

The Next Era of Global Technological Development

Seminar at the John Curtin Institute of Public Policy

Curtin University WA.

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Presented by

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Addressing the challenges of the future through innovation

About Continuity, Breakthroughs and Convergence

- The Mature Phase of the Digital Era.
- The Biological Nexus of Technological Innovation.
- The Resource Efficiency Era.

**More
Digital Disruption**

**Breakthroughs
in
Life Sciences**

**The Next
30 years**

Resource Efficiency

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Presentation 1

The Mature Phase of the Digital Era.

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The Digital Revolution

Based on Information Technology and Telecommunications had its beginnings in the early 1970's and is expected to extend through to the 2040's.

The nature and scope of innovation which it has produced has been unprecedented.

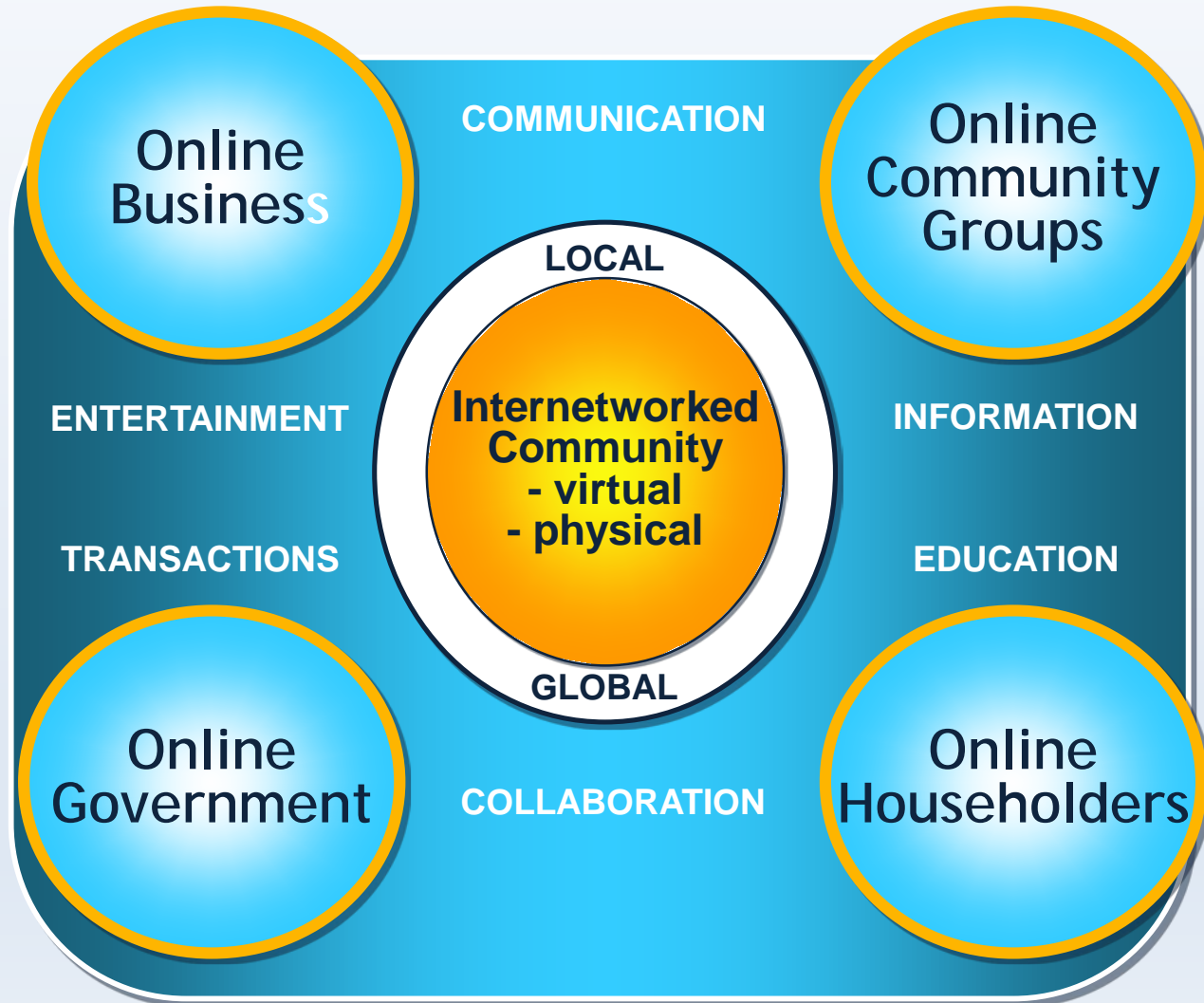
A “Game Changing”
environment....a wholesale shift for
society and the economy.

