



Broadband in South Derbyshire

Presentation to South Derbyshire DC – Overview and Scrutiny Committee
9th December 2009

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Agenda – points for discussion specified by SDDC

1. Broadband speeds
2. Broadband technology developments
3. Broadband infrastructure update
4. Broadband for business
5. Digital Britain
6. Copper infrastructure
7. Next Steps

1. Broadband speeds

Negating factors:

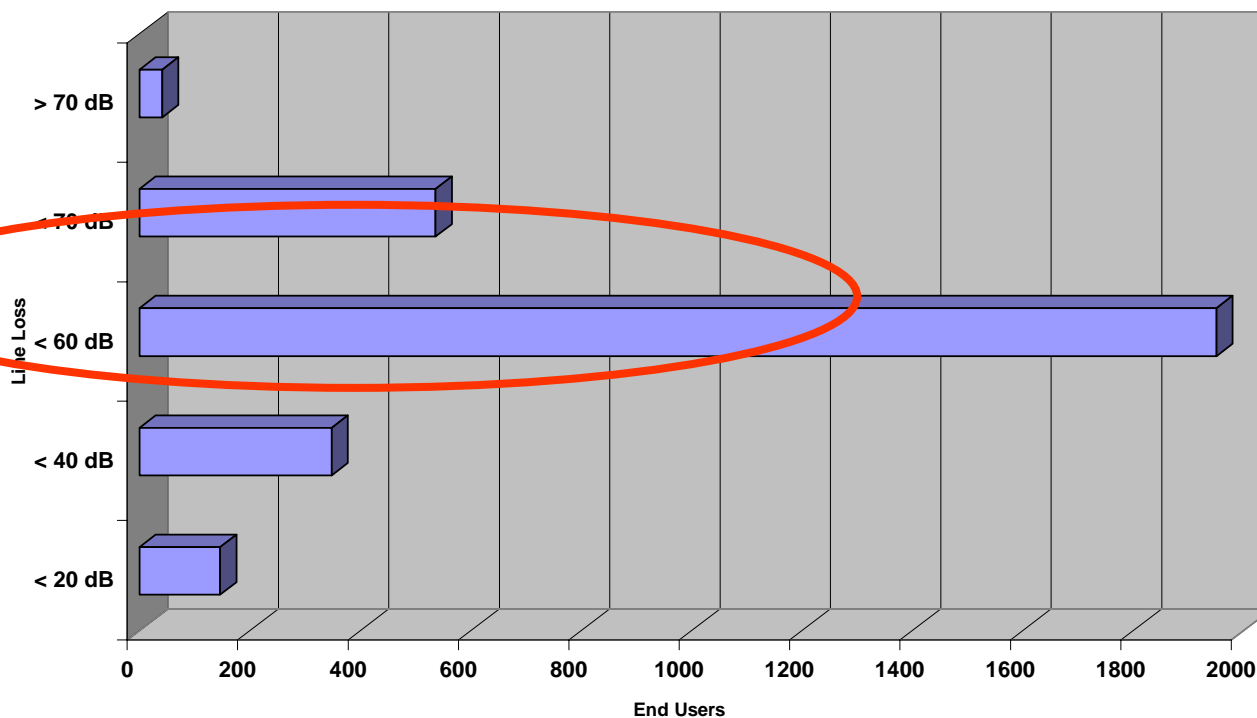
- Distance from the exchange
 - Contention ratio (the number of people sharing the same connection)
 - Time of day (peak time is 18:00 to 23:00)
 - Quality of modem and internal cables
 - Quality of external cables
 - Website capacity
- The performance of DSL on any given line in the access network is a function of the **signal to noise ratio** at the end of that line:
 - **Signal** is affected by the length, quality and dimensions of the copper (and sometime aluminium) cable,
 - **Noise** can come from
 - network crosstalk (directly related to the “fill” level of the cables in use,)
 - sources in the home or premises (including home wiring)
 - sources in the environment e.g. RFI from other electrical equipment
 - Geographic coverage achieved at any given speed also depends on
 - the topology of the access network
 - the statistical distribution of line lengths

These factors are identical for anyone operating DSL on BT's access network

Etwall exchange

- 73% of telephone lines within the Etwall exchange area have broadband
- Openreach contractually provide broadband on lines with a line loss of up to 70dB
- 1.0% of broadband lines within the Etwall exchange area are over 70dB

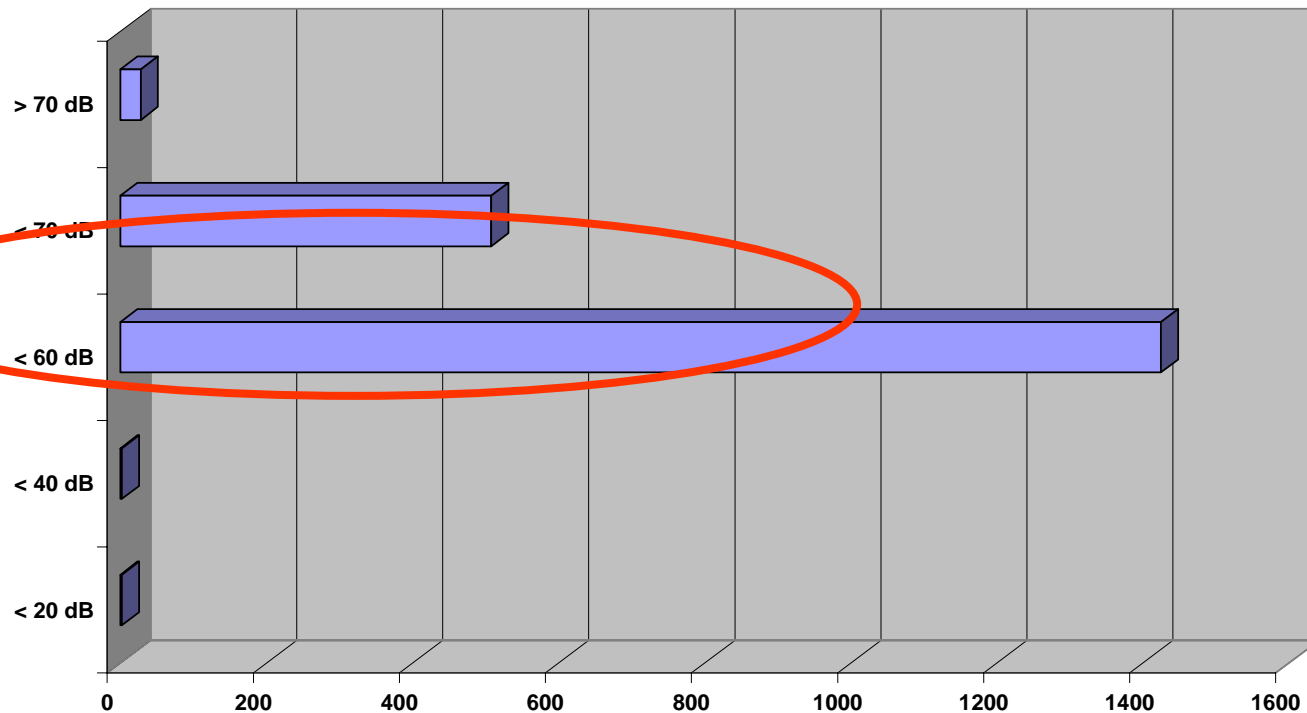
Broadband within Etwall



Hilton area

- 79% of telephone lines within Hilton area have broadband
- Major cable fill ranges from 67% in the higher gauge cables to 50% which is contributing to contention on the cables.

