BBC response to **Ofcom's** *Strategic Review of Digital Communications Discussion document*

8 October 2015

Overview

1. The BBC welcomes this opportunity to input into Ofcom's Strategic Review of Digital Communications.

2. The review comes at a time when the uses of fixed and mobile IP networks[1] are ever more important to our economy, to consumers and to the delivery of public services on which UK citizens rely.

3. For audiovisual (AV) providers like the BBC, this creates significant opportunities, such as new ways to reach audiences and meet growing demand for UK content. Increasingly people are enjoying what they want, whenever they want, wherever they are and relying on fixed and mobile IP networks to do this. In the next 10 years distribution over IP networks will likely become as important as distribution over the airwaves is today. During this time we will be moving to an internet-fit BBC, to be ready for an internet-only world whenever it comes.

4. Yet this transition also presents risks. If the regulatory regime fails to keep pace, public service broadcasting (PSB) content in particular could be increasingly exposed to gatekeeper power – with inadequate guarantees to secure its widespread availability, prominence, and quality of delivery, as well as to prevent the diversion of money invested in UK content to pay for carriage instead.

5. PSB regulation needs to be fit for an internet age offering far greater choice, innovation and higher volumes of video-on-demand, IPTV and interactive services. As broadcasters like the BBC make our services internet-ready, it is important that Ofcom, policymakers and industry consider what steps need to be taken to ensure IP networks are broadcaster-ready.

Special role of AV sector

6. The UK's audiovisual sector is not the focus of Ofcom's Review. It is just one of the sectors adapting to the profound changes resulting from greater connectivity and connected consumers. Yet it has a special role as a key driver of superfast broadband uptake[2] and mobile data demand.

7. The BBC has led in driving this demand for connectivity, from the stimulus BBC online provided to online adoption in the 1990s and 2000s to the market-making role of BBC iPlayer for long-form video on demand (VOD) and the resulting increase in broadband demand.

8. 40% of audiences say that BBC iPlayer was "one of the reasons I like having broadband at home", and 13% said it was "one of the reasons I got broadband at home in the first place".[3] By encouraging consumers to go online and go superfast, audiovisual services like BBC iPlayer improve the economics of network expansion and upgrades.

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[1] IP (internet protocol) networks carried through mobile, fixed and/or cable infrastructure.

[2] See for example, WIK, Competition and Investment: An analysis of the drivers for superfast broadband, July 2015, found that "In general, regulatory factors appear to date to have had less influence over NGA coverage and take-up than market-based factors such as infrastructure competition or online video".

[3] 40% based on 2015 average of data from Pulse by GfK for the BBC; 13% is from Pulse by GfK for the BBC. 777 UK adults who used iPlayer on a computer in the last three months (October 2013: six years after the launch of iPlayer in 2007).

The distribution of audiovisual content and services

9. The current main means of distribution for broadcasting have a number of characteristics which have benefitted PSBs and audiences substantially. These characteristics include:
    - Widespread availability
    - Affordable access
    - Service innovation
    - Guaranteed quality delivered via reliable and resilient networks
    - Support for a virtuous circle of reach, funding and investment in original UK content
    - Efficient, one-to-many distribution and a direct, unmediated relationship with audiences.

10. At the same time, IP networks have offered another distribution model with great potential for the audiovisual sector – lower barriers to entry, fast-paced evolution of technologies and services, one-to-one and many-to-many relationships with audiences, and a flexible and 'best efforts' regime in which content and service providers support and invest in the delivery of their content to ISPs (e.g. via CDNs), without being required to make direct payments for carriage.

11. The growth of IP-delivered services and connectivity does not mean we agree with those who say broadcasting will be replaced over the next decade. We don't. Overall, the BBC believes the majority of people will continue to enjoy radio and television, as now, over the next decade.

12. But increasingly, in a way made possible by the internet and mobile devices, people are enjoying what they want, whenever they want, wherever they are. It's perfectly possible that by the middle of the next decade that becomes the main route to what the BBC does.

13. So for the next 10 years, we will need to ride two horses - serving those who have adopted the internet and mobile media, while at the same time making sure that those who want to carry on watching and listening to traditional channels continue to be properly served too.

Opportunities for the delivery of audiovisual services over IP networks

14. The above characteristics of IP delivery offer enormous creative opportunities. They allow PSBs to reimagine their portfolios, straddling long and short-form content, live and on-demand; and fusing content with functionality to enable curation, recommendations, and onward journeys. It opens up the possibility of new formats and telling stories in interactive and immersive ways – and providing services that go where the audience is.

15. They offer the BBC opportunities for a new set of internet-first services, such as: the Ideas Service, an open online platform in partnership with the arts, cultural and intellectual institutions; a new online offer for UK children, BBC iPlay; and the move from rolling news to streaming news to meet mobile demand.

16. This strategy – for an Open BBC in the internet age[4] – can help offer pathfinder services for the rest of the audiovisual industry, and drive demand for connectivity further.

Risks to the delivery of audiovisual services over IP networks

17. Alongside the benefits outlined above, the transition towards an internet-first world raises a number of risks in relation to the delivery of audiovisual content and of public services.

