

Future of eResearch

Nick Jones

Future of eResearch?

Nick Jones

Ka mua, ka muri

Walking backwards into the future

- Look to the past to inform the future
- Learn from those who have gone before

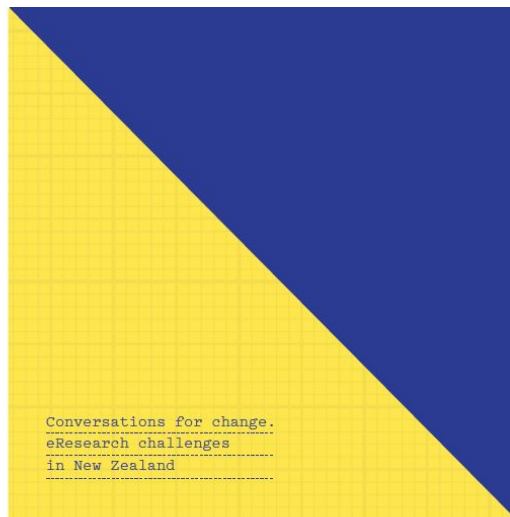


eResearch Challenges in New Zealand

Discussion Document

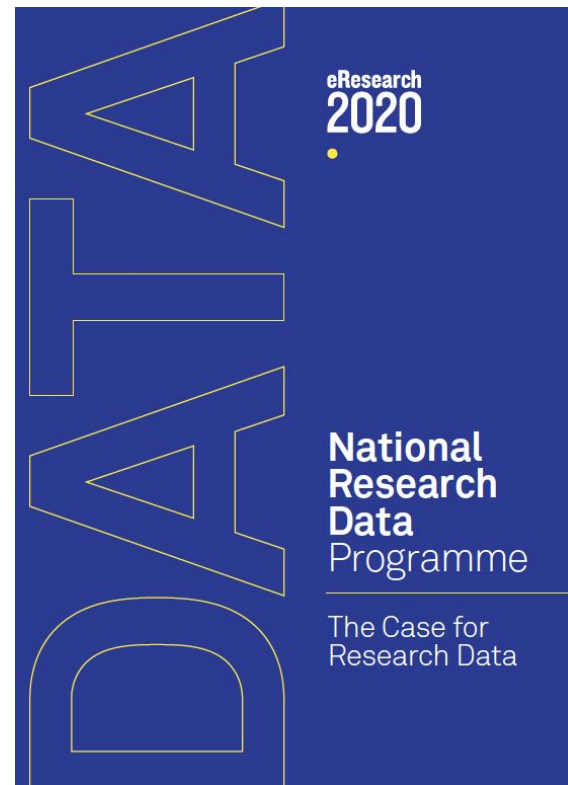
eResearch
2020

Conversations
for change.
March 2015



eResearch
2020

Abridged
Discussion Document
March 2015



REANWZ



Understanding the eResearch Ecosystem in New Zealand



Workshop Reflection Report
eResearch NZ 2018 Conference
Queenstown, New Zealand

Delivering Effective eResearch Services: Better Practices Drawn from Benchmarking Eight Jurisdictions Around the World

*Final Report of International Benchmarking Study for
New Zealand eScience Infrastructure (NeSI)*

March 2019

*Prepared by Mark Dietrich, in consultation with Nick Jones, NeSI Director, and
members of NeSI's Board*

International Benchmarking Early Impressions

1

International Benchmarking Study for
New Zealand eScience Infrastructure (NeSI)



NeSI
New Zealand eScience
Infrastructure

July 2018

Prepared for NeSI by Bloodstone Solutions Inc.