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The Digital World & High Speed Networks.



Waves of Innovation 1770's – 2030's

Innovation

1771

1830

1870's

1920's

1971

2030's

1st
wave

Iron
Water power
Mechanisation
Textiles

2nd
wave

Steam Power
And Railroads

3rd
wave

Steel
Electricity
Chemicals
Heavy Engineering

4th
wave

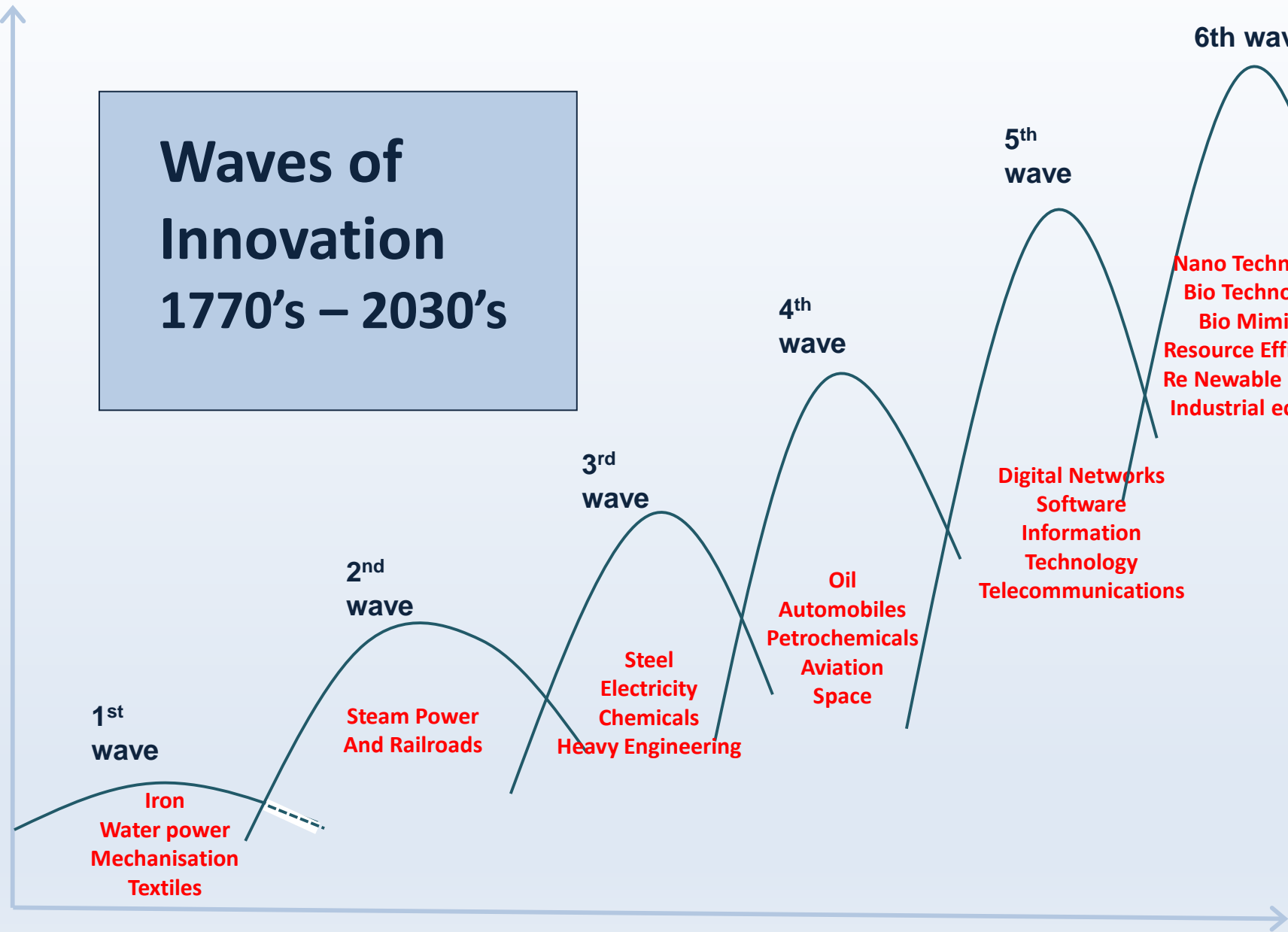
Oil
Automobiles
Petrochemicals
Aviation
Space

