

# Digital disruption: The need to build a successful future through information and digital literacy

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THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA

Create change

# AUSTRALIA







# Overview

- What do we mean by ‘digital disruption’?
- What might this mean to the future workforce?
- Where does digital literacy fit in?
  - What do we actually understand as ‘digital literacy’?
- What is happening in UQ Library?
  - UQL Strategic Framework for Information and Digital Literacy
  - Current initiatives to build student success

# So - what are your views?

Do you think 'digital disruption' is:

- Good
- Bad
- Fake news?



Image: <http://vr-rendez-vous.up.seesaa.net>

# What do we actually mean by ‘digital disruption’?



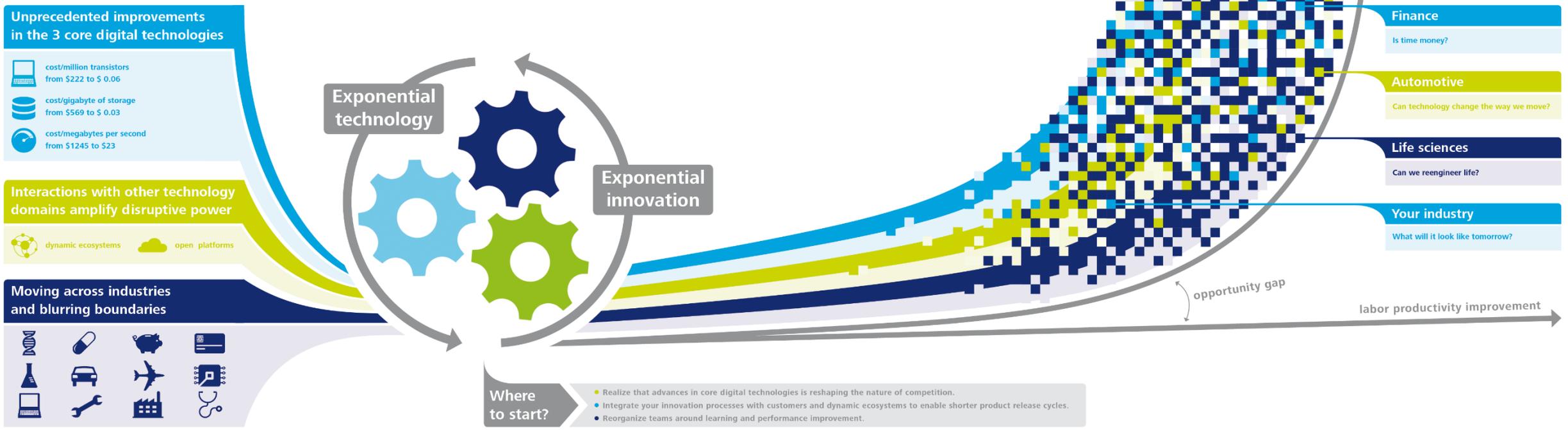
Digital disruption refers to the **rapid, transformational change** made possible by digital technologies and the **impact** they have on existing business practices, challenging and, in some cases threatening, the **established** way of doing business.

(Kelly & Schaufenbuel, 2016, p.4)

Arguably, there is nothing new here – new technologies have always emerged to replace old technologies...

- The printing press, electricity, the horseless carriage, flight...
- However, two significant factors:
  1. The **speed** of change
  2. The **high stakes** involved
- Technological change is **exponential**
- The rate of change is always **accelerating**
- Innovation is happening on multiple fronts **simultaneously**
- Many new digital technologies are **converging**  
**“to enable new and unexpected opportunities”**

Exponential technologies are driving wave after wave of exponential innovation



**Computing power**

cost/million transistors from \$222 to \$ 0.06

**Digital storage**

cost/gigabyte of storage from \$569 to \$ 0.03

**Bandwidth**

cost/megabytes per second from \$1245 to \$23

**dynamic ecosystems**

**open platforms**

# Our common understandings of the impact

- Markets are in flux due to technological advances
- The world is experiencing a continuous evolution as:
  - The marketplace is challenged
  - New segments emerge
  - The competitive landscape is redefined for entire industries
- Technology is transforming everything about:
  - The way businesses are run
  - The way they interact with customers
- This is all supported by social, mobile and cloud technologies
- *On the collective level:* ‘positive’ change for society
- *On the individual level:* often ‘negative’ change...



World's largest taxi company

Owens NO

~~Taxis~~



World's largest Accommodation provider

Owens NO

~~Real estate~~



World's largest Phone companies

Owens NO

~~Telco infra~~



Alibaba Group

World's most Valuable retailer

Owens NO

~~Inventory~~

facebook.

