APPLICATION TO VICE-CHANCELLOR'S STRATEGIC DEVELOPMENT FUND 2015
PROJECT TITLE: *Digital Literacy and Scholarship Skills Training for Researchers*

1. Applicants: *(Insert applicant names)*

M Fabiana Kubke (School of Medical Sciences, FMHS); **Adam Blake** (Centre for Learning & Research in Higher Education (CLeaR)); **Mark Gahegan** (Centre for eResearch (CeR)); **Poul Nielsen** (Auckland Bioengineering Institute (ABI)); **Nick Jones** (New Zealand eScience Infrastructure (NeSI)).

2. Linking the Project to the Strategic Plan Criteria and Priorities:

Criteria	Contribution of Project
6. Enhancing the University's development programmes for academic and general staff; **4.** Enhancing the student experience, including the experience of international students; **5.** Enhancing learning and teaching	● Train new and emerging researchers for the opportunities and demands of 21st century Research Digital Literacy and Scholarship (RDLS); ● Raise awareness of the opportunities afforded by digital research skills by providing short intensive single- or multi-day workshops (e.g. following the proven Software Carpentry model); ● Develop flexible teaching modules that can: **(1)** be easily incorporated into CLeaR programmes (e.g., PG Certificate in Academic Practice, Doctoral Academic Career Module, Research Catalyst programme), **(2)** contribute to existing and future Doctoral Induction schemes (e.g., ABI/MedTech CORE) and **(3)** form the core of a formal teaching course for students committed to the research path (e.g., Honours/700/PGDip).
2. Enhancing the University's ability to attract externally funded research and in particular, offshore funding **7.** Enhancing the University's international relationships and standing	● Align research practice with emerging international requirements to make relevant data (and metadata) available to third parties ● Align research practice to facilitate sharing of laboratory workflow and data during collaborations ● Explicitly state such intentions as part of student and staff development programmes (e.g., see U of Melbourne). ● Explore potential to collaborate or partner with international universities with recognised digital research leadership, such as U of Melbourne[1].
1. Attracting talented undergraduates and postgraduates from throughout NZ and internationally	● Positioning the University's programmes as digitally savvy and supportive of growing researchers with advanced digital skills and computing capabilities. ● Develop flexible teaching modules that can be restructured so that they can, in the future, be delivered as University of Auckland MOOCs, U21 Summer School courses, etc.
8. Enhancing the efficiency and effectiveness of University administration	Digital practice for data acquisition and management should facilitate administration of: **(1)** Data Management Plans (DMPs) and data sharing where funder and publisher requirement exist (e.g., NIH, NSF (USA), Wellcome Trust (UK); **(2)** Data management aligned with UoA IP policies.

3. Description

We aim to develop a training programme to provide researchers with the skills to exploit the benefits offered by digital research technologies. VCSDF funding will allow us to support the following:

● **develop** teaching modules and methods to support a set of training and education activities (including: pilot a semester credit earning course in 2nd semester 2016); support Software Carpentry workshops, CLeaR research development offerings, and establish the supporting platforms and delivery systems underpinning training activities and,

● **deliver** Software Carpentry instructor training and 'train-the-trainer' sessions, and host an Auckland Research Bazaar (ResBaz) based on the successful University of Melbourne model.

Project rationale

We aim to enhance the opportunities for researchers to acquire the competencies needed to operate in a digital research environment. Innovation often happens when research ideas drive the evolution of methods and supporting technologies. To use

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[1] http://its.unimelb.edu.au/research | http://melbourne.resbaz.edu.au/ | " We recognise that high quality, relevant training in research techniques is an essential [...] to enable established researchers to use the latest scientific instruments or to ensure that early career researchers are well grounded in research methodologies" (Prof Liz Sonenberg, Pro Vice-Chancellor Research Collaboration and Infrastructure).

existing tools innovatively, researchers often need to modify them. While some tools are highly flexible, tapping into this flexibility or developing new tools requires specific skills. To support this innovation research staff must understand the opportunities that digital literacy offers and how it can be exploited. Our proposed training program considers Research Digital Literacy and Scholarship (RDLS) not solely as a set of pragmatic skills but also how they link to core values of research[2].

