Designing the broadband universal service obligation

Call for inputs

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Specification and scope of the USO

How should the minimum technical performance of the USO be specified?

1.7 We have said that 10Mbit/s is the appropriate level at present for a broadband USO. This is also the Government's ambition for the USO. However, other factors will also affect how 'decent' a consumer's or business's broadband connection is. These may include upload speed, latency, jitter, contention and capacity.

EUTELSAT: We agree with Ofcom that the broadband-user experience is a combination of several factors.

- Download speed: We agree with the 10Mbps level as a minimum, in line with the recent Ofcom report {http://stakeholders.ofcom.org.uk/binaries/research/technology-research/2014/performance-eval.pdf} that shows "*a clear correlation between access speed and consumers' experience up to around 8-10Mbps,* however the value of the 10Mbps is dependent on the actual dimensions per user at peak usage hours. *Beyond this, there is only a marginal benefit to increased speed*" and states "*that a focus on quality, not quantity is required*", or, in other words, beyond a certain threshold "*speed becomes less important*" than "*delivering a good experience*".
- Upload speed: To address Internet trends, with increased user-generated traffic, we also believe it is relevant to have minimum upload speeds of 4Mbps
- Latency: For satellite services, latency is not really an issue for most common applications such as internet browsing thanks to the technologies being deployed (e.g. TCP-IP acceleration, spoofing, caching).
- Jitter: For geostationary satellites, which remain at a constant distance from the users, jitter is also not an issue as there is a single hop only to the Internet so the opportunity for any jitter is significantly reduced.

The objective of the Universal Service is to provide an 'essential' minimum set of Internet services to all users. That's why monthly volume allowances are also appropriate to ensure fair and equal access on shared network resources such as wireless.

1.8 We are interested in stakeholders' views on the minimum download speed for a broadband

USO, as well as which other aspects of technical performance should be specified, and at what level.

EUTELSAT: In line with the answer 1.7 above, one aspect is worth noting as far as the user experience is concerned.
Satellites bring the unique broadcast feature, which greatly enhances the user experience beyond the 10 Mbps level – or any level Ofcom would choose for the minimum download speed.
A hybrid solution that combines broadcast networks for distribution with broadband networks for interactivity, can deliver additional services, applications, content and products - including the new and innovative ones such as UHD TV - everywhere, even in rural and remote areas, in a less costly and quicker-to-market complementary way, on top of the available speed on the interactive broadband connectivity.
Therefore, we believe that Ofcom, when defining the criteria for the USO, should consider the global user experience (i.e. the services the user is enabled to benefit of) and not only specific technical performance.

1.9 We recognise that a variety of technologies, including wireless, are capable of delivering download speeds of 10Mbit/s. We aim to encourage the deployment of the most appropriate technology for different local circumstances so as to achieve the goals of the USO in the most efficient way.

EUTELSAT: We agree that a variety of appropriate technologies should be deployed to efficiently and cost effectively achieve the USO targets. Indeed Eutelsat does not anticipate broadband connection to be dominated by a single technology. Competition is expected to be on services, applications, content and products - including TV and radio - brought through a variety of different technologies.

We would like to highlight that satellites deliver the same quality of service everywhere, at the same monthly fee. In addition, a hybrid solution that combines broadcast networks for distribution with broadband networks for interactivity, can deliver services, applications, content and products - including the new and innovative ones such as UHD TV - everywhere, even in rural and remote areas, in a less costly and quicker-to-market complementary way.

We believe that the 'essential' minimum set of services of public interest and/or social value, should account of users' needs as well as the capability to provide them in a sustainable way.
The "most appropriate technology" qualification should take this into account.

<u>How should we ensure the USO is affordable?</u>

1.10 European and UK legislation requires Ofcom to ensure the universal service is provided at an affordable price. We are therefore considering how we might best ensure that this is the case. Options for achieving this include requirements for uniform pricing of broadband services or caps on charges. We are interested in views and evidence on what measures it may be appropriate to impose, if any, to ensure that services provided under the USO are affordable.

