hence reflect the actual running information as nearly as possible.

In addition, it is desirable that the equivalent information (if transmitted) from the other transport streams emitted from the same location will be extracted from their transmitted multiplex at the transmitter site and inserted into our multiplex. In this way our multiplex will carry basic event information for all emissions from any given site. It is anticipated that the other multiplex operators will arrange to do the same with the intention of presenting the viewer's receiver with a uniform set of tables across all of the multiplexes within a given region. This will enable a receiver to make certain assumptions about the nature of the information presented to it, as per the UK DTG D Book Receiver Requirements Specification.

However, it should be noted that the way in which we perform this insertion of information will be structured to maintain the transmission of mandatory elements in the event of failure in any of the additional equipment.

## Conditional Access

The situation for the decoding of a non free to air service is, however, more complex.

The conditional access system chosen by the various service providers and multiplex operators may very well not be the same, hence a receiver designed for one CA system may not decode the services scrambled by another. There are two solutions to this problem:

- multiple CA modules
- or Simulcrypt.

Each has advantages and disadvantages.

### *Multiple CA Modules*

If a receiver were to be constructed incorporating all of the elements for all CA systems, then each multiplex operator would be able to continue to run their own CA

system independently. This is unlikely to happen in practice but the same effect can be realised by mounting the CA elements on a removable module, connecting to the Transport Stream via a standardised interface (e.g. the DVB Common Interface).

The two main drawbacks of this approach are cost and reliability. The additional cost of providing this connectivity and the CA on a PCMCIA card would significantly increase the base price of the receiver. Also, the number of sets of services using different CA systems that can operate at any time is limited by the number of slots available in a receiver; the more slots the higher the cost. The most frequently quoted number is two slots per receiver, initially limiting the number of independent operators to two. Any increase in operators using this approach would require additional add on modules to increase the number of slots available (usually externally to the receiver) but again this will add to viewers costs or require viewers to swap modules when changing between channel encrypted under different CA systems.

It should be noted that at this time no digital broadcast system has been put into operation using this approach and no operationally proven common interface implementation of a CA system exists.

From the multiplex operator's point of view, another disadvantage to this approach is the difficulty it introduces with regards to the recovery of the costs of subsidising receivers. DTN notes that Oftel's December 1996 Consultative Paper on Conditional Access outlines a number of potential approaches for the recovery of costs associated with subsidy. DTN's sister company NTL has submitted written comments to Oftel and the DTI outlining its preferred approach to the recovery of the costs of subsidy, namely a competitive parity rule based on a revenue-based levy in conjunction with a non-exclusive minimum 'lock-in' contract with subscribers.

We are convinced that subsiding the cost of the receiver is necessary to ensure the rapid take-up of digital terrestrial television. Indeed, subsidy constitutes one of the largest financing requirements for DTN. We are in agreement with the approach outlined by NTL. We intend to consult directly with Oftel on our proposed arrangements for the recovery of the costs of subsidy to ensure that they are compatible with the relevant Oftel guidelines and regulations and with those of other relevant regulatory authorities.

We believe that the CA technology that we implement will need to be available in a common interface PCMCIA format in time for the launch of idTVs. The idTVs will use this approach for fitting their CA systems so that they can be manufactured to be compatible with multiple distribution technologies and markets.

***Simulcrypt***

The incremental system cost of operating multiple CA modules is significantly more than the cost of a port in the receiver. There are much larger impacts on the network build costs, CA module costs and multiplication of cards, security and management

costs. For these reasons the second solution, Simulcrypt, should be considered as it solves many of these problems although it introduces others.

Assuming all services use the DVB Common Scrambling Algorithm, the difference between CA systems is how the Control Word (used to scramble the signal) and a viewer's entitlements, are communicated to the receiver.

These elements are communicated via Entitlement Control Messages (ECMs) and Entitlement Management Messages (EMMs) respectively. It is possible to equip a system with an additional ECM and EMM generator which inserts the required information into the signal to allow decoding by a receiver equipped with either CA system. The important point is that only one of the CA systems supported is required in the receiver. This level of interaction between CA systems is possible and, although we have seen practical implementations demonstrated, they are still in their infancy.

The drawback is that two sets of ECMs and EMMs need transmitting, reducing slightly the bit rate within the multiplex available for programme services. If different multiplex operators choose different CA systems then potentially several sets of ECMs and EMMs could need to be inserted into the transport stream.

Additionally, this approach potentially requires equipment for each CA system to be installed at each point where CA is applied. This requires extensive commercial agreements between operators which would be subject to further negotiation once the multiplex licences are awarded.

### Application Program Interface

The final element needed to provide compatibility is the choice of Application Program Interface (API) in the receiver.

The functionality of many of the enhanced features offered by digital terrestrial television rely on any data being sent to a receiver being handled in a predictable way. Standardising the API means that the internal workings of the receiver are hidden from the data being broadcast so that only one software application needs to be written, irrespective of the type of receiver to which it is being delivered. We believe that the implementation of a single API across the whole digital terrestrial platform from launch is essential.

Additionally, the API must work in conjunction with the CA system fitted in the receiver, making receiver compatibility testing a potential problem area when using removable CA systems. Ensuring that all versions of CA, API and applications operate and will continue to operate together for the foreseeable life of the receiver, whilst allowing enhancements to be phased in, is not a trivial matter.

## DTN's Solutions

Ultimately it is likely that a combination of approaches will become the way forward in order to promote digital services. Certain technical issues can be resolved through unilateral action. For example to ensure compatibility at MPEG levels we will employ a specialist team to work closely with receiver manufacturers. Conformity to specifications would be tested in a dedicated compliance laboratory in association with the UK DTG and co-operation with others at the commercial and technical levels will be necessary. This might include subsidy of receivers or the operation of a Simulcrypt system. At a technical level co-operation on the form of SI carried by all operators will aid compatibility, even though the mechanism for achieving cross carriage may involve a unique implementation.

DTN, through NTL, has been actively involved in progressing digital television standardisation through involvement in the DVB project and the UK DTG, giving it a head start in devising innovative solutions to the issues. Many of these have been adopted by the rest of the industry, earning respect for our ability to understand the problems and produce workable solutions. The company will continue membership of these groups plus any new groups which come about as a result of licence awards in order to actively seek a solution to the technical and commercial problems for everyone's benefit, including the viewer.

DTN has a pragmatic approach to the solution of problems, preferring to build upon work already done by NTL, DMV, and others, rather than specifying unique solutions for the UK digital terrestrial television market. Consequently, the company has practical suggestions for the way in which the industry might solve the technical questions.

NTL has been involved in a project with DMV since the start of 1996 to develop a digital receiver for the UK market. This has included work which is still ongoing on the receiver front end, hardware and software development and on the total broadcast system. A prototype digital terrestrial receiver, compliant with the DVB specification, complete with conditional access, simple data services and an EPG running on a software API was demonstrated in October 1996. Further work has been ongoing to ensure interworking with other DVB-T transmissions. This work has also included the development of a single chip OFDM front end solution for which samples are expected in July 1997.

DTN supports the use of the DVB Common Interface as a mechanism for allowing diversity of CA systems amongst digital terrestrial television operators for non-subsidised set top boxes. However, this may not be necessary if agreement can be reached between operators as to a common standard, since many of the problems of CA would be removed if each operator adopted a common CA system for all digital terrestrial television transmissions. DTN would propose collaboration in this area, pointing out the considerable cost savings to be made by centralising certain CA

functions. The number of groups involved in reaching agreement will depend on the exact numbers of operators granted licences.

We intend to consult directly with Oftel on our proposed arrangements for CA to ensure that they are compatible with the relevant Oftel guidelines and regulations and with those of other relevant regulatory authorities.

Also, in order to promote digital terrestrial services, DTN proposes subsidising a batch of receivers optimised for DTN's services but able to receive all free to air transmissions. Again, in order to minimise costs and design time, it is proposed to base this receiver on a World Box concept, representing considerable savings as development costs would be spread over a far larger market than purely the UK digital terrestrial arena. Use of these set top boxes would provide a low initial start-up cost for digital terrestrial service providers and viewers and allow for continuous development to improve the functionality offered to the viewer without making previous versions obsolete.

Again, in order to build on existing developments, DTN proposes the use of an API that can be demonstrated in its current state of development and which has a development plan to meet the full future requirements of the digital terrestrial platform. DTN also believes that the use of a common API across all digital distribution technologies is highly desirable. The consumer, purchasing receiving equipment, will only be able to migrate, for example, from satellite to cable and retain full compatibility with the services if a common API across all platforms is implemented. CableTel and NTL have been involved in the relevant industry groups and they have been public in these views. This will also result in consequential savings for those writing software applications and improve the familiarity of services offered to viewers as the software applications written for one market can be used in the other. Whichever API is adopted, it is essential that broadcasters are able to write applications without having to pay specific royalties for its use.

However, having made these points, DTN fundamentally believes that the future of digital terrestrial television relies on co-operation between the multiplex operators and will remain flexible in its approach. Specific agreements cannot be reached until all parties are known but once the licences are issued DTN is fully committed to reaching commercial, lasting agreements, benefiting all concerned as soon as possible to ensure compatibility across the various multiplexes. To this end we will continue the lead that we have set in funding the development of the key technologies and ensuring that this is licensed to manufacturers to create wide availability of receivers by service launch.

The following points if adopted across all multiplexes would offer the simplest way forward to promote interoperability:

- adoption of a common CA system across all multiplexes

- adoption of a common API in all digital terrestrial receivers (this matter could be improved further by adopting a common API across all platforms including cable and satellite)
- system development based on existing technologies
- co-operation through the DTG to confirm interopability of the transmitted transport stream.

In order to achieve these goals DTN will continue working closely with manufacturers of both encoding and decoding equipment, through a common membership of groups such as the DTG as well as with other multiplex operators through membership of any new organisations set up after the award of licences.

If DTN were granted licences for Multiplexes B, C, and D, we would be willing to take a leading role in the development of standards required for interoperability with the other multiplexes and in development of the required hardware and software to ensure an early and successful launch of services.

Further details of our approach are provided in Section B.

## Differences In DTN's Proposals Under Section A13 For Less Than Three Multiplex Licences

We have set out above our proposals for ensuring that DTN's receiver equipment will be capable of receiving all of the multiplex services available in the proposed coverage area of our services on the basis that we are successful in our applications for Multiplexes B, C and D. The following comments relate to changes in these proposals in the event that we are awarded one or two multiplex licences.

DTN will wish to see the same proposals adopted in the event that it is awarded only one or two multiplex licences. We will remain committed to the common receiver and will contribute our technical experience in any case. However, we believe that it will be more to difficult to ensure the adoption of a common receiver across the entire digital terrestrial platform if we are awarded one or two multiplex licences only. In the absence of a clear leader in digital terrestrial, no single party is likely to be able to drive the process of adoption forward in the same way. At best, the adoption of a common receiver is likely to be delayed. At worst, the delay could be significant in allowing BSkyB to establish a dominant position in the digital market. Moreover, it is likely that the manufacturing costs of a common receiver would increase as a result of the compromises that would probably be necessary to reach agreement.

DTN does not propose to subsidise set top boxes in the event that it is awarded one multiplex licence. If we are awarded two licences, we will aim to introduce a subsidised set top box if we are awarded Multiplexes B and C. In any other case (i.e. if we were awarded B and D jointly, C and D jointly or any individual multiplex), we would not subsidise set top boxes.

Regardless of the number of multiplex licences it is awarded, DTN will argue for the adoption of the approach we have outlined.

Write in BLOCK CAPITALS!

New Divider Tab

A4

New Divider

# A14 Supply of Programme Services

*The applicant should indicate the sources of the programme services which he proposes to broadcast under the multiplex licence. Details of any agreements with suppliers should be given either here or in a confidential annex.*

## Summary

This section identifies the sources that DTN have arranged for the supply of the programme services detailed in Sections A4 and A5. Fuller details are contained in the Confidential Annex. Variations for different combinations of multiplexes are shown at the end of this section.

## The Money Channel

- The Money Channel in-house productions
- ITN
- UK independent production companies
- Consumers' Association
- Bloomberg
- Corporate sponsors
- The Media Trust
- United News & Media
- The Knowledge Network

## The Knowledge Network

- The Knowledge Network in-house productions
- UK independent production companies
- The Open University
- Educational institutions
- United News & Media
- International TV companies
- The British Sports Channel
- The Money Channel
- Metro TV

## British Sports Channel

- BSC in-house productions and co-productions
- UK independent production companies
- Eurosport
- ITN
- British sports federations and associations
- UK Sports Council
- SIS
- United News & Media

## The Best of British

See Confidential Annex.

## Specialist Channels

| Channel | Supplier |
|---|---|
| • The ITN Living History Channel | ITN |
| • Animal Planet | Discovery Communications |
| • Travel | Travel |
| • The Box | EMAP |
| • Rapture | United News & Media |
| • The Food Channel | The Food Channel |

## Digital Box Office

- Film distributors
- Sports federations and associations

## Best of the World

| Channel | Supplier |
|---|---|
| • TCM: Turner Classic Movies | Turner Broadcasting |
| • Cartoon Network | Turner Broadcasting |
| • MGM Gold | MGM |
| • The Movie Experience | See Confidential Annex |

## Metro TV

- Metro TV in-house productions
- Local independent production companies
- University of Salford
- ITN
- The Weather Channel
- The Money Channel
- The British Sports Channel
- The Knowledge Network

## The Hindi Channel

The Hindi Channel will be offered by a joint venture of Sony Pictures Entertainment Inc.