National and international groups are recognising these changing needs for research support, and a wide array of initiatives are forming up across our campus[3], but they have limited scale and focus. Few staff come into contact with RDLS activities, with most who do receiving awareness raising rather than gaining skills and fully engaging and sponsoring. There are many discrete areas of emerging leadership and significant expertise across campus and significant opportunity to collaborate[4]. We aim to start coordination across these initiatives to establish an integrated institutional training programme, through the following actions:

1. **Promote** these initiatives to ensure that RDLS is seen as vital in ensuring UoA retains its position as NZ's premier research university;
2. **Prioritise** a coordinated leadership initiative that ensures these formative activities gain support and evolve into an institution-wide programme.

b. The innovative nature of the project

Most resources currently available for student and staff research development are focused on specific tools, lacking the broader context of RDLS that lets researchers tap into the flexibility of existing tools. We will offer training that explicitly emphasises technical and cultural principles of RDLS and that is tool agnostic. Teaching modules will be self-contained and flexible so that they can be deployed in different contexts suited to the target group (e.g., a student-centered course, PD for staff, MOOC, U21 Summer School, etc.).

c. What alternatives have been considered and why the proposed project is the preferred option

We aim to target research-active staff and students committed to research. Alternatives, such as undergraduate training, are not cost- or time-effective within the scope of this application given the need for significant PD of current teaching staff.

d. The extent to which successful outcomes might be transferred to other areas of the University

Our approach offers both breadth training through Software Carpentry and ResBaz, and depth-oriented skill development, initially targeted to the Biomedical Sciences, using training material that can easily adapt to other areas. The training modules will suit a 'bring your own project' approach so that discipline boundaries are not a barrier. Engagement with CLeaR will ensure the training can be offered to diverse disciplines.

4. Project Resourcing and Management:

The project supports contributions across a range of planned activities in the coming year. We seek funds to employ support staff (1.0 FTE for September - December 2015 and 2.0 FTE for 2016) responsible for: consultation with staff; identification of existing training resources; development of the teaching modules and the supporting infrastructure and delivery systems. The roles and contributions of each of the applicants are outlined below:

Fabiana Kubke, SMS/FMHS: Project leadership & management **- Contribution**: Providing high level guidance and support for the team & mentoring on project management | Sponsor for Auckland hosting a ResBaz 2016 event | Piloting of a semester course Semester 2 2016.

Adam Blake, CLeaR: Education & training practices and programme evaluation **- Contribution**: Educational 'action research' on the pilot | Learning design advice on training programme development including modules, methods, and building capacity through a 'train-the-trainer' approach.

Mark Gahegan, Centre for eResearch: Project Advisor | Teacher **- Contribution:** Advice on eResearch eScience best practice, help with staffing, writing and delivering course material, mentoring of staff.

Poul Nielsen, ABI: Project Advisor **- Contribution:** Advice on bridging gap for life sciences research including enabling digital methods, tools, and approaches to skill acquisition | Advice on training programme structure across levels and modes of delivery e.g. Doctoral training, staff training, undergraduate, etc. (Available as needed while on sabbatical 2nd semester 2016.)

Nick Jones, NeSI: Partnership with NeSI's national training programme **- Contribution:** Development of a high level national training programme for NeSI (Q3 '15) aligned with sector institutional interests to build

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[2] Appreciation of principles of software and data design & engineering, and use of appropriate tools; Basic skills in writing macros and customising research codes/scripts; Ability to see value in, and use: data repositories, code repositories, workflow engines;Basic familiarity with using high performance computing platforms, or cloud platforms; Appreciation of trends and rationale behind twenty-first century scholarship (i.e. connected world, linked open data, semantics, digital lab notebooks, repositories and managed data collections, micropublishing, repeatability and openness in science / research).

