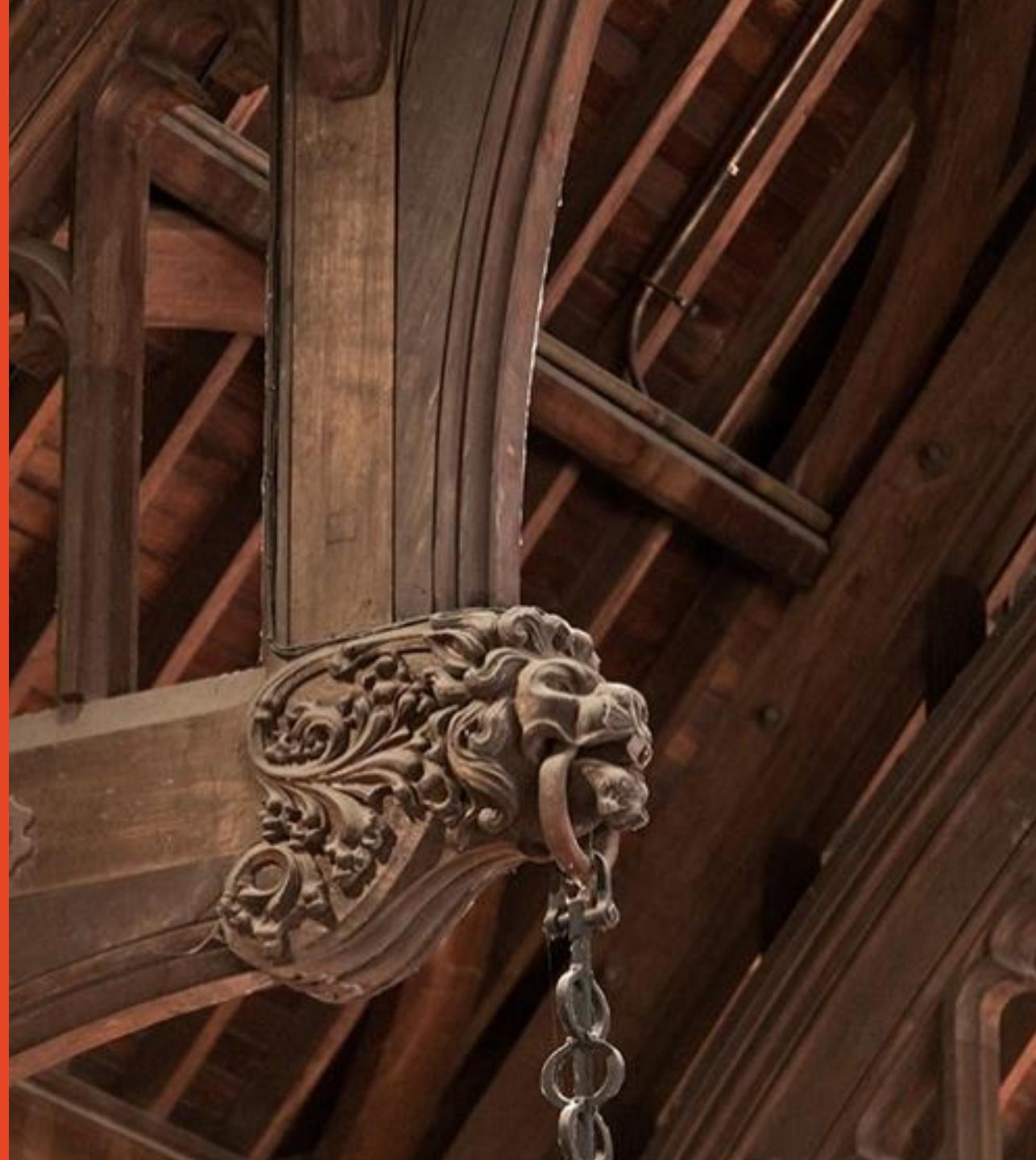


# **INFO5992 Understanding IT Innovations**

## **Week 1: Introductions**

A/Prof Jinman Kim

Semester 2, 2017



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**Copyright Regulations 1969**

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# Agenda

- Welcome!
- UoS Introduction / Outline / Admin
- About my Research interests – Innovation in the health sector
- Definition of Innovation
- Importance of Innovation
- Innovation System
- Innovation in Australia

# Teaching Team – Lecturer and Coordinator

- <http://sydney.edu.au/engineering/people/jinman.kim.php>

## ASSOCIATE PROFESSOR JINMAN KIM

*School of Information Technologies*  
Director of the BMIT Visual TeleHealth Lab

[J12 - The School of Information Technologies](#)  
The University of Sydney

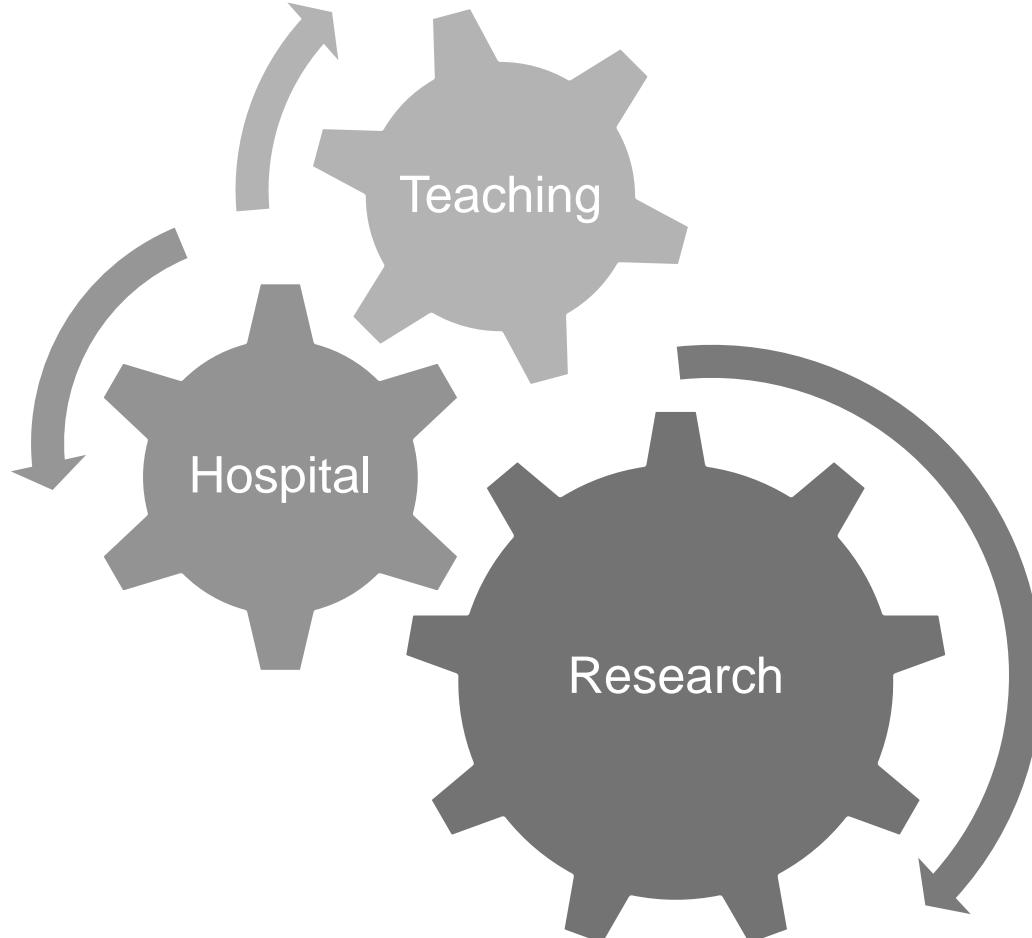
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 +61 2 9036 9708  
 [jinman.kim@sydney.edu.au](mailto:jinman.kim@sydney.edu.au)  
 [Biomedical engineering and technology](#)  
[BMIT Research Group](#)  
[School of Information Technologies](#)

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## SEARCH PAGE





- Research (50%)
  - Research Director, working with a team on solving biomedical information systems problems
- Teaching (30%)
  - Sharing and learning of knowledge
  - Student supervision
- Hospital (20%)
  - Academic Director, Nepean Telehealth Technology Centre, Nepean Hospital
  - Research Associate, RPA Hospital

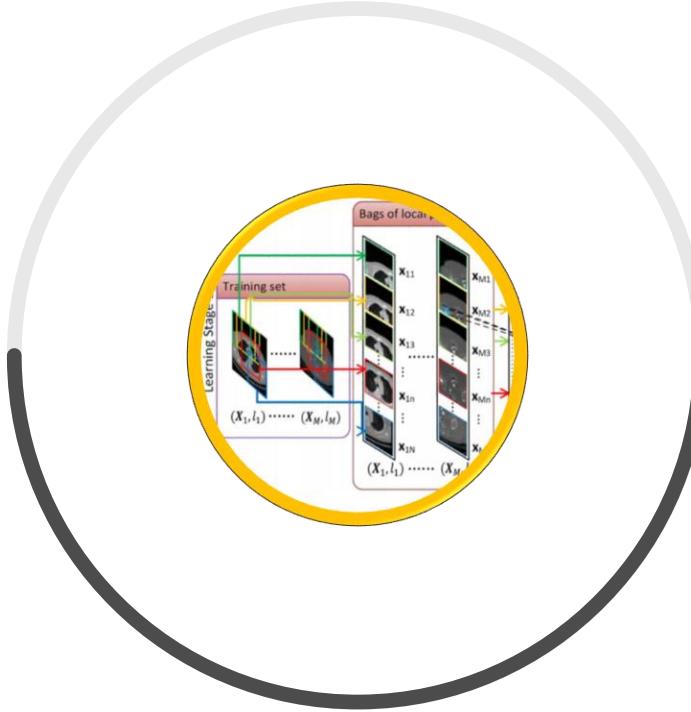
## Teaching experiences

- Multiple Ugrad and Pgrad Lecturers
- INFO5992 – Since 2016
- COMP5206 – Information Systems and Technology
- INFO5306 – Enterprise healthcare IS
- INFO6007 – Project Management
- My Research Team

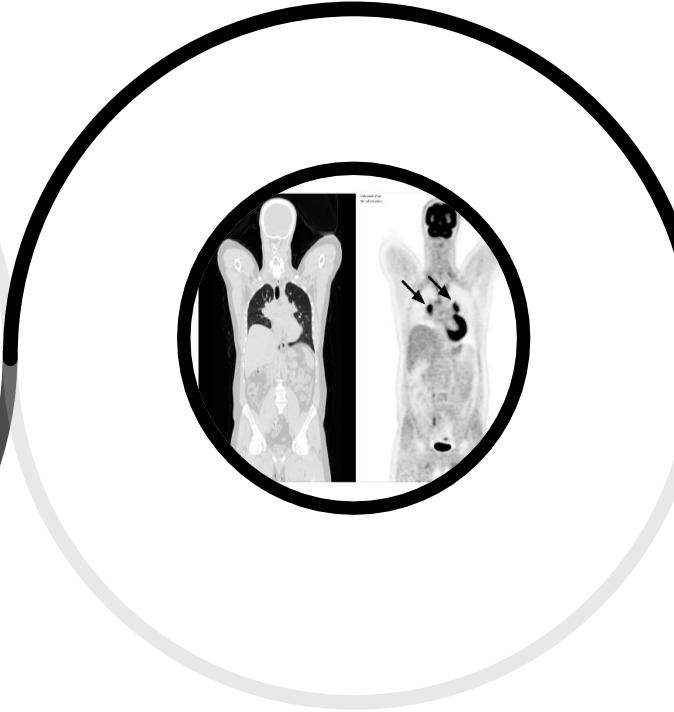
## Teaching Team – Tutors

- Tutors: depends on your timetable
  - Tian Steven Xia (Teaching Assistant)
  - Euijoon (Osmond) Ahn
  - Kritika Joon
  - Shilpa Shetty
  - Anuj Chopra
- Hoijoon Jung
- Ivan Chua

