

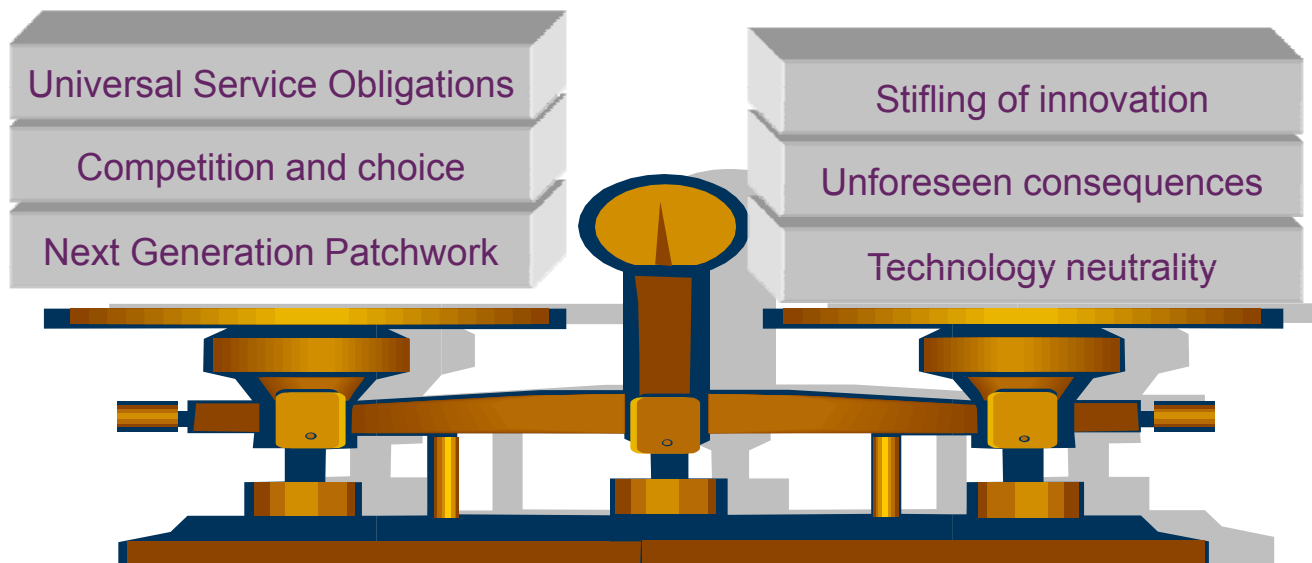
Wholesale Broadband Access Standardisation and the European Market

