MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

THE UNIVERSITY OF AUCKLAND
NEW ZEALAND

NIWA
Taihoro Nukurangi

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND

Manaaki Whenua
Landcare Research

Staying connected in an evolving eResearch ecosystem

Rob Bensley

Thursday 11th February
eResearch NZ 2021

MAHUIKA
MAHUIKA
NeSI
MĀUI
NIWA
NeSI
CRAY
CRAY
CRAY
MAUI

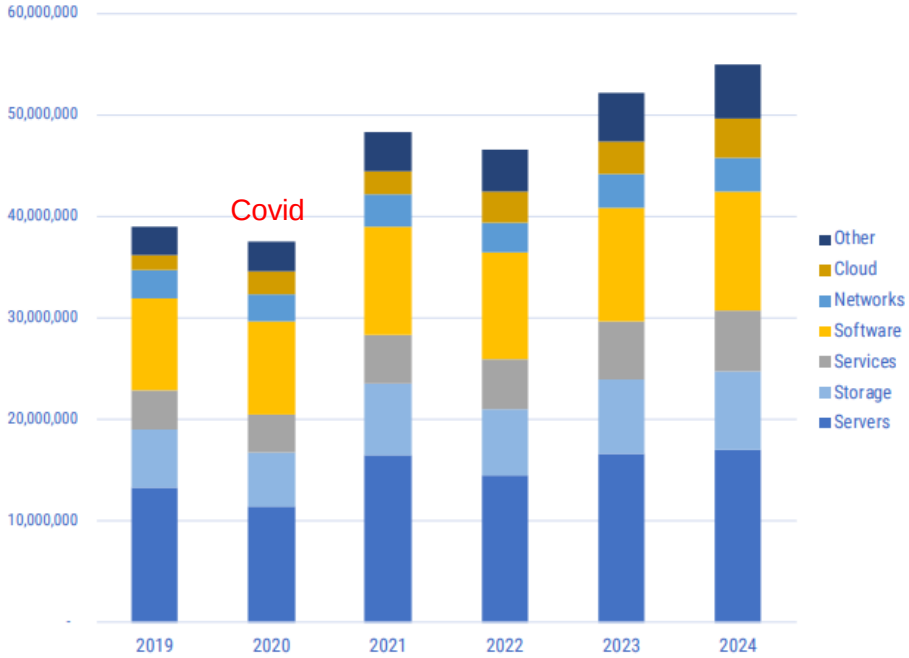
Focus the science outcomes

What are some drivers in the global HPC market?