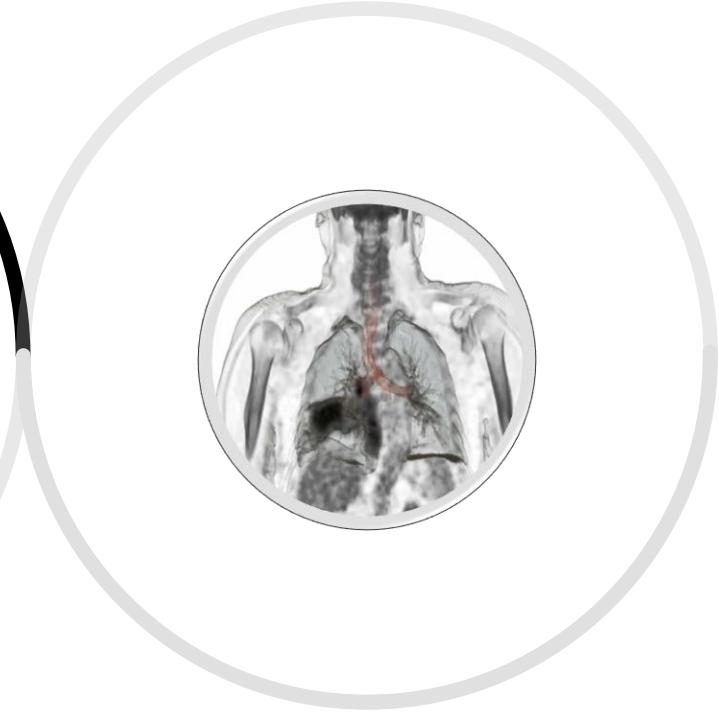
# My Research Interests – Medical Image Analysis



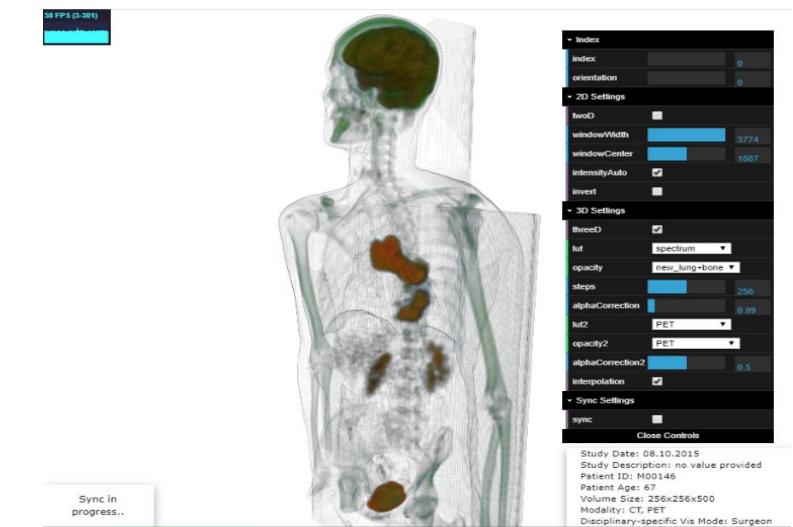
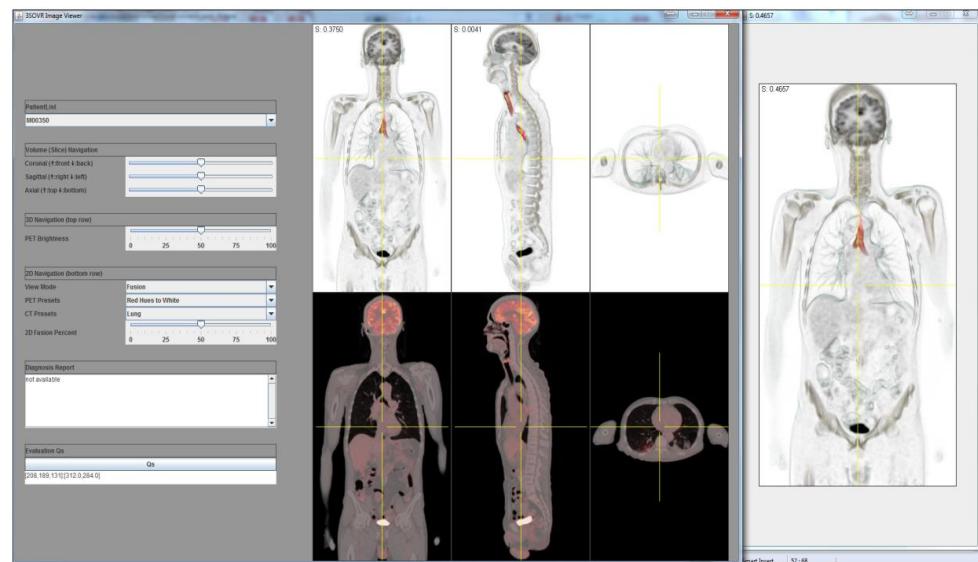
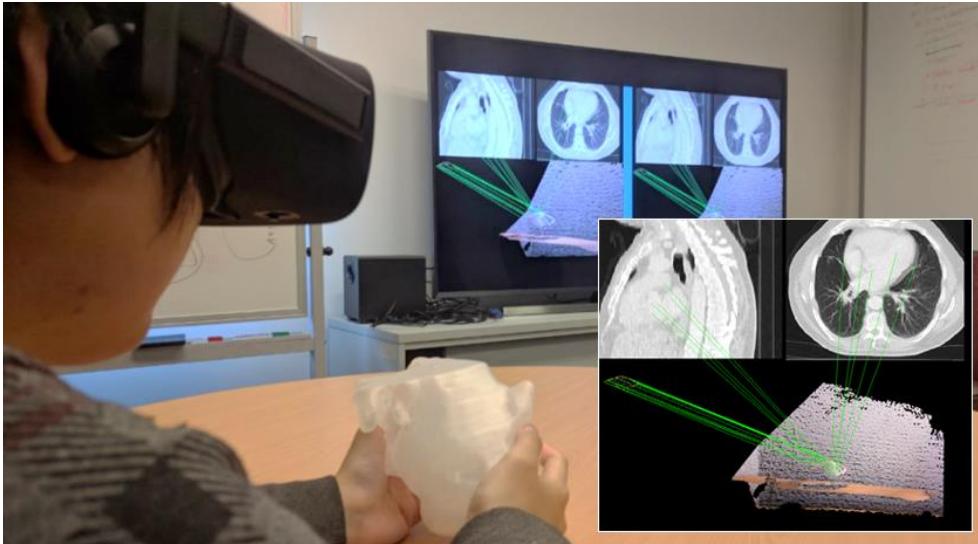
**AI / Deep Learning  
based Imaging  
Processing**



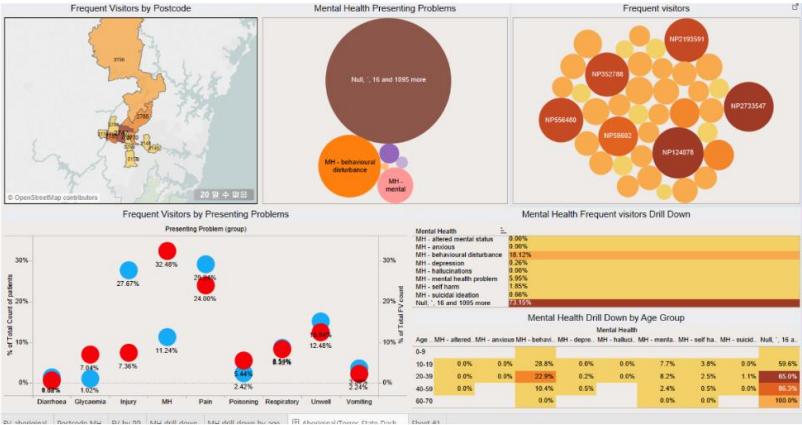
**Integrated data  
processing;  
Image+**



**Visualization;  
Mixed Medical  
Reality**



# My Research Interests – Telehealth Technology

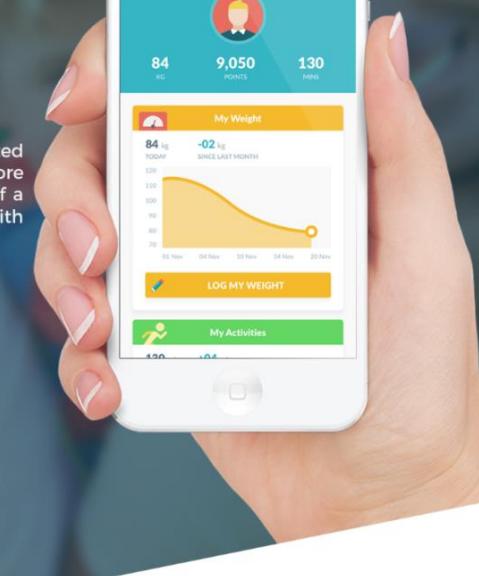


The University of Sydney

# POPFIT FOR A FITTER FAMILY

A family oriented, socially and incentive driven obesity management app

PopFIT is a unique and highly innovative family oriented obesity management app that aims to provide a more effective form of intervention through the introduction of a social platform connecting family members together with their doctor, dietitian and physiotherapist.



## Key features

### > Family-based model of care

A platform that focuses on treating families as a single unit. Provides customisable treatment plans for each family and individual.

### > Social support

Promotes positive encouragement between family members. Allows for doctors to intervene and to provide support.

### > Reward system

Provides incentives to both parents and child for achieving set goals and for the consistent use of the app via a special reward system.

### > Data sharing and feedback

Data are easily sharable across a family and allows for doctors to provide feedback and alterations to the treatment plan.

For more information

[popfit.vulsen.com](http://popfit.vulsen.com)

[info@vulsen.com](mailto:info@vulsen.com)

**Nepean Blue Mountains Local Health District**

**THE UNIVERSITY OF SYDNEY**

**VULSEN**  
NEPEAN BLUE MOUNTAINS  
An Australian Government Initiative

# **Unit of Study INFO5992**

## **Introduction**

# UoS Semester outline

Week	Lecture Topics	Activity	Assessments
1. 5 Mar	UoS Introduction; Definition of IT Innovation; IT Innovation System; IT Innovation in Australia	Tute 1 – Welcome to your tutorial; Importance of innovation to a Country	Form Groups
2. 12 Mar	Introduction to Technological / IT innovation; Examples of IT innovation in industry sectors; Type and Source of Innovation	Tute 2 – Massive Open Online Courses – Enabling technologies and Peer-review	
3. 19 Mar	Dynamics of Technological / IT Innovation; Adoption of Technology; Dominant Design	Tute 3 – Dominant design in the Smartphone market	Individual Report Introduction
4. 26 Mar	Disruptive Innovation; Industry Value Chain; Value Network analysis	Tute 4 – Cognitive IT services and its value chain	MCQ
<b>Easter Break</b>			
5. 9 Apr	Distributed innovation I: Open / Closed innovation; Platform innovation; Web APIs;	Tute 5 – Web API considerations	Group presentation Introduction
6. 16 Apr	Distributed innovation II: Crowd innovations; Free and Open source software;	Tute 6 – Open source Geolocation and Maps	
7. 23 Apr	Distributed innovation III: User innovation; Open Data	Tute 7 – Sharing Economy from a Distributed Innovation Context	
8. 30 Apr	Innovation by Start-up companies and Opportunities	Tute 8 – Business Model Canvas	
9. 7 May	Organisational Culture; Structure supporting innovation	Tute 9 – Group Presentation preparations and feedback	MCQ Report Submission
10. 14 May	IT Innovation Management	Group Presentation	Group Presentation submissions
11. 21 May	Innovation ecosystem; Sydney's innovation ecosystem	Peer-Review Marking	
12. 28 May	Judging IT Innovations	Tute 10 – Developing a Judging criteria for IT Innovation project	
4. 30 Jun	UoS Review; UoS comments / questions	Tute 11 – Technology innovations in IT Management	Peer-review

# Lecture Topics

- **Wk1:** UoS Introduction; Definition of IT Innovation; IT Innovation System; IT Innovation in Australia
- **Wk2:** Introduction to Technological / IT innovation; Examples of IT innovation in industry sectors; Type and Source of Innovation
- **Wk3:** Dynamics of Technological / IT Innovation; Adoption of Technology; Dominant Design
- **Wk4:** Disruptive Innovation; Industry Value Chain; Value Network analysis
- **Wk5:** Distributed innovation I: Open / Closed innovation; Platform innovation; Web APIs;
- **Wk6:** Distributed innovation II: Crowd innovations; Free and Open source software;
- **Wk7:** Distributed innovation III: User innovation; Open Data
- **Wk8:** Innovation by Start-up companies and Opportunities
- **Wk9:** Organisational Culture; Structure supporting innovation
- **Wk10:** IT Innovation Management
- **Wk11:** Innovation ecosystem; Sydney's innovation ecosystem
- **Wk12:** Judging IT Innovations
- **Wk13:** UoS Review; UoS comments / questions

# Tutorials

- In a class ~20 students (some up to 30)
- Study a key Topic from the Lecturer within a small group of ~5 students
  - Concept to read and discuss
  - Technology to try and evaluate
- Summarise main findings within the group
- Present and discuss the findings with the class
  
- Work as a team and innovate!
- Ask Questions and Clarify
- There is a group assignment – get to know your team!

