

Big Pipes for Big Opportunities

Address to the South West Development Commission
Critical Horizons Conference.

By
Hon Dr Mal Bryce AO
Chairman of iVEC
June 3rd 2010

Bunbury. Western Australia

An outline of this presentation

- An historical perspective.
- Australia's ICT Revolution.
- Bandwidth as an issue.
- Economic, environmental and social benefits of Big Pipes in the South West.
- Some concluding thoughts/reminders.

*“Jobs, knowledge use and economic growth will gravitate to those societies that are the most connected with the most networks and the broadest amount of bandwidth because these countries find it easiest to amass, deploy and share knowledge in order to design, invent, manufacture, sell, provide services, communicate, educate and entertain.....
.....**Connectivity is now productivity.**”*

Thomas Friedman.

The Lexus and the Olive Tree. (London. Harper Collins. 2000)

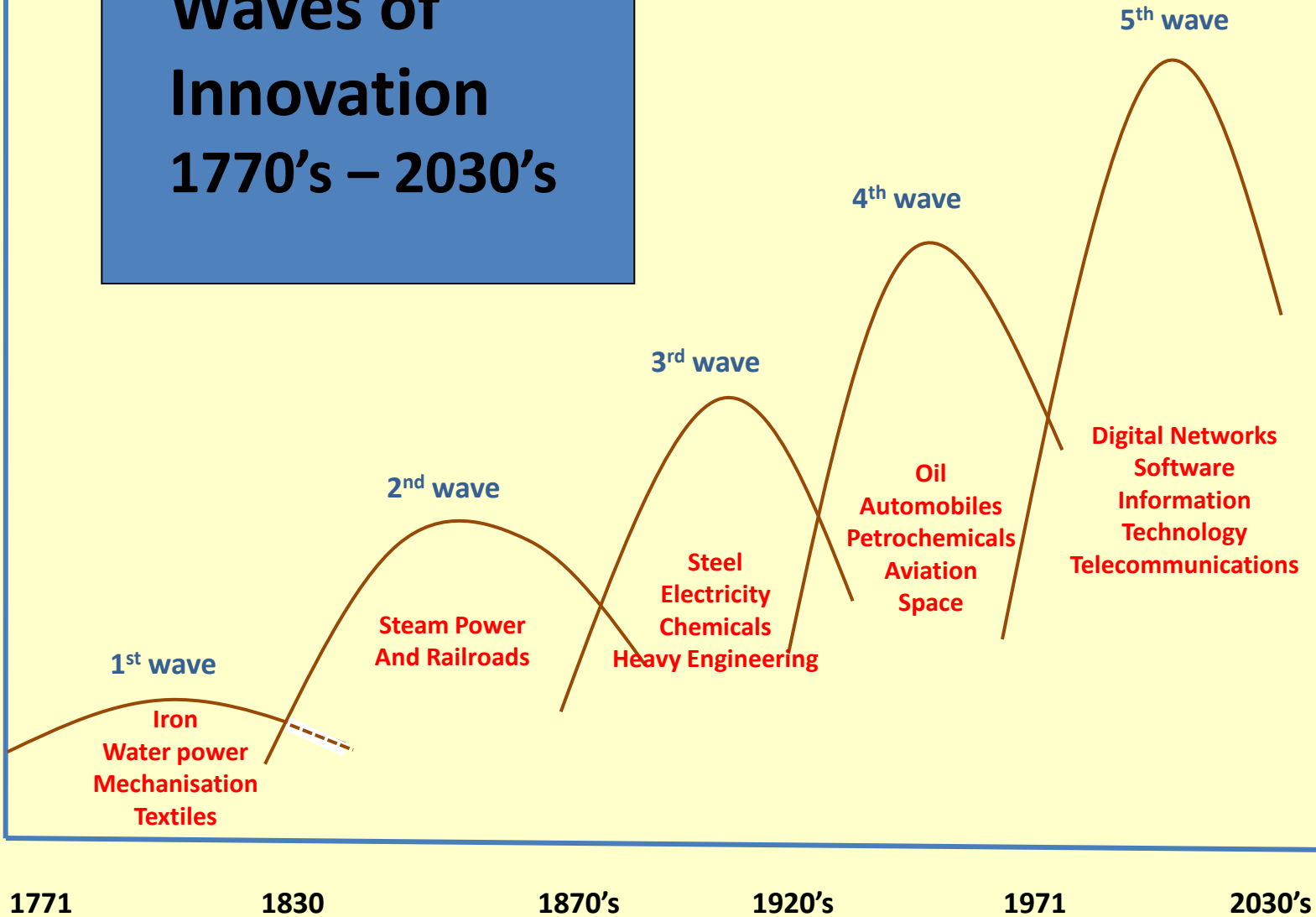
An Historical Perspective

The Long Wave Theory of Global Economic Development provides an interesting perspective.

Five Major Technological Revolutions
have shaped world economic activity
during the last 250 years.

