Creating a Digital Innovation Ecosystem

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Overview

- **Background**

- **Industry 4.0 & Digitalisation**

- **Australian Context**

- **Digital Innovation Ecosystem**

- **Strategic Infrastructure & Partnerships**

- **Summary**

Transforming Australian Manufacturing:
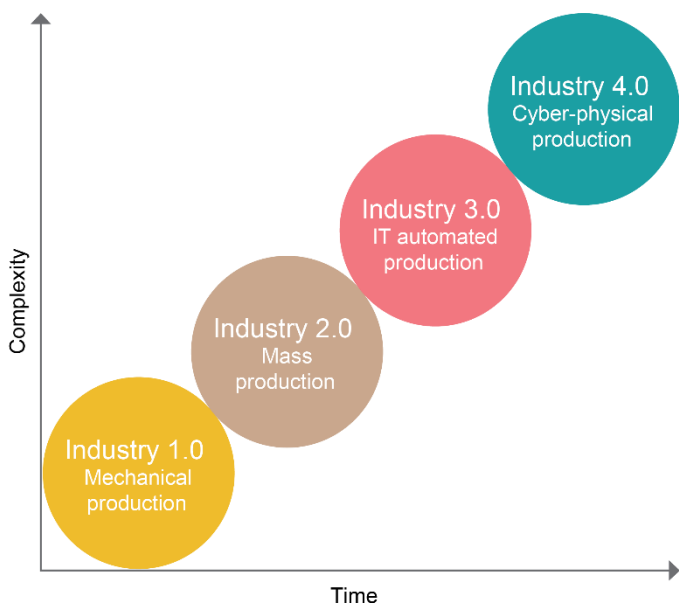Preparing businesses and workplaces for Industry 4.0

Industry 4.0 Testlabs in Australia
Preparing for the Future

A report of the Prime Minister's Industry 4.0 Taskforce
– Industry 4.0 Testlabs Workstream

Foreword by Professor Aleksandar Subic

The Fourth Industrial Revolution - Industry 4.0

Industry 4.0
Cyber-physical production

Industry 3.0
IT automated production

Industry 2.0
Mass production

Industry 1.0
Mechanical production

Complexity

Time

The fourth industrial revolution centres on 'cyber-physical systems'. Key enablers of Industry 4.0 are:

- **Rising data volumes, computational power and connectivity**
- **Emerging data analytics and business-intelligence capabilities**
- **New forms of human-machine interaction**
- **Improvements in transferring digital instructions to the physical world**

Digitalisation across entire value chains – "Data is the New Oil"

Examples of Industry 4.0 technologies and processes:

Industrial Internet of Things (IIoT): embedded technology for machines to communicate, record, and interact with the external environment using the Internet as a means of communication.

Artificial Intelligence (AI): Increased autonomy in machinery.

