SLR

Future of TV Distribution

Response to call for evidence

Service List Registry

December 2023

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Contents

Executive summary

This submission is structured in sections that correspond to each of the six questions raised in the call for evidence. It concludes with recommendations based on responses to other relevant consultations. Separate annexes explain the role of the Service List Registry, describe a national numbering plan model developed in response to a separate consultation, and for comparison provide an index of services and current channel numbers for existing regulated platforms.

In summary, the future of the distribution of television and audiovisual media services will see a migration towards online delivery over fixed and mobile data networks. In many respects, this transition is already in progress. To some it may seem technologically inevitable.

However, there is still considerable dependence on traditional digital television broadcasting over satellite and terrestrial transmission networks. This is likely to continue for many years and most likely well into the next decade.

The availability of free-to-air broadcasting is a public good on which many people rely. The importance of the plurality of public service media provision is well recognised by policy makers and the public.

Access to fixed and mobile data networks is currently provided as a paid service by commercial providers. While access is widespread, adoption is not yet universal and there are still remote areas that are relatively poorly served.

Meanwhile there are also growing numbers of users that will not have access to a traditional television antenna, for whom an equivalent service delivered over a broadband data network will be desirable.

For the foreseeable future it is likely that there will be a mixed economy of traditional broadcast transmission and online delivery of audiovisual media services.

Many users already have a hybrid of broadcast channels supplemented by online services. The integration of these is not necessarily seamless and this can result in a confusing user experience.

While the public service media providers have vigorously pursued an approach that promotes their own competing online services, usage remains relatively low compared to their traditional channels and has not compensated for their decline in viewing in the face of intensified competition.

Public service media providers are proposing to launch a new platform through Everyone TV to be branded as Freely, in addition to and as a possible replacement for Freeview and Freesat. The prospects for this are uncertain, as the market is now much more competitive than when Freeview was launched as a replacement for analogue television.

Manufacturers of devices and displays now play more of a role in defining the user interface, assuming more responsibility for service aggregation and integration, potentially competing with some of the functions previously provided by providers of pay-television platforms.

Providers of subscription services are driving the adoption of online video delivery. Pay-television providers have all launched online only propositions that attempt to aggregate multiple media services and applications. These all use separate delivery systems, requiring multiple contractual distribution agreements with media providers.

This may lead to the risk that access to traditional free-to-air broadcast television channels becomes mediated by third parties that may act as gatekeepers and potentially promote other services at their expense. This may exacerbate a long-term decline in the viewing of previously pre-eminent public service broadcasters.

The perceived importance of public service media in bringing people together in shared experiences and in providing essential information of national interest is such that the availability of such services should not be left simply to market forces or self-regulation.

Given the long lead times involved in introducing products and services to the market and the relatively long replacement cycles for consumer electronics device and displays, it is necessary to plan now for any long-term migration that may take at least ten years to implement.

One of the key considerations will be how to maintain parallel operation of existing broadcast infrastructure while introducing online distribution over fixed and mobile networks. It will be important to maintain consistency between these separate services as far as possible to avoid consumer confusion and to facilitate seamless transition between them.

Ideally, consumers should not know or care whether a television channel is delivered over a broadcast or an online network.

Broadly-based international industry organisations have been working to develop open technical standards to support these requirements, notably the DVB-I and HbbTV specifications, that are highly complementary.

The Service List Registry has been established to provide an implementation of the service announcement and discovery function of the DVB-I specification, operating internationally.

Among its provisions, DVB-I envisages a Regulated Service List of national, regional, and local audiovisual media services. This allows media providers to announce services that are available over various networks and enables devices and displays to discover them and according to their capabilities make them available to users.

The benefit of a Regulated Service List is that it specifies an ordered list of services that can be used to provide appropriate prominence for designated services. Numbered services can enable numeric navigation and simple up and down service selection. They can also incorporate both traditional channels and on-demand services and other applications.

A Regulated Service List will enable a national communications regulator such as Ofcom to specify and regulate listed services and the prominence with which they are accessible through various distribution networks.

This network-neutral approach will provide flexibility for the delivery of services from media providers in the future, while ensuring that they are available and accessible to the widest possible number of users without the risk of disintermediation by third parties.

Similar systems are being explored in other territories, with pilot services already in progress in Germany and Italy. With an international reputation for robust regulation of converged communications services, the United Kingdom could establish a world-leading approach to the future of television distribution.

The Service List Registry welcomes the opportunity to work with government and regulators to explore and develop these proposals in more detail.

Preface

As Chief Executive of the Service List Registry, I welcome this opportunity to contribute to the Ofcom call for evidence on the future of television distribution.

Based on internationally implemented open web standards, the Service List Registry provides a federated global platform to enable audiovisual media service providers to announce services and support service discovery by any compatible device or display. It also provides consultancy services on how best to implement service discovery for audiovisual media services.

The Service List Registry supports the open DVB-I industry standard developed by the DVB Project, an industry-led consortium of the world's leading media and technology companies working together to design open technical specifications for digital media delivery.

Central to this specification is the concept of a Service List that allows media providers to announce services and devices and displays to discover them. The DVB-I specification also includes provision for a national or regional Regulated Service List, enabling national regulatory authorities to authorise ordered lists of services with logical channel numbers and ensure appropriate prominence for public service media. In the context of the United Kingdom, the relevant competent authority is the communications regulator Ofcom.

The suggestions in this response are based on observations of best practices and international experience. They are intended to be compliant with the latest revision of the Ofcom *Code of Practice on Electronic Programme Guides* and the anticipated provisions of the *Media Bill* applicable to Television Selection Services and Radio Selection Services.

Beyond compliance with relevant regulations and competition requirements, our primary concern lies with the interests of the consumer. We seek to enable an open market for compatible devices and displays, allowing viewers to access a wide range of services in a way that offers them choice, convenience and control.

There is therefore the opportunity to create a coherent, consistent, compatible, and above all logical channel numbering scheme that serves the interests of media providers and their viewers.

I trust that the government, policy makers, regulators, and other readers will find this response to be a constructive contribution to the issues around the regulation of audiovisual media services and how they are discovered, selected and accessed by users.

The Service List Registry would be pleased to work with representatives of the government and the regulator to discuss further how the ideas presented in this response could be readily implemented in practice.

Dr William Cooper

Chief Executive
Service list Registry Limited
Brock House
London
W1W 6BP

About the author

As Head of New Media Operations at the BBC, Dr William Cooper helped to enable the launch of the Freeview digital terrestrial television platform and operationally supported numerous online and interactive service across multiple channels and platforms.

As the founder of the independent consultancy informitv, William has since advised on broadcast and broadband convergence around the world, including Freeview in Australia. He has also advised the European Commission on matters of transfrontier television and advised other leading management consultancies on television and video services.

With a background as a broadcast journalist, William gained a doctorate for his research on video literacy and how audiences appreciate television. He has a particular interest in viewer experience and user interface design. His weekly *Connected Vision* newsletter has been a regular read for thousands of executives around the world for almost two decades. He has chaired or produced over a hundred international conferences and is a regular judge of industry awards.

William is Chief Executive of the Service List Registry and is responsible for its development.

Service List Registry

The Service List Registry is a federated online directory of audiovisual media services, based on open standards. Registered regulators, media providers, and distributors can manage lists of offerings available online and through traditional broadcast networks. This enables compatible devices, displays and applications with different capabilities to discover and access relevant services from multiple sources, offering users choice, convenience and control, on any screen.

Supporting the open DVB-I standard for service discovery, developed by the international DVB Project that is responsible for standards used to deliver television services across Europe and around the world, the Service List Registry is committed to enabling a competitive market that supports the requirements of users, media providers, manufacturers of devices and displays, and national regulators.

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1. Audience expectations

Question 1. How are audience demands and expectations evolving, and how does that vary for users of different TV platforms and different demographics?

Television is an important medium that continues to inform, educate and entertain millions of viewers, contributing to our sense of national identity and culture.

Broadcast channels face increasing competition from online services that can offer viewers more choice and flexibility in viewing.

Average daily television viewing times have fallen to around 40 minutes a day for children and young adults, and to about five-and-a-half hours a day for those aged over 65 with more time available to view. Average viewing of broadcast programming across all individuals, at time of transmission and on-demand, is over two-and-a-half hours a day.

The ability to deliver audiovisual media services at high quality over the internet is transforming the television and video environment.

- Television channels can be delivered over the internet without the need for a traditional broadcast network.
- Broadcaster video-on-demand services like the BBC iPlayer, ITVX, 4 and My5 from public service broadcasters are widely enjoyed by viewers.
- Online video subscription services like Netflix, Amazon Prime Video, Disney+, and Paramount+ have gained significant market share.
- Free advertising-supported streaming television channels are also available online, including services from Samsung and LG, and standalone services like Pluto TV.

While such services offer increasing choice to viewers, the navigation of services is becoming increasingly complex and the distinction between traditional television channels and online video services is becoming blurred.

More than 500 hours of video are uploaded to YouTube every minute globally. While the laws of the land may apply to such material it is virtually impossible to regulate.

The decline in traditional television viewing may be partly attributed to far greater choice, not only in viewing options but in other ways in which users may pass their time.

There is a belief among some broadcasters that viewers no longer value traditional linear channels. They are actively promoting their online services but the audiences that they are receiving through them are not compensating for the loss of traditional television viewing.

Despite the availability of online video services from broadcasters, they still only account for a minority of viewing. The BBC iPlayer accounts for 15% of all BBC viewing, or around 8 minutes a day per person, while ITVX represents only 7% of ITV viewing, or an average of just 2 minutes a day per person.

Meanwhile, two-thirds of households have access to an online video subscription service like Netflix, Amazon Prime Video, or Disney+. Across the population these are collectively viewed for an average of approaching 40 minutes a day, although among young adults it is getting closer to an hour a day.

There is evidence that younger viewers and young adults watch far less traditional television than they used to, although they have always been relatively light television viewers.

This is often attributed to a preference to watching programmes on demand rather than according to a broadcast schedule. There may be some truth in this, but the most viewed programmes of broadcasters are generally still watched at the time of transmission or within 24 hours.

The main challenge for broadcast television is not so much its mode of delivery as the lack of appeal of much mainstream programming in a world of vastly increased viewing options.

Scheduled programming will continue to drive viewing behaviour, if only because news, sport, and events are driven by calendar times. Television viewing is also partly driven by habit and viewer routines.

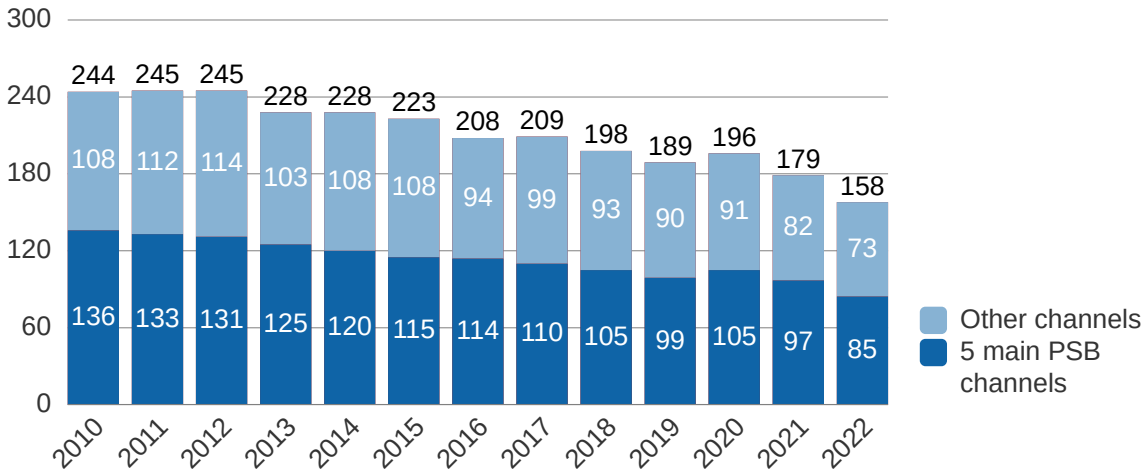
Older viewers, with more availability to view, have always been the heaviest television viewers, but the audience to traditional television is generally growing older. Many of these viewers also derive considerable benefit from television, particularly those that are socially isolated.

Channel usage

The Ofcom *Media Nations* report provides an annual breakdown of broadcast television viewing in the United Kingdom. This is based on BARB viewing panel data, across all individuals, as viewed on a television, live or recorded, measured over a 28-day period.

Among all individuals, average daily television viewing has declined by 35% in a decade, from over 4 hours a day to less than 2 hours and 40 minutes. This is still a significant amount of time per day, but it is less than it was previously.

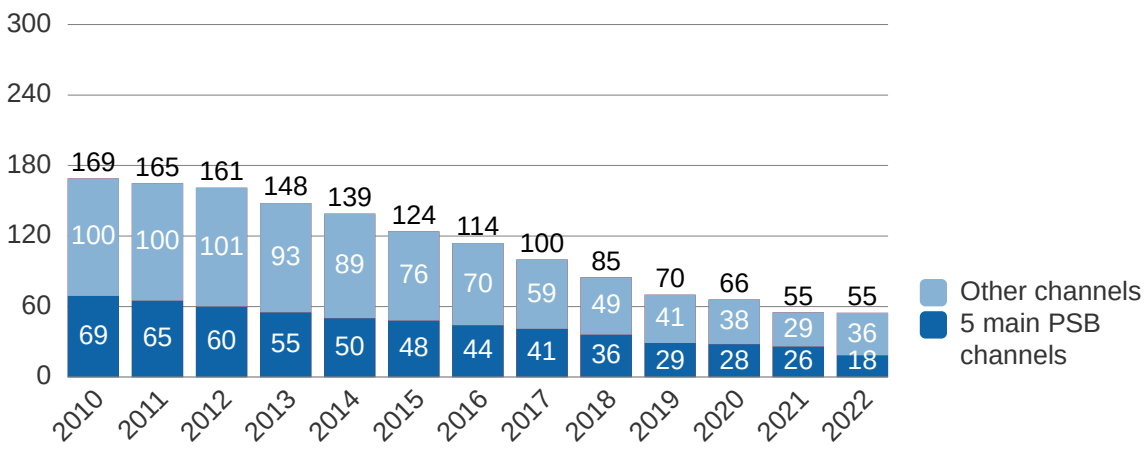
United Kingdom daily television viewing: Individuals
Minutes



Source: BARB 28-day consolidated viewing / Ofcom

Among those aged 16-24, who have always been relatively light viewers of television, viewing has declined by 65% in a decade, to less than an hour a day.

