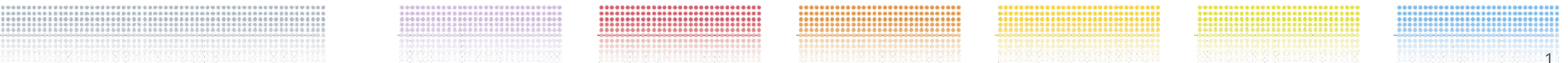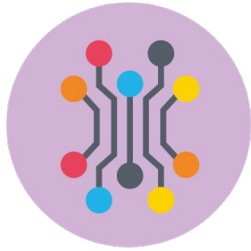# From local to the global: NeSI's efforts in building digital skills capabilities across Aotearoa

Dr Nisha Ghatak,
New Zealand eScience Infrastructure

# NeSI Services

## High performance computing (HPC) and analytics

- Fit-for-purpose national HPC platform including data analytics
- Flexible environments for research devops / research software engineers
- Hybrid eResearch platforms for institutions and communities

## Data services

- High speed, secure data transfer with end-to-end integration
- Hosting of large actively used research datasets, repositories, and archives

## Training and researcher skill development

- In-person and online training to grow capabilities in NZ research sector
- Partnership with The Carpentries (global programme to teach foundational coding and data science skills to researchers)

## Consultancy

- Computational science experts available to lift the computational capabilities of research teams, as well as optimise tools & workflows

# Training

# Training

-> Community

 -> Partnerships

-> Our training offerings

# Partnerships

# Partnerships

- Universities

- Crown Research Institutes (CRIs)

- Research Centres



Auckland

Wellington

Canterbury

Dunedin

Location of our team
Location of data centres

# Community Needs & NeSI's Role

- CRIs and 'digital transformation'

- Partnership and building awareness

- Our training plans are, thus, driven by needs and not specific checklists.

- Collaboratively deliver on those plans

# NeSI's collaboration with AgResearch

- The sentiment:

*"We know we want our researchers to be able to do bigger, better science; skills is a big hurdle to getting there"*

- The challenge:

*"Capability Challenge - Developing data savvy workforce, Data management, Data science and other related skills like HPC, data architects & data engineer"*

# Partnership with The Carpentries

# Partnership with The Carpentries

- Initiation in 2015.

- Regional coordinator and administrator role.

- Shift in regional coordination.

- Community building.

- Instructor Training.

- Executive Committee Member.