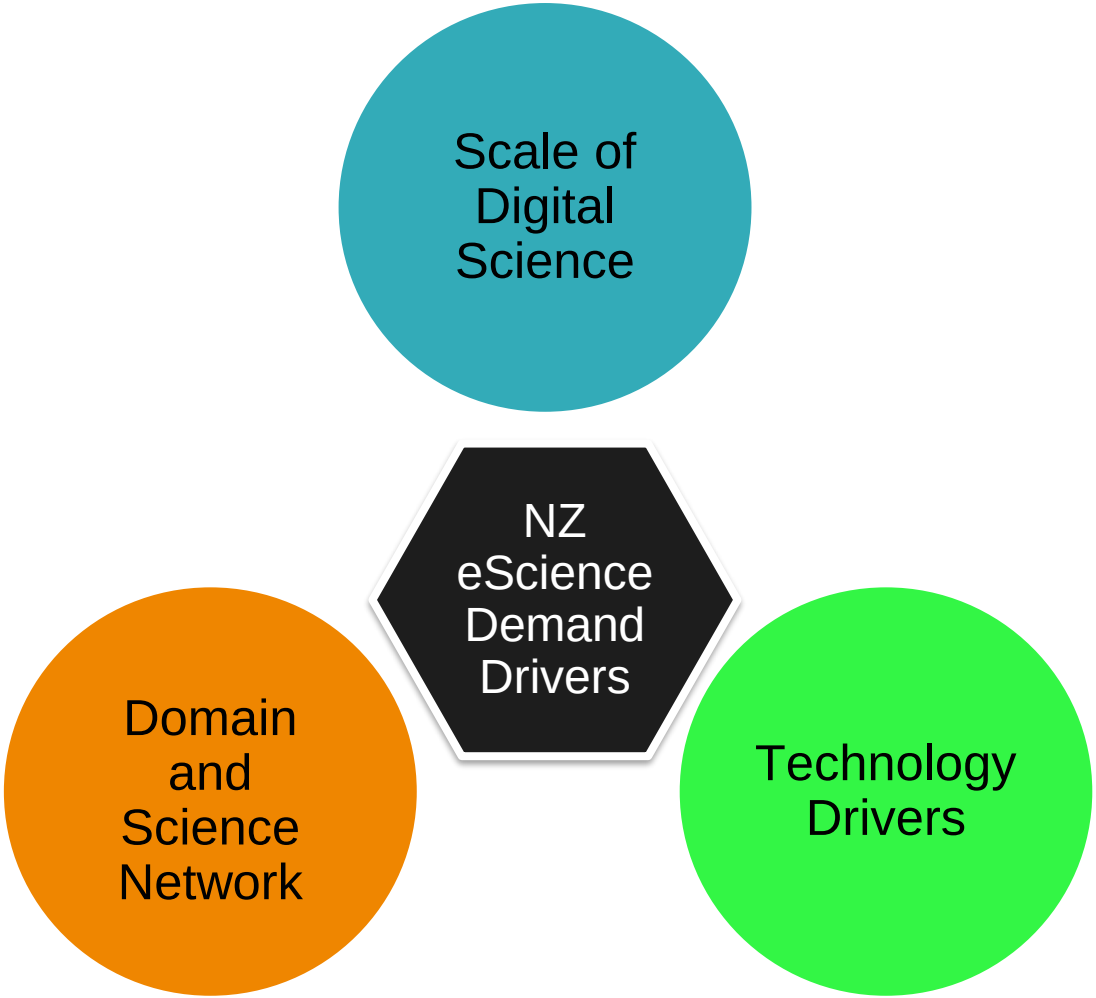
HPC market forecast to grow at CAGR **7%** to 2024

In addition to Hardware growth is seen in:

- Software
- Services
- HPC cloud

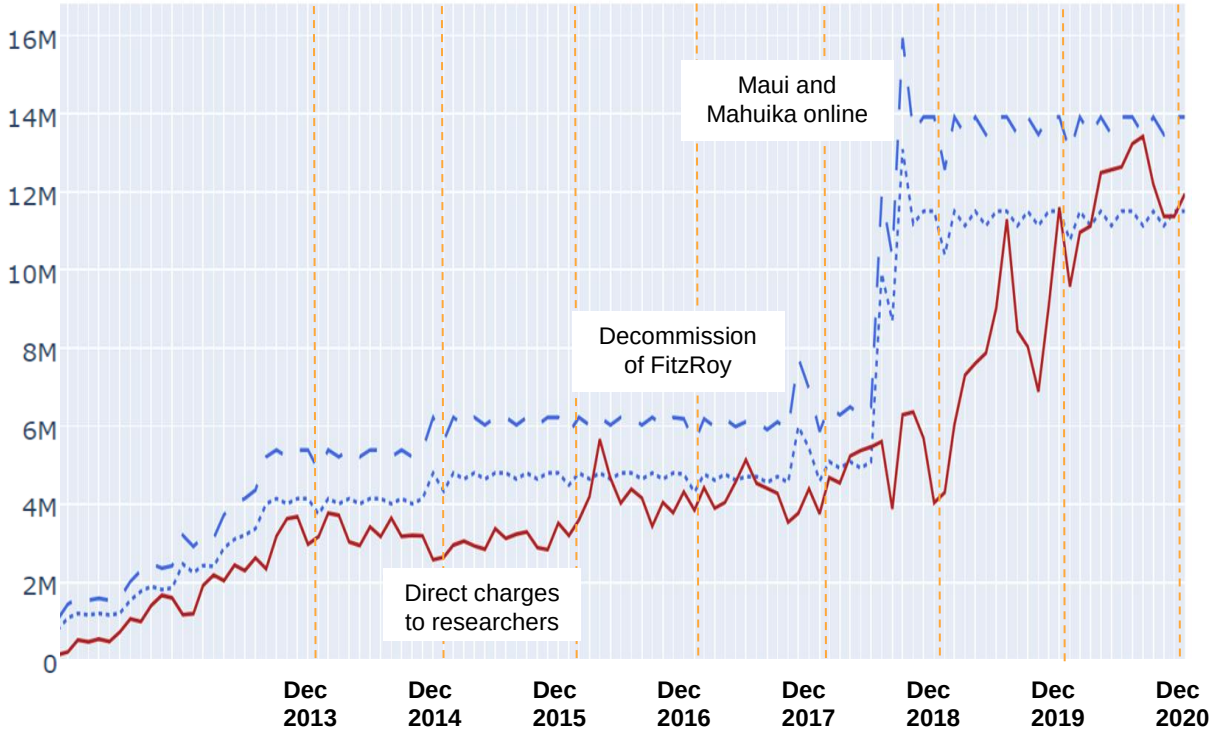


Source: HPC AI advisory council - Intersect 360, 2020


Scale of Digital Science
NZ eScience Demand Drivers
Domain and Science Network
Technology Drivers