# Tutorials

- **Tute1:** Importance of Innovation to a Country – Government's roles in Innovation
- **Tute2:** Massive Open Online Courses – Enabling technologies and Peer-review
- **Tute3:** Dominant design in the Smartphone market
- **Tute4:** Cognitive IT services and its Value Chain
- **Tute5:** Web API Consideration
- **Tute6:** Open source Geolocation and Maps
- **Tute7:** Sharing Economy from a Distributed Innovation Context
- **Tute8:** Business Model Canvas
- **Tute9:** Group Presentation Preparations
- **Tute10:** Developing a Judging criteria for IT Innovation project
- **Tute11:** Technology innovations in IT Management

# Tutorial Locations

- Tute: depends on your timetable
  - Go to the lab you are scheduled
- Do not miss class, except for illness, emergencies, etc
- Get help from the teaching team if you feel you are falling behind

## Part LEC Lecture

# Each student enrolled goes to the following class. Class allocations are preserved  
*Stud.* on 18/03/18.

- [M18A](#) Mon 18:00-20:00 [wks: 1 to 13] in [Eastern Avenue Lecture Theatre 315](#) (Capacity: Taught by 205) Jinman Kim  
(Preferred: 150, Limit: 150)

## Part PRAC Practical

# Each student enrolled goes to one of the following **7** classes. Class allocations are preserved on 18/03/18.

- [M20A](#) Mon 20:00 [wks: 1 to 13] in [Link Building 222 \(North\)](#) (Capacity: 20)  
(Preferred: 20, Limit: 20)
- [M20B](#) Mon 20:00 [wks: 1 to 13] in [Link Building 222 \(South\)](#) (Capacity: 20)  
(Preferred: 20, Limit: 20)
- [M20C](#) Mon 20:00 [wks: 1 to 13] in [Link Building 122](#) (Capacity: 20)  
(Preferred: 20, Limit: 20)
- [M20D](#) Mon 20:00 [wks: 1 to 13] in [Brennan MacCallum Learning Studio 108](#) (Capacity: 20)  
(Preferred: 20, Limit: 20)
- [M20E](#) Mon 20:00 [wks: 1 to 13] in [Brennan MacCallum Learning Studio 112-116](#) (Capacity: 40)  
(Preferred: 20, Limit: 20)
- [M20F](#) Mon 20:00 [wks: 1 to 13] in [New Law School Learning Studio 030](#) (Capacity: 48)  
(Preferred: 20, Limit: 20)
- [M20G](#) Mon 20:00 [wks: 1 to 13] in [School of Information Technologies Laboratory 116](#) (Capacity: 20)  
(Preferred: 20, Limit: 20)

# Assessments

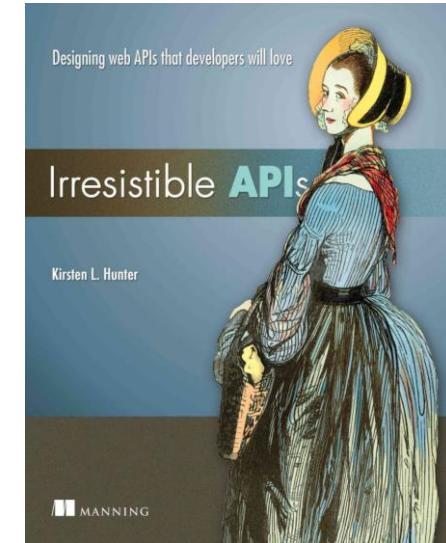
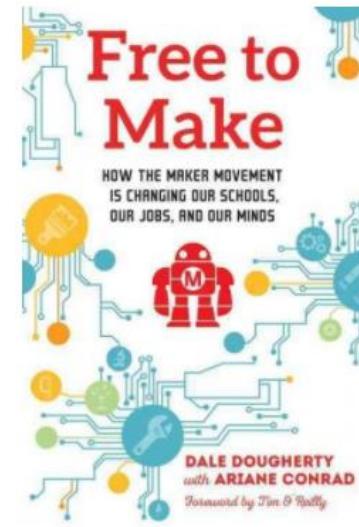
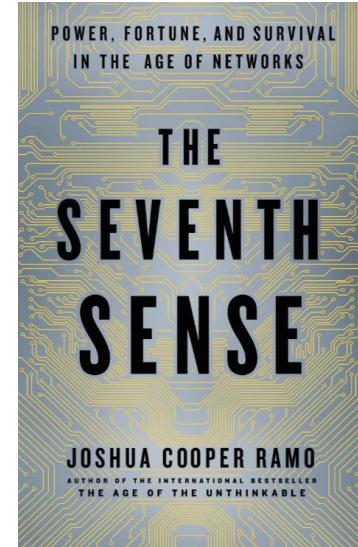
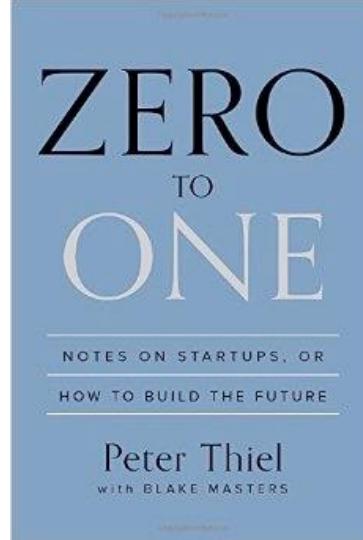
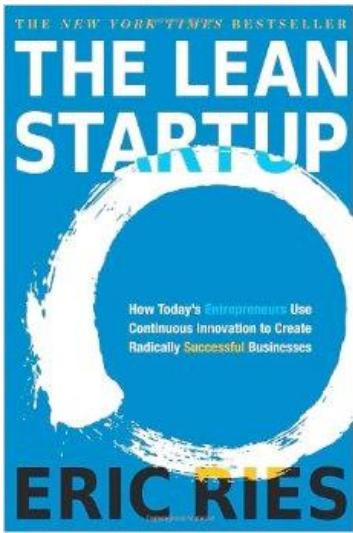
- **2 MCQs 5% each for a total of 10% (Week 4 and Week 9)**
  - Multiple choice questions
- **Innovation Report (Group + Individual) – 15% (Week 9)**
  - Critical report on a topic with IT innovation, with multiple case studies
- **Presentation (Group) : – IT Innovation Case Studies – 10% (Week 10+)**
  - Presentation of Innovation case studies and pitching a new idea!
- **Peer-Review Assessment of Presentations – 5% (Week 13)**
  - Attendance and participation in group presentations
- **Final Exam 60% (Exam Period)**
  - Final exam covering all material covered in lectures, guest lectures, assigned reading and class discussion

## **Recommended reading material**

- To be released in the Lectures
  - Many references and sources included in the slides
- To be released as part of a tutorial

## Reference books

- It is not required for purchase, but you may find it useful to guide your exploration of the ideas
- Others introduced throughout the UoS
- This and other relevant works can be found in the university library



# Resources

- eLearning <https://elearning.sydney.edu.au>
- Canvas
  - Announcements
  - Slides
  - Tutorials and Lab notes
  - Assignment instructions
  - Lecture recordings
  - Assessment submissions

# Expectations

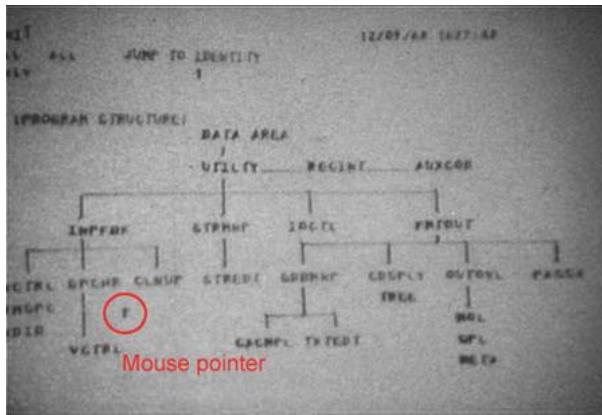
- Students attend scheduled classes, and devote an extra 3-6 hrs per week
  - doing assessments
  - preparing and reviewing for classes
  - revising and integrating the ideas
  - practice and self-assess
- Students are responsible learners
  - Participate in classes, constructively
    - Respect for one another (criticize ideas, not people)
    - Humility: none of us knows it all; each of us knows valuable things
  - Check eLearning site at least once a week!
  - Notify the teaching team whenever there are difficulties
  - Notify group partners honestly and promptly about difficulties

# Introduction to IT Innovations



THE UNIVERSITY OF  
SYDNEY

# Examples of ‘classic’ IT Innovations



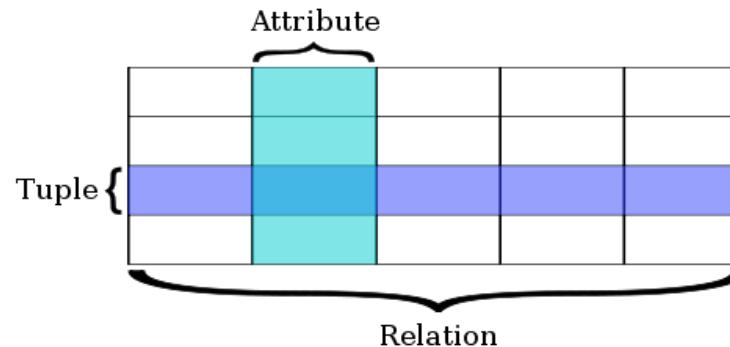
The Graphical User Interface



WWW architecture (HTML/HTTP/URL)

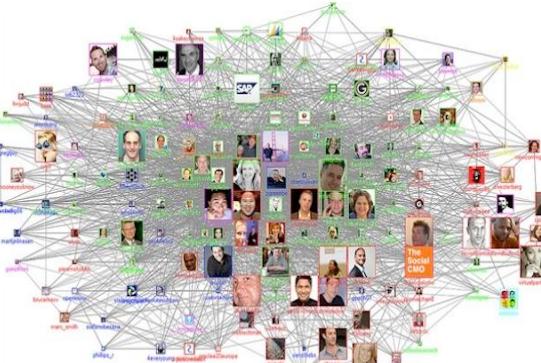


The Google search engine



Relational databases

# Some newish IT innovations



Graph databases  
Image: [beedesign.org](http://beedesign.org)



Mixed Reality (eg HoloLens)  
<https://www.microsoft.com/en-au/hololens>



Tesla  
[https://www.tesla.com/en\\_AU/model3](https://www.tesla.com/en_AU/model3)



3D Modelling

[https://www.robots.ox.ac.uk/~mobile/Papers/2015ISMAR\\_ondruska.pdf](https://www.robots.ox.ac.uk/~mobile/Papers/2015ISMAR_ondruska.pdf)  
<https://3dscanexpert.com/bevel-smartphone-3d-scanner-review/>

The University of Sydney



Alpha GO  
<https://techcrunch.com/2017/05/27/googles-alphago-ai-is-retiring/>

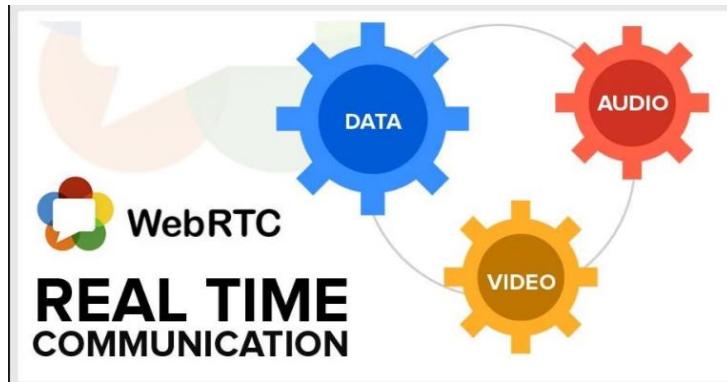
# Tesla and Ford - Which company is more innovative?