EUTELSAT: Economic analysis of the best solution. Any cost-effective analysis should give mandatory and proper consideration to the CAPEX expenditure of one investment versus another. Given the fact that the objectives are to enable real (not potential) broadband connectivity – the number of households living in the service area defines the potential connectivity while the financing of the purchase of ground equipment is directed to real users i.e. subscribers defines the real connectivity - with the optimum and most neutral allocation of public funds possible (especially in remote and

under populated areas), we believe that the criterion should be CAPEX required per user to enable the required or targeted broadband connectivity.

In a nutshell, satellite is the only technology that is immune to the geographical dispersion of the users, hence having a much more efficient use of CAPEX than other technologies in low population density areas.

Should there be a social tariff for broadband services?

1.11 A USO may also include particular measures for the benefit of those on low incomes or with special social needs. For example, BT (and KCOM in Hull) provides a 'social tariff' for consumers on certain income-related benefits. We are interested in evidence and views on the extent to which a social tariff for broadband services may also be appropriate.

EUTELSAT: If a social tariff were to be decided then Eutelsat believes that in order to finance a social tariff, the most appropriate, equitable and effective way could be a combination of general purpose public funding and all end-users contribution.

Demand for the USO

What might the potential demand for the USO be?

1.12 Our Connected Nations report highlighted around 2.4 million (over 8% of) premises could not receive a speed greater than 10Mbit/s in mid-2015, with around 1.5 million (48% of) premises in rural areas affected. Poor rural availability disproportionately affects Scotland, Wales and Northern Ireland as they are more rural than the UK as a whole. A combination of BDUK's superfast broadband programme and continued private investment has since reduced this number but it remains a significant proportion across the UK. We will publish updated coverage data in our Connected Nations report later this year, which will help us further understand the location and characteristics of USO premises.

EUTELSAT: Please note that satellite infrastructure and service reach already covers all regions of the UK regardless of their topography, with the same levels of service speeds and availability. This for the satellite part means that minimal - and accordingly extremely cost-effective - ground-based infrastructure enables immediate access, promoting regional cohesion and economic development objectives and allowing the benefits of broadband connectivity to be reaped instantly by those who have to date been without. Existing deployments in Europe that have been done on the basis of competitive tender all show that for white areas, satellite broadband networks do deliver the best economic solution.

1.13 Take-up of broadband across the UK has been increasing in recent years. Seventy-nine per cent of premises had a fixed broadband connection in 2015. The proportion adopting superfast broadband (capable of delivering speeds of 30Mbit/s or higher) is lower at 27%.[10] BDUK revised its superfast take-up target upwards to 30% from 20% in 2015 in recognition of higher than expected take-up of services in its roll-out areas.

EUTELSAT: The inclusion of broadband in universal service is suggested to solve the situations of market failure (e.g. in rural areas of the EU, where 38% of homes have no fixed broadband subscription {Source: EU Digital Agenda Scoreboard 2015}. Therefore it is not expected to have a disruptive impact on commercial super-fast investment plans, which tend to focus on areas ensuring an adequate return on investment.

1.14 Demand for the USO could depend on the technology used to deliver the service, the technical specification – including the speed it is capable of delivering – and the pricing. We are interested in stakeholders' views on the potential scale of demand for a broadband universal service.

EUTELSAT: Please refer to answer 1.12 above… Improving the broadband take-up, especially in rural areas and in situation of market failure, should be considered a priority. Satellite broadband services delivers a uniform service across the entire UK, regardless of location and topology, so currently underserved or excluded regions can receive services comparable to those on offer in over-subscribed regions such are the urban regions. As such, the inclusion of satellite broadband as part of the USO could possibly increase the take-up rate in the remote regions.

