

# Broadband & Australia's Window of Opportunity 2010-2020

Critical Horizon Forum

South West Development Commission

Bunbury Western Australia

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**Presentation by Mal Bryce**

*“The demise of DISTANCE as the key to the cost of communications may well prove to be the most significant economic force shaping the next half century”*

The Economist Sept 30th 1995

( The Revolution Begins at Last)

Fifteen years on the NBN is a transforming infrastructure that will be the greatest catalyst for innovation in Australian history.

# This Presentation examines

- ★ BANDWIDTH and the ICT Revolution.
- ★ Why high speed networks are vital for Australia?
- ★ What's happening overseas?

Some Conclusions.

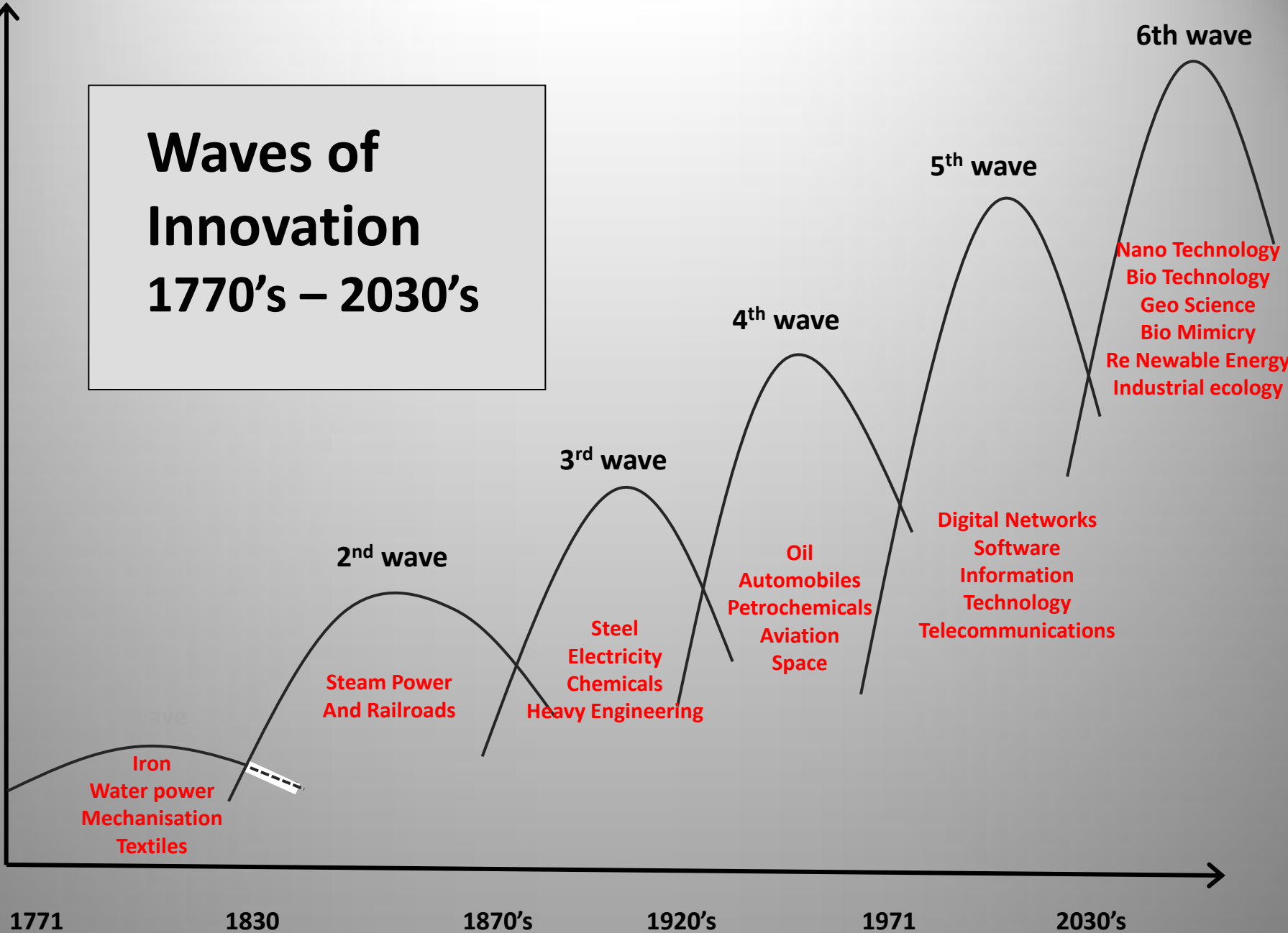
# Bandwidth & the ICT Revolution

Five major waves of innovation have shaped world economic activity during the last 250 years.

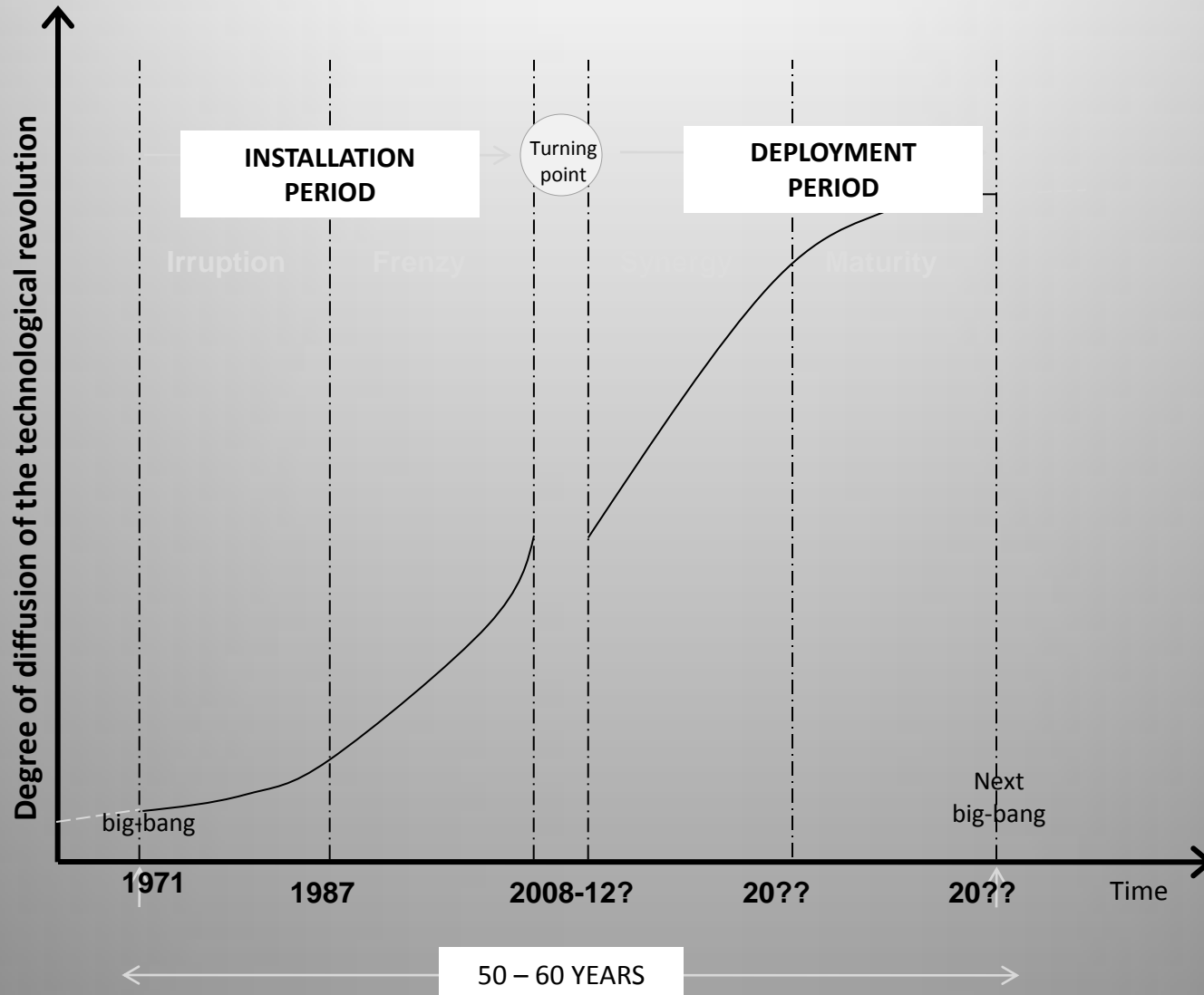
*See: Carlota Perez “Technological Revolutions and Financial Capital”*