- # cars sold in 2016: 76K >6.6M

<https://finance.yahoo.com/quote/TSLA?p=TSLA>

# Some more newish IT innovations

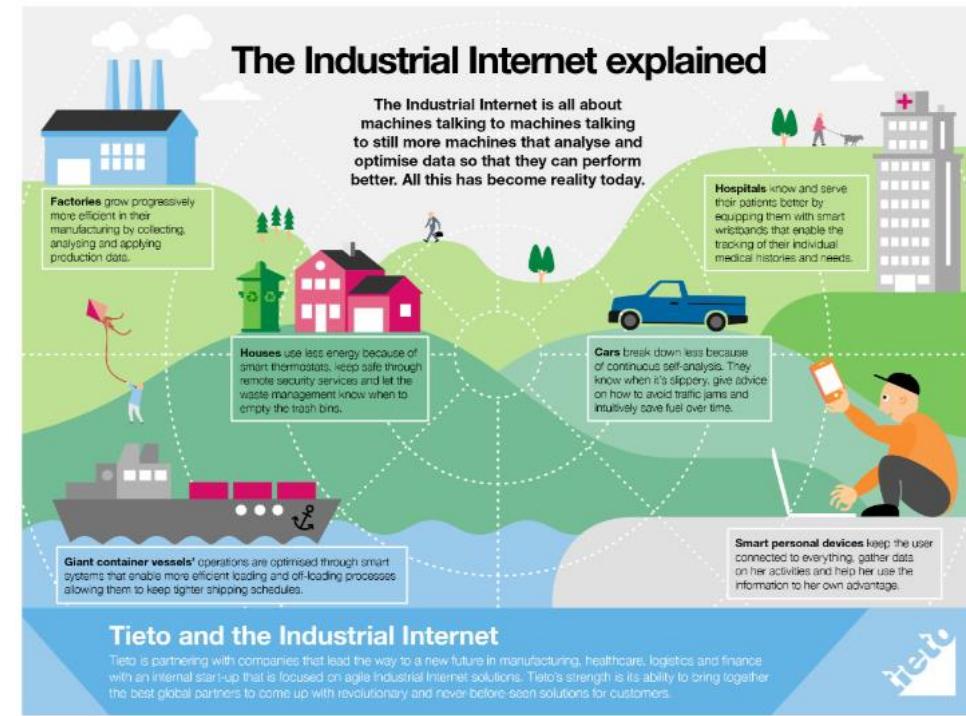


<https://webrtc.org/>



Titan X / Titan V

<https://blogs.nvidia.com/blog/2016/07/21/titan-x-deep-learning/>

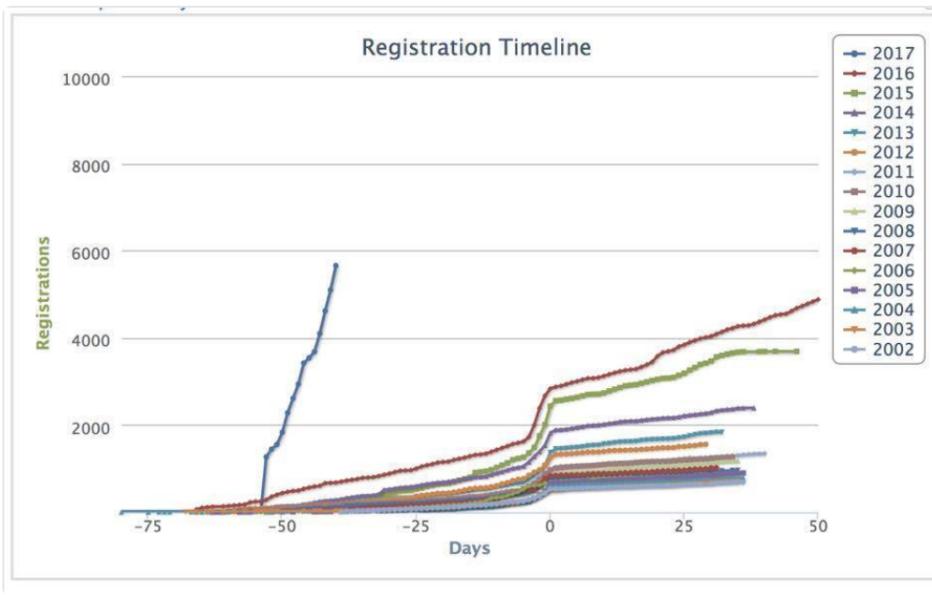


Industrial Internet of Things technology infrastructure will enable many new innovation

<http://www.iiconsortium.org/>

# Titan – GPU Deep Learning computer

Deep learning hype in one picture  
(NIPS conference registrations, 2002 through 2017) #nips2017



NVidia stock price



- Academic, industry, and public interest in Artificial Intelligence (A.I.) is taking off. <https://twitter.com/lxbrun/status/908712249379966977>

# What's the UoS about?

Understanding

IT

Innovations

# **Disciplines that the course draws on**

Economics

Sociology and  
Psychology

Technology  
management

Information  
Technology

Business  
studies

Entrepreneurship

## **Some questions the course will answer**

What is technological innovation?

What different types of innovation are there?

**Why do companies care about innovation?**

**Why do countries care about innovation?**

How does innovation happen?

**How do innovations spread?**

How should established companies organise themselves to create innovations?

What makes some innovations successful and others not?

How should my company know which innovations to adopt?

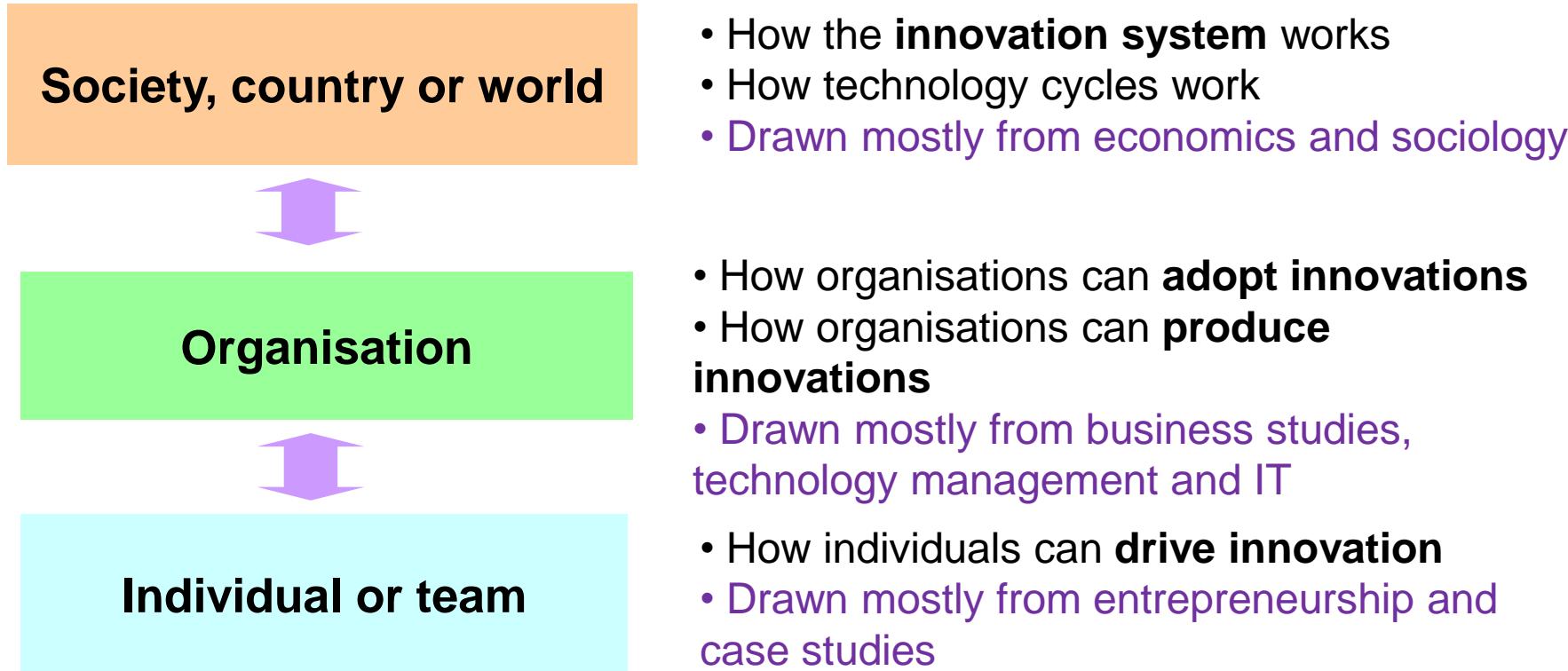
What jobs will still exist in the future?

**How do I get a new idea for a startup company?**

How do I get funding for my startup company?

**And lots more!**

# Levels of Involvement



# Relevance to IT careers

## A. Enterprise IT

Understand IT innovations so you can analyse likely impact from new technologies and plan for their adoption

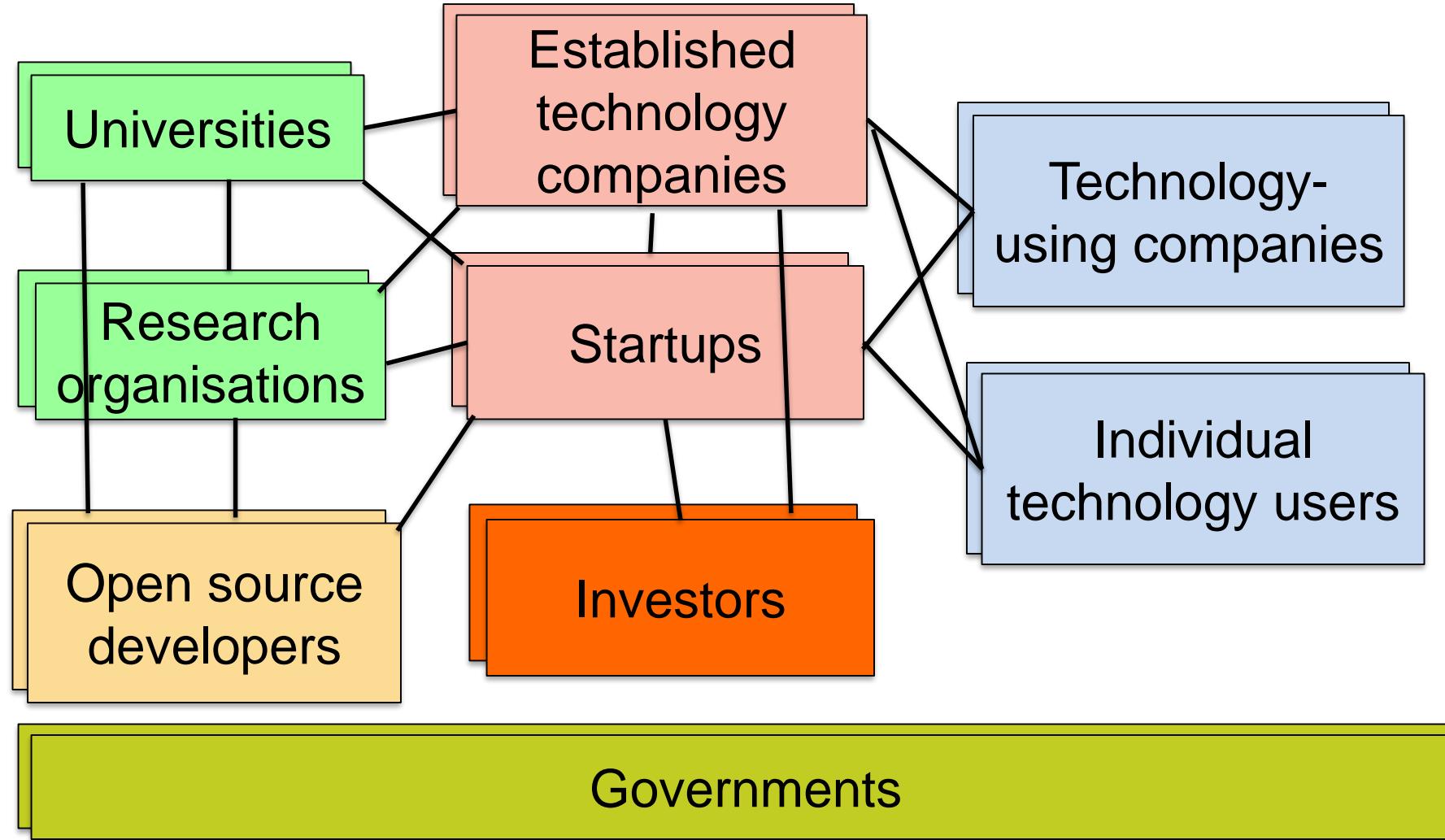
## B. R&D of IT technologies

Understand IT innovations so you can lead the development of new technologies within an established organisation