The Scale of Digital Science

Change in national core hours



Scale of Compute

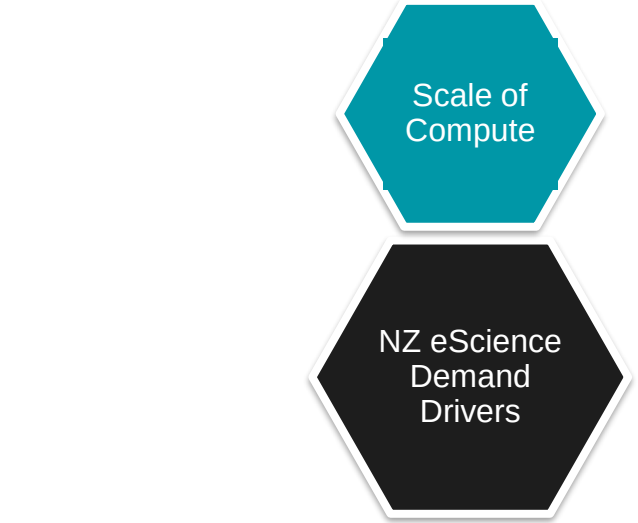
NZ eScience Demand Drivers

+58% compute growth

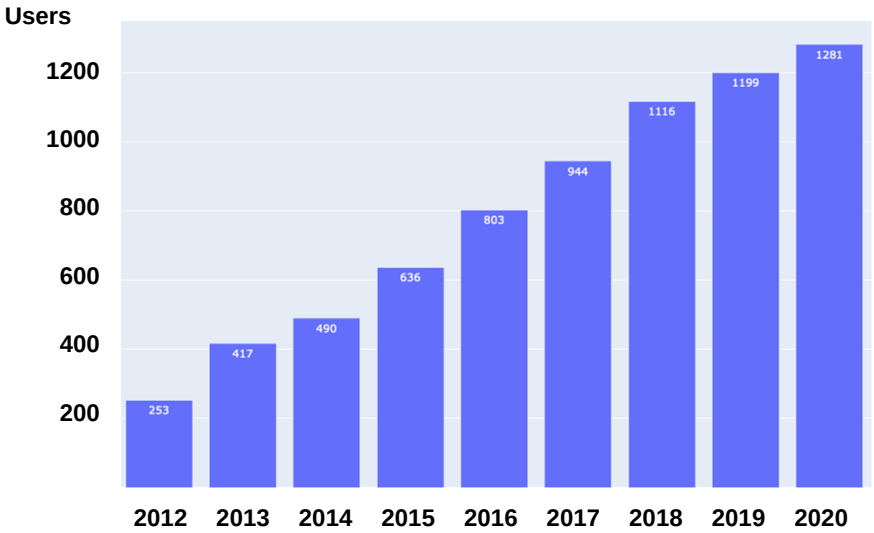
Core hours 2020 vs 2019

NeSI theoretical core Available
NeSI contracted core Available
core hours used

The Scale of Digital Science



HPC User numbers in 2020 >1200

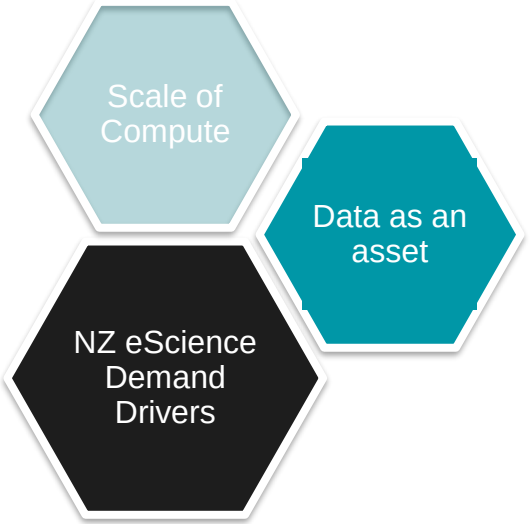


NeSI project members **+6%**

Active HPC users **+15%**

NeSI Training reached almost 1000 attendees in both 2019 and 2020
Over 500 attendees across the 2 years covering Genomics courses supported and enabled by NeSI's partnership with Genomics Aotearoa, driving high uptake by new users

The Scale of Digital Science



HPC storage

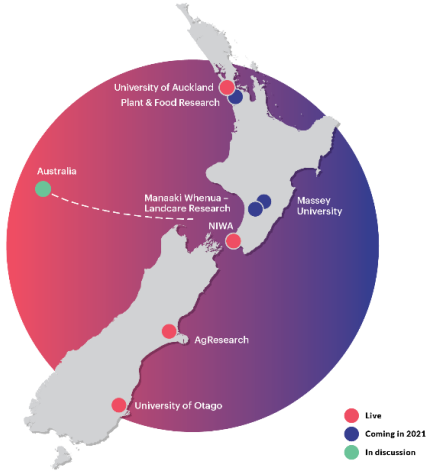
- Pressure on High performance storage
- Project storage (persistent backed-up disc) has grown **69%** 2020 vs 2019

Testing of Long Term **Tape Storage**

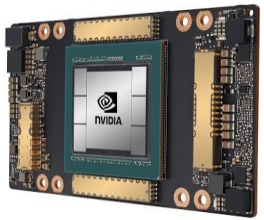
- 7.4 PB in use from a few test users!

Data Transfer Service

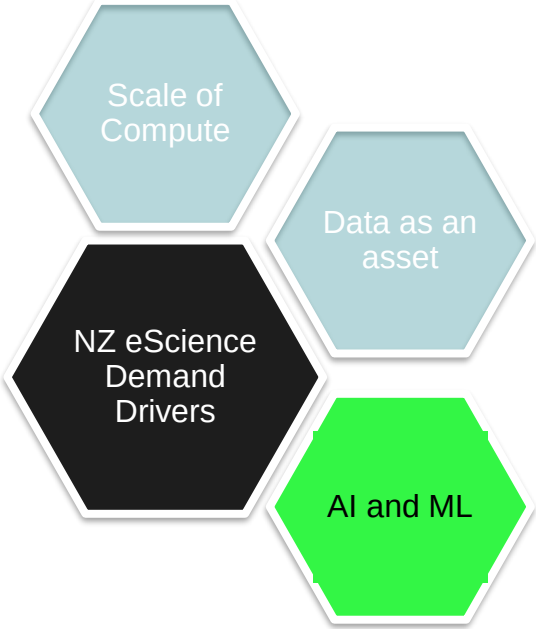
- New Endpoints
- 870TB transferred in 2020 up 138% on 2019
- 33% more users in 2020