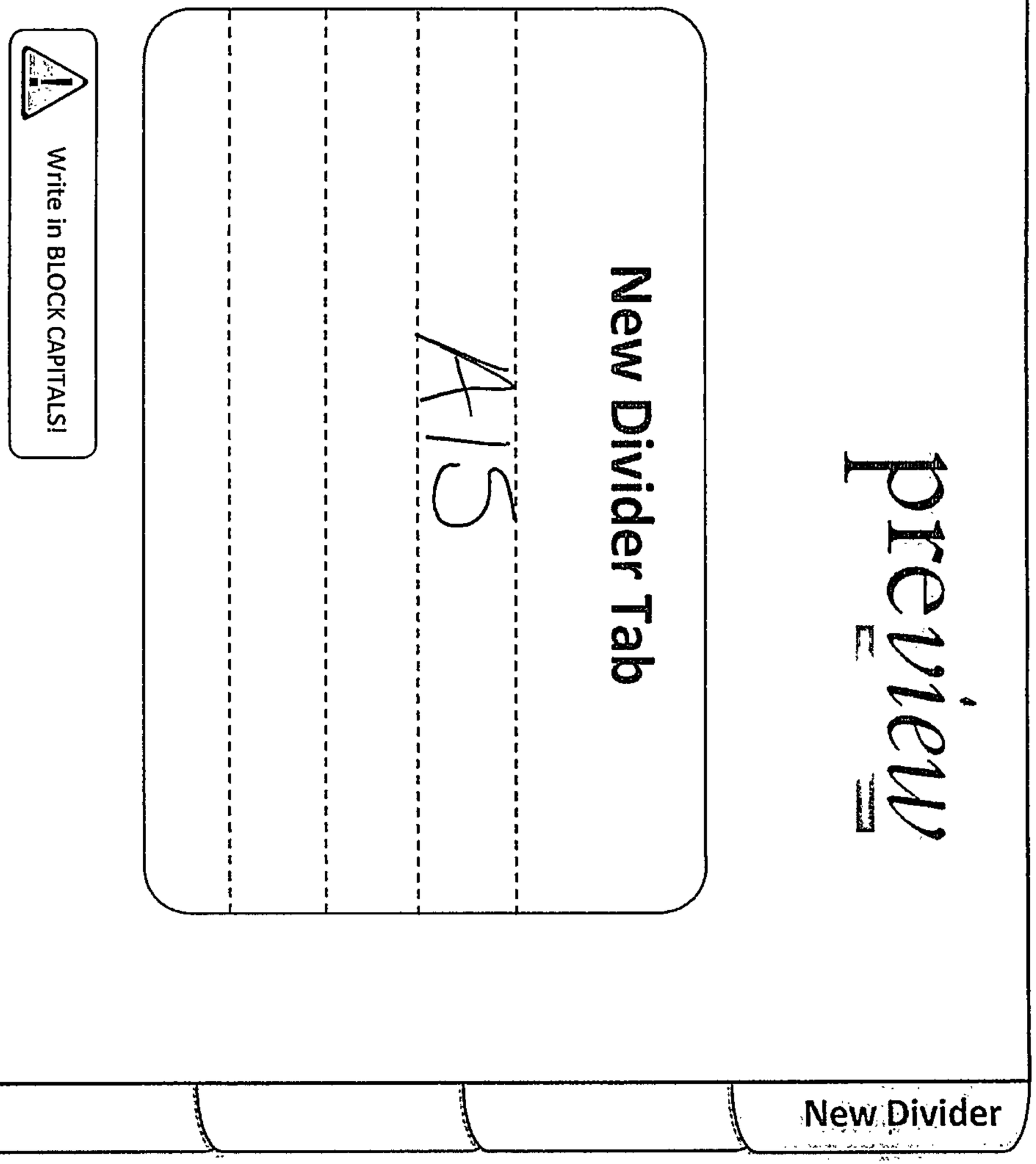
## Differences In DTN's Proposals Under Section A14 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplex licences our proposals would differ from those set out above. These differences are set out below.

Exhibit A14.1 shows the channels that will not be broadcast in the different multiplex combinations. In the case where the channel is not broadcast the suppliers will not be used.

**Exhibit A14.1: Services and Relevant Suppliers by Multiplex Combinations**

| Channel | B | C | D | BC | BD | CD | BCD |
|---|---|---|---|---|---|---|---|
| The ITN Living History Channel | B | C | D | B | B | C | D |
| Animal Planet | B | C | D | B | B | C | B |
| Travel | B | C | D | B | B | C | B |
| The Box | B | C | D | B | B | C | D |
| TCM: Turner Classic Movies | B | C | D | B | B | C | D |
| Cartoon Network | B | C | | B | B | C | D |
| MGM Gold | B | C | | B | B | C | D |
| Data Services | B | C | D | B | B | C | B |
| CA/SMS/EPG | B | C | D | B | B | C | B |
| The British Sports Channel | | | | C | | | B |
| Digital Box Office | | | | C | D | D | C |
| Data Services | | | | C | D | D | C |
| CA/SMS/EPG | | | | C | D | D | C |
| The Money Channel | | | | | | | B |
| The Knowledge Network | | | | | | | B |
| Metro TV/Hindi Channel | | | | | | | C |
| Horizons | | | | | | | B |
| Style/Showcase | | | | | | | B |
| Arena/Learning | | | | | | | D |
| Data Services | | | | | | | D |
| CA/SMS/EPG | | | | | | | D |



# A15 Capacity for Programme Services

*Noting the information given in paragraph 108, the applicant should state how he intends to ensure that at least 90 per cent of the digital capacity on the multiplex is available for the broadcasting of digital programme services, if appropriate also qualifying services, programme-related services or relevant technical services.*

## Summary

This section deals with the use of digital capacity on the multiplex and the share of digital capacity for digital programme services. Variations for different combinations of multiplexes are shown at the end of this section.

We are working closely with our Technology Team to ensure that we derive the maximum benefit for our programme services from the compression technology. To achieve this end we have conducted a series of tests around the current MPEG2 compression products but more particularly on the latest development programmes being undertaken by the research group. Two developments are well advanced, a new input processor which avoids sub-sampling and statistical multiplexing of the output transport stream. Together these two new techniques will reduce the quality threshold data rate by up to 2Mbps. As a consequence of this work we are confident of being able to run programme services at lower data rates than are practical today, whilst fully meeting the quality grading thresholds. Typical data rates we believe will be as follows:

- Sport 4 to 6Mbps
- Feature Films 3 to 5Mbps
- Video Programmes 3 to 5Mbps
- Local Programmes 3 to 5Mbps

The bit rates described above are "virtual" in the sense that we plan to use statistical multiplexing to better distribute the available data across all the programme channels. It is estimated from recent tests that we should see a 30% improvement in effective data allocations by using statistical multiplexing. The figures shown above on the left hand side indicate the absolute quality threshold which are effectively increased by the use of an integrated statistical multiplex system.

A fuller description of these developments are contained in Section A11.

Exhibit A15.1 shows DTN's multiplex and capacity allocation at launch for the range of services in all the multiplex variations. 90% of capacity is reserved for programme services. DTN's controlling system at the BOC allows us to monitor and maintain this so that DTN will ensure that this level is compliant with relevant regulations.

**Exhibit A15.1: Multiplex Allocation at Launch**

| Channel | B | C | D | BC | BD | CD | BCD | Mbps | Effective Mbps |
|---|---|---|---|---|---|---|---|---|---|
| The ITN Living History Channel | B | C | D | B | B | C | D | 3 | 5 |
| Animal Planet | B | C | D | B | B | C | B | 3 | 5 |
| Travel | B | C | D | B | B | C | B | 3 | 5 |
| The Box | B | C | D | B | B | C | D | 3 | 5 |
| TCM: Turner Classic Movies | B | C | D | B | B | C | D | 3 | 5 |
| Cartoon Network | B | C | | B | B | C | D | 3 | 5 |
| MGM Gold | B | C | | B | B | C | D | 3 | 5 |
| Data Services | B | C | D | B | B | C | B | 2.4 | 2.4 |
| CA/SMS/EPG | B | C | D | B | B | C | B | 0.7 | 0.7 |
| The British Sports Channel | | | | C | | | B | 4 | 6 |
| Digital Box Office | | | | C | D | D | C | 18 | 30 |
| Data Services | | | | C | D | D | C | 2.4 | 2.4 |
| CA/SMS/EPG | | | | C | D | D | C | 0.7 | 0.7 |
| The Money Channel | | | | | | | B | 3 | 5 |
| The Knowledge Network | | | | | | | B | 3 | 5 |
| Metro TV/Hindi | | | | | | | C | 3 | 5 |
| Horizons | | | | | | | B | 3 | 5 |
| Style/Showcase | | | | | | | B | 3 | 5 |
| Arena/Learning | | | | | | | D | 3 | 5 |
| Data Services | | | | | | | D | 1.8 | 1.8 |
| CA/SMS/EPG | | | | | | | D | 0.6 | 0.6 |

*Coverage figures assuming complete build out ('000)*

| | | |
|---|---|---|
| Multiplex B (Total 24 Mbps) | 50,608 | |
| Multiplex C (Total 24 Mbps) | 44,584 | (NB: Metro TV Coverage = 4,232, Hindi Channel = 40,352) |
| Multiplex D (Total 18 Mbps) | 42,440 | (NB: Nature of services will allow a reduction in data rate to 2.7Mbps on BCD) |
| | | (NB: Digital Box Office capacity 15 (25) Mbps on D) |

## Differences In DTN's Proposals Under Section A15 For Less Than Three Multiplex Licences

In the event that DTN was awarded less than three multiplex licences our proposals would be as illustrated in Exhibit 15.1 above.

Write in BLOCK CAPITALS!

New Divider Tab

A16

Preview

New Divider

# A16 Key Staff

*The applicant should identify the key posts and (where possible) the named post-holders who will be involved in establishing and running the multiplex service. Details should be given of the post holders' experience and qualifications. If the applicant prefers, this information may be given in a confidential annex.*

## Summary and Introduction

DTN has a well formulated strategy for its structure and staffing arrangements which will allow it to move immediately into an intensive start up phase on licence award. DTN has also identified specific and well qualified individuals for nearly all key posts as well as the training that the staff will enjoy to ensure that DTN is an extremely effective and efficient organisation.

Exhibit A16.1 shows the management and departmental structure for DTN. This illustrates the posts which will have ultimate departmental responsibility and the chain of control.

This section describes examines the directors; key staff by function; an outline of our equal opportunities policy; training arrangements; compliance procedures.

## Key Staff

### Names of Key Staff

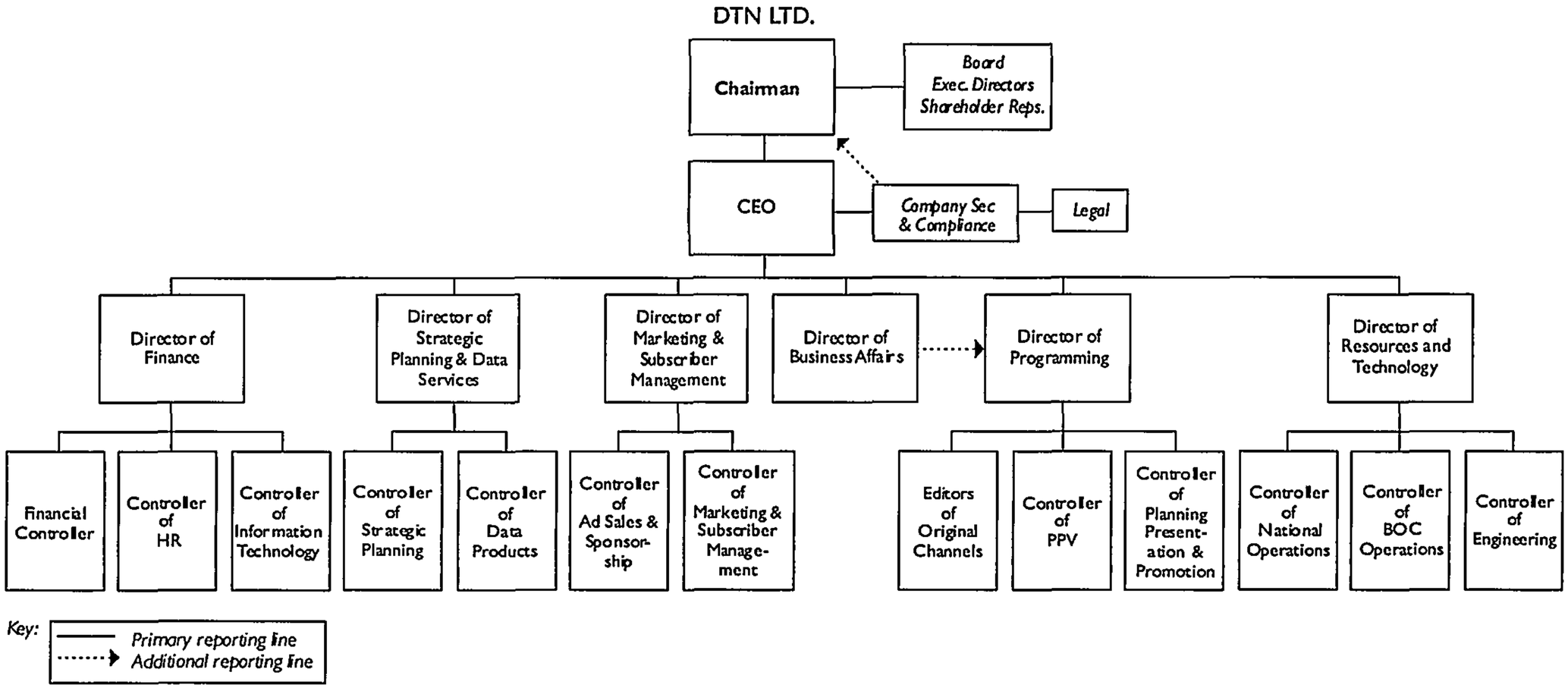
The key staff of Digital Television Network Ltd are;

- Chairman [redacted]
- Chief Executive [redacted]
- Director of Finance See Confidential Annex
- Director of Programming See Confidential Annex
- Director of Resources and Technology [redacted]
- Director of Marketing and Subscriber Management See Confidential Annex
- Director of Strategic Planning and Data Services See Confidential Annex
- Director of Business Affairs [redacted]

All but one of the above would be available to start immediately on the award of the licences.

A16(B)V12 1/12/97

## Exhibit AI 6.1: DTN Ltd. - Senior Management Structure



## Responsibilities

### *Chairman*

The Chairman of DTN Board will work closely with the Chief Executive to effect the efficient start-up and running of the company, maintain relationship with shareholders, banks and/or any financial institutions and provide a suitable conduit between the shareholders and the executive. He will assist the Chief Executive in the liaison with the regulatory authorities. The Chairman will provide support to the Company Secretary, and he will be responsible for ensuring good governance.

### *Chief Executive*

The Chief Executive will ensure the effective and efficient start-up and running of the company. The Chief Executive will carry overall responsibility for the day to day running of the business. He will establish an efficient communications/reporting system between himself and the six Executive Directors, and the Company Secretariat. Communication with the staff will be a regular event for the Chief Executive. He will be responsible for formulating policy, for liaison with the regulatory authorities and have overall responsibility for compliance. He will work with the Chairman on the relationship with banks and/or financial institutions. The Chief Executive will be ultimately responsible for strategy and development.

The Chief Executive will agree an annual budget for approval by the Board.

### *Director of Finance*

The Director of Finance (FD) will report to the Chief Executive. He will be responsible for the financial operation of the company. He will work with the Chairman and the Chief Executive on the relationship with shareholders, banks and financial institutions. The FD will liaise with financial advisors, will be responsible for the arrangement of management accounts, quarterly, interim and preliminary company results. He will liaise with regulatory authorities and he will cover relevant compliance issues. He will work with the company's appointed auditors. The FD's Directorate responsibilities will include Human Resources and Information Technology.

### *Director of Programming*

The Director of Programming (DoP) will report to the Chief Executive. He will be responsible for the total programming output; ensuring the company's policy on quality and taste is adhered to, and the presentation and style of each channel. He will select the bought in channels and liaise with the suppliers. He will select PPV films and events and he will be ultimately responsible for the content of the DTN originated channels. The DoP will dictate policy for planning, presentation and promotion of each channel and any generic variations. He will carry directorate responsibility for compliance issues and he will liaise with the regulatory authorities.

***Director of Resources and Technology***

The Director of Resources and Technology (DoRT) will report to the Chief Executive. He will be responsible for the design and specification of the Broadcast Operations Centre. He will be responsible for the day to day operations and quality standards of the BOC, local studio facilities, technical and quality standards from remote facilities and distribution and transmission, for maintenance and development and relationships with outside technology suppliers. The DoRT will be responsible for directorate compliance and he will liaise with the regulatory authorities.