## C. IT start-up

Understand IT innovation so that you can create a software start-up company

# IT Innovation Ecosystem



# **Definition of Innovation**

# Innovation vs Invention



Joseph  
Schumpeter,  
Economist and  
political scientist  
(1883 – 1950)

- ***Innovation involves (1) a new idea that is (2) applied commercially***  
– Schumpeter (1930s).
- ***“Invention is the first occurrence of an idea for a new product or process, while innovation is the first attempt to carry it out into practice.”***
- ***Jan Fagerberg, Oxford Handbook of Innovation, 2004***

# Definition of innovation

“Innovation is not simply invention; it is invention put to use. Invention without innovation is a pastime.”

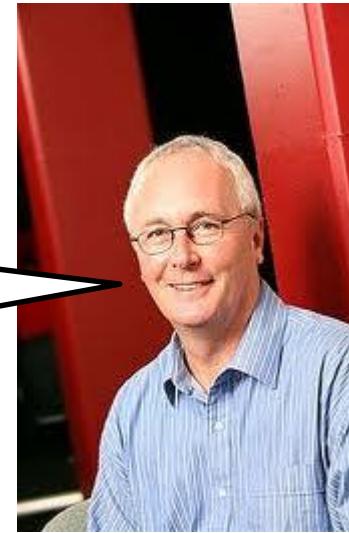


(Photo by Liam Doherty)

Sir Harold Evans, journalist and writer on the history of innovation

# Definition of innovation

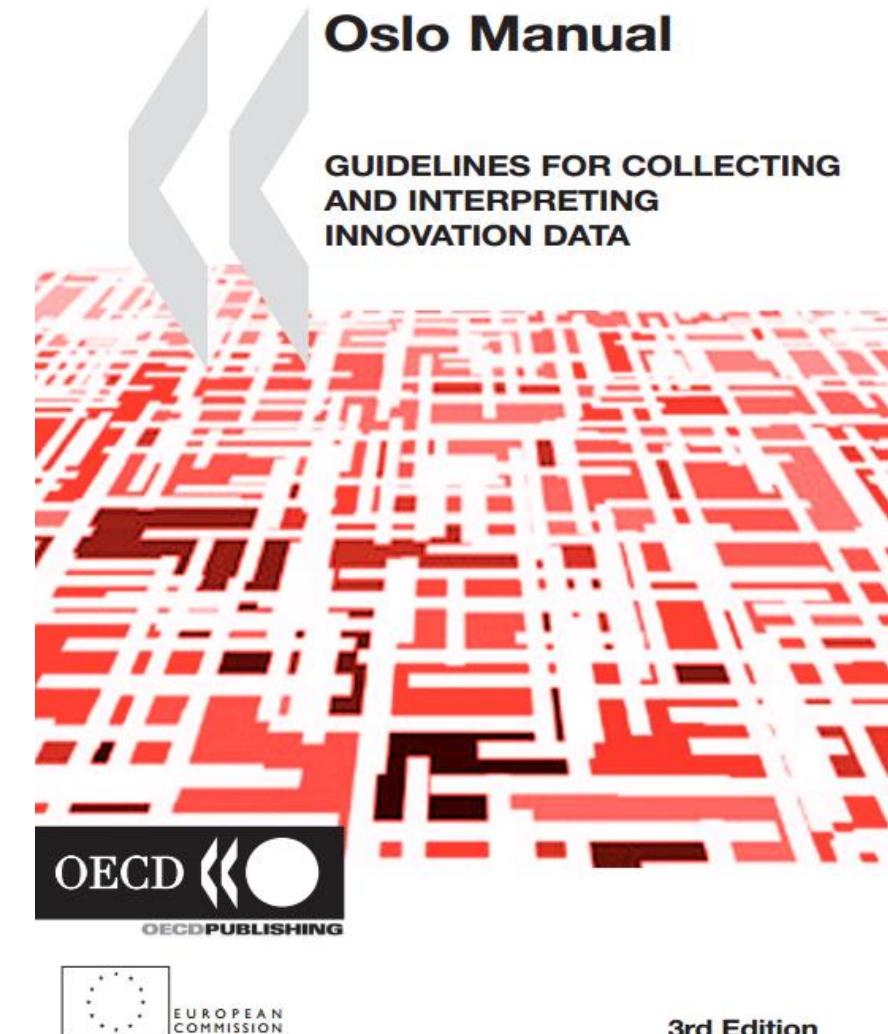
“Ideas successfully applied.”



Mark Dodgson, academic/author on innovation, Uni of QLD

# Definition of innovation

- *Innovation is the **implementation** of a new or significantly improved product (good or service), process, new marketing method or a new organisational method in business practices, workplace organisation or external relations.*
- OECD (2005) *Oslo Manual: Guidelines for collecting and interpreting innovation data*, 3rd edition, OECD and European Commission



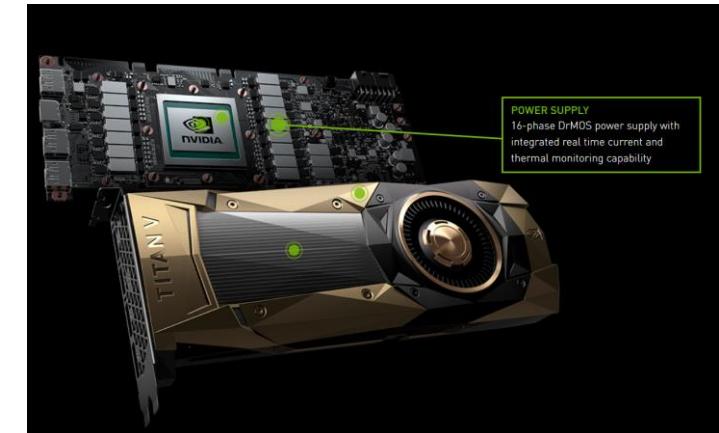
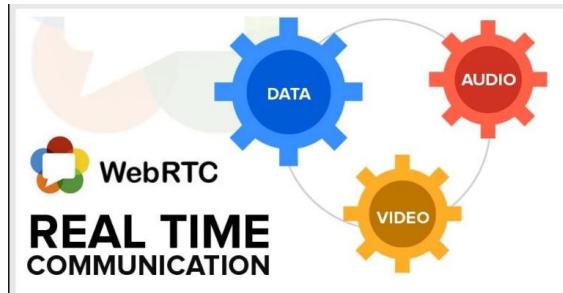
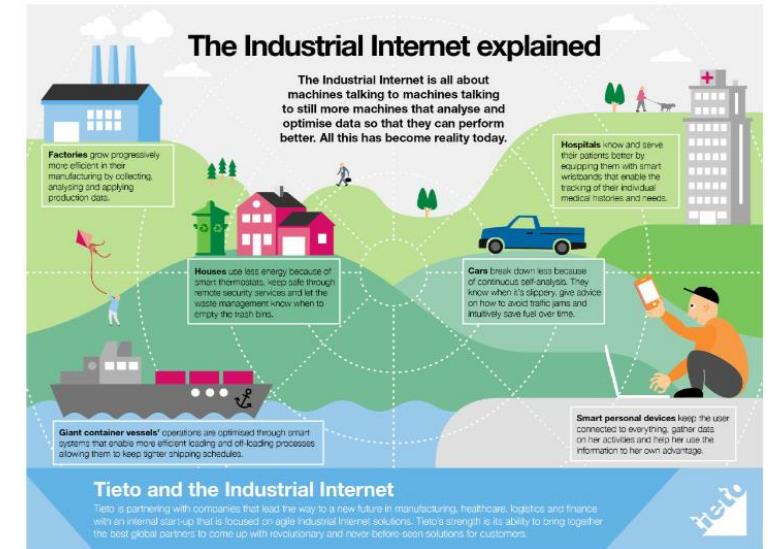
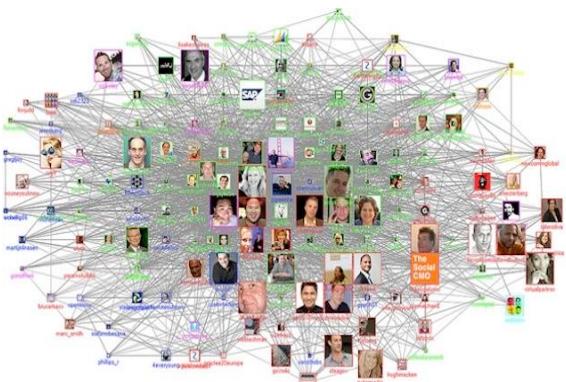
# Organisation for Economic Co-operation and Development (OECD) Innovation

- The mission of the Organisation for Economic Co-operation and Development (OECD) is to promote policies that will improve the economic and social well-being of people around the world.
- The OECD has developed the Observatory of Public Sector Innovation (OPSI) to collect and analyse examples and shared experiences of public sector innovation to provide practical advice to countries on how to make innovations work

## Definition of innovation

- So...
- Innovation is more than the generation of creative ideas
- It is implementation of those ideas into a new business/  
device/process/product
- **Innovation requires combining a creative idea with resources and expertise that make it possible to embody the creative idea in a useful form**

# What is invention and what is innovation?

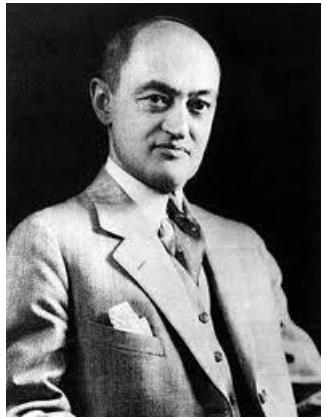


# The importance of innovation

## Innovation as “Creative Destruction”

- Economy is in state of constant change
- Innovation propels the economy
- Entrepreneurs within new firms drive innovation:
  - All companies react adaptively to change
  - Creative responses to change come **via innovative acts by entrepreneurs**
- Different forms of innovations:
  - New products; New organisations (e.g. mergers); New markets
  - Innovating firms emerge after **technological breakthrough**

## Innovation as “Creative Destruction”



Schumpeter

- “the opening up of new markets... and the organizational development ... illustrate the same process of industrial mutation, that incessantly [constantly] revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one”.
- Schumpeter called this process “creative destruction”.
- Creative destruction — waves that restructure entire industries and markets in favors of those who grasp and adapt to technological **changes** faster!

