



# Growing research which computes

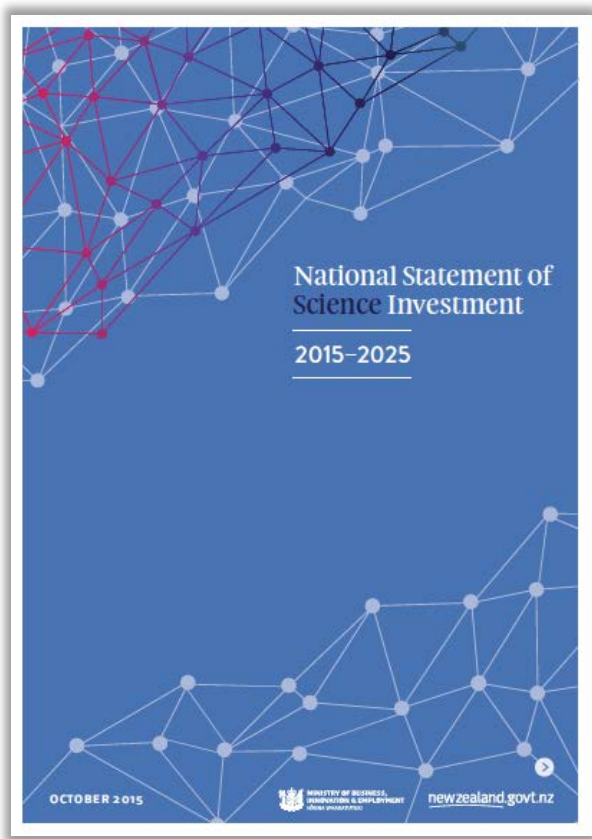


Nick Jones  
Director  
New Zealand eScience Infrastructure





# eScience in a national context



# National Statement of Science Investment

First National Science Strategy launched

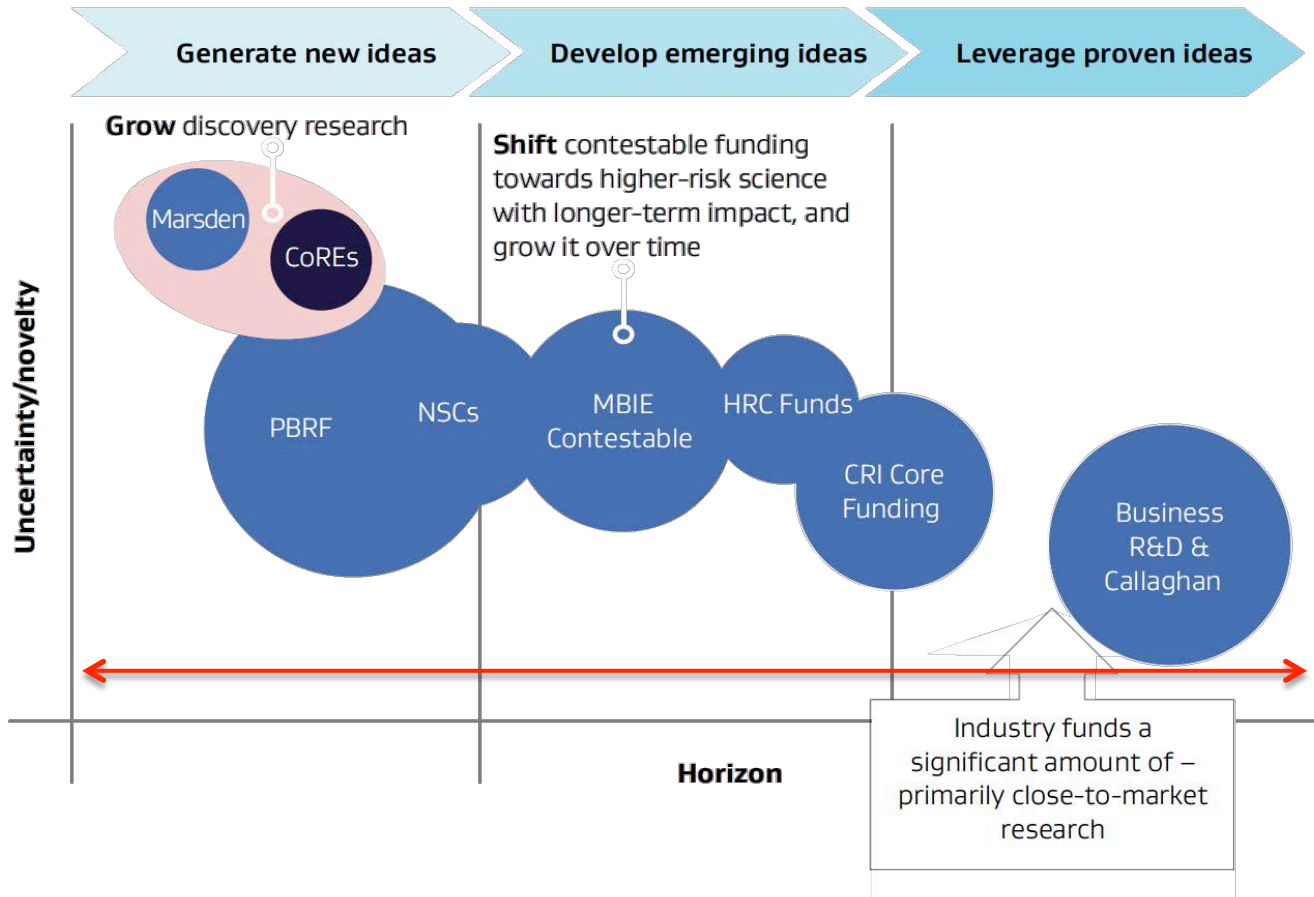
Steven Joyce, 5 October 2015

“Over the next five to 10 years, the science system will be increasingly