Broadband Line Loss Profile in Hilton



Knipton case study

End user in Knipton (01476) 870***

- Length of line 6.7km – measured Line Loss @ 74dB

There are currently 60 spare pairs at the green box, so this would be for broadband only

To achieve 60dB at 1000m past the green box:

- 850m of 0.9 gauge copper @ £9,500 (excludes blockages)

To achieve 60dB at the end users premises:

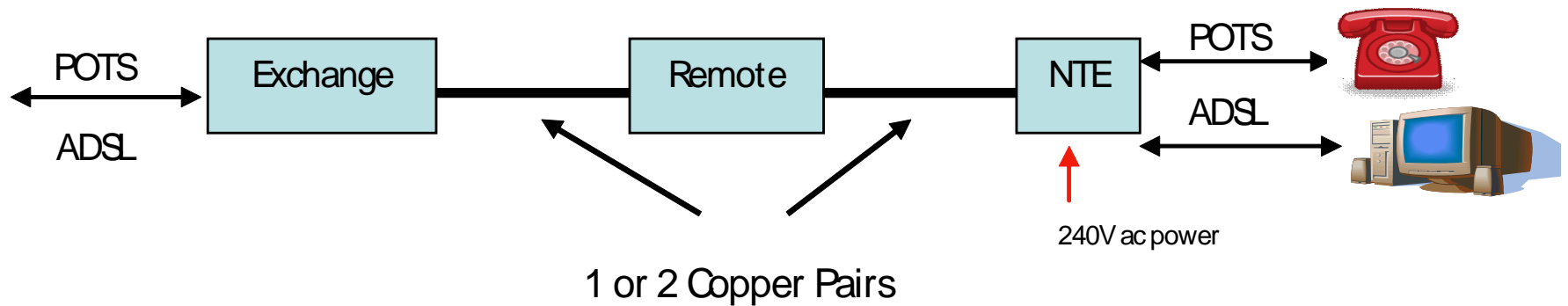
- will require a further 1.4km of cable past the green box

Potential remedies

BT iPlate (now)



BET (future)



2. Broadband technology developments

BT Wholesale offers a “mixed economy” of broadband products and services to communications providers throughout the UK...

IPstream

Copper – DSL

Up to 8Mbit/s

Wholesale Broadband Connect

Copper – next generation

Up to 24Mbit/s

Fibre to the cabinet

Up to 40Mbit/s
with improved upstream rates

Fibre to the premise

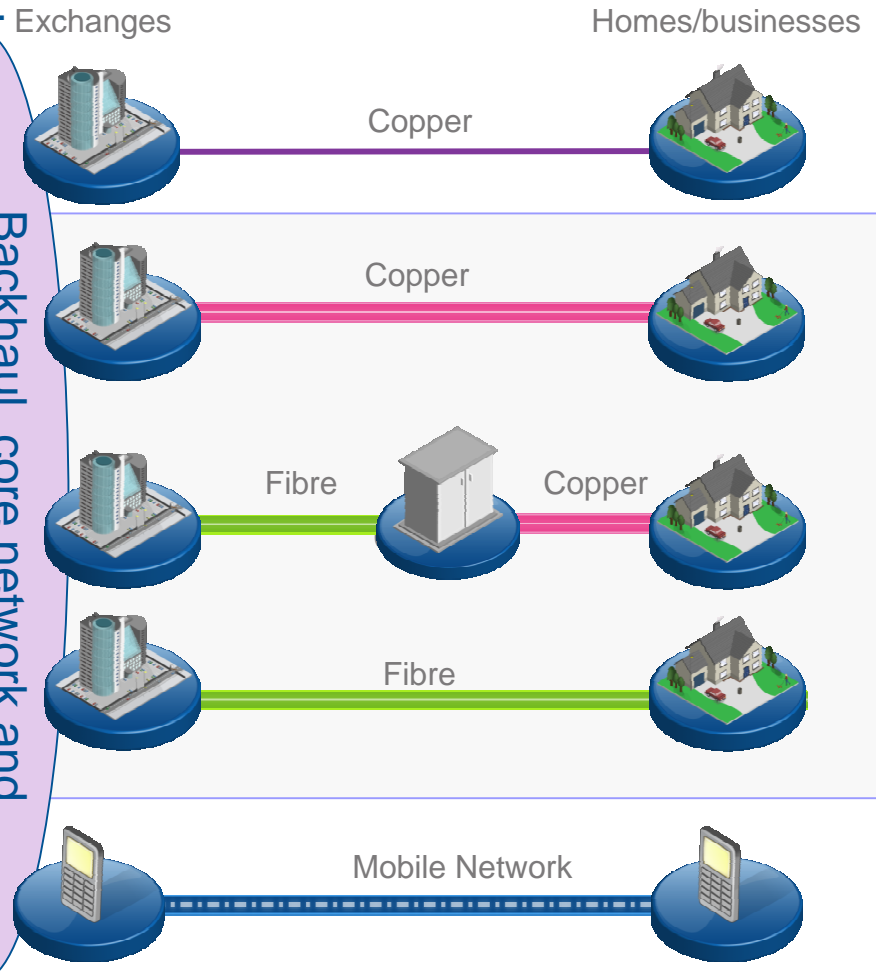
Up to 100Mbit/s
with improved upstream rates

Ethernet

Mobile

Up to 7.2Mbit/s ... and beyond

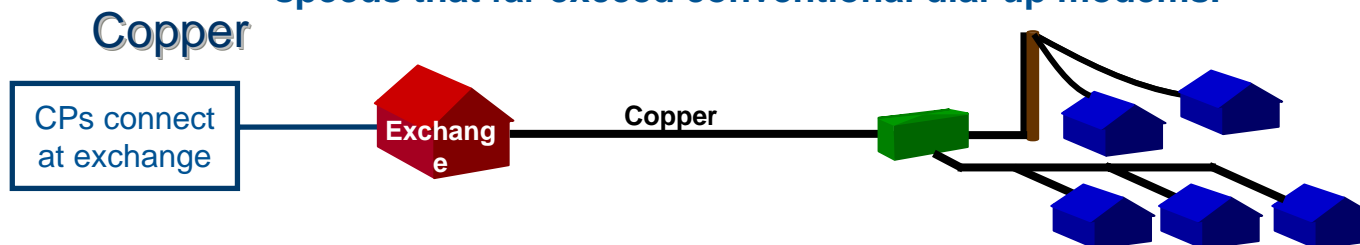
Backhaul, core network and
Service Provider interconnect



Broadband services that include exchange equipment, core networking, routing equipment and interconnection to service providers

Openreach provides a copper based local loop broadband access product to communication providers on an equivalent basis