Under the hypothesis of an addressable market of 5% of premises and a steady run-rate settles at 85%, more than 1 Million premises would be served by the US – which is a very significant market size. This further reinforces the need to have solid US delivering a real solution to "do business online, access key services or stream live TV".

Cost, proportionality and efficiency of the USO

Cost evidence

1.15 It will be important to ensure the overall costs of delivering the USO are both efficient and proportionate. We are interested in stakeholders' views on the most efficient technologies that could deliver the broadband USO. This will depend on views on the technical specification and scale of potential demand. For example, DCMS estimates the number of households that will not be able to access a 10Mbit/s service by 2017 is approximately 1 million, with 100,000 in remote rural areas. We are interested in views on the cost of provision of the USO to those households based on a variety of technologies that are capable of delivering 10Mbit/s. We are also interested in views on how costs may vary depending on stakeholders' own views on specification and demand. We are also interested views on the timescales over which stakeholders might expect such costs to be spread.

EUTELSAT: In order to ensure that broadband under USO is provided in a cost-effective manner causing the least market distortions, the best economic offer for connectivity can be selected through a cost-effectiveness analysis to identify the best-fit and advantages of each technological solution (in terms of total cost and value for money, timing of the deployment, expected penetration and capacity to meet the needs of the "last x%). Satellite deployment costs are relatively flat and stable regardless of the location (rural or urban), and are deployed on an as needed and per user basis even if this is a single user, whilst offering ubiquitous levels of services across all regions.

As to the forward-looking basis, investment intended for future needs must first be paved the way by investment in networks fulfilling current and future needs, and providing significant step change, even if not very high-performance, in unserved and underserved areas (38% of rural EU area is still not covered by basic broadband). Raising the current take-up of connectivity and services is indeed a pre-requisite for identifying future connectivity needs.

In this respect, the Digital Agenda for Europe website indicates that Korea, one of the most advance country in broadband wired and wireless development, in "Cyber Korea 21 policy ruled that satellite Internet service had to be provided to regions that could not receive the broadband service" and "for remote areas that could not establish a broadband network, satellite Internet services are to be provided at an affordable price similar to that of ADSL." {Source of the above quotes: Widening universal service in Korea to include broadband and mobile communications, https://ec.europa.eu/digital-agenda/events/cf/ict2015/document.cfm?doc_id=20262

1.16 Important inputs into any cost estimates will include the typical cost per home connected of a

range of technologies, and views on how costs may be affected by using shared network deployments or building on existing network infrastructure.

EUTELSAT: As above, the satellite broadband network infrastructure is present and available to all regions, with very little fluctuation in costs; in addition with a possible pay as you go subsidy model (payed per subscriber activation) this ensures that no costs are wasted with perhaps a speculative deployment of infrastructure

Eutelsat also believes that one way of lowering deployment costs is to avoid costly duplication and to take more advantage of existing infrastructures that are unlikely to be replicated. Satellites should be explicitly recognised as existing infrastructures, and as such potentially able to significantly reduce the investments costs in certain areas. In this context, an ex-ante cost-effective analysis of the various solutions for broadband connectivity should be mandatory, as the competitive tender procedure alone does not guarantee the choice of the most efficient and cost-effective solution.

Also, the satellite infrastructure deployed over UK can directly target end-users or serve as a backhaul link for an existing distribution technology (e.g. WiFi, LTE, ADSL). It can be adapted to boost existing networks that cannot be connected in an efficient manner to the fibre internet backbone.

1.17 Only the net costs of providing the USO can be recovered through Government or shared industry funding i.e. the costs over and above customer revenues received by the universal service provider (USP). The additional revenues and any other benefits will therefore also need to be estimated. We are interested in stakeholders' views on and evidence for the possible benefits of providing the USO. We are also interested in views on how any net costs calculation should be made where a network may be shared among multiple end customers (both USO and non-USO) and where the USP may be able to offer a range of retail products beyond just a 10Mbit/s connection. Proportionality and definition of a 'reasonable request'

EUTELSAT: We believe that the scope of the universal service must definitively include broadband access. Neither the use of public funding nor the State-Aid regime has succeeded to foster broadband deployment, as shown by the very low take-up in rural areas.