United Kingdom daily television viewing: 16-24
Minutes

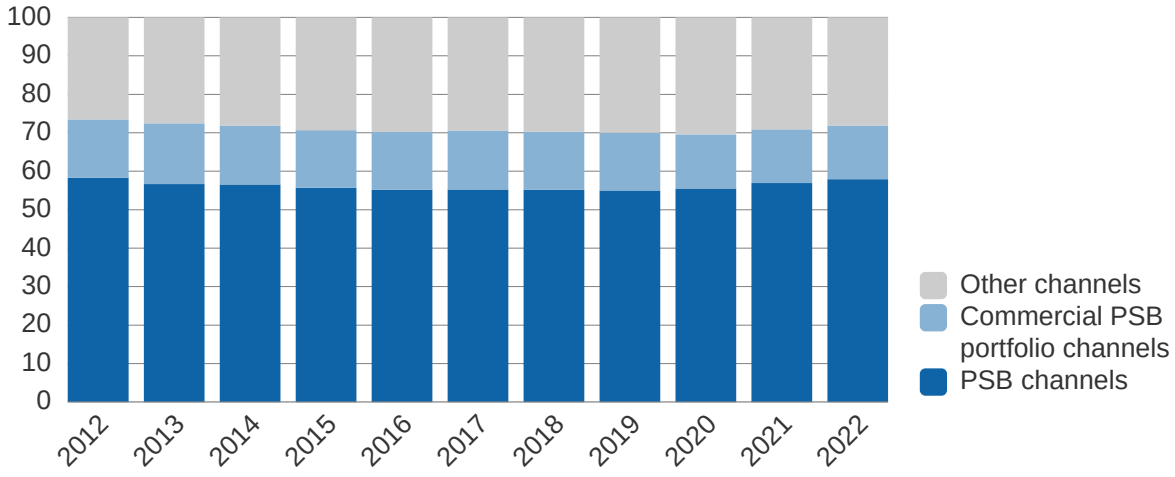


Source: BARB 28-day consolidated viewing / Ofcom

While overall viewing of broadcast television has declined, especially among younger viewers, the relative share of public service broadcasters has remained remarkably consistent, only fluctuating by a few percentage points over recent years.

- Public service broadcasters, comprising all the BBC channels, Channel 3, Channel 4, and Channel 5, account for 57.7% of all broadcast television viewing.
- The portfolio channels of public service broadcasters, including their +1 time-shift channels, contribute a further 13.9% of broadcast television viewing.
- The remaining 28.4% of broadcast television viewing is accounted for by channels from other broadcasters.

United Kingdom television viewing by channels
%



28-day consolidated viewing, all individuals aged 4+, on television sets
Source: BARB / Ofcom

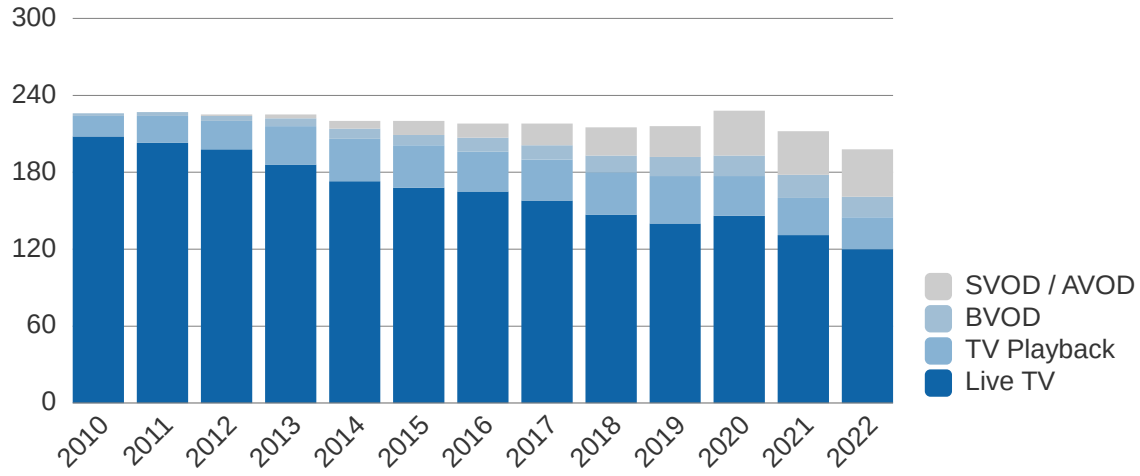
This implies that any perceived lack of prominence of public service broadcasters is not as significant a problem as some may suggest. Furthermore, it implies that the availability of these public service channels, which make up most television viewing, is more important to viewers than those with competing products and service might imagine.

With public service broadcasters and their portfolios constituting over 70% of UK television viewing, the remaining viewing is shared across numerous other channels and different viewers are likely to have their own favourite services among them.

Audience research suggests that many homes and individuals tend to use a small selection of channels regularly. Although they tend to watch the most popular channels, beyond that they may each watch a slightly different selection of services that form a long tail of viewing options. Ensuring easy navigation is paramount for viewer satisfaction.

Looking at viewing across all individuals, live television viewing still accounts for 60% of all television viewing. Playback of recording programming is still viewed more than the online video services of broadcasters, which have done little to compensate for the decline in viewing of broadcast television. Notably, despite popular perception, even viewing of subscription and advertising supported online video services has only partly substituted television viewing.

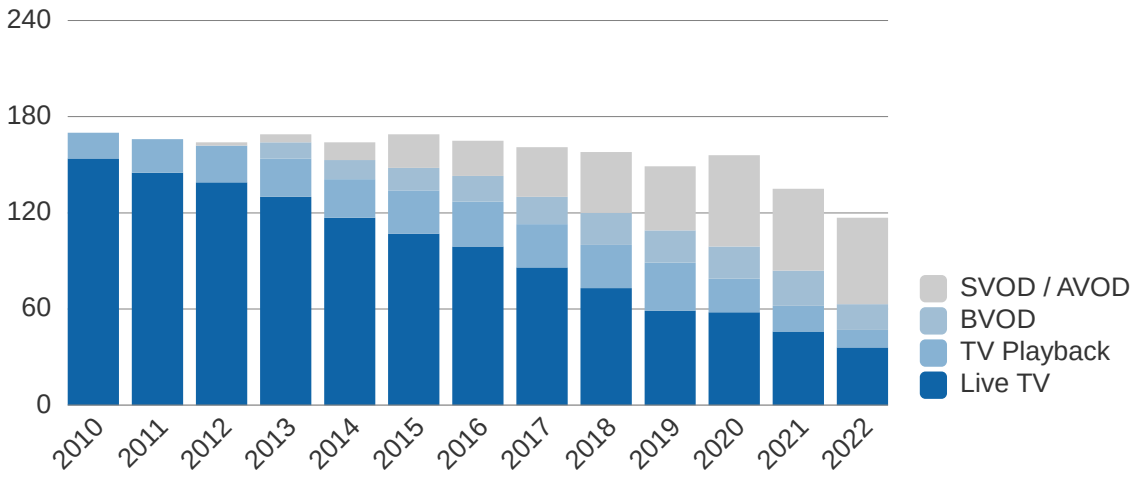
United Kingdom total daily television viewing: Individuals
Minutes



Source: BARB / Broadcaster stream data / IPA TouchPoints / ONS / Ofcom, Individuals

The picture is a little different among those aged 16-34, who are watching much less live television than they did a decade ago. Again, the online offerings of broadcasters have done little to compensate for this trend. Some 45% of their viewing is now to competing online video subscription and advertising supported services.

United Kingdom total daily television viewing: 16-34
Minutes



Source: BARB / Broadcaster stream data / IPA TouchPoints / ONS / Ofcom, 16-34

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Television platforms

While digital terrestrial television, transmitted from tall towers and received through a rooftop antenna, remains the most popular way of receiving broadcast channels in the United Kingdom, it is in long-term decline. The same can be said for satellite services. The future of audiovisual media delivery is increasingly online.

Any platform, device or display that does not integrate online services, including free and subscription services, is destined to be left behind as consumers adopt alternatives that offer choice, convenience and control. There is an urgent need to facilitate the migration of viewers from legacy platforms to next-generation services, while still providing access to existing channels.

Television services are available in the United Kingdom through different digital platforms that have evolved separately.

- Freeview is a brand name for a digital terrestrial television service in the United Kingdom and is now operated by Everyone TV.
- Freesat is a brand name for a digital satellite television service that is now operated by Everyone TV.
- YouView has the same shareholders as Everyone TV, with the addition of BT and TalkTalk, that also provide services under their own brands.
- Everyone TV recently announced plans for a next-generation platform, to be called Freely, which will be delivered online.
- Sky has historically delivered a pay television platform in the United Kingdom by satellite. More recently it has offered services over the internet to support its Sky Glass, Sky Stream, and Now products.
- Virgin Media 02 has historically operated a cable television platform but now also offers an online television service with its Stream proposition.
- BT has just launched a new television service under the EE brand that is delivered online, either to a box with a digital video recorder, a mini box, or as an app on an Apple TV box.

Everyone TV promotes itself as the custodian of free television platforms in the United Kingdom. It is jointly owned by the BBC, ITV, Channel Four, and Channel Five, which are designated as public service broadcasters. Everyone TV has no statutory authority but is subject to the regulatory requirements of the communications regulator Ofcom.

The television environment is now very different to the one in which Freeview was originally launched over twenty years ago in 2002.

The early success of Freeview coincided with the introduction and adoption of digital television and the availability of a wider range of free channels. A key factor was that it worked with virtually any retail television because it is based on internationally adopted open standards.

While digital terrestrial television remains an important platform, it now operates in a much more competitive market.

The market is becoming increasingly fragmented and dependent upon software applications to present services delivered over the internet.

The public service broadcasters have contributed to this problem, in some cases as the shareholders of platforms that they control, by pursuing a strategy of separate apps, with many missed opportunities to create a consolidated offering.

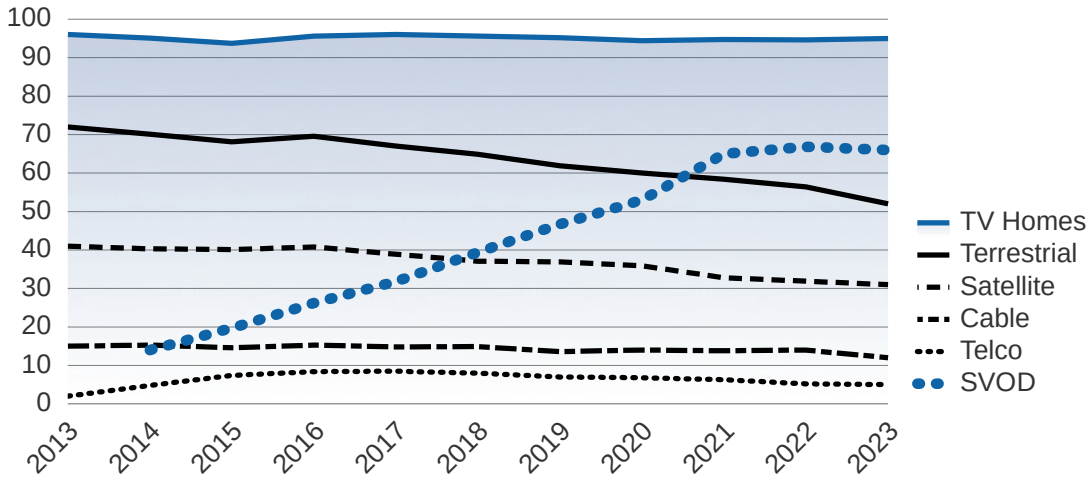
Freely may or may not provide a suitable solution but it is unlikely to address the requirements of the whole market.

Meanwhile, none of the public service broadcasters in the United Kingdom has a published plan for migrating away from digital terrestrial television transmissions.

Service adoption

The Ofcom *Communications Market* report provides an annual breakdown of households in the United Kingdom by television platform based on BARB Establishment Survey data.

United Kingdom television homes by platform
%



All television sets in the home.
Source: BARB Establishment Survey / Ofcom

Television ownership has remained consistent over the last ten years at around 95% of homes in the United Kingdom. The biggest decline has been the share of homes using digital terrestrial television, which has fallen from 72% to 52%, while the share of homes with online video subscription services has grown from 14% to 66%.

- Just over half of households in the United Kingdom (52%) have digital terrestrial television in their home and just over a third (34%) only have digital terrestrial television, which is approaching 10 million homes.

- Three out of ten (31%) of homes have digital satellite television, which is approaching 9 million homes, with 27% of homes subscribing to Sky and 4% using free to view satellite services. Freesat is the main television service in fewer than a million homes.

- 13% of homes have digital cable television, of which Virgin Media O2 is the primary provider, with about 3.4 million television subscribers.

- 6% of homes have a television service from BT, Plusnet, TalkTalk, or YouView, which is around 1.6 million households.

After 15 years, Freesat has achieved a market penetration of 3%, while YouView has less than 1% in 10 years. This experience suggests that delivering and deploying a next-generation television platform is far from a guaranteed success. The prospects for Freely in addressing the whole market are therefore limited.

The risk for broadcasters is that they will end up as an app on a restricted range of devices and displays, leaving limited opportunities for users that are reliant on existing terrestrial and satellite transmissions to migrate to online services over time, with catastrophic consequences for the viewing of previously pre-eminent broadcasters.

While public service media organisations should be free to evolve and innovate their offerings through their owned and managed platforms, it is likely that viewers will access their service through an increasing range of platforms, applications, devices and displays.

There is therefore a role for Ofcom in playing more of a part in ensuring that these and other audiovisual media services are available and accessible as universally as possible.

Specifically, Ofcom should ensure that public service media channels and services are available over the open internet and not only through service provider platforms. That is comparable to the availability of free-to-air broadcast television signals.

Ofcom reports the availability of broadband network access at 99%, or 97% for rates of 30Mbps or more. That represents a similar level of coverage to the digital terrestrial television network. However, availability of service does not necessarily mean that 97% of the population has broadband network access, or that they could use it to receive television or video services with a similar level of usage to broadcast services. As Ofcom reports, an estimated 14% of households in the United Kingdom have no fixed data network connection.

A key policy question is therefore how the digitally disadvantaged can be encouraged and supported to have access to adequate internet connections to access public media services and other public services.

2. Platform sustainability

Question 2. What do audience trends mean for the financial prospects and sustainability of TV distribution platforms, and what are the key decision points over the next ten years?

It is important not to overstate the trend towards online services at the expense of traditional broadcast delivery.

Many of the business challenges faced by broadcasters result from increased market competition. Despite their best efforts, broadcasters have made relatively little progress in moving their audience online over the last 15 years. The BBC iPlayer still only represents 15% of all BBC viewing, rising to 35% for those aged under 35, but they tend to watch relatively little television.

Parallel operation

Although it is not possible to guarantee the spectrum for digital terrestrial television transmission beyond 2034, subject partly to the outcome of the World Radiocommunication Conference, it will be socially and politically unpopular to switch off terrestrial television transmissions in the foreseeable future. There may come a point at which this may become practical but even when that time arrives it will require a massive programme to convert those viewers, potentially the most vulnerable and reliant upon it.

Based on the experience of analogue switch-off, it seems likely that it would take at least 10 years to implement a transition away from digital terrestrial television.

This implies a requirement to run the current digital terrestrial television network in parallel with emerging online delivery systems for at least a decade. It also means that planning needs to begin now.

A suitable approach is therefore required to be able to maintain existing systems, including linear channels with logical channel numbers. This would facilitate a progressive migration to online delivery, while maintaining a consistent and coherent user experience for audiences across the population.

3. Online infrastructure

Question 3. How do broadband networks and supporting infrastructure need to evolve to support resilient delivery of TV over the internet in the future?

Digital cable, satellite and terrestrial networks have been engineered to deliver an experience that is largely plug and play. Given an adequate radiofrequency signal, they should generally just work and deliver deterministic quality of service. This is not necessarily true of services delivered over data networks, which can be complex to troubleshoot in case of problems, with responsibility often shared across multiple providers, vendors, and devices.