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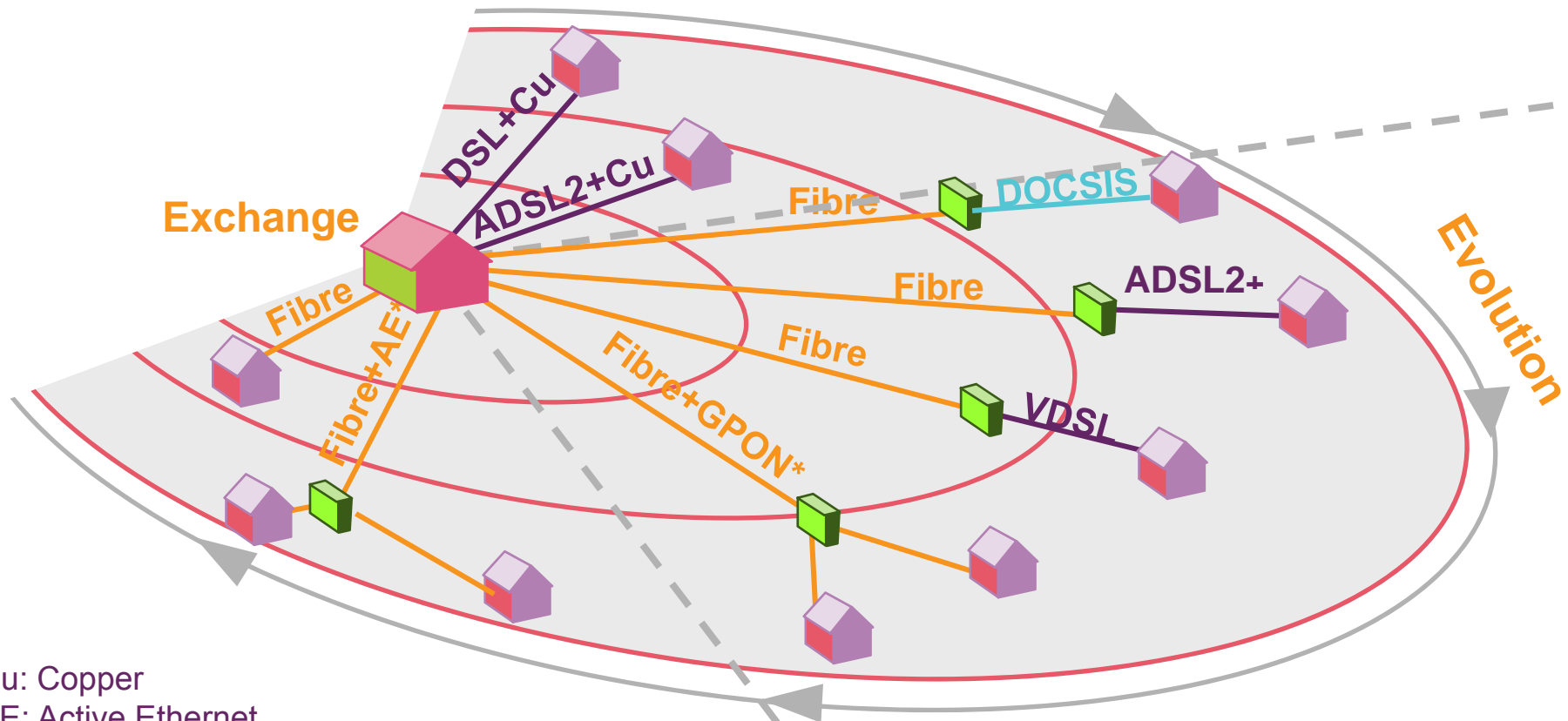
September 11th 2009

The case for regulatory intervention in standardisation for NGA wholesale access



'Finally balanced'