Augmented and virtual reality: Information and images overlayed onto real images.
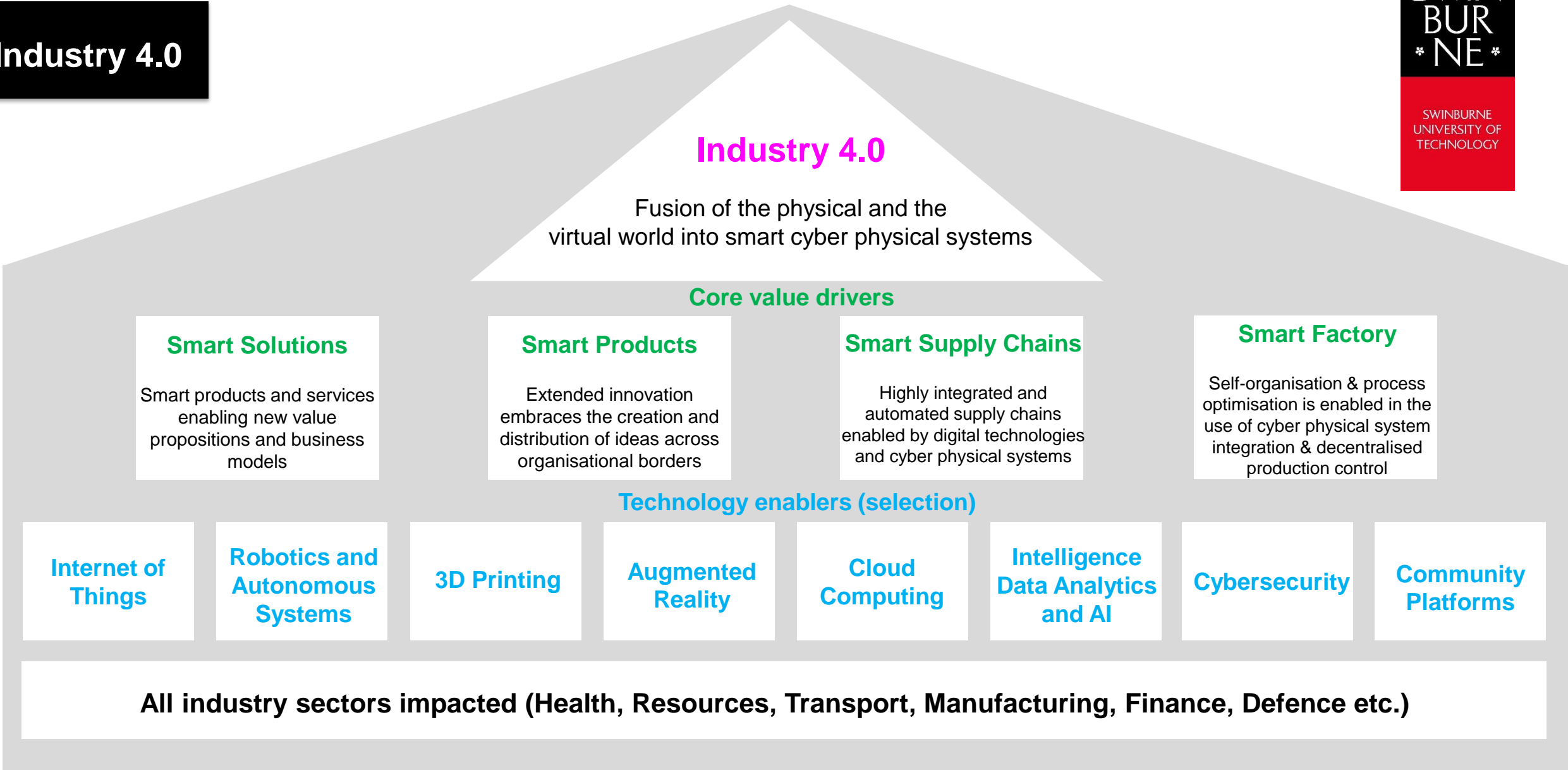
Automation: use of machines to undertake tasks once performed by humans.
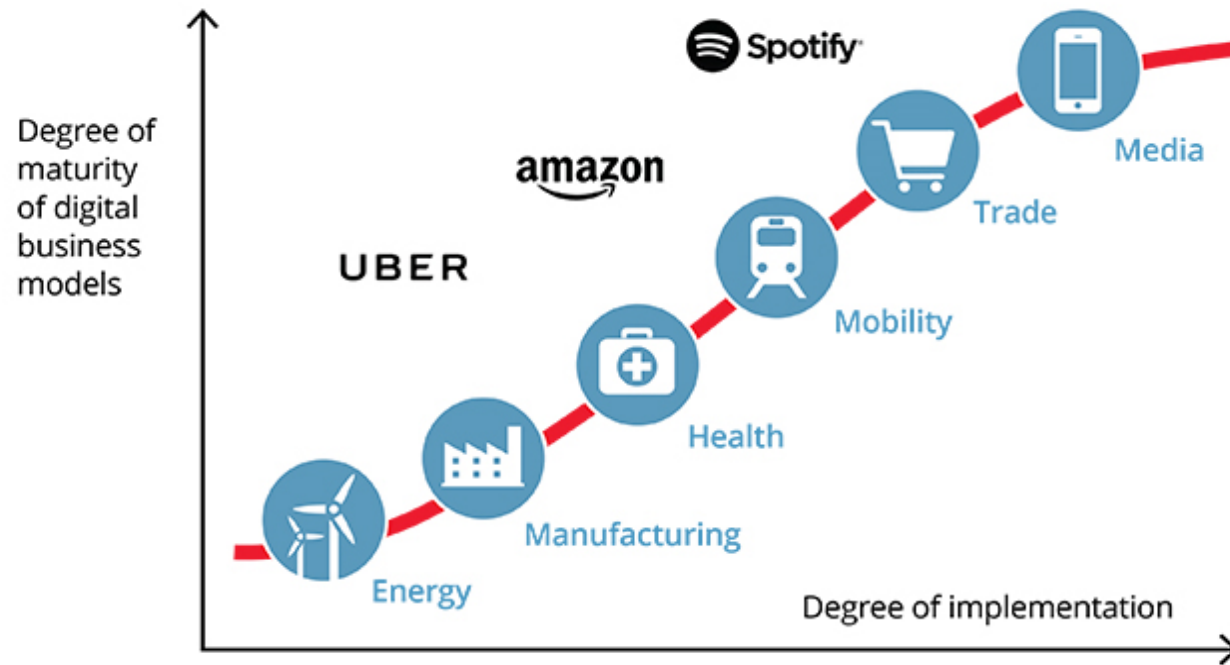
Big data analytics: powerful technology able to examine large data sets to reveal insights.