Most popular Media owner

Owens NO

~~Content~~



World's fastest Growing bank

Owens NO

~~Actual money~~

NETFLIX

World's largest movie house

Owens NO

~~Cinemas~~



World's largest Software vendors

Owens NO

~~Apps~~

# How we actually conceptualise 'disruption'

- 'Disruption' implies **problems**
  - Troubles that need to be fixed or solved
  - Need to 'weather the storm'
- 'Disruption' implies that it is a **temporary** state of affairs
  - Things will return to normal
- 'Disruption' implies that it is a **minor** tremor, rather than a major earthquake

# The reality...

## ➤ Is it temporary?

- The world has changed – and will continue to change – fundamentally
- There is no way to go back to the way things used to be
- Old models and methods of doing business have been superseded

## ➤ Is it minor?

- This is a paradigm shift: a whole new way of thinking and understanding
- The game has changed
- The balance of power has moved

~~Digital disruption~~

# 'Digital opportunity'

- This is not **minor** or **temporary**
- But rather than creating **problems**, it is creating exciting **opportunities and solutions** for all industries
- Increasing efficiencies
- Improving access to customers
- Speeding up communication
- Opening up new markets
- Reinvigorating existing markets
- ....

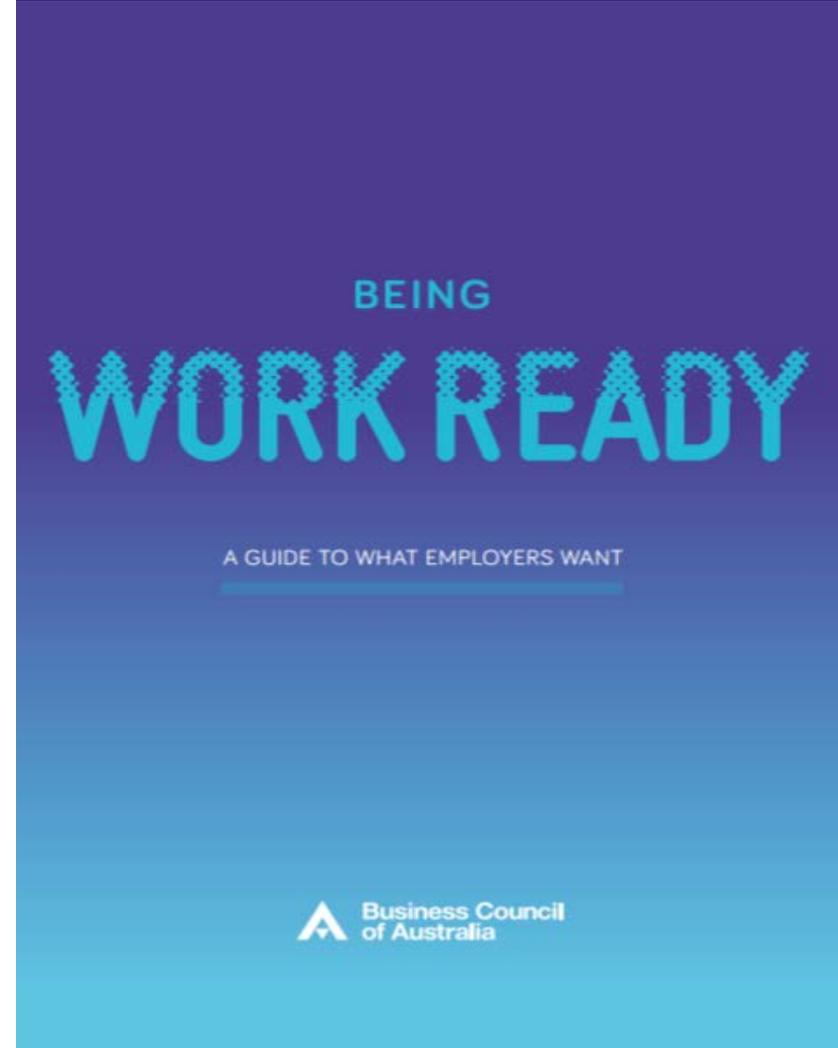
# Opportunity for the workforce of the future\*

- 82% of business leaders expect their organisations to be a digital business within 3 years (Accenture, 2015)
- If they are going to realise the benefits they anticipate from being a digital business, then the readiness of the workforce must be a priority
- Today's employers expect graduates to have well-developed digital capabilities
  - To hit the ground running in a new job
  - To act as change agents within the organisation
- A number of studies examine the impact of rapid technological change and new business models on employment in Australia:
  - Business Council of Australia
  - Australian Council of Learning Academics
  - CSIRO
  - Regional Australia Institute and NBN

