EE&T Alumni Connect Night

UNSW
THE UNIVERSITY OF NEW SOUTH WALES

June 29th 2012

Never Stand Still | Faculty of Engineering | School of Electrical Engineering and Telecommunications

Logistics

- Agenda
  - Introduction - Simon Lewis EET alumni committee Chair
  - Key Note Speech - Mike Quigley
  - Q&A - moderated by Adam Radford
  - Questions from the Audience
  - Food and refreshments in the Foyer
- Emergency exit
- Bathrooms

EE&T Alumni Committee

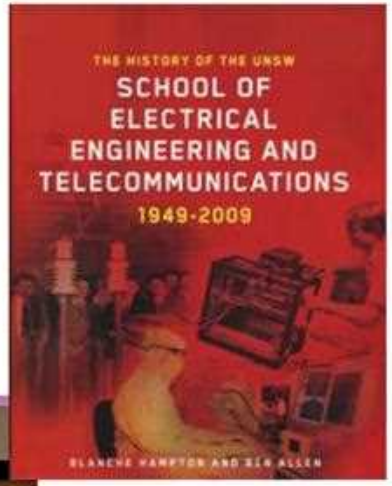
- Purpose
  - Bring alumni together
  - Connect alumni with current students
  - Host the Alumni Awards
- Owned and run by alumni, not staff
- School support for events
- Current members:
- Simon Lewis, Simon Buchwald, Darron Passlow, Julien Epps, James Carrapetta, Nonie Politi, Stefanie Brown, William Rowley, Perry Stephenson, Andy Yeap, Abbas Reslan, and S Sinnathurai

EE&T Alumni Events 2011

- Guest speaker: Dr John Kaye (NSW Greens member) & Mr Guy Pross (Better Place)
- Singapore Networking evening

EE&T Alumni Events 2011

- August - 60th Anniversary Dinner and Book Launch



The Alumni Reconnect Initiative

A mutually beneficial partnership between EE&T Alumni and current EE&T students

What are the Benefits?

Benefits for EE&T Students

- Bridges the gap between education and graduation
- Helps students get in touch with industry
- Assist students in learning appropriate industry skills now

Benefits for EE&T Alumni

- Allows alumni to invest in the employees of tomorrow
- Helps alumni give back to the school
- Alumni can get in touch with old contacts

Alumni Reconnect in Action

Want to know more/Have an idea/Want to Connect?

- Email: eetalumni@unsw.edu.au
- Facebook: www.facebook.com/eetunsw
- LinkedIn: http://www.linkedin.com/groups?gid=2201131
- Talk to us on the foyer
- Or update your details on the faculty website
- Upcoming Events
  - Singapore networking night 2012
  - Alumni Connect night November
  - Alumni Family Picnic

EE&T Alumni Dinner (Singapore) 2011

‘Shedding Light on the NBN’

Presented by Mr Mike Quigley, CEO of the NBN

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EE&T Alumni Connect

Mike Quigley
NBN Co

Disclaimer
This document sets out NBN Co's proposals in respect of certain aspects of the National Broadband Network. The contents of this document represent NBN Co's current position on the subject matter of this document. The contents of this document should not be relied upon by our stakeholders (or any other person) as representing NBN Co's final position on the subject matter of this document, except where stated otherwise. NBN Co's position on the subject matter of this document may also be impacted by legislative and regulatory developments in respect of the National Broadband Network.
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NBNCo

1. Why do we need a new fixed-line broadband network?
2. Why should a GBE build the NBN?
3. What is NBN Co building?
4. Industry impact

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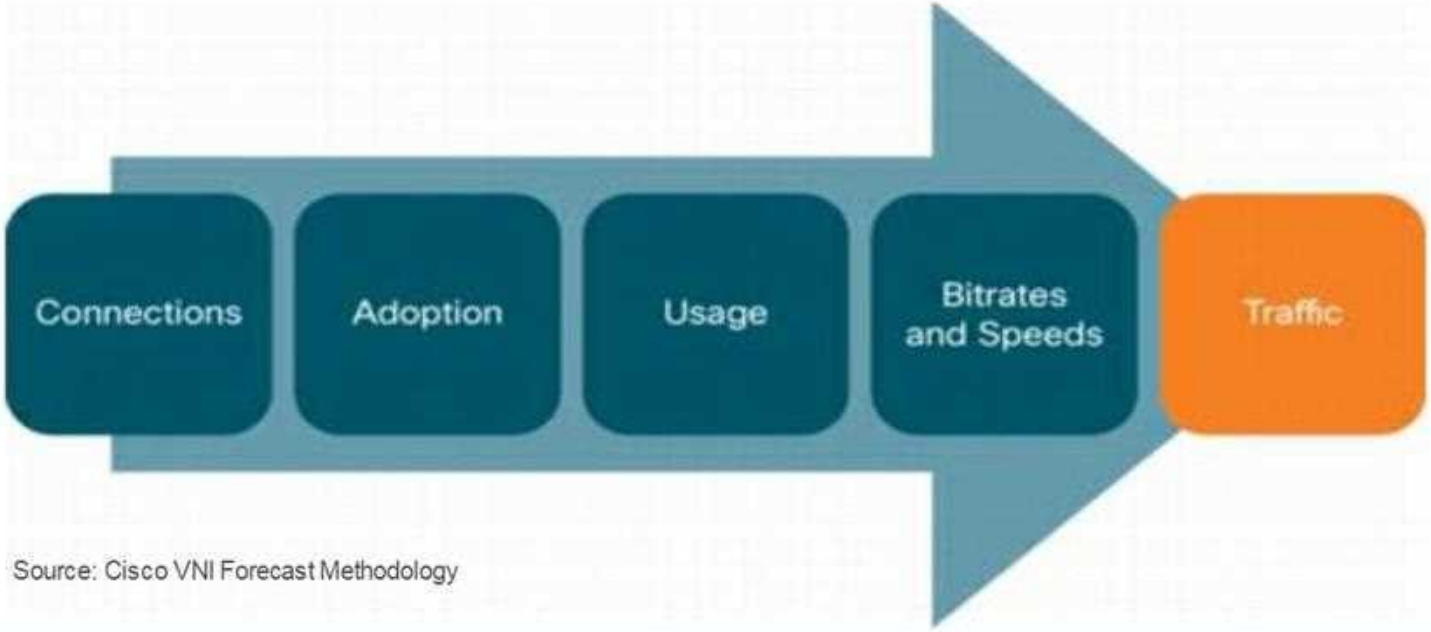
Australia Usage trends – 2011 – 2016