***Director of Marketing and Subscriber Management***

The Director of Marketing and Subscriber Management (DoMSM) will report to the Chief Executive. The responsibilities of this Directorate spread across the whole of our marketing, from attracting and securing subscribers for all DTN's services, to obtaining sponsorship and advertising revenues. This includes the SMS, customer services, subscriber marketing, including the handling of receivers, retailer liaison, manufacturer liaison, press and PR and telephony sales. Initially, DTN intends to outsource advertising sales for the programming channels and data services, but the DoMSM will have five managers who will each have an area of responsibility to ensure our requirements are well serviced by the engaged organisation. These managers will also be involved in securing sponsorship revenues. The DoMSM will have Directorate responsibility for compliance and he will liaise with the regulatory authorities.

***Director of Strategic Planning and Data Services***

The Director of Strategic Planning and Data Services (DoSPDS) will report to the Chief Executive. The strategic planning element of this Directorate will work closely with the Chief Executive to establish a three year rolling strategic plan. There will be a constant review of strategy employed, to assess how it can be developed to maintain or to achieve set objectives. Forward planning will arrive at objectives for the coming year, in order to set budgets and targets, and it will review the three year rolling plan.

The advent of digital technology allows an opportunity to develop data services in a way not possible on analogue television - interactivity now becomes a reality. This Directorate is structured to ensure that the opportunities so provided are fully exploited. National services to support programme channels where appropriate, and to supply stand alone information and transaction services will be introduced. Data Services will also supply bandwidth for subtitles. DTN will roll data services out on a local basis, establishing services in three locations per year. The DoSPDS will have directorate responsibility for compliance and liaison with the regulatory authorities.

***Director of Business Affairs***

The Director of Business Affairs (DoBA) will report to the Chief Executive. The principal activity of this Directorate is to support the Director of Programming by contracting all elements of the programme channels. The DoBA will manage the sports rights for The British Sports Channel, and all the dealings connected with PPV events. He will also be responsible for selling to cable any programming or data services for which we have the distribution rights. He will be responsible for Directorate compliance and for liaising with the regulatory authorities.

**Experience of Directors**

The experience of the Directors who have been named above is outlined below. Details of those whose names are withheld are enclosed in the Confidential Annex.

[redacted]

[redacted]

## Other Key Staff

This part provides details of the names and roles for each of the key posts below Director level in DTN. Their experience is included in the Confidential Annex.

### Information Technology

Significant importance is attached to the establishment of Information Technology systems which will be able to cope with the demands of the hi-tech business we will be operating. Priority will be given to the recruitment of the Controller of IT. In order not to lose any headway, DTN will be able to call upon extensive support from NTL who have considerable experience of establishing systems to cope with complex requirements. CableTel's experience of establishing an SMS will provide additional support.

### Engineering

The Controller of Engineering in the Resources & Technology Department, which is responsible for the installation of equipment at the BOC and for supplying all the technological aspects of the operation, has been selected and he would be immediately available to DTN. Due to the very short lead time between the award of licences and the "on air" date, the installation process would need to start without delay.

- Controller of Engineering — See Confidential Annex

Senior engineering personnel have also been identified, and NTL would be prepared to second experienced managers and technical support staff to assist with the heavy demands of the installation period.

### DTN's Own Channels

The originated Channels, those created by DTN or created specifically for DTN to be supplied under licence, will have a management structure designed to support the aims and objectives set by the Director of Programming. These comprise;

- The Money Channel
  - Chairman — See Confidential Annex
- The Knowledge Network
  - Chairman — See Confidential Annex
  - Editor in Chief — See Confidential Annex
- British Sports Channel
  - Chairman — See Confidential Annex
  - Chief Executive Officer — [redacted]

- MetroTV
  - Chairman — See Confidential Annex
  - Editor in Chief — See Confidential Annex

The experience of [redacted] is shown above.

Each of those directly involved with the management of these originated channels are extremely experienced broadcasters.

Those independent suppliers to these channels which have been already identified are shown in the confidential information section. The production staffs required would be recruited for start dates dictated by the complexity of the individual channel and its specific delivery schedule.

### Human Resources

The Controller of Human Resources (HR) would be appointed immediately, with the HR department then being supported by CableTel, and outside agencies to cope with the high volume of recruitment required at the outset. More detail is given in our response to Section B7. The HR Controller will be responsible for the company-wide implementation of our stated equal opportunities policy.

## Promotion of Equal Opportunities

DTN acknowledges its obligations under equal opportunities legislation and endorses the related codes of practice. DTN would aim to eliminate all forms of unlawful discrimination (including harassment) on grounds of sex and/or race and against disabled persons.

To assist in achieving this aim, DTN would implement a comprehensive policy to promote equality of opportunity between men and women and between people of different racial groups, as well as the fair treatment of disabled people.

DTN's policy would:

- apply to all employment related decisions and arrangements (including, for disabled people, appropriate adjustments to company premises and the provision of equipment and other facilities to assist them in their work) relating to its approach to recruitment, promotion, training and career development and to terms and conditions of employment. DTN's principal purpose would be to recruit and promote those who are best and most suitably qualified and to reward them appropriately. Details of ethnic origins would be maintained together with records, where practicable, showing the basis on which applicants were recruited and promoted and why other applicants were unsuccessful;

- set out clearly channels of communication to be followed by anyone wishing to pursue an equal opportunities complaint. All complaints will be treated confidentially and will not be taken further without the complainant's consent; and
- provide that any breach of its provisions would constitute a serious disciplinary matter resulting in appropriate disciplinary action (which may include dismissal) against those responsible.

DTN will aim to ensure that all equal opportunities complaints are investigated promptly and appropriate action taken with the minimum delay.

As part of the implementation of its policy, DTN will ensure that all employees are briefed on their responsibilities in relation to equal opportunities requirements including, as appropriate, through in-house or external programmes, schemes and arrangements.

The effectiveness of DTN's equal opportunities policy will be monitored by selected members of management. A senior member of management will have specific responsibility for overseeing the implementation of the policy in practice.

The programming policy in this regard would not only apply to the supply of particular interest programming to racial and other special interest groups, but also it would ensure that the company's equal opportunities code is also practised in the production of programming, where ever we can influence such matters.

DTN would ensure that its compliance with equal opportunities requirements are made publicly available on an annual basis, either in a specifically drawn up statement or in its annual report, as and when it is required to publicly issue such reports. It would also be prepared to provide the ITC from time to time with separate information on its equal opportunities policy and practices in terms of employment programme content.

## Training

Training will be a core aspect of DTN's overall strategy - the new digital terrestrial environment will not only place new technical demands on the DTN team but also the vast range of new programming services with linked interactive data.

For technical aspects of training, DTN would not establish its own in-house training department, but instead use the widely acknowledged excellence of the NTL Training Group (NTLTG) to supply suitable training programmes for the majority of staff employed at the Broadcast Operations Centre. Where appropriate, external courses would be selected for the training and development of BOC studio based production personnel. The training profile for the BOC staff and other technical personnel is described in Section A11.

All non-engineering and support staff will receive a general training programme to familiarise them with IT used and corporate systems. The type and length of the course are shown below:

- Computer Technology (3 day)
- MS Office (2 day)
- MS Word (1 day)
- Excel (1 day)
- MS Access (2 day)
- MS Project (selected) (2 day)
- Corporate systems (1 day)

Training for programme production personnel based at the BOC and at local services is covered in Sections A4 and A5. For local channels DTN will pursue training in collaboration with local universities - this is described in Section A5.

## Compliance

DTN recognises the importance of maintaining strict compliance procedures. Procedures will require particular focus on the additional data services we propose. Each department will be responsible, at its Director or Controller level, for the day to day compliance with ITC and legislative requirements. A senior member of the Company Secretariat will be responsible for establishing that these senior managers are adequately versed with the requirements of the Licences, the 1990 Act, the 1996 Act and the Codes & Guidelines in order that they will be able to ensure the necessary compliance.

The Company Secretariat will arrange procedures to immediately implement such general and specific directions which may from time to time be given to DTN by the ITC. Regular review meetings will be held, at which time not only would established matters be addressed but also reports on the implementation of recently introduced requirements would be considered.

With the nomination of the departmental Director or Controller as the person responsible for day to day compliance, we consider that sufficient seniority to ensure implementation of existing, or new, requirements is established. With the handling of all compliance matters resting in the Company Secretariat, which has direct reporting lines to the Chief Executive and/or direct access to the Chairman, we are satisfied that suitable arrangements are in place so that, where necessary, any issue relating to compliance may be brought to the attention of senior management for consideration.

## Differences In DTN's Proposals Under Section A16 For Less Than Three Multiplex Licences

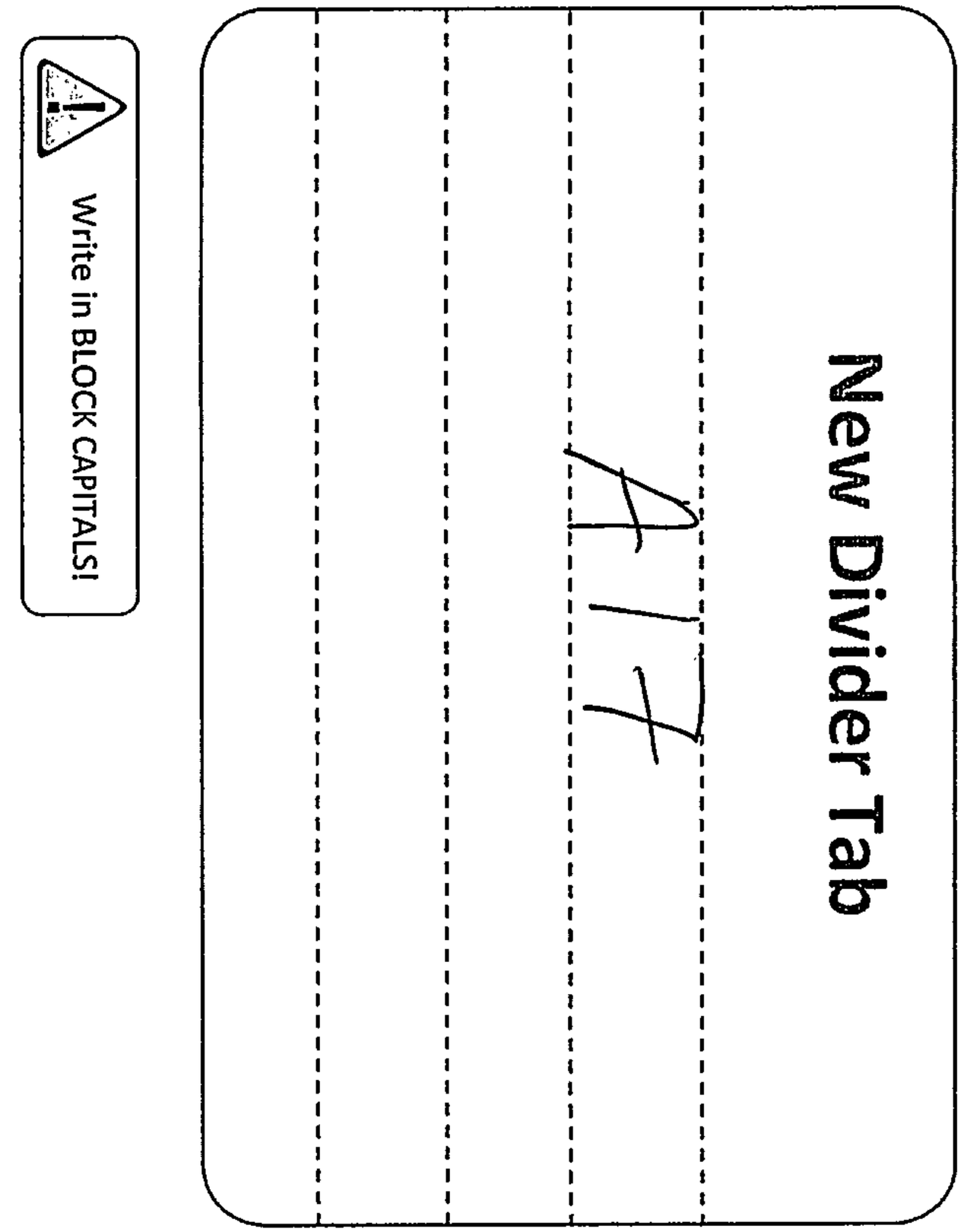
In the event that DTN was awarded less than three multiplex licences our proposals would differ from those set out above. These differences are set out in Exhibit A16.2.

**Exhibit A16.2: Variations to Section A16 for Different Multiplex Combinations**

| | B | C | D | BC | CD | BD | BCD |
|---|---|---|---|---|---|---|---|
| Chairman | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| CEO | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Company Secretary | ✗[1] | ✗[1] | ✗[1] | ✗[7] | ✗[7] | ✗[7] | ✔ |
| FD | ✗[2] | ✗[2] | ✗[2] | ✔ | ✔ | ✔ | ✔ |
| DoP | ✗[3] | ✗[3] | ✗[3] | ✔[8] | ✔[8] | ✔[8] | ✔ |
| DoRT | ✗[4] | ✗[4] | ✗[4] | ✔[9] | ✔[9] | ✔[9] | ✔ |
| DoMSM | ✗[5] | ✗[5] | ✗[5] | ✔[10] | ✔[10] | ✔[10] | ✔ |
| DoSPDS | ✔[12] | ✔[12] | ✔[12] | ✔[11] | ✔[11] | ✔[11] | ✔ |
| DoBA | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✔ |
| Controller Eng. | ✗ | ✗ | ✗ | ✔ | ✔ | ✔ | ✔ |
| Controller IT | ✗ | ✗ | ✗ | ✔ | ✔ | ✔ | ✔ |
| Controller Finance | ✔[6] | ✔[6] | ✔[6] | ✗ | ✗ | ✗ | ✔ |
| Controller PPV | ✗ | ✗ | ✗ | ✔ | ✔ | ✔ | ✔ |
| Controller Marketing | ✗ | ✗ | ✗ | ✔ | ✔ | ✔ | ✔ |
| Controller P,P&P | ✗ | ✗ | ✗ | ✔ | ✔ | ✔ | ✔ |
| **DTN's Own Channels Staff** | | | | | | | |
| Sports | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✔ |
| Money | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✔ |
| Metro | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✔ |
| Knowledge | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✔ |

1. *Company Secretary and Compliance roles will be absorbed by Controller Finance*
2. *Finance Director role will be absorbed by Controller Finance*
3. *Consultant DoP*
4. *Total engineering outsourced to NTL and others*
5. *Marketing outsourced to CableTel*
6. *Controller Finance will work to CableTel Group FD*
7. *Company Secretary and Compliance will be absorbed by FD - requirement for less experienced person*
8. *To head a reduced department - consultant as in 3*
9. *Engineering requirements outsourced as in 4, but some staff to co-ordinate larger output*
10. *Marketing effort maintained - lead taken to create SMS service and make it available to others*
11. *Limited development of Data Services - requirement for a less experienced person*
12. *Consultant DoSPDS*

*In order to comply with engineering and receiver requirements, DTN would make all efforts to arrive at satisfactory agreements with other licensees across the DTT platform to co-operate and share costs for BOC, SMS (if applicable) and receiver subsidy.*




New Divider

# A17 Directors

*(i) Where the applicant is a body corporate, he should give for each of the following, the full names, addresses, nationality, country of residence, and other directorships, offices or employment's of the individuals concerned.*

*(a) the directors of the applicant body;*

*(b) if the applicant body is yet to be incorporated or formed, the proposed directors;*

*(c) the directors of any body by which the applicant body is controlled (as defined in Schedule 2 of the 1990 Act);*

*(d) the directors of any body that is a participant (as defined in Schedule 2 of the 1990 Act) with an interest of more than 20 per cent in the applicant*

*(ii) Where the applicant is not, or is not proposed to be, a body corporate, similar information should be provided about those responsible for management and policy-making.*

## The proposed directors of DTN are as follows:

*Name* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

[redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

[redacted]

If DTN is granted all three multiplex licences, a further director will be appointed as finance director. Details of this individual are contained in the Confidential Annex. If one or two multiplex licences are granted, a financial controller will be appointed.