# NZ Carpentry Connect

- Held as a pre-conference event for eResearch NZ conference.
- Annual event for members of the carpentries community in NZ to come together.
- NeSI sponsored informal gathering.
- Often a space for potential carpentries instructors and enthusiasts to know more about the community.
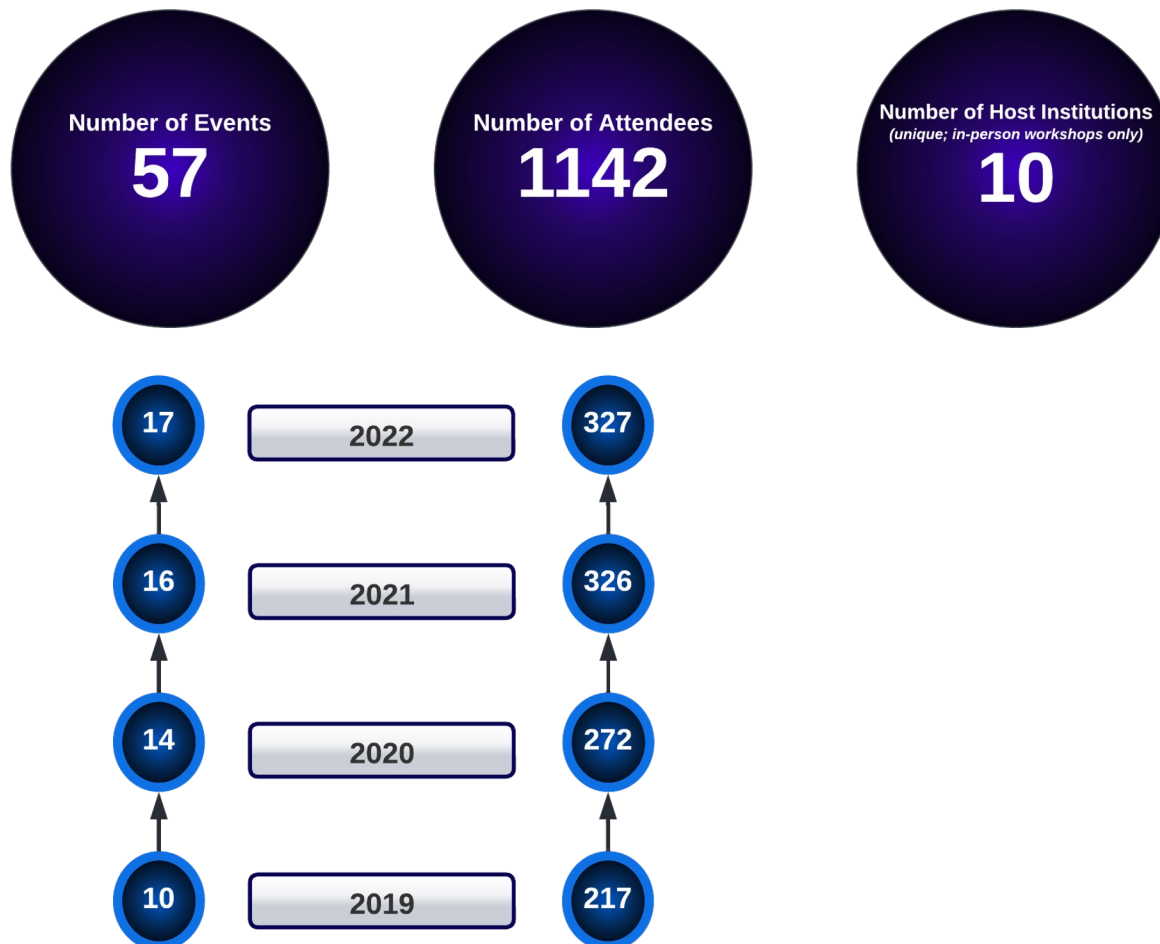
# Training Partnership with Genomics Aotearoa
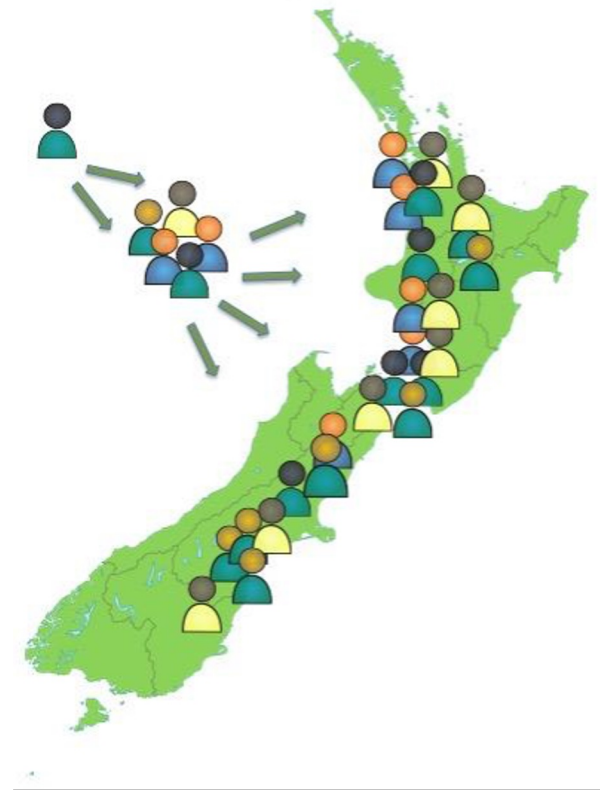
# NeSI-GA Bioinformatics Training



NeSI / Genomics Aotearoa : Training Summary ( 11.06.2019-02.12.2022)