Delivery of online television services at scale over fixed and wireless data networks may require a different approach in the future. They may have different resilience and security characteristics compared to broadcast signals. Simplicity is critical. Many online architectures are arguably overcomplicated.

Simplification

One of the advantages of online delivery is that it can support incremental enhancement to support the capabilities of different devices and displays, unlike a broadcast network.

Most online video delivery has adopted an approach based on adaptive bitrate delivery, which involves creating multiple versions of a service at different bitrates or resolutions and allowing a client device to switch between these according to current network conditions.

Adaptive approaches were necessary when available access network capacity was highly constrained. However, it introduces arguably unnecessary complexity in situations where sufficient network bandwidth is available. It also means that the quality of experience delivered is non-deterministic.

As network provision improves, many connections can easily accommodate the data required for a high-definition or even an ultra-high-definition video stream. This may mean that service providers will be able to simplify their online video delivery systems to support a more limited number of renderings at various fixed resolutions.

Synchronous delivery

There are different operational requirements for the synchronous delivery of live services to those for asynchronous on-demand services, which exhibit different traffic patterns.

Synchronous delivery of live services to mass audiences for major events and sporting occasions remains challenging with existing approaches. It is unlikely that existing infrastructure and content delivery networks could scale to meet the demand of the largest events watched by over a third of the population.

While many assume that viewing will become increasingly asynchronous, there will always be national events that may need to support massive audiences. This means that networks will need to be provisioned for peak usage, which may be expensive in terms of investment and energy usage.

Most online video is currently delivered as unicast, meaning that a unique data stream is delivered to each end user device or display. Caching techniques may be used so that this data may be stored in intermediate cache storage to avoid the need for every data stream to be delivered direct from an origin server, reducing data traffic over core networks.

Multicast techniques may theoretically be used to enable live services to be delivered more efficiently. However, these can typically only extend as far as the home gateway and do not currently work well over wireless networks in the home. This requires appropriate management in the domestic router and there are currently no well adopted technical standards for this.

BT has developed a hybrid system it calls Multicast-Assisted Unicast Delivery or MAUD. but it relies on implementing software to provide what is called an edge proxy in a domestic router or network access point and this has yet to be deployed.

The BT approach is a proprietary variation of the DVB-MABR Multicast Adaptive Bit Rate standard developed by the DVB project.

There may be a requirement for agreement on industry standards to enable interoperability of multicast services across different network providers and domestic equipment. If this is not forthcoming appropriate regulation may be required.

Even in the case of massive synchronous viewing of an event, commercial media providers may wish to deliver targeted or addressable advertising, which implies the need to switch between a common live stream and more personalised advertising, sponsorship, or promotions.

Given the potential complications involved in deploying multicast solutions to the user, many advocate the continuing use of unicast with edge caching. This could be combined with multicast in core networks for operational efficiency.

This may require a co-ordinated approach to providing caching and network switching at geographically distributed exchange sites. As incumbent infrastructure providers may not be commercially incentivised to offer this to third parties in a cost-effective manner, regulatory intervention may be required.

Mobile delivery

Although the use cases for mobile reception of television and video services may be limited, they are partly restricted by the current user experience. Given the massive adoption of smartphones, it should not be assumed that television and video viewing will be mainly limited to the home environment.

Mobile distribution has different requirements and characteristics to other networks. There are technical standards that could enable multicast delivery. Consideration should be given to how separate network service providers can co-ordinate, or be required to co-operate, to share resources, to avoid duplication of services, which would be an inefficient use of scarce spectrum bandwidth.

Consolidation

What should be avoided is the current situation in which each platform or service provider implements its own approach to delivery, meaning that separate streams are required for each channel and for each platform. This result in unnecessary operational complexity. Ideally, each media provider would provide a single instance of a channel, which would be made available to each platform or service provider. This could form part of a must-offer and must-carry regulatory regime.

Just as the digital terrestrial transmission network involves a carefully planned architecture to ensure appropriate regional coverage, there may be a requirement for a similar approach to a nationally designed network architecture to deliver online television services reliably and resiliently.

In practical terms, co-ordinated planning and regulation will be required to ensure the universal availability of national channels at a level of provision and resilience comparable to the digital terrestrial television network. There is no such published plan. The regulator has a role in establishing a co-ordinated industry strategy, particularly for those public service media organisations that it regulates directly.

4. Hybrid services

Question 4. In what ways might different types of 'hybrid' terrestrial and internet services deliver benefits for audiences and what risks may arise?

Hybrid services that combine terrestrial broadcast networks and services delivered online are practical and widely adopted. Examples of these include the combination of broadcast channels with online applications like the BBC iPlayer.

The various apps of global online video services can also contribute to a hybrid experience, as can online video channels that may provide a complement or even a substitute for traditional television broadcasts.

There is a regulatory concern that some of these services do not operate under the same level of regulatory requirements as traditional broadcast channels, although to consumers they may be seen as similar.

Disintegration

The challenge for consumers is that online applications have been developed as standalone propositions, with limited integration between them. This introduces complexity in navigation and user journeys. A risk is that using online services is typically more complicated than simple channel selection, which has implications for the availability and accessibility of such services to vulnerable and disadvantaged users.

While hybrid services are often conceived as a combination of services in a single user interface, it should also be recognised that hybrid services may also exist in parallel. Media providers already support delivery of live channels through a combination of broadcast networks and online distribution. These may be accessed separately by users depending on the network available. So, some viewers may only have an online experience. However, it is desirable viewers should have broadly consistent user experience irrespective of the delivery network.

Open standards

There is also a risk that service providers and manufacturers of devices and displays do not adopt open standards or rely on closed proprietary implementations.

A broadcast network effectively requires conformance to certain industry standards to achieve interoperability. There is no such requirement in a closed network. As a result, platform operators may implement unique or proprietary approaches that effectively lock out other parties, unintentionally or otherwise.

With industry standards such as DVB-I and HbbTV that are designed to support hybrid broadcast and broadband deployment, it is possible to offer an online application as virtual channel, meaning that an app can be selected directly through a user interface in much the same way as a broadcast channel. It is also possible to use these standards to deliver higher quality audio or video over different networks, according to the capabilities of the device or display, as well as enhanced services to support accessibility for those with sensory impairments.

These standards may also be used to deliver non-broadcast services to any compatible device. This could include anything from integrating security cameras or healthcare monitoring to personal channels of family videos.

5. Infrastructure implications

Question 5. Given the sharing of infrastructure, what would the implications for other sectors be if there was a change to the use of digital terrestrial television (DTT)?

The digital terrestrial television transmission sytem is available to 98.5% of households in the United Kingdom.

Broadcast distribution is generally more energy efficient than online delivery, all factors considered.

Digital terrestrial television infrastructure is also used to deliver other services, including broadcast radio and other wireless communications services.

The costs of delivering and maintaining the broadcast network are shared amongst its users. Any reduction in use by broadcasters for television channels could have wider impact for other uses, including radio.

If there were to be a move away from using UHF frequencies to deliver television signals using digital terrestrial television standards such as DVB-T/T2, it is likely that the tall tower infrastructure could or should be used to deliver services using mobile broadcast standards.

6. Coordination requirements

Question 6. What coordination and planning across the value chain might be necessary to secure good outcomes for audiences and key providers over the long term?

Although digital terrestrial television transmission is likely to continue for many years, possibly decades, subject to the continuing availability of sufficient spectrum, there is an urgent need to plan for a long-term evolution to online delivery using internet protocols over fixed and mobile data networks.

This process is already beginning, with service providers Sky, Virgin, and EE offering television and video services that are delivered entirely online. Unfortunately, these have been developed entirely independently.

For the foreseeable future there will be a need to maintain both traditional broadcast and online delivery networks. There will also be a need to manage these so that the viewer proposition is as consistent as possible, irrespective of the mode of delivery.

Preparation

Given product development lead times and relatively long replacement cycles for devices and displays, planning needs to begin now to manage any long-term migration of services away from traditional broadcast networks. This is likely to take at least ten years and arguably longer.

A key issue will be the equivalent regulation of services that are delivered online to those that are delivered over traditional broadcast networks.

The challenge of retaining prominence for providers of public service media has been widely identified and is covered to an extent in the provisions proposed in the Media Bill.

Much of the responsibility for the interpretation and implementation of this in practice will fall to Ofcom as the communications regulator.

Isolation

The United Kingdom is not an island in splendid isolation in respect to international markets and standards. The market for media products and services is increasingly international or even global. This is particularly true for consumer electronic products such as devices and displays, including televisions and handheld screens. Without access to such screens, unless they are vertically integrated in products, media providers have no route to market.

International technical standards therefore play a key role in ensuring the availability of compatible devices and displays in an open competitive market. Without these, there is a risk that proprietary implementations foreclose the market and become powerful media gatekeepers.

The risk of domination by global technology corporations has been widely stated. There is also a risk that the United Kingdom adopts proprietary or parochial approaches that do not offer economies of scale.

The United Kingdom punches above its weight in the creative industries and is a major market by value. However, it is a relatively minor market in terms of consumer electronics shipments.

The importance of adopting open international standards is critical to maintaining an open market. The nature of broadcasting is that it relies on open standards to provide interoperability between transmitters and receivers. For online distribution it is possible to use open standards at some layers but implement entirely proprietary systems at the application layer for service discovery, authentication, and navigation.

Designation

One way in which universal access to certain services can be achieved is through the designation of certain services and applying regulation to them such that they are accessible through any compatible device or display.

This capability is now part of an open standard known as DVB-I, which complements existing DVB standards used for the delivery of traditional digital television services. It is also expected to support other delivery systems, including 5G mobile networks.

The importance of DVB-I is that it brings together many existing standards, including those currently used for terrestrial and satellite broadcasting, as well as the delivery of online services and applications.

Central to DVB-I is the concept of a Service List that is used to announce available services and provide mappings to service instances, which can be transmission network identifiers or internet addresses.

DVB-I also supports a national or regional Regulated Service List for use in a particular territory or jurisdiction. This is intended to identify services that are approved by the relevant regulatory authority. This can include designated services with appropriate prominence and prioritisation, which can be supported by a numbering scheme to provide consistency of positioning across various diverse platforms.

Pilot projects are already under way in Germany and Italy using DVB-I, with other territories also beginning to evaluate the standard.

Implementation of a national Regulated Service List is not dependent on a specific technical standard but can be facilitated by a standard such as DVB-I that promises international compatibility across devices and displays. In addition, such a list can be provided in other machine-readable formats, or simply as a spreadsheet or PDF file.

The value of such a Regulated Service List is that it provides an ordered list of services that can be used to regulate their availability, prominence, and provenance.

The media authorities in Germany have specified a Public Value list of channels and services that make a particular contribution to the diversity of opinion and offerings in Germany. They have published a recommended ordering of the channels and services as a guideline for user interface providers. This is available, in German, on the web site of the state media authorities at www.die-medienanstalten.de/public-value.

The Italian regulator has recently published proposals for the regulation of the numbering of television channels available through digital terrestrial television. This is available, in Italian, on the web site of the communications regulator AGCOM as resolution 294/23/CONS at www.agcom.it/atti-e-provvedimenti.

Network neutrality

It is important that any system of service ordering is network neutral, rather than reflecting the inherent limitations of any one delivery system or platform provider. For too long, separate policies and numbering schemes have emerged based on differences between platforms.

The result has been consumer confusion. Channel numbering may differ from home to home or even from room to room or from screen to screen. It is also more difficult for service providers to promote their services, either on screen, online, or offline, when they need to announce or promote multiple numbers for different platforms.

Regionalisation

There is a requirement to support regionalisation at multiple levels. Differences may be required at the level of nations and regions, for instance to support different services for Scotland and Wales. Public service broadcasters offer different services at a regional level, for the purpose of local news programming or advertising. Local services may be offered at a city level. This essentially means that the same slot or Logical Channel Number may be used for different services depending on location.

Historically, digital terrestrial television regions have been established according to transmitter coverage and regional topology rather than actual administrative areas. The boundaries used also vary between different broadcasters, with overlaps between them.

With online delivery, the location of transmitters and the propagation of radio waves over terrain is no longer a factor and regions can be designated by administrative areas, like post codes, or distances from a location. Users can potentially be offered a choice of which service region they wish to be in.

There is a case for a standard approach to regionalisation to provide consistency between service providers and platforms and to reduce the cost of implementation. There is also a case for this to come under the administration of the regulator rather than an industry organisation with competing shareholder interests.

Coordination

A coordinated channel numbering system offers tangible benefits to consumers beyond just fulfilling the prominence requirements for Designated Channels of public service broadcasters.

Furthermore, it should not be left to public service media providers to determine the ordering or placement of competing services. That is fundamentally anti-competitive. It makes sense for the coordination of any Regulated Service List and associated channel numbering to be determined by an independent regulator such as Ofcom.

An example of such co-ordination can be found in telephone numbers. Imagine the confusion if every telecom operator had a unique telephone numbering system. There are clear consumer benefits in a common framework for telephone numbering. This is provided at an international level by the International Telecommunication Union, an agency of the United Nations, and on a national level by Ofcom, which manages the UK National Telephone Numbering Plan.

While expecting subscription television providers to universally adopt a single numbering system might be optimistic, achieving greater alignment in service numbering across various platforms is a realistic goal. This alignment becomes particularly feasible when we consider the necessity to adhere to prominence regulations.

Regulation

Given that some aspects of ordering are likely to be commercially contentious, this would require a process of independent assessment and arbitration. Rather than relying on an industry body with conflicting shareholder interests, the ultimate arbitrator should be the communications regulator Ofcom.

Ofcom currently manages the regulation of certain Electronic Programme Guides through a Code of Practice.

As part of the implementation of the proposed provisions of the Media Bill, we recommend revising the Code of Practice to refer to a Regulated Service List that would apply to any User Interface that facilitates access to any listed service.

7. Recommendations

In response to a separate consultation from the Department of Culture, Media, and Sport, the Service List Registry has proposed the following recommendations:

- Regulation should continue to apply to existing regulated **Electronic Programme Guides**, namely those of Freeview, Freesat, YouView, Sky, and Virgin Media.

- Existing regulations should apply to **Designated Channels** in relation to **Appropriate Prominence**. This should also apply to the online services and associated online applications of public service media organisations, namely the BBC and those providing Channel 3 services, Channel 4, Channel 5, and S4C.

- As the relevant regulator, Ofcom should in consultation with stakeholders draw up a **Regulated Service List**, including Designated Channels and online services and the licensed audiovisual media services of any other media providers that wish to be included the list. The Regulated Service List may apply to specific services nationally, regionally, or locally.

- Ofcom should in consultation with stakeholders develop a revised **Code of Practice** relating to the presentation and accessibility of services in a Regulated Service List, with specific reference to the Appropriate Prominence and priority of Designated Channels.

- Any product or service that provides a **User Interface** to facilitate access to any audiovisual media service listed in a Regulated Service List must comply with the revised Code of Practice.

- Under the revised Code of Practice, any service listed in a Regulated Service List must have a relevant licence from Ofcom.

- Any Designated Channel in a Regulated Service List must be made available on a must-offer and must-carry basis subject to any reasonable contractual carriage conditions.