DEVICES - By 2016, 5.7 Internet connected devices/person, 142M networked devices

SPEED - Average fixed broadband speeds increase from 7.9Mb/s to 36Mb/s.

VIDEO - Internet video traffic will make up 80% of Australia's consumer traffic by 2016.

CAPACITY - 6-fold internet traffic growth from 2011-2016. (Global growth is only 4-fold)



Source: Cisco VNI Forecast Methodology

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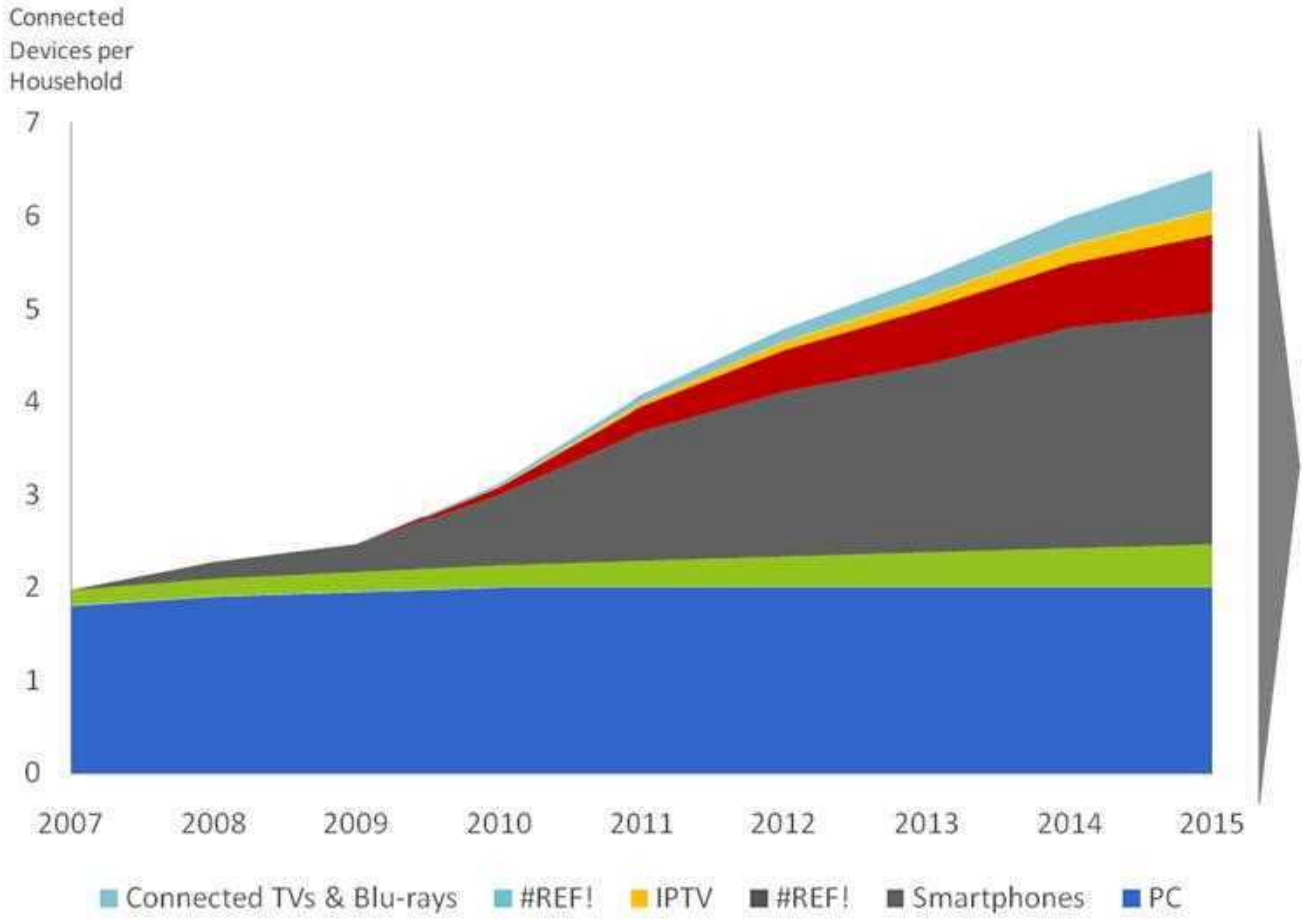
Connected Devices per Household



- Internet Usage driven by multiple devices
- New platforms accessing the Internet are emerging
- Concurrent usage of the Internet increasing in the household
- Smartphone and tablet devices changing content usage behaviour to multi-screen environments

Source: Various sources, Gartner, Goldman Sachs, Nielsen, Telstra, FetchTV, ABS, Sony, Microsoft, Samsung