\* *And the future starts now...*

# Business Council of Australia

- *Being work ready: A guide to what employers want*
- Technical skills
- Understanding of ICTs
- Data analysis
- Critical analysis
  
- All contextualised for the immediate work roles



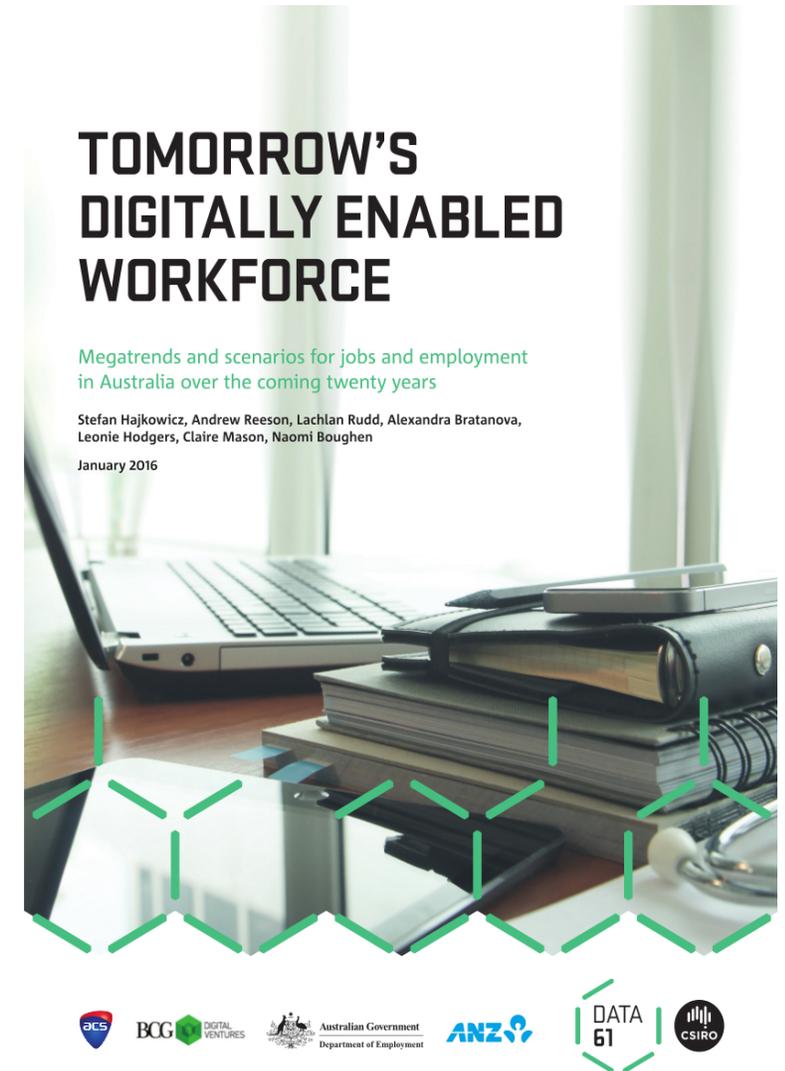
# Australian Council of Learning Academics (ACOLA)

- *Skills and capabilities for Australian enterprise innovation*
- National project to examine the capabilities
  - To foster and support innovation
  - To generate new ideas
- Multidisciplinary: HASS + STEM
- Employees need to be able to “think in technological terms and know what and how solutions can be achieved through the use of technology”
- Digital literacy
- Design thinking
- Collaboration and teamwork
- Problem solving



# CSIRO

- *Tomorrow's digitally enabled workforce: Megatrends and scenarios for jobs and employment in Australia over the coming twenty years*
- The report reviews a number of megatrends
  - Computing speed
  - Data volumes
  - Device connectivity
- How can technology augment the value of human enterprise?
- Disciplinary and professional boundaries blurring
- Potential for new creative work roles



# Regional Australia Institute & NBN

- *The future of work: setting kids up for success*
- Within 2-5 years, 90% of the workforce will require basic digital literacy
- The need to use technology “purposefully and confidently”
- 50% will need higher technology skills
  - Programming
  - Software development
- Information, digital and media fluency will be absolutely critical