**Number of Events**
**57**

**Number of Attendees**
**1142**

**Number of Host Institutions**
*(unique; in-person workshops only)*
**10**

| | Year | |
|---|---|---|
| 17 | 2022 | 327 |
| 16 | 2021 | 326 |
| 14 | 2020 | 272 |
| 10 | 2019 | 217 |

# Where to from here?

He tangata,
　　He tangata,
　　　　He tangata

**UPCOMING CONFERENCE**

# eResearch NZ 2023

15 - 17 February | University of Waikato

Hamilton, New Zealand

# No one has time for training. Is doing less the answer?

Dr Melissa Burke, Training and Communications Officer, Australian BioCommons

ARDC Skills Summit, 10 February 2023

Not so long ago, in a universe uncannily like this one, a researcher started teaching others about digital research skills. They worked alone to craft a workshop and brought small groups of people together to hone their skills. Soon, word got out that these workshops were pretty good and more and more people came knocking at their door.

And so the researcher gave them more.

They repeated their workshop and reached even more people. They loved teaching others and seeing them grow and wanted to do even more workshops. But the researcher started to tire. They were feeling overwhelmed with demand for the workshop. They had no more time to do training on other topics, or even for their day job. They were feeling rather glum.

One day the researcher met up with other researchers and suddenly realised they all had the same problem. Suddenly one of the researchers cried:

'I have an idea! Let's combine forces!'.

And so the researchers set up a cooperative. By working together they brought their workshop to bigger groups of people with less effort and were able to expand into new topics. Excitedly, the cooperative exclaimed:

'We can do more! We will do more!'.

Soon, word got out that these workshops were pretty good and more and more people came knocking at the door.….

The researchers had found themselves stuck in a bit of a cycle. How could they keep up with demand for training and how could they keep up with new topics? They could do more, but should they do more?

This is a true story and is the conundrum we find ourselves in with the National Bioinformatics Training Cooperative. A group of bioinformatics training providers who are working together to deliver a national program of bioinformatics training.

The model really has been a success, we really enjoy working together and we genuinely want to do more.

But we seem to have reached a peak in the number of live workshops that we can offer. Our trainers have no time for more training and have other commitments and priorities.

Recently I've been wondering:
Is doing less the answer?
How do you balance demand and capacity?
Are workshops the only way?
Are there more efficient ways of getting training to everyone?

I'll leave you with these questions and look forward to hearing your thoughts on this.

# Industry training collaborations.
# Is this the future?

Dr. Giorgia Mori
Data Science Trainer
**Sydney Informatics Hub (SIH)**

Narrowing the skills gap:
Lightning talk provocations

**ARDC Skills Summit 2023**

9-10th February

**@GiorgiaMori87**

# Mini case studies

| | Training tailored to SIH needs | Training tailored to industry needs |
|---|---|---|
| **Outcomes** | | |
| | **Organisation** | **Organisation** |
| | **NVIDIA** | **Petroleum Exploration Society of Australia (PESA)** |
| | **Opportunity** | **Opportunity** |
| • **Further ongoing collaboration beyond the single training;** | • ICT purchased $1,000,000 of GPUs from NVIDIA | • SIH ran a "python for geoscience" workshop at a conference |
| | **Approach** | **Approach** |
| • **Improved reputation and visibility in industry/university;** | • SIH reached out to NVIDIA to run a training workshop on how to use them effectively | • SIH approached to run bespoke versions *via* "contact us" form on SIH website |
| | **Insights** | **Insights** |
| • **Opportunities to upskill employees/researchers** | • Big tech companies are interested in continuous engagement with research (e.g. **NVIDIA DLI UNIVERSITY AMBASSADOR PROGRAM**) | • Researchers connections and various grants |

# Practical considerations:

- Differences in disciplines and knowledge levels among participants;

  - Manage expectations on training content and delivery format;

- Leverage university expertise for effective training development.

Universities and industry are "natural partners"
for bridging the skills gap;

For universities to fill the skills gap,
a strong industry partnership in needed;

University and industry need to share a clear understanding
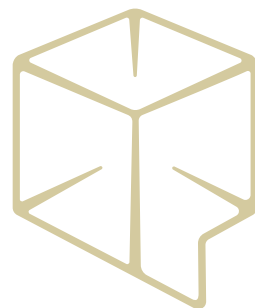of what needs to come out on the other side.