18. When Ofcom started its last Review, no channels offered full catch-up TV services, and when BBC iPlayer launched as *de facto* market leader in 2007, all of its usage was over the Open Internet – i.e. 0% of access was 'gatekept', where that third-party had the capability to act as an intermediary between the BBC and the audience. Now 63% of BBC iPlayer use is gatekept.

19. PSB could be increasingly exposed to this gatekeeper power, as the incentives of ISPs - and vertically integrated, converged platform operators in particular – are unlikely to be aligned with PSB objectives. Such a risk is exacerbated by a regulatory regime which is in need of modernisation.

A regulatory environment to support world-class AV sector and world-class connectivity

20. We recognise the primary role that competition and competition policy will play in driving the development of IP networks in the interests of consumers. The market remains dynamic and innovative – it may overcome a number of the policy and technical challenges alone. However, as Ofcom recognises, public policy also has a role to play. Some issues are likely to require coordinated action from Government, regulators and industry.

21. As Ofcom looks to the kind of market outcomes and regulatory climate which will support world-class connectivity, we would encourage Ofcom to consider also the future of the UK's world-class audiovisual sector.

22. To this end, we would urge Ofcom to consider three key areas:

    i) **Ongoing support for PSBs** as the cornerstone of investment in UK content, drivers of IP service innovation and significant contributors to the UK's demand for connectivity. In particular, it will be important to ensure that the terms of distribution on IP networks do not require investment in UK content to be diverted to pay for carriage.

    ii) **A regulatory framework which supports the availability and prominence of PSB content in the internet age**. The regulatory framework already provides a series of potential protections to audiovisual service providers – for example, through significant market power (SMP) competition tools, access-related conditions and the forthcoming EU Regulation covering net neutrality. As Ofcom's recent PSB Review noted "*if PSB is to be 'maintained and strengthened' as set out in the statutory*

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[4] British, Bold, Creative, The BBC's programmes and services in the next Charter, September 2015, available at: https://downloads.bbc.co.uk/aboutthebbc/reports/pdf/futureofthebbc2015.pdf

duty, catch-up players for all PSB channels should benefit from appropriate prominence and access to all major platforms". In our view, the same is true of PSB linear and PSB interactive services. For prominence, this requires Government to modernise UK legislation to cover on-demand and significant new gateways to content, and Ofcom to review its electronic programming guide (EPG) Code. For access, it requires the modernisation of 'must carry' rules. We would encourage Ofcom to shape the current EU debates – and support a timely review of EU-level definitions of electronic communications networks and services, and information society services, in light of current market conditions.

iii)   **An annual review of the broadcaster-readiness of IP networks**. A broader range of market, regulatory and technological trends should be monitored to establish the readiness of IP networks to carry the greater volumes of VOD and IPTV arising from the ongoing transition towards IP. These are likely to include the availability and take-up of connectivity, any market tendencies towards the use of gatekeeper power, and the technical capabilities of networks (such as the availability and deployment of new technologies like "multicast OTT"). Such a review might build on the approach used in Ofcom's Free to View discussion document – and might feature as part of Ofcom's annual Infrastructure Report updates.

23. Not all the points we raise in our submission will be carried forward directly by Ofcom's Digital Communications Review. We recognise the breadth of the Review and that Ofcom is carrying out other relevant work, such as its Review of Access to On Demand Services on TV Platforms.

24. Nonetheless, Ofcom should take the 10-year opportunity of its Digital Communication's Review to set out a strategic commitment to ensure that IP networks support the future delivery of audiovisual services and PSB in particular.

Responses to Ofcom's Questions

25. We have clustered our analysis around three sections of Ofcom's consultation as follows:
    - Q1-3: Availability and take-up
    - Q4-5: Convergence, changing market structures and gatekeeper risks
    - Q20-21: Quality of service and capability, end-to-end, to meet an IPTV future.

Availability and take-up

> **Should competition policy remain at the core of good availability outcomes for most consumers, complemented by targeted intervention as required?**
>
> *Q1: Do stakeholders agree that promoting effective and sustainable competition remains an appropriate strategy to deliver efficient investment and widespread availability of services for the majority of consumers, whilst noting the need for complementary public policy action for header to reach areas across the UK?*
>
> *Q2: Would alternative models deliver better outcomes for consumers in terms of investment, availability and price?*
>
> **What more can be done through public policy to deliver truly widespread availability?**
>
> *Q3: We are interested in stakeholders' views on the likely future challenges for fixed and mobile service availability. Can a 'good' level of availability for particular services be defined? What options are there for policy makers to do more to extend availability to areas that may otherwise not be commercially viable or take longer to cover?*

26. The BBC agrees that effective and sustainable competition will remain the cornerstone of efficient investment and widespread availability of digital communications services, supported by appropriate public policy interventions. Competition is already spurring the biggest players to invest in ultrafast. Earlier this year, Virgin Media announced plans to spend £3billion[5] to connect 4 million more UK homes and businesses at faster speeds. BT also announced the rollout and upgrade of its superfast network with an ambition to bring G.fast to up to 10 million homes by 2020. Other networks are investing too. CityFibre is committed to a £500m rollout of a new fibre network in cities – and, with Sky and TalkTalk, is building out a network with speeds of up to 1Gbps across the city of York. A number of independent networks are also raising significant funds for network deployment in rural areas and localities.