Waves of Innovation 1770's – 2030's

Innovation



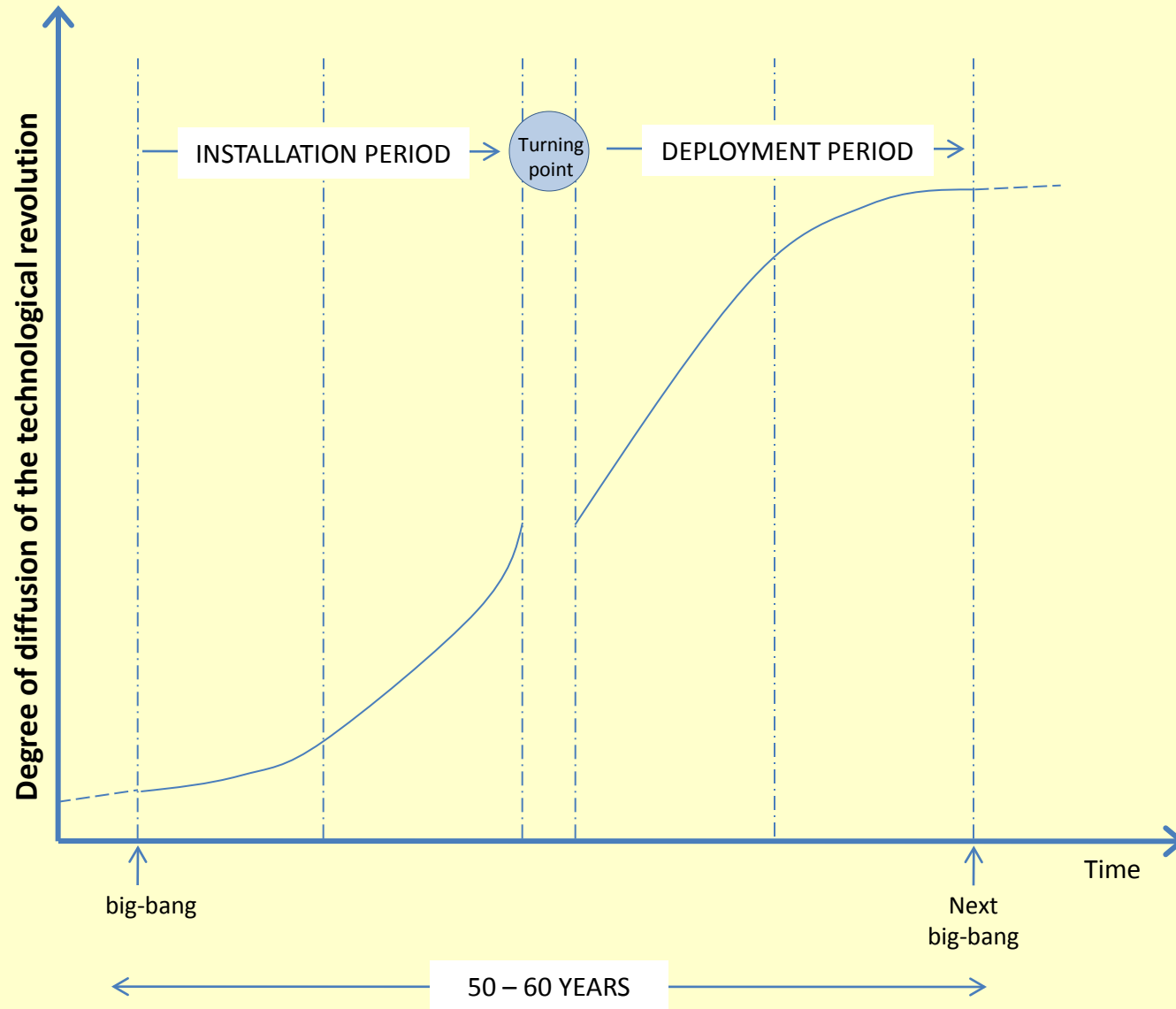
Each Revolution has passed through

- Two major periods
- Four phases and
- A turning point

All Technological Revolutions.....

- Produce fundamental changes to our life style and std of living.
- Alter the business environment.
- Significantly overlap each other.
- Strengthen/enhance the key features of previous revolutions.

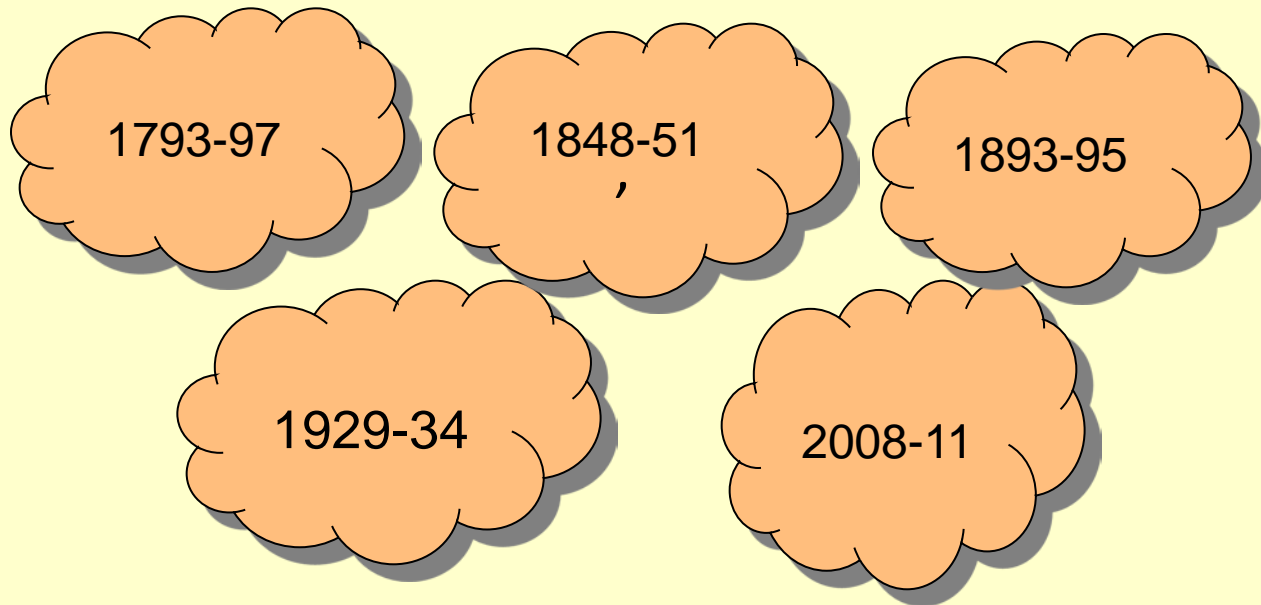
Two different periods in each great surge