5th
wave

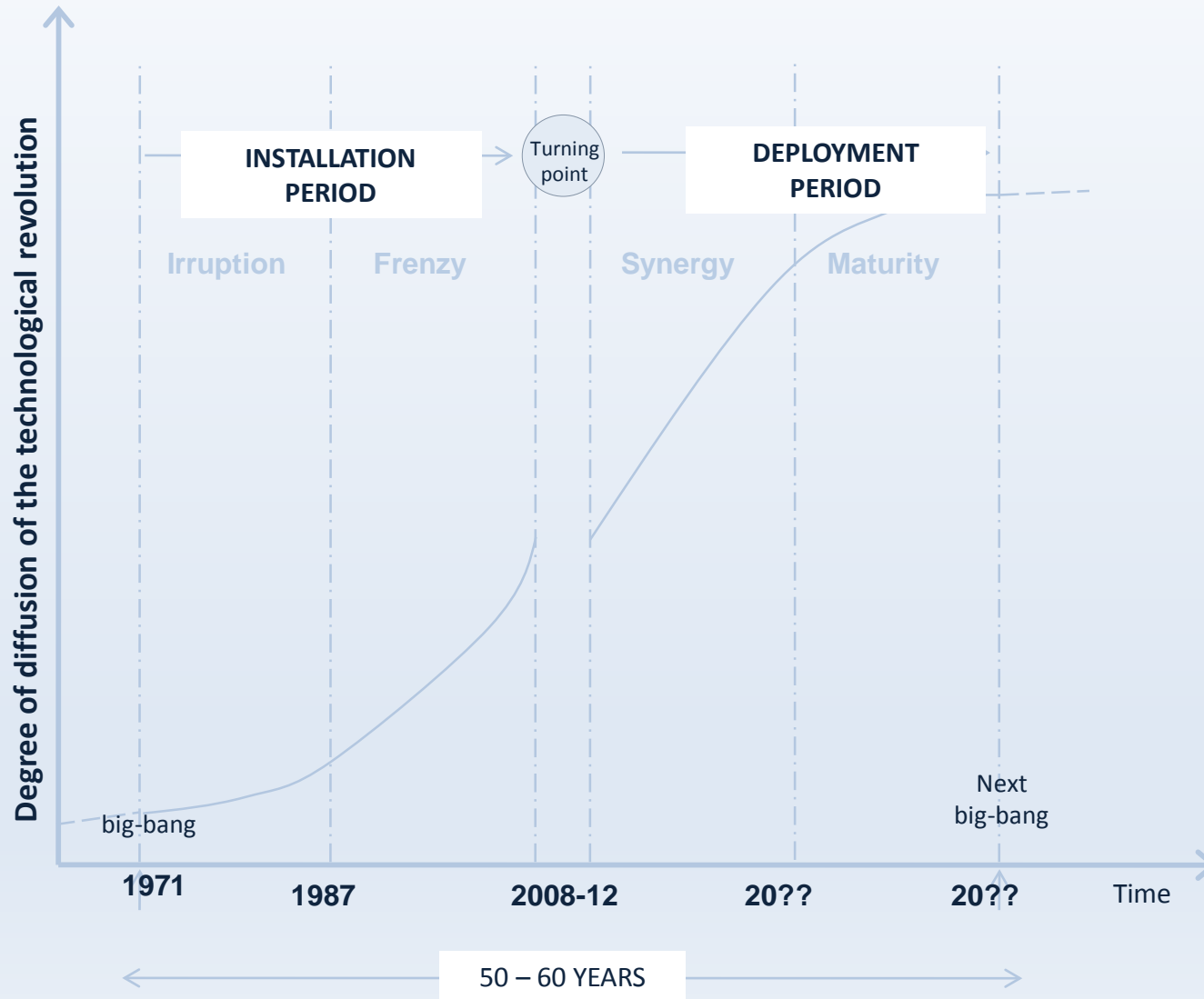
Digital Networks
Software
Information
Technology
Telecommunications

6th wave

Nano Technology
Bio Technology
Bio Mimicry
Resource Efficiency
Re Newable Energy
Industrial ecology



Classic Phases of the ICT Revolution 1970's – 2040's



SOURCE: Perez, "Technological Revolutions and Financial Capital"

Digital Disruption is widespread.