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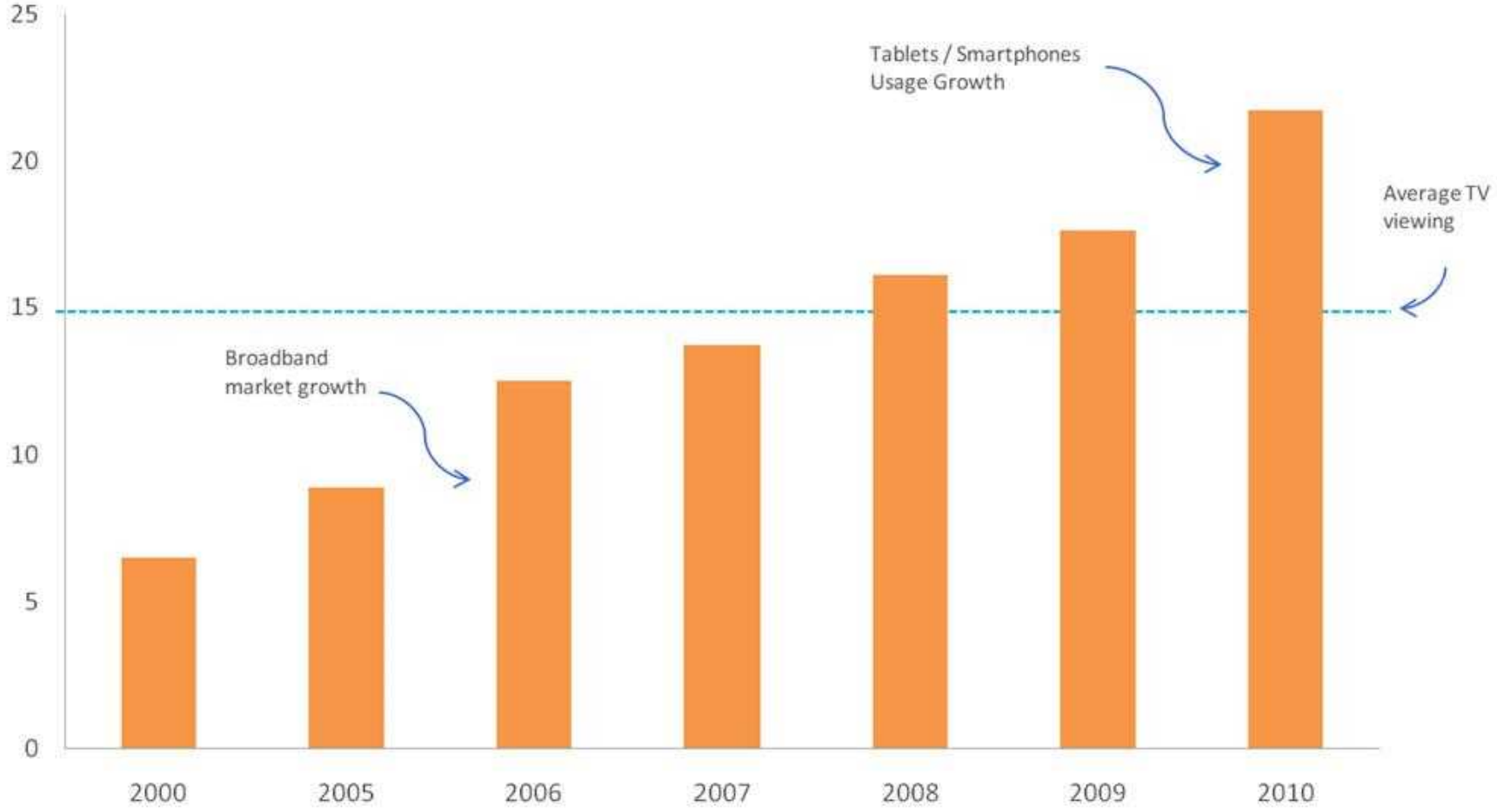
Time Online
- Average Hours Spent on the Internet Each Week



Source: Nielsen, The Australian Online consumer Report, 2011; OZTAM, Metro TV viewing

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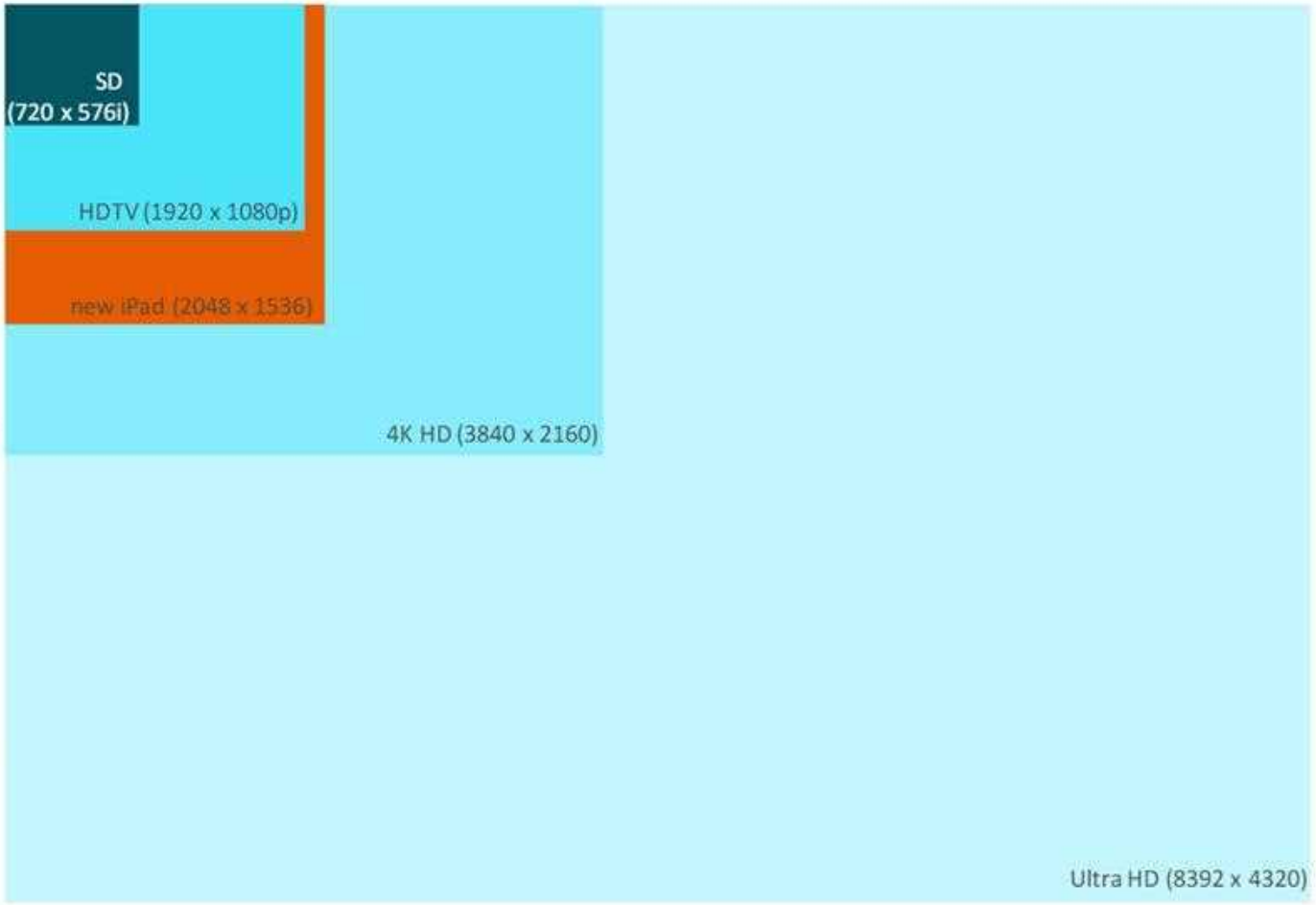
The On-line Experience is Becoming Richer & Richer