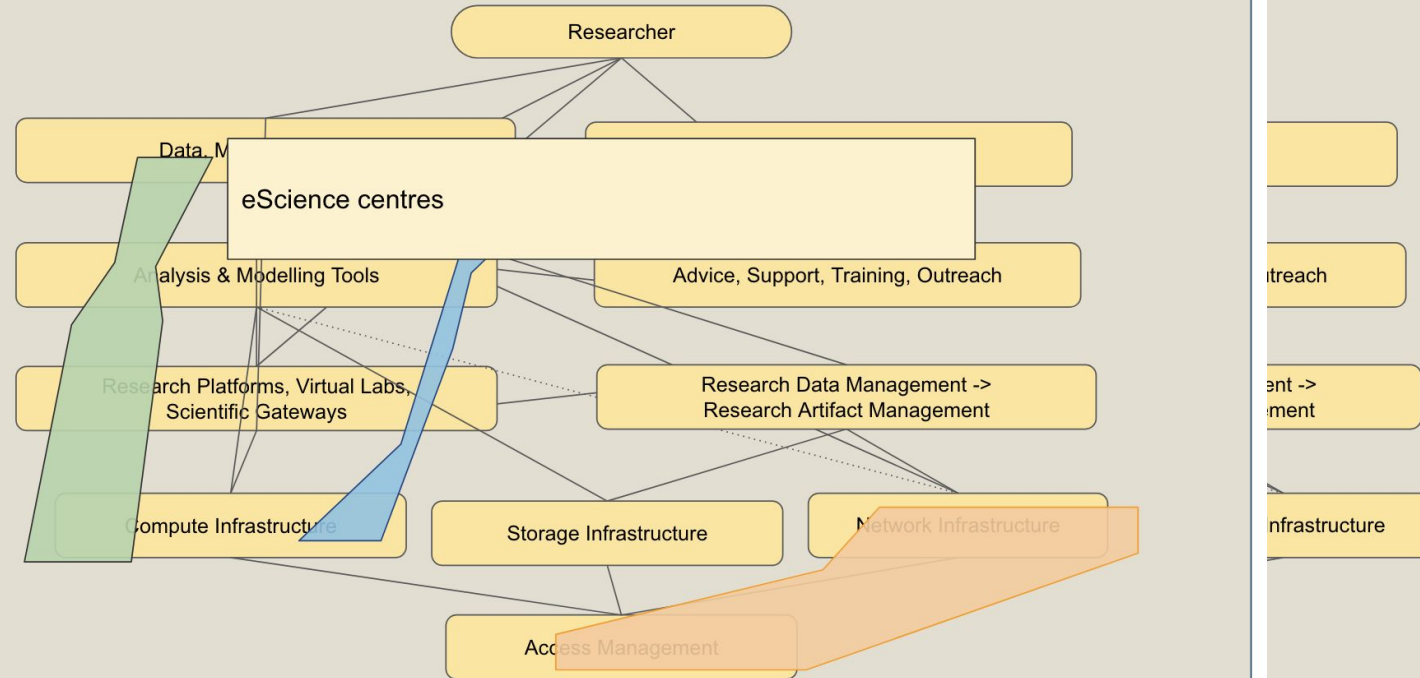


17-Jun-18

eResearch Ecosystem Framework (eREF)