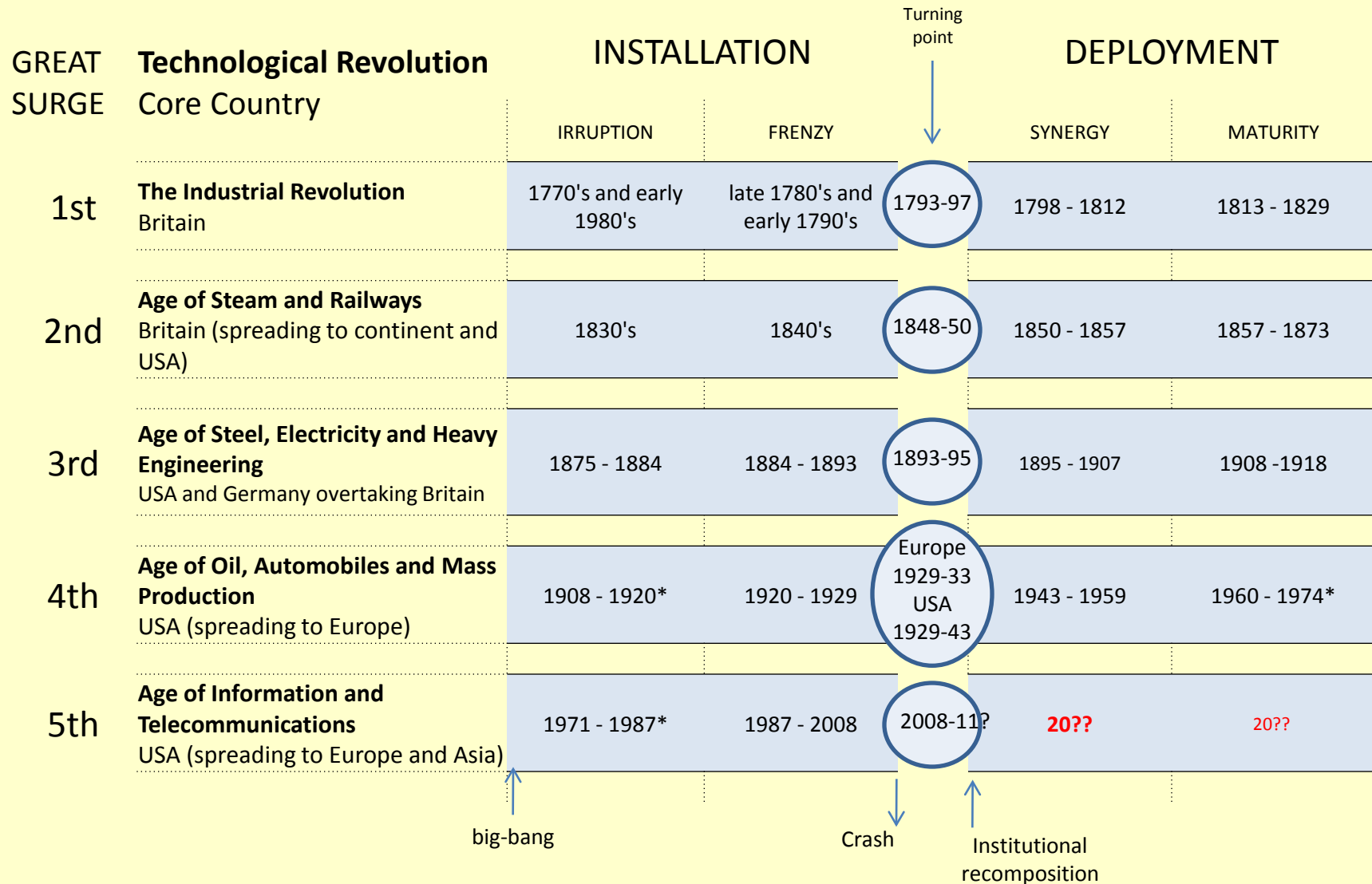


The Halfway mark of each Revolution
is marked by a turning point
featuring:

- Manic behaviour
- A Financial Bubble
- The inevitable crisis and crash

The Financial Bubbles that actually Burst





SOURCE: Perez, "Technological Revolutions and Financial Capital" 2005

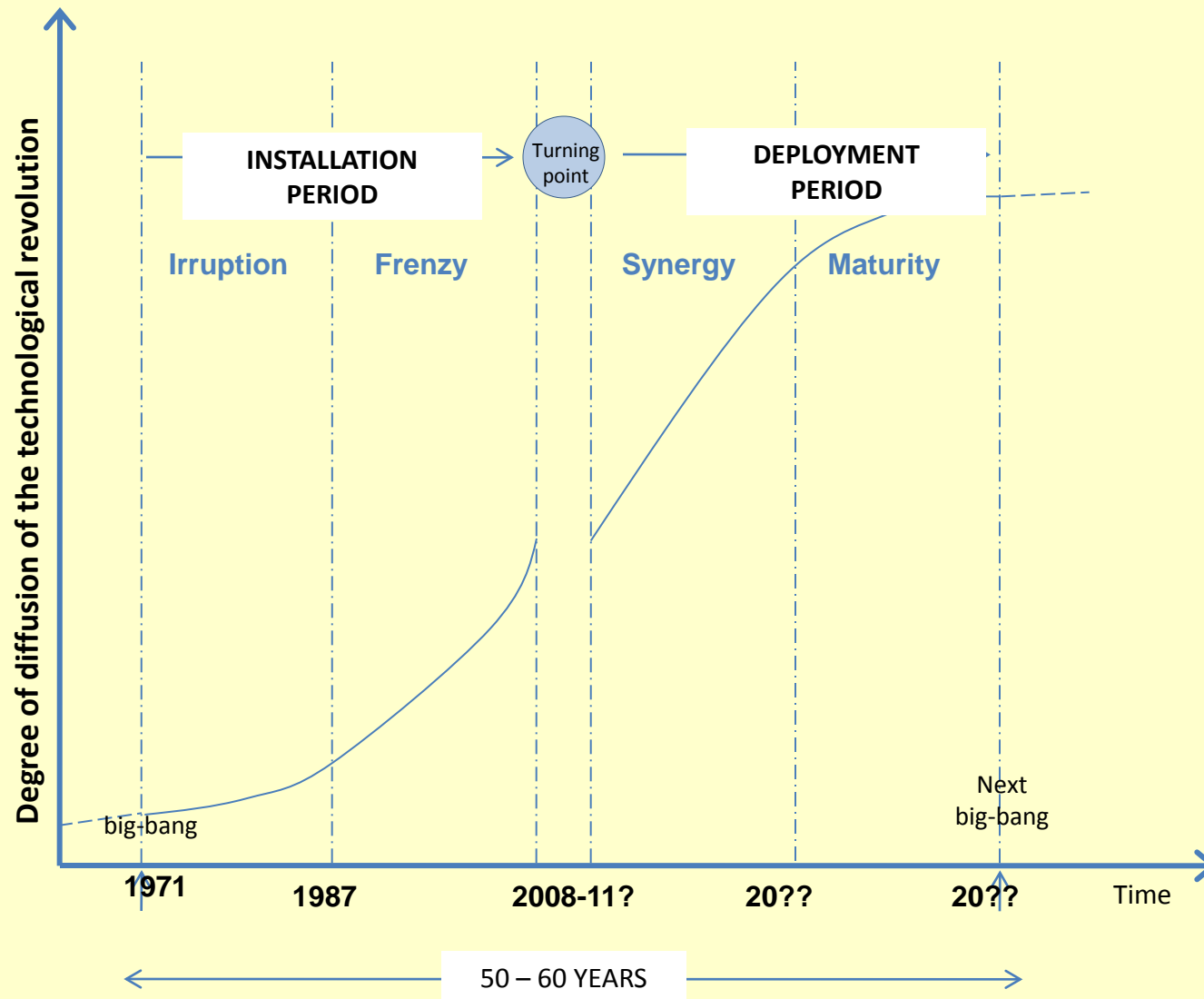
During each Financial Crisis the world's financial systems were described as broken and discredited.

Governments of all leading nations developed strategies to ensure “The excesses of the last 5-6 years would never happen again”

The current Technological Revolution
(ICT Revolution) has just passed the
half way mark....

35 years into a 60 year phenomenon

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



SOURCE: Perez, "Technological Revolutions and Financial Capital" 2005

The second half of the ICT Revolution is the Deployment Period....beyond 2010 which leads to the full flowering of the revolution

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 High Performance
Computing (Supercomputing).
- Serious convergence of technologies eg;
(Bioinformatics, geoinformatics, computational chemistry)

THE BANDWIDTH PHENOMENON

The Evolution of the Bandwidth Issue

- 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.

Broadband Defined.

(ACCC in Australia 2002)

- Broadband is any high speed connection greater than 200Kbps (in the last mile) over a mix of media.
- Always on connectivity
- Two way functionality...enables interactivity.
- Ability to carry multiple applications simultaneously.

Broadband Defined- based on Internet Technology

- **First Generation:** Dial up access and ISDN links
- **Second Generation:** ADSL always on...> 200 Kbps, beginnings of broadband.
- **Third Generation:** Beyond ADSL connection speeds > 10 Mbps.