27. However, as we look forward to a time when such communications networks will be critical to the delivery of public services and live TV among other audiovisual service offers, it is clear that a focus on availability is necessary but insufficient. Availability cannot be decoupled from take-up for two reasons. First, if the UK is to derive the full economic and social utility of greater connectivity, the widest availability must be matched by the widest take-up. Second, while supply-side competition drives greater availability, so too does demand stimulation by improving the rollout investment case and allows capital expenditures to spread further. Historically, audiovisual content – and services like BBC iPlayer – have played an important role in demand stimulation, and we see this role increasing.

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[5] Virgin Media statement, 13 February 2015

Competition will remain the cornerstone and has at times been under-estimated

28. The BBC recognises the role competition has played in driving broadband availability, and agrees with Ofcom's analysis on the potential of cable infrastructure to act as a competitive spur to fixed broadband rollout (paragraph 6.35). Indeed, in some respects, the role of competition has been under-estimated in the past. It appears the market has delivered more than Broadband Delivery UK (BDUK) estimated. £600m of licence fee funds were earmarked to fund tenders for superfast broadband rollout but some of the public funding (c.£129 million) is now being clawed-back, given the higher than predicated take-up of broadband in the relevant areas. While the returned funds will support further tenders for broadband rollout, this demonstrates the risk of public investment subsidising market activity that would have happened anyway.

Yet competition alone is unlikely to deliver the widest availability

29. We also recognise that competition alone is unlikely to deliver the widest availability of superfast broadband during the time period of the Review. Availability currently stands at c.80%[6]. Existing public funding administered by BDUK is intended to ensure superfast availability to 95% of UK premises by 2017, with Digital Scotland, Superfast Cymru and the Northern Ireland Next Generation Broadband Programme making important contributions to that target. This leaves the 'final 5%' representing some of the hardest to reach UK premises.

30. As outlined above, BT has suggested that clawed-back funds may extend superfast fibre rollout by a further percentage point to 96%.[7] Fibre, however, is unlikely to be the only potential technology contributing to the 'final 5%'. BDUK has used public funds to support pilots exploring a mix of technologies for cost effective rollout. Lessons may also be learnt from the Rural Community Broadband Fund and innovative community funding models like B4RN (Broadband for the Rural North). Government's ambition to address the 'final 5%' should take account of these factors. Whatever the mix of technologies and funding streams, one of the primary funding streams hitherto will stop in the period of Ofcom's Review. The summer Budget 2015 announced the phasing out of licence fee funding of broadband rollout by 2020/21. This will strengthen the independence of the BBC, and is in line with the Culture Media and Sport (CMS) Select Committee's conclusion that the case for licence fee funding broadband rollout was "unconvincing".[8]

31. It is unlikely that every premise in the 'final 5%' would be reached given the cost gradient of connecting the very final percentage points. In light of this, we welcome the discussion Ofcom started with its 2014 Infrastructure Report suggestion that it might be time to review public policy around universal service. We note it is also Government's intention to 'look to raise' the speed of the Universal Service Obligation (USO) – the legal entitlement to a basic service – from dial-up speeds (28.8 kbit/s[9]). A USO might act as a safety net to catch those who do not receive superfast connectivity via commercial or existing BDUK deployments.

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[6] Ofcom, Communications Market Report, 2015.
[7] BT, News Release 'BT CEO delivers vision for Britain's Digital Future', 22 September 2015.
[8] CMS Committee, February 2015, Future of the BBC Inquiry
[9] Ofcom, Designation of BT and KCOM as universal service providers

32. Ofcom's analysis of the impact of broadband speeds on average data downloads suggests that currently, speeds below 10Mbps may constrain usage, for example because some applications will not work properly (figure 18). The analysis also shows that access speed mainly affects the consumer experience when it falls below c.10Mbps (figure 19). This data should be considered by Government in its deliberations over the USO and the adequacy of the current universal service commitment of 2Mbps.

Broadcaster-readiness

33. Current levels of superfast availability are not as widespread as traditional broadcasting platforms. Looking to the future, comparable levels of coverage may be required if the full benefits of PSB were to be fully replicated over the internet.

34. The bandwidth requirements of broadcaster-ready networks would also need careful consideration. We note that already, based on existing habits, Ofcom modelled a use case scenario of a four-person household requiring 12.5Mbps at peak time.[10] Looking ahead to 2023, the Broadband Stakeholder Group (BSG) forecast a median household scenario could require 19Mbps, and some users require 20 – 30 Mbps.[11] In the longer-term, were IP networks to become the predominant means of many households consuming live TV this would likely require comparable superfast speeds. But such speeds could rise in line with consumer expectation and citizen needs to access other essential services.

35. These requirements of course differ from advertised headline speeds and speed is only one factor in determining quality of experience.[12] Today's figures also do not account for the impact of higher consumer expectations for quality (such as 4k), better compression technologies or network enhancements such as multicasting and vectoring. Nonetheless, the BSG estimate makes the case for the pace of change, and the necessity that any speed-based public policy interventions (such as a USO or any minimum quality of service) be kept under review in the longer-term.