## THE FUTURE OF WORK SETTING KIDS UP FOR SUCCESS

November 2016



REGIONAL  
AUSTRALIA  
INSTITUTE



Australia's  
broadband  
network

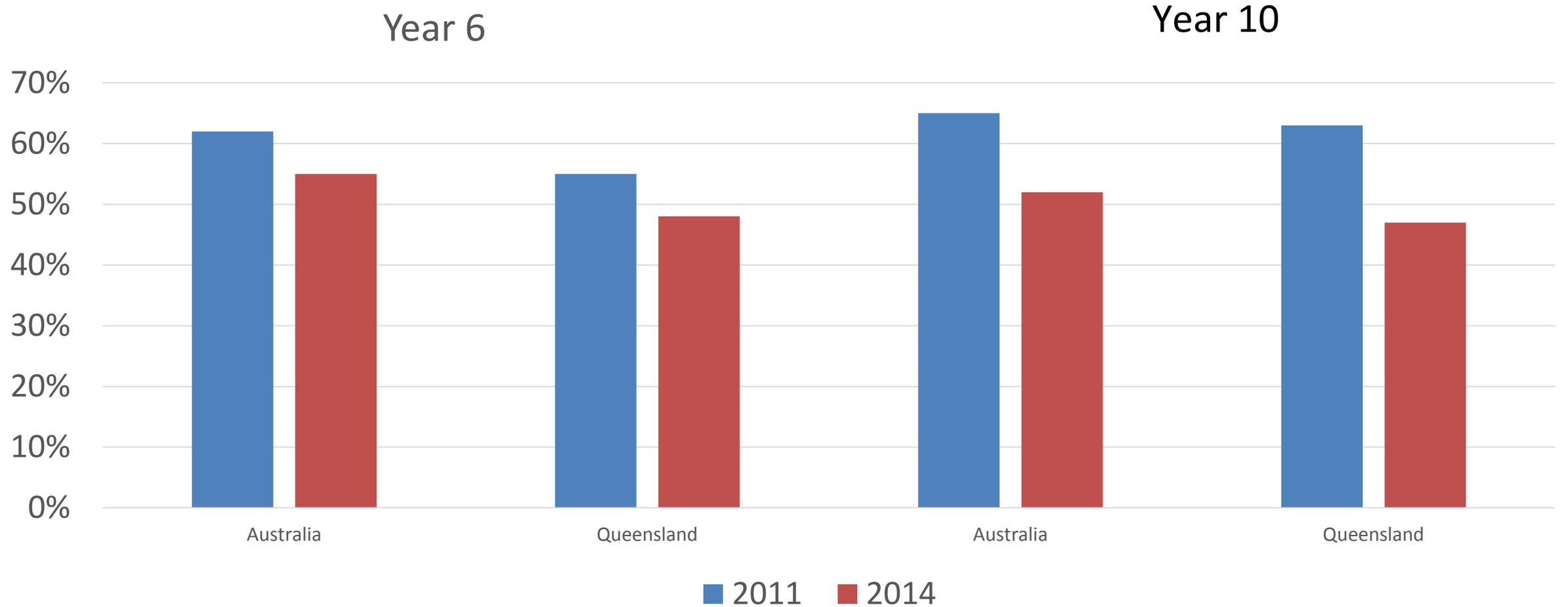
## Exhibit 4: Proportion (%) of students at or above proficient standard in ICT literacy

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
<b>Year 6</b>									
2011	66	64	55	59	62	51	74	42	62
2014	55	64	48	52	59	46	58	43	55
<b>Year 10</b>									
2011	66	68	63	61	63	54	72	48	65
2014	50	55	47	57	57	51	60	43	52

Source: Australian Curriculum Assessment and Reporting Agency, National Assessment Program ICT Literacy Report, 2014.

(NSW Audit Office, 2017)

# Proportion (%) of students at or above proficient standard in ICT literacy



# The main culprit...



Image: <https://solutionsreview.com>

# The strategic value of information & digital literacy

- NMC Horizon Reports
  - Watching brief on digital literacies over the years
  - Tracking the shift from one-way learning activities to collaborative content creation
  - Potential to improve digital literacy viewed as a “solvable challenge” (Adams Becker, 2017a, 2017b)
- Recent research-focused projects relating to digital literacies in the academic world
  - European Union, UNESCO, OECD
  - JISC: a number of funded projects, eg LLiDA (Glasgow), PriDE (Bath), The Digital Department (UCL)
  - Leeds Metropolitan University, London School of Economics, the Open University
- Practical activities
  - Deakin University, La Trobe University, University of Adelaide
- Research activities
  - Jo Coldwell-Neilson, Fellow, (Australian) Office of Learning and Teaching
  - “Fellowship will build a shared understanding of digital literacy. It will develop a digital literacy benchmark for students entering and graduating from Australian higher education (HE) institutions, bridging the gap between school skills (as defined by the Australian National Curriculum) and workplace skills (as demanded by employers)”

# Opportunities to build digital capabilities

- Digital technologies create new opportunities for the collaborative co-construction of knowledge
- The active processes of managing, synthesising and re-purposing data and information are highly valued
- We need a clear understanding of how the ways that students and researchers **think, interpret and communicate ideas** are influenced by their interactions with **digital information resources**
- However – real concerns about a **patchwork pattern of information and digital literacy skills**
- “A **university-wide approach**... which attempts to involve all faculty and students” is recommended

(Alexander et al, 2016, p.11)

# Information and digital literacy (IDL) at UQ

## The vision:

All members of the UQ community will develop the information and digital literacy skills they need to thrive and lead throughout their personal, academic, professional and civic lives.