# Waves of Innovation 1770's – 2030's

Innovation



# Classic Phases of the ICT Revolution 1970's – 2030's



The current great wave of Innovation  
(**ICT Revolution**) has just passed the  
half way mark....

35 years into a 60 year phenomenon

# Key features of the ICT Revolution in Australia for the next 20 years will be:

- The Roll out of High Capacity Bandwidth..... the NBN
- A content revolution
- The devolution of supercomputing and cloud computing
- Grid services and data storage services
- Visualization technology and video collaboration.
- Serious convergence of technologies eg;  
(Bioinformatics, geoinformatics, nanotechnology and computational chemistry)

# How and why Bandwidth became important.

- 1876-1970's: Bandwidth not an issue for the telephone system.
- 1980's: Move from analogue to digital technologies and data becomes important.
- 1990's: Telecoms system expected to carry voice traffic, data, graphic intensive images, AND video traffic.
- 1997-8: In Australia the volume of data transmitted surpassed the volume of voice traffic for the first time.
- 2000-2010 Telecoms public policy emerged for debate.

**Can we afford  
\$36 Billion?**  
(actually \$27Billion)

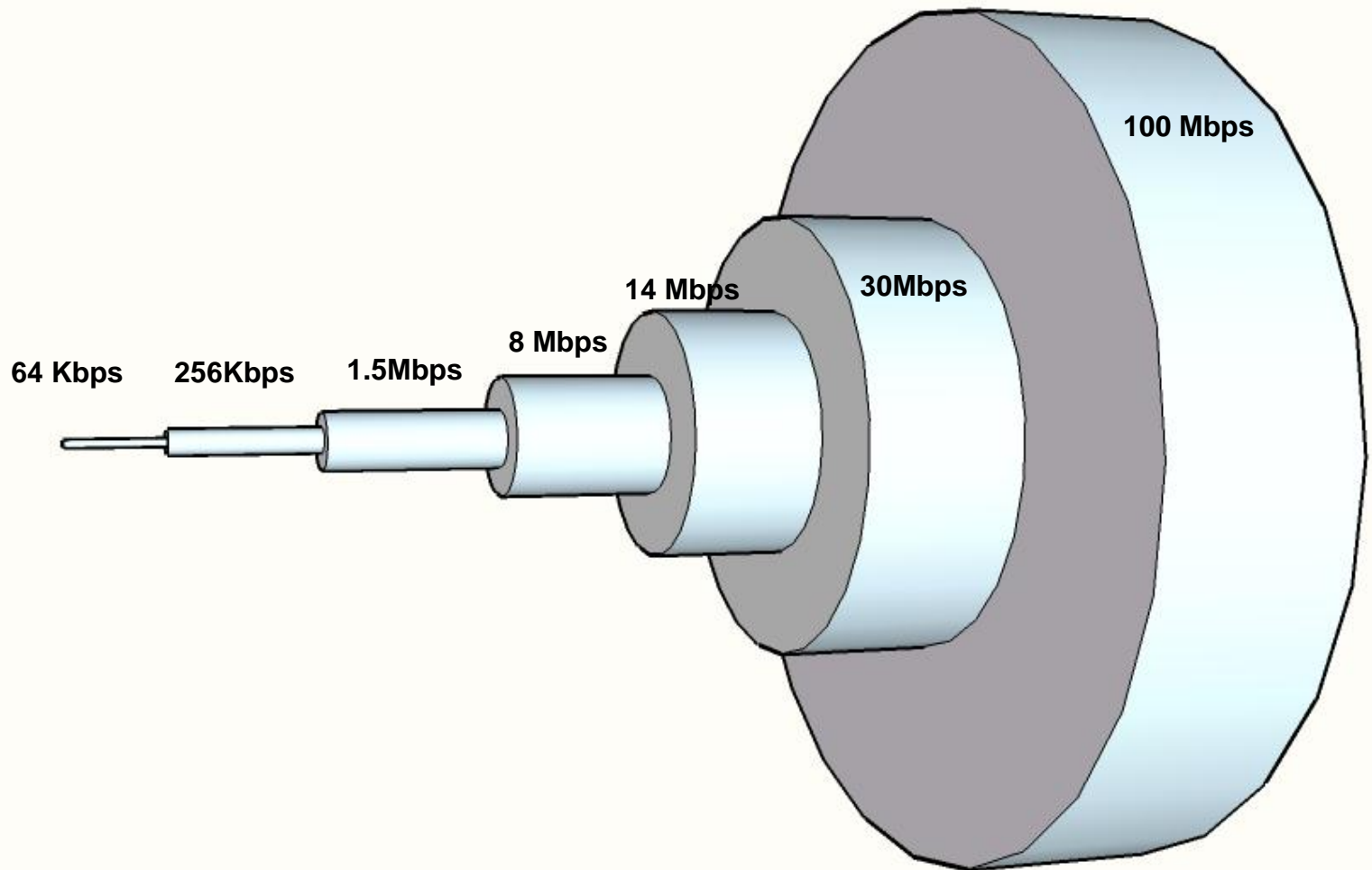
# Some Basic Numbers

- \$36Bn for NBN over 8 years (\$4.4 Bn Per Annum)  
**\$27 Billion from the taxpayers**
- 2011-12 Federal Budget = \$360 Billion in revenue.
- Federal Budget over 8 years = \$3.8 Trillion