Take-up

36. Despite the wide and increasing availability of broadband at faster speeds, take-up continues to lag behind availability. While 80% of homes can currently subscribe to superfast broadband, only 30% of homes have chosen to do so. 15% of UK households remain entirely offline.[13] More than three quarters of offline homes say they do not intend to get access to the internet.[14]

37. Audiovisual content and services have to date played a critical role in driving up broadband demand.

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[10] Ofcom, Infrastructure Report, paragraph 3.96, December 2014.
[11] Broadband Stakeholders Group, <u>Domestic Demand for Bandwidth</u>, December 2013.
[12] As recognised in paragraph 13.27 of Ofcom, Digital Communications Review, 2015
[13] Ofcom, Communications Market Report, 2015.
[14] http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr15/CMR_UK_2015.pdf

38. Back in the mid-2000s, the BBC was able to overcome the uncertain investment conditions and co-ordination problems associated with VOD. Its Charter-based mission to 'bring new digital technologies to everyone' gave it a mandate and its funding model, expertise and trusted brand the means. The success of BBC iPlayer increased demand for VOD services to the benefit of all market participants. Reed Hastings, Chief Executive of Netflix, said: *"The iPlayer really blazed the trail. That was long before Netflix and people really got used to the idea of on-demand viewing."*

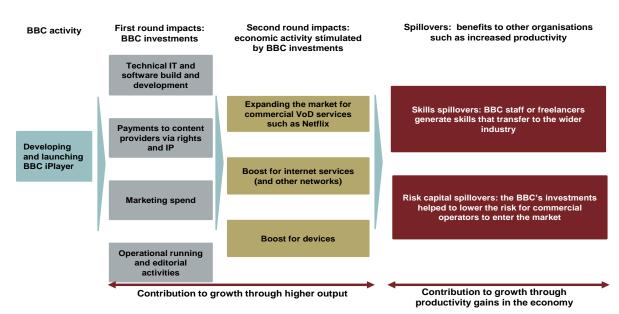39. The role of iPlayer in driving benefits across the VOD distribution chain is illustrated below.

Figure 1: BBC investments in BBC iPlayer

BBC activity	First round impacts: BBC investments	Second round impacts: economic activity stimulated by BBC investments	Spillovers: benefits to other organisations such as increased productivity
Developing and launching BBC iPlayer	Technical IT and software build and development	Expanding the market for commercial VoD services such as Netflix	Skills spillovers: BBC staff or freelancers generate skills that transfer to the wider industry
	Payments to content providers via rights and IP	Boost for internet services (and other networks)	
	Marketing spend	Boost for devices	Risk capital spillovers: the BBC's investments helped to lower the risk for commercial operators to enter the market
	Operational running and editorial activities		
	Contribution to growth through higher output		Contribution to growth through productivity gains in the economy

Source: Frontier Economics. 'The contributions of the BBC to the UK creative industries'. April 2015.

In part, thanks to this role, the UK market is now a global leader in catch up TV. Out of Europe's top five economies, it has both the broadest free-to-air catch-up viewing[15] with services like BBC iPlayer and the strongest commercial revenues – more than two-and-a half times greater than the next biggest market.[16] Offers like Freeview Play will build on this track-record of VOD success and provide further incentives to connect TV sets. Platforms like YouView will show the potential of IPTV to further drive demand. We see connected TV platforms as particularly important in moving offline audiences towards IP, and onwards towards superfast.

40. Among the major consumer barriers to broadband adoption (which include lack of interest and lack of skills as well as a lack of availability) it is important to note cost. Ofcom research reveals 15% of those without internet access cite cost as the main barrier to getting connected.[17] While free-to-view platforms now offer affordable access to television services, connectivity can add a significant incremental cost to the UK's connected viewers.

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[15] Ofcom, International Communications Market Report 2014
[16] Screen Digest
[17] http://stakeholders.ofcom.org.uk/binaries/research/media-literacy/adults-2014/2014_Adults_report.pdf

41. UK broadband subscriptions are already highly price competitive by international standards. Nonetheless, it will be important for comparatively affordable TV services to continue to be available if the full benefits of PSB are to be fully replicated over the internet.

Convergence, changing market structures and gatekeeper risks

> **Does convergence and consolidation in our sectors suggest new approaches or tools are required to deliver effective competition?**
>
> *Q4: Do different types of convergence and their effect on overall market structures suggest the need for changes in overarching regulatory strategy or specific policies? Are there new competition or wider policy challenges that will emerge as a result? What evidence is available today on such challenges?*
>
> *Q5: Do you think that current regulatory and competition tools are suitable to address competition concerns in concentrated markets with no single firm dominance? If not, what changes do you think should be considered in this regard and why?*

The pace of convergence and consolidation

42. Convergence and consolidation are resulting in profound consequences for the UK market and its regulation. Increasingly, the UK market is consolidating, characterised by vertically integrated triple and quad play companies, merging to form multi-territorial businesses.