- Any Regulated Service List must specify default channel numbering and genre classification, assigned by Ofcom according to the revised Code of Practice.

- Any Designated Channels in the relevant Regulated Service List must be presented within a User Interface with Appropriate Prominence with respect to the priority and numerical order defined in the list according to the nation or region of the user.

- A User Interface will not be obliged to use numbers to identify services but those that do should adopt the default numbering and ordering scheme for the relevant Regulated Service List as far as practical.

- Ofcom should be required to develop and publish the Regulated Service List and a revised Code of Practice within 12 months and products and services should have 18 months from publication to comply with its provisions.

- Any exemptions from compliance with the Code of Practice for practical or operational reasons should be administered by Ofcom on a case-by-case basis.

8. Conclusion

The future of television distribution is changing rapidly, driven by consumer adoption of online video services. However, the traditional digital terrestrial television transmission network remains of critical importance and will continue to do so for many years to come. Nevertheless, the long lead times involved in the replacement of consumer electronics devices and displays mean that it is crucial to begin preparing as soon as possible for any long-term migration to online distribution. It is also essential to employ open international standards and to avoid proprietary or potentially parochial approaches. One way of ensuring an open and competitive market with universal availability and prominence of public service media is through a standards-based approach to service announcement and discovery coupled with a Regulated Service List of designated services.

The Service List Registry would welcome the opportunity support Ofcom in exploring the applicability of such an approach, consistent with its regulatory obligations under current and proposed legislation.

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Annexes

The following documents are provided as separate annexes.

- **Service List Registry**
- **Service List Model**
- **Current channel numbers**

Service List Registry

Our purpose is to make it easy for anyone to discover and access audiovisual media services over any network, on any screen.

We aim to become the *de facto* standard platform for audiovisual media service discovery worldwide, transforming the media market.

We will achieve this by providing the leading international service platform implementing the open DVB-I standard developed by the DVB Project, involving stakeholders across the sector.

- **Users** will benefit from choice, convenience, and control, with simple service selection on any screen.
- **Providers** of audiovisual media services will be able to announce their channels and services through an open platform.
- **Devices**, displays and applications will be able to discover and access audiovisual media services over any network.
- **Regulators** will be able to designate and authorise services to ensure appropriate prominence, provenance, plurality, accessibility, and availability of services.

Our innovative multiscreen index will support the provision of public service media and maintain an open competitive market for audiovisual media services. These may be traditional television channels or on-demand services, available free or through a subscription. The platform will be a key enabler for a multi-billion market, generating substantial and sustainable annual recurring revenues, with a long customer lifetime and significant potential for continuing growth.

Values

- **Open** — We use open standards, freely available to all participants.
- **Equitable** — We are fair, reasonable, and non-discriminatory.
- **Accessible** — Our services are accessible to anyone.
- **Available** — Our platform provides the highest level of availability.
- **Transparent** — We always operate with clarity and integrity.

Position

SLR is an independent and neutral platform for the provision of audiovisual media services over any network to any screen.

We enable providers of audiovisual media to create virtual packages of services that for the first time are independent of any physical cable, satellite, terrestrial or telco network infrastructure. This offers an open alternative to powerful aggregators and gatekeepers that otherwise threaten to foreclose the open distribution of audiovisual media.

We exist to enable the adoption and deployment of the DVB-I standard by multiple mutually competing players in the market.

Problem

Navigating the rapidly evolving viewing environment is increasingly complex for both users and media providers, as competition for audience attention intensifies.

Service discovery

We have more viewing choices than ever and so many more ways to watch, but it is still difficult to discover how to access audiovisual media services on different devices and displays.

Finding a particular programme can be frustrating, as we are often forced to fight our way through multiple menus and similar but separate user interfaces on various screens.

As viewing moves from traditional broadcast channels to online delivery, there has been no standard way for media services to advertise their availability or for devices and displays to discover and offer them to users.

Consumers are no longer satisfied by traditional broadcast services. They expect to be able to access audiovisual media services on any screen, over any network.

- **Users** typically need to navigate multiple applications to access services from different providers, which limits usability, accessibility, and availability. Traditional channels and online services are not necessarily integrated. Users need to switch between different inputs and apps and there is no common system of navigation. This creates confusion and frustration for consumers. It also presents accessibility problems for those with various sensory, cognitive, or physical abilities.

- **Devices** and displays do not have a standard way to discover, offer, and access non-broadcast services. Television manufacturers need to provide products that do not depend on a conventional cable, satellite, or terrestrial antenna connection. Phones and tablets can only access online services. This is leading to market fragmentation.

- **Providers** of media services need to negotiate distribution of their applications across multiple platforms. The fragmented market is eroding the prominence of previously pre-eminent public service media providers. Traditional broadcast channels are facing increasing competition and are losing audience share as viewing moves online.

- **Regulators** are seeking to maintain the prominence of public media services and regulate services that are no longer restricted to licensed radio frequency spectrum. Regulators also have a policy objective or a legal requirement to ensure the prominence, availability, and accessibility of public media services, which is becoming more difficult as the viewing environment fragments.

Current solutions either involve dedicated devices and displays, which do not address the requirement for universal availability, or individual applications that need to be developed for multiple operating environments.

Some aggregators are producing their own integrated hardware devices and displays, like Sky Stream, Sky Glass, Amazon Fire TV, or Roku TV. These competing platforms involve inefficient duplication of incompatible systems, with no one dominant solution in the market.

Audiovisual media service providers need to develop apps for many different types of devices and displays. These add-on solutions end up competing for positioning on products and for the attention of users.

The audiovisual media market is complex, with thousands of services competing for the attention of hundreds of millions of viewers. With billions at stake, the ability to connect viewers with programmes that they want to watch is the key to unlocking the multiscreen experience.

Solution

We want to make it easier for everyone to find media services, offering choice, convenience, and control on any screen.

Simple service selection

Our open platform enables different devices, displays and applications to discover available audiovisual media services and access them across the most appropriate delivery networks.

Imagine a machine-readable online directory that applications and products can use to look up lists of relevant services and offer them within their user interface.

- **Users** with compatible devices, displays or applications can simply select services from lists of familiar channels and online offerings in an integrated view, based on their location and the capabilities of their screen. All queries are anonymous, protecting personal privacy. The ordered service list responses facilitate simple accessible navigation, including numeric selection.

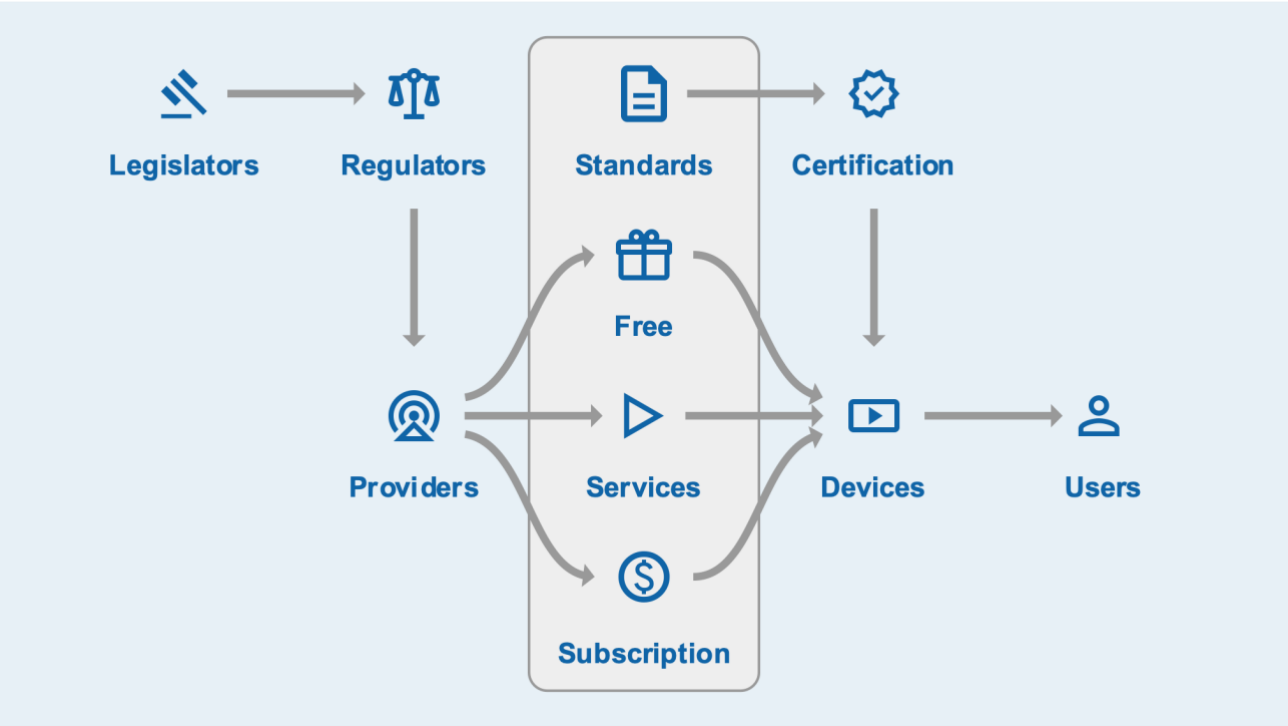
- **Devices**, displays and applications can use open web standards to request service lists and present the results in their own environment. Third parties retain the freedom to innovate and differentiate the user experience of their products in an open and competitive multinational market. This includes integration with intelligent systems, including personalised recommendations, voice control, and home automation.

- **Providers** of media services can publish lists of services available by region across various delivery networks. They can promote their brands and retain control of the distribution of their services, with the option to prioritise different modes of delivery and offer higher quality audio and video formats for compatible devices and displays.

- **Regulators** and legislators can designate and approve lists of services to maintain the prominence of public service media providers and ensure that they are universally available and easily accessible. This identifies the provenance of licenced services within their jurisdiction and facilitates the fulfilment of public policy objectives and plurality of media provision.

Encouraging collaboration between industry stakeholders across the ecosystem, our service discovery platform empowers media providers to extend the reach of their services efficiently and effectively. It simplifies the process of promoting and providing programming across different devices and displays, offering a smooth transition to delivery over any network to any screen.

Value network



The solution is based on existing open standards and does not require any changes to current broadcast transmission systems. By using web technologies, the online service layer can be easily integrated with various client devices and displays, reducing barriers to adoption. This allows for a gradual migration as products are progressively upgraded or replaced. Employing a federated approach and distributed architecture, the system is designed to scale to serve a massive user base.

The core concept of a service directory is well established in computer science. It is widely used in software such as Microsoft desktop and enterprise products. So far, such a system has been absent in broadcast networks, which have assumed no connection between a client and a server. However, with the advent of devices and displays with network connections, such an architecture now offers advantages.

The unique innovation enabled by SLR is to allow the flexible aggregation of media services across multiple delivery networks without the requirement for additional investment in infrastructure. This is a business breakthrough as much as a technology innovation. Just as the development of the World Wide Web applied a new protocol to an existing internet infrastructure, the Service List Registry has the potential to transform the way we access audio and video services.

The SLR platform offers an addition to the industry ecosystem. It extends the reach of media services without requiring customers to change their existing distribution arrangements. It allows them to maintain legacy services while developing their online strategy. It does not require a step change investment but allows incremental enhancement of services. The cost to media providers is marginal and the risk involved is low.

Foundation

The solution is based on the open DVB-I specification developed by the DVB Project, the member organization responsible for the development of digital broadcasting standards in use across Europe and around the world. This is in turn based on open web standards developed by the W3C World Wide Web Consortium.

A limited version of the proposed approach has already been adopted for the Freeview Play proposition in the United Kingdom, where it is known locally as Channel List Management and is based on a proprietary implementation.

The significance of the DVB-I specification is that it will bring the capability of service list aggregation to a much wider market, based on open standards that can be adopted worldwide.

Innovation

The Service List Registry is an essential component of the ecosystem. It provides an index that devices, displays and applications can query to request available audiovisual media services with which they are compatible.

Although the DVB-I standard specifies the registry in terms of request and response syntax and semantics, the actual operation of the service platform is outside the scope of the standard, both in technical and business processes. It is simply assumed to exist. Reference implementations that have been developed are not suitable for production deployment.

The Service List Registry fills this market requirement and aims to provide an industrial-strength operational platform to support the international deployment of the standard. It achieves this though both technical innovation and its business model.

Implementation

The technical implementation involves innovative features that enable the registry to meet the anticipated demand from devices, displays and applications. These proprietary approaches are more efficient than traditional relational database models that do not scale well.

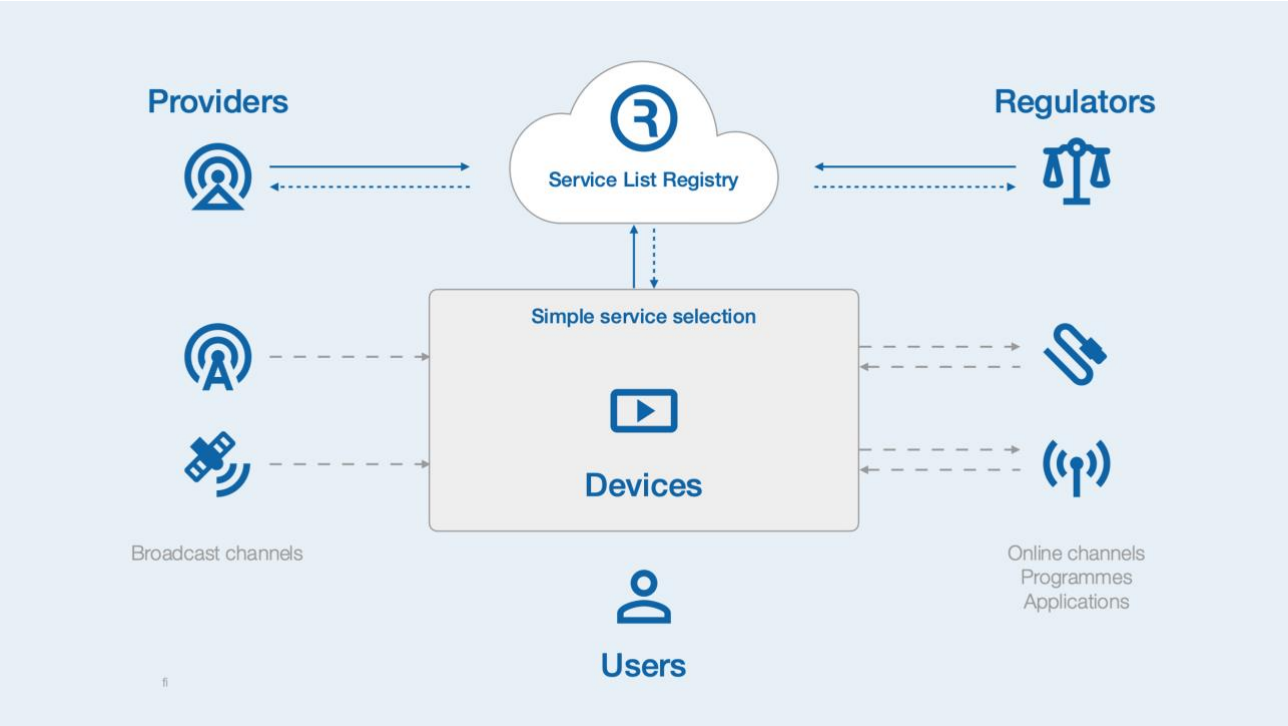
The business implementation includes a federated system that delegates the administration of services to authorized audiovisual media service providers, service aggregators, and regulators. This avoids the need for a central service registry, which would be politically and commercially contentious.