prominent as it both shapes and is shaped by an economy that is increasingly innovation-led, ...

“This first NSSI responds to the need to plan more strategically, target New Zealand’s growing science investments more effectively, and leverage them to maximise their long-term value to New Zealand.”

Growth in collaborative research

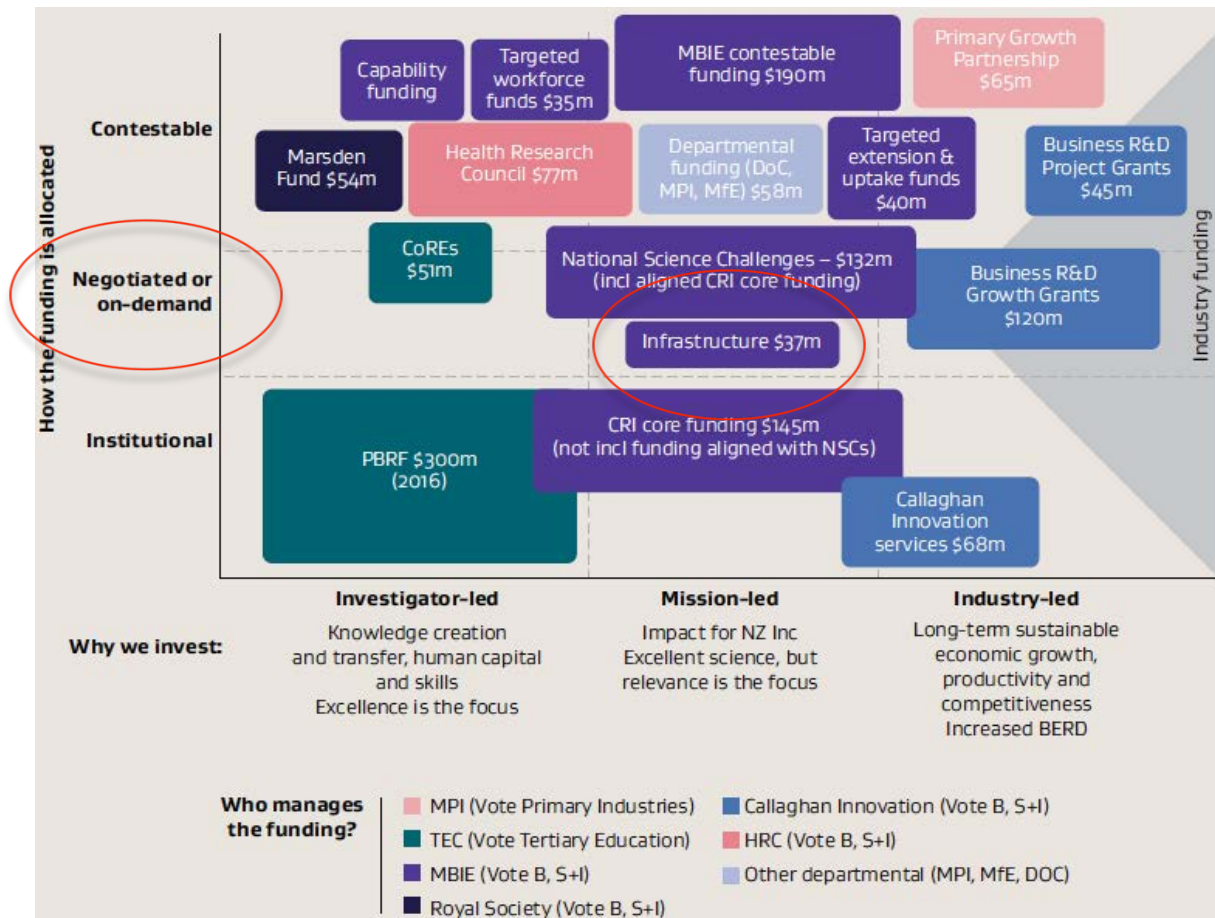
Long-term research plans (5+5)