43. Retail convergence – or bundling of services - has increased significantly since Ofcom's last telecoms sector review. For TV alone, the proportion of UK homes who got their service as part of a communications 'bundle' increased from c.10% in 2004 to c.25% a decade later.[18]

44. Service convergence has seen on-demand and over the top (OTT) delivery offer an important complement to broadcast viewing. While historically, viewing has largely been additive, we are beginning to see some substitution. BARB data suggests that half of the recent modest decline in TV viewing (c.11 minutes per day per person in the past year) may have shifted to catch-up and other non-traditional TV consumption.[19] In ten years, we expect at least half of all viewing and listening will be live.

45. Service convergence has been accompanied by device convergence. Over half of the UK has a TV set connected to the internet, although this figure is likely to be higher if accounting for third-party devices which can connect TVs to the internet (e.g. Chromecast).[20] Similarly, since Ofcom's last Review, mobile devices have enabled the substitution of Wi-Fi for mobile data. 95% of BBC iPlayer consumption on iOS devices is served via Wi-Fi[21]. However, network convergence is also increasing the ability of mobile networks to meet the growing data demand - driven by video - through the use of fixed fibre leased lines for backhaul.

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[18] Sources: Ofcom Communications Market Reports 2004 & 2014 for UK-wide bundling; BARB data for total households; company reports.
[19] Ofcom, Communications Market Report 2015, 1.4.2.
[20] Ofcom, Communications Market Report 2015, 2.1.3.
[21] BBC data, September 2015.

Opportunities

46. Consolidation can bring some consumer benefits, such as efficiencies of scale and a simple customer relationship for consumers. Convergence also brings enormous opportunities for the seamless delivery of audiovisual services, anytime, anywhere. It has lowered the barriers to entry for new OTT entrants and enabled a more interactive, two-way relationship with audiences.

47. For PSBs like the BBC, convergence offers an opportunity to reimagine their portfolios, straddling long and short-form content, live and on-demand; and fusing content with functionality to enable curation, recommendations, and onward journeys. It opens up the possibility of new formats and telling stories in interactive and immersive ways – and providing services that go where the audience is.

48. In 10 years broadcasting will still be crucial to the BBC, but it will be complemented by a new set of internet-first services. The BBC has begun the transition with services like BBC Three moving online to act as pathfinders. It has also proposed internet-native services like BBC iPlay, a new offer for UK children, providing the breadth of age-appropriate BBC content as well as interactive formats and tools to encourage children to be active creators. These are set out in full in the BBC's recent Charter publication.[22]

Risks

49. Despite the benefits of convergence, it also brings risks to content providers – in particular in relation to gatekeeping.

50. Some gatekeeper risks are already clear – in particular, in relation to on-demand content. When Ofcom started its last Review, no channels offered full catch-up TV services, and when BBC iPlayer launched as *de facto* market leader in 2007, all of its usage was over the open internet – i.e. 0% of access was 'gatekept', where that third-party had the capability to act as an intermediary between the BBC and the audience. Now 63% of BBC iPlayer use is gatekept.

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[22] British, Bold, Creative, The BBC's programmes and services in the next Charter, September 2015, available at: https://downloads.bbc.co.uk/aboutthebbc/reports/pdf/futureofthebbc2015.pdf

Figure 2: Percentage of iPlayer traffic delivered without gatekeeping

Source: BBC analysis, current May 2015

51. We welcome Ofcom's acknowledgement that it is important to be "mindful that [convergence] may also raise the potential for new online platform gatekeepers to emerge in the future".[23]

52. This concern was expanded in the fuller, TV-specific analysis laid out in Ofcom's Free to View Discussion Document. This stated:

> *"the relationship between the ISPs as distribution platforms and broadcasters as content providers has not yet been tested. For example, there could be a concern that the ISPs could act as new gatekeepers over the distribution of broadcast services over IP. Especially if content providers have to rely on their managed services to provide a quality TV experience."*

53. On this criterion, Ofcom judged the UK's "readiness for mass market IPTV" as "low". Under the criterion of "sufficient protection for broadcasters against unwarranted traffic management", it also judged the UK's readiness as "low". These areas of exposure were in contrast to Ofcom's more positive assessment of criteria such as availability, equipment uptake and infrastructure capabilities (readiness judged in all cases as "medium").[24]

54. The above risks raised by Ofcom all suggest that ISPs may be incentivised to use a variety of means of requiring payments from content and application providers, based on a two-side market model. This might involve rentseeking, making the only way to access their customer base with a quality TV experience contingent on payment for carriage. This scenario would present three unenviable options to PSBs:
   - a lessening of availability if gatekeeping made it impossible/unviable to access audiences
   - a lower quality of service should managed services cause real detriment to OTT delivery
   - being forced to pay for carriage and – for the BBC in particular, with its constrained funding levels - see money diverted from UK content.
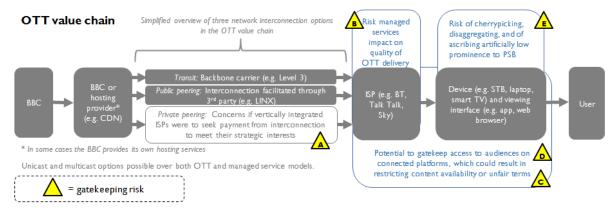
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[23] paragraph 9.120, Ofcom, Digital Communication Review, 2015
[24] Ofcom, The Future of Free to View, May 2014, Figure 5.3

55. Where ISPs also control connected platforms or user interfaces (UIs), they could also exert editorial gatekeeper power. These areas of potential gatekeeping are identified in the below value chain.