## IT as an enabling technology (More in week 2)

- IT is a “General Purpose Technology” (GPT)
- Like electricity – it enables other technologies
- GPTs differ from other technologies and:
  - Are pervasive – spreading to most sectors
  - Continually improve in usefulness and lower in cost
  - Spawn innovation in other areas – making it easier to invent and produce new products or processes

Source: ITU, *Measuring ICT for Social and Economic Development*, 2006.  
(based on Bresnahan and Trajtenberg, “General purpose technologies”, 1995)

# Case Study

## The Australian Innovation System Report



# The Australian Innovation System Report

Australian Innovation  
System Report

- The annual Australian Innovation System Report explores the impact of innovation and related activities on business, industry and national performance. The report also outlines challenges and future opportunities for Australian innovation.
- The innovation system plays a crucial role in the long-term economic growth of a country.

<http://www.industry.gov.au/Office-of-the-Chief-Economist/Pages/National-Innovation-Map.html>

<http://www.innovation.gov.au/Innovation/Policy/AustralianInnovationSystemReport/>

# Importance of Technological innovation

Australian Innovation  
System Report 2015

- Technological innovation:
  - Is often the most important competitive driver in many industries
  - Leads to improvements in productivity
  - Is strongly linked with improvements in Gross Domestic Product (GDP)
  - Is linked to improvements in standard of living including:
    - Job creation
    - Improved enjoyment of life
    - Health improvements
    - Education improvements
    - Addressing national or global issues including by:
      - Decreasing pollution
      - Improving disaster response

# Importance of innovation to a Country

Australian Innovation  
System Report 2015

- According to the Australian Government report...
- “The qualitative and quantitative data in the Australian Innovation System Reports produced since 2010, in conjunction with the available academic literature, demonstrate a **causal** link between innovation and performance measures like productivity.
- The OECD estimates that as much as 50 per cent of economic growth in its member countries can be accounted for by innovation activity.”

## Importance of innovation to a Country

- “At the aggregate level, innovation leads to a more productive allocation of resources throughout the economy.
- Based on the concept of ‘creative destruction’ developed by Schumpeter, innovative cutting-edge firms (and their business models) enter markets and disrupt them forcing less productive models out.”

# Importance of innovation to Companies

Australian Innovation  
System Report 2015

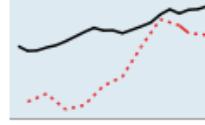
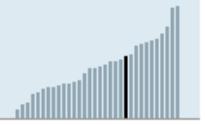
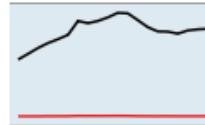
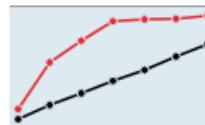
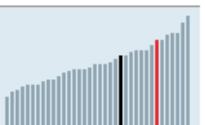
- “Compared to Australian businesses that don’t innovate, innovative Australian businesses are also:
  - 42% more likely to report increased profitability;
  - Three times more likely to export and eighteen times more likely to increase the number of export markets targeted;
  - Four times more likely to increase the range of goods or services offered;
  - More than twice as likely to increase employment;
  - More than three times more likely to increase training for employees; and
  - More than three times more likely to increase social contributions such as community enhancement projects”

# Innovation System

Australian Innovation  
System Report 2016

- We define an innovation system in this way:
- “*An innovation system is an open network of organisations that interact with each other and operate within framework conditions that regulate their activities and interactions.*
- *The three components of the innovation system —*
  - *networks,*
  - *innovation activities and*
  - *framework conditions*
- *collectively function to produce and diffuse innovations that have, in aggregate, economic, social and/or environmental value.”*

# OECD Innovation and Technology Index for Australia

Innovation and Technology	Latest	Trend	Ranking
❖ Gross domestic spending on R&D <small>INDICATOR</small>	<b>2.1</b> % of GDP	 	
❖ ICT value added <small>INDICATOR</small>			
❖ Internet access <small>INDICATOR</small>	<b>83.0</b> % of all households	 	
❖ Triadic patent families <small>INDICATOR</small>	<b>316.4</b> Number	 	
❖ Wireless mobile broadband subscriptions <small>INDICATOR</small>	<b>116.4</b> Per 100 inhabitants	 	

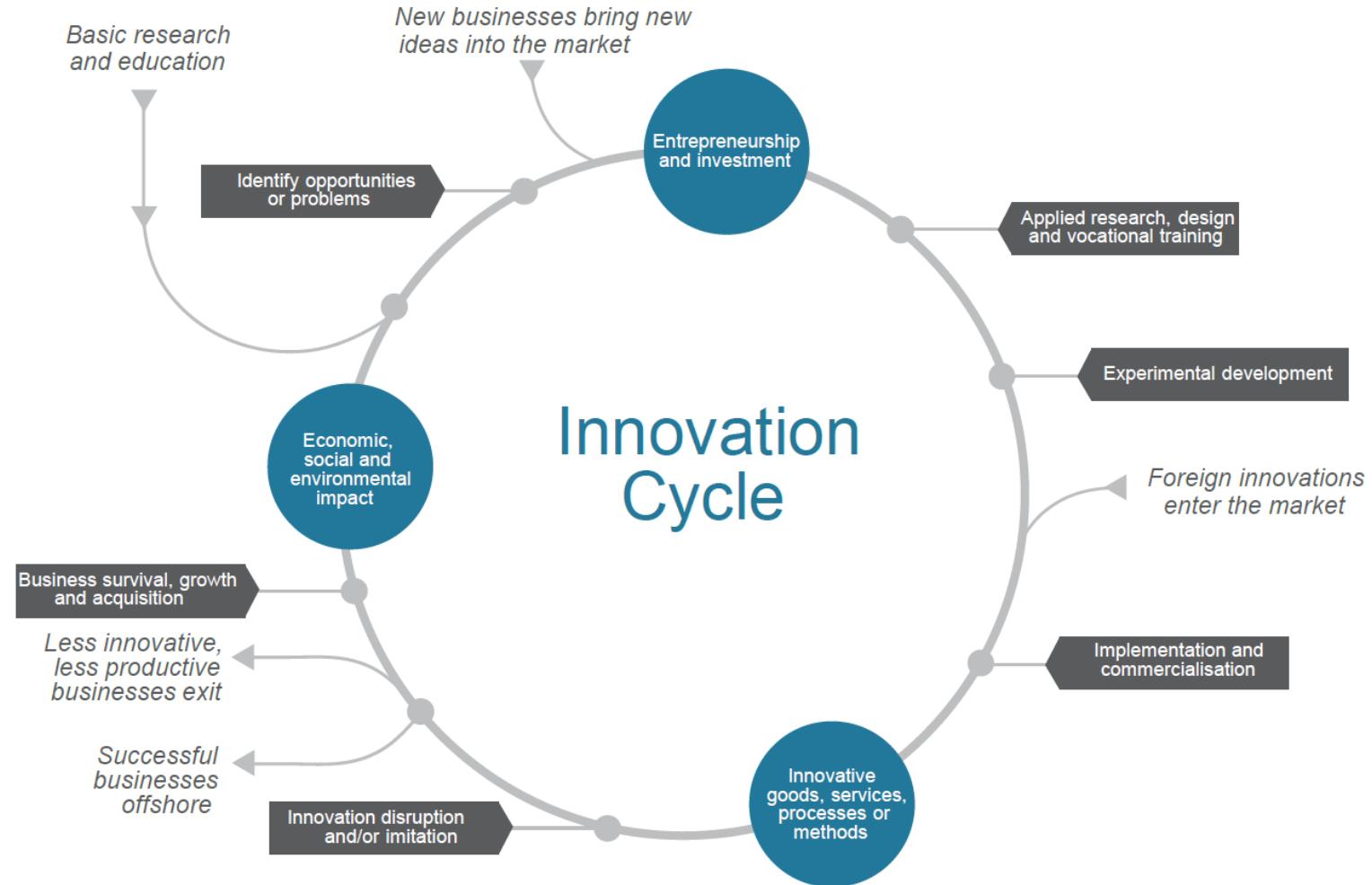
› Find all indicators on Innovation and Technology

<http://www.oecd.org/gov/innovative-government/>

<https://data.oecd.org/australia.htm#profile-innovationandtechnology>

<https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>

# Innovation Cycle

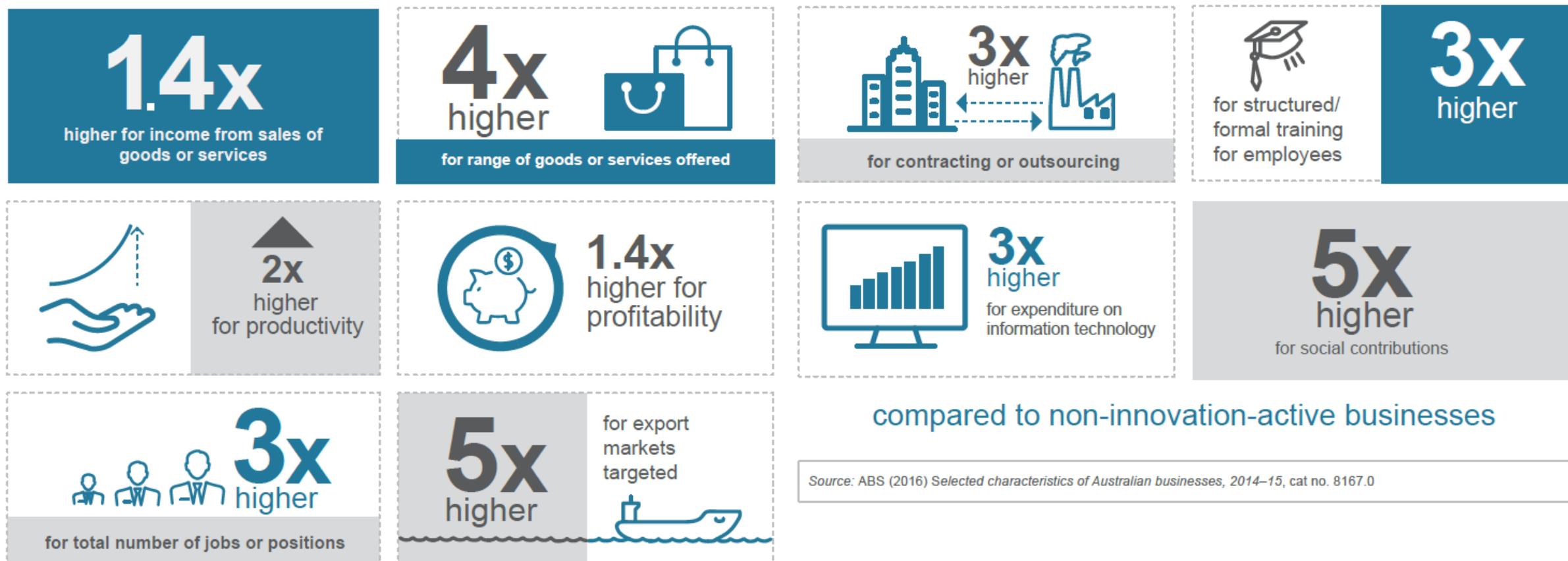


Source: Department of Industry, Innovation and Science (2016)

- **innovating businesses** (includes businesses that introduced at least one type of innovation during the reference period)
- **innovation-active businesses** (includes businesses that undertook any innovative activity irrespective of whether the innovation was introduced, still in development or abandoned during the reference period).
- Innovation activity – Are the discrete activities that lead to discoveries that have commercial potential, such as R&D, entrepreneurial activity, innovation funding (e.g. venture capital), or the training of scientists and engineers in tertiary education. Includes any work that was intended to, or did, result in the introduction of an innovation.