3D printing (additive manufacturing) production of solid objects from a digital model to enable rapid prototyping and custom creation of products.

Source: Accenture – assessment based on the 3 dimensions (business models, value creation processes and products)

Industry 4.0 & Sunshine Coast

Source: www.submarinecablemap.com
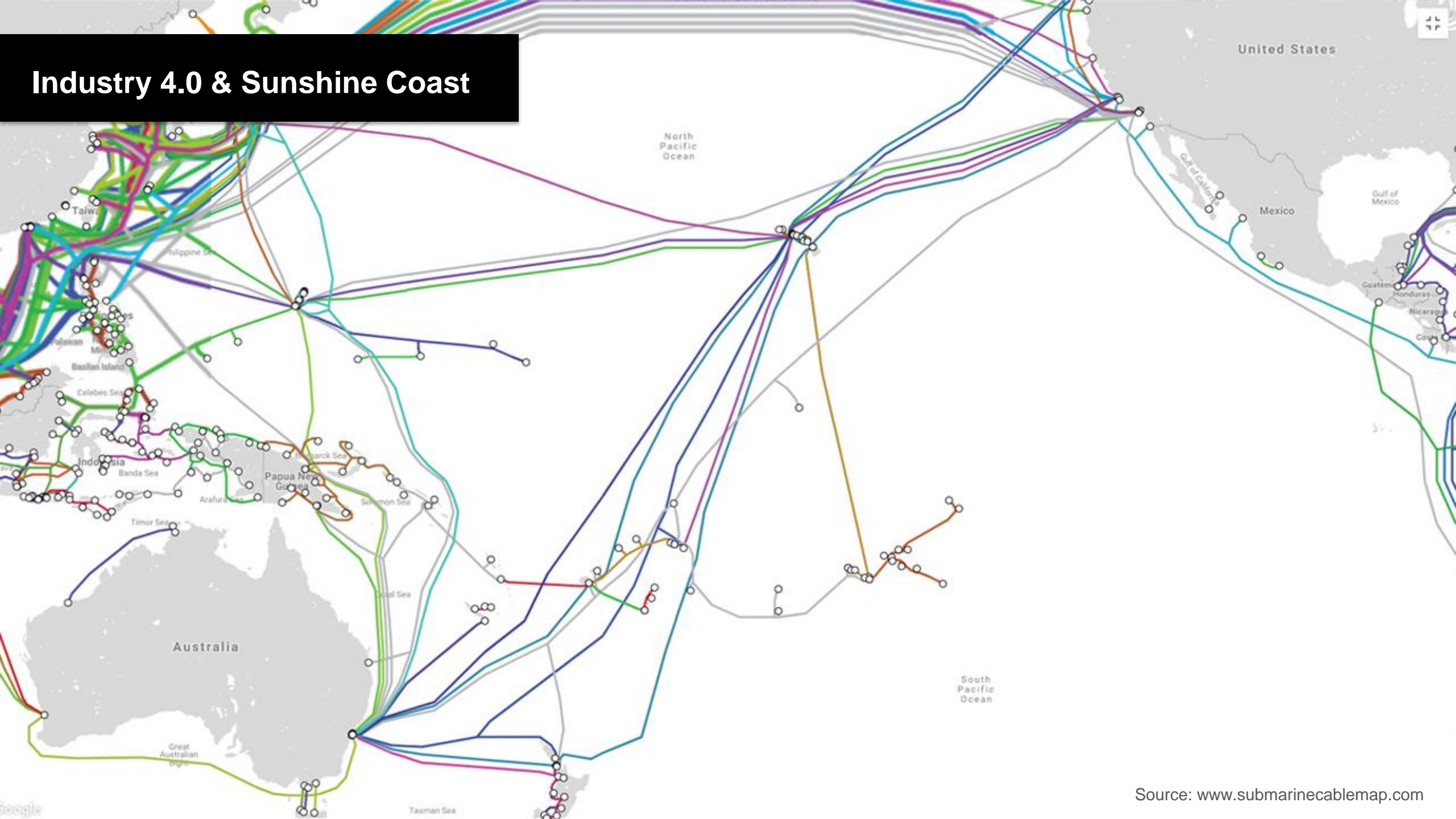
Swinburne and CSIRO in Silicon Valley

