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USO – Defining the problem

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The proposed 10 Mbps USO – a high degree of difficulty?

- In the past, voice USOs were a relatively minor issue
 - Very widespread coverage was already in place from the monopoly era
 - The USO ‘bit’ only in a small number of instances
 - There was one obvious provider
 - The technical specification and associated price was simple
- Even broadband USOs to date have been minor
 - Low speed thresholds and (in some cases) inclusion of mobile as one way requirement can be met has meant that in practice the USO has had very narrow scope (11 households in Sweden)
 - Consequently cost has been low (often simply imposed on the incumbent without great protest)
- The UK is therefore entering uncharted territory
 - Potentially very expensive USO (up to £1bn?) ...
 - ... depending on tech spec (which needs to be developed)
 - Potentially multiple providers
 - Complex procurement structuring
 - A desire to fund from industry, but mechanisms for this need to be developed

... or are we already there?

- Satellite is well capable of delivering 10 Mbps
 - Already delivering 12-16 Mbps in the US in peak periods
 - An important component of Australia's NBN
 - Terabit satellites (shared) due for launch over Europe in 2019
- However, satellite seems to be 'assumed away' in USO discussions in the UK
- This may be appropriate (certainly it has some technical disadvantages relative to terrestrial solutions, and traffic is more expensive), but to be sure, we need to be specific about what the USO is *for*

The purpose of the USO

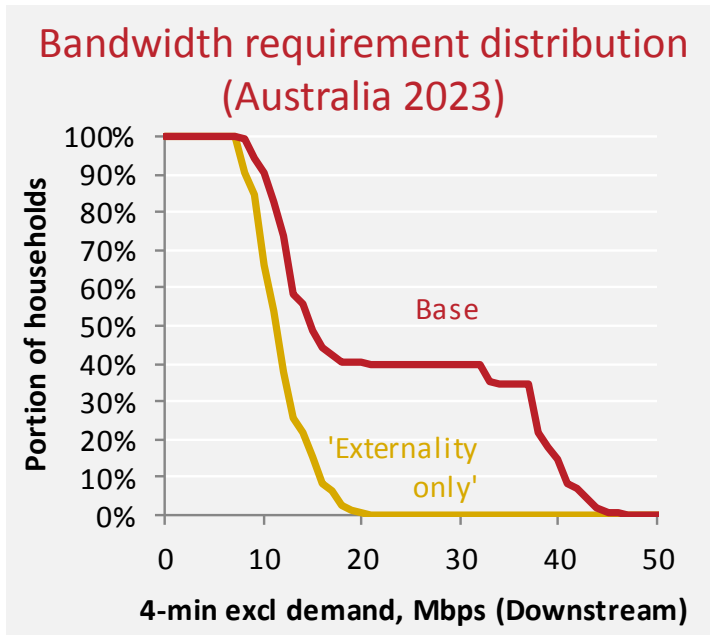
A USO may meet a number of needs, but these have cost implications. Which are our 'must haves'? (This is in part a political rather than a technical question)

- ? Preventing social exclusion
- ? Capturing network externalities
- ? Access to public services
- ? Enabling household economic participation
- ? Full access to unlimited entertainment content
- ? Rural/urban parity
- ? Any business anywhere

} *Brings a significant
increase in the cost of
the USO*

The relevant EC Directive speaks of 'functional internet access' and requires that it be 'provided in a cost-effective manner'

The conceptual scope of the USO can have dramatic implications for the technical requirements



Note: Unconstrained demand
Source: Communications Chambers for Australian government

- Some of the applications which are most demanding bring relatively little in the way of externalities
 - 4K TV, games downloads, rapid other downloads
- Excluding 4K and games, and slowing other downloads, makes a sharp difference to required bandwidth
- Even this scenario leaves in much usage with limited externalities (YouTube, HD TV streaming, leisure web surfing ...)

Traffic in the USO specification is a pivotal dimension

- If the USO specifies unlimited (subsidised) traffic, then this will have three impacts on cost
 - It will likely make satellite (and potentially fixed wireless) too expensive, excluding these technologies where they might otherwise have fundamental cost advantages
 - It will narrow the number of bidders, perhaps replicating (in many locations) BDUK's single-bidder problem
 - If a fixed solution is de facto mandated, it will require spend on all homes passed, not just those requiring service
- The traffic specification is particularly relevant given that much traffic is driven by applications with a weaker fit to many USO purposes
 - 65% of North American peak period traffic is now real-time entertainment, and a further 5% is file-sharing
- Note also the 80/20 distribution of traffic – a higher traffic specification will primarily benefit a subset of users in the last 5%

Some thorny contractual & procurement issues ...

- How to set the consumer price of the USO product?
- Is the product retail or wholesale?
- Is it to be universal? Or limited to the 5%?
- How to address areas where (say) fixed wireless broadband may be deployed in the future, but is not yet available?
- How to tender?
 - One operator or many?
 - Geographic lots? Nationwide?
 - Able to accommodate 'mosaic' solutions, with much local variation of technology?
 - Risk of inadvertent technology non-neutrality
- How to compensate if the cost being subsidised is primarily opex rather than capex?

... and how to pay for it?

- If the USO represents an 'unfair burden' on the party carrying it, the net cost can be met via 'national measures'
 - Certainly a USO with a high tech spec is likely to represent an unfair burden
- The government has proposed an industry levy. This raises a number of questions:
 - Who should pay? Fixed / mobile / application providers ...
 - Against which customers? Consumer / business / wholesale / ...
 - On what basis? Per line / % of revs / % of profits /...
 - Over what period?
- It also raises the possibility of unintended consequences. Assuming costs are passed through, might price-sensitive consumers in the 95% drop off the network?

In summary ...

What is our fundamental purpose for a USO?

What technical specification is required to meet that purpose?

What structure of procurement gives maximum flexibility to the market in offering solutions to meet that specification?

How can the USO be funded to minimise competitive distortion & ensure the burden falls on those getting the greatest benefit