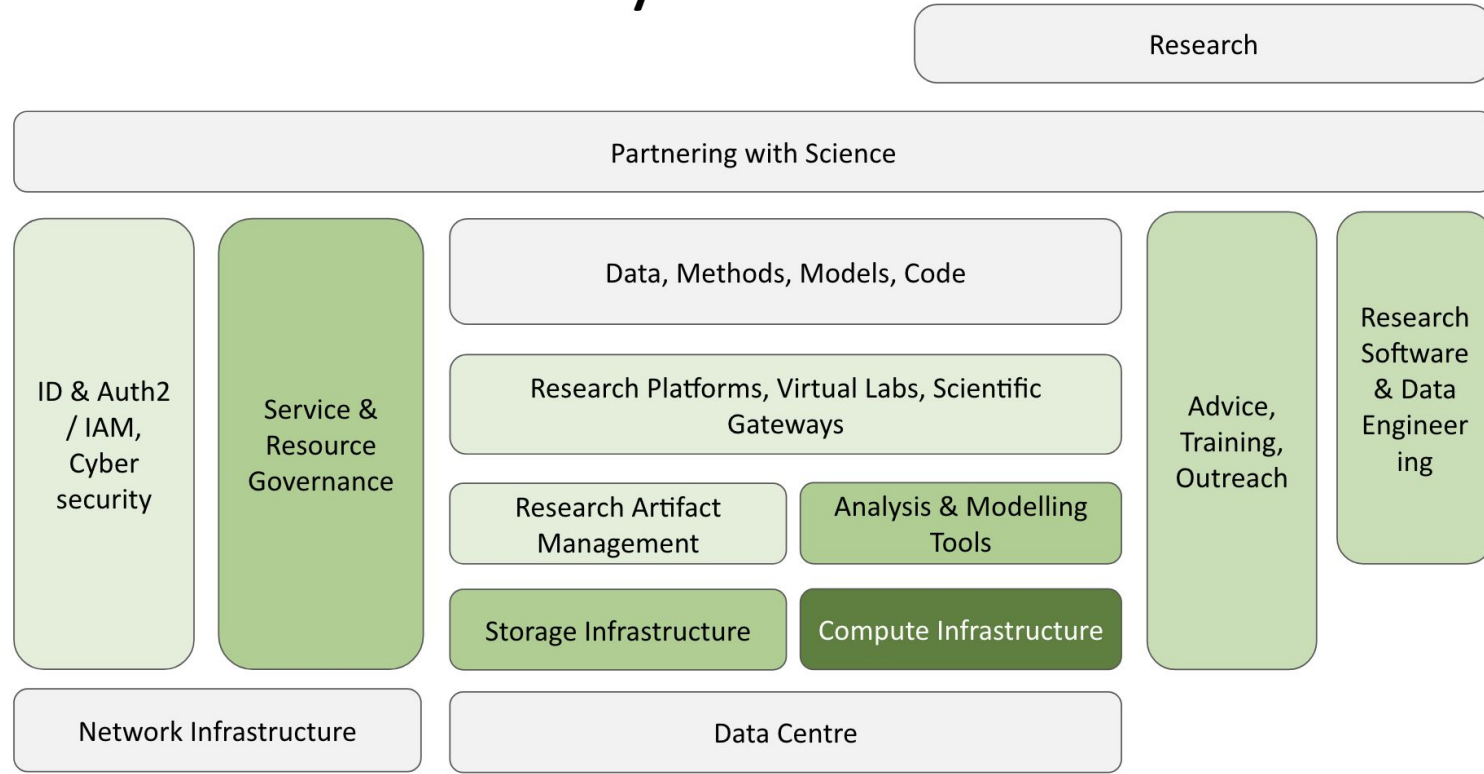
High level components

4



eREF)

Current state maturity



NEW ZEALAND'S RESEARCH, SCIENCE & INNOVATION STRATEGY

Draft for Consultation

SEPTEMBER 2019

Our Research and Innovation System

RSI STRATEGY

Our research, science and innovation system consists of people, institutions (including research organisations and businesses), and infrastructure. Many people are engaged day-to-day in innovating, researching and connecting with each other in a wide range of activities that contribute to research, science and innovation.

The processes of research and innovation rely on fluid connections between the components of the system. Those connections are a key theme of this strategy.

REGULATION

Regulation sets the scene for a lot of innovative activity in our economy, although we have not yet been explicit about its use or potential.

We want to consider regulatory systems approaches to some of the key goals in this strategy. These can be activity-specific, such as supporting our innovative aerospace industry, or more generic, such as enabling free transaction of knowledge and ideas between research institutions and businesses, and a strong commercialisation system.



Much of our work over the past five years has focused on ensuring our funding systems are fit-for-purpose and work well together to support the full range of research, science and innovation activity.

Our next tranche of work will focus on ensuring that the other components of our system - people, institutions, regulation and Government - are working in concert and set up for success.

INSTITUTIONS

Around 4,000 businesses in New Zealand report performing R&D, with many more engaging in innovation. We also have 11 Universities, 7 Crown Research Institutes, and a number of independent research organisations dedicated to research activity.

We need to continue to ensure that our research institutions are set up and well supported and to succeed as world-leading producers of knowledge, and that our businesses and public services have access to the research and support they need to build on and use that knowledge.



PEOPLE

Not including students, New Zealand has around 20,000 FTE researchers, of which around 60% work in business.

People are at the heart of research, science and innovation. We currently have few policies directly focused at developing, attracting and retaining excellent researchers. We also need to increase the diversity of our researchers, and ensure greater opportunities for Māori.

We also need engaged users of research, and a general public actively interacting with the future possibilities of research and innovation.



GOVERNMENT

The Government works in this system through setting the overall strategy and direction, investing, ownership of some institutions, and creating enabling regulatory frameworks.

Government, and the public services it provides, is also an important user of research and innovation, to inform decisions and provide better and more effective public services across social, health and environmental functions.

MBIE functions as system steward across all domains of research, acting on behalf of Government for the research system.

INFRASTRUCTURE

Research and Innovation Infrastructure is housed in our businesses and research institutions. Government directly supports some large parts of this - from research vessels to pilot plants and particle accelerators.

We want to focus on sustainable provision of future-focused infrastructure, in particular our databases, collections, and e-research infrastructure. We also want to create or participate in opportunities to share infrastructure with our international partners.



INVESTMENT

Both Government and businesses invest in the research and innovation system - and this investment needs to grow. More detail on our Investment system is shown on the next page.

Harnessing research and innovation to advance the wellbeing of all New Zealanders into the future

*By 2027, New Zealand will be a global innovation hub,
a world-class generator of new ideas for a productive,
sustainable and inclusive future.*

Guiding Principles

Excellence - Connections - Impact

1. MAKING NEW ZEALAND A MAGNET FOR TALENT

Develop a large scale talent initiative to grow, attract, and retain the best researchers, entrepreneurs, investors, and visionary thinkers.

Ensure diverse talent can thrive and grow in our research and innovation system.



2. CONNECTING RESEARCH AND INNOVATION

Develop a global best practice research commercialisation system, with a growing network of technology incubators, and a regulatory systems approach to publicly-funded IP.

Connect New Zealand with global research leaders working at the knowledge frontier. Integrate with overseas RSI systems for mutual benefit on global challenges, such as climate change, and opportunities to share



3. START-UP^SCALE-UP

Scale up our research and innovation capabilities in key focus areas at the global frontier.

