



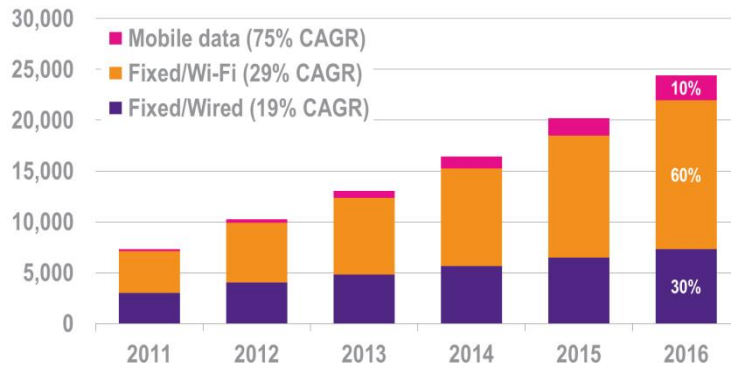
Future proofing Wi-Fi

Brian Williamson

30 January 2013

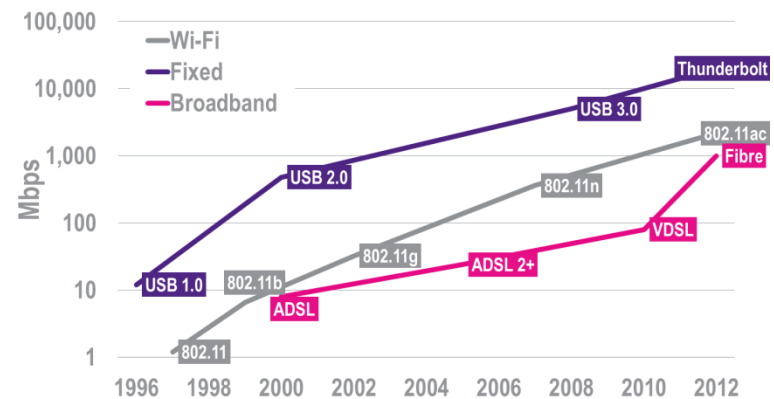
Future demand for capacity & speed

Forecast internet traffic in Western Europe
(PB per month)



Source: Plum Consulting, Cisco VNI

Connection speeds of different technologies



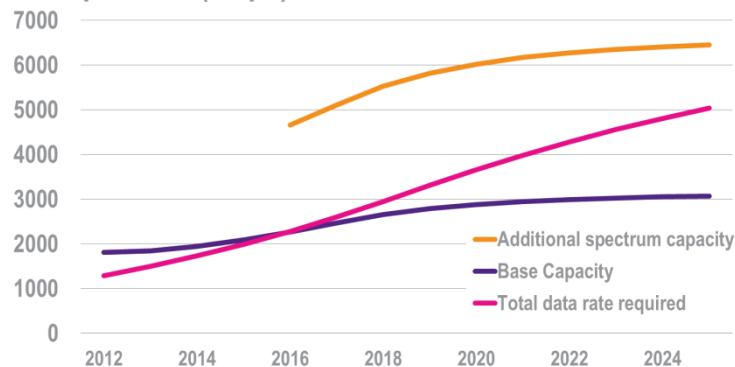
Source: Plum Consulting

High-speed high-capacity end-to-end connectivity to the device & device-to-device

Capacity/speed constrained without more spectrum

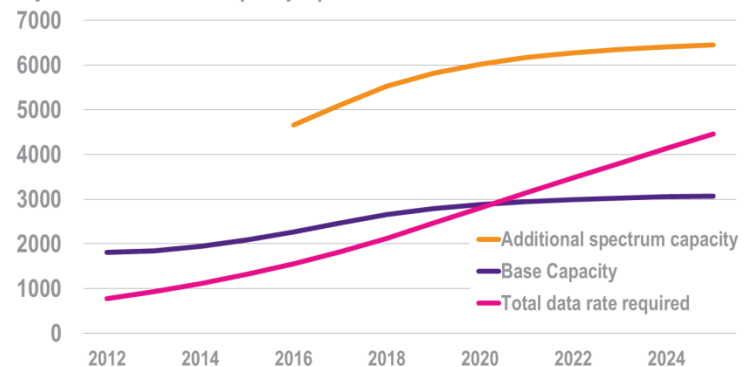


Data rate required and capacity in a busy transport hub (Mbps)



Source: Plum Consulting

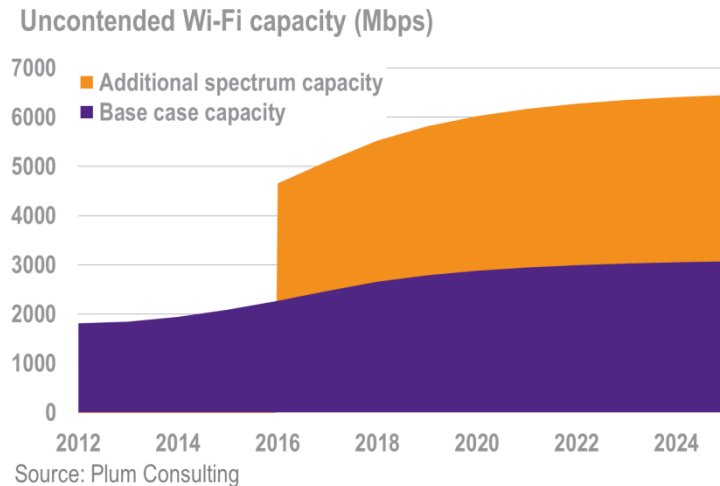
Data rate required and capacity in an apartment block (Mbps)



Source: Plum Consulting

Reality more complex - “local” constraints in time & space occur earlier

More 5 GHz spectrum to provide more capacity/speed



- **Potential to double capacity with more spectrum**
- **Detect & avoid has worked**
 - Need to verify for additional 5GHz
- **Existing 5 GHz devices can utilise additional spectrum**
 - Growing rapidly as smartphones & tablets support 5 GHz band
- **However, routers need update**
 - Routers tell devices which 5 GHz spectrum is clear to use

Europe led on initial 5 GHz allocation for Wi-Fi a decade ago

Benefits



- **We quantified two benefits**

- Faster broadband support
 - Estimate via speed gain & willingness to pay for speed
- Mobile network cost savings
 - LTE costs avoided with 10% more offload in 2016 growing to 25% in 2025 (for doubled Wi-Fi capacity)

Benefit	NPV (€)
Improved Wi-Fi quality of service	€12.3 billion
Cost savings from more offload	€4.0 billion
Total quantified benefits	€16.3 billion

- **Benefits we did not quantify**

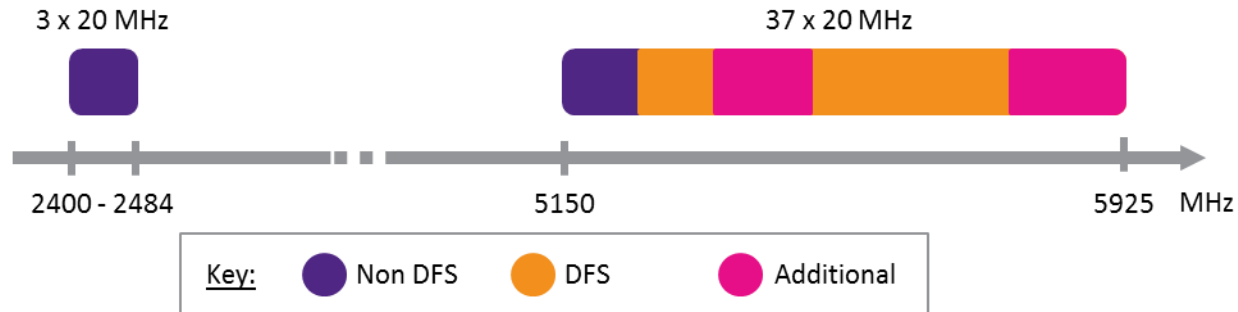
- “Innovation without permission”
- Faster device-to-device transfers
- Network competition benefits
- Managed network cost savings

Capacity, speed & innovation to support Digital Agenda

We propose



A study now by the CEPT to assess Wi-Fi sharing additional spectrum at 5 GHz (see below)



Note: DFS is Dynamic Frequency Selection
(detect & avoid technology to support sharing)

Thank you



brian.williamson@plumconsulting.co.uk