Swinburne and CSIRO established joint presence in Silicon Valley to access knowledge, commercial investment, infrastructure and new research and industry partnerships.
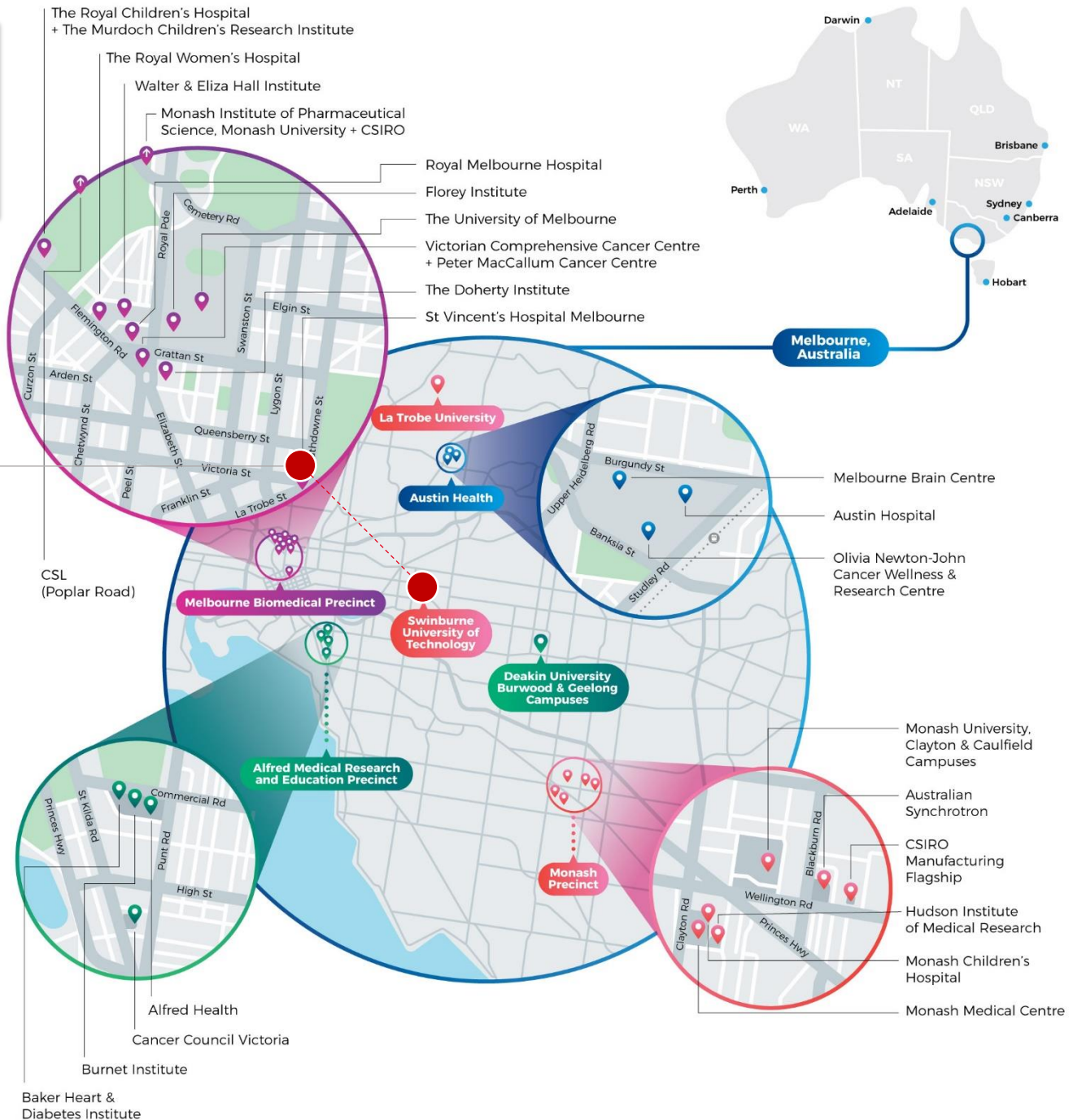