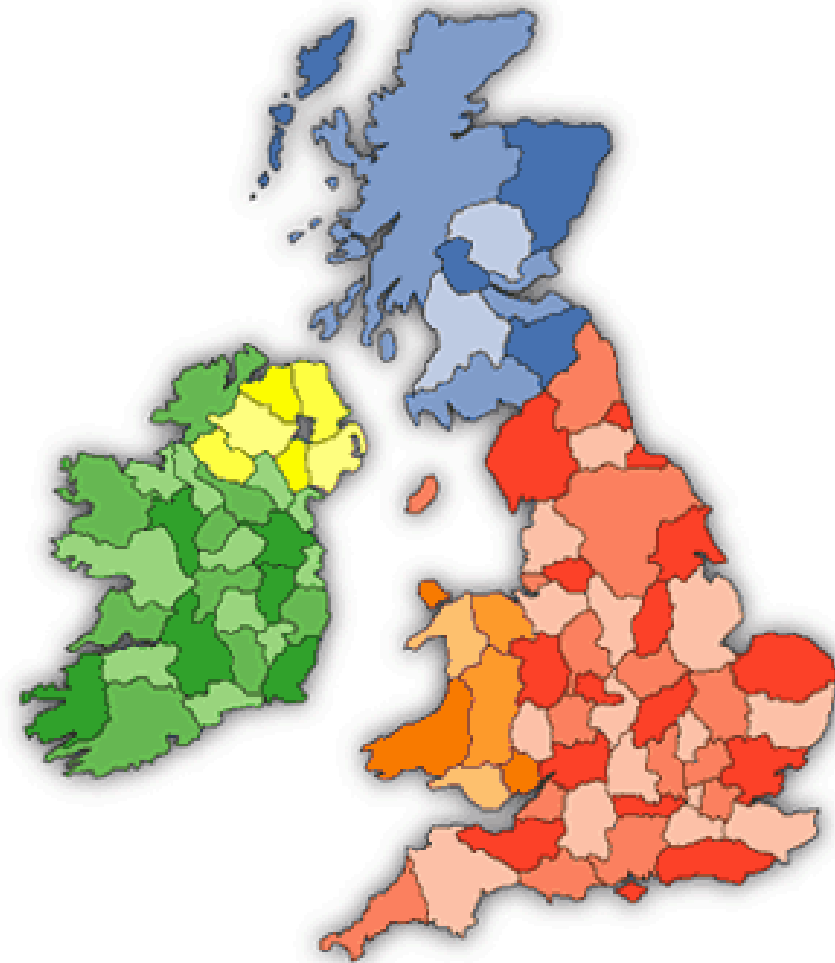
Technology evolution



Cu: Copper
AE: Active Ethernet
GPON: Gigabit Passive Optical Network
DSL: Digital Subscriber Line; ADSL: Asynchronous DSL; VDSL: Very High Speed DSL
DOCSIS: Data Over Cable Service Interface Specification

The Next Generation Patchwork

- Next generation access networks are likely to be a 'patchwork' of different technologies
- This fragmentation may lead to the loss of scale economies for service providers
- And may deter many from providing service to all but the largest markets > 100,000
- Consumers in smaller markets may be left with little or no choice apart from...
- ... their vertically integrated infrastructure provider



Standardised wholesale access has many benefits

- Retains as much as capability to differentiate as possible
 - Is neutral to higher layers:
 - Is implementation neutral to the underlying media
 - Is service neutral to the applications:
- Reduces cost of serving customers which
 - Encourages competitive entry
 - Reduces likelihood of technology isolation
- Facilitates the delivery of the USO
 - One wholesale access for all technologies
- Benefits from the economies of scale of Ethernet
- And the economies of bitstream

But would have a price...

- Undermines regulatory technical neutrality
- May impose 'wrong' technology
- May stifle innovation
- Unforeseen consequences



Competition



Competition



Consumer protection



Consumer protection



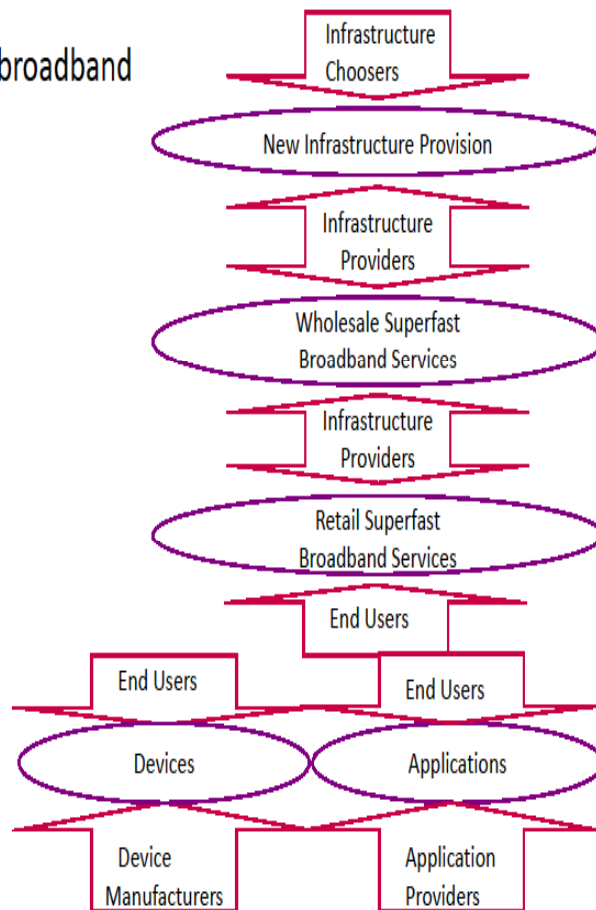
Competition



Competition

Will the market produce (the right) standards?