- Australia's Public Debt Level < 9% of GDP
- NBN expenditure = 4% of Australia's GDP.
- Federal Government Tax cuts 2008-10 = \$47Billion
- **cf: Rio's next expansion? Cost of Gorgon?**

**Who on earth needs 100mbps?**

- Australian household Internet Connectivity jumped from; 16% to 72% between 1999-2009
- Demand for bandwidth since 1994 has grown exponentially.
- Facebook/U Tube/MySpace/eBay are just the beginning.
- Telemedicine/eHealth.....killer app !!!
- Early take up rate expected to be slow
- Remember electricity, telephone and fax machines.

# Telecoms Bandwidth 1999-2010



“Data traffic on our networks doubled in 2011 and is projected to increase;

- 30 fold in the next five years
- 1000 fold in the next 10 years”

Catherine Livingstone Chairman of Telstra  
Special Shareholders Meeting Oct 2011

# Moore's Law

(non technical version)

*“The speed and memory capacity of computers doubles every 2 years”*

# Metcalfe's Law

*“Broadband speeds and it's performance/price ratio doubles every 15/18 months”*

# **Fibre Cable or Wireless?**

- Not either but BOTH
- Capacity of Wireless is seriously limited.
- The spectrum is already crowded.
- Wireless is ideal in certain applications.
- Fibre Cable is future proof in basic terms (147 colours etc)
- There is no magical alternative infrastructure around the corner in the medium term.
- ref: Reed Hundt.

# The basics of a hard wired community?

- 10 – 100 Mbps at home
- 1-10 Gbps at work
- Wireless all around.