Figure 3: Potential gatekeeping in the OTT value chain (fixed)

A. Potential use of interconnection for strategic interests

56. The BBC currently work with all major UK ISPs to arrange interconnection including private and public peering arrangements and are exploring new arrangements such as caching deeper in ISPs' networks where it is of benefit to the BBC and the ISP.

57. Interconnection is an essential aspect of internet operations and arrangements are agreed when the BBC and an ISP exchange sufficient data to justify the cost of setting up and maintaining a direct link. Such links can be beneficial from a network engineering point of view too (as data travels a shorter distance and is less likely to degrade.) [25] They can also be economically beneficial as creating a direct connection reduces the traffic load and therefore the cost of transit services.

58. Currently both interconnecting parties meet their own connection costs and, reflecting the mutually beneficial nature of the relationship, additional fees do not change hands. But vertically integrated network providers could refuse to make such connections in order to raise the cost of distribution for rivals. Netflix was reportedly forced to make such payments for peering with ISPs in the United States[26] and recently backed a merger deal on the basis that fees for interconnection with the merged operators would not be sought.[27]

59. We would be concerned if this was the direction of travel in the UK and the only way for the audiovisual service providers to form such interconnections was to pay ISP gatekeepers. This would essentially mean paying to access audiences was even though, absent vertical interests, these interconnections would be mutually benefit for both parties – and for citizens and consumers.

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[25] http://www.broadbanduk.org/wp-content/uploads/2010/03/BSG-and-Value-Partners-White-Paper-Broadband-Infrastructure-The-Service-and-Application-Providers-View-23-March-2010.pdf

[26] https://gigaom.com/2014/02/23/confirmed-comcast-and-netflix-have-signed-a-peering-agreement/

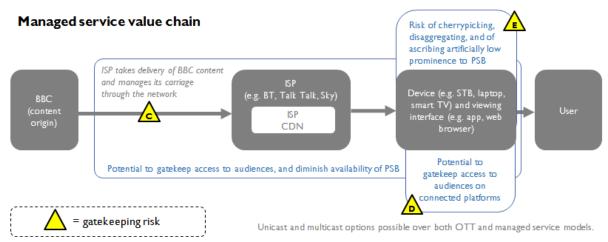[27] http://fortune.com/2015/07/15/netflix-investor-call-q2/

B. The Open Internet model and OTT delivery

60. The open internet has offered low barriers to entry and "innovation without permission". This has allowed new entrants to scale rapidly and become some of today's most well-known companies. The open internet has also been a successful engine for innovation and growth, carrying mutual benefits for users, content and application providers and network operators.

61. It has also allowed PSBs to reach all audiences with connected devices OTT, delivering our standardised products like BBC iPlayer, and without payment for carriage. New EU Regulations, sensibly interpreted, should enshrine the UK's principles-based approach to safeguarding the quality and availability of the open internet into law. The laws should also empower Ofcom with more robust, practical and clearly-defined tools (such as minimum quality of service). Net neutrality laws should not restrict network innovation or hinder the availability of managed services where that is compatible with open internet safeguards.

62. Nonetheless, as vertically integrated companies strategically prioritise managed networks, incentives may not be aligned with these as-yet unimplemented EU regulations. It is therefore important that Ofcom, Government and industry (through bodies like the Broadband Stakeholder Group) continue to work to ensure the UK continues to lead in the support of balanced net neutrality principles.

C. Access to managed networks

63. The managed service value chain is characterised differently from OTT delivery, with the key parts of the value chain – and relevant gatekeeper risks – outlined below.

Figure 4: Potential gatekeeping in the managed service value chain (fixed)

64. Managed networks complement OTT and broadcasting, representing a relatively small proportion of overall viewing. As delivery of TV over IP becomes increasingly important, they are likely to become more important as a route to audiences. Their ability to offer a guaranteed quality of service, end-to-end, could represent an opportunity for network innovation and audiovisual service delivery. As Ofcom implied in their FTV TV discussion document, their role could become even more important should open internet guarantees prove insufficient to deliver quality TV reception.

65. Such an outcome could also present risks to audiovisual service providers, as identified in Ofcom's Net Neutrality statement[28]. As well as potentially raising barriers to entry, Ofcom especially noted the risk to PSBs and the importance of considering whether 'must carry' obligations should *"apply to public service content delivered online".*[29]

66. More recently, Ofcom's PSB Review concluded that any update to access rules, should consider:
   - *"whether the existing 'must offer' and 'must carry' regimes remain fit for purpose in the light of changing technologies;*
   - *"whether the PSBs need some protection in relation to carriage arrangements for services carried over the internet, as they currently have for services carried over broadcast networks; and*
   - *"whether the rules can be designed to capture significant platforms only, given the likely proliferation of platforms in the future."*

67. We agree. In our view, there is a compelling case to extend must-carry rules that currently apply to 'principal means' of receiving TV for a 'significant number of end users' to cover all PSB services, including VOD and interactive services like connected red button as these services are an increasingly important and popular aspect of the BBC's offer to audiences.