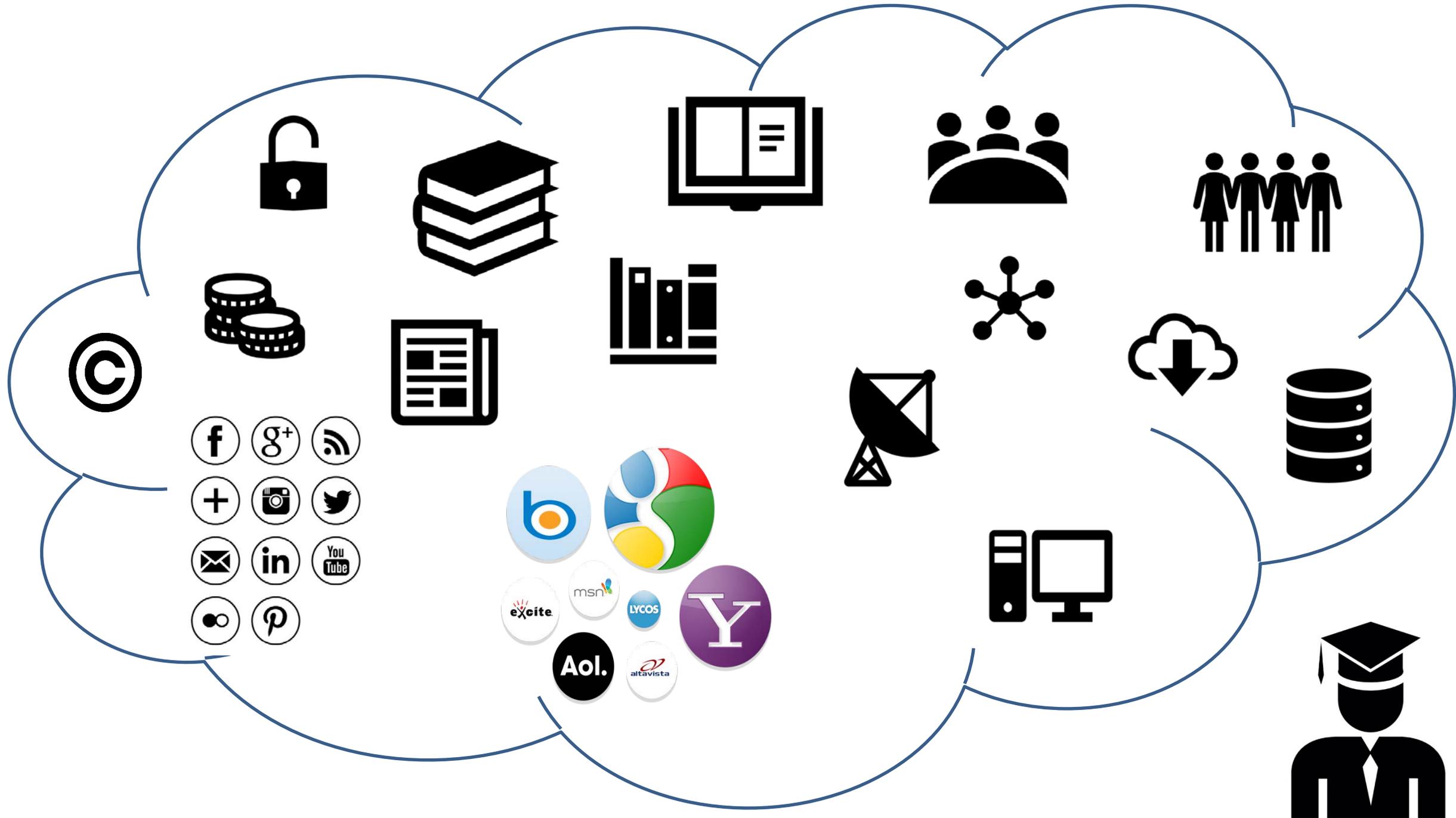
# Our changing understanding of 'information literacy'

- 2000 Association of College and Research Libraries (ACRL): Information Literacy Standards
- 2004 Australian and New Zealand Information Literacy Framework

The information literate person can:



# Information



# Learning environment

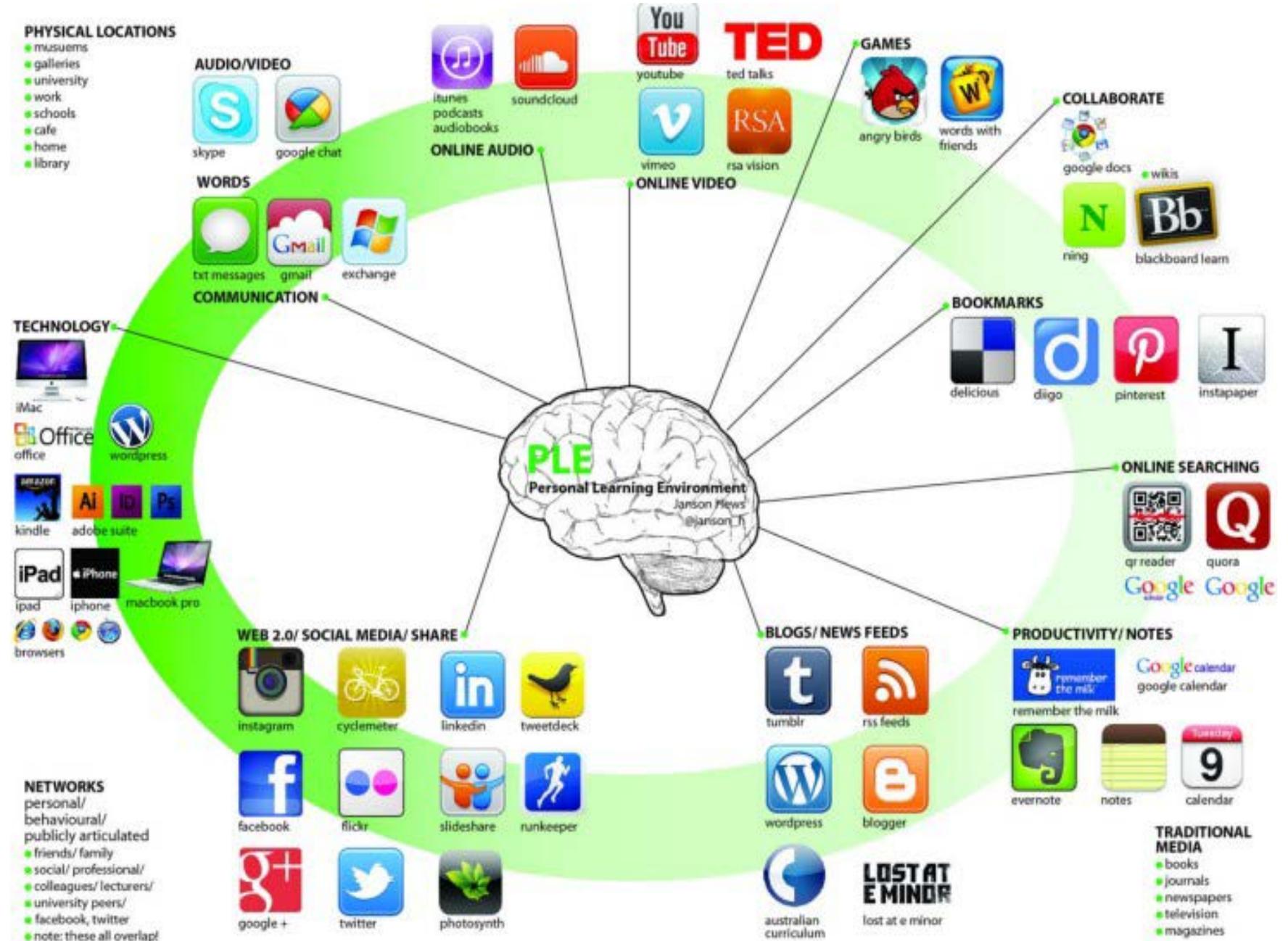


Image: [Janson Hews](#)

# The central issues

- Digital literacies represent the capabilities which fit a person for living, learning and working in a digital society (JISC, 2015)
- The UQ Student Strategy emphasises the impact of digital technologies on life
- Employers expect graduates to have well-developed digital capabilities to hit the ground running, and to act as change agents
- Universities have the responsibility to develop students who can thrive in the digital world

