

# BT: Report from a G.Fast Trial

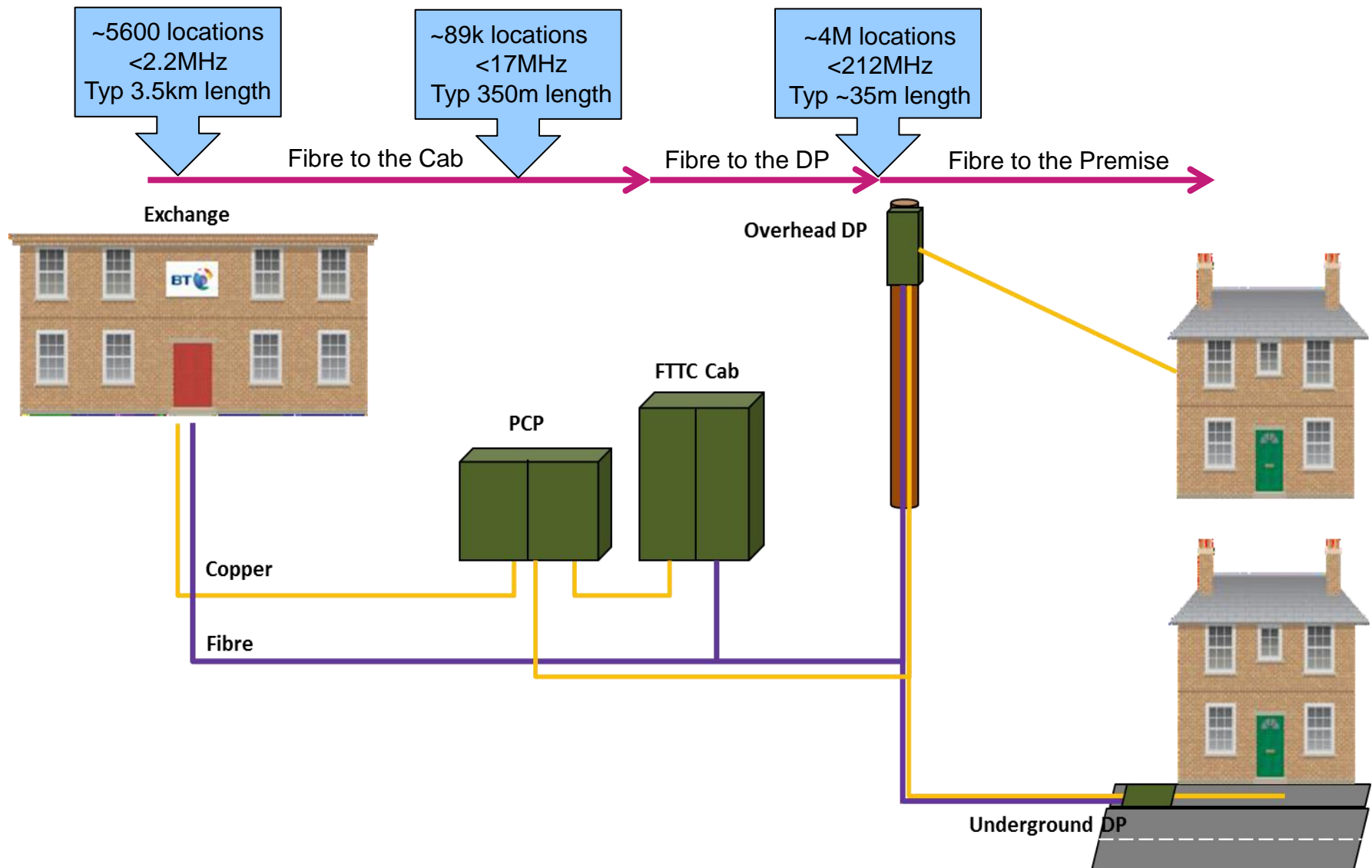
Trevor Linney

Head of Access Network Research

BT Technology, Service and Operations

That's ingenious. **BT** 

# The access network



# Pushing fibre deeper into the network

## The Distribution Point

- Beyond the green cabinets, BT has overhead and underground DPs with an average of ~8 customers connected, but can have >16 customers in some cases
- Space is limited and they are exposed to the elements
- The typical distance from the DP to the customer is ~35m making it the ideal location for delivering very high speeds
- Rural final drops can be significantly longer than the median distance





# The BT / Huawei Trial

- As announced at the Broadband World Forum in 2013, BT and Huawei deployed a prototype FPGA unit near Adastral Park on three trialists lines
- This was to prove the physics of G.Fast transmission on actual copper plant



## Huawei Announces Fibre To The Distribution Point G.FAST Technical Field Trial with BT

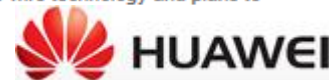
[Ipswich, UK, 21 October, 2013]: Huawei, a leading global information and communications technology (ICT) solutions provider, today announced a Fibre To The Distribution Point (FTTdp) G.FAST technical field trial in partnership with BT.

G.FAST technology allows existing copper connections to reach speeds comparable to optical connections, with the potential to facilitate Gigabit per second broadband speeds to domestic and commercial customers without causing the major upgrade disruption associated with Fibre-to-the-Premises technology. By maximising the potential capacity of existing copper wire infrastructure, successful deployment of G.FAST technology could accelerate the rollout of ultrafast broadband in the UK.

The G.FAST trial, located close to the BT Adastral Park R&D centre in Ipswich, UK, has seen multi-port G.FAST equipment installed in underground distribution points. G.FAST permits the last leg of an ultrafast network connection to be carried out with copper wire where previously only optical cable was capable of reaching adequate speeds.

Dr Tim Whitley, Managing Director, Research and Innovation remarked: "The G.FAST trial has the potential to demonstrate how ultrafast bandwidth access may be more efficiently delivered to consumers and businesses. We will be observing the results of the trial with interest to see whether G.FAST technology could play a role in ensuring BT has the best network in the short, medium and long term.

Mr. Gao Ji, Huawei Chief Strategy and Marketing Officer Western Europe, said: "Copper wires remain an important resource to telecom carriers and are assets that have yet to be fully exploited. By utilising new copper wire technologies, such as Vectoring and G.FAST, carriers can make more efficient use of their resources and quickly implement bandwidth strategies, helping to achieve commercial success. Huawei will continue to invest in copper wire technology and plans to lead further innovations in this area."



# Key locations for the trial



## **Adastral Park – BTs engineering headquarters**

Lab evaluation, safe to connect testing, management and internet connectivity



## **Portman road exchange, Ipswich**

Integrated Layer 2 Switch with XG-PON1 link to trial DPU and GE connectivity to Adastral

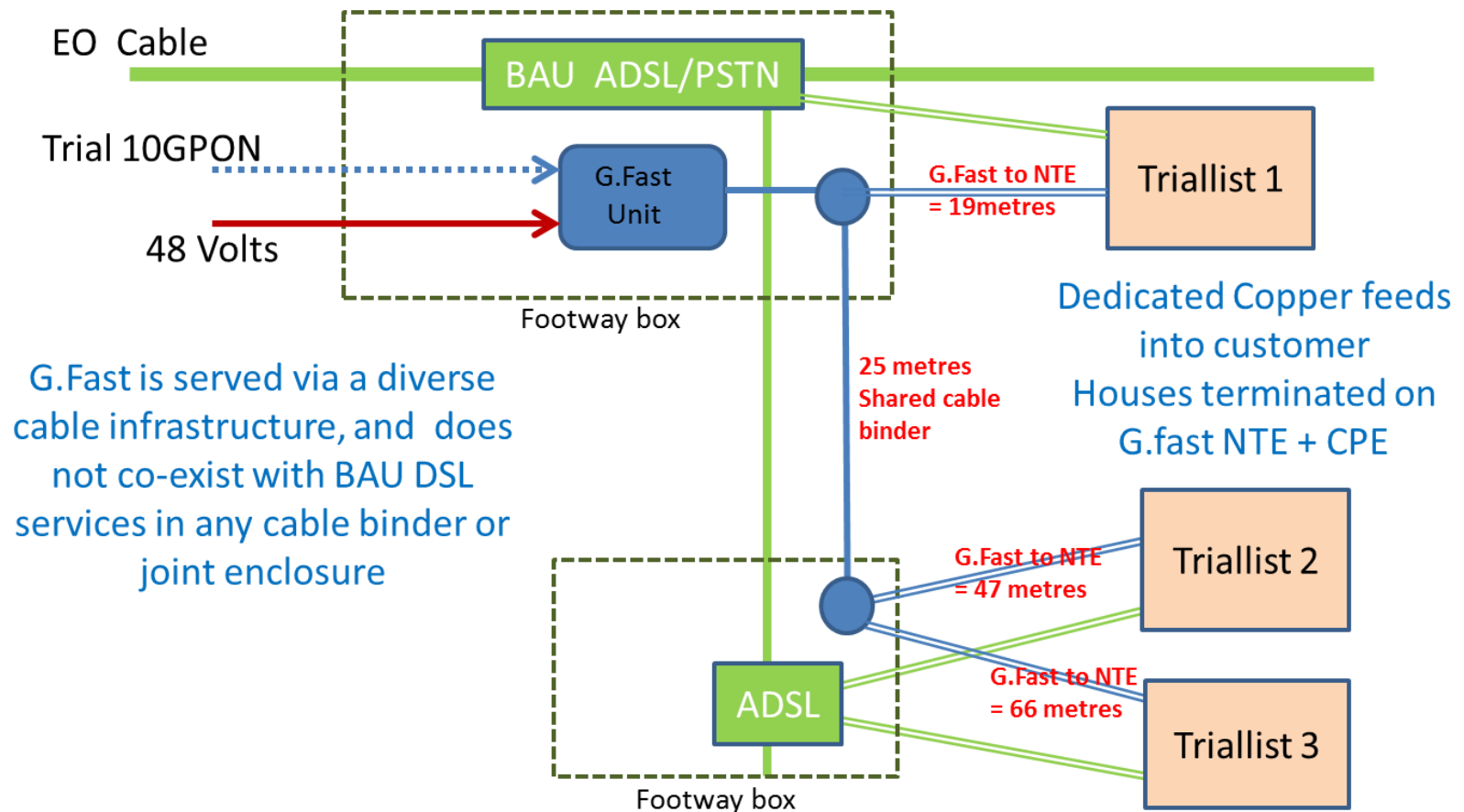


## **Trial underground Distribution Point (DP)**

Location of sealed DP unit connected to overlay copper DP and customer drops

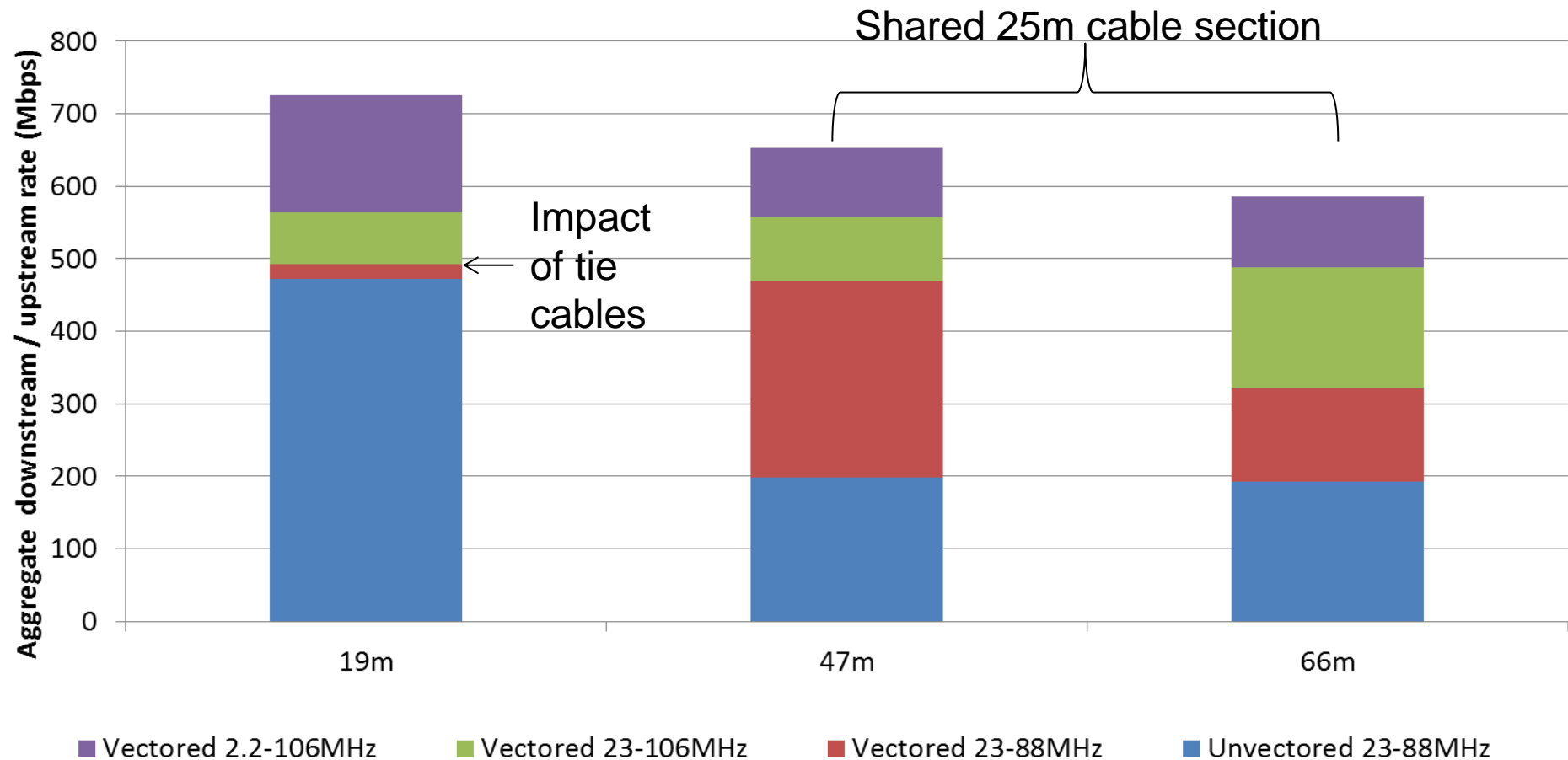
# Copper plant topology

- The trial used existing duct structures and DP locations, but created a separate overlay to prevent harm to existing plant



# Results of initial prototype field trial

- Performance of the three trial lines with different frequency plans
- All results with **20dB** target to allow comparison with un-vectorized results





# Focusing on the 66m line

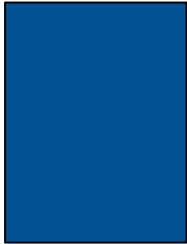


193Mbps



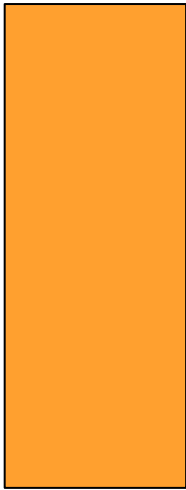
23-88MHz  
20dB Margin  
Un-vectored

+13.5%