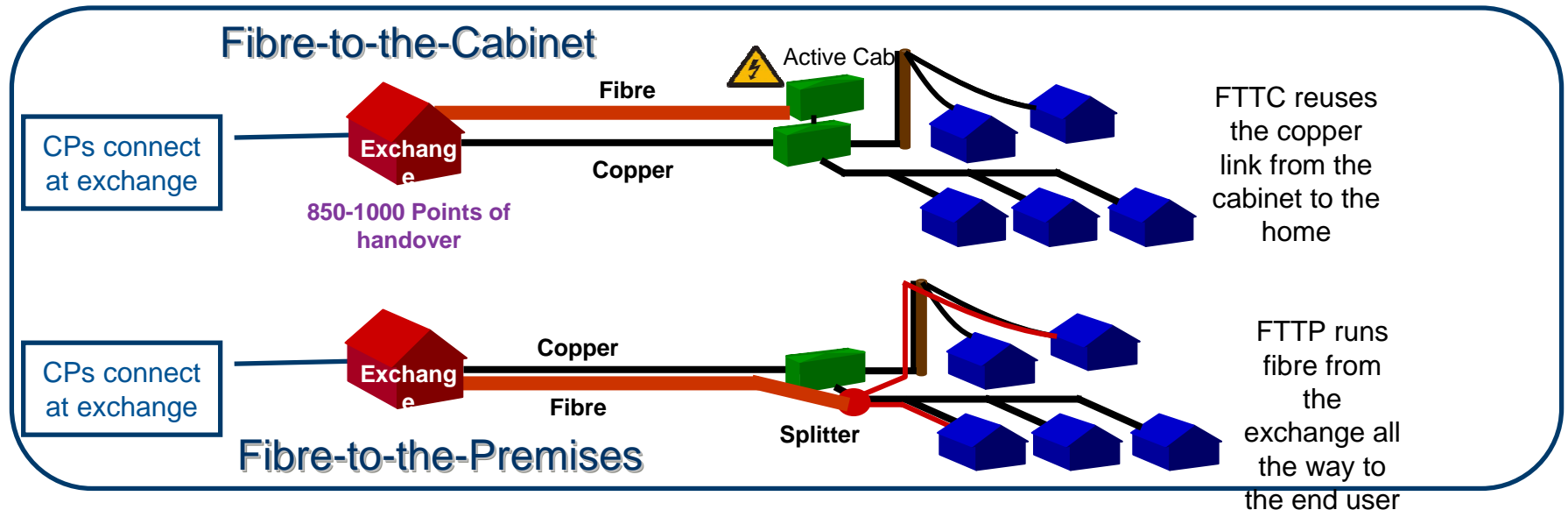
ADSL (or DSL for short) is a high-speed Internet access service that utilises existing copper telephone lines to send and receive data at speeds that far exceed conventional dial-up modems.



ADSL2+ extends the capability of regular ADSL by doubling the number of downstream bits.

Infrastructure	Technology	Openreach Product	End user speeds	Distance limitations	Who would purchase it?
Copper	ADSL (Asymmetric Digital Subscriber Line)	SMPF/MPF	Up to 8 Mb/s downstream, 1 Mb/s upstream	Approx 5km between the home and the central switch	Communication providers (CPs) BT Wholesale
	ADSL2+	SMPF/MPF	Up to 20 Mb/s downstream, up to 1.4Mb/s upstream	Approx 5km between the home and the central switch	CPs BT Wholesale

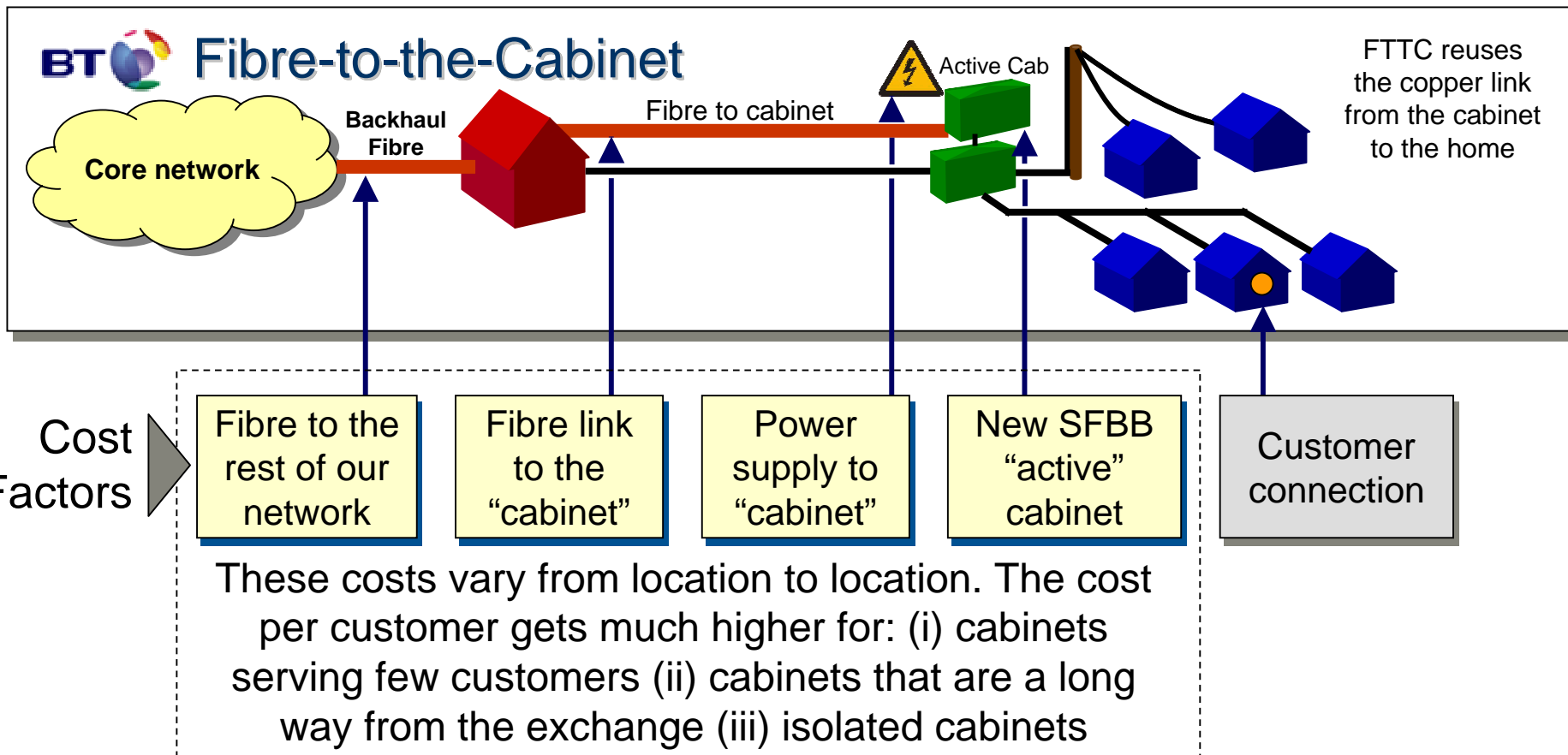
Openreach is deploying next generation fibre based broadband access products for communication providers