A comparison may be drawn to the DNS Domain Name System that allows any device to resolve a human readable domain name to an internet address. The distributed architecture allows third parties to register domain names and administer records without recourse to a central database. This system is fundamental to the operation of the internet and has successfully scaled to support billions of devices worldwide.

Proposition

The Service List Registry enables the virtual aggregation of audiovisual media services across diverse delivery networks that can be accessed on any compatible device, display, or application.

Data flows



The unique value proposition is that the Service List Registry enables media providers and service aggregators to announce linear channels and on-demand applications without being limited to conventional cable, satellite, or terrestrial transmission infrastructure. It enables online-only video services to co-exist with traditional channels. It also provides a way for traditional broadcasters to extend beyond those modes of delivery and migrate to online distribution over fixed or wireless internet connections.

Such a solution is urgently needed, as online viewing is increasing rapidly, and a strategic service platform is required to enable the long-term migration from traditional broadcasting.

There is no comparable open platform that is available to audiovisual media service providers internationally.

An international approach is necessary as no single territory, at least in Europe, has sufficient scale to support manufacturers that aim to address multinational markets with devices and displays. The main threat that national broadcasters face is from online video services that are multinational.

Development

The DVB-I specification has been developed and published as an open standard by ETSI (TS 103 770 V1.1.1) as revised in DVB Bluebook DVB Document A177 Rev.5.

SLR has developed a proof-of-concept, and this was demonstrated to industry stakeholders at DVB World in May 2022 and the IBC trade show in 2023. SLR has also provided private workshops to broadcasters from Japan and Australia.

SLR has announced a Pilot Programme to enable early adopters to evaluate their requirements.

Closed pilot projects in progress with public and private broadcasters in Germany and Italy are moving to a second phase of trials to address the requirements for market introduction to the public in these territories.

SLR is in discussions with other broadcasters about other pilot projects. These include Freeview Australia, which represents all the major public service, commercial, and regional television broadcasters in Australia. They comprise more than 40 television channels with over 45 regional variations.

The SLR platform is currently hosted on AWS global network infrastructure that provides high levels of availability, integrity and security, necessary for supporting transmission critical services.

A simple online demonstration, showing how queries to the registry are constructed and providing example responses, is available at slrdb.org/demo.

Service List Model

To provide a concrete model of how the Service List model can be applied, this section shows a suggested application for the market in the United Kingdom. Market and regulatory requirements tend to differ by territory and jurisdiction, but the Service List model can be applied accordingly. The Service List Registry has provided proof of concept implementations for other markets.

European context

There are 9406 television channels available in the wider European area as tracked by the European Audiovisual Observatory MAVISE database. 323 of these channels are categorised as targeting the United Kingdom. Table 1 provides a breakdown by the set of 14 categories recorded in the database.

Table 1: Television channels in Europe by category

Category	Europe		Targeting UK	
Entertainment	762	8.1%	60	18.6%
Generalist	4273	45.4%	60	18.6%
Lifestyle / Leisure / Health / Travel	431	4.6%	8	2.5%
Film and TV Fiction	645	6.9%	40	12.4%
Music	458	4.9%	22	6.8%
Sport	822	8.7%	49	15.2%
Documentary	271	2.9%	10	3.1%
Cultural / Educational	199	2.1%	2	0.6%
News / Business	423	4.5%	13	4.0%
Parliamentary / Government / Administration	20	0.2%	2	0.6%
Children	309	3.3%	14	4.3%
Home Shopping	150	1.6%	3	0.9%
Religious	172	1.8%	1	0.3%
Adult	172	1.8%	8	2.5%
Other / Not Identified	299	3.2%	31	9.6%
Total	**9406**	100.0%	**323**	100.0%

Source: European Audiovisual Observatory / MAVISE

United Kingdom model

The total number of television channels currently available on leading platforms with a regulated Electronic Programme Guide is shown in Table 2. This in includes channels available as regional variations.

Table 2: Channels by platform

Service	Freeview	Freesat	Sky	Virgin
Number of television channels	159	143	469	239

The model for the United Kingdom was developed in response to a recent consultation by Everyone TV, the organisation jointly owned by the public service broadcasters in the United Kingdom that manages and promotes the existing Freeview and Freesat services. It is currently engaged in an initiative to develop a next-generation platform based on online delivery.

The approach adopted in developing this model was to seek to achieve alignment with existing platform providers, notably those that are currently covered by regulations with respect to Electronic Programme Guides: Freeview, Freesat, YouView, Sky, and Virgin Media. As these have developed separately within the current Ofcom Code of Practice requirements, there are inconsistencies between them, although they follow similar principles.

The model proposes a numeric organisation for services providing ranges for different genres and categories of service, as shown in Table 3. This is intended to provide an organisation that is logical, coherent, and consistent for users, and aligns well with other popular platforms.

Table 3: Summary of suggested service numbering ranges

LCN Range	Category	Slots	Notes
1-99	Favourite	100	Pre-assigned channels
100-199	Entertainment	100	Including Designated Channels
200-299		100	Time-shift and further channels
300-349	Movies	50	
350-399	Music	50	
400-449	Sport	50	
450-499	Documentary	50	
500-549	News	50	
550-599	Regional	50	Linked to parent service 555 for accessible EPG
600-649	Children	50	
650-699	Shopping	50	
700-749	Religion	50	
750-799	International	50	
800-975	Radio	175	
980-999	Adult	20	With parental controls
1000-9999	Other	9000	Non-broadcast services

This system is broadly consistent with the schemes adopted by the current regulated Electronic Programme Guides, although there are differences between them. These differences are summarised in Table 4, which show the extent to which they align.

Table 4: Genre comparison with other leading platforms

LCN Range	Category	Freeview	Freesat	Sky	Virgin
1-99	Entertainment		—	—	—
100-149					
150-199					
200-249		Children/ News	News	Time-shift	
250-299					Music
300-349	Movies		Movies	Movies	Time-shift
350-399	Music			Music	
400-449	Sport			Sport	Movies
450-499	Documentary				
500-549	News		Music	News/ Religion	Sport
550-599	Regional				
600-649	Children		Children	Children	News
650-699	Shopping	Adult	Religion	Shopping	
700-749	Religion	Radio	Radio	International	Children
750-799	International				Shopping
800-849	Radio		Shopping	SD	International
850-899					Regional
900-949				Adult	Radio
950-979			Regional	Regional	Adult
980-999	Adult		Regional		
1000-9999	Other				

Source: Platform listings.

The main difference is that Freeview does not use genre groups as it started with relatively few channels and has grown organically. Other platforms vary in the numbering of some genres.

The determination of the primary genre of a service will normally be self-evident but in case of dispute will be according to any categorisation provided by the relevant regulator responsible for licensing the service.

While there is some consistency in categories, it is evident that it is not possible to achieve a complete alignment of some genres across all platforms. It is not anticipated that other commercial platforms will reorganise their entire line-up to realise this, although of course they may choose to do so.

The question then arises as to how individual services are organised within these categories. Each of the currently regulated platforms has adopted different approaches to this.

In order to implement a regulated national or regional Service List a simple system of deterministic rules is recommended that can be applied objectively.

It is important to note that this system of organisation applies to the Service List. The objective is to provide a default ordering that that can be easily adopted to provide consistency across platforms. An existing or prospective platform provider remains free to map this to its own system of listing.

Designated channels

Some services are currently Designated Channels and there is a legal and regulatory requirement in the United Kingdom for these to be presented with Appropriate Prominence.

This imposes certain constraints on the numbering of these Designated Channels, complicated by the regionalisation requirements around national and local channels.

Table 5 shows that there is consistency in the first five Designated Channels across all platforms, subject to the requirement that they appear in the first five slots in the electronic programme guide. In the case of Freesat, Sky and Virgin, this begins at 101. This is also reflected on Freeview. It is recommended that this practice is maintained in the suggested scheme, such that 101 corresponds to BBC One on all platforms. It will also be available by default as channel 1 as a pre-assigned favourite channel.

Rule 1: The first five slots, from 101 to 105, shall be allocated to Designated Channels for public service broadcasters (currently BBC One, BBC Two, Channel 3, Channel 4, and Channel 5).

The platforms diverge after the first five Designated Channels. This is partly due to the less prescriptive requirements for prominence. There is limited consistency in the regionalisation of channel numbers for Channel 4 in Wales or the numbering for BBC Scotland or BBC Alba in Scotland. There are differences in channel numbering for BBC Three and Four across platforms and regions.

Table 5: Designated Channels

Service	Suggested	Freeview	Freesat	Sky	Virgin
England					
BBC One	1 / 101	1 / 101	101	101	101
BBC Two	2 / 102	2 / 102	102	102	102
Channel 3 (ITV1)	3 / 103	3 / 103	103	103	103
Channel 4	4 / 104	4 / 104	104	104	104
Channel 5	5 / 105	5 / 105	105	105	105
	6 / 106				
Local	7 / 107				
National / Local	8 / 108				
National	9 / 109				
BBC iPlayer	10 / 110				
BBC Three	11 / 111	23 / 107 / 301 / 613	107 / 179	115 / 117 / 845	107
BBC Four	12 / 112	9 / 106 / 614	108 / 173	116 / 815	108

The suggested solution is to allocate local channels consistently in slots 7 and 8, according to nation or region.

This leaves slot 6 available for another service. It could either be left vacant, used as a channel to promote the platform, as an occasional service for special events, or retained for future expansion.

Given the ability to regionalise the service list, it should be possible to rationalise the local and national arrangements using slots 7, 8 and 9.

Table 6: National variations

Service	Suggested	Freeview	Freesat	Sky	Virgin
Wales					
S4C	4 / 104	4 / 104	104	104	104
Channel 4	9 / 108	7 / 110	106	108	108
Scotland					
BBC Scotland	8 / 108	9 / 108 / 302	106 / 110	115	108
BBC Alba	9 / 109	7 / 303	109	117	120

Rule 2: Slots 106 to 109 shall be allocated to Designated Channels for national, regional, or local services.

The remaining Designated Channels include the other channels of the BBC. Some of these will be included in this block, while others will be accommodated in the appropriate genre categories for News and Children.

It is recommended that the BBC iPlayer be allocated a dedicated channel number to allow direct numeric selection.

Rule 3: Slots 110 to 112 shall be allocated to Designated Channels for other BBC services.

Related services

In addition to the grouping of services by within portfolio groups and by genre category, there is also another opportunity to group channels that are related by provider.

Grouping of related channels can be achieved through metadata associated with each service that identifies a parent group. Such information can be employed by a user interface to reference and present related services.

For instance, when a service such as BBC One is selected, there could be an option to access related services. These could include channels such as BBC Two, BBC Three, BBC Four, and additionally BBC News, BBC Parliament, CBBC and CBeebies, as well as other national services.

A similar approach may be used to reference associated online services, such as the BBC iPlayer, BBC Sounds, or a News, Sport, or Weather application.

This can provide another dimension by which services can be related. The presentation of such information can be implementation dependent, according to the design of an application or guide.

Portfolio services

Portfolio channels associated with the other public service broadcasters can then be allocated to slots 13-32, with blocks allocated to ITV, Channel 4, and Channel 5, in the order of their primary Designated Channel, followed by the UKTV portfolio channels of BBC Studios, of which the BBC is ultimate owner.

There is a benefit to viewers and service providers in contiguity of these families of services in a revised numbering scheme.

It is also desirable to offer direct access to the online service of each of these families within its group.

This suggests an allocation of five slots for each of the families of portfolio services, including its online offering.

It should be delegated to these service providers to propose how they wish to allocate the order of services within their own family group.

Table 7 offers a suggested line-up that demonstrates how this would bring consistency, coherence and contiguity to these services that is currently missing on existing platforms.

Rule 4: Slots 113 to 132 shall be allocated to the portfolio channels associated with the providers of Designated Channels (currently those of ITV, Channel 4, Channel 5, and UKTV).

Table 7: Suggested portfolio channel numbering

Service	Suggested	Freeview	Freesat	Sky	Virgin
ITVX	13 / 113				
ITV2	14 / 114	6	113	118 / 816	115
ITV3	15 / 115	10	115	119 / 817	117
ITV4	16 / 116	26	117	120 / 818	118
ITV Be	17 / 117	28	119	131	119
4	18 / 118				
E4	19 / 119	13	112	135 / 830	106
E4 Extra	20 / 120	31	126	138	287
More4	21 / 121	18	124	136 / 831	147
4seven	22 / 122	49	127	137	143
My 5	23 / 123				
5USA	24 / 124	21	129	141	141
5Star	25 / 125	32	131	128	126
5Select	26 / 126	46	133	153	138
5ACTION	27 / 127	33	132	150	130
UKTV Play	28 / 128				
Dave	29 / 129	19	157	111 / 811	127
Drama	30 / 130	20	158	143	116
W	31 / 131	25	156	132 / 827	125
Yesterday	32 / 132	27	159	155 / 846	129

Other service groups

That leaves fewer than 50 other services in the Entertainment category that are currently available on Freeview and Freesat. These can be accommodated in the remaining double-digit slots.

Where an ultimate owner controls more than one channel on 30 June 2023, these channels may be assigned to a further family group, with the proviso that no group can contain more than ten services.

The ordering of these family groups will be determined by a weighted set of factors, such as volume of viewing, audience reach, the length of time that services have been licensed in the United Kingdom, and alphabetical ordering.

Rule 5: Slots 133 to 199 shall be allocated to family groups of up to ten Entertainment services from the same ultimate owner, ranked by weighted factors.

Table 8 is indicative only, with group ordering and numbering to be determined.

Table 8: Suggested family groups

Service	License holder	Ultimate owner
NOW	Sky UK	Comcast
Sky Arts	Sky UK	Comcast
Pick	Sky UK	Comcast
Challenge	Sky UK	Comcast
Discovery+	Discovery	Warner Bros Discovery
Quest	Discovery	Warner Bros Discovery
Really	Discovery	Warner Bros Discovery
DMAX	Discovery	Warner Bros Discovery
Quest Red	Discovery	Warner Bros Discovery
Food Network	Discovery	Warner Bros Discovery
HGTV	Discovery	Warner Bros Discovery
Paramount+	Paramount	Paramount
Legend	CBS / AMC	AMC Networks / Paramount
CBS Reality	CBS / AMC	AMC Networks / Paramount
Reality Xtra	CBS / AMC	AMC Networks / Paramount
Horror Xtra	CBS / AMC	AMC Networks / Paramount

Other family groups can be created where there is an ultimate common owner. Some of these services may elect to be allocated to other categories, such as Movies or Music.

Promotional service

Channel 200 will be reserved for the purpose of platform promotion and service announcements. This could vary by platform or delivery network.

Rule 6: Slot 200 shall be reserved for promotion and service announcements on the relevant platform.

Time-shift services

Time-shift services, often known as +1 channels, will be allocated in the range from 201 to 299 where applicable, offset where possible by +100 from their parent channel. If the parent channel is outside the range 101-199 the time-shift channel may be allocated to the next available slot following the parent channel.