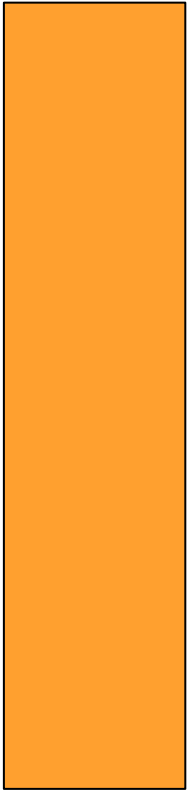
23-106MHz  
20dB Margin  
Un-vectored

+123%



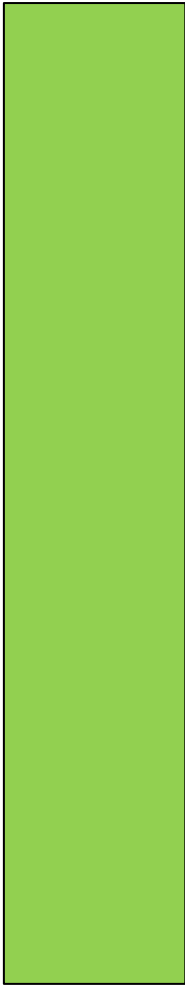
23-106MHz  
20dB Margin  
Vectored

+50%



23-106MHz  
10dB Margin  
Vectored

+22%



2-106MHz  
10dB Margin  
Vectored



# Conclusions

- BT has deployed a G.Fast prototype to prove the physics of G.Fast work
- The prototype delivered aggregate speeds up to 1Gbps when using the full 2-106MHz spectrum. However, speeds are highly dependent on equipment placement and frequency plan
- BT continues to believe that G.Fast has significant potential, though it has yet to be proven in operational deployment in a final standards compliant form. We are currently focused on driving the ITU, BBF and ETSI standards to completion.