Our US Partners:

- Caltech, Capgemini, Wipro, Stanford, PARC Xerox, UC Santa Cruz, Cal Poly, Tesla, Anatomics, Amazon, Planet Labs, Lawrence Livermore National Laboratories, Afterpay Touch, Google, Microsoft, Boeing, Lockheed Martin, and growing.

Why is West Coast and Silicon Valley a thriving Innovation Ecosystem:

- **World's Largest Innovation Ecosystem**
  (California worlds 5th largest economy, from start-up to scale-up)
- **Expansive Pool of High–Quality Talent**
  (talent, mentors, diversity, culture, internationalisation)
- **World Class Universities with Leading Research and Innovation**
  (world class skills, innovation focused, industry embedded)
- **Dynamic Business Network Built on Digital Innovation**
  (7 of the 10 worlds largest tech firms are located in SV and Seattle; consumers and companies of all sizes are early adopters)
- **Access to the World's Smartest Capital**
  (highest level of investment in tech innovation, top VC firms)
- **Access to World Leading Innovation Infrastructure**
  (digital infrastructure, accelerators/incubators, lifestyle)

Precincts Model: Melbourne Biomedical Precinct

The Royal Children's Hospital + The Murdoch Children's Research Institute
The Royal Women's Hospital
Walter & Eliza Hall Institute
Monash Institute of Pharmaceutical Science, Monash University + CSIRO
Royal Melbourne Hospital
Florey Institute
The University of Melbourne
Victorian Comprehensive Cancer Centre + Peter MacCallum Cancer Centre
The Doherty Institute
St Vincent's Hospital Melbourne

Aikenhead Centre for Medical Discovery (ACMD)

CSL (Poplar Road)

Melbourne Biomedical Precinct
La Trobe University
Austin Health
Swinburne University of Technology
Deakin University Burwood & Geelong Campuses
Alfred Medical Research and Education Precinct
Monash Precinct

Melbourne Brain Centre
Austin Hospital
Olivia Newton-John Cancer Wellness & Research Centre

Monash University, Clayton & Caulfield Campuses
Australian Synchrotron
CSIRO Manufacturing Flagship
Hudson Institute of Medical Research
Monash Children's Hospital
Monash Medical Centre

Alfred Health
Cancer Council Victoria
Burnet Institute
Baker Heart & Diabetes Institute