For example, the +1 channel of a parent service numbered 114 will be allocated channel 214. This provides a consistent pattern for the convenience of viewers.

Rule 7: Time-shift or +1 services shall be allocated slots in the range 201 to 299, offset where possible by +100 from their parent service.

Other entertainment services

Any additional Entertainment services will be allocated available slots in this range, ordered by the priority date on which they were first licensed in the United Kingdom. This will allow the list to expand without disrupting the sequence.

Rule 8: Additional Entertainment services shall be allocated remaining available slots in the range 201 to 299, ordered by the priority date on which they were first licensed in the United Kingdom.

Other non-broadcast services

Some of the most popular online video services are from providers that do not have a broadcast presence on existing free platforms. They include Netflix, Amazon Prime Video, and Disney+.

Channel numbers for such services could be accommodated within the suggested scheme. Alternatively, where supported by platforms, devices and displays, users could assign favourite numbers in the range 1-99 to access installed apps for such services.

Thematic services

Specific ranges are reserved for thematic services, grouped by Movies, Music, Sport, and Documentary. These can include services that are currently broadcast on Freeview and Freesat and licensed services that are only available online.

Rule 10: Movies services shall be allocated slots in the range 300-349.

Rule 11: Music services shall be allocated slots in the range 350-399.

Rule 12: Sport services shall be allocated slots in the range 400-449.

Rule 13: Documentary services are allocated slots in the range 450-499.

News

The News channels BBC News and BBC Parliament could lead the News group, as currently on Freeview, followed by other services including Sky News. There is unfortunately no consistency across numbering of news channels on other services, or easy way of achieving harmonisation.

Table 9: News

Service	Suggested	Freeview	Freesat	Sky	Virgin
News					
BBC News	501	231	200	503	601
BBC Parliament	502	232	201	504	605
[TBC]	503				
…					

Rule 14: News services shall be allocated slots in the range 500-549, starting with Designated Services.

Regions

Regional variations of Designated Channels will be carried in the range 550-599. Since the channel numbering can be regionalised, viewers will see the services of their preferred region at the appropriate number for Designated Channels. Where possible, a system of related channels can be used to link regional variations with their parent service.

Rule 15: Regional variations of Designated Channels shall be allocated slots in the range 550-599. Slot 555 is reserved for an accessible programme guide.

Children

The designated channels for Children, CBBC and CBeebies, would lead the Children group, as they currently do on Freeview and Freesat.

Table 10: Children

Service	Suggested	Freeview	Freesat	Sky	Virgin
News					
CBBC	601	201 / 204	600	607 / 643	701
CBeebies	602	202 / 205	601	608 / 644	702
[TBC]	603				
…					

Rule 16: Children's services shall be allocated slots in the range 600-649, starting with Designated Channels.

Shopping

Shopping services are grouped in the range 650-699. Service providers may also be allocated additional numbers in the Entertainment range if they qualify on other grounds. This grouping provides convenient navigation for viewers specifically looking for shopping services.

Rule 17: Shopping services shall be allocated slots in the range 650-699, in addition to any other qualifying slots.

Religion

Religious and faith services are grouped in the range 700-749.

Rule 18: Religion and faith services shall be allocated slots in the range 700-749.

International

International services are grouped in the range 750-799. These will generally be foreign language services.

Rule 19: International services shall be allocated slots in the range 750-799.

Radio

Allocating 800-975 to radio services allows for 175 services. That is still insufficient to list all the radio stations available in the United Kingdom. RAJAR tracks listening for about 400 services. However, it should be sufficient to list all the BBC radio services and provide a point of entry for each of the major commercial groups.

Within this range, the first 20 slots could be allocated to BBC services, starting at 801, including regional and local radio services assigned automatically based on geographic location. The last 50 slots in the range could be allocated to BBC local radio services in alphabetical order.

That leaves over 100 slots from 820-924 available for other radio services. We recommend that these are presented in family groups by ultimate owner, ranked by aggregate audience reach across each family.

Additional radio services can be accommodated in the range 1000-9999, which provides significant room for further expansion.

It should be noted that the use of favourites could also allow users to assign services to double digit numbers for easy access based on their personal preferences.

Where voice control is available, this should allow access to any radio service that is licensed in the United Kingdom.

Rule 20: Radio services shall be allocated slots in the range 800-975, starting with 20 BBC services.

Adult

The range 980-999 is reserved for adult services, which should be protected by appropriate parental controls or PIN codes. These services are separated from the preceding television channels by a large buffer zone. They could also optionally be hidden from display in channel listings according to viewer preference depending on the user interface implementation.

Rule 21: Adult services shall be allocated slots in the range 980-999, with appropriate parental controls.

Integration of additional services

It is important to provide a way in which additional services in the range 1000+ can be integrated appropriately into the viewing experience, while preserving the principles of prominence for Designated Channels.

One way in which integration can be achieved is through tagging of services with genre or category classifications. This is a feature of standards such as DVB-I. It allows a service to be associated with one or more genres or categories.

This would enable a service with a high Logical Channel Number such as 1111 that is tagged with the category Sport to be appended to the presentation of a list of services in the range 400-449. This can accommodate numerous Sports channels, while preserving the range 400-449 as an entry point for Sport.

While it may be appropriate for a service to reference multiple categories, it is recommended that channels should generally have one category tag and no more than three.

Rule 22: A service may be tagged with up to three genre categories that are appropriate to its programming.

Favourite channels

A further facility that can improve the viewer experience is the ability for users to add favourite channels, either a device level or for their personal profile, using the numbers 1-99. In this way, they can assign their own personal priorities and numeric associations to services, independent of a logical numbering scheme.

Sky has been a pioneer in providing a favourites list that allows users to select and order their own list of channels from those available. This is presented in addition to the ordering determined by the operator in compliance with the prevailing regulations. In this way, public services can retain prominent presentation, but viewers can establish their own navigation to their favourite services. Sky does this because as a service provider that is obliged to has to earn its monthly subscription it needs to satisfy the needs of its subscribers. Research suggests that the feature is not used by all subscribers but is highly valued by those that do.

Current channel numbers

The following tables indicate the channel numbering used across Freeview, Freesat, Sky, and Virgin Media platforms in the United Kingdom. They indicate the scale and complexity of the channel numbering schemes in use and the difficulty of harmonising numbers across all platforms.

Freeview

LCN	Service	Notes
1	BBC One	HD
2	BBC Two	HD
3	ITV1	
4	Channel 4	
	S4C (Wales)	
5	Channel 5	
6	ITV2	
7	Local TV (England)	
7	Channel 4 (Wales)	
8	Local TV	
9	BBC Four	HD
10	ITV3	
11	Sky Arts	
12	Quest	
13	E4	
14	Film4	
15	Channel 4+1	
16	QVC	
17	Really	
18	More 4	
19	Dave	
20	Drama	
21	5 USA	
22	TJC	
23	BBC Three	HD England
25	W	
26	ITV4	
27	Yesterday	
28	ITVBe	
29	ITV2+1	
30	E4+1	Not via relays in Wales
31	E4 Extra	
32	5 STAR	
33	5ACTION	
34	GREAT! movies	
35	ITV1+1	
36	Pick	
37	QVC 2	
38	Channel 5+1	
39	DMAX	
40	Quest Red	
41	Legend	
42	GREAT! action	Not Wales
43	Food Network	
44	HGTV	
45	Gems TV	
46	5 SELECT	
47	Film4+1	

Freeview

LCN	Service	Notes
48	Challenge	
49	4seven	
50	GREAT! tv	
51	Ideal World	
52	GREAT! romance	
57	Dave Ja Vu	
58	ITVBe+1	0400-0500
59	ITV3+1	2100-0400
60	Drama+1	
61	GREAT! movies+1	Closed
62	GREAT! tv+1	0400-2200 Manchester only
63	GREAT! romance+1	2200-0400 Manchester only
64	Blaze	
65	That's TV UK	0600-0400
66	TBN UK	
67	CBS Reality	
68	Reality Xtra	Local TV coverage areas only
69	Horror Xtra	
70	Quest+1	
71	That's 60s	0900-0300
72	Jewellery Maker	0800-1300
73	Shopping Quarter	
74	Yesterday+1	0500-0700
75	That's 70s	0300-0900
76	That's 80s	0400-0600
77	That's 60s MCR	Manchester only
78	TCC	0300-0500
79	Earthx TV	
80	That's 70s MCR	Manchester only
81	Blaze+1	
82	Talking Pictures	
83	Together	0500-0700 Online at other times
84	PBS America	1300-0000
85	Create & Craft	0700-2200
86	That's 80s MCR	Manchester only
87	TV Warehouse	Manchester only
88	TV Warehouse+1	Manchester only
89	ITV4+1	0500-0700
90	Together TV+1	0700-0800 / Streaming at other times.
91	WildEarth	
100	Freeview	Portal to Freeview Play (Information channel for older Freeview receivers)
	HIGH DEFINITION	
101	BBC One HD	
102	BBC Two HD	
103	ITV1 HD	

Freeview

LCN	Service	Notes
104	Channel 4 HD	
	S4C HD (Wales)	(1900-0600 Mon-Fri, 1400-0600 Sat/Sun)
105	Channel 5 HD	
106	BBC Four HD	
107	BBC Three HD	
	(not Wales)	
110	Channel 4 HD (Wales only)	
	CHILDREN	
201	CBBC	HD England
202	CBeebies	HD England
203	CITV	
204	CBBC HD	
204	CBeebies SD	Some Freeview Play devices only.
205	CBeebies HD	
205	CBBC SD	Some Freeview Play devices only.
206	POP	Local TV coverage areas only.
207	Tiny POP	Local TV coverage areas only.
208	POP Max	Local TV coverage areas only.
209	Ketchup TV	Streaming service
210	Ketchup Too	Streaming service
211	YAAAS!	Streaming service
212	POP Player	Streaming service
	NEWS	
231	BBC News	
232	BBC Parliament	
233	Sky News	
235	Al Jazeera English	
236	GB News	
237	TalkTV	
	DATA AND STREAMING	HbbTV-based services
250	BBC Red Button	
261	Vision TV	Streaming service
262	Arise News	Streaming service
263	Sonlife	Streaming service
264	Fail Army	Streaming service
265	On-demand 365	Streaming service
266	Pet Collective	Streaming service
267	Al Jazeera English	Streaming service
268	Al Jazeera Arabic	Streaming service
269	WION News	Streaming service
270	Real Crime	Streaming service
271	Channelbox	Streaming service
272	Asharq News	Streaming service
273	Al Arabiya	Streaming service
276	Shots!	Streaming service
277	UK Radio Portal	Streaming service
279	Al Alaraby	Streaming service

Freeview

LCN	Service	Notes
280	ROK	Streaming service
281	Revelation TV	Streaming service
282	God TV	Streaming service
283	3ABN	Streaming service
284	Amazing Discoveries	Streaming service
	IP CHANNELS	Some Freeview Play devices only
301	BBC Three HD	
302	BBC Scotland HD	
303	BBC Alba HD	
501	BBC News HD	
502	BBC Parliament HD	
	ACCESSIBILITY SERVICE	
555	Accessible TV Guide	Freeview Play devices only
	INTERACTIVE	
601	BBC RB1	
	SD CHANNELS	Devices that support HD substitution
611	BBC One SD	Some Freeview Play devices only
612	BBC Two SD	Some Freeview Play devices only
613	BBC Three SD	Some Freeview Play devices only
614	BBC Four SD	Some Freeview Play devices only
	ADULT	
670	Adult Section	
671	Adult Xpanded	
673	SmileTV3	
674	Adult Babestn	
699	Adult Section	
	RADIO	
700	BBC Radio 1	
701	BBC Radio 1 Xtra	
702	BBC Radio 2	
703	BBC Radio 3	
704	BBC Radio 4	
706	BBC Radio 5 Sports Extra	
705	BBC Radio 5 Live	
707	BBC Radio 6 Music	
708	BBC Radio 4 Extra	
709	BBC Asian Network	
710	BBC World Service	
711	Hits Radio	
712	KISS FRESH	
713	KISS	
714	KISSTORY	
715	Magic	
716	Greatest Hits Radio	
717	Kerrang!	
718	Smooth Radio	
719	BBC Local Radio (England)	
	BBC Radio Wales (Wales)	

Freeview

LCN	Service	Notes
720	BBC Local Radio (England)	
	BBC Radio Cymru (Wales)	
721	BBC Local Radio (England)	
	BBC Radio Cymru 2 (Wales)	
722	BBC Local Radio (England)	In some regions only
723	TalkSport	
724	Capital	
725	Premier	
726	BBC Local Radio (England)	In some regions only
727	Absolute	
728	Heart	
730	RNIB Connect	
731	Classic FM	
732	LBC	
733	Trans World Radio	
734	BBC Local Radio (England)	In some regions only
735	BBC Local Radio (England)	In some regions only

Channel 780-799 Reserved for temporary services.

Channel 800+ Receiver specific range and non-Freeview channels.

Freesat

LCN	Service	Notes
101	BBC ONE HD	Local BBC service
102	BBC TWO HD	
103	ITV1 HD	STV SD (C/N Scotland)
		ITV1 Border Sco. SD (Border)
		UTV HD (Northern Ireland)
		ITV1 Channel SD (CI)
104	Channel 4 HD	S4C HD (Wales)
105	Channel 5 HD	
106	-	BBC SCOTLAND HD (Scotland)
		Channel 4 HD (Wales)
107	BBC THREE HD	
108	BBC FOUR HD	
109	BBC ALBA HD	
110	BBC SCOTLAND HD	(SD version in Scotland)
111	ITV1 SD	ITV1 HD (Border)
		STV HD (Central/N Scotland)
112	ITV1+1	Not in STV/UTV regions
113	ITV2 HD	
114	ITV2 +1	
115	ITV3 HD	
116	ITV3 +1	
117	ITV4 HD	
118	ITV4+1	
119	ITVBe	
120	S4C HD	In Wales on 104
121	Channel 4 + 1	
122	E4	
123	E4+1	
124	More4	
125	More4 +1	
126	E4 Extra	
127	4seven	
128	Channel 5 + 1	
129	5USA	
130	5USA +1	
131	5STAR	
132	5ACTION	
133	5SELECT	
134	Reality Xtra	
135	CBS Reality	
136	CBS Reality +1	
137	Legend	
138	Horror Xtra	
139	Horror Xtra +1	
141	5STAR+1	
142	GREAT! tv	
143	GREAT! tv +1	
144	Pick	

Freesat

LCN	Service	Notes
146	Challenge	
147	Sky Arts	
148	Food Network	
149	Food Network +1	
150	DMAX	
151	DMAX+1	
155	PBS America	
156	W	
157	Dave	
158	Drama	
159	Yesterday	
160	Really	
162	Blaze	
164	Together	
166	HGTV	
167	Quest HD	
168	Quest+1	
169	Quest Red	
170	Quest Red+1	
172	Quest	
173	BBC FOUR SD	
174	BBC SCOTLAND SD	Not Scotland
177	Court TV	
178	That's TV UK	
179	BBC THREE SD	
	NEWS AND SPORT	
200	BBC NEWS HD	
201	BBC PARLIAMENT HD	
202	Sky News	
203	Al Jazeera English HD	
204	France 24	
208	Bloomberg HD	
209	NHK World-Japan HD	
210	CNBC	
212	BBC NEWS SD	
213	Channels 24	
214	Arirang TV HD	
215	TRT World	
216	GB News HD	
217	TalkTV HD	
250	Sporty Stuff HD	
	FILMS	
300	Film 4	
301	Film 4+1	
302	GREAT! movies	
303	GREAT! romance	
304	GREAT! romance+1	
305	GREAT! movies action	