The superfast broadband value chain



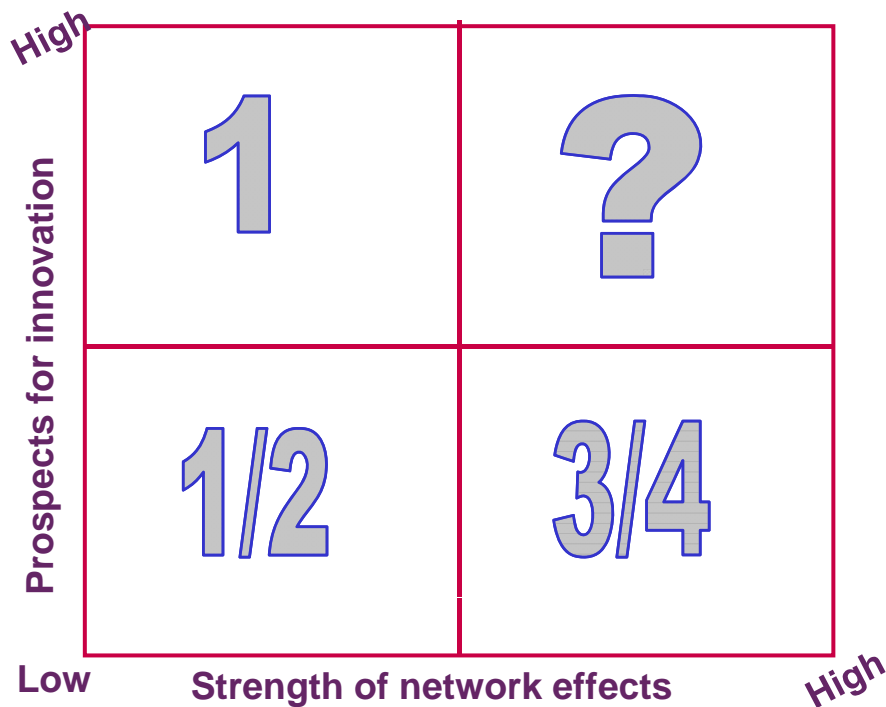
Drivers
In the interests of infrastructure users
In the interests of smaller infrastructure providers
Equipment susceptible to economies of scale
Some direct network effects for infrastructure users and end users

Barriers
Prevalence of vertically integrated providers, - who may not see benefits of interopeability
Telecoms standardisation process fragmented, long and complex
Systemic barriers to inter and intra industry co-operation

What are the options for intervention?

1. *Take no formal action.* Whilst informal encouragement might fall under this heading its effectiveness would rely on existing incentives to reach right outcome. This would therefore appear to equate to the absence of intervention and would allow the development of proprietary interfaces or no interfaces.
2. *Require that infrastructure providers use open standards, without specifying which standards should be used.* Ofcom would be ensuring standards were there to optimise the network effects and help create social value. Infrastructure providers would be able to choose which standard to use and the vertically integrated would have incentives to choose in such a way as to limit downstream competition
3. *Mandate a particular standard to be used.* Ofcom could choose which existing standard infrastructure providers had to use. This would necessarily be the output of existing standards development and subject to the advantages and disadvantages of the existing standardisation process.
4. *Specify the standard to be used.* This would be the heaviest form of intervention where Ofcom would write the standard, optimised to achieve the desired regulatory outcome, but with all the dangers of technology choice and imposition.

Determining whether and how to intervene: innovation versus network effects



- In Next Generation Access we see both strong network effects and strong prospects for innovation
- Ofcom has the power to intervene where there are competition concerns; and to protect consumers
- Ofcom therefore decided on a progressive approach:
 - A. No formal intervention
 - B. Regulatory clarity as to intention to intervene if necessary
 - C. Facilitate industry engagement and standardisation
 - D. Be ready to use formal powers where competition does not develop



*Policy tools for public involvement in the deployment of next generation communications
Info, No 6, Vol 11 October 2009*

What has happened since Ofcom's statement in March?