In addition several benefits of providing the USO can be identified for satellites:

- Sharing the fixed costs (e.g. launch, satellite platform) on multiple markets
- Having the institution support in providing services on some markets. For instance, some premises could be designated to be covered by satellite technology only
- Opportunity to upscale the USO into a full-blown very high speed solution (>30 Mbps)

Eutelsat addresses the financing model topic in sections 1.28.

Also, the satellite model is very simple. Beyond the broadband infrastructure CAPEX (satellite, gateways), the net ground capex costs are primarily the end-user equipment (fixed) and install (may vary in some circumstances depend on remoteness, but regions may be corralled to lower install costs), also maybe self-install, in some instances, are possible.

1.18 Under the USO, a universal service provider (USP) is only required to meet requests for a USO connection that are considered 'reasonable'. Defining 'reasonableness' will be an important factor in determining who can benefit from the USO and the overall cost of delivering the USO. We are keen to achieve a proportionate balance between ensuring as many consumers as possible benefit from the USO and ensuring the costs of delivery are not disproportionate.

EUTELSAT: We agree, yet noting that satellite deployment costs are relatively flat and stable regardless of the location.

1.19 We want to ensure that the USO is proportionate in keeping costs down and not undermining existing initiatives and competition within existing commercial and community networks, while ensuring that consumers are able to access the connections they need. We welcome stakeholders' views on approaches to achieving this.

EUTELSAT: Agree, please refer to P1.16 and 1.18 above, satellite deployment can occur anywhere within the footprint so services can co-exist with other technologies offering wider customer choice at no extra cost or investment.

1.20 Another aspect of the 'reasonable' request is that the cost of provision to the USP (or relevant fund) of providing a connection to individual eligible consumers or groups of consumers should not be disproportionate. The current telephony USO sets a cost threshold of £3,400. For connection costs below this, households pay a standard connection charge to BT, the USP for nearly all of the UK, of £130. For the most expensive to connect premises, consumers have the option of covering any construction charges over this threshold, alongside the standard connection charge.

EUTELSAT: In fact, there is a potentially high cost involved in connecting certain premises. The deployment of the most appropriate technology for different local circumstances (among those capable of delivering the requested performance) is the best and the most cost-effective way to achieve the goals of the USO.

1.21 We are considering what an appropriate cost threshold may be for the broadband USO, balancing the need to ensure that as many consumers as possible are able to obtain a 10Mbit/s connection with a proportionate cost burden. We are interested in views as to how such a reasonable cost threshold might be determined.

EUTELSAT: In addition to the section 1.9 above the satellite broadband deployment model would be based on a per activation one-off fee to cover end-user equipment and standard installation (as per the current BDUK model). The subsidy levels envisaged would be in the £400-£500 range for a standard customer installation.

1.22 A further consideration concerns the manner in which the cost of provision for an individual consumer is calculated. In electronic communications networks many network elements are often shared between multiple end users (e.g. upgrading a cabinet or mobile cell site for one customer benefits all customers covered by that infrastructure), with high up-front fixed costs of building shared network elements and much lower costs for connecting individual customers. We are therefore interested in views on how any shared costs should be reflected when estimating the cost of meeting an individual request.

EUTELSAT: The current deployment of satellite networks has been paid by private funding (upfront investment corresponding to the cost of building and launching the satellite as well as setting up the gateways that connect the satellite to the backbone internet). As explained above, the current satellite broadband infrastructure is universal and paid for, and so only the end user set-up costs need to be considered. In future the next generation of VHTS (Very High-Throughput Satellites) which could be used to provide USO access could use a different model of public and/or private funding (e.g. fully private investment, PPP or fully public investment)

1.23 We are interested in options to maximise the reach of the broadband USO to the hardest to

reach areas and consumers while ensuring the cost of provision remains proportionate. Possibilities could include modifying the technical specification for specific circumstances, or options around how consumers can make contributions to excess construction charges. We welcome views on possible options that meet the goal of improving broadband services for the hardest to reach.