Technology Drivers



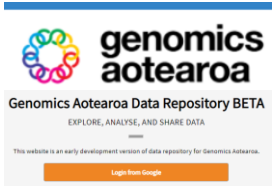
PlantTech



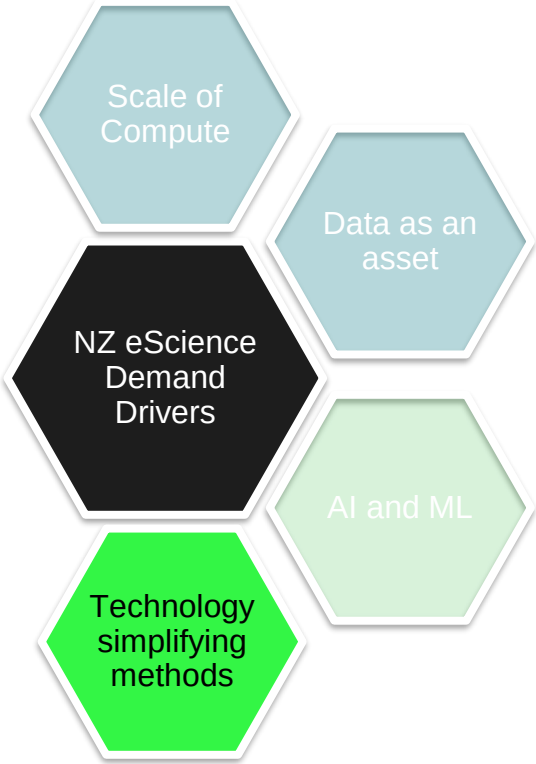
Technology Drivers

Web interface

Containers



Virtual Labs and Clouds

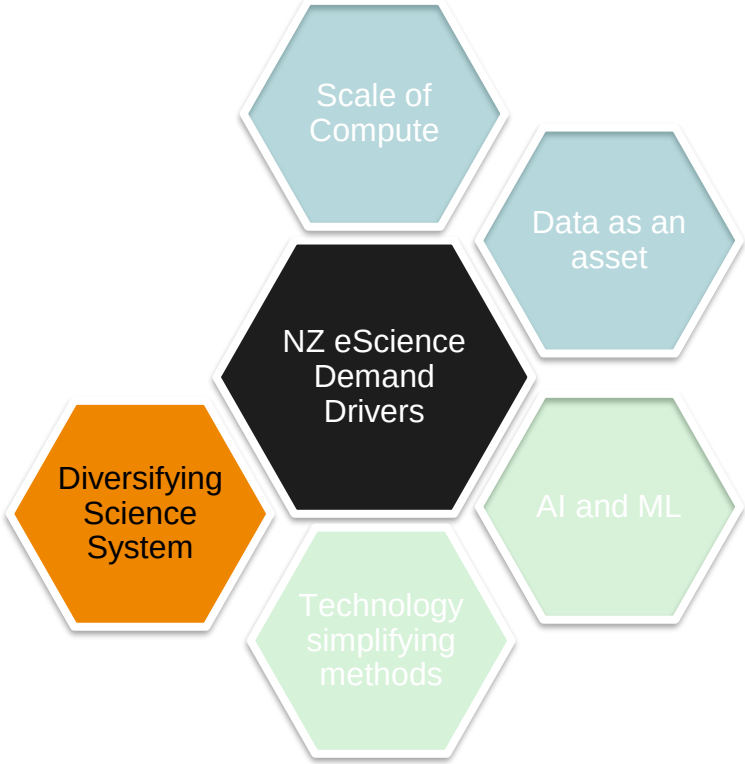


Domain & Science Network

Diversifying Science System

- More funded groups in the sector
- Commercial groups