CableTel Investments Limited ("CableTel Investments"), which is a wholly-owned subsidiary of International CableTel Incorporated ("International CableTel"), or another subsidiary of International CableTel, will control DTN for the purposes of Schedule 2 of the Broadcasting Act 1990.

## The directors of CableTel Investments are as follows:

*Name:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

## The directors of International CableTel are as follows:

*Name:* [redacted]

*Name:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

[redacted]

[redacted]

*Name:* [redacted]

*Address:* [redacted]

*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

*Name:* [redacted]

*Address:* [redacted]

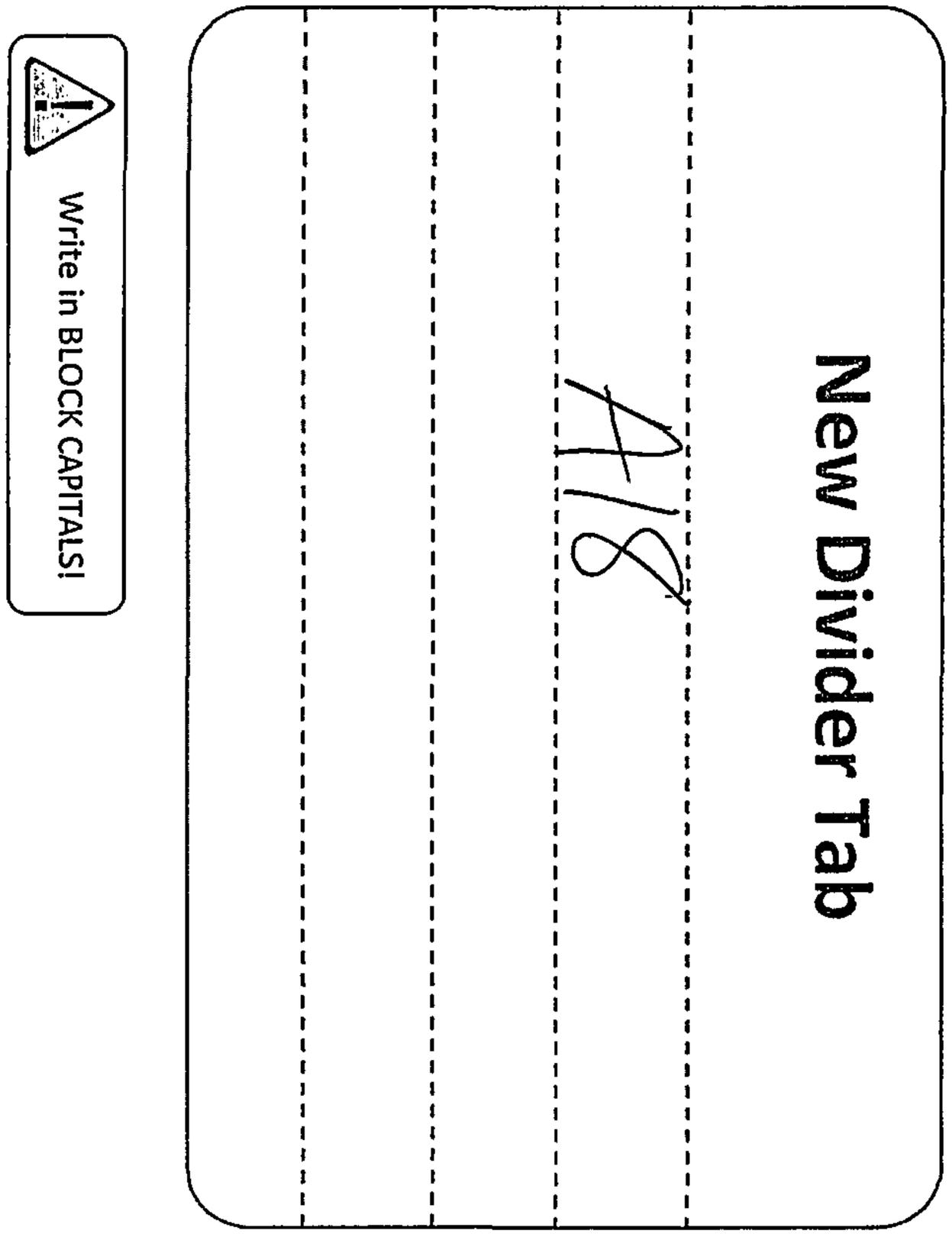
*Nationality:* [redacted]

*Country of residence:* [redacted]

*Other directorships, offices and employment:* [redacted]

## Differences In DTN's Proposals Under Section A17 For Less Than Three Multiplex Licences

There would be no changes to the directors of DTN if we were awarded less than three multiplexes except that the finance director referred to in the Confidential Annex would not be appointed.



# A18 Shareholders

*Where the applicant is a body corporate, he should give the names and addresses of the following (together with the number and class of shares held, or to be held):*

*(a) participants with an interest of more than 5% in the applicant;*

*(b) persons who it is intended will, following the award of a licence, be participants with an interest of more than 5% in the applicant;*

*(c) participants with an interest of more than 5% in any body which controls the applicant;*

*(d) participants with an interest of more than 5% in any body which has an interest of 20% or more in the applicant.*

*Notes:*

*(1) Where interest are held in the name of trustees or nominees, this should be stated and the above details should be given in relation to the beneficial owner.*

*(2) Five copies of the body's Memorandum and Articles of Association should be provided, together with a copy of any resolution amending or updating them.*

## Shareholders

DTN will be controlled by CableTel Investments or another wholly-owned subsidiary of International CableTel. The registered office of CableTel Investments is CableTel House, 1 Lakeside Road, Farnborough, Hampshire GU14 6XP. It is intended that there will be no other participants in DTN with an interest of more than 5 per cent. DTN currently has an authorised share capital of 1,000 ordinary shares of £1 each and an issued share capital of 2 ordinary shares of £1 each, both of which are currently owned by CableTel Investments. If one or more multiplex licences are to be granted to DTN, the authorised and issued share capital of DTN will be increased to reflect the funding commitment described in Section B14.

CableTel Investments is an indirect, wholly-owned subsidiary of International CableTel. As at 24 January 1997 (the latest practicable date before the printing of this Application), the directors of International CableTel were aware of the following persons having an interest of more than 5 per cent of the common stock of International CableTel:-

[redacted]

The Capital Group Companies, Inc. 5.1%
333 South Hope Street
Los Angeles, CA 90071

Neuberger & Berman L.P. 12.44%
605 Third Avenue
New York, NY 10158-3698

General Electric Investment Corporation 6.8%
3003 Summer Street
Stamford
Connecticut 06904

[redacted]

Five copies of the existing Memorandum and Articles of Association of DTN are enclosed in the Confidential Annex.

## Differences In DTN's Proposals Under Section A18 For Less Than Three Multiplex Licences

There would be no changes to this section if DTN were awarded less than three multiplexes.

preview

New Divider

## New Divider Tab

A19

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# A19 Disqualified Persons etc.

*(i) In relation to the details given in answer to A18(a) - (d), applicants should identify any body or individual who is:*

*(a) a local authority;*

*(b) a body whose objects are wholly or mainly of a political nature, or which is affiliated to such a body;*

*(c) a body whose objects are wholly or mainly of a religious nature;*

*(d) an individual who is an officer of a body falling within (b) or (c);*

*(e) a body corporate which is an associate (as defined in paragraphs 1(1) and 1(1)(A) of Part I of Schedule 2 to the 1990 Act) of a body falling within (b) or (c);*

*(f) an advertising agency or an associate of an advertising agency.*

*(ii) The applicant should give details of any other participant in the applicant body whose interest is or could be deemed to be incompatible with the requirements imposed by or under Schedule 2 to the 1990 Act.*

## Disqualified Persons

None of the participants fall into any of the categories listed in Section A19.

## Differences In DTN's Proposals Under Section A19 For Less Than Three Multiplex Licences

None of the participants would fall into any of the categories listed in Section A19 if DTN were awarded less than three multiplexes.

preview

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**New Divider Tab**

APPENDIX

New Divider

# Appendix A - Glossary

| | |
|---|---|
| *1+1 LNB subsystem* | Fully redundant LNB system, allowing one receive dish to feed two receivers in case of failure |
| *16QAM* | A modulation system used in digital terrestrial television (for DTN's proposed Multiplex D) |
| *Adjustable Group Delay* | Equipment to equalise delay through a transmitter |
| *AES/EBU standard* | Technical standard for digital audio |
| *Amplitude Equalisation* | Adjustment of a signal's amplitude response |
| *Application Programme Interface (API)* | Receiver software which allows software applications to be written, which are independent of the specific receiver type |
| *ATM* | Asynchronous Transfer Mode |
| *Automatic Call Distribution (ACD)* | Routing of an incoming telephone call to first available extension |
| *Authorisation ControlCentre (ACC)* | Computer which codes entitlement information into Entitlement Management Messages |
| *Automation File Server/Event Synchronisation System AFS/ESS* | Central database of programme information required by CA system. Incorporates system to synchronise changes with real time cues |
| *Betacam SP* | Analogue component video recording format |
| *Betacam SX* | Digital, MPEG video recording format |
| *Bit Rate allocation* | Number of bits per second allocated to any programme service |
| *bps* | Bits per second |
| *Broadcast Operations Centre (BOC)* | DTN's playout and studio centre |
| *CA Programme Information Management Systems (CAPIMS)* | Computer which arranges programme information for coding by Broadcast Control Computer (BCC) into Entitlement Management Messages |
| *Caller Line Identification (CLI)* | System for identifying a telephone caller's number |

| | |
|---|---|
| *CCD camera* | Television camera using solid state Charge Coupled Devices (CCDs), as opposed to traditional camera tubes |
| *CCIR (601 or 656)* | Technical standards for digital video |
| *Chroma keying* | The process by which a foreground object (e.g. presenter) can be superimposed on a background |
| *Coded Orthogonal Frequency Division Multiplex (COFDM)* | Modulated method used by digital terrestrial television |
| *Concatenation test* | Video compression equipment test series |
| *Conditional Access (CA)* | Method for ensuring only viewers entitled to receive a service can do so |
| *Control Words (CW)* | The random number used to scramble a service to render it undecodeable by those not entitled to receive it |
| *CREATEC* | An arm of the National Film and Television School which produces open learning modules on new technology (Creative Media Arts Technology Centre) |
| *DTG D-Book* | Digital Television Groups document laying down recommendations to ensure interoperability between multiplexes |
| *DAT* | Digital Audio Tape |
| *Data Carousel* | Mechanism for repeatedly transmitting data, for a receiver to select when required |
| *Data Marshalling System* | Computer system which organises and formats data for transmission |
| *Data rate (18 Mbps)* | See bit rate allocation |
| *DAVIC* | Digital Audio Visual Council. American standalone group |
| *DigiCart* | Digital Audio Equivalent of Traditional Cart machine used to play effects/strings |
| *Digital fibre network* | Fibre optic cable network, transmitting digital signals |
| *DMV* | Digi Media Vision. Technology company specialising in digital television equipment |

| | |
|---|---|
| *Downstream keyer* | Equipment used to insert captions into a picture |
| *DTG* | Digital Terrestrial Group |
| *Multiplexer* | Equipment used to combine services into a single data stream, or multiplex |
| *DVB-T* | Digital Video Broadcasting-Terrestrial. Digital terrestrial television transmission standards |
| *DVCPRO* | Digital Video Tape Format |
| *DVD player* | Digital Video Disc Player |
| *EDI link* | Electronic Data Interchange link |
| *EIR* | Equivalent Isotropic Radiator. Theoretical aerial which transmits equally in all directions |
| *EIRP* | Isotropic Radiated Power. Power that would need to be fed into an EIR to achieve the same storage |
| *Electronic Programme Guide (EPG)* | Method of presenting a viewer with programme information over air |
| *Entitlement Control Messages (ECMs)* | Method of transmitting viewer's entitlements to a receiver |
| *Entitlement Management Messages (EMM)* | Method of transmitting control word to receivers |
| *Ethernet link* | Local area network standard |
| *ETR 211* | Guidelines on implementation and usage of DVB service information |
| *ETS 300 468* | Specifications for service information in DVB systems |
| *European Digital Video Broadcasting (DVB)* | Group set up by European Broadcasting Union to set standards for digital television |
| *Eutelsat* | European television satellite company |
| *Event Information Table (EIT)* | Standard method of organising programme information, within service information |
| *Firewall* | Computer which detects viruses/illegal access and prevents access to sensitive areas |

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|---|---|
| *Flash memory* | Type of memory used in receiver |
| *Forward Error Correction (FEC)* | Method of adding extra information to data before transmission to enable errors to be corrected |
| *G703 8Mbps circuit* | European Standard for a telecommunications circuit |
| *gate instability* | Mechanical stability in a film to video tape transition process |
| *geo-stationary satellite* | Artificial satellite positioned such that it appears not to move relative to the earth |
| *GPS Satellite System* | Global positioning system |
| *Group Delay Equaliser* | See adjustable group delay |
| *Hard disk server* | Computer containing storage for networked computers |
| *home page* | Personal page on World Wide Web |
| *HPA* | High power amplifier |
| *HTML* | Hypertext mark-up language. Standard language used by computers to link from one WWW page to another |
| *idTV* | Integrated digital television |
| *Impulse Pay Per View (IPPV)* | System to allow purchase of a right to view a programme which does not require pre-booking |
| *Integrated receiver chip set* | Electronic components designed to provide all functions of a receiver |
| *Intelsat* | International television satellite company |
| *Internet* | International computer network |
| *Interstitial promotion* | Promotional material played out between programmes |
| *Intranet* | Computer network contained within one area, but simulating much of the functionality of the Internet |
| *IPR Information* | Intellectual property right information, i.e. who owns an idea |
| *IRD* | Integrated receiver/decoder |