[3] Research Catalyst (CLeaR); Development of a Research Advisory service (Centre of eResearch, Library, ITS); Analysis of Research Support (DVCR); Academic Staff Professional Development Policy and Procedures (DVCR); LADDeR (DVCR, Janet McAllister); Research Outputs and Open Access (Library); Doctoral Skills Training (Auckland Bioengineering Institute, & MedTech CORE, Poul Nielsen); Doctoral Academic Career Module (CLeaR); Software Carpentry (NeSI, Centre for eResearch); Hacky Hour (Centre for eResearch).

[4] Exemplars at the University of Auckland include (but are not limited) to work done by the Auckland Bioengineering Institute (OpenCMISS, CellML, Physiome Project), by the Bioinformatics community (Computational Evolution: Beast; NZGL/Bioinformatics Institute) and Statistics (R; COMPASS).

capacity with institutions across the sector.

Project Management

Project Sponsors	eResearch Advisory Board
Project Manager(s)	Fabiana Kubke, Cameron McLean
Project Advisors	Poul Nielsen, Mark Gahegan, Adam Blake, Nick Jones

Project Managers will establish routines for utilising the Project Advisors (monthly meeting), feedback and guidance on project delivery of anticipated benefits, and reporting back to Project Sponsors (quaterly).

e. The potential for the project to succeed (risks and mitigations)

This project addresses at UoA an identified NZ-wide digital research capability gap (eResearch 2020, 2015). The primary risk is that, despite the constraints this gap places on the quality and dissemination of UoA research, staff and PG students will fail to undertake the digital research PD the project will provide. However this will be mitigated through developing training in a modular format able to be repurposed across Faculty, CLeaR and CeR programmes (on campus and online), and through active promotion by project staff.

f. How successful achievement will be measured

Feedback will be captured throughout the the project through our consultation rounds and through evaluations from students, teaching staff and project supervisors involved in the formal course. Action research performed during the delivery of the course will be a key part of the evaluation.

5. Timelines: *(Insert timeline for the approval, introduction and outcome of the project)*

Time Frame	Objectives	Specific Actions
SEP - DEC 2015	Match existing need analysis data with existing content.	Identify existing online resources | Identify potential supervisors | Support a ResBaz 2016 at Auckland
DEC 2015 - MAR 2016	Plan for content delivery in 2016	Seek HOD approval | Begin advertising to students and research staff
DEC 2015 - MAR 2016	Work with learning design team to build the course	Develop course curriculum and assessment | mapping to graduate profile | Participate in Software Carpentry Instructor Training | Sponsor/host a ResBaz 2016 at Auckland
DEC 2015 - MAR 2016	Consultation	Match proposed structure with staff needs and identify potential gaps | Identify specific projects Identify potential teaching staff
MAR - JULY 2016	Fill the gaps	Design the needed resources | Identify potential teaching staff
MAR - JULY 2016	Finalise projects	Work with supervisors on final project details | Recruit teaching staff
JULY - NOV 2016	Pilot - Honours/ PGDip course.	Run pilot course | Action research
DEC 2016	Wrap-up and next steps	Analyse and make suggestions for improvements | Plan for 2017 | Report

6. Funding Requested: *(Insert detailed costing model)*

We are requesting $150,000 for staffing.

Staff	Year	FTEs	Cost
Dedicated Staff: Cameron McLean Project manager (shared with Dr Kubke) | Consultation and advisory support | Module development | Pilot course support | Software Carpentry instruction | ResBaz support	2015	0.5 FTE dedication over 4 months @ 76,000 p.a.	12,700
	2016	0.8 FTE dedication over 1 year @77,500 p.a	66,100
Casual Staff Project support | Consultation and advisory support | Course delivery support | Module development support | ResBaz support e.g. Event services	2015	Equivalent to ~0.5 FTE dedication over 4 months	12,000
	2016	equivalent to ~1.2 dedication for 1 year	59,200

Signed By		
HOD *(if applicable)*	Name:	Signature:
Dean/Director	Name: Professor John Hosking	Signature: