

The USO and Wireless

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Telco Subject Matter Expert



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Introduction – NBN, the USO and Wireless

- NBN History & *wireless*
 - Remember *OPEL in 2007?*
- USO Reform & mobile
 - We want data AND better mobile coverage!
- Wireless & Mobile – same but different
- Satellite and Fixed Wireless
- Fixed and Mobile – Co-competition
- 5G and Beyond 2020
- Concluding Remarks & Q and A



Brief NBN History and Wireless

- Broadband & Telstra - >2005
- OPEL and 'wireless' (WiMax) – 2007
 - WiMax review of ACCC
 - Use of free 'unlicensed' (Class) spectrum
- Expert Panel & PPP at \$4.7 billion -2008
 - Cost of \$15 billion?
- NBN and FTTC at \$43 billion -2009
 - Fixed Wireless and Satellite
 - 25% for the 10% (including backhaul)
- NBN from 2013 to 2017



USO Reform and mobile

- USO Reform – *a long slow march*
 - Contestability & Telstra
 - Minimum service?
 - Reliable voice service (ie not necessarily the STS!)
 - Addition of 'data' to 'broadband' (the NBN)
 - Relentless rise in demand for mobile (the mobile hot spot program)
 - 2015 Regional Telecommunications Review
- Productivity Commission Review
 - Final Report – April 2017!



Wireless and Mobile - same but different!

- Same – both use radio transmission?
 - Both utilise ‘mass market’ mobile technology (eg LTE)
 - Require dedicated standardised ‘spectrum’
 - Contention within the ‘cell or zone’ between users
 - coverage ‘zone’ for fixed wireless can be more ‘user centric’
- Different – mobile user?
 - ‘mobile use requirement’ completely changes
 - directional antenna for fixed user (ie zone vs cell contention)
 - User terminal very different (but same technology)



Satellite and Fixed Wireless

- Key platforms for regional & remote broadband
 - Fixed Wireless
 - Spectrum – 2.3GHz, 3.5GHz
 - Technology – same as mobile (Long Term Evolution LTE variant)
 - Satellite – Sky Muster – Europe and the US have done it
 - Broadband Ka band – 2 satellites with 100 spot beams
 - Replaced and *improved* ISS (Ku band)
- Issues in realisation!
 - An ‘acceptable’ voice service to replace ‘STS’ (eg USO)
 - A single policy for all technologies?



Fixed and Mobile – Co-competition

- Fixed broadband ‘complements’ mobile
 - High throughput (always more bang for buck)
 - Rich media content & ‘consistent’ quality
 - WiFi traffic ‘off load’ for mobile
- Mobile broadband ‘competes’ with fixed
 - Flexible consumer demand
 - Different ‘service price sensitivity’ (eg margin for mobility)
 - market segments (eg younger people)

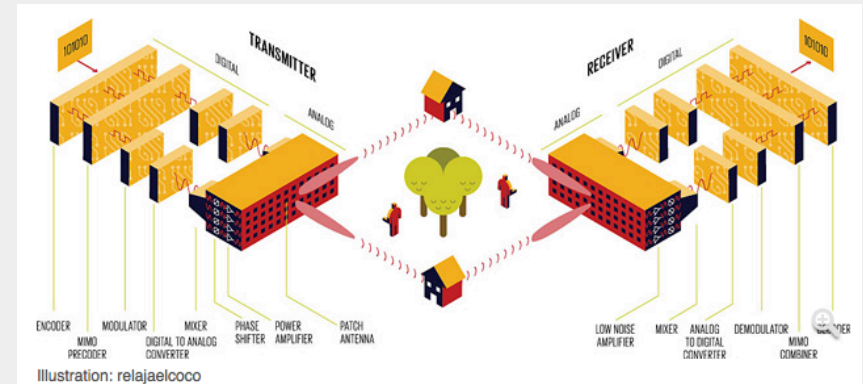
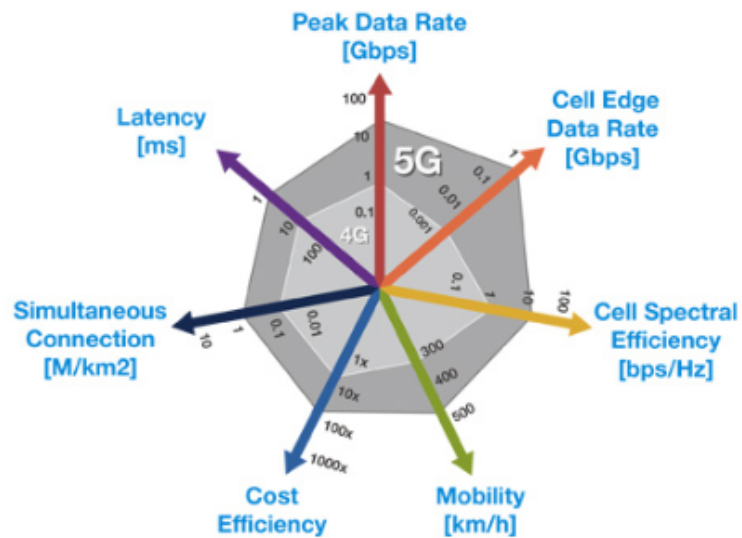


5G and Beyond 2020

- Key Aspects of 5G
 - New spectrum bands to
 - Convergence of fixed and mobile – finally?
 - Greater transparency to the user (WiFi example)
 - Improved performance (eg low latency)
- Caution with respect to timing!
 - Standards (eg ITU, 3GPP) from 2018
 - Evolutionary & ‘different’ realities
 - Regulatory challenges! (barriers to competition)



Visions of 5G



Staying In Focus: An adaptive array of 64 tiny antennas, each about the size of an aspirin tablet, forms the heart of millimeter-wave transceivers used in Samsung's 5G wireless prototypes. Individual antenna outputs are honed and steered by phase shifters to create a focused beam of data. That analog data is then converted to digital, which offers precise control over segments of the array and allows for the use of spatial multiplexing techniques—known as multiple-input, multiple-output, or MIMO—to segment the resulting beam. That gives operators the choice of sending information to multiple devices simultaneously or directing multiple beams at one device to improve download speed.

Evolution Takes Time!!



Concluding Remarks And Q and A