EUTELSAT: As mentioned in P1.16, uniquely amongst the technological mix, the satellite infrastructure ensures the reach of the broadband USO is extended to all the hardest to reach areas and consumers while ensuring the cost of provision remains more or less fixed

Ensuring efficiency

1.24 It will be important to ensure the overall costs of delivering the USO are efficient. For example, it will be important to ensure a least cost approach from the USP and we will consider how to ensure the right incentives and safeguards for the USP to minimise its costs. This will partly be achieved through the reasonable cost threshold, as outlined above, but will also be related to encouraging the deployment of suitable technology for the location and making reasonable assumptions about expected demand. We would be interested in stakeholders' views on how to ensure the USO delivers efficiency, both overall and on a per premises basis.

EUTELSAT: Please refer to the Section above, a best fit technology-mix approach should be considered with appropriate deployments matched to delivering USO to the diverse regions. For remote region where the pre-emptive rollout of terrestrial infrastructure maybe somewhat speculative and expensive, the use of already present infrastructure and the subsidy aligned to an activation model would offer broadband series aligned to the best value for money model

The universal service provider or providers

How should the universal service provider be designated?

1.25 The USP will have to be capable of delivering a connection on request that meets the technical and is affordable. A single provider may be designated for the whole of the United Kingdom to provide the USO. Alternatively, it is possible for Ofcom to designate more than one USP, for example, for different regions.

EUTELSAT: It should be ensured that any single or multiple providers offer the appropriate technology mix without prejudice or favouritism, whilst adding the best value for money to the end-user and tax-payer

1.26 In deciding upon who to designate and how, Ofcom may designate a USP(s) directly or a competitive process, such as commercial procurement or a reverse auction, may be used. Our aim, set out in our Strategic Review of Digital Communications, is for a competitive and technology neutral procurement process wherever possible to secure efficient delivery and value for money.

EUTELSAT: Eutelsat agrees.

1.27 We are therefore interested in views on the extent to which providers may come forward for designation as the USP to allow for a meaningful competitive process. We recognise that certain providers may only be willing or able to serve specific geographic areas and would welcome indications of where providers may seek to be designated.

EUTELSAT: The satellite service inherently covers the entire of the UK, however service providers can focus on and supply specific USO services to target regions.

Funding of the USO and potential market distortions

Funding of the USO

1.28 The USO may result in a cost burden being placed on the USP(s) that is designated. Under the Universal Service Directive, the net cost (i.e. after taking account of any additional revenue or other benefits) may be recovered from public funds, through an industry funding scheme or a combination of both industry and Government. The Government has indicated that its preference is for an industry funded scheme. Participants in such a scheme may include any communications provider or may be more restricted. We are interested in views on who should contribute to an industry scheme, taking into account the need to ensure that the scheme is non-discriminatory, proportionate, transparent and causes the least market distortion. We are also interested in views on the potential effects on consumer pricing of a broadband USO on USO and non-USO customers.

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Concerning USO financing, Eutelsat believes that the most appropriate, equitable and effective way could be a combination of general purpose public funding and all end-users contribution. Bearing in mind already funded and deployed broadband services should not be heavily impacted by any market distortion caused by a funded USO rollout which may cause an overlap of broadband technologies and services

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How could any potential market distortions of competition be minimised?