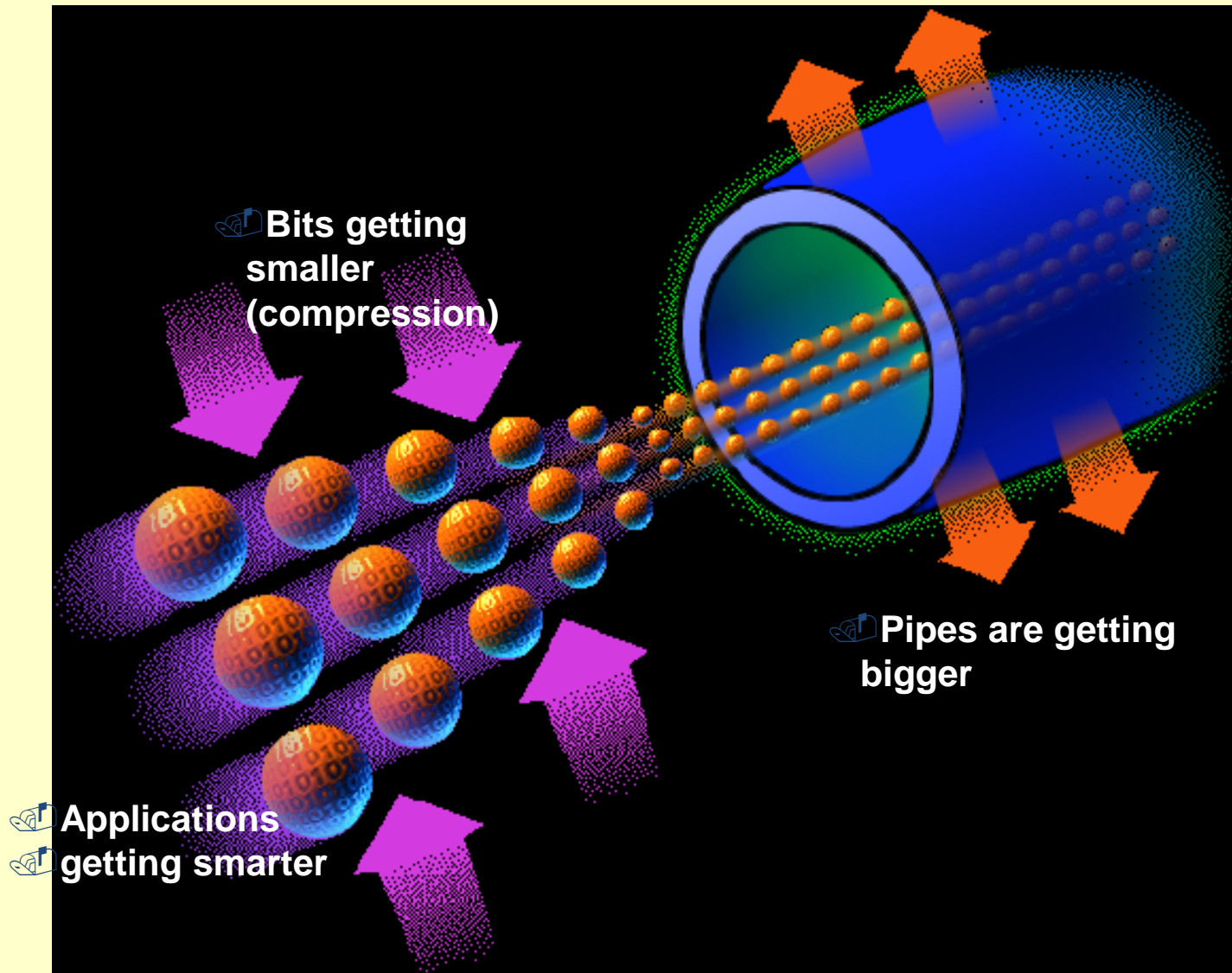
Ref: ICT FORUM Broadband Report 2004

Broadband Re-Defined: “Big or Serious Broadband”

- 10/100 @ Home (Megabits)
- 1/10 @ Work (Gigabits)
- Wireless all around

Ref: Reed Hundt. New America Foundation 2005

Bandwidth and Compression



Progress has been painfully slow

- 1993 up to 14.4 Kbit/sec
- 1995 up to 28.8 Kbit/sec
- 1996 up to 33.3 Kbit/sec
- 1998 up to 56 Kbit/sec
- 1999 up to 128 Kbit/sec

- **2000 up to 256 Kbit/sec**
- 2003 up to 1.5 Mbit/sec
- 2006 up to 5 Mbit/sec
- 2008 up to 8 Mbit/sec
- 2010 up to 30 Mbit/sec
- 2010-17 up to 100 Mbit/sec

Reminder: Australia in 2005

- **Most Australians were connected to BB through ADSL Technology.**
- **Most BB customers paid for speeds of 512Kbps.**
- **Most achieved speeds much < 512Kbps.**
- **A small number of Australians paid for ADSL connections @ 1.5Kbps.**
- **Many advanced economies were moving to technology beyond ADSL for speeds of 10-50Mbps.**
- **By 2008 >180 countries had launched BB services.**

Convergence ...since early 1990's

(TV, Phone, PC, Internet)