- Major Government Announcements
 - 31/3/09, the New Zealand Government consults on \$NZ1.5B “Broadband Investment Initiative”
 - 4/5/09 OpenNet, Singapore's Next Gen NetCo contracted. Government will provide a grant of S\$ 750M of S\$ 2.2 B to support the roll-out of the fiber
 - 7/5/09 Australian Government announces \$A 43.7B investment in NBN
 - 5/09 European Union draft consultation on NGA published in June reflect the roles of active access and standardisation
 - 16/6 Digital Britain encourages standardisation
- Industry developments
 - Broadband Forum, MEF, NICC and ITU all looking at standardisation
 - At least nine wholesale Ethernet access products available or in development
 - Ofcom has undertaken a comparison of them against ALA technical requirements
 - We see both commonality – and difference

¹ <http://www.ofcom.org.uk/telecoms/discussnga/eala/eas/>

Wholesale ethernet access products are being launched:

Source of

Specification

Security

QoS

Multicast

CPE

Interconnect

Swedish Urban Network Assoc



Openreach GEA



IFNL



New Zealand Commerce Commission



Malaysian Comms and Multimedia Commission



Telefonica Espana



Belgacom (info from BIPT)



No information



KPN



Telecom Italia



Not considered

Quantifying the costs of accessing the European market without a standard

- The absence of a standardised wholesale input increases the cost of market entry for an operator
- A UK operator such as Carphone Warehouse (CPW) will have developed a retail offering based on BT's wholesale input – GEA.
- If CPW wants to enter the Spanish market it must adapt its UK product for the Telefonica wholesale input.
- This involves cost :
 - Product development
 - Systems development
 - Changes in Customer Premises Equipment
 - CPE is probably the biggest cost driver
 - This will be a cost within a market as well as between markets if there is no standard and consumers need to swap out CPE when they change provider.
 - The cost will therefore be related to churn as one CPE is replaced by another
 - Current broadband churn is about 10% in the UK, without high CPE cost

Quantifying the costs of accessing the European market without a standard



$$C_{EC} = M * F * (P + S + E)$$

- C is the cost to the European Community, M is Markets, F: firms entering; P product development costs, S systems development costs and E consumer premises equipment

This can be refined as

$$C_{EC} = M * F * (P + S) + \sum CH * e^y [1 - n]$$

Where C: annual rate of churn, H: households with a connection e: cost of each CPE ; y: year

Assumptions:

Currently the line termination equipment in the home varies between £5 and £250. S and therefore P between 3.75M and 9M . IDATE estimates of the market for Superfast broadband in Europe (includes Russia)

2010	2011	2012	2013	2014
9262040	1143431	1627942	2159653	2828074

Illustrative scenario:

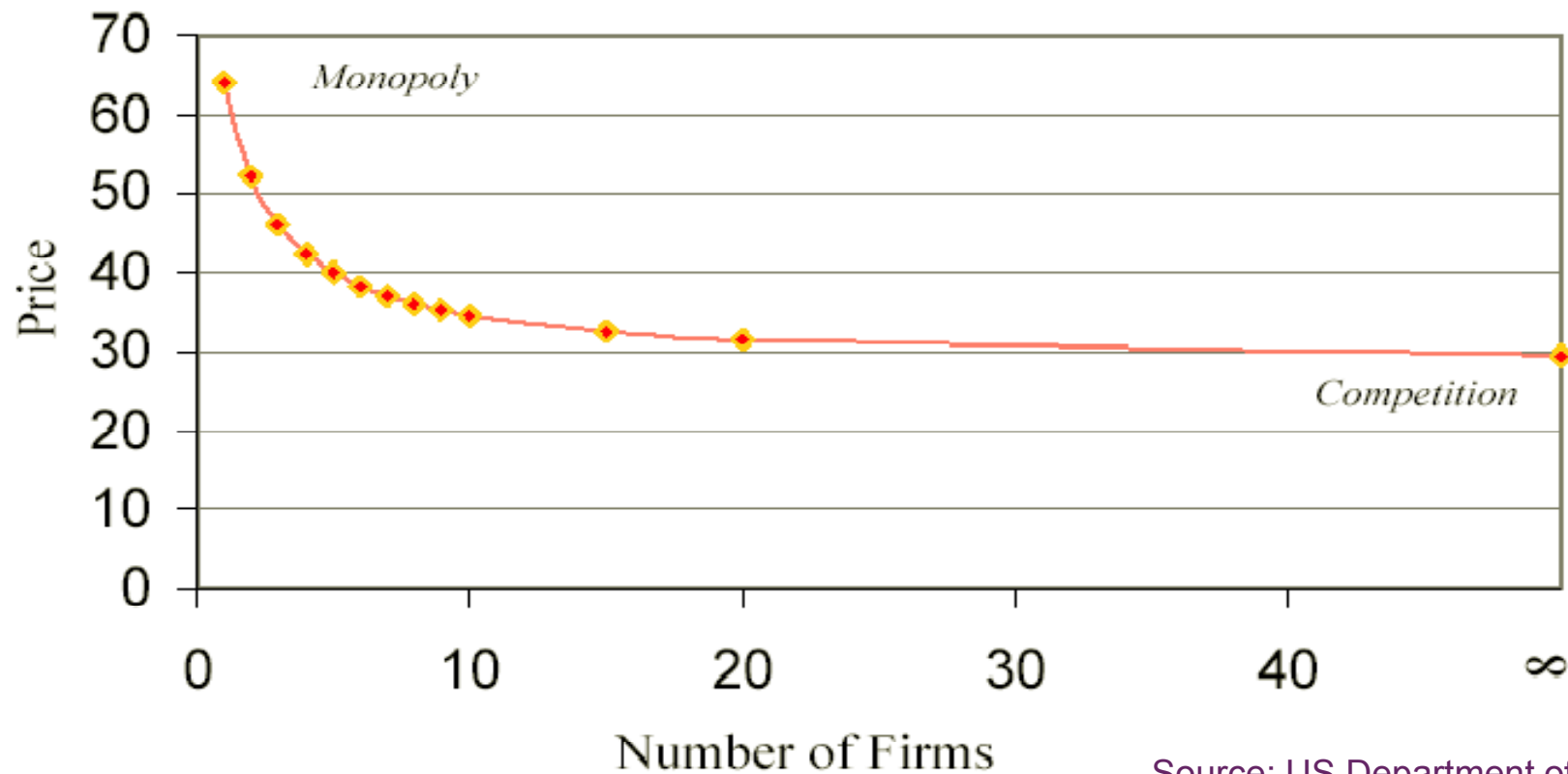
Effective competition means four operators launching services in all 27 European countries, with an incremental CPE cost of £50 per home

$$C \text{ is } 27 * 4 (3,750,000 + 3,750,000) + 1702114 * 50 \text{ or } \text{£}836\text{M,}$$

€1B

The impact on consumer welfare of less competition

Cournot Equilibrium with Few and Many Firms



Source: US Department of Justice.

Summary

- In many countries, consumers are reaping the benefits of a competitive market in current generation broadband. As next generation access networks roll-out, active access will play an important part in the success stories
- Passive access products have many advantages but are unlikely to work everywhere. Ethernet Active Line Access has the potential to be a generic wholesale access product which enables providers to compete and differentiate themselves – attracting next generation consumers
- Standardisation is critical if there is to be competition
- There may be significant costs incurred if there is no standard

Next steps

- Refine the costs of accessing the European market:
 - Are cost structure assumptions realistic?
 - Are cost actuals realistic – more empirical evidence required
 - Investigate evolution of CPE – key driver
 - Consider desirable competition scenarios
- Refine our understanding of the impact of the cost
 - Would a firm still enter?
 - Would market entry be lower without a standard or absent altogether – step function?
 - Estimate the possible benefits of increased entry.

Questions?

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