# Large Scale Research Infrastructure, funded via an on-demand investment

sector (senior leaders of all institutions) endorsed as a national investment

as a sector, we've chosen to collaborate (rather than compete) to realise eResearch infrastructure

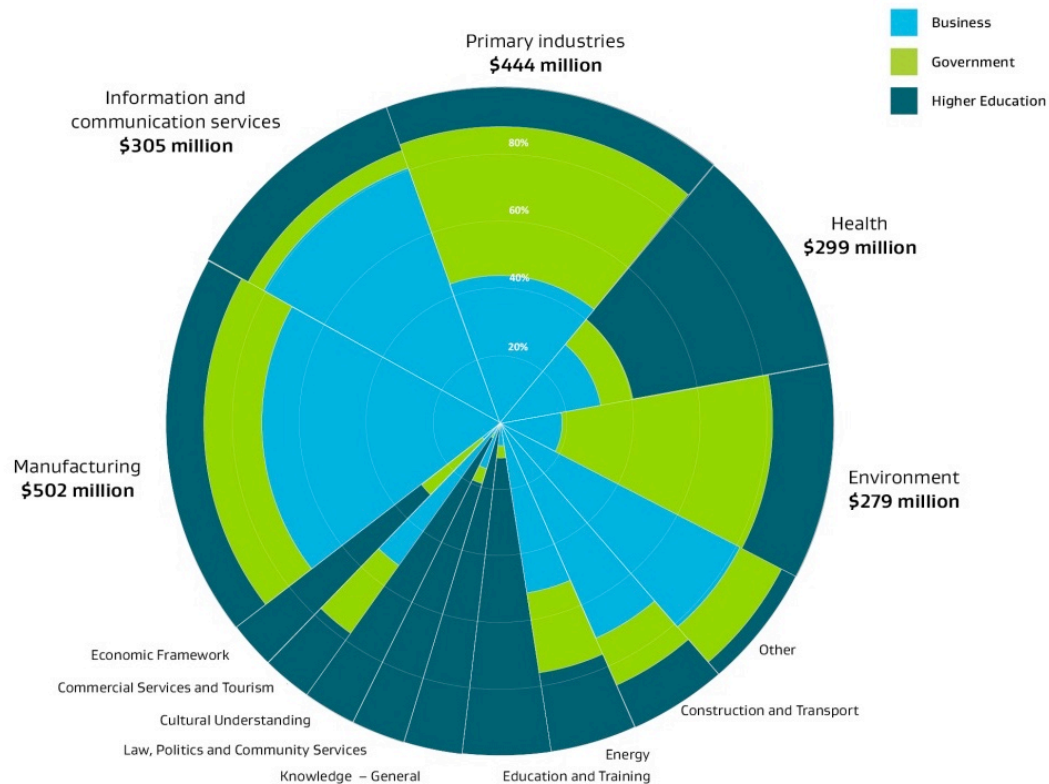


# Business Growth Agenda

## Building Innovation

Developing NZ as a hub for high-value, knowledge-intensive businesses and conducting more R&D to lift innovation