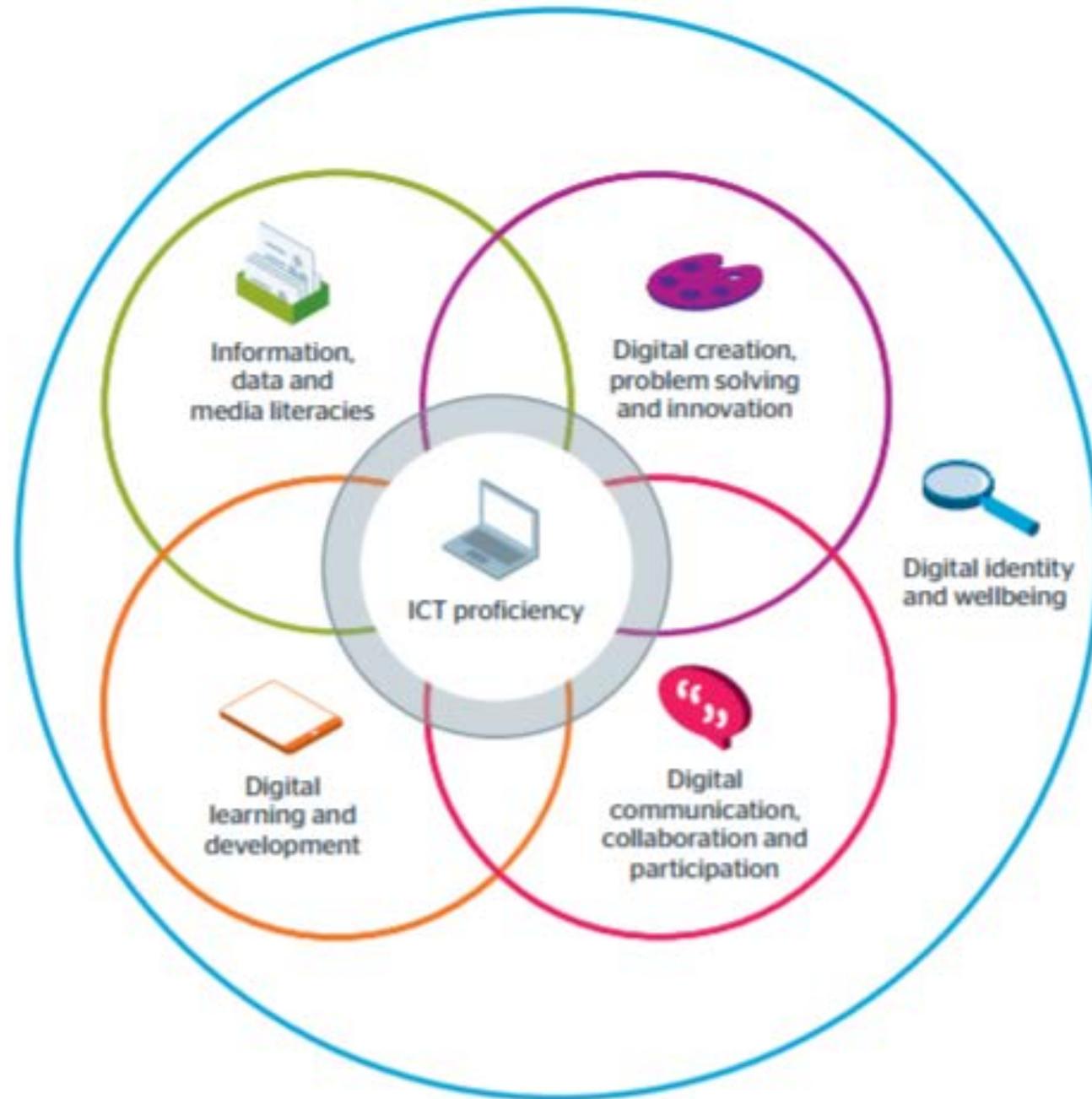
# And in the different disciplines and professions?



Icons from [thenounproject.com](http://thenounproject.com)

# Are there some common denominators?

- Are there some common, foundational elements of 'digital literacy'?
- Is it possible to identify these and distil them into a model or framework?
- Can a model be used to guide the development of skills across the different disciplines?



# Information and digital literacy:

A strategic framework  
for UQ Library 2016-2020



## Guiding principles

The UQL Information and Digital Literacy Strategic Framework is guided by five core principles:



### Collaboration

The responsibility for developing information and digital literacy is not limited to UQL staff. Programs are designed and delivered in collaboration with academic staff, learning designers, education technologists and others, with a shared focus on student learning.



### Alignment

*In the context of teaching and learning:* Information and digital literacy is fully integrated into the curriculum and contextualised in students' learning and assessment activities.

*In the context of academic research:* Information and digital literacy is fully integrated into the research lifecycle.



### Innovation

The development of information and digital literacy skills utilises contemporary pedagogies and online tools in new and transformational ways.



### Sustainability

The scope and reach of UQL information and digital literacy activities are extended through the adoption of new, flexible forms of delivery and support.