Institutions using NeSI up 20% **in 2020 vs 2019 to 29**



Domain & Science Network

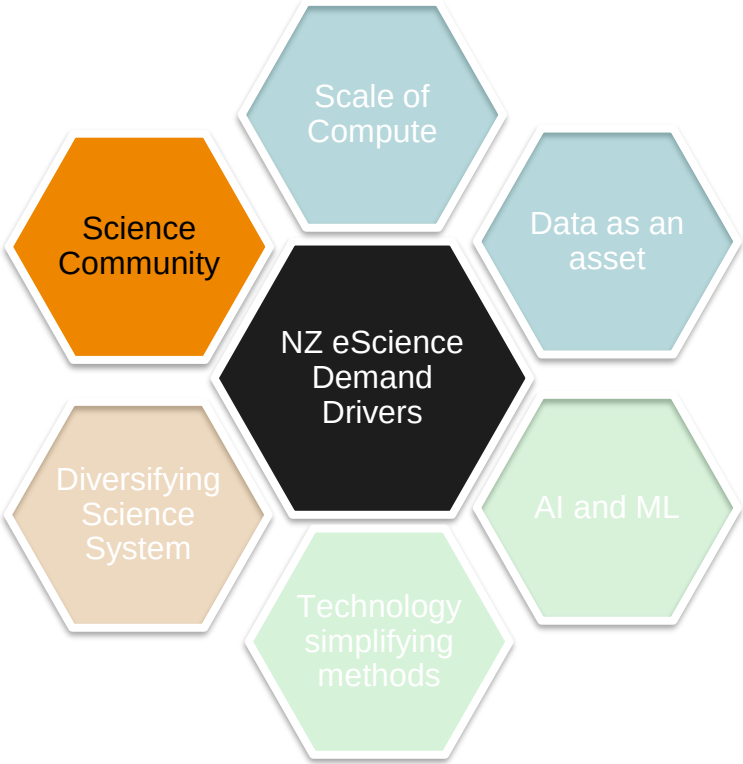
Science Community

Research domain articulation of need is getting better:
e.g. Earth Sciences, Genomics, AI/ML, Medical

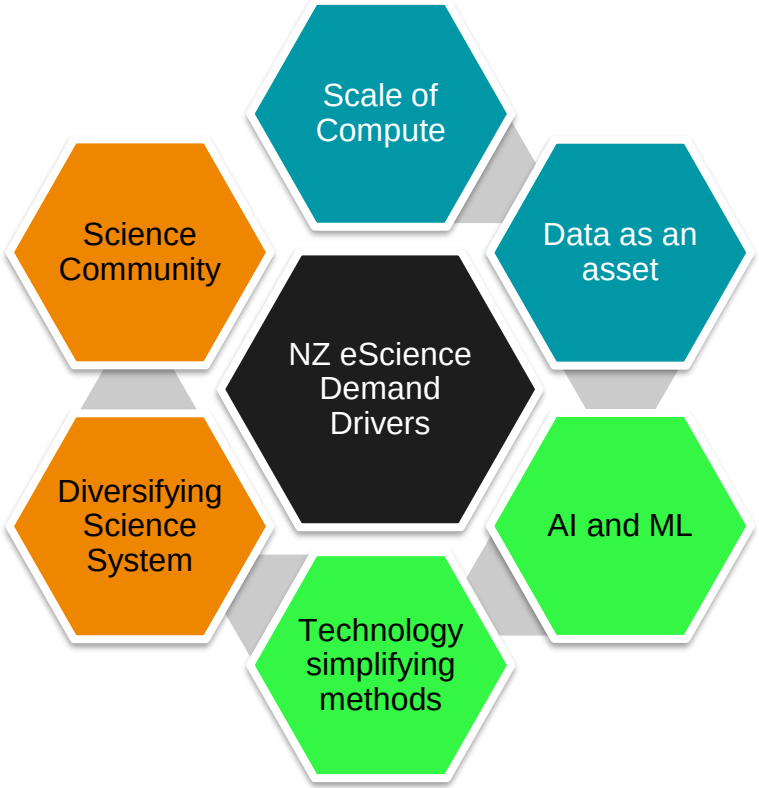
Specific deep needs such as the Genomics Data repository requires investment and time.