**Expenditure on R&D, purpose of research and sector of expenditure**



Source: Statistics New Zealand R&D Survey 2014



# eResearch 2020: Conversations for change

## eResearch challenges in New Zealand

eResearch 2020, March 2015

“... international research norms have begun a shift to digitally driven research methods and to new standards in terms of evidence and publishing. The future impact of New Zealand research and researchers will depend on the ability of the sector to adopt these new tools and to excel against the new expectations.

“To address this we need a coordinated approach across the research sector. Most importantly we need to alter the culture in our research institutions towards quality engagement with digital research methods and 21st century standards.”

# eResearch Challenges in New Zealand

## DISCUSSION DOCUMENT

eResearch  
2020

Conversations  
for change.  
March 2015

# 1 2 3 4

## Skills Lag

We are under-investing in research skills and methodological training

## Research Communities

eResearch strategy needs to fit with the needs of different research-disciplines

## Align Incentives

Research and institutional planning need to be better aligned

## Future Infrastructure

We must prioritise investment in data, visualisation, and digital research expertise





# New Zealand eScience Infrastructure



# NeSI

New Zealand eScience  
Infrastructure

## The Power Behind Researchers

Growing the computing capability of New Zealand  
researchers to ensure our future prosperity

## Delivering value through eScience services



High Performance Computing  
– computation and analytics



Consultancy  
Training



Data sharing and transfer

Public and private sector researchers

Access Policy

... supports individuals and institutions



New Zealand's specialist land-based university



CallaghanInnovation

REAAWZ

Landcare Research  
Manaaki Whenua

THE UNIVERSITY  
OF AUCKLAND

UNIVERSITY  
of OTAGO  
1848



NIWA  
Taihoro Nukurangi

NeSI

UC  
UNIVERSITY OF  
CANTERBURY

NZGL  
NEW ZEALAND GENOMICS LIMITED

MINISTRY OF BUSINESS,  
INNOVATION & EMPLOYMENT  
#KORINA WHAKATUKU | Science +  
Innovation