Ref: Reed Hundt 2003 (Former Chair US Communications Commission)

# Why High Speed Networks are vital for Australia?

## INTERNET BY THE NUMBERS

**3.6%** The internet's direct contribution to GDP last year

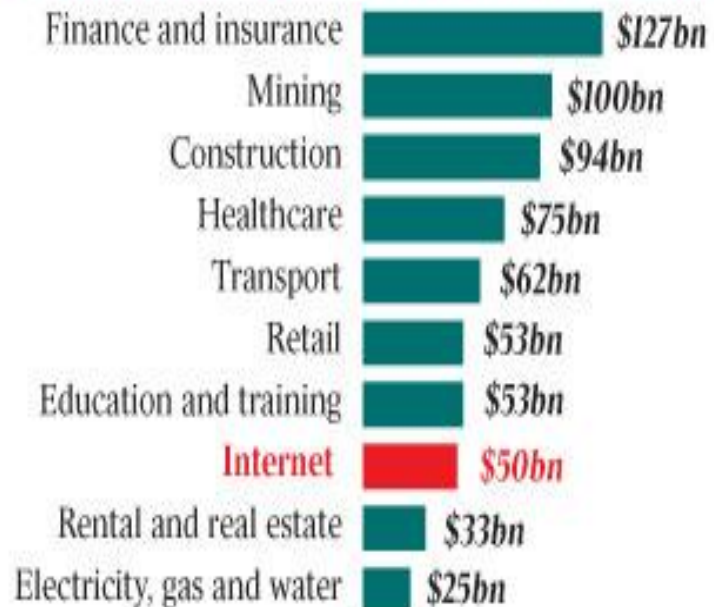
**190,000** People in Australia employed in occupations directly related to the internet

**80,000** Additional internet-related jobs to be created by 2016

**\$27bn** Productivity increases to businesses and government last year

**\$53bn** Benefit to households in convenience, time saving, access to goods and services and recreation

## CONTRIBUTIONS TO GDP IN 2010



Source: Deloitte Access Economics /The Connected Continent

# High Speed Networks and Australia's Digital Future means:

More People, more data, more  
locations Online

Faster Speeds and faster Outcomes

# Email

Video mail will subsume data based email and eventually we will be able to search video.

# Smart Utilities

With smart services (often automated)

- Water wastage
- Traffic congestion
- Energy consumption

...will all be managed more efficiently

It is really all about  
RICH MEDIA

# Serious Broadband delivers Rich Media.

**Rich Media** means: high speed two way high quality, voice , data and video transmission. (HD and 3D)

# 14 well recognised targets

- The “take off” for Telework
- Substitution of Bits for Atoms
- Intelligent buildings.
- Intelligent utilities....power grids etc.
- Rich media and entertainment.
- The business sector.
- Households and families.

- Intelligent transport logistics
- Personalized public transport
- eHealth and Telemedicine
- Education services & Life long learning.
- eGovernment service delivery.
- Personal security and public safety
- The new democracy.

Australia's future beyond the minerals extraction industries ???

# Five top priorities

- Households and Families.
- Telemedicine and eHealth.
- Education, Training & Lifelong learning.
- eGovernment service delivery.
- The Business Sector.

**What's happening  
overseas?**

# Global Internet Access 1983 - 2010

- 1983.....negligible
- 1993.....10 Million people
- 1995..... 40 Million people
- 2002..... 670 Million people
- 2010..... 2 Billion people

Globally from 2 Billion, (in 2010)  
the number of people online will  
double and treble quickly.

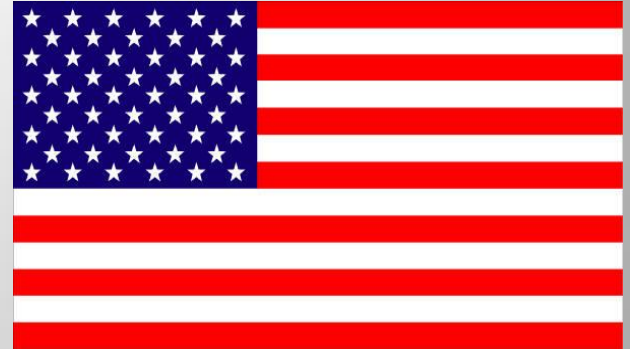
Beyond 30% penetration for  
Broadband .....the revolution  
really begins

# Access to the Internet as a “Human Right”

- First muted in UN 2003
- Adopted already in France, Spain, Finland, Estonia and Greece.