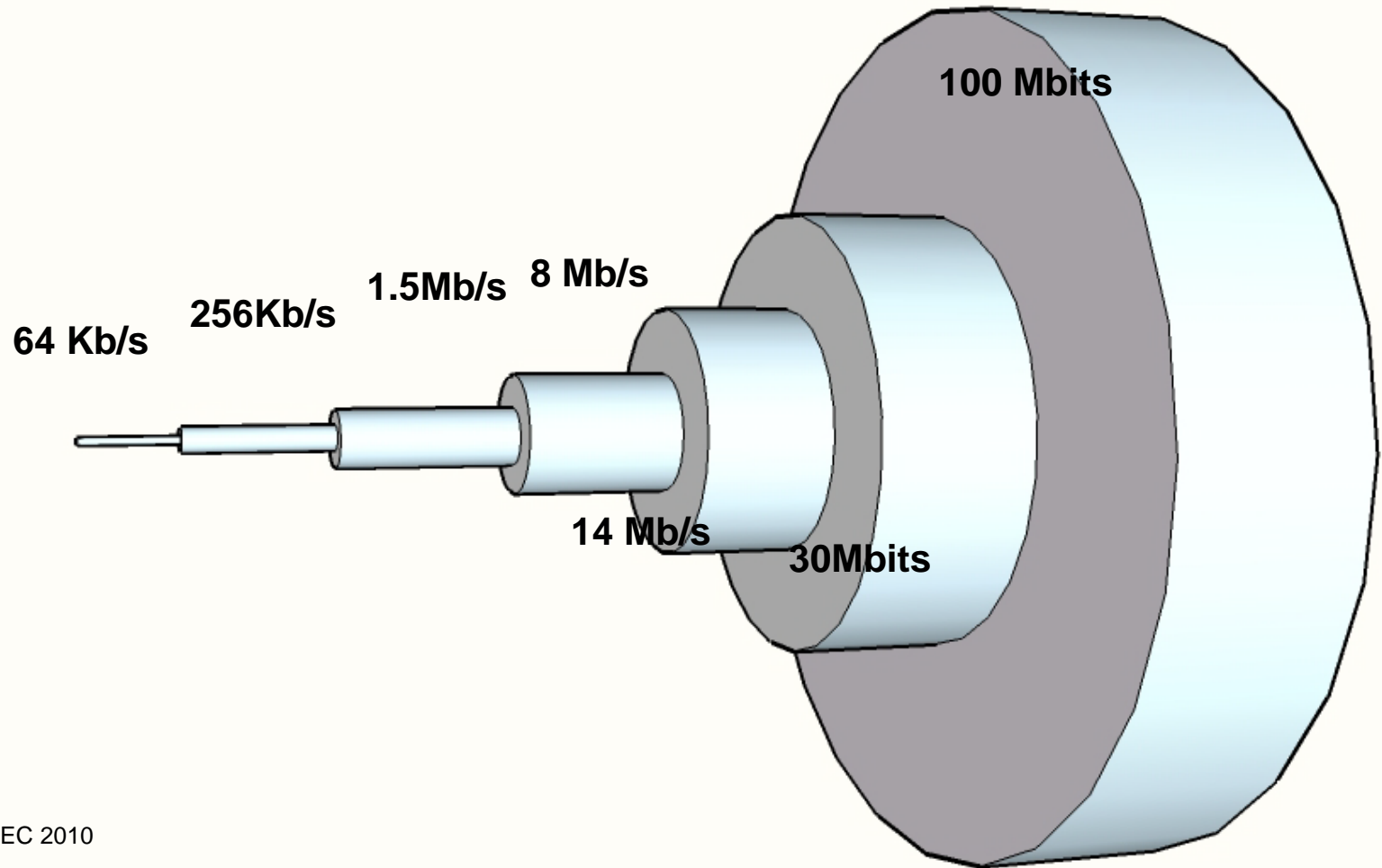
- Copper V Optical Fibre
- Content V Conduit
- Wireless V Wire
- Data V Voice
- Satellite V Terrestrial
- Broadcast V Cable
- Communications V Computing

Ultimately

the consumer is not interested in the technology of delivery or the question of convergence.