# Thank you!

# A day hike in the beautiful Accursed Mountains of Albania



Map

Valley

Vista

# Wilderness or signposts?

Do we leave our learners out in the wilderness, with minimal to no (recognisable) learning markers / guides?

OR

Do we provide signposts along their journey?

# The Status Quo... Lots of Content, minimal guidance "into" or "through"

**For users & for staff:**

- Core > Specialised

- Short trainings & deep dives

- Topical seminars & mini-conferences (P'Con)

- Hackathons, mini-hacks

- AMAs (Ask.Me.Anything.) / Q&As

- Online, virtual, hybrid

- Informational, instructional, experiential

- Cross-domain, domain-specific

- Modularised for 'quick picks', stackable

**For tertiary students:**

- ResBaz support: short trainings, Carpentries support

- One-off presentations & seminars

- Annual 10-week Internships

- Semester HPC course offering

**For secondary students:**

- School incursions and excursions; special group requests

- Work experience (partnered & beyond)

- Teacher MasterClasses

- Learn@Pawsey dataset/s

# Pathways..
# A Start!

More than content... pathways through.

Want to offer a minimalist path, as well as more robust path options.

Not everyone wants to hike the full Albanian pass. BUT, if they want to, they should be guided on how to do so.

Hundreds of training assets to be assessed, vetted and placed within the relevant pathways.

# Training Roadmaps

Created by Ann Backhaus, last modified by Marco De La Pierre on Sep 09, 2022

These roadmaps provide suggested learning paths for a particular topic. You can follow in sequence or take individual courses as needed.

To view upcoming training activities, view the Pawsey Events calendar.

Is there a roadmap you'd like to see that isn't here? Contact training@pawsey.org.au.

**Allocations**

> Click here to expand...

**Migration to Setonix Supercomputing System**

> Click here to expand...

**Migration to Acacia Storage System**

> Click here to expand...

**Visualisation**

∨ Click here to expand...

| Pawsey Resource | Title | Format | I want to learn more about... |
|---|---|---|---|
| Visualisation | Introduction to Remote Visualisation | Training Slides<br><br>YouTube link<br><br>Recording (52:53 hour:min)<br><br>5 Aug 2020<br><br>Documentation: Topaz Remote Visualisation | • What is remote visualisation?<br>• How do I use the remote visualisation service at Pawsey?<br>• How do I access visualisation packages remotely? |
| Visualisation | Paraview Part 1 | Training Slides<br><br>ParaView on Topaz<br><br>Documentation: ParaView on Topaz#Running+Paraview+in+Parallel | • How do I use ParaView remote visualisation?<br>• ParaView basics<br>• How do I launch a ParaView client-server?<br>• Hands-on examples |

# The Creatives... 2 examples of what's worked well at Pawsey

## Mentored Sprints

*If I could ask for 1 training, I'd ask for another mentored sprint.   --Emily*

- Goals:
  - Rapid progress; guided hands-on; targeted outcomes
- 3-week preparation: development platform, processes, realistic sprint plan
- 5-day sprint: daily stand-ups, agile
- Post-sprint: retrospective

**Others in the pipeline:**

- National & International Exchanges

## National: Annual Internships

*I changed what I wanted to do after the Program. --Intern*

- Co-funding (quadrupled intake)
- Intern Mentors & Alumn programs
- Immersive "bootcamp"; reusable repo of foundational training
- Combine with an extended "summer school"?

**International: Summer School / Exchanges**

- IHPCSS – International HPC Summer School (1st invite 2023)
- Expand teacher & school partners

# The questions I ask myself (and anyone who will listen)...

- How am I making it easy for someone to find what they need, when they need it, to upskill or evenskill?

- **How can I 'do' more with limited staff/money/time/etc.?**
(reuse/extend, "partners", CoP, industry $$, government grants, etc.)

- **What might creative options look like and what is blocking me from 'creativity'?**
(mentored sprints, micro-certs, formalised on-ramps or parallel freeways, etc.)

- **How can I extend inclusion?**