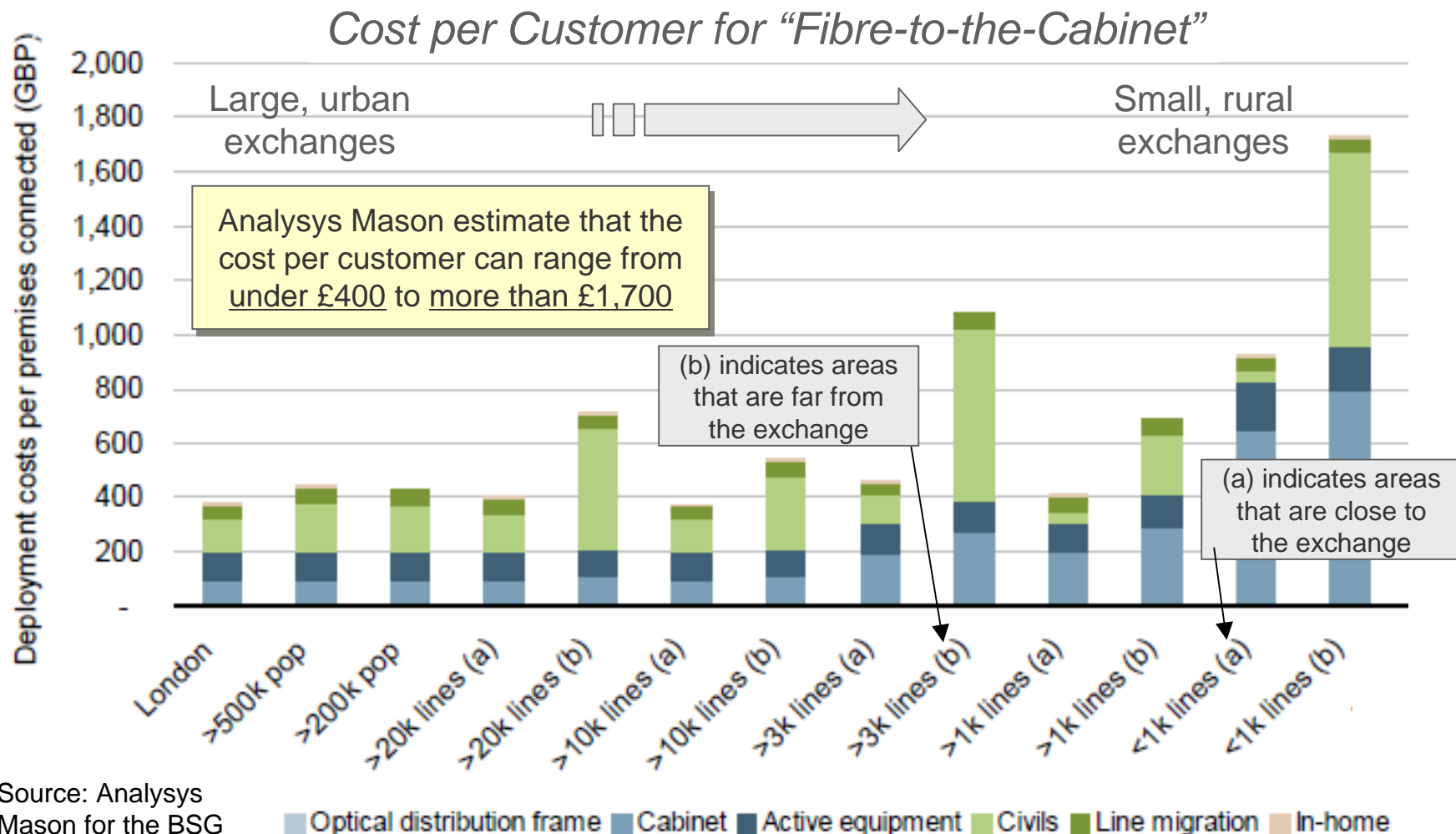
Infrastructure	Technology	Openreach Product	End user speeds	Distance limitations	Who would purchase it?
FTTC (Fibre to the Cabinet)	VDLS2 (Very high speed Digital Subscriber Line)	GEA (Generic Ethernet Access) 1Gb/s	Up to 40 Mb/s downstream (15 Mb/s assured), 2 Mb/s upstream (or 10 Mb/s upgrade)	Approx 5km between the home and the central switch	CPs BT Wholesale
FTTP (Fibre to the Premise)	GPON (Gigabit Passive Optical Network)	GEA (Generic Ethernet Access)	40 or 100 Mb/s downstream, 2 or 10 Mb/s upstream	Allows for up to 80 km between the home and the central switch	CPs BT Wholesale

Our deployment decisions are driven by *demand & cost*...

- In-depth review of demand (consumer & business)
 - *Also, as we roll-out fibre, we will learn more about who buys it and why*
- Detailed cost modelling:
 - *The costs of the 2 different technology strands are driven by different factors...*