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|---|---|
| *ITU-R 5 point grading scale* | Internationally agreed method of evaluating picture quality |
| *JPEG* | A standard for digital video compression |
| *Klystron Power Amplifier* | Transmitter based on Klystron valve |
| *Ku Band* | Microwave frequency band |
| *L-Band signal* | Microwave frequency band |
| *LAN* | Local area network |
| *MCC* | Multiplex control computer |
| *Metadata* | Re-formatted third party data |
| *Mini DV* | Digital videotape format |
| *Minitel* | French data service intended for domestic use (videotext system) |
| *Modem* | Modulator-demodulator. Used to send computer data over a telephone |
| *Modulator* | Converts a baseband signal into a form suitable for broadcasting |
| *MPEG 2* | International standard for compression of video into low speed digital data |
| *MPEG Compression Hub* | Ethernet connection point, used by compression equipment |
| *MPEG Transport Stream* | Output signal from multiplexer |
| *MPEG-TS* | See MPEG Transport Stream |
| *Multi-channel houses* | Home able to receive more than just the analogue terrestrial channels |
| *Multiplex* | Process for converting parallel data signals into a serial data stream |
| *NCSC* | National Customer Service Centre (NTL) |
| *Near Video on Demand (NVOD)* | Method of playing out a film several times with the start time staggered |

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|---|---|
| *Network management system (NMS)* | Transmitter control system |
| *NIT* | Network information table. Standard method of organising transmission information, within service information |
| *NTL* | National Telecommunications Ltd. |
| *NTL BRT fibre network* | Nationwide wideband fibre optic cable network based on BRT infrastructure |
| *NTSC* | National television sub-committee for American analogue television standard |
| *NVRAM* | Non volatile random access memory. Computer memory which does not lose its information when turned off |
| *OFDM* | See COFDM |
| *OFDM demodulation chips* | Electronic components used to de-modulate OFDM signals |
| *PACT* | Independent Television/Film Producers' Association |
| *Paint Station* | Electronic graphics system |
| *PAL* | Phase Alternating Line, British analogue television standard |
| *Pay-TV* | Television that is paid for on a subscription basis |
| *Panasonic SmartCart* | Video cassette playout system |
| *Payload* | Part of a data signal containing data, as opposed to synchronising information etc. |
| *PID allocation* | Packet indentifier. Elements of a data signal which informs a receiver of how to handle the data packets |
| *Playout centre* | Area which originates programme material to be transmitted |
| *Predictive frame processing (P Frames)* | Picture element which is predicted from previous information rather than transmitted complete |
| *Programmable Wipe* | Video effect |

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| *Programme Specific Information (PSI)* | Data transmitted which enables a receiver to decode the programme services within a transport stream |
| *PSC Crew* | Portable single camera crew. Film crew which uses electronic (video) cameras |
| *PSTN line* | Public Switched Telephone Network line. Telephone line |
| *QPSK* | Quadrature phase shift keying. Modulating method used in satellite service |
| *RBL* | Re-broadcast link. A method of getting a signal to a transmitter which re-broadcasts another transmitter's signal |
| *Receive Only Terminal* | Satellite receiver system at the transmitter |
| *Receiver* | An IRD (either a set top box or idTV) |
| *Redundant Array of Independent Discs (RAID)* | Method of spreading information across several disks in a computer, to provide protection against failure |
| *Reed Solomon coding* | See Forward Error Correction |
| *Regional Contribution Network* | Method of getting regional elements of a service to the BOC |
| *Relay site* | Transmitter which re-broadcasts another transmitter's signal |
| *Return path* | Connection from a viewer's STB to the BOC, for interactive services |
| *RF Cabin* | Building at transmitter site |
| *RF Subsystem* | Part of transmitter which handles radio frequency element of service |
| *RS422 baseband signal* | Data connection standard |
| *Satellite Distribution System* | Method of distributing signal by satellite |
| *SDI Interfacing* | Serial digital interface. Connection standard for digital video |
| *Service Information (SI)* | Standardised method of converting information to a receiver |

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|---|---|
| *Set top box* | A devise which incorporates an IRD but can incorporate other devices such as a modem |
| *SI Insertion Point (SIIP)* | Point at which SI is finally inserted into a transport stream |
| *Simulcrypt* | Method of allowing two CA systems to operate in a single transport stream |
| *Statistical Multiplexing* | Method of using the statistically variable nature of video, to improve coding efficiency of a digital service |
| *Subscriber Management System (SMS)* | Contact point for subscribers. Processes viewer's requests for services and handles billing |
| *Subscription Management Call Centre* | Location of SMS |
| *TCP/IP* | Computer network protocol used on the Internet |
| *Telecine* | Equipment which converts film to video |
| *Telemetry* | Data relating to the condition of a transmitter which is communicated to a monitoring point |
| *Teleprompter* | Equipment which enables a presenter to reach a script, whilst looking into a camera lens |
| *The Carousel* | DTN's broadcast data service |
| *The Grid* | DTN's online service |
| *Transcoder* | Equipment which converts signals from the satellite distribution system into one suitable for terrestrial transmission |
| *Transmission Automation System* | Computer system which automates the transmission functions of the playout centre |
| *Transmitter Network* | Collection of transmitters |
| *Transponder* | Electronic element of a satellite |
| *Transport Stream (TS)* | See MPEG transport stream |
| *Triax output* | Output of a camera, which is on a tri-axial cable |
| *TVRO* | Television receive only satellite system |

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|---|---|
| *UCAS* | Universities and Colleges Admissions Service |
| *UK Digital Terrestrial Group (DTG)* | Group of companies with an interest in promoting digital terrestrial TV |
| *Upconverter* | Equipment to convert from the low frequency output of a modulator, to the final transmitted frequency |
| *Uplink* | Signal transmitted from ground to a satellite |
| *UPS unit* | Uninteruptable power supply |
| *Video compression* | Method of reducing bit rate required to transmit video |
| *Vision mixer* | Equipment to mix video sources together as required |
| *16:9 and 4:3 formats* | Ratio of horizontal to vertical size of a TV picture |

DTN

Digital Television Network

# Bid for Multiplex C

## Summary

DTN

Digital Television Network

# Bid for Multiplex C

## Summary

*The following is a brief summary of certain matters relating to Digital Television Network Limited and its application for Multiplex Licence C. It has been prepared by the applicant and it is provided for information only. The summary does not form any part of the documentation required to be published pursuant to Section 7(8), or any other provision, of the Broadcasting Act 1996. The Independent Television Commission is not responsible for and can accept no liability in respect of, the accuracy or otherwise of its contents.*

*Section A of the application is available for consideration by the public at the ITC's headquarters and on DTN's own Web site at http://www.DTN.Net.uk on the next working day following the closing date for applications. It will also be available within five working days of the closing date at the ITC's regional offices, national offices and selected main libraries.*

*Note: the information presented in this summary refers to a scenario in which DTN is granted all three licences. Where any other combination of licences is concerned a clear reference to this is made in the text. A summary of particularly important differences between multiplex combinations is attached at page 12.*

## Introduction

Digital terrestrial television is the most exciting development in broadcasting since the introduction of colour. DTN is a new company set up specifically to develop this opportunity and is applying to the Independent Television Commission (ITC) for three licences (referred to as B, C and D) to operate the service. Our aim is to take British television into the 21st century, offering viewers over twenty channels of quality television and providing a revolutionary array of information and transaction services.

Our application document runs to more than 1,000 pages of text. At its core, however, is the simple conviction that digital terrestrial television is the future of British broadcasting:

- it will bring a far wider choice of channels to viewers. DTN's carefully selected channels (and the channels of other licensees) will dramatically expand the range of programming available to the public
- viewers will enjoy a radically improved viewing experience, with improved picture quality, CD quality sound and widescreen pictures for movies and sports
- traditional analogue teletext will be transported into the digital era when DTN's data services are launched. These will allow viewers to find a job, book a holiday or browse the Internet from the comfort of their home
- viewers will no longer need to trek to the video shop, as DTN will bring the latest movies into people's homes on a pay-per-view basis.

All this can be delivered without a satellite dish. Viewers will only need a set top box or a new digital television. Consumers can simply plug in the new equipment and start watching. And all this will cost less - our subscribers will pay, on average, half of what BSkyB subscribers pay today and will even be able to save money on their telephone bill through our special telephony service.

DTN's plans for delivering the full promise of digital terrestrial television are explained below.

## The Challenge of Digital Terrestrial Television

DTN is convinced that digital terrestrial television is a substantial commercial opportunity, as well as a boon to British viewers. Nevertheless, we are well aware that it faces real technological and marketing challenges, particularly during its launch period. A unique combination of insight and experience is required to succeed. The crucial ingredients of our approach are as follows:

- programmes of innovation and quality that will appeal to a broad section of the community and will inform, educate and entertain *(see below)*
- new and creative data services bringing the information society to the mass of the UK population *(see page 4)*
- the technical skills and assets to take a highly complex new technology to launch in a little over a year *(see page 6)*
- a relentless focus on the consumer *(see page 8)*

Our conviction is that phrases like the "Information Superhighway" and "convergence" are meaningless until the broad mass of consumers are using and enjoying the new media. DTN's team *(described on page 9)* has the vision, the commitment and the know-how to make digital terrestrial television happen.

## DTN's Programming

Digital terrestrial television will succeed if it provides something that people want. Its real test will be whether people will devote their time and money to watching and using it.

DTN's programming services combine the best traditions of British broadcasting with the novelty and innovation of the digital medium. Digital television is not just a chance to add quality to existing television services, it is an opportunity to use sounds, pictures and data in new and startling combinations. It will provide new creative opportunities to programme makers and a new kind of television experience to viewers. About three quarters of DTN's programming will be British-originated, and we will make a substantial investment in new production.

Behind our channel line-up is a rejection of the notion that an abundance of channels leads inevitably to a vulgarisation of the medium. We believe digital terrestrial television will permit a new type of television to emerge - television which can serve small audiences with specific interests with good quality output.

Our proposal for The British Sports Channel, for example, will enable new forms of sport on television in close collaboration with the many sports associations around the country. It will have several distinct audiences, all sharing a passionate commitment to seeing their favourite sport regularly on television, many for the first

time. The Knowledge Network will show educational programming, appealing to a very different audience. But it will also build discrete groups of committed viewers. Our third new channel, the Money Channel takes a different approach. We believe money is of universal interest, but is treated by most broadcasters in an unduly specialised and excluding way. We will open up the world of money in all its many forms to the entire population. All of these channels will innovate, exploiting the full interactive potential of digital terrestrial.

We will also launch Metro TV. This will begin as a local service in Greater Manchester, made by Mancunians for Mancunians. If it is successful, similar services will be offered in other cities. ITN will supply us with The Living History Channel, devoted to events from the immediate past from the makers of News At Ten. And Digital Box Office will give us a range of pay-per-view offerings from both the British cinema and the Hollywood studios.

In addition to these completely new services, we will be offering a range of exciting channels from established broadcasters. Our plans include a travel channel, a channel on wildlife, a music channel, a movie channel and a cartoon channel; and if we are successful in our application for all three multiplexes, the BBC have indicated that they are willing to offer us eight exciting new services.

Our likely programme line-up is given in Box 1.

**Box 1: DTN Programming**

*If we win three multiplex licences, we plan to offer the following:*

***Original channels created by DTN***
- The Money Channel - a new way of looking at money for a general audience
- The Knowledge Network - a new way of learning for young and old alike
- The British Sports Channel - live sport and sports news, 24 hours a day

***Specialist Channels***
- The ITN Living History Channel - the real stories behind recent events from one of Britain's best known broadcasters
- Animal Planet - wildlife programmes for the whole family
- Travel - where to go, what to see and how much to spend around the world
- The Box - Britain's most popular music channel, programmed by the audience itself

***Digital Box Office***
- Our pay-per-view service of movies, sport and events

***The Best of the World***
- TCM: Turner Classic Movies - classic movies from the Golden Age of Hollywood
- Cartoon Network - the best cartoons from the best kids channel with evening programmes for the grown ups
- MGM Gold - entertainment programming from the home of the Roaring Lion
- And coming later, The Movie Experience - an entire channel devoted to movies from Britain and abroad

***Metro TV***
- Our new local service starting in Greater Manchester and coming to your neighbourhood soon

*Note: If we win two multiplexes, we will offer the Specialist Channels, the Best of the World and the Digital Box Office (NB. we will include The British Sport Channel only if awarded Multiplexes B and C); if we win a single multiplex licence, we will offer the Specialist Channels and the Best of the World (NB we will include only TCM under "Best of the World," if allocated Multiplex D)*

## Data and Telephony Services

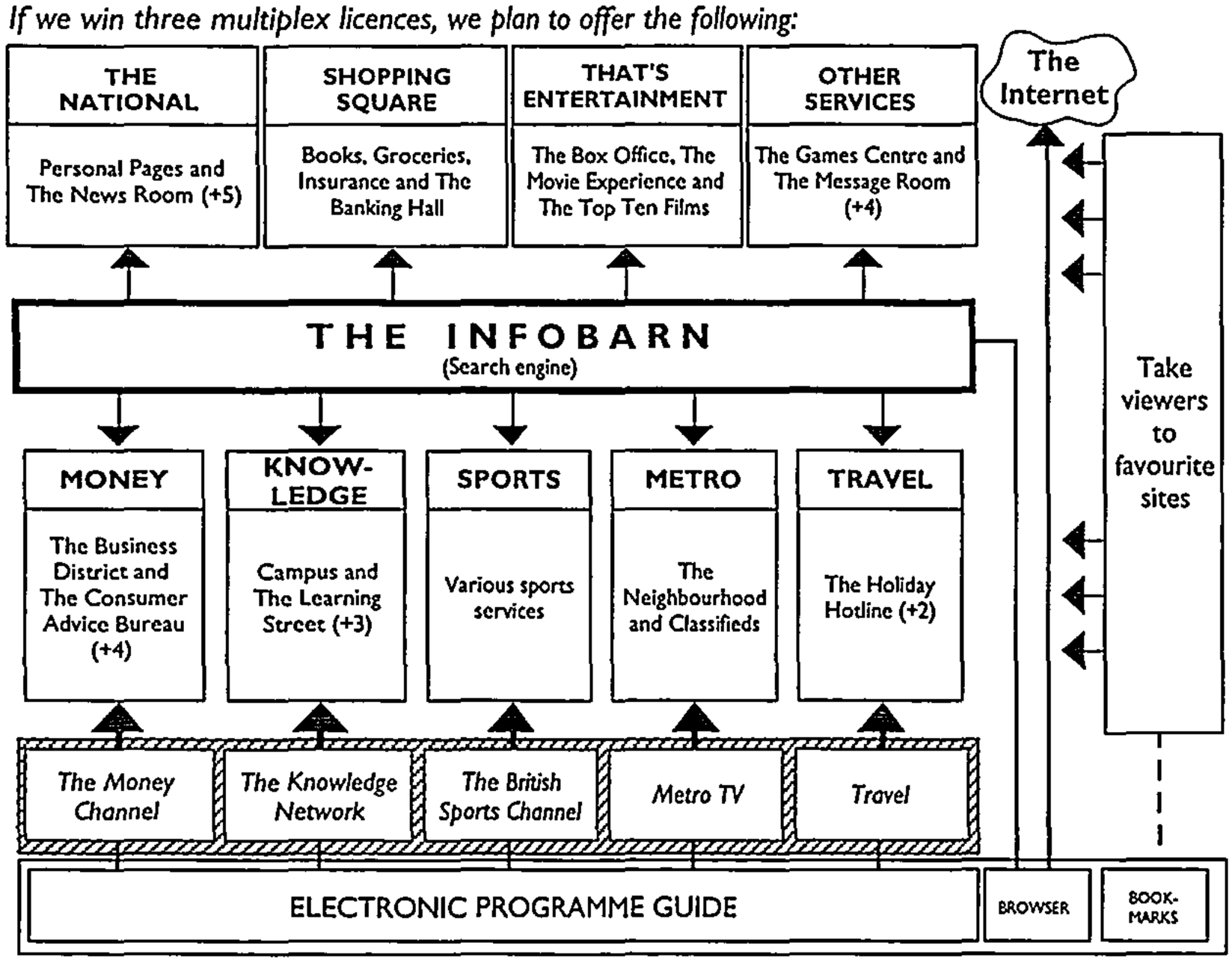
As people's ability to access and process information increases, a common concern is that we will become a society of information haves and have-nots. We believe that digital terrestrial television can help democratise the Information Society. The new generation of television equipment will gradually become as ubiquitous as traditional analogue televisions are today, bringing a powerful computer into every home. We have no doubt that this idea will appeal - our market research suggests that people's interest in digital television increases when they are told about the data services that will be available.