Average Bit Rate	1Hr Streaming Data Usage
Catch-Up TV 1.5Mbps – 2Mbps	900MB
HDTV 3.5 – 7.5Mbps	1.5 - 3.4GB
4KHD Movie or Sport ~9-29Mbps	4 – 13 GB
Cinematographic Experience ~180-300Mbps	81–135GB



Relative Screen Sizes for Equivalent Resolution

Source: Various sources, NHK, BBC, Sony

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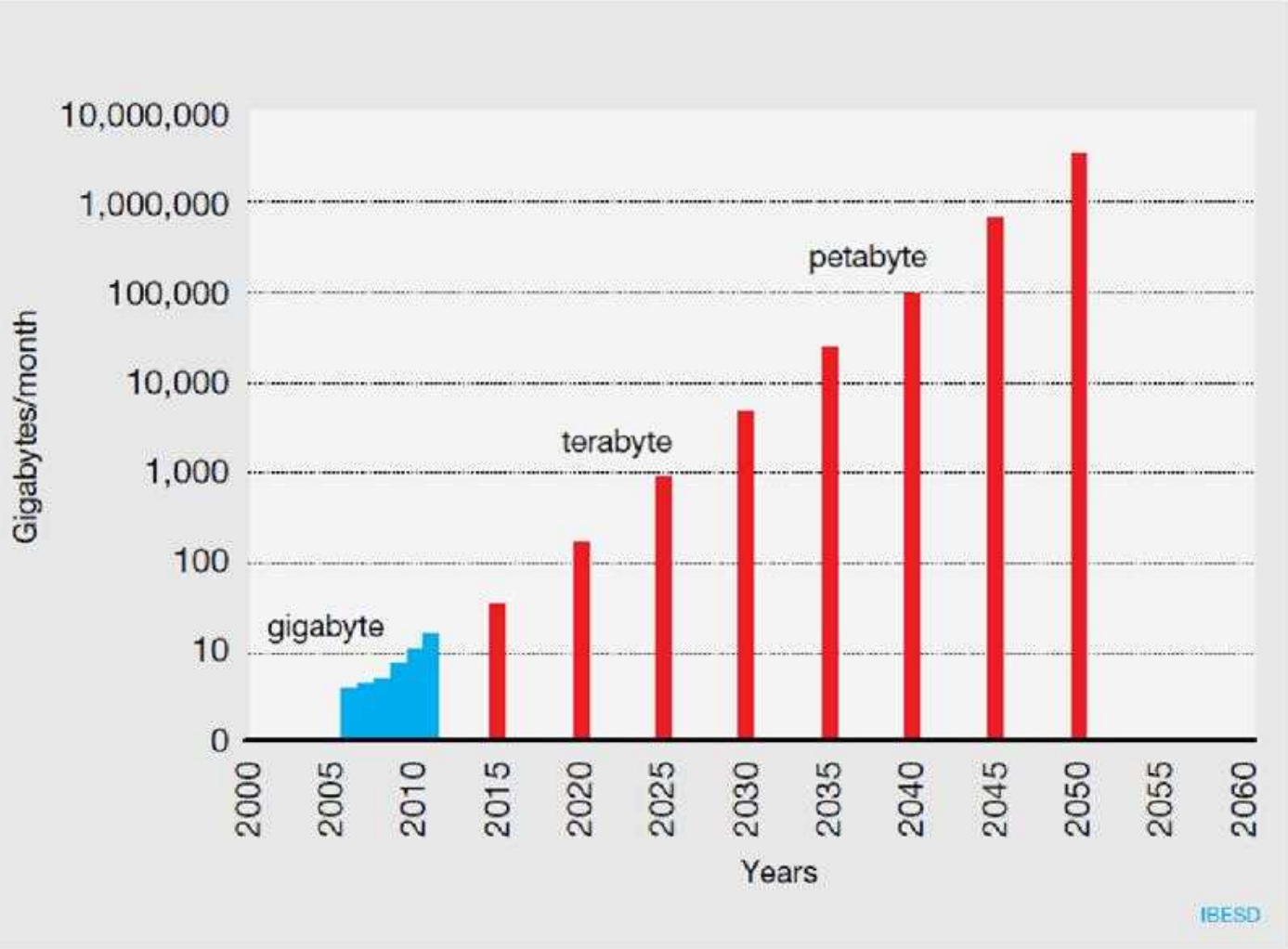
2050 Forecast: Australia – GB/Month per user