The costs can be challenging in some rural areas

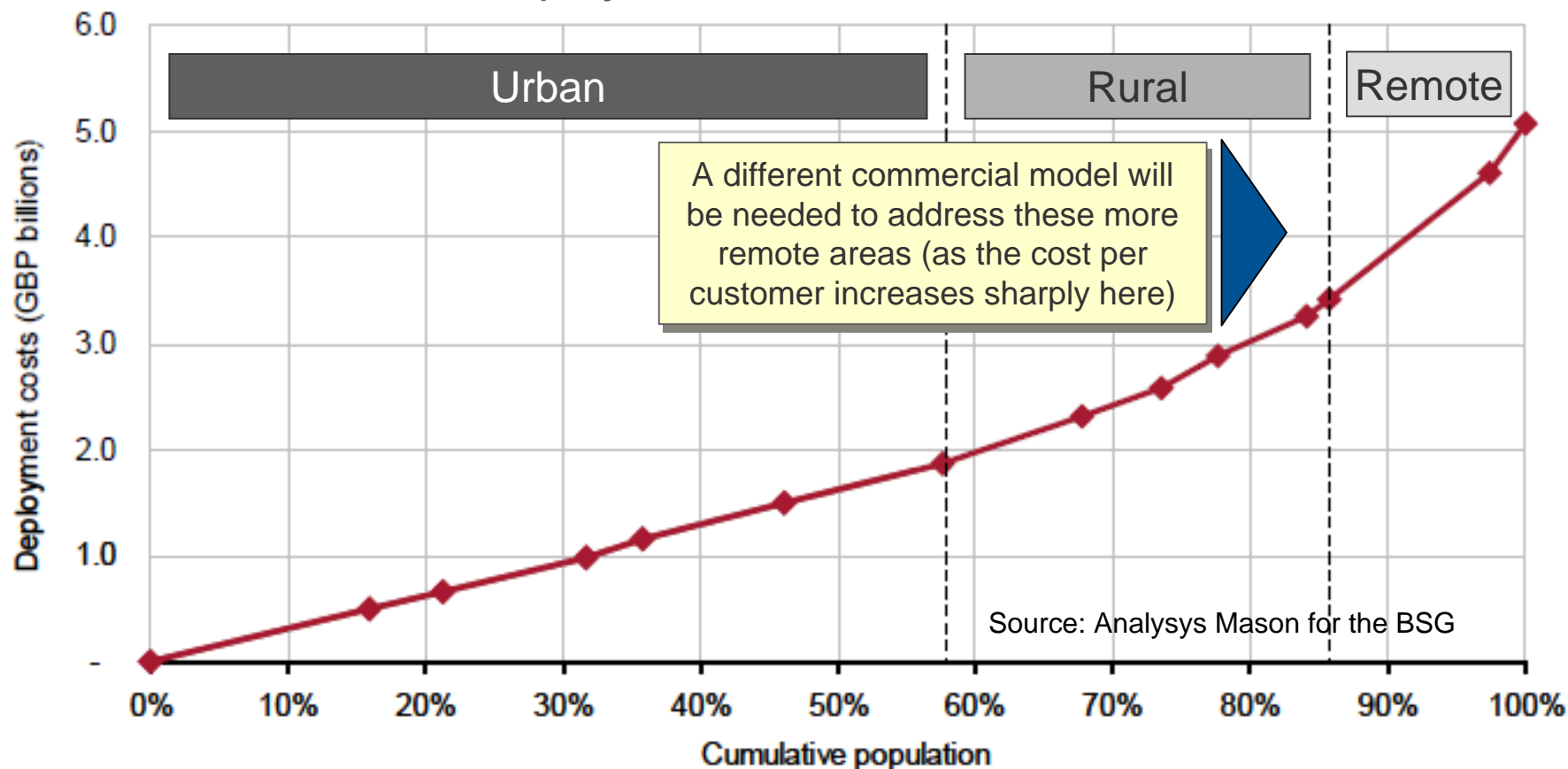


Source: Analysys
Mason for the BSG

- The graph shown above has been produced by independent analysts “Analysys Mason” for the Broadband Stakeholder Group (BSG).
- For the full report, see “<http://www.broadbanduk.org>” for details.

...which makes 100% coverage very expensive to achieve

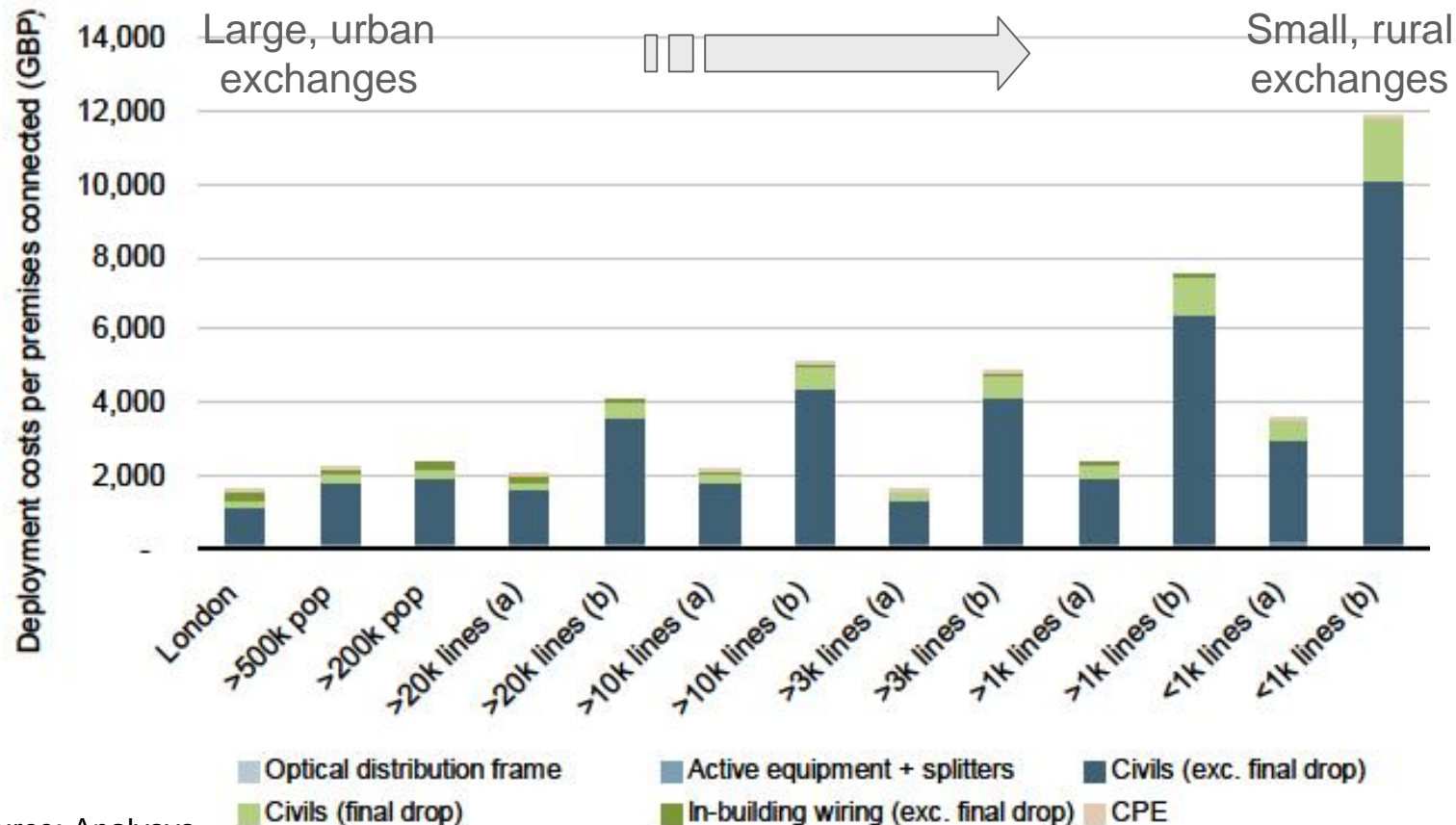
UK-Wide Deployment Costs for Fibre-to-the-Cabinet



- Analysys Mason produced the graph shown above which suggests that the most remote 10% of the UK would cost the same to serve as the most urban 35%
- For the full report, see “<http://www.broadbanduk.org>” for details.

The costs for FTTP are significantly higher...

Cost per Customer for “Fibre-to-the-Premise”



Source: Analysys
Mason for the BSG

- The graph shown above has been produced by independent analysts “Analysys Mason” for the Broadband Stakeholder Group (BSG).
- For the full report, see “<http://www.broadbanduk.org>” for details.

3. Broadband infrastructure update

All 13 exchanges are enabled with ADSL Max (8mb/s)

- **Mickleover:** ADSL Max; LLU – AOL, C&W, O2/Be, TalkTalk, Sky, Tiscali,
- **Etwall:** ADSL Max
- **Repton:** ADSL Max & SDSL; LLU – TalkTalk
- **Overseal:** ADSL Max
- **Melbourne:** ADSL Max
- **Peartree:** ADSL Max (WBC by March end/Ethernet by December);
LLU - AOL, Bulldog, O2/Be, TalkTalk, Sky/Easynet, Tiscali
- **Swadlincote:** ADSL Max, ADSL WBC, SDSL
LLU - AOL, Bulldog, O2/Be, TalkTalk, Sky/Easynet, Tiscali
- **Burton-under-Needwood:** ADSL Max, SDSL
- **Tutbury:** ADSL Max, SDSL; LLU – TalkTalk
- **Kirk Langley:** ADSL Max
- **Sudbury:** DSL Max, SDSL; LLU - TalkTalk
- **Chellaston:** ADSL Max, SDSL; LLU - O2/Be, TalkTalk,
- **Shardlow:** ADSL Max

4. Broadband for business

Wholesale Ethernet

- BT provides the broadest range of CPs with a 'competition-ready' infrastructure on which to deliver their own services and sustain their business
- CPs benefit from BT Wholesale's carrier-grade quality of service and the tremendous bandwidth capacity and service flexibility potential offered.
- 614 nodes deployed. This gives 90% business coverage using fibre and 54% business coverage using Ethernet in the First Mile (copper).