# The power behind researchers

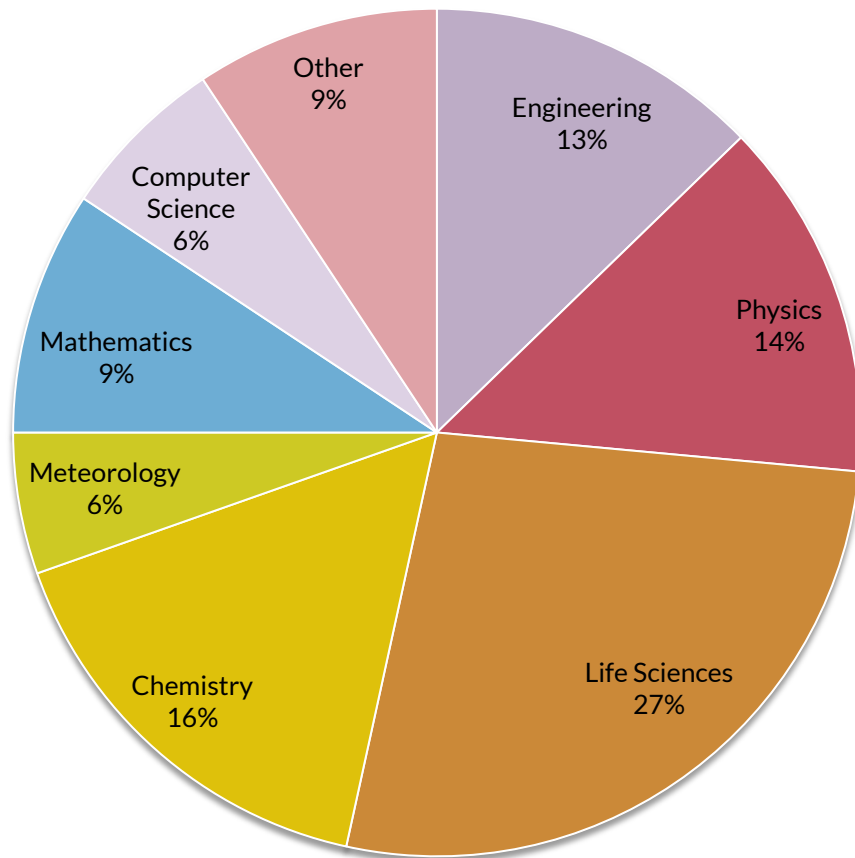


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# Research projects by discipline