## Australian innovation-active businesses

The ratio of innovation-active businesses that reported increases in performance was:



# Australian Innovation System

On average, every \$1 invested in innovation returns \$2 in sales



Innovation activity accounts for:

**50%** of economic growth in the **OECD**

R&D spending (billion)



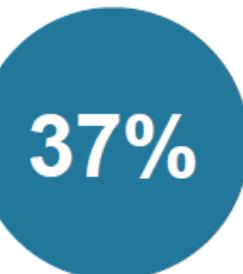
Top barriers to innovation  
(all businesses)

- 1st → 18% Access to additional funds
- 2nd → 16% Lack of skilled persons
- 3rd → 13% Cost of development or introduction/implementation

Average gross operating profit, by innovation status and degree of novelty



Share of innovation-active businesses collaborating with:



Clients, customers or buyers



Competitors and other businesses from the same industry



Government agencies

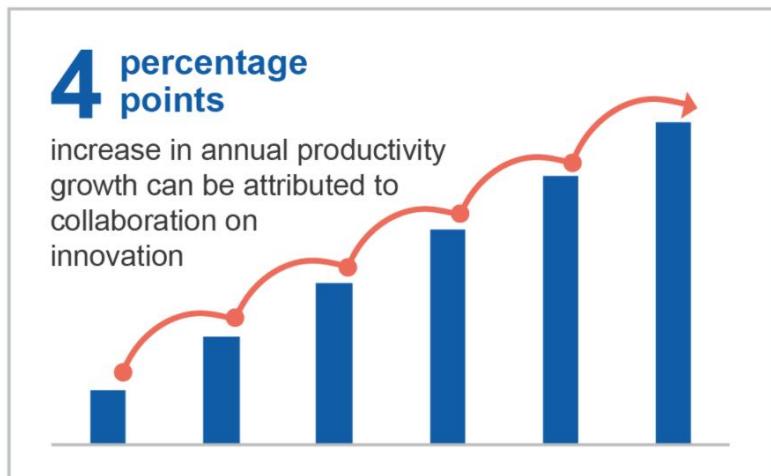
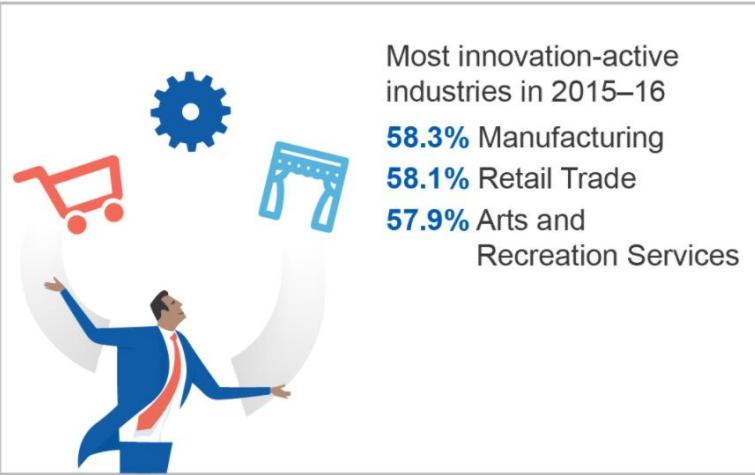
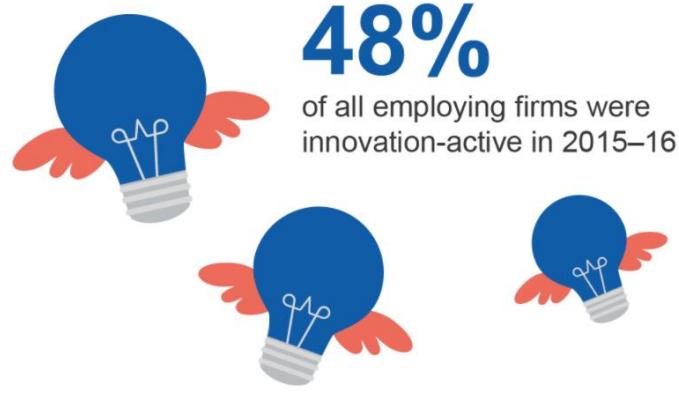


Universities or other higher education institutions

Source: ABS (2016) *Innovation in Australian Business 2014–15*, cat. no. 8158.0; OECD (2015) *The OECD Innovation Strategy 2015*, OECD Publishing; ABS (2016) Customised ABS data commissioned by the Department of Industry, Innovation and Science; ABS (2015) *Research and Experimental Development, Business, 2013–14*, cat no. 8104.0; ABS (2016) *Government and Private Non-Profit Organisations, 2014–15*; ABS (2016) *Higher Education Organisations, 2014*, cat no. 8111.0

# Australia's innovation system

Australian Innovation System Report 2017



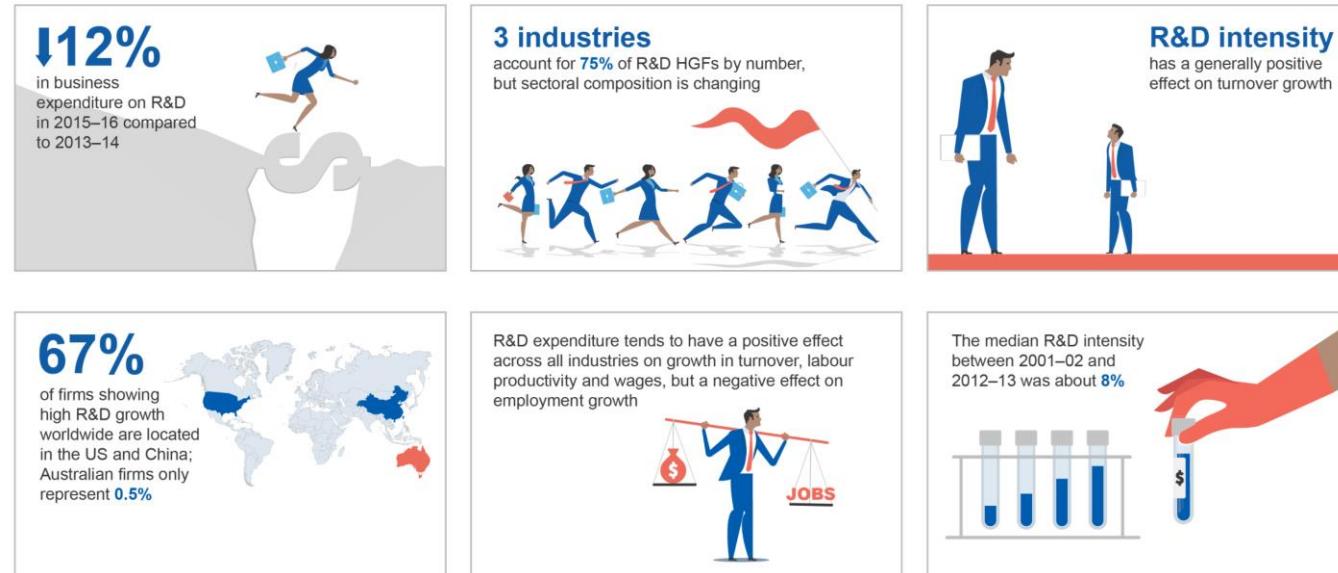
For more information on the report visit [www.industry.gov.au/OCE](http://www.industry.gov.au/OCE)

Sources (left to right): 1) ABS (2017) Summary of IT Use and Innovation in Australian Businesses, cat. no. 8166.0; 2) ABS (2017) Summary of IT Use and Innovation in Australian Businesses, 2015–16 and 2007–08, cat. no. 8166.0; 3) ABS (2016) Data analysis based on the BCS commissioned by Department of Industry Innovation and Science; 4) Palangkaraya A, Spurling T and Webster E (2015) Does innovation make (SME) firms more productive?, Paper presented to Reserve Bank of Australia Annual Conference 2015, Sydney; 5) InCites (2016) Clarivate Analytics database; 6) ABS (2017) Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016, cat. no. 8165.0

# High-growth Firm

- The Australian Innovation System Report 2017 provides updates on Australia's innovation performance, and aims to fill the current information gap on the high-growth firm (HGF) phenomenon in Australia.

## Growth in business R&D activity



For more information on the report visit [www.industry.gov.au/OCE](http://www.industry.gov.au/OCE)

Sources (left to right): 1) ABS (2017) Research and Experimental Development, Businesses, Australia, 2015–16, cat. no. 8104.0; 2) Department of Industry, Innovation and Science (2001–2011) Programme data for the R&D Tax Concession; 3) ABS (2017) Business Longitudinal Analysis Data Environment (BLADE), Analysis by Department of Industry, Innovation and Science; 4) European Commission (2016) The 2016 EU Industrial R&D Investment Scoreboard, <http://iri.jrc.ec.europa.eu/scoreboard16.html>, accessed 22 May 2017; 5–6) ABS (2017) Business Longitudinal Analysis Data Environment (BLADE), Analysis by Department of Industry, Innovation and Science

# **Tutorial #1**

## **Importance of innovation to a Country**

# Tutorial

- Form a group of 5 students
- Discuss the tutorial questions among your group
- As a class, present and discuss your findings

## Discuss the following Questions

- Read Section 5.8 of the 2016 report [1], pages 82 – 85. It is important to note the roles of the Government in a Country’s innovation cycle. Study the cycle and look at the different roles of the Government. What are some of the ways that the Government can support innovation?
- ‘Historically, publicly-funded research has been essential to a range of significant innovations that turned out to have large economic returns. Notable examples include aviation, nuclear energy, the internet, pharmaceuticals, GPS navigation, biotechnology, artificial intelligence and robotics’ [1]. It is important to note that many of the given examples are technology (IT) innovations, e.g., Internet, GPS, AI and Robotics, and likely the others are enabled by these IT innovations. Why do you think these examples were publicly funded and not privately funded?
- [Optional / Homework] Read the ‘Feature Article’ of the 2017 report [2], pages 59-62. It presents findings on the “new tech means greater returns”. What is the outcome of this study and what does it say about the use of technologies as in ‘digital footprints’ and its impact on employment growths?

# Closing



[Home](#) / [Study](#) / [Student entrepreneurship](#)

← Home

← Study

Find a course

Courses\_

## Student entrepreneurship and innovation

Share



Become an entrepreneur and shape the future

<https://sydney.edu.au/study/student-entrepreneurship-and-innovation.html>

# UoS Adminstrivia

# **Academic dishonesty and plagiarism**

School of Information Technologies

## Special Consideration (University policy)

- If your performance on assessments is affected by illness or misadventure
- Follow proper bureaucratic procedures
  - Have professional practitioner sign special USyd form
  - Submit application for special consideration online, upload scans
  - Note you have only a quite short deadline for applying
  - [http://sydney.edu.au/current\\_students/special\\_consideration/](http://sydney.edu.au/current_students/special_consideration/)
- Also, notify coordinator by email as soon as anything begins to go wrong
- There is a similar process if you need special arrangements eg for religious observance, military service, representative sports

# Academic Integrity (University policy)

- “The University of Sydney is unequivocally opposed to, and intolerant of, plagiarism and academic dishonesty.
  - Academic dishonesty means seeking to obtain or obtaining academic advantage for oneself or for others (including in the assessment or publication of work) by dishonest or unfair means.
  - Plagiarism means presenting another person’s work as one’s own work by presenting, copying or reproducing it without appropriate acknowledgement of the source.” [from site below]
    - <http://sydney.edu.au/elearning/student/EI/index.shtml>
- Submitted work is compared against other work (from students, the internet etc)
  - Turnitin for textual tasks (through eLearning), other systems for code
- Penalties for academic dishonesty or plagiarism can be severe

# Academic dishonesty and plagiarism

- Please read the University policy on Academic Honesty carefully:  
[http://sydney.edu.au/elearning/student/EI/academic\\_honesty.shtml](http://sydney.edu.au/elearning/student/EI/academic_honesty.shtml)
- All cases of academic dishonesty and plagiarism will be investigated
- There is a new process and a centralized University system and database
- Three types of offenses:
  - **Plagiarism** – when you copy from another student, website or other source. This includes copying the whole assignment or only a part of it.
  - **Academic dishonesty** – when you make your work available to another student to copy (the whole assignment or a part of it). There are other examples of academic dishonesty.
  - **Misconduct** - when you engage another person to complete your assignment (or a part of it), for payment or not. This is a **very serious** matter and the Policy requires that your case is forwarded to the University Registrar for investigation.