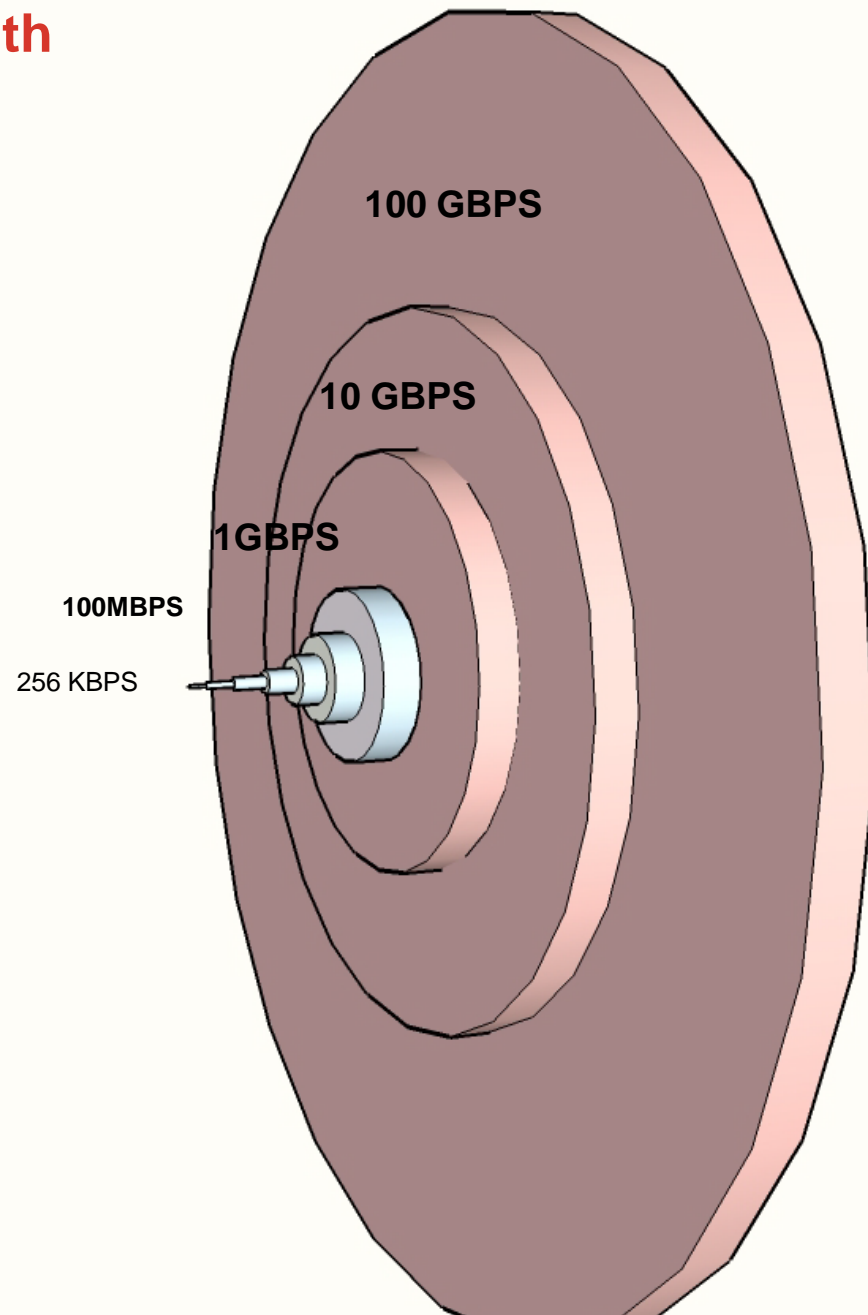
“The consumer’s interest will be in the devices which the technology powers and the reliability of the service.”

Telecoms Bandwidth 1999-2010



Source: iVEC 2010

Telecommunications Bandwidth 1999 and beyond.



The National Broadband Network

- Australia's lost decade
- The decision and the skepticism about 100mbps FTTH
- The Business Case for a Telco V the case for national development.
- An end to the rivalry about wireless and fibre cable.
- How Tasmania stole a march on the other states.
- Where is the roll out strategy for Australia's Western Third?

The Impact

Ubiquitous access to High Capacity Broadband will transform the economy, spawn new environmental technologies and have significant impact on our communities.

High Capacity Broadband

Applications and Benefits for the
South West

Next Generation eCommerce in the South West

BUSINESSES

- Become more efficient and flexible in their internal operations.
- Are able to work more closely with their suppliers.
- Can be more responsive to the needs and expectations of their customers.
- Can select the best suppliers regardless of location.
- Can sell to an expanded global market.
- Can benefit from better management systems across different organisations.

Tele-work and Tele presence Facilities in the South West.

- Reduced costs associated with staff relocation and recruitment.
- Improved motivation of the workforce.
- Retention of key skilled employees.
- Multi disciplinary teams can be assembled irrespective of geography.
- Greater organisational resilience in the face of external disruptions.
- Enhanced customer service, beyond normal working hours.
- Reduced costs associated with travel time.
- Reduced traffic congestion.
- Wider employment/work opportunities
- Greater access to work for people with specific difficulties.

An Environmental Edge for the South West.

- The links between HCB and reduced green house gas emissions.
- BB changes the way people and businesses live, shop, travel work and use products.
- BB has added significantly to our understanding of the natural environment.
- Substituting bits for atoms
- De-centralized workplaces reduce commuting distances and transport emissions.

eHealth and Tele-medicine in the South West.

- Reduced health care costs.
- Increased access to health information.
- Improved quality of health care.
- Superior access to health care.
- Greater prevention of illness.
- A shift from hospital care to primary and home care.
- Providing better citizen centred health care.

Next Generation Education Services in the South West.

- High quality video is providing meaningful two-way, interactive, real time learning experiences.
- Education and gaming technologies are beginning to merge into learning based simulations that are demanding massive bandwidth.
- Companies are using sophisticated online technologies to save on workforce development costs.

Personal Security and Public Safety in the South West.

- Secure homes from crime and other hazards
- Making vehicles safer
- Reducing auto theft
- Preventing accidents
- Responding to emergencies

eGovernment Service Delivery in the South West.

- The transformation of complicated legacy systems into customer friendly systems.
- Making government more efficient.
- The provision of data required for various forms of problem solving.
- The provision of “access” to important data outside business hours.
- Reducing the costs of service delivery.

Opportunities for Innovation in the South West.

- BB has become the world's knowledge conduit...innovators can better track other innovators.
- BB enables companies of all sizes to access talented people.
- BB delivers more powerful tools for research.
- BB means virtual product development replaces expensive prototypes/modeling.

Improved Productivity in the South West.