5. Digital Britain

1. Universal Service Commitment

- **Confirms Government's intention to deliver broadband universal service commitment (USC) at 2Mb/s by 2012 to nearly all people in the UK**

2. Next Generation Access

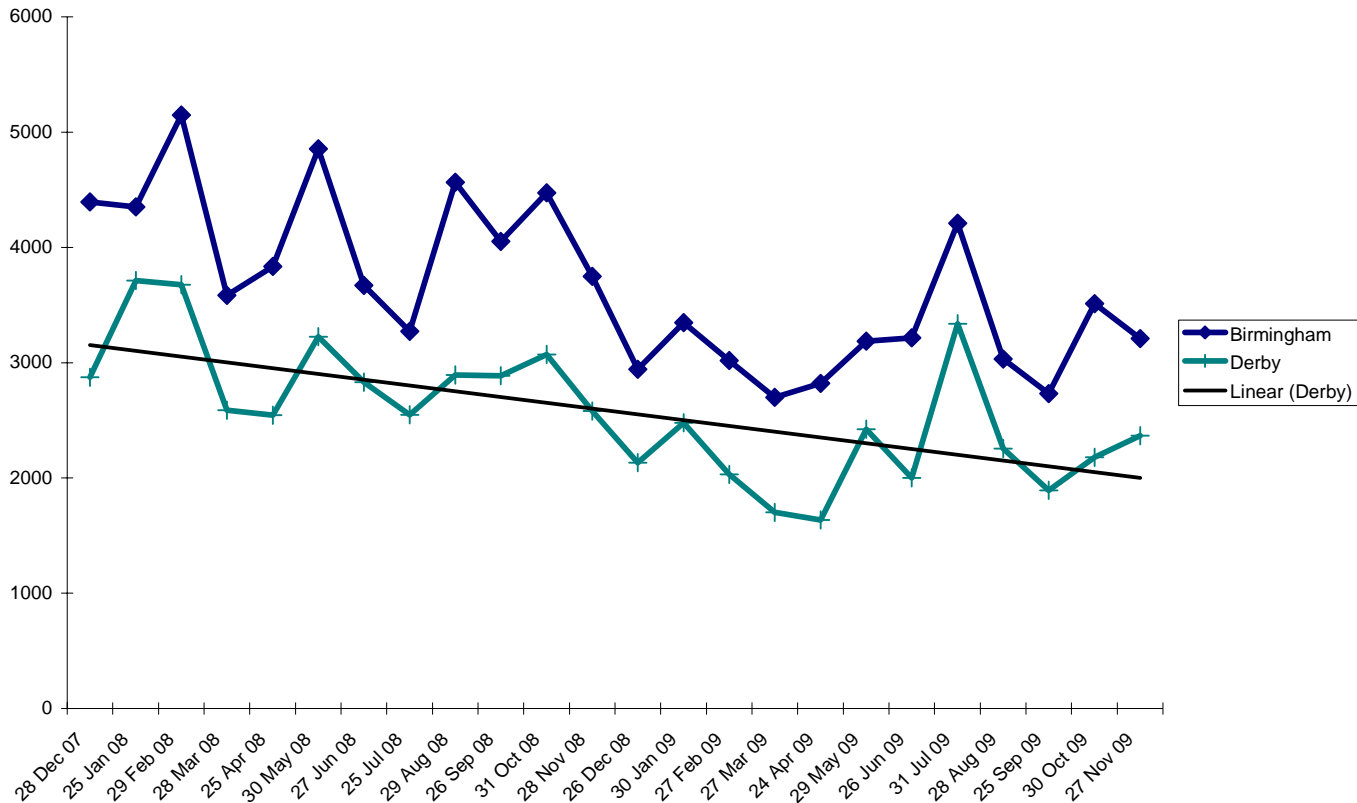
- Public support for 'the network of tomorrow' so consumers who are not expected to be reached by commercial deployment – referred to as 'final third of UK' – will be able to enjoy next generation access (NGA)
- **Creation of independent Next Generation Fund, based on 50p levy per month (£6 per year) on all copper lines (including cable)**
- **Fund available to communications providers, like BT, on tender basis providing a financial subsidy to bring super-fast broadband to 'last third of homes and small businesses**

For locations that are unsuitable for fibre we are developing a range of broadband products to reach remote locations or improve current access speeds...

Product	Speeds
Satellite: Wholesale <i>BT Wholesale are developing a satellite broadband product with our partner Avanti for launch in 2010 with line speeds of 4Mb/s.</i>	5-10Mb/s Down
Sharedband; BT Retail / Plusnet BT Retail are developing a product that bonds copper pairs together to improve end user line speeds for ADSL, ADSL2+ and VDSL based broadband. These will mainly suited for business use.	2-10Mb/s Down
Broadband Enabling Technology; Openreach <i>BET technology 'boosts' the broadband signal half way down the line, to push the electrical signal that much further than standard ADSL to distances up to 12km – this is over double traditional reach. BET is most applicable when there are at least 10 lines on any one exchange that would benefit from it. However BET may not be so effective when there is a cluster fed from a single Cabinet or similar.</i> <i>BT Wholesale and BT Retail are developing BET based products for launch in 2011.</i>	1-2Mb/s Down 1Mb/s Up

6. Copper infrastructure

9% reduction in the volume of faults reported and cleared in the last 12 months (Nov08 vs Nov09) on the same number of exchange connections



- investment in fault volume reduction ✓
- deployment of new test equipment ✓
- investment in our infrastructure ✓
- removal of legacy equipment ✓

7. Next Steps

- **BT has already made a major investment in new network infrastructure and a competition-ready platform for a wide range of service providers**
 - How can we maximise this where it is available now or in the near future in terms of planning, implementation, demand generation, take-up, services and innovation?
- **The rollout plan will continue to 2012 and beyond based on exchange areas**
 - How does this meet the needs and ambitions of your place or region and is there a desire to understand and articulate these further?
 - What scope and appetite is there for intervention and mobilising the public sector, business, educational and community stakeholders together to take decisive action where acceleration or maximum coverage is a priority?
- **Supporting the UK to make Digital Britain a reality**
 - Your BT regional team can support you with information, advice and access to experts to help with strategy and planning through to implementation