Melbourne, Australia
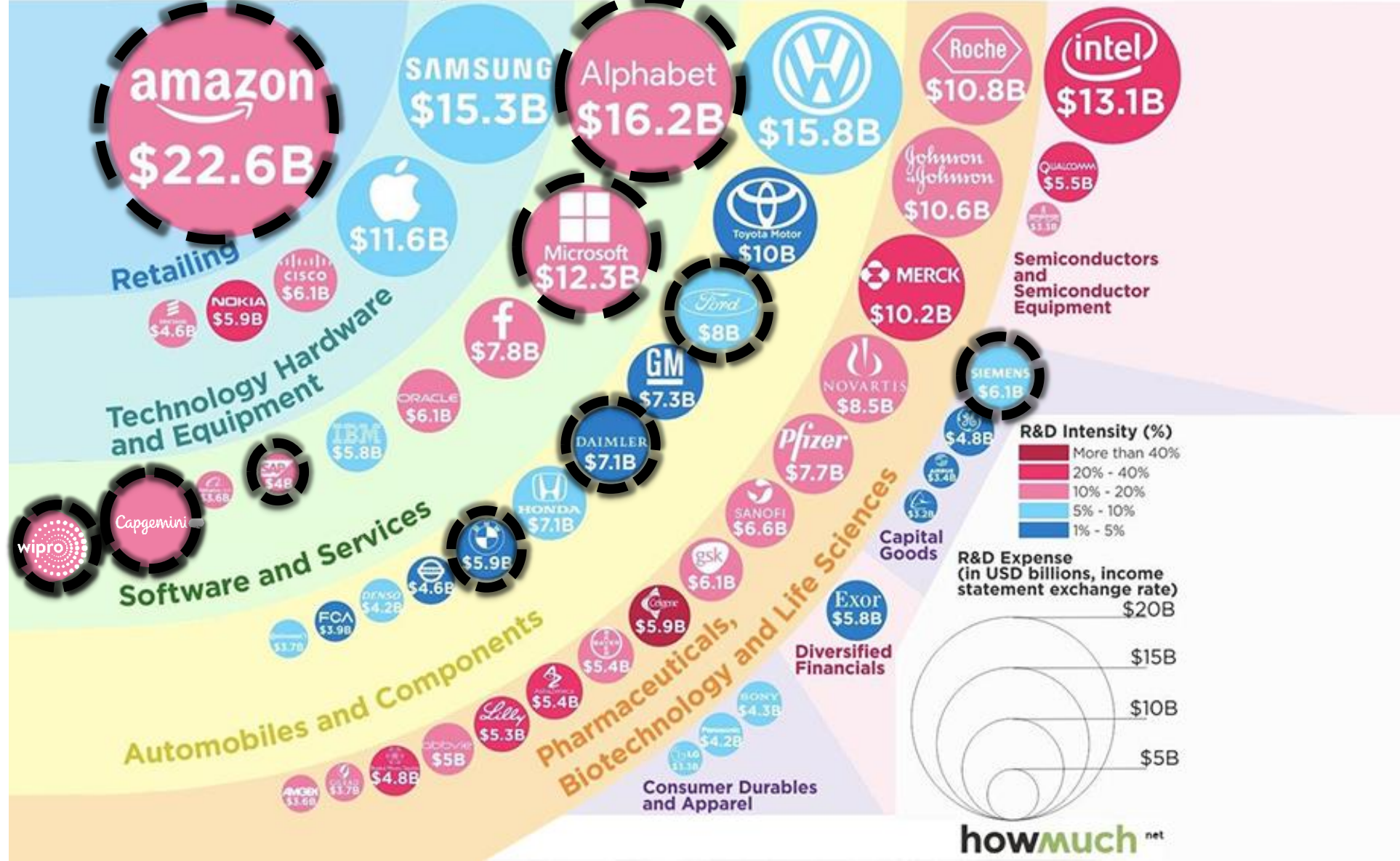
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Digital Precinct
Industry embedded on campus

1. Industry 4.0 Testlab National Network
2. Siemens MindSphere Centre
3. Industry 4.0 SME Hub in Factory of the Future with Vic Gov, AMGC and IMCRC
4. Capgemini Blockchain Global COE
5. Cisco Network Lab
6. Wipro AI Innovation Centre
7. Design Factory Melbourne
8. Start-up Incubator and Accelerator in the Innovation Precinct
9. Amazon Cloud Innovation Centre
10. Data Science Research Institute
11. DXC Digital Transformation Centre

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The World's Most Innovative Companies 2018
What Companies Spend the most on R&D?

Amazon Cloud Innovation Centre at Swinburne
First in the Southern Hemisphere

Siemens MindSphere IoT Centre at Swinburne

Industrial Digitalisation
Siemens $150 million industrial digitalisation grant supporting training, education and higher degrees by research.

Factory of the Future

Concepts transformed into reality (from "digital twin" to cyber-physical facility) – **SME Hub**

Strategic Digital Infrastructure

Swinburne OzSTAR Supercomputer and Data Centre
Access to KECK (Hawaii) and aarnet
Access to first World Exascale Computer Aurora (US)
Access to national digital infrastructure

Summary

- **Ecosystem Approach**
  GREATER THAN SOME OF ALL PARTS

- **Global Outlook**
  MARKETS, TALENT, INVESTMENT

- **Digital Infrastructure**
  CONNECTIVITY, DATA, VALUE CHAINS

- **Strategic Partnerships**
  CO-CREATION, CO-INVESTMENT

- **SKILLS, SKILLS, SKILLS**

Digitalise or Perish