Develop a flexible and graduated system of support that enables start-up firms to fast-track their growth and achieve scale.

Establish innovation missions to address public good opportunities, such as kaitiakitanga of our biological heritage, and health system delivery.



4. TOWARDS AN EXTENDED VISION MĀTAURANGA

Ensure the RSI system is open to the best Māori thinkers and researchers.

Ensure the innovation system is open to the energy and ideas of our Māori entrepreneurs.

Resource and protect Mātauranga Māori.

Create an environment where Māori entities and businesses invest with confidence in research and innovation.



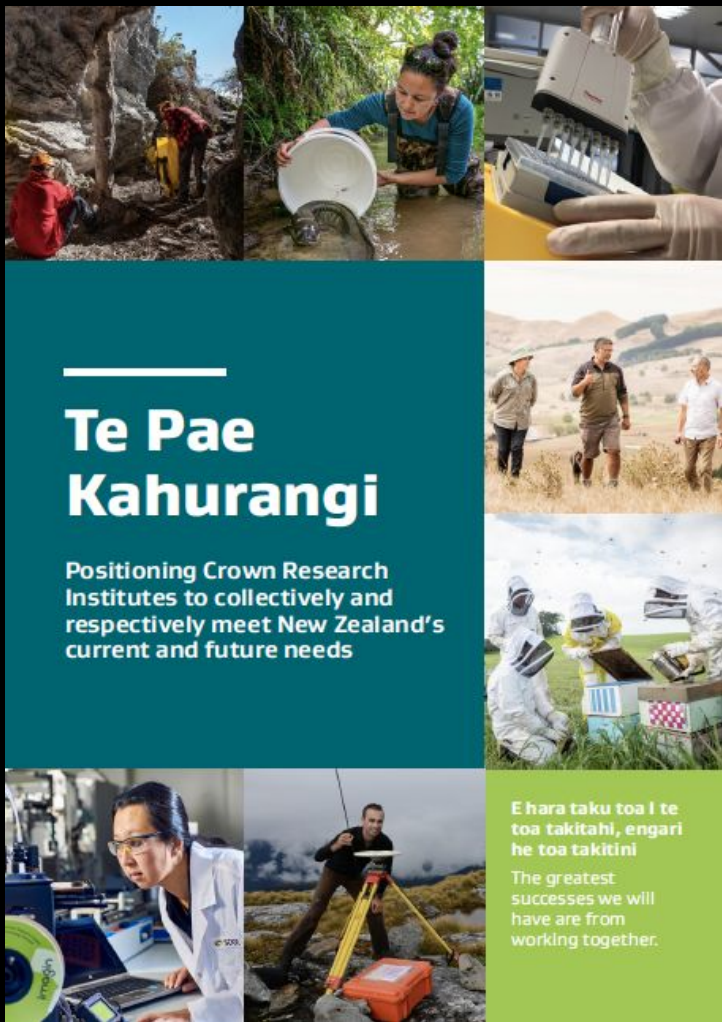
5. BUILDING FIRM FOUNDATIONS

Create a progressive investment programme to enhance the contribution of main RSI funds to government health, social, environmental and economic objectives. Focus on sustainable increases to the R&D tax incentive, the Endeavour Fund, the Marsden Fund and the Health Research Council.

Ensure our structures, funding, and policies encourage our public research organisations to form a coordinated, dynamic network of research across the horizons of research and innovation.

Ensure our research infrastructure is placed on a sustainable footing. We will focus on e-research, databases and collections, and international scale infrastructure collaborations.





Te Pae Kahurangi

Positioning Crown Research Institutes to collectively and respectively meet New Zealand's current and future needs

E hāra taku toa i te
toa takitahi, engari
he toa takitini

The greatest
successes we will
have are from
working together.

- Highlights the strong drivers coming from digital transformation, data science, and research infrastructure
- Specifically calls out connectivity, HPC, eResearch, research data
- Challenges relations and partnership with Te Ao Maori
- Questions the incentives including the commercial expectations on our CRIs, and have we got the balance right
- Sets an expectation that we need to move beyond institutional boundaries, and collaborate on shared investments to achieve our goals

eResearch Ecosystem Framework

Research

Partnering with
Research

Data, Methods, Models, Code

Research Platforms, Virtual Labs, Science Gateways,
Super Facilities

Research Artifact
Management

Analysis & Modelling
Tools

Storage

Compute

Data Networks

Data Centres & Cloud Hosting

Research Software & Data Engineering

Advice, Support, Training, Outreach

Service & Resource Governance

Identity & Security

Aim - reflect on where we've come from, and on how we move forward at an individual, group, national level

Researchers

Institutions

Infrastructures