Source: IBISWorld

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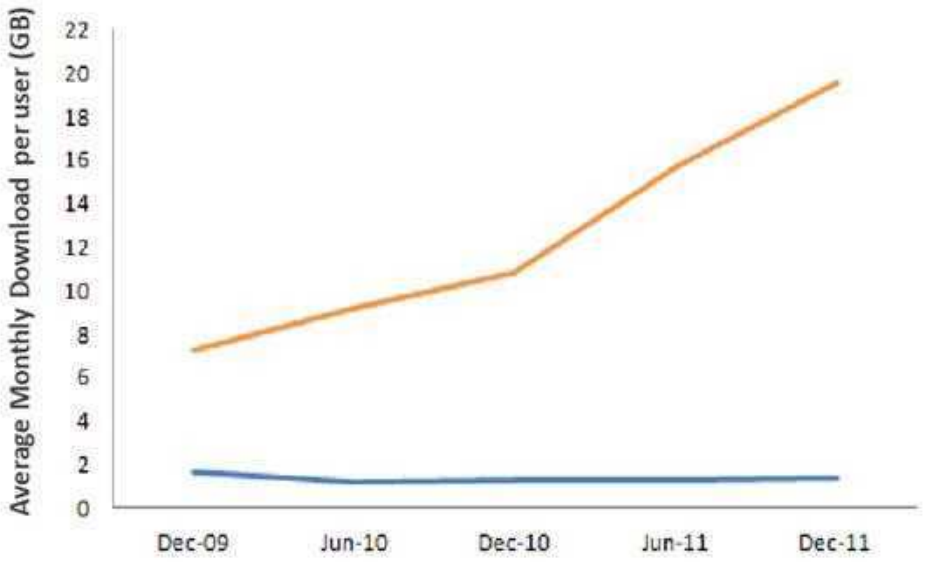
Broadband Usage is Not Slowing

Fixed networks are carrying the bulk of the traffic.

Fixed and Mobile Subscribers ('000s)

Fixed and Mobile Download Usage (GB)



Source: ABS, December 2011.

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Capacities of the NBN Co Access Technologies

Technology	Spectrum (MHz)	Down Capacity (Mbps)	End-Users	Down Capacity per User (kbps)
GPON Fibre (OLT)	50,000	40,000	4,000	10,000
Fixed Wireless (sector)	20	40	60	660
Satellite (spot beam) avg	550	700	2,000	350

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Predictions - Cisco Visual Networking Index 2011-2016

On Optic Fibre - "All roads point to the requirement of optic fibre being implemented deep into both wired and wireless networks."

On Wireless - "The future is indeed wireless, but it's mostly WiFi and not 4G."

On Mobile Traffic - "Australian mobile networks will soon have to join the US and UK in offloading data onto local WiFi networks in order to avoid congestion."

On Technology Options - "A fibre to the node infrastructure which relies on a 'last mile' premises connection using Australia's current copper infrastructure, current HFC networks or fixed 4G-like wireless **won't have the symmetry, contention ratio, bandwidth or latency to keep up with demand by 2016."**

Dr Robert Pepper
- Vice President of Global Technology Policy

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Relative cost of publically funded networks

	1870	1950	2010
Telecommunications Infrastructure	Overland telegraph	Copper Customer Access Network	National Broadband Network
Estimated cost to public purse in today's AUD$	$0.9 Billion [1]	$10 Billion[4]	$27 Billion
Australian population	1.6 Million	8.1 Million	22.4 Million
Estimated cost per head of population	$600 / person [2] $5,365 / person [3]	$1,222 / person	$1,204 / person

Note:

1. Funded by SA State Government. 60% State's annual budget
2. Australia wide
3. South Australia – the only State that funded the project.
4. In 2009, £42 million. In 1945 is worth around £5,920,000000 using the share of GDP, calculated using: http://www.measuringworth.com/index.html. Then converted to AUD$10,307,900,000 (using rates on 1 December 2009) on http://www.oanda.com/

Source: Australian Historical Population Statistics (2008)