EUTELSAT: The inclusion of broadband in universal service is suggested to solve the situations of market failure (e.g. in rural areas, where 38% of homes have no fixed broadband subscription {Source: Digital Agenda Scoreboard 2015}. Therefore it is not expected to have a disruptive impact on commercial super-fast investment plans, which focus on areas ensuring an adequate return on investment. Also, remote regions could be designated as receiving specific broadband technology networks only, with an approach (unlike BDUK) of an outside-in approach, which ensures that remote broadband region are not left waiting on a possible rollout which may, or may not, eventually reach them.

1.29 The USO will aim, wherever possible, to build on existing commercial and community networks, rather than displacing them. Minimising the risk of existing network overbuild is important for retaining incentives for operators to continue to roll out high-speed networks and services. We would be interested in stakeholders' views on options for limiting overbuild and avoiding creating disincentives for investment.

EUTELSAT: In general terms it must be ensured that the USO model does not crowd out existing and planned market initiatives in the broadband sector. USO initiatives could affect investments already made by broadband operators on market terms and might significantly undermine the incentives of market operators to invest in broadband in the first place.

As such, the primary objective of the USO should be to ensure that any measures will result in a higher level of broadband coverage and penetration, or at a faster rate, than would occur without it, and to ensure that the positive effects of USO outweigh its negative effects in terms of distortion of competition.

Specifically for satellite, Eutelsat suggests a focus on initial deployments to "not-spot" or underdeveloped broadband regions to equalise the broadband divide, with an outside-in approach and a target to 100% coverage.

As mentioned previously, the ability to commercially rollout satellite broadband does not depend on the density of a specific regions, rather it depends the number of users per se, irrespective of their location. Even a sole isolated user can be served at the same cost and with the same service level as a user in a populated area. As such, these are precisely the areas where other technologies will not go under open market conditions, but where satellite operators can quickly and efficiently connect isolated users with an initial and simple incentive to cover equipment costs.

1.30 We also have an aim to minimise the risk of distortion to retail competition in broadband service provision. We are interested in stakeholders' views as to how a broadband USO might create such risks, and how they could be minimised

EUTELSAT: It should be stated at the commencement of the USO programme the specific regions that will receive broadband by specific technologies (e.g.. the specific remote regions that will receive broadband by eligible satellite SP's), thus enabling service providers continue market driven initiatives and deployments without the risk of possible competitive distortions due to the USO programme, as we have seen to a certain extent with the BDUK deployment.

Review of the USO

When, and on what basis, should the USO be reviewed?

1.31 The USO should allow a typical household to engage in a reasonable level of internet use. But consumer demand for internet services evolves quickly. Both Ofcom and the Government have recognised that the USO specification must be reviewed periodically to ensure it continues to meet the needs of consumers and businesses that rely on the USO. It is important that the USO can change over time to ensure consumers relying on the broadband USO do not fall unacceptably far behind the rest of the UK. At the same time, the timetable for review should consider the investment lifecycle of the USP's specific USO network investments. Too short a review period could increase costs and might discourage providers from being a USP.

EUTELSAT: Eutelsat agrees with the need to review the growing needs on a regular period. To enable the USP to plan its service and assess the relevant financial scheme, Eutelsat suggests that the following aspects are considered:

- A pre-defined path for the evolution of the key criteria (speeds, provisioning, and volume allowance) should be established from the beginning. This will permit the USP to dimension accordingly their networks and Ofcom to have a full view of the roll-out costs during the program lifetime.
- A compensation financial mechanism due to unpredictable criteria changes should be established from the beginning. This would limit risks and favour the investment of the USP.

1.32 A minimum review period would have the advantage of providing some certainty for bidders and the eventual providers. On the other hand, setting a minimum review period could limit our ability to respond in a timely way to changes in the market and consumer behaviour and ensure the USO continues to deliver a sufficient service. We are interested in views on what an appropriate review period might be and on the process for reviewing the USO over time.

EUTELSAT: To consider return on investments by the technology providers and service providers, we believe typical review periods should be held about every 3-4 years, and the process should include all the relevant stakeholders.