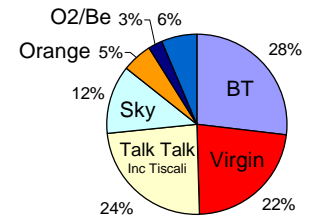
Broadband in South Derbyshire

Back-up slides

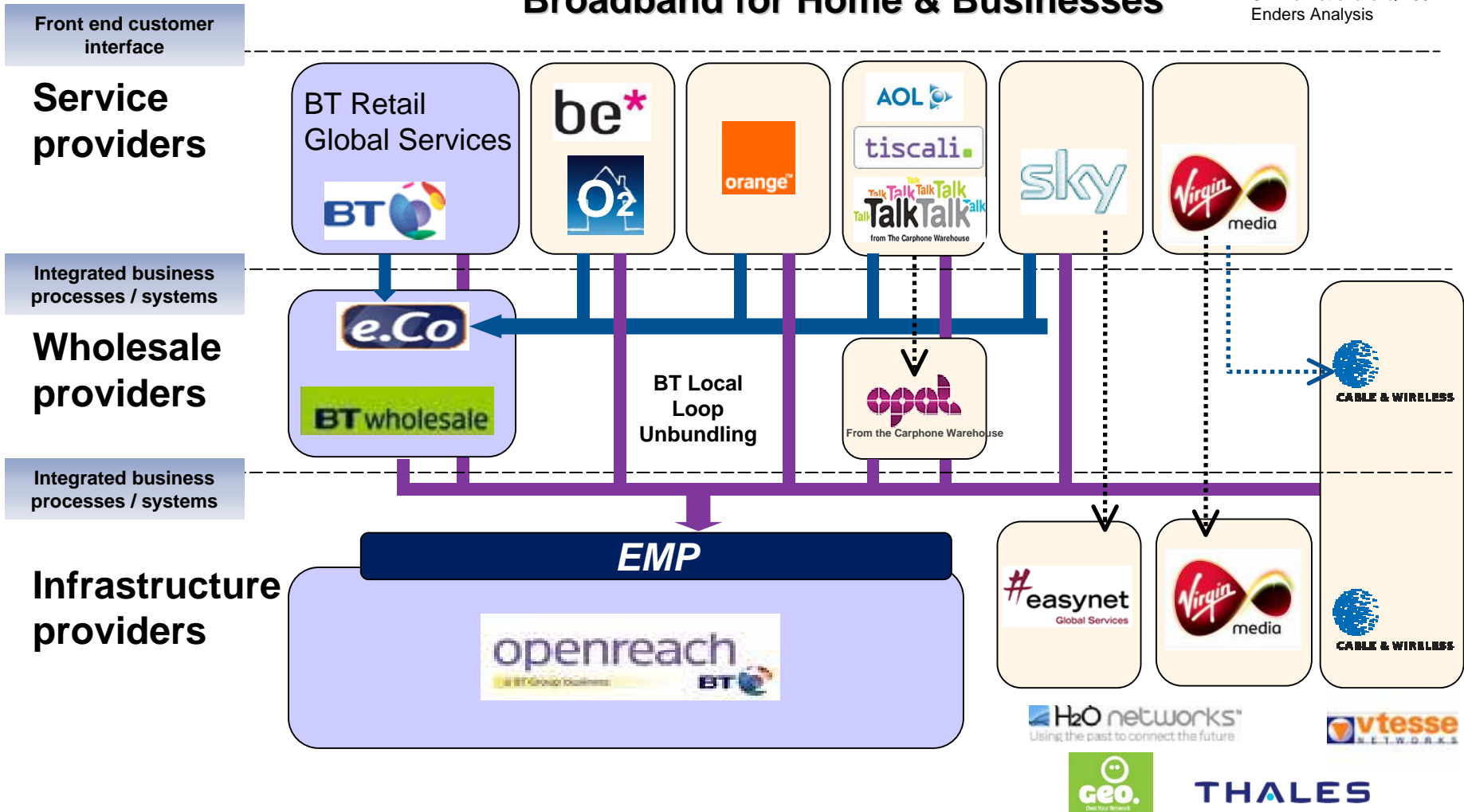
UK broadband market is competitive at all layers from end user services through to infrastructure



Broadband for Home & Businesses



UK market share Q2 09
Enders Analysis



Wholesale Operational system



Equivalence Management Platform



The UK has one of the most open, competitive and innovative communications markets in the world....

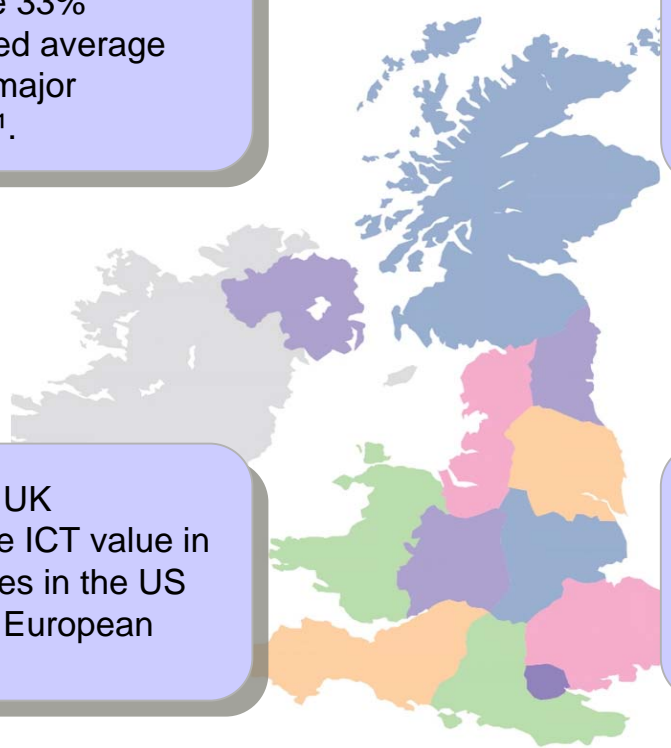
BT invests over £2.5bn a year in building and maintaining modern networks which it opens up to other Communications Providers - creating one of the most open, competitive and innovative communications markets in the world - with wide reaching benefits and choice for consumers and businesses throughout the UK.

Lower prices. Communication services in the UK are 33% cheaper than combined average prices in the US and major European economies¹.

Higher consumer take up. c61% of UK households have a broadband connection². Higher than 20 other European countries – including France, Italy and Spain.

Powering business. UK businesses drive more ICT value in the UK than businesses in the US or in any of the major European economies³.

Creating modern jobs. The UK has a higher proportion of ICT related jobs than the US or any of the major European economies³.