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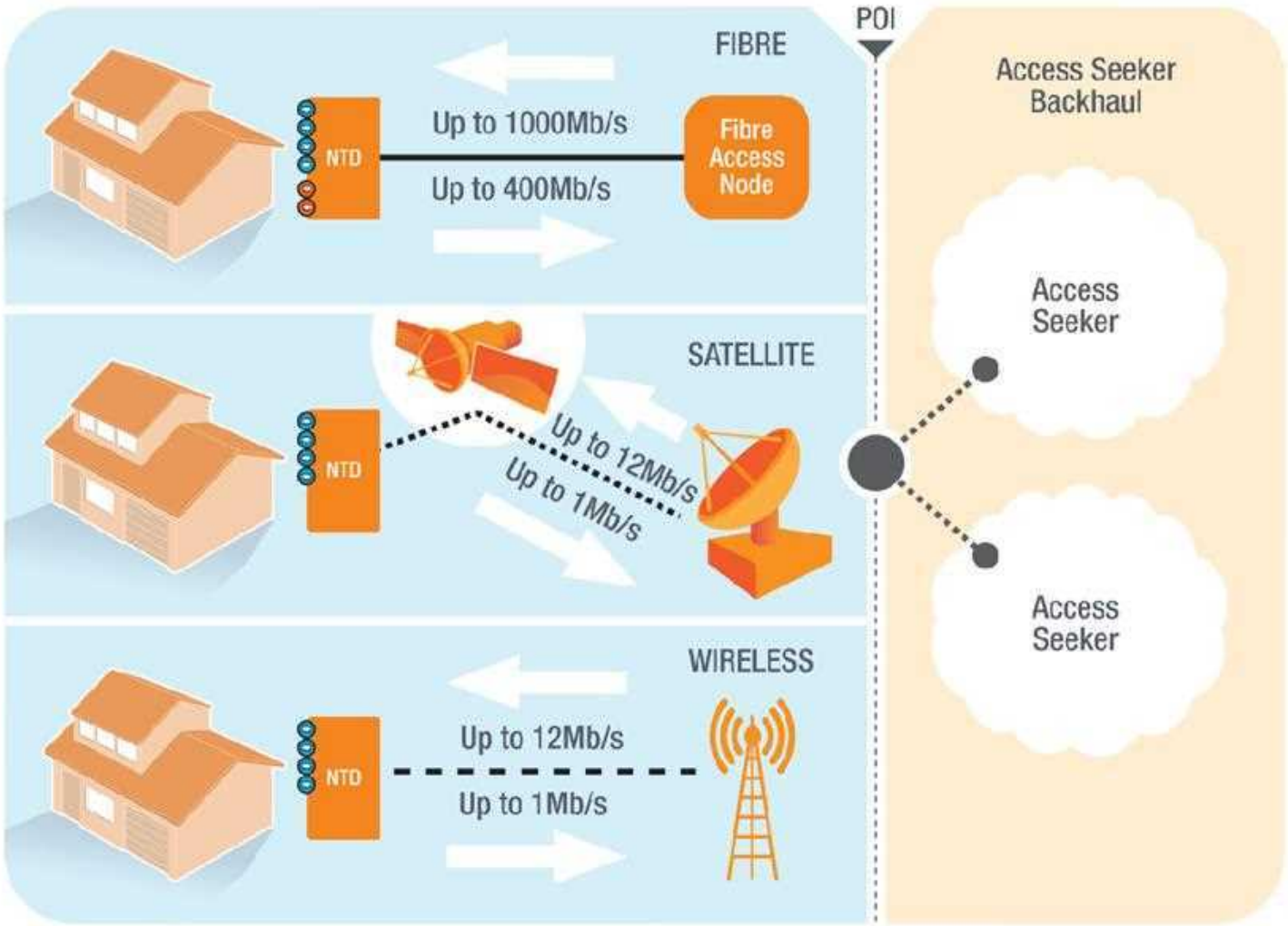
One Product – Three Technologies



** The NBN is being designed to be capable of delivering these speeds to NBN Co's wholesale customers via fibre, fixed wireless & satellite. Speeds actually achieved by users will depend on the quality of their equipment & in-premises connection, the broadband plans offered by their service provider & how their service provider designs its network.*

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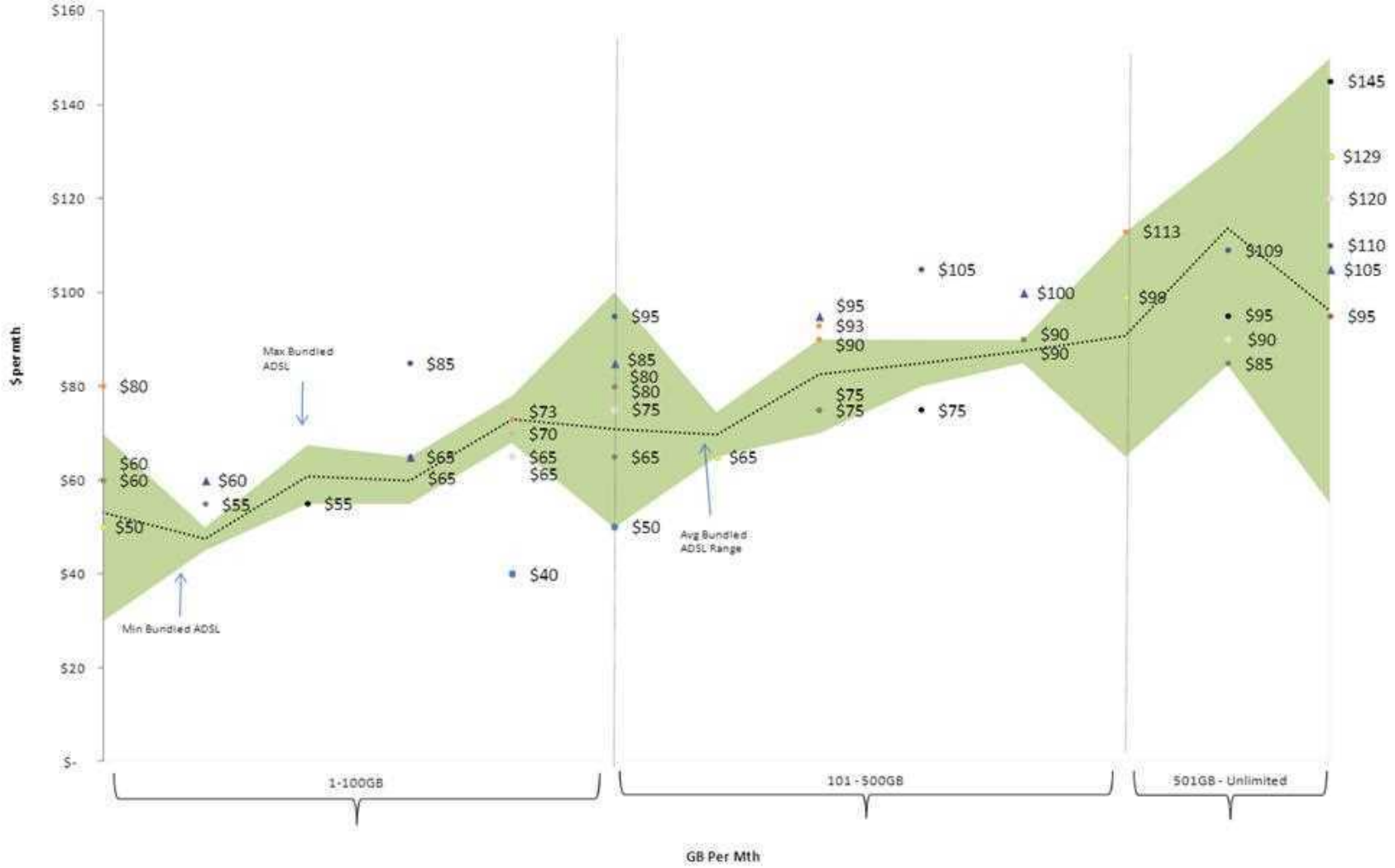
NBN Retail 25/5 Bundled Pricing : (ADSL2+ Pricing Shaded)