### Evaluation

Information and digital literacies are reviewed and evaluated as part of the process of continual improvement.

# Current initiatives at UQ Library

- Collaboration
  - eLearning co-located with IDL team
  - Online learning resources: ITaLI, Graduate School, Student Services, faculty librarians
  - T&L grant to investigate students' IDL skills gaps and provide strategies to build skills
  - Sharing practice and ideas across the Library, across the university
- Alignment
  - Mapping librarians' IDL activities across all courses and programs
  - T&L grant proposal to focus on the contextual differences across the disciplines
- Innovation
  - Digital librarians-in-residence
  - Poster Fairs to showcase impact of IDL activities on T&L at UQ
- Sustainability
  - Extending the reach of IDL development – strategic funding to move into digital content
  - New training activities for students and academic staff
- Evaluation
  - Review and feedback

# IDL to foster digital scholarship

- Digital scholarship is evolving as new technologies allow researchers to engage with content
  - Both traditional physical and increasingly digital
  - Born digital or digitised
- To expose and explain previously unseen patterns to create new knowledge
- All about how students' and researchers' **interactions with digital information resources** influence the ways they **think, interpret and communicate ideas**
- Digital humanities allow closer connections between research and teaching, enabling students
  - To engage with original materials
  - To adapt and repurpose content for new creative works
  - To build new skill sets
- IDL becomes the new foundation for both learning and research activities

# Centre for Digital Scholarship (CDS):

## Digital infrastructure, digital tools, digital training

- CDS provides a space for academics and students, across all disciplines, enrolment status and employment roles, with resources, services and support for digital scholarship activities
- Supporting the shift from 'independent' research to 'collaborative and participative' research
- Opportunities to facilitate and establish networks and communities of users
  - To bring together experienced users and potential new players
  - To showcase and to learn in a collaborative or mentoring way
- Provides access to hardware and software tools:
  - 3D printing and 3D photogrammetry
  - Geographic Information Systems
  - Web scraping, text mining and textual analysis
  - Data analysis, interpretation and visualisation
- Staffed by casual staff who are (usually) HRD students
  - Enhancing the student experience and increasing employability
- Liaison librarians building cohesion between the Schools and CDS

## Text analysis



Text analysis software can be used to access and interpret text and produce quantitative data that can be analysed.

## Data analysis



Data analysis software can help to examine data to discover useful information. Use data analysis tools to collect, evaluate and present data and draw conclusions.

## Data visualisation



Data visualisation software is used to produce visual representations of data to convey meaning.

## Geographical information systems (GIS)



Geographic information systems (GIS) software is used to capture, analyse and present spatial or geographical data.

## Media creation & editing



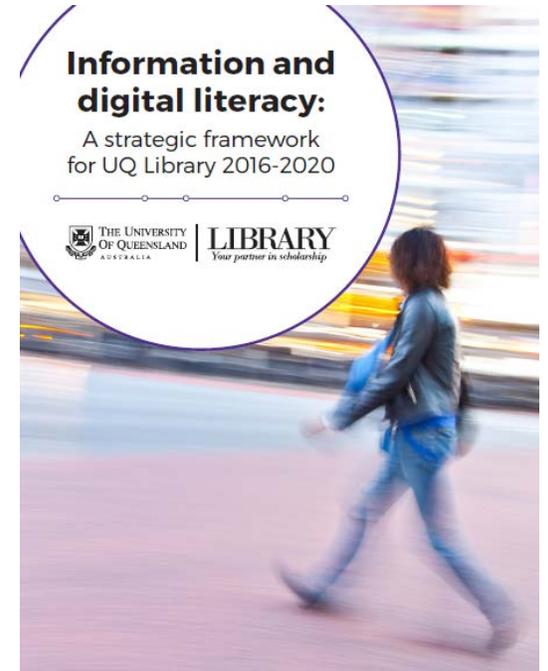
Media creation and editing software is used to produce and edit video, audio and graphics.

## 3D modelling software



3D modelling software can be used to create and modify 3D models.

- A university-wide approach is needed
  - To align the Library with the institution's strategic directions
  - To provide opportunities to build and demonstrate excellence and impact across learning, research and digital scholarship
  
- The IDL Strategic Framework is
  - A conversation starter to facilitate:
    - A common language
    - A shared philosophy
  - A document to help the Library:
    - To demonstrate the roles it plays in supporting learning and research
    - To align itself with the ICT agenda across the institution
    - To articulate its investments in online systems and e-content
    - To open up opportunities for new ideas, new collaborations
    - To encourage the library staff to develop new skills and understandings



Building a successful future through information and digital literacy

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