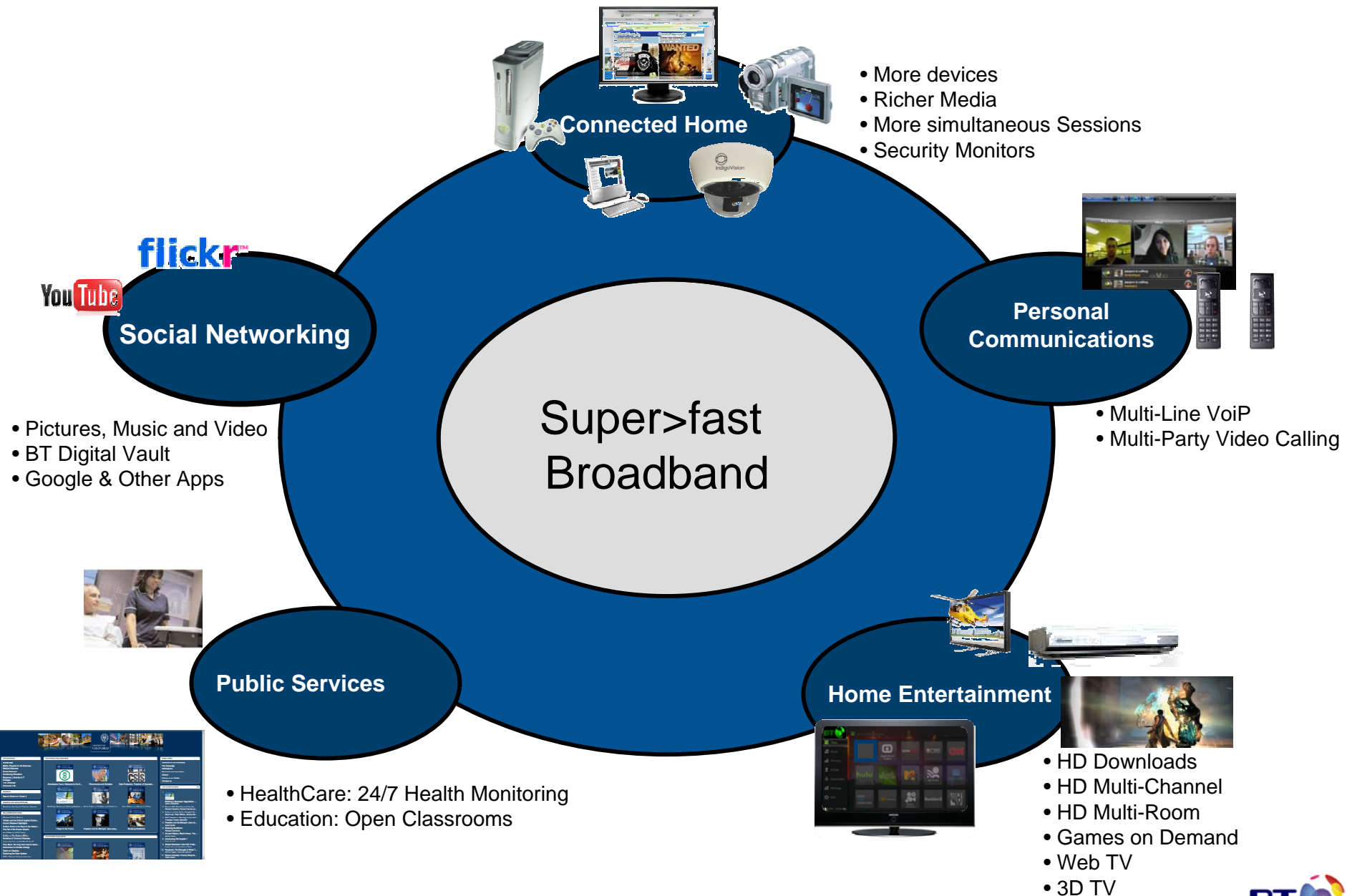


¹Source: OCED Portal 2008

²Source: OECD Portal 2008

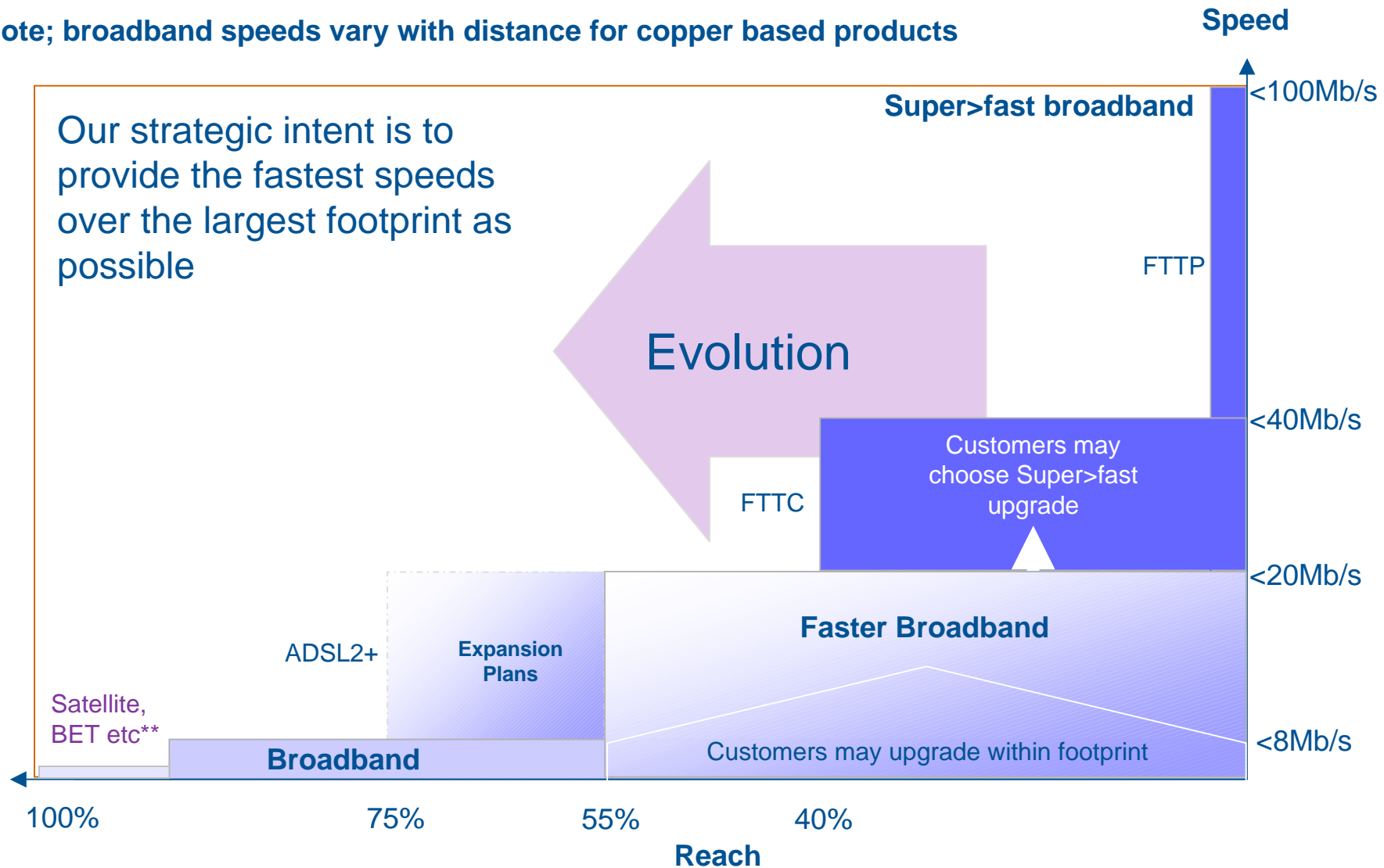
³Source: OECD

Super>fast Broadband will enable a richer consumer experience



We are developing a complementary portfolio that offers a range of speeds over the full footprint of the UK...

Note; broadband speeds vary with distance for copper based products



Massive increase in available bandwidth – driven by customer choice

7.

- We are investing **£1.5bn** to rollout fibre to **10 million** homes and businesses, some 40% of the UK, by **2012**



FTTP

FTTC Trial/Pilot