- Almost everything we do is impacted.
- The nature of consumption, competition, and work has changed.
- The balance of power between organizations and individuals has changed.
- Major new competitive pressure has arrived.
- Disruption varies across sectors and geography.

The Age of High Speed Networks mean:

More people, more data,
more locations “Online”
and faster outcomes

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

Drivers for Further Digital Disruption

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Rollout of **High Speed Networks**

- *Infrastructure for Gigabits and 100's of Megabits*
- *National retrofit for the copper telephone network.*
- *The best possible mix of fibre glass, wireless and satellite.*
- *Infrastructure for global competitiveness.*

Eg: Telstra to increase its data traffic One Thousand fold between 2011 and 2020

Exponential Growth of **Social Media.**

- *Customer service becomes customer intimacy*
- *By 2012 > 1 billion people per day were accessing Facebook.*
- *Facebook is now second only to Google for Internet activity.*
- *Growth Rate for Twitter is greater than Facebook.*
- *Customer profiling is ubiquitous.*

Mobility of devices, apps and data services

- *Smart phones and tablets are the basis of a mobility revolution.*
- *The Age of the App has arrived*
 - *Cheap to access*
 - *Meet specific needs*
 - *Keep track of their owners*
 - *Generate massive volumes of data.*
- *Globally (by 2013) 30% of all mobile phones were smart phones.*
- *One in seven online searches is now from a mobile device.*
- *Wearable computers for enhanced reality are next.*

Big Data and Analytics

- *Unprecedented volumes of data are now generated daily on a global basis.*
- *Big Data allows large volumes of data to be analysed to identify trends and patterns.*
- *Current data is now cross referenced with previous data.*
- *Supercomputing handles the mountain of data.*
- *Data literate people are in increasing demand.*

Devolution of **Cloud Computing**

- *Origins in the surplus capacity of the Big Five.*
- *Outsourcing takes over from traditional “in-house” IT Infrastructure.*
- *Expected to be a Trillion Dollar business activity by 2015’*
- *Delivers new services, cost reductions and support for remote working patterns.*
- *Provides superior security services.*

The Internet of Things

- *26 Billion THINGS connected to the Net by 2020 ?? (Gartner Group)*
- *Objects, animals and humans automatically transferring data.*
- *Mountains of data will result.*
- *Billions of sensors and transponders interacting with;*
 - *the internal state of things*
 - *the external environment.*
- *Future concerns about data privacy. Sovereignty and security.*

The Maturity of eCommerce

- *Basic commercial processes remain the same. Technology has changed.*
- *By 2013 eCommerce (globally) reached a turnover > \$1.3 Trillion.*
- *Now infinite options to buy goods and services online.*
- *Key Message: Adapt or Disappear.*
- *Unsolicited and targeted advertising push is of growing concern.*

A Wave of **New Content:** entertainment, visualisation and video collaboration

- *Telepresence, video collaboration and 3D come of age.*
- *Dramatic changes for traditional media.*
- *Smart Glasses leaders in wearable computers ?*
- *Spontaneous citizen Video footage enters the arena.*
- *Since the mid 90's Online Gaming has become a \$70 Billion industry activity.*
- *Consumers looking for interactive involvement in entertainment.*
- *Migration of artists and audiences to new media*

Cyber Security

- *A new playground for digitally savvy criminals.*
- *Vulnerability of Online services.*
- *Limitations of national “Statute Law”*
- *Identity theft and the need for certification.*
- *New generation of end user “security services”.*
- *Cyber warfare and new threats to national security.*

Conclusions

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Numerous Technologies and Disciplines have converged with Informatics eg:

- Bioinformatics
- Geoinformatics
- Hydroinformatics
- Business informatics
- Engineering informatics
- Environmental informatics

**High Speed Networks and the
new digital services have
become basic sinews of our
economy.**

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The Links are now undeniable



Connectivity

Creativity

Innovation

Productivity

PROSPERITY

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