# Digital Literacy for Researchers at The University of Auckland

Authors: Fabiana Kubke, Nick Jones, Adam Blake

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## Why?

Growth in digital literacy for researchers aims at improvements to:

* research quality and impact
* recognition and reward for researchers
* professional growth and development for researchers

Research is typically delivered by small labs of researchers operating increasingly within collaborative networks. Research practice operates in both physical/analogue and virtual/digital environments. Practice requires knowledge of research methods, skills in the use of relevant tools, and depends on tools available within an environment. Digital environments and related skills underpin use of methods for data, computation, modeling, simulation, signals & processing.

Inside a lab, innovation often happens when research ideas & questions drive the evolution of methods and supporting tools and technologies:

* Tools encapsulate knowledge so researchers do more of the same, with consistency
* While some tools are highly flexible, the most flexible tools require very advanced skills and high levels of sophistication to be useful
* Meanwhile to innovate in their use of methods researchers often need to modify tools, to execute on their ideas
* So the tools must be flexible or malleable, and researchers must have the skills to exploit or modify them
* Incentives don’t align with researchers investing to change their methods and tools

## What?

To support digital literacy a variety of knowledge and skills is required, covering:

* Digital research methods, supporting such areas as data analytics, computational modelling and simulation
* Skills in the use of specific applications that underpin a research discipline such as bioinformatics applications, or those for computational fluid dynamics applied to biological systems
* Skills in the use of generic platforms and services to support the research process, including for creating and generating data, data analysis, computational processing, data management, and data access and reuse
* Advanced skills to adapt and modify software codes and to apply sophisticated feature rich generic tools for data analysis and computational modelling such as R and Python



Moving to a future of enhanced quality, impact, innovation and recognition through digital literacy

## How - current state

A wide array of initiatives are forming up across the campus and are linking us to national and international groups who are recognising the changing needs for research support.

### Local initiatives

A list follows of current relevant initiatives which have some connection to the professional growth and development for researchers in digital literacy includes:

* Research Catalyst (CLeaR)
* Graduate Profile (?)
* Development of a Research Advisory service (eResearch, Library, IT)
* Analysis of Research Support (DVCR)
* Academic Staff Professional Development Policy and Procedures (DVCR)
  + LADDeR "Learning And Development Designed (for) Researchers" (DVCR, Janet McAllister)
* Research Outputs and Open Access (Library)
* Special Topic on Digital Literacy (Fabiana Kubke)
* Doctoral Skills Training (Poul Neilsen)
* Software Carpentry (NeSI, eResearch)
* Hacky Hour (eResearch)

### Research communities specialising in digital methods

Aside from these specific initiatives there are research communities on campus that also maintain methods and their implementations in software environments that exemplify desirable future states - some examples include:

* Bioengineering - ABI: OpenCMISS, CellML;
* Bioinformatics - Computational Evolution: Beast; NZGL/Bioinformatics Institute;
* Chemistry
* Engineering
* Health - CAMRI; NIHI;
* Library - Subject Area Librarians
* Physics - Te Punaha Matatini;
* Statistics - R; COMPASS;

## Observations

1. Limited scale, mostly to small cohorts of students and focused on depth of skills
2. Few staff come into contact with digital literacy activities, with most who do receiving limited awareness raising rather than gaining skills and fully engaging and sponsoring
3. There are many discrete areas of emerging leadership and significant expertise across campus
4. There is significant opportunity to collaborate

## Proposal

1. **Now**: **Promote** these initiatives and ensure that Digital Literacy for Researchers is understood as being important, recognising the changing nature of research as it becomes digital and the need to promote and support that change
2. **Soon**: **Prioritise** a coordination action or agree to a leadership initiative that ensures these formative activities gain support and evolve into an institutional programme

## Relevance to the University of Auckland Strategic Plan 2013 - 2020

* International standing/Recognition | High quality teaching research (Mission and Values)
* Attract students of high academic potential and give them an outstanding university experience so that they become successful and influential graduates and loyal alumni. (Aspiration)
* Enhance the University’s international rankings and reputation so as to make us more attractive to domestic and international postgraduate students. (from Objective 5)
* Develop taught postgraduate programmes that are competitive internationally to enable growth in this segment of our academic activities. (from Objective 5)
* Ensure that we have graduate profiles which clearly lay out the desired attributes of graduates and the value that students will obtain from their studies. (from Objective 7)
* Ensure that our curricula reflect the relevant graduate profiles and deliver high quality programmes that meet national needs and international standards in an efficient manner.(from Objective 7)
* Invest in professional development activities that will enhance the quality and quantity of research performance across the University. (from Objective 9)
* Facilitate development of excellent cross-disciplinary/ transnational research teams to address questions of national and global significance. (from Objective 10)
* Support staff in the acquisition of the skills needed to interact productively with the business sector. (from Objective 10)
* Promote collaborative arrangements and partnerships that support our objective of achieving outstanding performance, facilitate international collaboration and exchange, and consequently enhance our contribution to the international academic community.(from Objective 19)