Freesat

LCN	Service	Notes
306	Talking Pictures TV	
	MUSIC	
501	4Music	
502	The Box	
503	KISS TV	
504	Magic TV	
505	Kerrang!	
506	That's 60s	
	CHILDREN	
600	CBBC HD	
601	CBeebies HD	
602	CITV	
603	POP	
604	Pop Max	
605	Tiny Pop	
606	CBBC SD	
607	CBeebies SD	
	RELIGION	
691	Daystar HD	
692	Revelation	
694	GOD Channel	
695	Sonlife	
	RADIO	
700	BBC Radio 1	
701	BBC Radio 1Xtra	
702	BBC Radio 2	
703	BBC Radio 3	
704	BBC Radio 4	
705	BBC Radio 5	
706	BBC Radio 5 Sports Extra	
707	BBC Radio 6 Music	
708	BBC Radio 4 Extra	
709	BBC Asian Network	
710	BBC Radio 4 LW	
711	BBC World Service	
712	BBC Radio Scotland	
713	BBC Radio Nan Gaidheal	
714	BBC Radio Wales	
715	BBC Radio Cymru	
716	BBC Radio Ulster	
717	BBC Radio Foyle	
718	BBC Radio London	(London) BBC Radio Cymru 2 (Wales)
719	Capital	
720	Capital Xtra	
721	Classic FM	
722	Gold	
723	Radio X	

Freesat

LCN	Service	Notes
724	Absolute	
726	Absolute 80s	
730	Planet Rock	
731	TalkSport	
732	Smooth	
733	Heart	
734	LBC	
735	BBC Radio Cymru 2	Except Wales, where it is on channel 718
736	Virgin Radio UK	
750	RTÉ Radio 1	
751	RTÉ 2FM	
752	RTÉ Lyric	
753	RTÉ RnaG	
786	Forces Radio BFBS	
790	TWR	
	SHOPPING	
800	QVC HD	
801	QVC Beauty	
802	QVC Extra	
803	QVC Style HD	
805	Gems TV (Gemporia)	
807	Jewellery Maker	
809	TJC	
810	TJC Beauty	
812	Ideal World HD	
813	Create & Craft HD	
	REGIONAL VERSIONS	Viewers will see relevant version on channels 101-103
951	BBC One London HD	
952	BBC One NE & Cumbria HD	
953	BBC One North West HD	
954	BBC One Yorkshire HD	
955	BBC One E Yorks & Lincs HD	
956	BBC One West Midlands HD	
957	BBC One East Midlands HD	
958	BBC One East HD	
959	BBC One South East HD	
960	BBC One West HD	
961	BBC One South HD	
962	BBC One South West HD	
963	BBC One Channel Islands HD	
964	BBC One Scotland HD	
965	BBC One Wales HD	
966	BBC One NI HD	
967	BBC Two Network	Except Eng/Sco
968	BBC Two Wales HD	Except Wales
969	BBC Two NI HD	Except NI

Freesat

LCN	Service	Notes
	OTHER	
970	BBC RB1 HD	
971	BBC RB1 SD	
977	ITV London AD	Except London
998	Freesat UHD	
2101	Rakuten TV	New Freesat devices only
2102	BBC iPlayer	New Freesat devices only

Sky

LCN	Service	Notes
101	BBC One	
102	BBC Two	
103	ITV1	STV in Central and Northern Scotland, UTV in Northern Ireland. HD except Channel Islands and Border Scotland.
104	Channel 4	S4C (Wales)
105	Channel 5	
106	Sky Showcase	
107	Sky Witness	
108	Sky Atlantic	Channel 4 (Wales)
109	alibi	Sky Atlantic (Wales)
110	GOLD	alibi (Wales)
111	Dave	Gold (Wales)
112	Comedy Central	Dave (Wales)
113	Sky Max	Comedy Central (Wales)
114	Sky Comedy	Sky Max (Wales)
115	BBC Three HD (England/NI)	Sky Comedy (Wales);
		BBC Scotland (Scotland);
116	BBC Four	
117	BBC Three (England, outside of London)	London Live (London);
		BBC Alba HD (Scotland)
118	ITV2	
119	ITV3	
120	ITV4	
121	Sky Documentaries	BBC Three (Scotland)
122	Sky Crime	Sky Documentaries (Scotland)
123	Sky History	Sky Crime (Scotland)
124	Sky Nature	Sky History (Scotland)
125	Discovery	Sky Nature (Scotland)
126	MTV	Discovery (Scotland)
127	Comedy Central Xtra	MTV (Scotland)
128	5STAR	Comedy Central Xtra (Scotland)
129	Nat Geo	5STAR (Scotland)
130	Sky Arts	Nat Geo (Scotland)
131	ITVBe	Sky Arts (Scotland)
132	W	ITVBe (Scotland)
133	TLC	W (Scotland)
134	S4C (Eng, NI, CI, IoM)	TLC (Scotland)
135	E4	S4C (Scotland)
136	More4	E4 (Scotland)
137	4seven	More4 (Scotland)
138	E4 Extra	4seven (Scotland)
139	Sky Sci-Fi	E4 Extra (Scotland)
140	Food Network	Sky Sci-Fi (Scotland)
141	5 USA	Food Network (Scotland)
142	Really	
143	Drama	

Sky

LCN	Service	Notes
144	QUEST	
145	Challenge	
146	CBS Reality	
147	Reality Xtra	
148	Legend	
149	Quest Red	
150	5ACTION	
151	Pick	
152	Sky Replay	
153	5SELECT	
154	ID	
155	YESTERDAY	
156	Crime+Investigation	
157	GREAT! tv	
158	HGTV	
159	E!	
161	Discovery Turbo	RTÉ One in Northern Ireland
162	Animal Planet	RTÉ 2 in Northern Ireland
163	Sky History 2	TG4 in Northern Ireland
164	BLAZE	
165	Nat Geo Wild	
166	Eden	
167	Disc. Science	
168	Sky History 2 (Northern Ireland only)	
169	BBC Alba HD	5USA (Scotland)
170	Together	
172	DMAX	
174	PBS America	
176	ITV1 HD [Border England version]	In the Border Scotland region.
177	Discovery History	
178	Animal Planet (Northern Ireland)	
179	Court TV	
180	EarthX TV	HD only.
181	Channel 7	
182	Travelxp	
183	That's TV (UK)	
184	Discovery Turbo (Northern Ireland)	
185	NTD	
186	Ayozat	
187	BBC Scotland	(not Scotland)
200-299	+1 CHANNELS	100 places above the parent channel
203	ITV1+1	Not in the STV region.
204	Channel 4+1	
205	Channel 5+1	
206	Sky Showcase+1	
207	Sky Witness+1	
208	Sky Atlantic+1	

Sky

LCN	Service	Notes
209	alibi+1	Wales: Sky Atlantic+1
210	GOLD+1	Wales: alibi+1
211	Dave ja vu	Wales: GOLD+1
212	Comedy Central +1	Wales: Dave Ja Vu
213		Wales: Comedy Central+1
218	ITV2+1	
219	ITV3+1	
220	ITV4+1	
222	Sky Crime+1	Not Scotland
223	Sky History+1	Scotland: Sky Crime+1
224		Scotland: Sky History+1
225	Discovery+1	Not Scotland
226		Scotland: Discovery+1
228	5STAR+1	Not Scotland
229	Nat Geo+1	Scotland: 5STAR+1
230		Scotland: Nat Geo+1
232	W+1	Not Scotland
233	TLC+1	Scotland: W+1
234		Scotland: TLC+1
235	E4+1	Not Scotland
236	More4+1	Scotland: E4+1
237		Scotland: More4+1
240	Food Network+1	Not Scotland
241	5USA+1	Scotland: Food Network+1
243	Drama+1	
244	QUEST+1	
246	CBS Reality+1	
249	Quest Red+1	
254	ID+1	
255	YESTERDAY+1	
256	Crime+Investigation +1	
257	GREAT! tv+1	
258	HGTV+1	
261	Disc. Turbo+1	(In Northern Ireland on 284)
262	Animal Planet+1	(In Northern Ireland on 278)
266	Eden+1	
267	Discovery Sci+1	
269		Scotland: 5USA+1
272	DMAX+1	
277	Discovery History+1	
278	Animal Planet+1	(In Northern Ireland)
284	Discovery Turbo+1	(In Northern Ireland)
300-349	MOVIES	
301	Sky Cinema Premiere	
302	Sky Cinema Select	
303	Sky Cinema Hits	
304	Sky Cinema Sci-Fi/Horror	
305	Sky Cinema Animation	

Sky

LCN	Service	Notes
306	Sky Cinema Family	
307	Sky Cinema Action	
308	Sky Cinema Comedy	HD only
309	Sky Cinema Thriller	HD only
310	Sky Cinema Drama	HD only
311	Sky Cinema Greats	
313	Film4	
314	Film4+1	
317	Horror Xtra	
318	Horror Xtra+1	
319	GREAT! romance	
320	GREAT! romance+1	
321	GREAT! movies	
322	GREAT! movies+1	
323	GREAT! movies action	
324	GREAT! movies action+1	
325	Movies24	
326	Movies24+	
328	TalkingPictures	
350-399	MUSIC	
350	MTV MUSIC	
351	MTV HITS	
352	MTV 90s	
353	MTV 80s	
354	4Music	
355	The Box	
356	KISS	
357	Magic	
358	Kerrang!	
360	Trace Vault	
361	NOW 70s	
362	NOW 80s	
363	NOW ROCKS	
364	Clubland TV	
365	That's 60s	
366	That's 80s	
400-499	SPORT	
401	Sky Sports Main Event	
402	Sky Sports Premier League	
403	Sky Sports Football	
404	Sky Sports Cricket	
405	Sky Sports Golf	
406	Sky Sports F1	
407	Sky Sports Action	Sky Sports NFL (part-time)
408	Sky Sports Arena	
409	Sky Sports News	
410	TNT Sports 1	
411	TNT Sports 2	

Sky

LCN	Service	Notes
412	Viaplay Sports 1	HD only
413	Eurosport 1	
414	Eurosport 2	
415	Sky Sports Racing	
416	Sky Sports Mix	
417	TNT Sports 3	
418	MUTV	
419	Viaplay Sports 2	HD only
420	Viaplay Xtra HD	HD only
421	TNT Sports 4	
423	LFCTV	
424	Racing TV	
427	Sporty Stuff TV HD	HD only
429	DAZN 1 HD	HD only
490	TNT Sports Box Office	part-time
491	Sky Sports Box Office SD	part-time
492	Sky Sports Box Office HD	part-time
493	TNT Sports Ultimate (UHD)	part-time
494	TNT Sports Box Office 2	part-time
495	DAZN PPV	part-time
500-579	NEWS	
501	Sky News	
502	Bloomberg	
503	BBC NEWS	
504	BBC Parliament	
505	CNBC	
506	CNN	
507	NHK World	HD only
508	Euronews	
509	NDTV 24x7	
510	FRANCE 24	
511	Al Jazeera English	HD only
512	GB News	HD only
513	TRT World	
515	Channels 24	
516	Arise News	
518	Arirang TV	
519	WION	HD only
520	TVC News	
521	NBC News Now	HD only
522	TalkTV	HD only
523	India Today	
580-599	RELIGION	
580	GOD Channel	
581	revelation	
582	TBN UK	
583	DAYSTAR	
584	Inspiration TV	

Sky

LCN	Service	Notes
585	LoveWorld	
586	EWTN Catholic	
587	Word Network	
588	Faith World TV	
589	KICC TV	
590	Faith UK	
591	Good News TV	
592	Dunamis TV	
593	SonLife	
594	New Media HD	
600-659	CHILDREN	
601	Cartoon Network	
602	Cartoon Network +1 (CN+1)	
603	Boomerang	
604	Nickelodeon	
605	Nicktoons	
606	Nick Jr.	
607	CBBC	
608	CBeebies	
609	Sky Kids	
610	Cartoonito	
611	Boomerang+1	
612	CITV	
613	Nick Jr. Too	
614	POP	
615	Tiny Pop	
616	Nickelodeon+1	
618	Tiny Pop+1	
619	POP+1	
620	POP Max	
621	POP Max+1	
622	Nick Jr+1	
624	RTÉjr	Northern Ireland only
626	Baby TV	
640	Cartoon Network	SD version
641	Boomerang	SD version
642	Nickelodeon	SD version
643	CBBC	SD version
644	CBeebies	SD version
645	Nick Jr.	SD version
660-699	SHOPPING	
660	QVC	HD only
661	JML Direct	
662	TJC	
663	QVC Beauty	
665	Gems TV	
666	High Street TV 1	
667	High Street TV 2	

Sky

LCN	Service	Notes
668	TJC Beauty	
669	Best Direct	
670	Gemporia Craft	
672	High Street TV 3	
673	Create & Craft HD	
674	HobbyMaker	
675	High Street TV 4	
676	TV Warehouse	
677	QVC Style	HD only
678	Direct Store TV	
679	QVC Extra	
680	Craft Extra	
681	Cruise1st.tv	
700-799	INTERNATIONAL	
701	B4U Movies	
702	B4U Music	
703	SONY TV	
704	Utsav Bharat	
705	Utsav Plus	
706	COLORS	
707	Zee Cinema	
709	Zee TV	
710	AAJ TAK	
711	MATV National	
712	Foodxp	
713	Colors Rishtey	
714	Colors Cineplex	
715	SONY MAX	
716	Siraj TV	
717	Utsav Gold	
718	SONY SAB	
720	SONY MAX 2	
724	Aastha	
725	Sanskar	
731	MTA1 World	HD only
732	HUM Masala	
733	Hidayat TV	
734	GEO News	
735	PTV Global	
736	New Vision TV	
737	Islam Channel	
738	GEO TV	
739	Noor TV	
742	IQRA TV	
743	92 News	
744	Islam TV	
745	Ahlebait TV	
746	Madani Chnl	

Sky

LCN	Service	Notes
749	Takbeer TV	
751	HUM EUROPE	
752	British Muslim	
754	Dunya News	
755	Islam Ch Urdu	
757	Eman Channel	
758	ARY Digital	
759	Samaa TV	
760	Siraj TV	
761	QTV	
766	PTC PUNJABI	
767	Brit Asia TV	
768	Sikh Channel	
769	Sangat	
770	Akaal Channel	
772	Kanshi TV	
774	Pitaara	
775	PBC	
777	CHSTV	
778	IQRA BANGLA	
779	ATN	
780	NTV	
781	TV One	
782	iON TV	
783	Deen TV	
784	Islam Bangla	
786	Abu Dhabi TV	
787	Ahlulbayt TV	
788	Sky News Arabia	
789	ImamHussain3	
791	PCNE Chinese	HD only
794	Colors Gujarati	
800-899	SD SWAP	Standard definition versions of channels with an HD version. (Excludes children's SD/HD swaps)
801	BBC One Nightlight	No regional programmes
802	BBC Two	
803	ITV / STV / UTV	
804	Channel 4	
805	Channel 5	
806	Sky One	
807	Sky Witness	
808	Sky Atlantic	
809	alibi	
810	GOLD	
811	Dave	
812	Comedy Central	
813	Sky Max	