2015

204 new projects



# Service performance 2015

89% of users (strongly) agree NeSI's services meet their needs

99.3% availability of services

## Case studies



High Performance Computing  
– computation and analytics



Consultancy  
Training



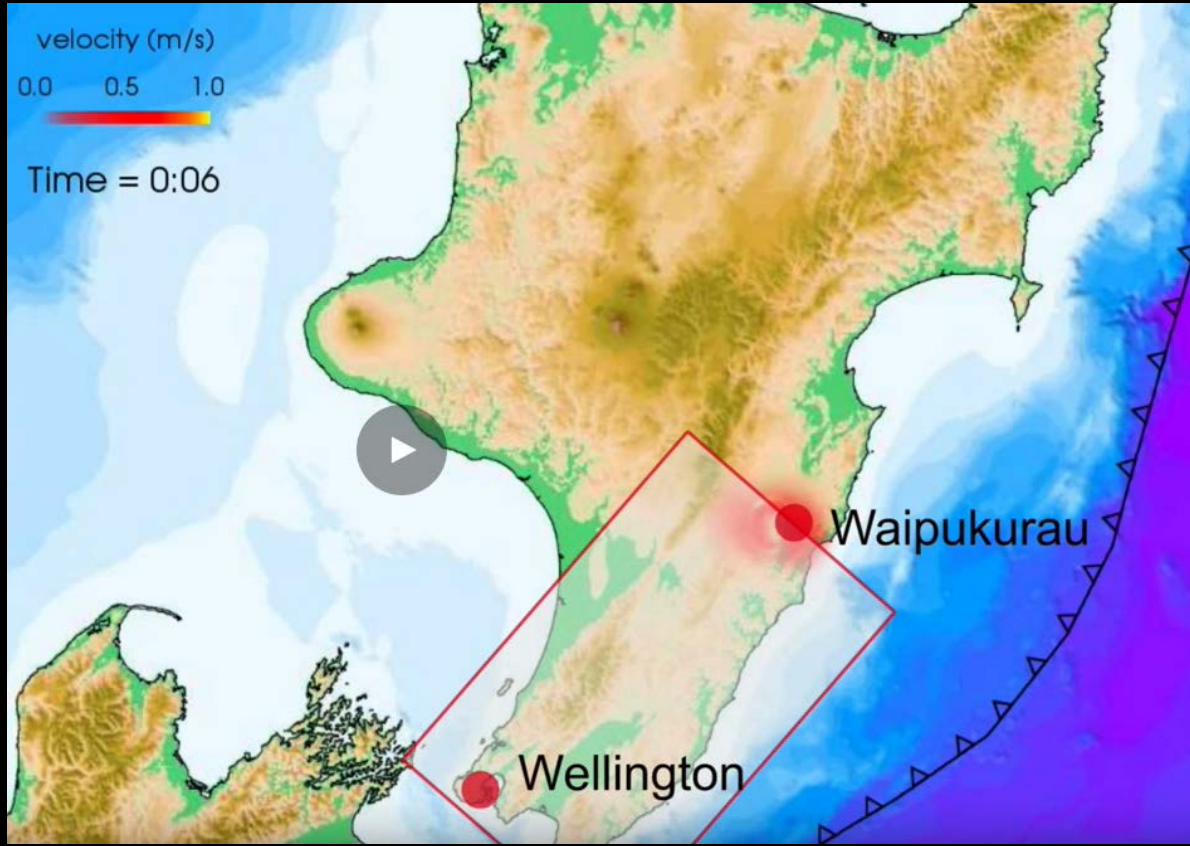
Data sharing and transfer





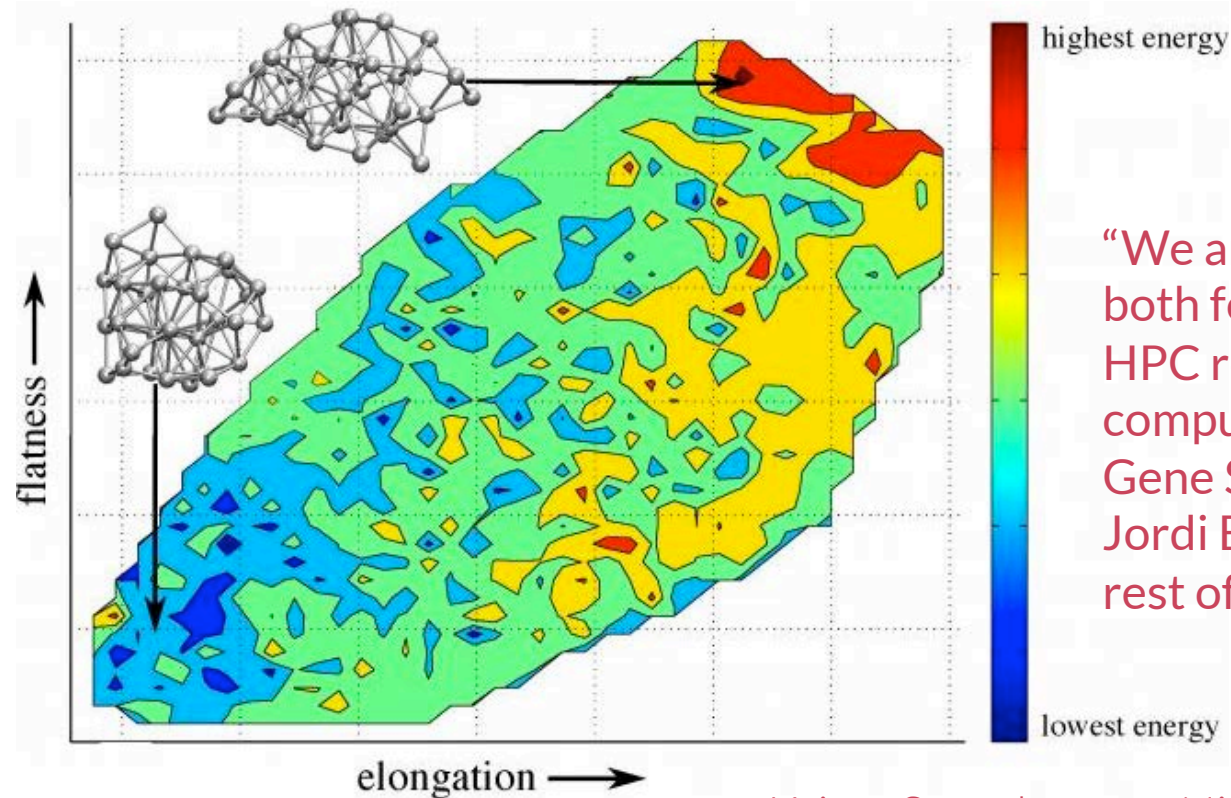
“Setting up our codes to run was straightforward and data transfer using Globus was quick thanks to the assistance and expertise of the NeSI team.”

