MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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Research Infrastructure

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NB: the views expressed in these slides are those of the author and do not represent MBIE.

How do we fund big stuff?

- Certain key facilities/capabilities recognised as essential for a competitive science system ……. on many levels.

- Our fully-costed, fully-funded science system deals adequately with people and operational costs such as equipment charges, but demonstrates market failure with major research infrastructure.

Some History

- Recognised and addressed (imperfectly) through the formation of the Research Infrastructure Advisory Group (RIAG) by MoRST 2005 – 2010.
- Provided a mechanism for government intervention (co-funding), based on the strength of a science case (RIAG) and ultimately a credible business case:
  - Nationally significant facilities
  - Cost and/or complexity beyond the capacity of individual institutions
- REANNZ (already established), Australian Synchrotron (NZSG), New Zealand Genomics Ltd, NeSI ……
- High threshold, complex negotiation across institutions, unique solution to each case, difficult to manage financially (institutions and crown), ***slow*** ……

Infrastructure surveys

- RIAG scan (2007) – Hill, Wilson, Webber, Metson (chair)
  - By sector – all Universities, CRIs invited to participate
  - Lists with modest level of prioritisation …..

- Update Scan (2010) –, Gluckman, Cleland, Gerrard, McNabb, Metson (chair) - Priorities identified:
  - REANNZ - underpinning
  - High Performance Computing - underpinning
  - Synchrotron Beamlines
  - Nano/Micro fabrication and rapid prototyping, underpinned by characterisation facilities.
  - Integrated Systems Biology (Integrated 'omics facilities)
  - Large Animal Imaging

Have we made these identified priorities happen?

- The co-investment model dictates that:
  - Someone needs to champion the case
  - Institutions need to commit to a sustained investment - this may or may not align with their strategic priorities
  - Commitments required are large and compete directly with other calls on budget e.g. people.

- Collective action is challenging – it can be perceived as limiting competitive advantage, or even providing this to another institution.
- We struggle with new tools – if we don't already use it then by definition we don't need it?

National Statement of Science Investment (May 2014)

"New Zealand researchers and innovators need access to large-scale research infrastructure to:

- meet current and future research requirements of key sectors and users
- ensure New Zealand's science and innovation system is internationally competitive and can attract and retain top talent
- enable and support research innovation and increased collaboration.

……

A common theme across recent investments is the development of infrastructure to support collaborative, highly distributed computational and data-intensive research."

NSSI p.62,

NSSI on infrastructure (cont)

- Government has directly invested around $90 million over the past five years.
- In 2013/14, $28 million was invested through Vote Science - A portion of this investment is matched by institutional co-funding.
- Current investments include:
  - RV Tangaroa, a deep water marine research vessel with multiple scientific capabilities
  - Research and Education Advanced Network New Zealand Limited (REANNZ)
  - Australian Synchrotron (located in Victoria, Australia), ….. through the New Zealand Synchrotron Group Limited
  - New Zealand Genomics Limited, which provides national genomics technology and bioinformatics services
  - New Zealand e-Science Infrastructure.

NSSI p.62, May 2014

Future Direction

- "The Government sees a role in supporting the development of large-scale infrastructure that provides research capability and capacity at a national level. While projects may involve a long-term funding commitment from the Government, collaborators will need to **demonstrate a significant self-funding contribution and a commitment to put in place appropriate cost-recovery mechanisms**."

- Criteria – cost, complexity, capacity, impact, multi-user ….. align closely with and build upon the original RIAG principles

Observations

- The value of any research infrastructure lies solely in the science it produces.
- The public finance act requires that we pay for (depreciate) these facilities, ***whether we use them or not***.
- Do we have the right structures and incentives in the system to maximise this value?
- How can we better align the interests of the researchers with those of the institution(s)?

The critical issues

- Who owns depreciates – Can place a major burden on unwilling institutions. This may come with a requirement for an ROI.

- Business cases rarely stand the test of time:
  - We need to get realistic and understand real costs, including operating, impacts of user charges and how commercial use arises (and is paid for)
  - Address the value equation – the value lies in the science and the balance of underpinning funding vs user charges needs to encourage maximising productivity

Cont …..

- Funding envelopes are non-elastic - infrastructure competes with any other use of funding - large, nationally important infrastructures ***may*** attract crown contributions

- Are we prepared to consider a different paradigm e.g. higher overheads to support a dedicated infrastructure support fund and merit based access rather than cost recovery based access?

- How would this work in terms of *collective* action on both prioritisation and the need for institutional control over their commitments?