



RadComms08

The Internet and spectrum allocation

Alan Noble
Engineering Director
Australia & New Zealand



Why spectrum is important

- Access to the Internet is a vital enabler - communicating, collaborating and sharing
- Consumer adoption of mobile and wireless Internet services
- Access to spectrum = opportunity to accelerate uptake of Internet access
- Today's environment: Internet access is critical to economic, social and personal advancement

Google's involvement in the US: mobile spectrum

- In the preparation for the US 700MHz auction, Google advocated the FCC adopt four openness principles
- The openness principles could spur additional competition, with consumers benefiting
- Google promised to bid in the auction if the FCC adopted all four openness principles



Open access principles supported in the US

- Open Applications
- Open Devices
- Open Services
- Open Networks

The 700MHz Auction

- Google's support for the openness principles
- The anti-collusion rules
- The bidding process
- The outcome: Verizon Wireless was the highest bidder; the two openness licence conditions were invoked



Benefits of the adoption of these principles

- FCC only adopted applications and devices conditions
- Competition in the application & device markets
 - Bringing "innovation without permission" ethos of the Internet to the wireless world
- Competition in wireless network market
 - Analogy: Unbundling and "open access"
- More access, more choice = **consumers win**
- The goal: new, open Internet platform providers



Google's involvement in the US: white spaces

- White Spaces: the unused areas of spectrum between the licensed television channels
- The propagation characteristics of this spectrum facilitates building networks that can transmit signals over long-range distances and can more easily penetrate obstacles
- Great potential for use for Internet access, including in rural areas
- Ubiquity and speed of Internet access



Spectrum-sensing technology

- More efficient use of spectrum through spectrum-sensing technology
- Allows devices to use spectrum on a secondary basis without interfering or causing harm to primary users or uses
- Spectrum-sensing technology has demonstrated value already
 - Eg, Widely used 802.11a-based WiFi currently supports spectrum sensing to protect military radar from interference

Business benefits of use of white spaces

- Case study: Wi-Fi
 - 1999-2000: first standards
 - 2005: market had grown to \$US2.5 billion
 - 2009 forecast: \$US4.8 billion
- And more services: including bluetooth, wireless microphones and baby monitors
- Spectrum availability (especially in television 'white spaces') + advanced signal processing techniques = dramatically increased data rates
- Akin to a faster, longer range, higher data rate WiFi service – 'WiFi 2.0'
- WiFi on steroids



Google's involvement in the US: white spaces

- Google is member of White Spaces Coalition, together with:
 - Dell
 - Intel
 - Microsoft
 - Hewlett-Packard
 - Philips Electronics
- It is possible to use this spectrum without interfering with television signals
- FCC developing appropriate interference standards



Where to from here?

- Google is a company that supports openness
- Openness is a key feature of all of Google's services.
 - For example, no consumer lock-in, no proprietary software
 - Open access to the Internet is an extension of this approach
- Google commends the ACMA on its work to develop the efficient use of spectrum in Australia
- Early days, but spectrum is definitely a major issue to be examined as part of growing the digital economy



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Discussion

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