“This resulted in greatly reduced computational times — from several months on a standard four-core machine to less than ten hours on Pan for the full 6.5 year-long dataset”



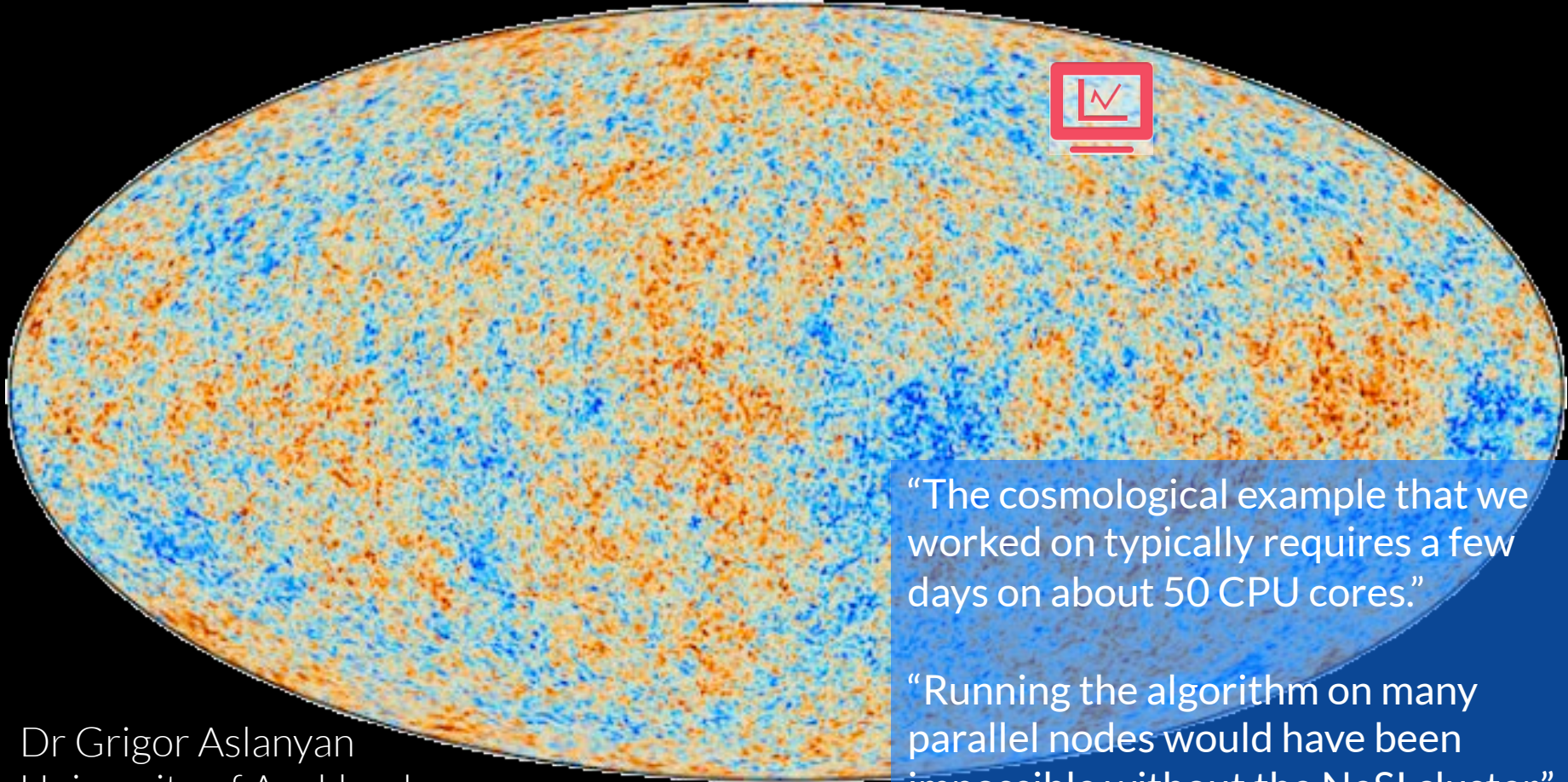
“Without NeSI’s supercomputer, we cannot run our simulations with a sufficient resolution.”

Seismologist Yoshi Kaneko  
GNS Science



“We are very grateful to NeSI – both for the access to powerful HPC resources as well the excellent computational support provided by Gene Soudlenkov, Francois Bissey, Jordi Blasco, Ben Roberts and the rest of the NeSI team.”

Krista Steenbergen, Nicola Gaston  
Massey University, Victoria University of Wellington



“The cosmological example that we worked on typically requires a few days on about 50 CPU cores.”

“Running the algorithm on many parallel nodes would have been impossible without the NeSI cluster.”

Dr Grigor Aslanyan  
University of Auckland