# Penalties

- The penalties are **severe** and include:
  - 1) a permanent record of academic dishonesty, plagiarism and misconduct in the University database and on your student file
  - 2) mark deduction, ranging from 0 for the assignment to Fail for the course
  - 3) expulsion from the University and cancelling of your student visa
- **Do not confuse legitimate co-operation and cheating!** You can discuss the assignment with another student, this is a legitimate collaboration, but you cannot complete the assignment together – everyone must write their own code or report, unless the assignment is group work.
- When there is copying between students, note that **both students are penalised** – the student who copies and the student who makes his/her work available for copying

# Detection

- We will use the similarity detection software TurnItIn and MOSS to compare your assignments with these of other students (current and previous) and the Internet
  - Turnitin is for text documents: [http://www.turnitin.com/en\\_us/higher-education](http://www.turnitin.com/en_us/higher-education)
  - MOSS is for programming code: <https://theory.stanford.edu/~aiken/moss/>
- These tools are **extremely good!**
  - e.g. MOSS cannot be fooled by changing the names of the variables or changing the order of the conditions in if-else statements
- Examples of plagiarism in programming code:
  - [http://www.upenn.edu/academicintegrity/ai\\_computercode.html](http://www.upenn.edu/academicintegrity/ai_computercode.html)

# Student excuses

- All these are cases of plagiarism and academic dishonesty we have seen in our school and the student excuses are not acceptable:
  - *I sat the test and then posted the questions and solutions to my friends whose test was later in the week. I only wanted to help them understand the concepts that are examinable.*
  - *I posted parts of my code on my web page (group discussion forum) because my solution was cool (or I wanted to help them). I didn't expect them to copy it.*
  - *I tried to do the assignment on my own but I had problems with the extension part that I couldn't fix, so I submitted my core part and his extension part. I didn't cheat.*
  - *I finished my assignment but my friend had family problems. I felt sorry for her, so I gave her my assignment as an example. She said she only wanted to have a look and promised not to copy it.*
  - *The test has finished but the tutor hasn't collected the papers yet. I showed my answer to my friend. I didn't expect him to copy it.*
  - *He is my best friend. I had no choice but to let him copy my assignment.*

## Key message

- Plagiarism and any form of academic dishonesty will be dealt with, and the penalties are severe
- We use plagiarism detection systems such as MOSS and TurnItIn that are extremely good. If you cheat, the chances you will be caught are very high.
- If someone asks you to see or copy your assignment, or to complete the assignment instead of them, just say: *I can't do this. This is against the University policy. I will not risk my future by doing this.*

**Be smart and don't risk your future by engaging in plagiarism and academic dishonesty!**

# **WHS INDUCTION**

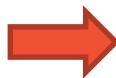
School of Information Technologies

# General Housekeeping – Use of Labs

- Keep work area clean and orderly
- Remove trip hazards around desk area
- No food and drink near machines
- No smoking permitted within University buildings
- Do not unplug or move equipment without permission



# EMERGENCIES – Be prepared



[www.sydney.edu.au/whs/emergency](http://www.sydney.edu.au/whs/emergency)

The screenshot shows the University of Sydney's Safety Health & Wellbeing website. At the top, there is a red header bar with the university's crest and the text 'THE UNIVERSITY OF SYDNEY'. Below this is a blue header bar with the text 'SAFETY HEALTH & WELLBEING' and a search bar. The main content area has a yellow navigation bar at the top with links like 'Policy & strategy', 'Responsibilities', 'Managing WHS', etc., and an 'Emergency' link which is highlighted in red. On the left, there is a sidebar titled 'EMERGENCY' with a list of links: 'What to do in an emergency', 'First aid', 'Incident & accident reporting', 'Chief building wardens', 'Emergency management', 'Building emergency procedures', 'Handling of suspicious packages', 'Chem Alert (MSDS)', and 'Mercury spills'. The main content area has a title 'WHAT TO DO IN AN EMERGENCY' and a list of emergency situations with bullet points. To the right, there is a sidebar titled 'EMERGENCY CONTACT NUMBERS' with sections for 'POLICE, FIRE, AMBULANCE' and 'OTHER USEFUL NUMBERS', each containing a list of contact details.

SAFETY HEALTH & WELLBEING

University of Sydney

SAFETY HEALTH & WELLBEING

University Home Staff Intranet Contacts

Q University of Sydney GO

You are here: Home / WHS / Emergency

**EMERGENCY**

- What to do in an emergency
- First aid
- Incident & accident reporting
- Chief building wardens
- Emergency management
- Building emergency procedures
- Handling of suspicious packages
- Chem Alert (MSDS)
- Mercury spills

**WHAT TO DO IN AN EMERGENCY**

Emergencies can occur at any time, and can arise from a number of causes including fire, medical emergencies, chemical spills, gas leaks, bomb threats and physical threats. The first priority in any emergency situation is the safety of all people who may be in danger.

- Be prepared
- Fire alarms
- Emergency response
- Medical emergencies
- People with disabilities
- Hazardous material incidents
- Gas leaks
- Phone threats
- Unattended bags or other suspicious items
- Emergency lockdown
- Personal safety on campus
- Personal threats
- Suspicious behaviour

**Be prepared**

**EMERGENCY CONTACT NUMBERS**

**POLICE, FIRE, AMBULANCE:**

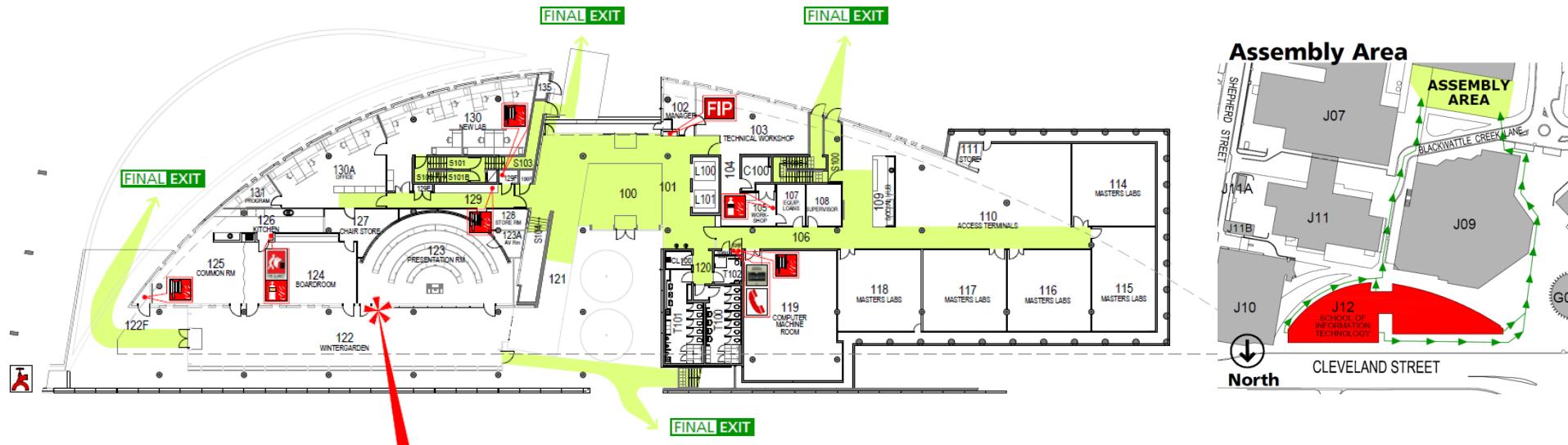
- | Dial **0-000** from a University phone; if you are calling from an external line or mobile phone, dial **000**. Be prepared to give your name and location, and details of the emergency.

**OTHER USEFUL NUMBERS**

- | **University Security Service:** 9351-3333  
This is an emergency number only.
- | **Chief fire wardens**
- | **Nominated first aid officers**

# EMERGENCIES

# WHERE IS YOUR CLOSEST SAFE EXIT ?



# EMERGENCIES

## Evacuation Procedures

### ALARMS

- )) BEEP... BEEP... Prepare to evacuate
1. Check for any signs of immediate danger.
  2. Shut Down equipment / processes.
  3. Collect any nearby personal items.

- )) WHOOP... WHOOP... Evacuate the building
1. Follow the **EXIT** exit signs.
  2. Escort visitors & those who require assistance.
  3. DO NOT use lifts.
  4. Proceed to the assembly area.

### EMERGENCY RESPONSE

1. Warn anyone in immediate danger.
2. Fight the fire or contain the emergency, if safe & trained to do so.  
If necessary...
3. Close the door, if safe to do so.
4. Activate the "Break Glass" Alarm  or 
5. Evacuate via your closest safe exit. **EXIT** 
6. Report the emergency to 0-000 & 9351-3333

# MEDICAL EMERGENCY

- › If a person is seriously ill/injured:

1. call an ambulance 0-000
2. notify the closest Nominated First Aid Officer

If unconscious— send for Automated External Defibrillator (AED)    AED locations.

- NEAREST to SIT Building (J12)
  - Electrical Engineering Building, L2 (ground) near lifts
  - Seymour Centre, left of box office
    - Carried by all Security Patrol vehicles

3. call Security - 9351-3333
4. Facilitate the arrival of Ambulance Staff (via Security)



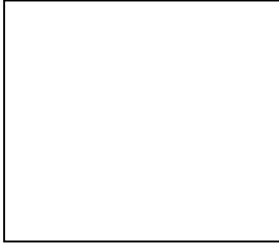
## Nearest Medical Facility

University Health Service in Level 3, Wentworth Building

## First Aid kit – SIT Building (J12)

kitchen area adjacent to Lab 110

# School of IT Safety Contacts



## CHIEF WARDEN

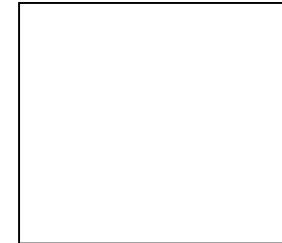
Name: To be advised  
Mobile:



## FIRST AID OFFICERS



Name: Will Calleja  
Location: 1 West  
Phone: 9036 9706



Name: Katie Yang  
Location: 2E-227  
Phone: 9351 4918

**Orally REPORT all  
INCIDENTS  
& HAZARDS  
to your SUPERVISOR**

OR

Undergraduates: to Katie Yang  
9351 4918

Coursework

Postgraduates: to Cecille Faraizi  
9351 6060

SIT School Manager: Shari Lee  
9351 4158

# Assistance

- There are a wide range of support services available for students
- Please make contact, and get help
- You are not required to tell anyone else about this
- If you are willing to inform the unit coordinator, they may be able to work with other support to reduce the impact on this unit
  - eg provide advice on which tasks are most significant

# DISABILITY SERVICES

## Do you have a disability?

- You may not think of yourself as having a ‘disability’ but the definition under the **Disability Discrimination Act** is broad and includes temporary or chronic medical conditions, physical or sensory disabilities, psychological conditions and learning disabilities.
- The types of disabilities we see include:
  - anxiety, arthritis, asthma, asperger's disorder, ADHD, bipolar disorder, broken bones, cancer, cerebral palsy, chronic fatigue syndrome, crohn's disease, cystic fibrosis, depression, diabetes, dyslexia, epilepsy, hearing impairment, learning disability, mobility impairment, multiple sclerosis, post traumatic stress, schizophrenia , vision impairment, and much more.
- Students needing assistance must register with Disability Services –
  - it is advisable to do this as early as possible.
- <http://sydney.edu.au/study/academic-support/disability-support.html>

# Other support

- Learning support
  - <http://sydney.edu.au/study/academic-support/learning-support.html>
- International students
  - <http://sydney.edu.au/study/academic-support/support-for-international-students.html>
- Aboriginal and Torres Strait Islanders
  - <http://sydney.edu.au/study/academic-support/aboriginal-and-torres-strait-islander-support.html>
- Student organization (can represent you in academic appeals etc)
  - <http://srcusyd.net.au/> or <http://www.supra.net.au/>
- Please make contact, and get help
- You are not required to tell anyone else about this
- If you are willing to inform the unit coordinator, they may be able to work with other support to reduce the impact on this unit
  - eg provide advice on which tasks are most significant