Note:
* The plotted dotted average bundled ADSL line represents an average between the number of ADSL plans at that point. If data was available to allow a weighted average cal'n based on the distribution of ISP mkt shares, the revised average plotted line would be higher
** Internode and Dodo are the only RSPs currently offering unlimited data allowances in the market
*** ADSL distribution includes the lowest price point for bundled ADSL2+/Naked ADSL products from RSPs

Source: RSP Published Pricing as at May12, reflecting circa ~ 90% of current market share

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Commercial Mathematics, Fibre Optimization

Input

- ✔ Reference architecture (engineering standard)
- ✔ Target geography (GIS data for the candidate network)

Engine

- ✔ Network design optimiser minimizes construction cost and design effort

Output

- ✔ Fibre network layout
- ✔ Feasible and optimised network

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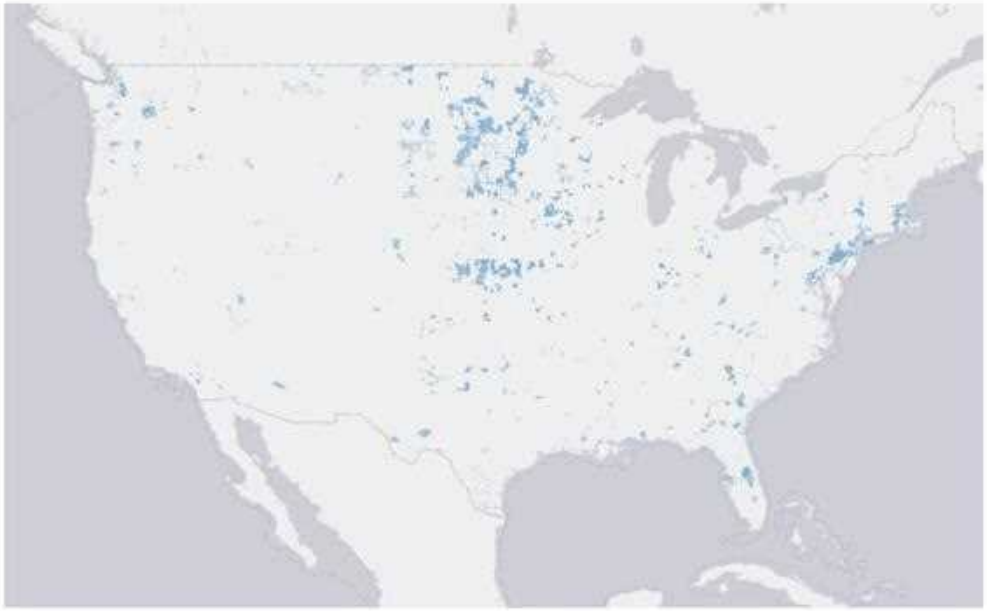
US National Broadband Map

Disjointed fibre deployments.
- 816 separate independent telcos and municipalities

Range of technologies:
- GPON, BPON, EPON, RFoG
- Active Ethernet, FTTN, FTTB

Largest Providers:
- Verizon – Only 28 states
- AT&T – Only 22 states
- Limited State Coverage



Map source: http://www.broadbandmap.gov/technology

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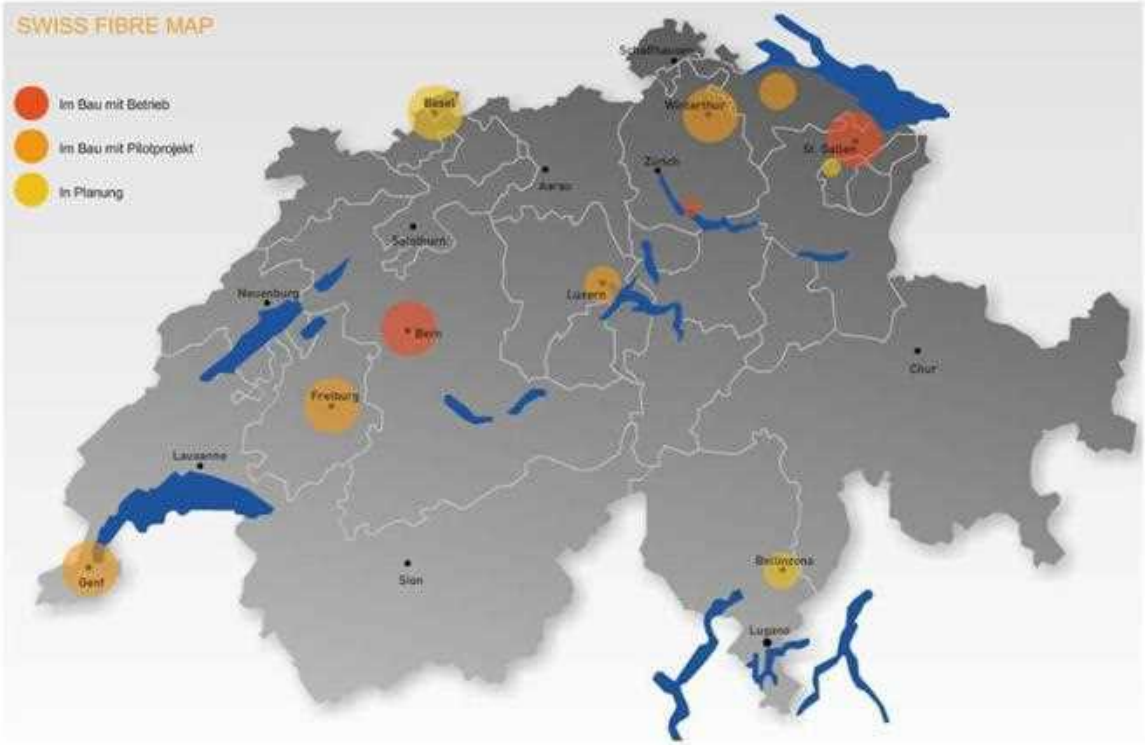
Switzerland Broadband Map – The Journey