# The USA

- Home of the Internet
- Wealthy neighbourhoods well served.
- Wireless option as Plan B
- Large Gaps.
- No National Strategy for FTTH



# Canada

- Early arrivals to the Internet.
- Large gaps in access to BB
- No National Strategy for FTTH.
- “Gone to sleep at the wheel”



# Mexico



- Third World malaise.
- Very ordinary level of BB penetration.
- Progress painfully slow.
- No national Strategy for FTTH

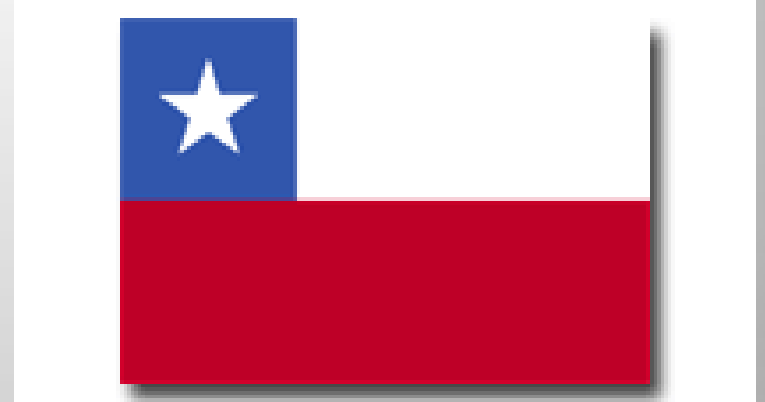
# Brazil

- Infrastructure antiquated
- Speeds poor
- Penetration of BB low
- No National Strategy for FTTH



# Chile

- Still working to achieve Internet access.
- Many “Grand” Government Statements.
- BB penetration very low.



# European Union

- Big on targets and aspirations.
- Wide variations.
- Some of the fastest speeds in the world. (<30Mbps)
- No funding for universal FTTH



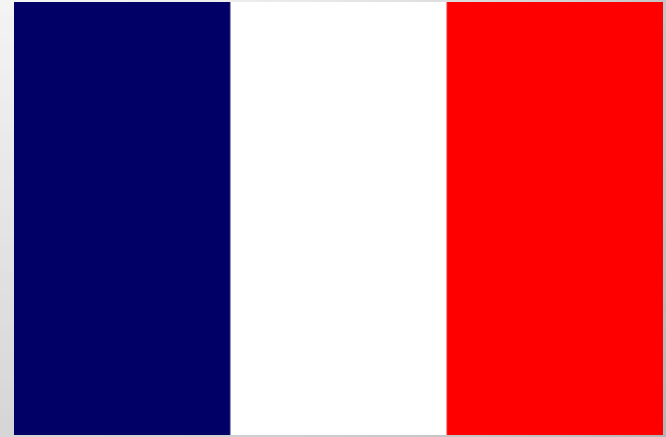
# Finland

- A European/world leader.
- Access for all at 1Mbps by 2010
- FTTH for all by 2015 (100Mbps+)



# France

- A European leader.
- Still mainly ADSL connections up to 28Mbps
- Competition high- prices low
- No National Strategy for FTTH