Our data services will be relevant, fast and easy to use. We will offer over 20 services linked to, and cross-promoted by, our channel brands, Money, Knowledge, Sports, Metro and Travel. In addition, there will be a range of other services, notably the Shopping Square, a home shopping service, and various national news services.

Our services are listed in more detail in Box 2.

**Box 2: DTN Data Services**

*If we win three multiplex licences, we plan to offer the following:*




*Note: Most of the services above offer both a 'superteletext' service and an online facility. If we are awarded Multiplexes B and C, we will still offer our online service and our 'superteletext' service, although the latter will be reduced in size to reflect the reduced capacity. If we are awarded other joint multiplexes (either B and D or C and D) or any single multiplex, we will not offer our online service and we will have to reconfigure our superteletext service accordingly*

Any consumer resistance to DTN's data services will be overcome by the way that they are presented. The services will make it easy for users to get the information they want, when they want it. Television programmes, continuity features and the EPG (the electronic programme guide - an on-screen version of the TV listings) will all draw the viewer's attention to a series of related and easily-accessible data services, many of which will be marketed using the brands of our conventional channels. A viewer could watch a programme about Tunisia on Travel (our travel channel), enquire about a holiday package advertised on the programme and, using the online link from our set top box, book the holiday and pay for it. This will involve sophisticated

technology, moving from a conventional television programme to a very fast version of teletext to an online service and, finally, to an exchange of financial and personal details, enabling the transaction to be completed. The key point is that the viewer will move easily and seamlessly between all of these services. Book a theatre ticket, find out a phone number, consult our encyclopaedia - go no further than your television set.

DTN has discussed its service proposals with a wide range of companies, associations and charities. We have obtained support for the service concept from over sixty organisations. DTN's parent company, International CableTel is an Internet service provider through its subsidiary Cable Online and it is also a partner in the branded online offering, Virgin.Net. Combined with the telecommunications expertise of both CableTel and NTL, DTN is the best equipped company in the UK to launch these services.

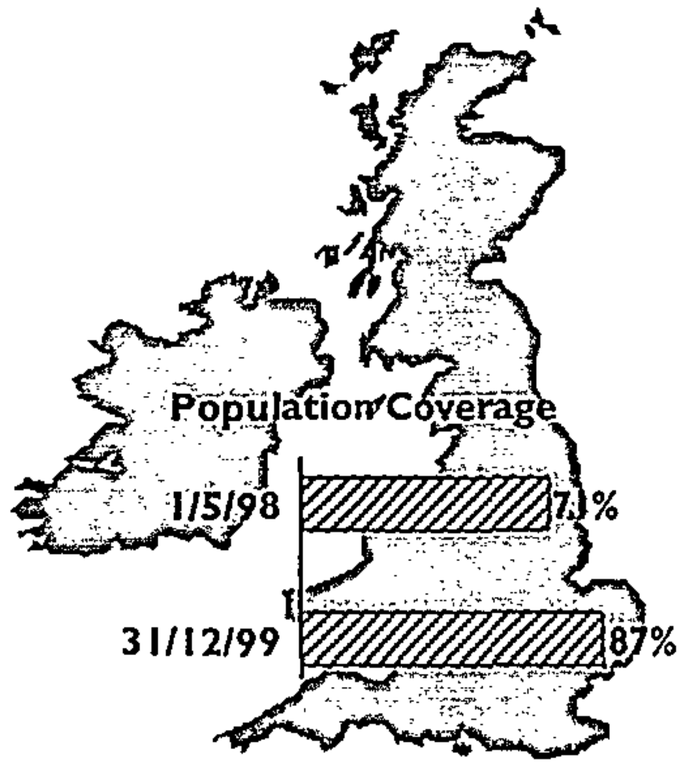
We also plan to provide telephony at a discount to normal rates for long distance and international calls. International CableTel has experience of the positive impact of telephony on the take-up of cable television services in Britain. Accordingly, we are convinced that a package of powerful and affordable programming, easy to use and exciting data services and telephony will be a compelling proposition to the British public.

## Technology Strategy

DTN's technology expertise is the foundation upon which its aspiration to bring digital television to the mass market in the UK is based. Technology will be absolutely critical to delivering easy to use, low cost and high quality services to the largest possible audience in the shortest timeframe. The key elements of digital terrestrial's technology strategy and the rationale behind them are as follows:

- *rapid roll out of the service*: our aim is to bring digital terrestrial television to the British public as quickly as possible. BSkyB is likely to launch its digital satellite service towards the end of 1997. We will launch our service within the first six months of 1998, as shown in the roll-out plan in Box 3.

**Box 3: Outline of Transmission and Roll-out Plan**




If we win three multiplex licences, the key features of our transmission and roll-out plans are as follows:

- start date: 1 May 1998
- coverage at start date: 40 transmitters, 71% of the population
- final coverage complete : end 1999
- coverage at end 1999: 81 transmitters, 87% of the population
- as new frequencies become available, we will extend coverage
- at all stages, our plans for coverage are well ahead of ITC targets

*Note: If we are only awarded a single licence or two licences, we will clearly need to consult with other licensees and agree a transmitter roll-out plan with them*

- *a strategy which makes set top boxes easily accessible*: one strategy for digital terrestrial might be to rely entirely on digital television sets with the necessary software capabilities integrated within them - idTVs, as they have become known. In our view, such a strategy would disenfranchise many members of the public. Set top boxes allow the large number of people who are not contemplating buying a television set in the near future to gain access to digital terrestrial from its launch. In addition, a strategy based around set top boxes will draw suppliers of programming to digital terrestrial - the last thing that they want is to supply channels which hardly anyone can watch. Consequently, in the early years, nearly 90% of DTN's subscribers are projected to be connected to DTN by a set top box.

- *a 'high spec' strategy for set top boxes*: the set top boxes must be future proof. It is important that subscribers do not view digital terrestrial as a technological cul de sac. We must be able to say to them that the set top box they buy or rent will be able to process a signal from satellite and cable, as well as terrestrial. This means extra ports and processing power must be incorporated within the box. Additionally, a 'high spec' box will be able to cope with our data services. DTN has developed a detailed specification for its set top box which meets these objectives.

- *a low cost set top box*: while the set top box needs to incorporate advanced features, it must not be expensive. We intend to combine advanced features and low cost by using standard components and by securing manufacturer support for what we are proposing. Subsidy of the set top box also plays a part, as described below.

## Focus on the Consumer

Three-quarters of households in the UK have yet to subscribe to pay-TV. In formulating our marketing strategy, DTN set out to understand why this is the case. Our market research indicates that people want value, choice and flexibility in multi-channel television. Our marketing strategy seeks to accommodate these findings.

In addition, we also recognise that, when we launch digital terrestrial, we will be selling a totally new technology - and consumers will react with appropriate caution. We know that we will have to build confidence in our service and earn the trust of the public.

To reflect all this, our marketing strategy has a number of different facets:

- *an array of programmes and services designed to build subscriber and viewer numbers*: we have chosen programmes and services which offer quality, novelty and innovation within the broadcasting traditions with which our viewers will be familiar
- *low prices*: we will subsidise our set top box substantially to give the consumer real value for money and will offer both rental and purchase options*. In addition, we will keep the cost of the services low, offering a small basic package and several small additional packages of channels that the customer can pick and mix from at will.
- *hardware design*: our set top box will be future proof, upgradeable to receive satellite and cable channels and any new digital terrestrial channels that come later. All our equipment will be easy to use and "plug and play"
- *effective distribution channels*: we have developed a detailed set of procedures for both rental* and sale of set top boxes and for the sale of idTVs. We have obtained extensive support from retailers for our approach. In addition, we may develop a proposal for a direct rental operation which we believe could play an important role in the early years of the service*
- *excellent customer support*: our subscriber management centre in Cardiff will be staffed by about 1,000 people by the year 2000, fully trained and available 24 hours a day to help consumers with their enquiries.
- *a comprehensive communications plan*: the communication budget we have committed to will make DTN the major advertiser in the sector in 1998 and should achieve a 90% awareness level of the service at the end of our first year. Consumers will know who we are, what we offer and where to go to subscribe to our services.

* *this only applies if we are awarded all three Multiplexes B, C and D or joint Multiplexes B and C - for further details, see page 12*

## DTN's Team

The final ingredient of DTN's strategy is its team. DTN is wholly owned by International CableTel which is the third largest cable operator in the UK and owns NTL, one of two major British transmission companies.

CableTel brings great strengths to DTN. As well as its online interests mentioned above, its cable and residential telephony penetration rates are 50% above the industry average. It has now launched a new package of services which is achieving penetration of twice the industry average. Over 95% of its customers are satisfied with its service.

NTL also brings critical skills to digital television. It has accumulated more expertise relevant to this business than any other company in the UK. In addition, NTL has a full national telecommunications network which will enable DTN to offer its unique range of data and interactive services. No other company in Britain can draw on the range of technical skills and assets that will be required to bring these exciting new services to the British public.

We have also assembled some of the best programme makers from Britain and abroad to create a raft of new channels. As mentioned above, we have in addition, obtained the support of over sixty companies who would like to offer data services.

We believe our team combines the key attributes to succeed - a rare combination of technical and commercial skill, entrepreneurialism, a history of well-judged innovation and a commitment to quality. Details of the team are shown at Box 4.

[redacted]

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The ITC's Invitation to Apply requires that, while applicants are permitted to apply for more than one licence, each licence must be applied for separately. Applicants are also prohibited from making an application for one licence wholly conditional upon securing

one or more licences. We are therefore bidding for three single licences, respectively Multiplexes B, C and D. However our aspiration is to win all three.

This is because we want the new business to succeed. Our view is that digital terrestrial television is not isolated from the rest of the pay television industry. On the contrary, it has to carve out a market for itself against a very powerful competitor. To create effective competition to digital satellite, digital terrestrial cannot afford to go through difficult and time consuming attempts to collaborate. By allocating the maximum number of commercial multiplexes to a single entity, the ITC can give digital terrestrial the best chance of establishing itself against its competition.

## Differences between Multiplex Combinations

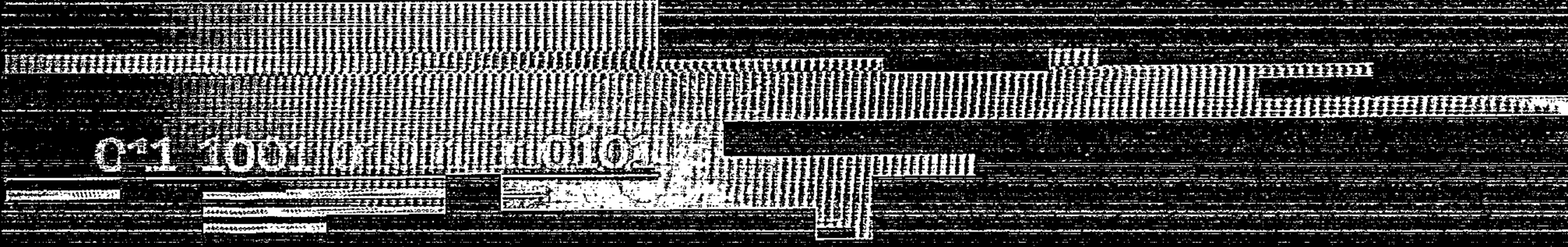
(i) Allocation of channels to multiplexes

| Channel | B | C | D | BC | BD | CD | BCD |
|---|---|---|---|---|---|---|---|
| The ITN Living History Channel | B | C | D | B | B | C | D |
| Animal Planet | B | C | D | B | B | C | B |
| Travel | B | C | D | B | B | C | B |
| The Box | B | C | D | B | B | C | D |
| TCM: Turner Classic Movies | B | C | D | B | B | C | D |
| Cartoon Network | B | C | | B | B | C | D |
| MGM Gold | B | C | | B | B | C | D |
| Data Services | B | C | D | B | B | C | B |
| CA/SMS/EPG | B | C | D | B | B | C | B |
| The British Sports Channel | | | | C | | | B |
| Digital Box Office | | | | C | D | D | C |
| Data Services | | | | C | D | D | C |
| CA/SMS/EPG | | | | C | D | D | C |
| The Money Channel | | | | | | | B |
| The Knowledge Network | | | | | | | B |
| Metro TV/Hindi Channel | | | | | | | C |
| Horizons | | | | | | | B |
| Style/Showcase | | | | | | | B |
| Arena/Learning | | | | | | | D |
| Data Services | | | | | | | D |
| CA/SMS/EPG | | | | | | | D |

(ii) Promoting or assisting the acquisition of equipment: if DTN is granted all three Multiplexes B, C and D or B and C (jointly), then we plan to subsidise set top boxes and offer them for rental; in any other eventuality, we are not planning to either subsidise or rent them

(iii) the effects of other differences between multiplex combinations are summarised in the notes to Boxes 1-4 (see above)

*DTN welcomes enquires about our application; if you would like more information, please contract* [redacted]



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# DTN

## Digital Television Network

# Bid for Multiplex C

## Section A

# Introduction to Section A

This Introduction is provided to explain to the reader the structure of this document.

DTN is applying for Multiplex Licences B, C and D. Our application for Multiplex Licence B has been written so as to set out our proposals not just for Multiplex B but also our proposals for Multiplex C and for Multiplex D. It provides all the requisite information for each of the multiplexes on its own as well as our supplementary proposals which would apply for any combination of the licences, should we be awarded more than one

Because Section A of our application for Multiplex Licence B is written in this way DTN's Section A documents for Multiplex Licences C and D take a different, far shorter form. They simply cross-refer to Section A of our application for Multiplex B rather than repeat the information contained therein. The only substantive element of these two documents that differs from the application for Multiplex B is Section A1, which states the licence applied for.

The impact of this approach is a significant reduction in the sheer volume of paper that the ITC has to examine, without in any way reducing the actual information we are providing. We believe that this will make the ITC's task of assessing our applications easier.

Our approach means that all the information DTN is required to present to the ITC under Section A of the Invitation to Apply, for our individual applications for Multiplex Licence C and for Multiplex Licence D, is contained in Section A of DTN's application for Multiplex Licence B.

Therefore, any reference to "this application", "this multiplex" or "this licence" in Section A of the application for Multiplex Licence B should also be taken to mean the application, multiplex or licence (as the case may be) for Multiplex Licence C or Multiplex Licence D as appropriate.