Initial Duplication
- Lack of standardisation
- Poor infrastructure returns
- Need for unified investment

"Swiss Fibre Net"
- Three year dialogue
- Joint telco/utility deployment
- Open access network and platform standardisation

Desired Result
- Universal access to fibre



Map source: http://www.swissfibrenet.ch/sfm-de.html

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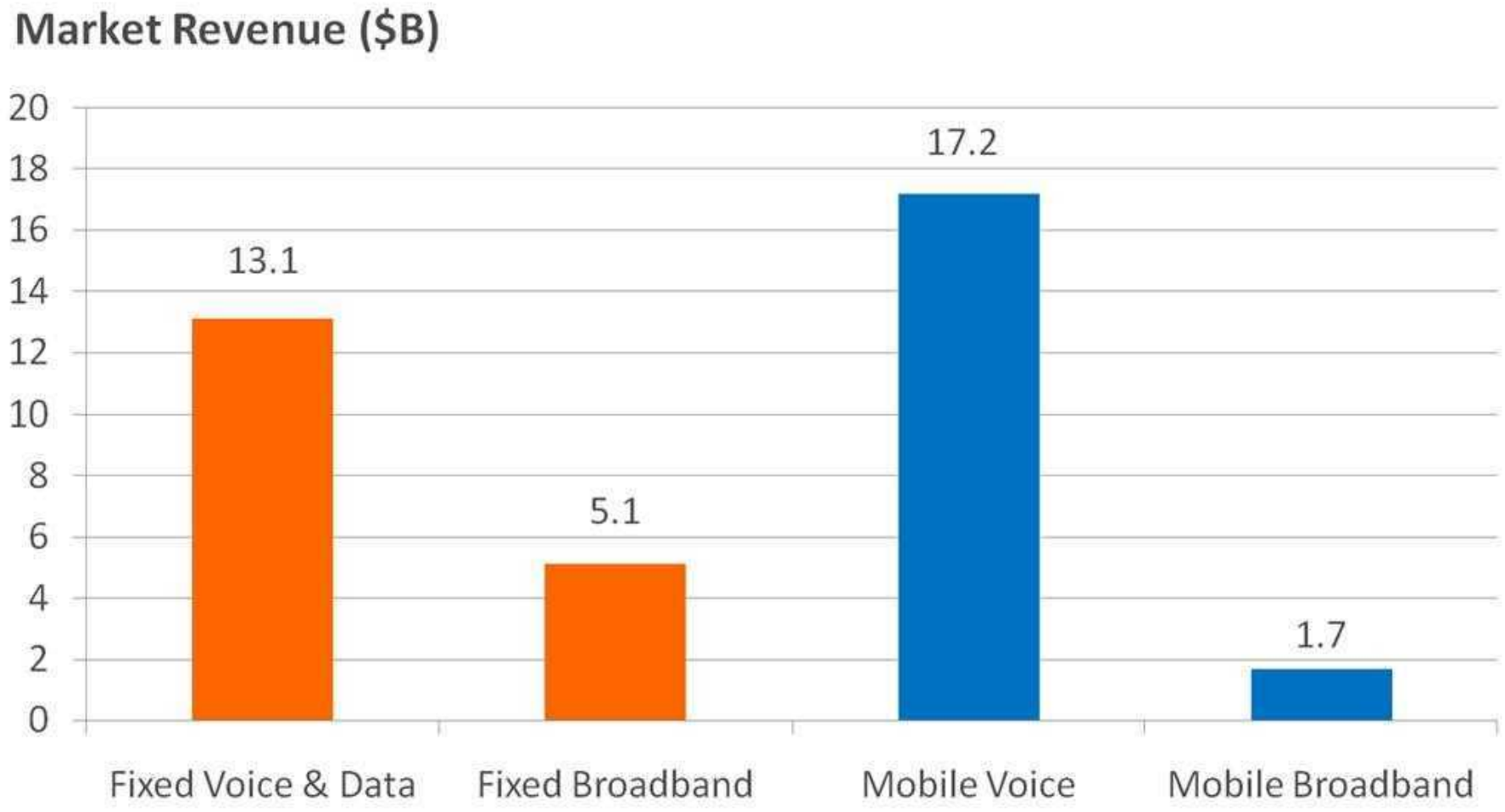
Australia Telecommunication Industry Revenue – FY11



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Where next ?

- Canapés and drinks served outside
- Please continue the conversation with us and your fellow alumni