68. We would encourage Ofcom to shape the current EU debates on these topics. In this respect, it is timely to review EU-level definitions of electronic communications networks and services and information society services in light of current market conditions.

D. Access to connected platforms

69. The interests of connected platform providers may not always be aligned with the wide availability of a breadth of audiovisual services, whether live, on-demand or interactive. In some cases, this may work against sustainable competition, efficient investment and innovation, and the greatest possible benefit for the end-users.

70. To this end, in addition to PSB-specific tools, Ofcom retains general competition powers in the form of access-related conditions which go beyond its powers under the wider SMP framework. They have an important role as a backstop to ensure the carriage of audiovisual services on a fair, reasonable and non-discriminatory (FRND) basis.

71. While 'must carry' rules remain in need of modernisation - for example to cover on-demand and interactive services - access-related conditions will remain particularly significant to PSBs as a backstop power in relation to the provision of such services.

72. As Ofcom summarised in a recent statement: "*In relation to these existing on-demand services, the Act confers broad powers allowing us to consider a wide range of issues related to network access and interoperability of services under sections 73 and 74 and the wider significant market power (SMP)*

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[28] Ofcom. Net Neutrality Statement. 24 November 2011.
[29] Ofcom. Net Neutrality Statement. 24 November 2011. (Paragraph 4.51)

framework. As content providers increasingly take advantage of new ways to deliver content, with richer interactivity, this is an area of growing strategic importance…[The on-demand assessment] will enable us to consider whether it would be appropriate and proportionate to exercise our powers to impose conditions to regulate access to these services."[30]

E. Editorial gatekeeping and EPGs/UIs

73. IP networks and on-demand delivery increase the potential for connected platforms to seek to exert editorial control to cherrypick, disaggregate or ascribe artificially low prominence to rival content providers. Vertically integrated companies may be particularly incentivised to discriminate against offers which rival their own content propositions.

74. The UK's EPG regime is based on traditional lists of linear channels on the main TV platforms only. This is out of step with the growing importance of on-demand content and new content gateways, as well as the longer-term role of IP in delivering TV.

75. This raises particular challenges for PSB delivery and its regulatory underpinnings. While the popularity of BBC iPlayer has helped ensure its prominence to date, this is unlikely to be sufficient in future given the imbalanced regulatory regime and the risks of misaligned incentives between PSBs and platforms. Market trends suggest that the commercial incentives of platforms may well collide with public interest in achieving easy access to and high consumption of original British content and PSB. Particular risks include:

    • Disaggregation of content, curation and functionality diminishing the ability to offer PSB experiences, and facilitating cherrypicking of the most popular, but not always the most important, PSB content
    • The increasing saleability of prominence on TV platforms and connected platforms
    • The effect of global prominence deals having no regard to local market concerns, such as the availability of high-quality British content
    • Vertical integration and commercial partnerships between platforms and content.

76. Such risks raise the prospect of a significant erosion of the social, creative and economic value delivered by the existing PSB system. In light of this, we welcomed the conclusions of Ofcom's PSB Review that PSB prominence rules "*need to be reformed to match changes in technology and ensure that public service content remains available and easy to find, in whatever way it is viewed.*"[31]

77. Government is expected to publish its policy on PSB prominence later this year. While it is therefore not sensible for Ofcom's Digital Communications Review to cover the same ground, PSB prominence and editorial gatekeeper issues should remain important areas to consider when assessing the broadcaster-readiness of the UK's IP networks.
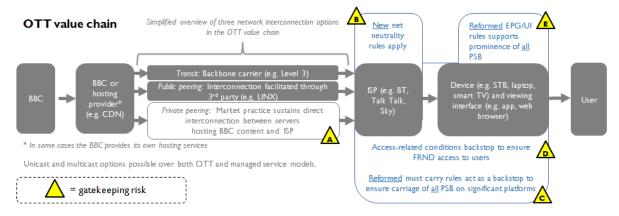
Reformed regulatory framework

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[30] paragraph 1.20 of Ofcom's Review of Sky's Access Control Services Regulation of 17 March 2015
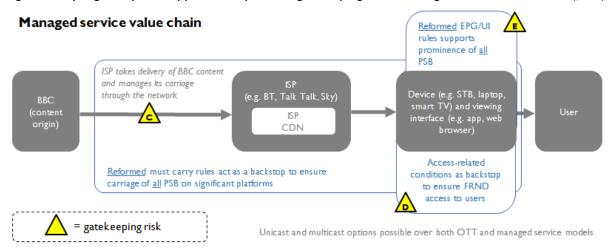[31] Ofcom, Public Service Broadcasting in the Internet Age. July 2015, Paragraph 2.19

78. The modernisation of the regulatory framework outlined above could be characterised on the OTT value chain as follows:

Figure 5: Key regulatory tools applicable to potential gatekeeping in the OTT value chain (fixed)

79. The modernisation could be reflected on the value chain for managed networks as follows:

Figure 6: Key regulatory tools applicable to potential gatekeeping in the managed network value chain (fixed)

Quality of service and networks ready for an IPTV future

> **What more should Ofcom do to support better quality of service for consumers, in either competitive or less competitive markets?**
>
> *Q20: Are there examples in competitive or uncompetitive sections of the market where providers are not currently delivering adequate quality of services to consumers? What might be causing such outcomes?*
>
> *Q21: What further options, if any, should Ofcom consider to secure better quality of service in the digital communications sectors?*

Existing Quality of Service and Experience

80. Ofcom singles out video delivery when considering potential quality of experience issues as follows:

   "Some broadband connections are high quality during the day, but unable to support video streaming in the evenings. Meanwhile for a business using a residential connection, they may experience a drop in service quality during the afternoon when children in the neighbourhood return from school."[32]

81. Quality of service goes beyond network performance (i.e. technical fitness for purpose) and spans the whole end-to-end user interaction with a service.[33] Speeds may be a key factor but other factors can also be important to VOD delivery such as latency and jitter. These factors can increase transfer delays, packet loss and packet error rates which all diminish the overall quality of service.

82. The BBC has actively contributed to global standards to facilitate the delivery of audiovisual services over IP networks and has embraced innovations like adaptive bitrate technologies to provide a better audience experience. The BBC has always sought the most effective means for distributing its content by reaching peering agreements, using commercial content distribution networks (CDNs) and developing systems that reduce distribution costs for both the BBC and ISPs.

Broadcaster-readiness

83. Resilience and reliability of networks are important contributors to network availability. Even though availability targets for IP networks exceed those for DTT, evidence of the performance of DTT in practice suggests its performance may be more reliable.

84. DTT networks are engineered to have a high availability.[34] As Ofcom's 2014 Infrastructure Report reminded us, architectural measures such as back up feeds to main transmitter sites using separate providers and power sources as well as other measures mean that multiple points of failure are required for consumers to lose service.[35] According to measurements from BBC systems/suppliers, DTT is available about 99.97% of the time[36] compared to estimates of a slightly lower level of end to end (access and core) network availability for broadband networks.

85. The nature of network outages in IP networks is also much more likely to affect individual homes. According to Ofcom data[37] some superfast broadband lines are experiencing disconnections of 30 seconds or more every 10 days or so. The issues causing these events are not reported but are likely to arise due to the instability of individual broadband lines and in-home issues. Issues affecting individual broadband lines include interference from electrical cables as well as water ingress from excessive rain. In respect of problems caused from within the

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[32] paragraph 13.13, Ofcom, Digital Communications Review, 2015
[33] Body of European Regulators for Electronic Communications (BEREC), '*Framework for Quality of Service in the scope of Net Neutrality*' available at http://berec.europa.eu/doc/berec/bor/bor11_53_qualityservice.pdf
[34] http://stakeholders.ofcom.org.uk/binaries/research/infrastructure/2014/infrastructure-14.pdf
[35] http://stakeholders.ofcom.org.uk/binaries/research/infrastructure/2014/infrastructure-14.pdf
[36] BBC suppliers
[37] Ofcom. May 2014. UK fixed-line broadband performance.

home consumer device outages (e.g. automatic reboots) and Wi-Fi interference reduce the availability of IP networks.

86. Despite similar headline speeds evidence suggests that mobile broadband doesn't perform as well as fixed which affects the user experience for services such as streaming video.[38] As future mobile standards are developed, Ofcom might consider the right conditions to facilitate delivery of audiovisual services through mobile networks enabling consumers to enjoy what they want, wherever they are through low cost reliable connections.

87. To enable the mass delivery of TV over IP networks investment would likely required across the value chain. For audiovisual service providers, investments would primarily need to take the form of service innovation and technological innovations that improve quality of service for users (in the way adaptive bit rate technology has in the past). Server capacity might also need expanding to host content. For network providers, investments would likely be required in network areas including backhaul ports and links as well as interface capacity.

Multicasting and other appropriate technologies

88. Multicast technologies could help increase network efficiency and thus reduce the scale of network investment required. Indeed, multicast technology is already available providing ISPs a managed service tool to deliver cost effective and scalable high volume live events. However, these tools are not available for OTT services. While that is not material today (the consumption of OTT live unicast services today being manageable), it will increasingly become a differentiator between an event delivered within a managed service environment, and the same event delivered OTT. Without an equivalent tool, for example a development of multicast technologies that can be used by OTT services outside of a managed network arrangement, there is the risk that content providers will either be forced to deliver such events over managed networks, or that they drive capacity issues that lead to the need for ISPs to take protective measures (and a poor experience for the audience).

89. We would encourage Ofcom to monitor the availability and deployment of appropriate technologies (perhaps "OTT multicast") which may provide cost-effective routes to sustain the quality of OTT delivery alongside managed networks.

ENDS.

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[38] Ofcom. August 2015. Communications Market Report.