- Enabling employees to do more things at the same time.
- Allowing routine tasks to be automated and remotely managed, where appropriate.
- Enabling firms to restructure their supply chains.
- Facilitating more productive self service.
- Enabling the creation of markets and market signals where before there were none.

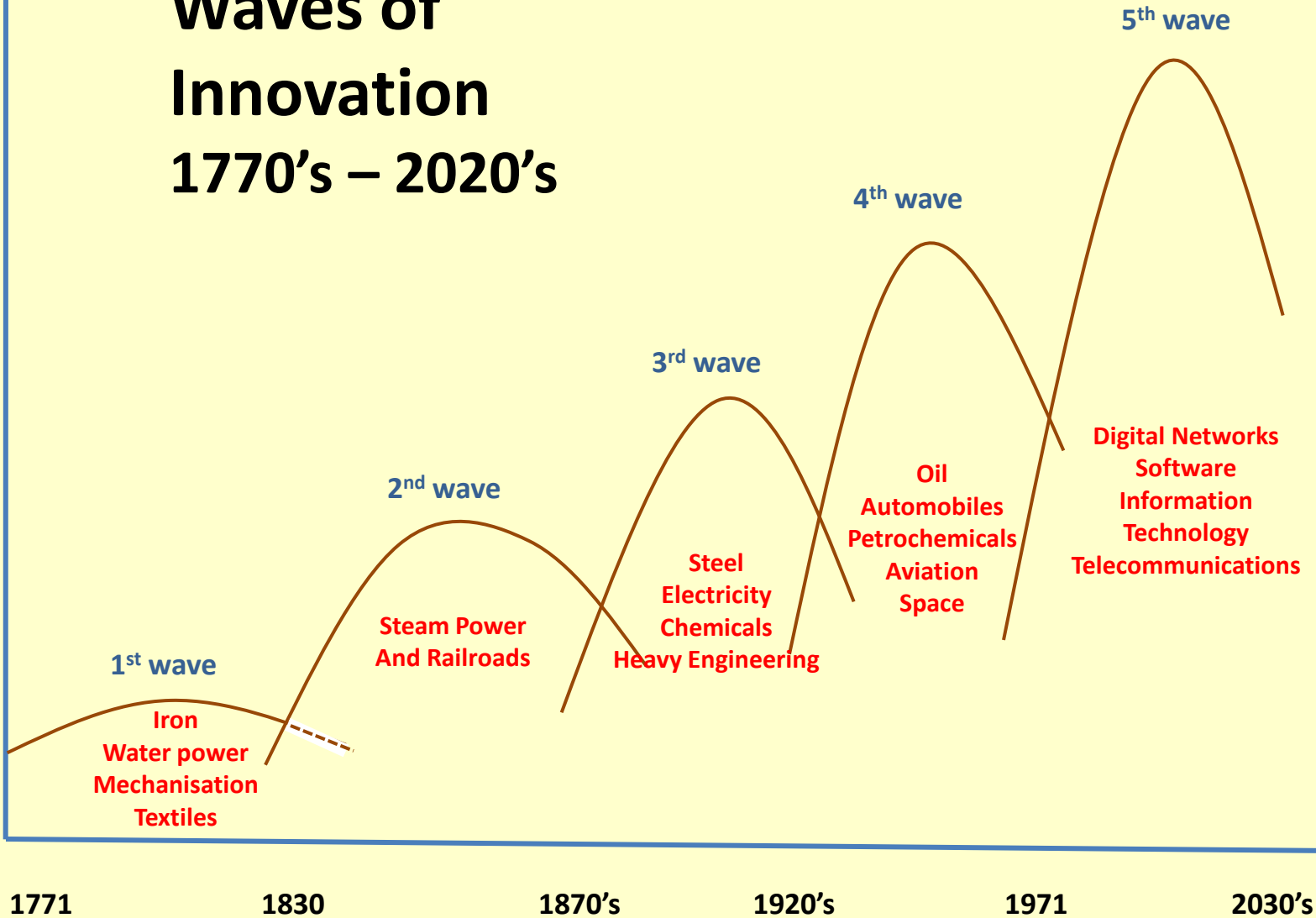
Then there is.....

- Intelligent Buildings and Smart Homes
- Intelligent Power Grids
- Intelligent Transport Logistics
- Personalized Public Transport
- Home Based Entertainment

SOME CONCLUDING THOUGHTS AND REMINDERS

Waves of Innovation 1770's – 2020's

Innovation



High Capacity Bandwidth (Big Pipes) and High Performance Computing will play a vital role in unlocking and harnessing the awesome potential of nano, geo and bio technologies for the South West.

- High speed networks will continue to fundamentally change the way we live, work, study, take our leisure and relate to each other.

- HCB is one of our best hopes for long term economic recovery.

- HCB is one of our best hopes of delivering a low carbon future and managing the challenges of climate change.

**SOME CONCLUDING CHALLENGES FOR
THE SOUTH WEST.**

- Will the South West “sit back” or decide to be part of the Research Effort?

- Does the South West want to be part of the Content Revolution?

- Is there a will in the South West to harness the power of the BB economy by training and skilling its people?

- Does the South West have a deployment strategy for the NBN which it has discussed with the NBN Co?

REMEMBER

“Connectivity is productivity and productivity is the key to future prosperity.”