Equally any reference to the award of "only one multiplex" should be construed in the same way.

The following pages contain Section A1 of this specific multiplex application and a list of subsequent sections, with a statement instructing the reader to see the relevant section of DTN's application for Multiplex Licence B (Section A).

# A1 The Licence Applied For

*The applicant should state which multiplex licence he is applying for by means of this application. If the applicant is applying for more than one licence, and if this application contains supplementary proposals which would be implemented only if he were awarded more than one licence, then he should specify the other licences to which these supplementary proposals apply. If the applicant is applying for more than the number of licences he would be permitted to hold under any requirement imposed by or under Schedule 2 to the 1990 Act, he should state his preferences in relation to these licences (see paragraph 22).*

## The Licence Applied For

This is an application for Multiplex Licence C.

DTN is applying for the three individual licences: B, C and D. This application contains supplementary proposals for the ownership of all these licences together as well as supplementary proposals for the ownership of licences B and C, licences B and D, and licences C and D. This number is within the limits for multiplex ownership as set in the 1990 Broadcasting Act.

The Introduction to Section A explains the way this document has been written and should be read in conjunction with the Introduction to Section A in our application for Multiplex Licence B.

# Sections A2 to A19

## A2 Transmission Coverage and Roll-out

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A3 Promoting or Assisting the Acquisition of Equipment

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A4 Number and Characteristics of Services

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A5 Local or Regional Services

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A6 Programmes of High Quality

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A7 Additional Services

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A8 Licence A

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

This is not an application for Multiplex Licence A.

## A9 The Development of Digital Television Broadcasting

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A10 Transmission Standard

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A11 Technical Quality and Reliability

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A12 Changes to Existing Transmission and Reception Arrangements

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A13 Receiving Equipment

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A14 Supply of Programme Services

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A15 Capacity for Programme Services

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A16 Key Staff

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A17 Composition and Identity of the Applicant: Directors

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A18 Composition and Identity of the Applicant: Shareholders etc.

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A19 Composition and Identity of the Applicant: Disqualified Persons etc.

Our proposals for Multiplex Licence C under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

# DTN

## Digital Television Network

# Bid for Multiplex D

## Summary

DTN

Digital Television Network

# Bid for Multiplex D

## Summary

*The following is a brief summary of certain matters relating to Digital Television Network Limited and its application for Multiplex Licence D. It has been prepared by the applicant and it is provided for information only. The summary does not form any part of the documentation required to be published pursuant to Section 7(8), or any other provision, of the Broadcasting Act 1996. The Independent Television Commission is not responsible for and can accept no liability in respect of, the accuracy or otherwise of its contents.*

*Section A of the application is available for consideration by the public at the ITC's headquarters and on DTN's own Web site at http://www.DTN.Net.uk on the next working day following the closing date for applications. It will also be available within five working days of the closing date at the ITC's regional offices, national offices and selected main libraries.*

*Note: the information presented in this summary refers to a scenario in which DTN is granted all three licences. Where any other combination of licences is concerned a clear reference to this is made in the text. A summary of particularly important differences between multiplex combinations is attached at page 12.*

## Introduction

Digital terrestrial television is the most exciting development in broadcasting since the introduction of colour. DTN is a new company set up specifically to develop this opportunity and is applying to the Independent Television Commission (ITC) for three licences (referred to as B, C and D) to operate the service. Our aim is to take British television into the 21st century, offering viewers over twenty channels of quality television and providing a revolutionary array of information and transaction services.

Our application document runs to more than 1,000 pages of text. At its core, however, is the simple conviction that digital terrestrial television is the future of British broadcasting:

- it will bring a far wider choice of channels to viewers. DTN's carefully selected channels (and the channels of other licensees) will dramatically expand the range of programming available to the public
- viewers will enjoy a radically improved viewing experience, with improved picture quality, CD quality sound and widescreen pictures for movies and sports
- traditional analogue teletext will be transported into the digital era when DTN's data services are launched. These will allow viewers to find a job, book a holiday or browse the Internet from the comfort of their home
- viewers will no longer need to trek to the video shop, as DTN will bring the latest movies into people's homes on a pay-per-view basis.

All this can be delivered without a satellite dish. Viewers will only need a set top box or a new digital television. Consumers can simply plug in the new equipment and start watching. And all this will cost less - our subscribers will pay, on average, half of what BSkyB subscribers pay today and will even be able to save money on their telephone bill through our special telephony service.

DTN's plans for delivering the full promise of digital terrestrial television are explained below.

## The Challenge of Digital Terrestrial Television

DTN is convinced that digital terrestrial television is a substantial commercial opportunity, as well as a boon to British viewers. Nevertheless, we are well aware that it faces real technological and marketing challenges, particularly during its launch period. A unique combination of insight and experience is required to succeed. The crucial ingredients of our approach are as follows:

- programmes of innovation and quality that will appeal to a broad section of the community and will inform, educate and entertain *(see below)*
- new and creative data services bringing the information society to the mass of the UK population *(see page 4)*
- the technical skills and assets to take a highly complex new technology to launch in a little over a year *(see page 6)*
- a relentless focus on the consumer *(see page 8)*

Our conviction is that phrases like the "Information Superhighway" and "convergence" are meaningless until the broad mass of consumers are using and enjoying the new media. DTN's team *(described on page 9)* has the vision, the commitment and the know-how to make digital terrestrial television happen.

## DTN's Programming

Digital terrestrial television will succeed if it provides something that people want. Its real test will be whether people will devote their time and money to watching and using it.

DTN's programming services combine the best traditions of British broadcasting with the novelty and innovation of the digital medium. Digital television is not just a chance to add quality to existing television services, it is an opportunity to use sounds, pictures and data in new and startling combinations. It will provide new creative opportunities to programme makers and a new kind of television experience to viewers. About three quarters of DTN's programming will be British-originated, and we will make a substantial investment in new production.

Behind our channel line-up is a rejection of the notion that an abundance of channels leads inevitably to a vulgarisation of the medium. We believe digital terrestrial television will permit a new type of television to emerge - television which can serve small audiences with specific interests with good quality output.

Our proposal for The British Sports Channel, for example, will enable new forms of sport on television in close collaboration with the many sports associations around the country. It will have several distinct audiences, all sharing a passionate commitment to seeing their favourite sport regularly on television, many for the first

time. The Knowledge Network will show educational programming, appealing to a very different audience. But it will also build discrete groups of committed viewers. Our third new channel, the Money Channel takes a different approach. We believe money is of universal interest, but is treated by most broadcasters in an unduly specialised and excluding way. We will open up the world of money in all its many forms to the entire population. All of these channels will innovate, exploiting the full interactive potential of digital terrestrial.

We will also launch Metro TV. This will begin as a local service in Greater Manchester, made by Mancunians for Mancunians. If it is successful, similar services will be offered in other cities. ITN will supply us with The Living History Channel, devoted to events from the immediate past from the makers of News At Ten. And Digital Box Office will give us a range of pay-per-view offerings from both the British cinema and the Hollywood studios.

In addition to these completely new services, we will be offering a range of exciting channels from established broadcasters. Our plans include a travel channel, a channel on wildlife, a music channel, a movie channel and a cartoon channel; and if we are successful in our application for all three multiplexes, the BBC have indicated that they are willing to offer us eight exciting new services.

Our likely programme line-up is given in Box 1.

**Box 1: DTN Programming**

*If we win three multiplex licences, we plan to offer the following:*

***Original channels created by DTN***
- The Money Channel - a new way of looking at money for a general audience
- The Knowledge Network - a new way of learning for young and old alike
- The British Sports Channel - live sport and sports news, 24 hours a day

***Specialist Channels***
- The ITN Living History Channel - the real stories behind recent events from one of Britain's best known broadcasters
- Animal Planet - wildlife programmes for the whole family
- Travel - where to go, what to see and how much to spend around the world
- The-Box - Britain's most popular music channel, programmed by the audience itself

***Digital Box Office***
- Our pay-per-view service of movies, sport and events

***The Best of the World***
- TCM: Turner Classic Movies - classic movies from the Golden Age of Hollywood
- Cartoon Network - the best cartoons from the best kids channel with evening programmes for the grown ups
- MGM Gold - entertainment programming from the home of the Roaring Lion
- And coming later, The Movie Experience - an entire channel devoted to movies from Britain and abroad

***Metro TV***
- Our new local service starting in Greater Manchester and coming to your neighbourhood soon

*Note: If we win two multiplexes, we will offer the Specialist Channels, the Best of the World and the Digital Box Office (NB. we will include The British Sport Channel only if awarded Multiplexes B and C); if we win a single multiplex licence, we will offer the Specialist Channels and the Best of the World (NB we will include only TCM under "Best of the World," if allocated Multiplex D)*

## Data and Telephony Services

As people's ability to access and process information increases, a common concern is that we will become a society of information haves and have-nots. We believe that digital terrestrial television can help democratise the Information Society. The new generation of television equipment will gradually become as ubiquitous as traditional analogue televisions are today, bringing a powerful computer into every home. We have no doubt that this idea will appeal - our market research suggests that people's interest in digital television increases when they are told about the data services that will be available.

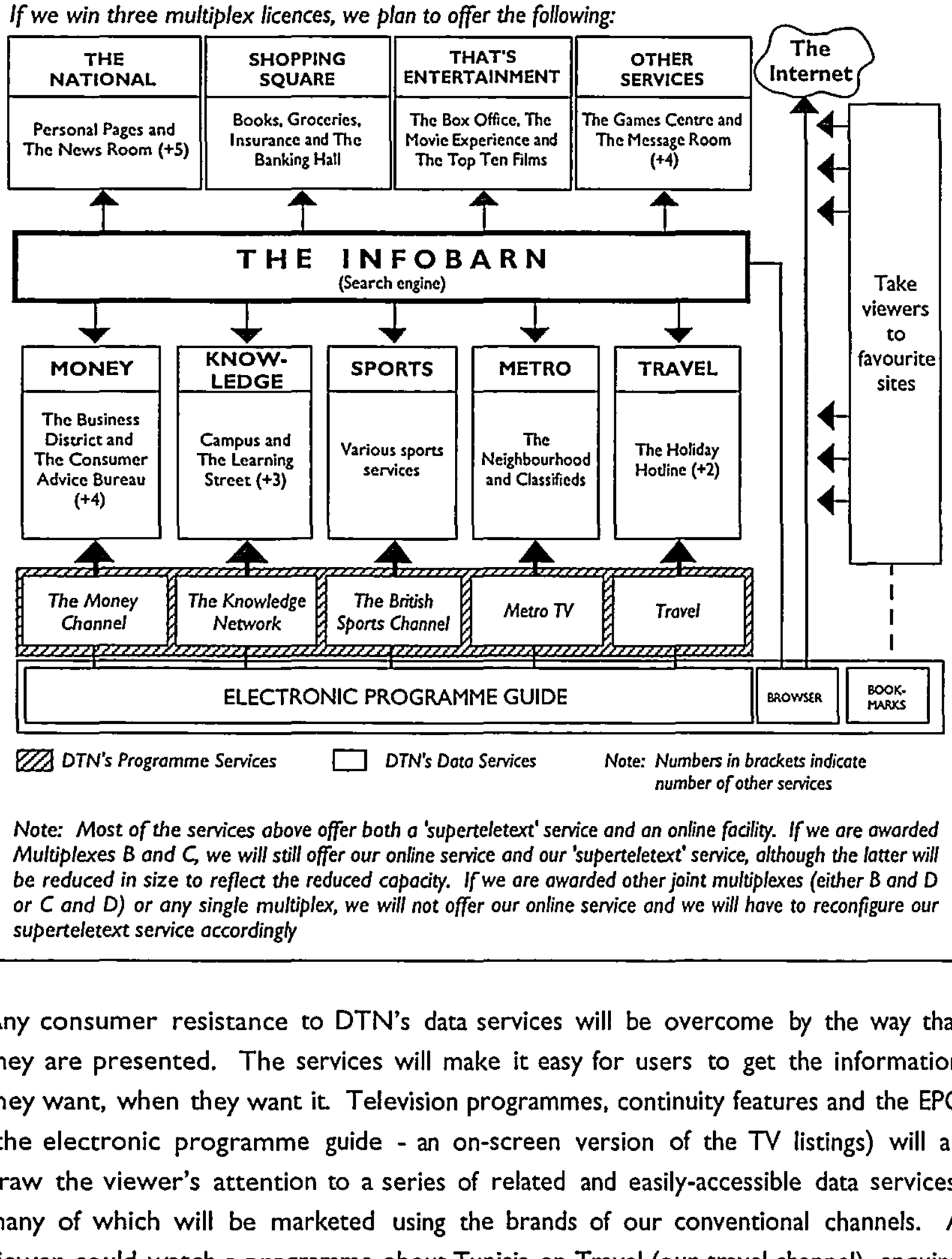
Our data services will be relevant, fast and easy to use. We will offer over 20 services linked to, and cross-promoted by, our channel brands, Money, Knowledge, Sports,

Metro and Travel. In addition, there will be a range of other services, notably the Shopping Square, a home shopping service, and various national news services.

Our services are listed in more detail in Box 2.

**Box 2: DTN Data Services**

*If we win three multiplex licences, we plan to offer the following:*




*Note: Most of the services above offer both a 'superteletext' service and an online facility. If we are awarded Multiplexes B and C, we will still offer our online service and our 'superteletext' service, although the latter will be reduced in size to reflect the reduced capacity. If we are awarded other joint multiplexes (either B and D or C and D) or any single multiplex, we will not offer our online service and we will have to reconfigure our superteletext service accordingly*

Any consumer resistance to DTN's data services will be overcome by the way that they are presented. The services will make it easy for users to get the information they want, when they want it. Television programmes, continuity features and the EPG (the electronic programme guide - an on-screen version of the TV listings) will all draw the viewer's attention to a series of related and easily-accessible data services, many of which will be marketed using the brands of our conventional channels. A viewer could watch a programme about Tunisia on Travel (our travel channel), enquire about a holiday package advertised on the programme and, using the online link from our set top box, book the holiday and pay for it. This will involve sophisticated technology, moving from a conventional television programme to a very fast version of teletext to an online service and, finally, to an exchange of financial and personal details,

enabling the transaction to be completed. The key point is that the viewer will move easily and seamlessly between all of these services. Book a theatre ticket, find out a phone number, consult our encyclopaedia - go no further than your television set.

DTN has discussed its service proposals with a wide range of companies, associations and charities. We have obtained support for the service concept from over sixty organisations. DTN's parent company, International CableTel is an Internet service provider through its subsidiary Cable Online and it is also a partner in the branded online offering, Virgin.Net. Combined with the telecommunications expertise of both CableTel and NTL, DTN is the best equipped company in the UK to launch these services.