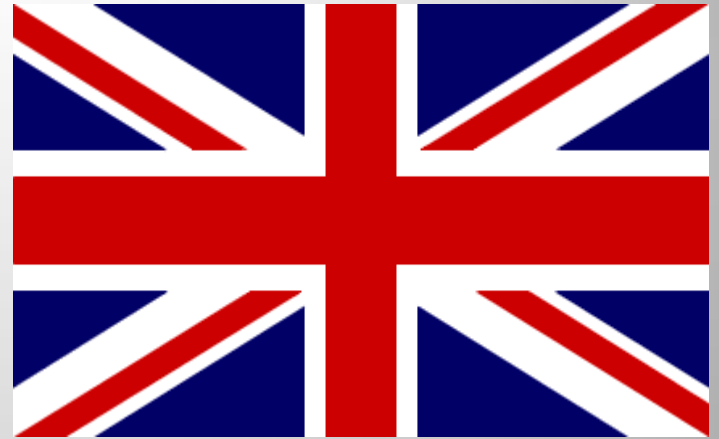


# Germany



- Predominantly a DSL market.
- Competition high – prices low.
- Some pockets of FTTH
- No National Strategy for universal fibre.

# United Kingdom.



- Much ado about “Universal access” to 2Mbps by 2012.
- Private sector tackling up to 50Mbps in certain markets.
- No National Strategy for FTTN

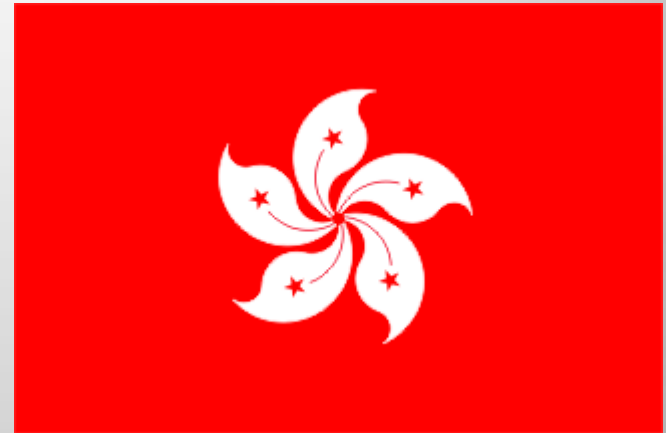
# Russia.



- Slow to encourage access to the internet.
- Infrastructure old and slow.
- No national strategy for FTTH.

# Hong Kong.

- A world leader.
- Offers very cheap high speed services.
- 100Mbps available for \$13US per month.
- Has FTTH



# Japan.



- A world leader.
- Most urban areas have + 100Mbps (FTTH)
- Non urban areas (12-25 Mbps)
- Prices low.

# South Korea.

- THE world leader.
- All citizens have access to 100Mbps + (FTTH)
- World's fastest and cheapest network.



# Singapore.



- A world leader.
- 75% FTTH by June 2011.
- 95% coverage by mid 2012.
- Speeds up to 1Gbps.

# China.

- Internet access for 31% of the population.
- Very strict Government censorship.
- Average speed in China = .8 Mbps
- Massive Infrastructure program.



# India.

- Basically DSL service.
- Slows speeds-very expensive.
- Only 8% of population has access to Internet.
- No National Strategy for FTTH



# Australia



- 70% of population was connected to the Internet by 2008.
- Copper network...speeds very slow.
- NBN announced by Federal Gov't 2009.
  - 93% of homes FTTP (100Mbps)
  - 4% homes Fixed Wireless (12Mbps)
  - 3% homes Satellite (12 Mbps)
- Cost of Network \$36Billion over 8-9 years

**In Conclusion...**

We have just entered the most innovative chapter of Australian History.

The next 10 years (2011- 2020) is a classic window of opportunity for Australia in terms of our global competitiveness.

# Our Window of Opportunity

- The timing is right.
- The network is affordable.
- The Internet is a critical part of Australia's future.
- We have a proud tradition of Nation Building Innovation.
- Australia will be in the **World Top 10** by 2016-17.

The creation, distribution and marketing of digital content becomes the main game.

Service providers must learn to cope  
with the demand for instant  
gratification.

Many users of the NBN will be machines and interconnected devices rather than human beings.

How effectively we harness the power of the NBN is the key to our future.