Sky

LCN	Service	Notes
814	Sky Comedy	
815	BBC Four	
816	ITV2	
817	ITV3	
818	ITV4	
819	Sky Documentaries	
820	Sky Crime	
821	Sky History	
822	Sky Nature	
823	Discovery	
824	MTV	
825	National Geographic	
826	Sky Arts	
827	W	
828	TLC	
829	S4C	
830	E4	
831	More4	
834	Quest	
835	E!	
836	SyFy	
837	Crime+Investigation	
840	Sky History 2	
841	Nat Geo Wild	
843	Smithsonian Channel	
844	BBC Scotland	
845	BBC Three	
846	Yesterday	
847	BBC ALBA SD	
848	Sky Cinema Premiere	
849	Sky Cinema Greats	
850	Sky Cinema Family	
851	Sky Cinema Action	
855	Film4	
858	Sky Sports Main Event	
859	Sky Sports Main Event	UHD/HD swap
860	Sky Sports Premier League	
861	Sky Sports Football	
862	Sky Sports Cricket	
863	Sky Sports Golf	
864	Sky Sports F1	
865	Sky Sports Action	
866	Sky Sports Arena	
867	Sky Sports News	
868	Eurosport 1	
869	Eurosport 2	
870	BT Sport 1	
871	BT Sport 2	

Sky

LCN	Service	Notes
873	Sky Sports Mix	
874	BT Sport 3	
875	MUTV HD	
876	BT Sport ESPN	
877	Racing TV	
881	Sky News	
882	BBC News	
883	CNBC	
884	CNN	
886	TRT World	
890	TJC	
892	Sony TV Asia	
893	Utsav Plus	
894	Colors	
895	Sony Max	
896	Utsav Gold	
898	Zee TV	
900-929	ADULT	
900	TVX	
901	Adult Channel	
902	Xpanded TV	
903	Babes & Brazzers	
904	Babenation	
905	Get Lucky TV	
906	XXX Public Pickups	
907	TVX 40+	
908	XXX Girl Girl	
909	XXX College	
950	Sky Intro	
951-980	REGIONAL VARIATIONS and BBC RED BUTTON	Viewers will see relevant version on channels 101-103.
951	BBC One London HD	
952	BBC One NE & Cumbria HD	
953	BBC One North West HD	
954	BBC One Yorkshire HD	
955	BBC One E Yorks & Lincs HD	
956	BBC One West Mids HD	
957	BBC One East Mids HD	
958	BBC One East HD	
959	BBC One South East HD	
960	BBC One West HD	
961	BBC One South HD	
962	BBC One South West HD	
963	BBC One Channel Islands HD	
964	BBC One Scotland HD	
965	BBC One Wales HD	
966	BBC One NI HD	
967	BBC Two HD	NI/Wales

Sky

LCN	Service	Notes
968	BBC Two Wales HD	Eng/Sco/NI
969	BBC Two NI HD	Eng/Sco/Wal
970	BBC RB 1 HD	(Red Button)
971	BBC RB 1 SD	
973	ITV1+1	in some regions
990-999	OTHER	
996	Channel Line-up	
998	Sky Intro	
999	Sky	
	RADIO	
101	BBC Radio 1	
102	BBC Radio 2	
103	BBC Radio 3	
104	BBC Radio 4	
105	BBC Radio 5 Live	
106	Classic FM	
107	Absolute Radio	
108	TalkSport	
109	Capital	
110	Planet Rock	
111	Heart	
112	Heart 80s	
113	Radio X	
114	Capital Xtra	
115	BBC World Service	
116	BBC Radio Scotland	
117	BBC Radio Wales	
118	BBC Radio Ulster	
119	BBC Asian Network	
120	BBC Radio 6 Music	
121	Gold	
122	WRN Europe	
123	LBC	
124	Smooth Radio	
125	Panjab Radio	
126	BBC Radio 4 Extra	
127	BBC Radio 1Xtra	
128	TWR	
129	BBC Radio Nan Gaidheal	
130	BBC Radio 4 LW	
131	BBC Radio 5 Live Sports Extra	
132	Heart Extra	
133	Sukh Sagar	
135	variations:	BBC Radio London (London); BBC Radio Foyle (NI); BBC Radio Cymru (Wales)
136	variations:	BBC Radio Cymru (Eng, Sco, NI); BBC Radio Cymru 2 (Wales)
137	RTÉ Radio 1	

Sky

LCN	Service	Notes
138	RTÉ 2fm	
139	RTÉ Lyric	
140	RTÉ Raidió na Gaeltachta	
141	Kiss	
142	Magic	
143	Hits Radio	
144	Absolute 80s	
145	Absolute 90s	
146	Jazz FM	
148	Absolute Classic Rock	
149	BFBS Forces Radio	
150	Virgin Radio	
151	Greatest Hits Radio	
152	Heart 90s	

Virgin

LCN	Service	Notes
100	Virgin Media Previews HD	
101	BBC One HD	Your local BBC One service
102	BBC Two HD	
103	ITV1/STV/UTV HD	
104	Channel 4 HD	S4C HD in Wales
105	Channel 5 HD	
106	E4 HD	
107	BBC Three HD	England/NI
	BBC Four HD	Scotland/Wales
108	BBC Four HD	England/NI
	BBC Scotland HD	Scotland
	Channel 4 HD	Wales
109	Sky Showcase HD	
110	Sky Witness HD	
111	Sky Max HD	
112	Sky Comedy HD	
113		BBC Three HD (Scot/Wal)
114	Alibi HD	
115	ITV2 HD	
116	Drama HD	
117	ITV3 HD	
118	ITV4 HD	
119	ITVBe HD	
120	5USA	BBC Alba HD (Scotland)
121	Sky Crime HD	
122	Sky Sci-Fi HD	
123	Sky Arts HD	
124	GOLD HD	
125	W HD	
126	5STAR	
127	Dave HD	
128	Really	
129	Yesterday HD	
130	5ACTION HD	
131	Sky History HD	
132	Comedy Central HD	
133	Crime+Investigation HD	
134	MTV HD	
135	Pick	
136	Together TV	
137	Quest HD	
138	5SELECT	
139	Challenge	
140	Sky Arts (HD)	
143	4seven HD	
147	More4 HD	
148	CBS Reality	
149	LEGEND	

Virgin

LCN	Service	Notes
150	That's TV UK	
154	Comedy Central Extra	
156	Sky Replay	
159	Local TV	(in some areas only, e.g. London Live in London)
160	E! HD	
161	BBC Alba HD (Eng/Wal/NI)	On 120 in Scotland
162	BBC Scotland HD (Eng/Wal/NI)	5USA (Scotland)
164	S4C HD (Eng/Wal/NI)	On 104 in Wales
165	TLC HD	
166	Investigation Discovery (ID)	
168	Quest Red	
169	DMAX	
170	GREAT! tv	
171	Horror Xtra	
172	Reality Xtra	
174	BLAZE	
175	Virgin UHD	
176	Eden HD	
177	Discovery HD	
178	Animal Planet	
179	Discovery Science	
180	Discovery Turbo	
181	Discovery History	
182	Nat Geo Wild HD	
183	National Geographic HD	
186	Sky History 2 HD	
187	PBS America	
188	Sky Documentaries HD	
189	Sky Nature HD	
190	Food Network	
191	HGTV	
192	God TV	
	IP Services	
204	Netflix	
205	Amazon Prime Video	
220	Inside Crime UK	
221	Real Wild	
222	Mystery TV	
223	HauntTV	
224	History Hit	
230	Homes Under The Hammer	
231	Great British Menu	
232	Tastemade	
242	NextUp Live Comedy	
243	Chat Show	
244	Baywatch	
250	Deal or No Deal USA	

Virgin

LCN	Service	Notes
251	Fear Factor	
252	Wipeout Xtra	
	MUSIC	
280	MTV Music	
281	MTV Live HD	
282	MTV Hits	
283	MTV 90s	
284	MTV 80s	
285	The Box	
286	4Music	
287	E4 Extra	
288	Kiss	
289	Magic	
290	Kerrang!	
291	Vevo	
292	Clubland TV	
293	Now 70s	
294	Now 80s	
295	Now Rock	
296	That's 60s	
	+1 Timeshifts	
303	ITV1+1	STV+1 / UTV+1 (Scot/NI)
304	Channel 4+1	Not Wales
305	Channel 5+1	
306	E4+1	
308	Channel 4+1	In Wales
310	Sky Witness+1	
314	Alibi+1	
315	ITV2+1	
316	Drama+1	
317	ITV3+1	
318	ITV4+1	
319	ITVBe+1	
320	5USA+1	Not Scotland
321	Sky Crime+1	
324	Gold+1	
325	W+1	
326	5STAR+1	
327	Dave Ja Vu	
329	Yesterday+1	
331	Sky History+1	
332	Comedy Central+1	
333	Crime+Investigation+1	
337	Quest+1	
347	More4+1	
348	CBS Reality+1	
362	5USA+1	in Scotland
365	TLC+1	

Virgin

LCN	Service	Notes
366	ID+1	
369	DMAX+1	
371	Horror Xtra+1	
376	Eden+1	
377	Discovery+1	
378	Animal Planet+1	
379	Discovery Science+1	
381	Discovery History+1	
383	National Geographic+1	
391	HGTV+1	
	FILMS	
400	Virgin Movies Previews	
401	Sky Cinema Premiere HD	
402	Sky Cinema Select HD	
403	Sky Cinema Hits HD	
404	Sky Cinema Greats HD	
406	Sky Cinema Family HD	
407	Sky Cinema Action HD	
408	Sky Cinema Comedy HD	
409	Sky Cinema Thriller HD	
410	Sky Cinema Drama HD	
411	Sky Cinema Sci-Fi & Horror HD	
412	Sky Cinema Animation	
419	Movies 24	
420	Movies 24 +	
424	GREAT! movies classic / christmas	
425	GREAT! movies	
426	GREAT! movies action	
428	Film4 HD	
430	Film4 +1	
445	Talking Pictures TV	
	SPORT	
501	Sky Sports Main Event HD	
502	Sky Sports Premier League HD	
503	Sky Sports Football HD	
504	Sky Sports Cricket HD	
505	Sky Sports Golf HD	
506	Sky Sports F1 HD	
507	Sky Sports Action HD	
508	Sky Sports Arena HD	
509	Sky Sports News HD	
510	Sky Sports Mix HD	
511	Sky Sports Main Event	V6 box
512	Sky Sports Premier League	V6 box
513	Sky Sports Football	V6 box
514	Sky Sports Cricket	V6 box
515	Sky Sports Golf	V6 box
516	Sky Sports F1	V6 box

Virgin

LCN	Service	Notes
517	Sky Sports Action	V6 box
518	Sky Sports Arena	V6 box
519	Sky Sports Racing HD	
521	Eurosport 1 HD	
522	Eurosport 2 HD	
526	MUTV	
527	TNT Sports 1 HD	
528	TNT Sports 2 HD	
529	TNT Sports 3 HD	
530	TNT Sports 4 HD	
531	TNT Sports Ultimate (UHD)	
532	Sky Sports Main Event UHD	
533	Sky Sports F1 UHD	
534	Sky Sports UHD 1	
535	Sky Sports UHD 2	
536	Racing TV HD	
544	LFC TV HD	
551	Viaplay Sports 1 HD	
552	Viaplay Sports 2 HD	
553	Viaplay Xtra HD	
	NEWS	
601	BBC News HD	
602	Sky News (HD)	
604	GB News HD	
605	BBC Parliament HD	
606	TalkTV HD	
609	Bloomberg HD	
613	CNBC	
614	NBC News Now HD	
620	Euronews	
621	NDTV 24x7	
622	Al Jazeera English	
624	France 24 English HD	
625	NHK World-Japan HD	
	CHILDREN'S	
701	CBBC HD	
702	CBeebies HD	
703	Baby TV	
704	Cartoon Network HD	
705	Cartoon Network +1	
706	Cartoonito	
707	Sky Kids HD	
712	Nickelodeon HD	
713	Nick +1	
715	Nick Jr.	
716	Nick Jr. Too	
717	Nicktoons	
730	Boomerang	

Virgin

LCN	Service	Notes
731	Boomerang +1	
734	CITV	
736	Pop	
737	Tiny Pop	
	SHOPPING	
740	QVC HD	
741	QVC Beauty	
742	QVC Style HD	
743	QVC Extra	
748	Create and Craft	
755	Gems TV	
757	TJC	
	INTERNATIONAL	
800	Desi App Pack	
801	Utsav Gold HD	
802	Utsav Bharat	
803	Utsav Plus HD	
805	SONY TV ASIA HD	
806	SONY MAX HD	
807	SONY SAB	
808	SONY MAX 2	
809	Zee TV	
810	Zee Cinema HD	
815	B4U Movies	
816	B4U Music	
825	Colors Gujarati	
826	Colors TV HD	
827	Colors Rishtey	
828	Colors Cineplex	
829	NDTV Good Times	
831	Al Jazeera Arabic	
838	Islam Channel	
839	Islam Channel Urdu	
	VARIATIONS	
861	BBC One London HD	
862	BBC One Scotland HD	
863	BBC One NI HD	
864	BBC One Wales HD	
865	BBC Two HD	Network version for England and Scotland
875	RTÉ One	In Northern Ireland.
876	RTÉ 2	In Northern Ireland.
877	TG4	In Northern Ireland.
	RADIO	
901	BBC Radio 1	
902	BBC Radio 2	
903	BBC Radio 3	
904	BBC Radio 4	

Virgin

LCN	Service	Notes
905	BBC Radio 5 Live	
906	BBC World Service	
907	BBC Radio 1Xtra	
908	BBC Radio 5 Live Sports Extra	
909	BBC Radio 6 Music	
910	BBC Radio 4 Extra	
911	BBC Radio 4 LW	
912	BBC Asian Network	
913	BBC Radio Cymru 2	
915	Absolute Radio	
916	Smooth Radio	
917	RTÉ Radio 1	
918	Heart	
919	LBC	
920	WRN	
921	Heart 80s	
922	Classic FM	
923	Gold	
924	Planet Rock	
927	TalkSPORT	
928	Magic	
930	BBC Radio Scotland	
931	BBC Radio Wales	
932	BBC Radio Ulster	
933	BBC Radio Foyle	
934	BBC Radio Nan Gaidheal	
936	BBC Radio Cymru	
937	BBC Radio London	
951	Absolute 80s	
952	Absolute Classic Rock	
958	Capital	
959	Capital Xtra	
960	Radio X	
963	Kiss	
	ADULT	Variations apply to V6 box
968	PIN Help	Advisory
969	Previews	
970	TVX	
978		
971	Babes and Brazzers	
972	Adult Channel	
980		
973	XXX Brits	
979		
974	GirlGirl	
981	Babenation	
982	Meet The Babes	
985	PIN Help	Advisory

Virgin

LCN	Service	Notes
	OTHER	
991	BBC RB1 HD	BBC Red Button service
998	VM Previews	
999	VM Ultra HD	