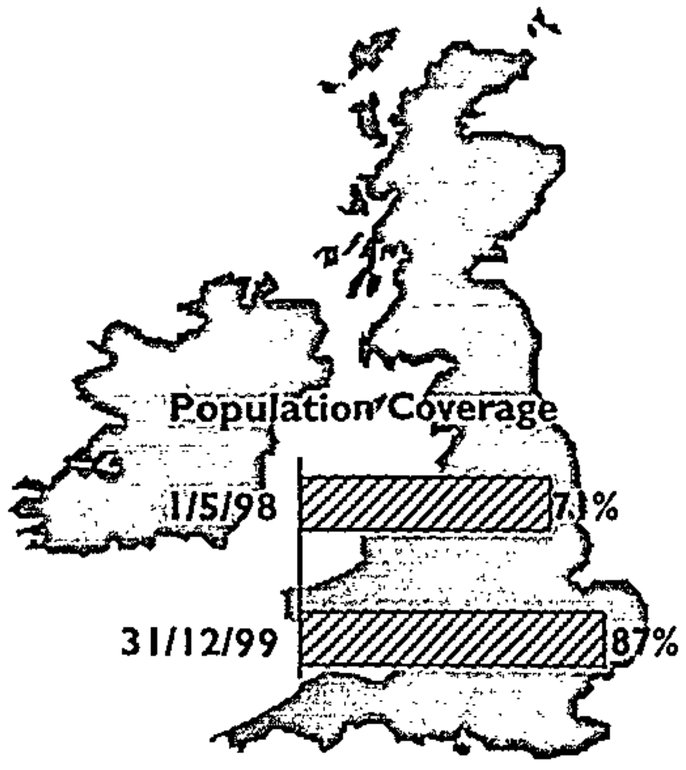
We also plan to provide telephony at a discount to normal rates for long distance and international calls. International CableTel has experience of the positive impact of telephony on the take-up of cable television services in Britain. Accordingly, we are convinced that a package of powerful and affordable programming, easy to use and exciting data services and telephony will be a compelling proposition to the British public.

## Technology Strategy

DTN's technology expertise is the foundation upon which its aspiration to bring digital television to the mass market in the UK is based. Technology will be absolutely critical to delivering easy to use, low cost and high quality services to the largest possible audience in the shortest timeframe. The key elements of digital terrestrial's technology strategy and the rationale behind them are as follows:

- *rapid roll out of the service*: our aim is to bring digital terrestrial television to the British public as quickly as possible. BSkyB is likely to launch its digital satellite service towards the end of 1997. We will launch our service within the first six months of 1998, as shown in the roll-out plan in Box 3.

**Box 3: Outline of Transmission and Roll-out Plan**




If we win three multiplex licences, the key features of our transmission and roll-out plans are as follows:

- start date: 1 May 1998
- coverage at start date: 40 transmitters, 71% of the population
- final coverage complete : end 1999
- coverage at end 1999: 81 transmitters, 87% of the population
- as new frequencies become available, we will extend coverage
- at all stages, our plans for coverage are well ahead of ITC targets

*Note: If we are only awarded a single licence or two licences, we will clearly need to consult with other licensees and agree a transmitter roll-out plan with them*

- *a strategy which makes set top boxes easily accessible*: one strategy for digital terrestrial might be to rely entirely on digital television sets with the necessary software capabilities integrated within them - idTVs, as they have become known. In our view, such a strategy would disenfranchise many members of the public. Set top boxes allow the large number of people who are not contemplating buying a television set in the near future to gain access to digital terrestrial from its launch. In addition, a strategy based around set top boxes will draw suppliers of programming to digital terrestrial - the last thing that they want is to supply channels which hardly anyone can watch. Consequently, in the early years, nearly 90% of DTN's subscribers are projected to be connected to DTN by a set top box.

- *a 'high spec' strategy for set top boxes*: the set top boxes must be future proof. It is important that subscribers do not view digital terrestrial as a technological cul de sac. We must be able to say to them that the set top box they buy or rent will be able to process a signal from satellite and cable, as well as terrestrial. This means extra ports and processing power must be incorporated within the box. Additionally, a 'high spec' box will be able to cope with our data services. DTN has developed a detailed specification for its set top box which meets these objectives.

- *a low cost set top box*: while the set top box needs to incorporate advanced features, it must not be expensive. We intend to combine advanced features and low cost by using standard components and by securing manufacturer support for what we are proposing. Subsidy of the set top box also plays a part, as described below.

## Focus on the Consumer

Three-quarters of households in the UK have yet to subscribe to pay-TV. In formulating our marketing strategy, DTN set out to understand why this is the case. Our market research indicates that people want value, choice and flexibility in multi-channel television. Our marketing strategy seeks to accommodate these findings.

In addition, we also recognise that, when we launch digital terrestrial, we will be selling a totally new technology - and consumers will react with appropriate caution. We know that we will have to build confidence in our service and earn the trust of the public.

To reflect all this, our marketing strategy has a number of different facets:

- *an array of programmes and services designed to build subscriber and viewer numbers*: we have chosen programmes and services which offer quality, novelty and innovation within the broadcasting traditions with which our viewers will be familiar
- *low prices*: we will subsidise our set top box substantially to give the consumer real value for money and will offer both rental and purchase options*. In addition, we will keep the cost of the services low, offering a small basic package and several small additional packages of channels that the customer can pick and mix from at will.
- *hardware design*: our set top box will be future proof, upgradeable to receive satellite and cable channels and any new digital terrestrial channels that come later. All our equipment will be easy to use and "plug and play"
- *effective distribution channels*: we have developed a detailed set of procedures for both rental* and sale of set top boxes and for the sale of idTVs. We have obtained extensive support from retailers for our approach. In addition, we may develop a proposal for a direct rental operation which we believe could play an important role in the early years of the service*
- *excellent customer support*: our subscriber management centre in Cardiff will be staffed by about 1,000 people by the year 2000, fully trained and available 24 hours a day to help consumers with their enquiries.
- *a comprehensive communications plan*: the communication budget we have committed to will make DTN the major advertiser in the sector in 1998 and should achieve a 90% awareness level of the service at the end of our first year. Consumers will know who we are, what we offer and where to go to subscribe to our services.

* *this only applies if we are awarded all three Multiplexes B, C and D or joint Multiplexes B and C - for further details, see page 12*

## DTN's Team

The final ingredient of DTN's strategy is its team. DTN is wholly owned by International CableTel which is the third largest cable operator in the UK and owns NTL, one of two major British transmission companies.

CableTel brings great strengths to DTN. As well as its online interests mentioned above, its cable and residential telephony penetration rates are 50% above the industry average. It has now launched a new package of services which is achieving penetration of twice the industry average. Over 95% of its customers are satisfied with its service.

NTL also brings critical skills to digital television. It has accumulated more expertise relevant to this business than any other company in the UK. In addition, NTL has a full national telecommunications network which will enable DTN to offer its unique range of data and interactive services. No other company in Britain can draw on the range of technical skills and assets that will be required to bring these exciting new services to the British public.

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We believe our team combines the key attributes to succeed - a rare combination of technical and commercial skill, entrepreneurialism, a history of well-judged innovation and a commitment to quality. Details of the team are shown at Box 4.

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## Differences between Multiplex Combinations

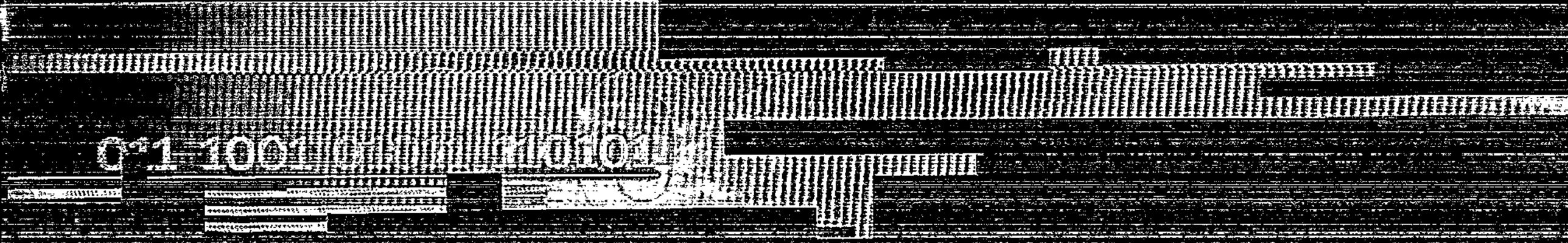
(i) Allocation of channels to multiplexes

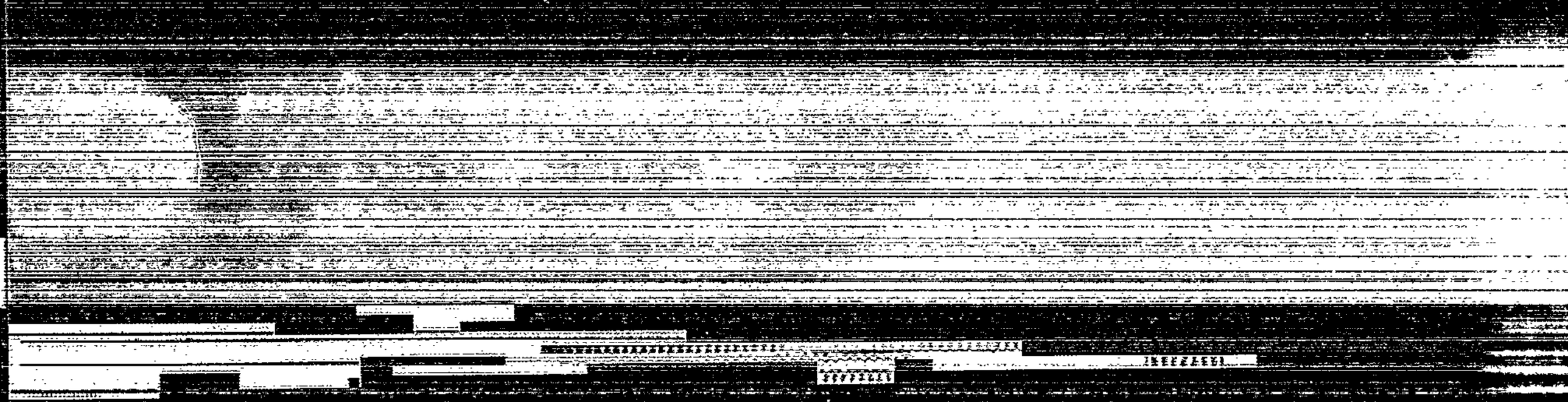
| Channel | B | C | D | BC | BD | CD | BCD |
|---|---|---|---|---|---|---|---|
| The ITN Living History Channel | B | C | D | B | B | C | D |
| Animal Planet | B | C | D | B | B | C | B |
| Travel | B | C | D | B | B | C | B |
| The Box | B | C | D | B | B | C | D |
| TCM: Turner Classic Movies | B | C | D | B | B | C | D |
| Cartoon Network | B | C | | B | B | C | D |
| MGM Gold | B | C | | B | B | C | D |
| Data Services | B | C | D | B | B | C | B |
| CA/SMS/EPG | B | C | D | B | B | C | B |
| The British Sports Channel | | | | C | | | B |
| Digital Box Office | | | | C | D | D | C |
| Data Services | | | | C | D | D | C |
| CA/SMS/EPG | | | | C | D | D | C |
| The Money Channel | | | | | | | B |
| The Knowledge Network | | | | | | | B |
| Metro TV/Hindi Channel | | | | | | | C |
| Horizons | | | | | | | B |
| Style/Showcase | | | | | | | B |
| Arena/Learning | | | | | | | D |
| Data Services | | | | | | | D |
| CA/SMS/EPG | | | | | | | D |

(ii) Promoting or assisting the acquisition of equipment: if DTN is granted all three Multiplexes B, C and D or B and C (jointly), then we plan to subsidise set top boxes and offer them for rental; in any other eventuality, we are not planning to either subsidise or rent them

(iii) the effects of other differences between multiplex combinations are summarised in the notes to Boxes 1-4 (see above)

*DTN welcomes enquires about our application; if you would like more information, please contract* [redacted]





DTN

Digital Television Network

Digital Television Network Limited
Crawley Court
Winchester
Hampshire

# DTN

## Digital Television Network

# Bid for Multiplex D

## Section A

# Introduction to Section A

This Introduction is provided to explain to the reader the structure of this document.

DTN is applying for Multiplex Licences B, C and D. Our application for Multiplex Licence B has been written so as to set out our proposals not just for Multiplex B but also our proposals for Multiplex C and for Multiplex D. It provides all the requisite information for each of the multiplexes on its own as well as our supplementary proposals which would apply for any combination of the licences, should we be awarded more than one

Because Section A of our application for Multiplex Licence B is written in this way DTN's Section A documents for Multiplex Licences C and D take a different, far shorter form. They simply cross-refer to Section A of our application for Multiplex B rather than repeat the information contained therein. The only substantive element of these two documents that differs from the application for Multiplex B is Section A1, which states the licence applied for.

The impact of this approach is a significant reduction in the sheer volume of paper that the ITC has to examine, without in any way reducing the actual information we are providing. We believe that this will make the ITC's task of assessing our applications easier.

Our approach means that all the information DTN is required to present to the ITC under Section A of the Invitation to Apply, for our individual applications for Multiplex Licence C and for Multiplex Licence D, is contained in Section A of DTN's application for Multiplex Licence B.

Therefore, any reference to "this application", "this multiplex" or "this licence" in Section A of the application for Multiplex Licence B should also be taken to mean the application, multiplex or licence (as the case may be) for Multiplex Licence C or Multiplex Licence D as appropriate.

Equally any reference to the award of "only one multiplex" should be construed in the same way.

The following pages contain Section A1 of this specific multiplex application and a list of subsequent sections, with a statement instructing the reader to see the relevant section of DTN's application for Multiplex Licence B (Section A).

# A1 The Licence Applied For

*The applicant should state which multiplex licence he is applying for by means of this application. If the applicant is applying for more than one licence, and if this application contains supplementary proposals which would be implemented only if he were awarded more than one licence, then he should specify the other licences to which these supplementary proposals apply. If the applicant is applying for more than the number of licences he would be permitted to hold under any requirement imposed by or under Schedule 2 to the 1990 Act, he should state his preferences in relation to these licences (see paragraph 22).*

## The Licence Applied For

This is an application for Multiplex Licence D.

DTN is applying for the three individual licences: B, C and D. This application contains supplementary proposals for the ownership of all these licences together as well as supplementary proposals for the ownership of licences B and C, licences B and D, and licences C and D. This number is within the limits for multiplex ownership as set in the 1990 Broadcasting Act.

The Introduction to Section A explains the way this document has been written and should be read in conjunction with the Introduction to Section A in our application for Multiplex Licence B.

# Sections A2 to A19

## A2 Transmission Coverage and Roll-out

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A3 Promoting or Assisting the Acquisition of Equipment

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A4 Number and Characteristics of Services

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A5 Local or Regional Services

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A6 Programmes of High Quality

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A7 Additional Services

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

## A8 Licence A

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

This is not an application for Multiplex Licence A.

## A9 The Development of Digital Television Broadcasting

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A10 Transmission Standard

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A11 Technical Quality and Reliability

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A12 Changes to Existing Transmission and Reception Arrangements

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A13 Receiving Equipment

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A14 Supply of Programme Services

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A15 Capacity for Programme Services

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A16 Key Staff

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A17 Composition and Identity of the Applicant: Directors

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

### A18 Composition and Identity of the Applicant: Shareholders etc.

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).

**A19 Composition and Identity of the Applicant: Disqualified Persons etc.**

Our proposals for Multiplex Licence D under this section are contained in the corresponding section of DTN's application for Multiplex Licence B (Section A).