Research Software Engineering team work directly with Science teams, Their projects were up **24%*** to 36 long term projects.

*2020 vs 2019



Capturing the national need



NeSI New Zealand eScience Infrastructure

RSE RSE-AUNZ

Science New Zealand

NZ Research Software Engineers Conference

Spring 2021

Help us plan the programme!
Email events@nesi.org.nz to get involved.

Who attends:

- Researchers and academics who code
- Software engineers & system admins working in the research domain
- Generalists who bring together the research and technical domains
- Developers, IT managers, coding enthusiasts, and big data analysts from Crown Research Institutes, universities, and other public sector organisations

NeSI @ eResearch NZ - Talks & Workshops:

Wednesday 10 Feb

13:00 - 17:00 - **Maxime Rio -** Machine Learning on NeSI 101

13:20 - 13:40 - **Jun Huh -** Taonga: building a data repository for genomics research in New Zealand

13:20 - 13:40 - **Dinindu Senanayake** - Paving the way for Bioinformatics excellence in New Zealand

14:20 -15:00 - **Brian Flaherty** - Moving data: getting up to speed with Globus and Science DMZ

15:50 - 16:50 - **Jana Makar** - Challenge Accepted: Responding to community feedback for supporting diversity in HPC & eResearch

Thursday 11 Feb

11:00 - 11:20 - **Maxime Rio** - Data science consultancies at NeSI: A whirlwind tour of case studies

13:30 - 13:50 - **Chris Scott** - GPUs on NeSI

13:50 - 14:10 - **Georgina Rae** - Building Partnerships for eResearch

14:10 - 14:30 - **Wolfgang Hayek** - NeSI Consultancies - Evolving a Scientific Programming Service

14:40 - 15:00 - **Albert Savary** - Software on NeSI

15:00 - 15:20 - **Jeff Zais** - Taking Advantage of Technology Innovations in the Next Generation of NeSI HPC Infrastructure

15:20 - 15:40 - **Callum Walley** - Virtual Desktops for HPC

Thursday 11 Feb (cont.)

15:20 - 15:40 - **Robin Bensley** - Staying connected in an evolving eResearch ecosystem

16:00 - 17:00 - **Megan Guidry** - Sowing the seeds of capability: Experience what Carpentries instructor training is all about

Friday 12 Feb

11:20 - 12:30 - **Nick Jones** - Future of eResearch

12:20 - 12:30 - **José Filipe Gonçalves Higino** - Coaching great practices of describing a problem

13:30 - 14:30 - **Blair Bethwaite** - Embracing cloud-native architectures

13:30 - 14:30 - **Alexander Pletzer and Nooriyah Lohani** - Who needs research software engineers?

13:30 - 14:30 - **Georgina Rae** - FAIR for Research Software

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

THE UNIVERSITY OF AUCKLAND
NEW ZEALAND

NIWA
Taihoro Nukurangi

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND

Manaaki Whenua
Landcare Research

www.nesi.org.nz

@NeSI_NZ

support@nesi.org.nz

https://www.nesi.org.nz/apply