From:	no-reply@mbie.govt.nz
To:	Research, Science and Innovation Strategy Secretariat
Subject:	Draft Research, Science and Innovation Strategy submission
Date:	Saturday, 9 November 2019 1:22:29 a.m.
Attachments:	Online-submission-form-uploadsdraft-research-science-and-innovation-strategy-submissionsOtago-Museum_submission-research-science-and-innovation-strategy-1.docx

Submission on Draft Research, Science and Innovation Strategy recevied:

Are you making your submission as an individual, or on behalf of an organisation?
Organisation

Name
Craig Grant

Name of organisation or institutional affiliation
Otago Museum

Role within organisation
Director Science Engagement & Visitor Experience

Email address (in case we would like to follow up with you further about your submission)
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Which of the below areas do you feel represents your perspective as a submitter? (Please select all that apply)

If you selected other, please specify here:

Gender

Ethnicity

Name of organisation on whose behalf you are submitting, if different to the organisation named above
As above

In which sector does your organisation operate: (Please select all that apply)
Research , Non-profit, Interface of research and industry, Other

If you selected other, please specify here:
Science communication, outreach and engagement with public

How large is your organisation (in number of full-time-equivalent employees)?
~75

Please indicate if you would like some or all of the information you provide in your submission kept in confidence, and if so which information.
No confidentiality concerns.

Please upload your submission document here
Otago-Museum_submission-research-science-and-innovation-strategy-1.docx - Download File

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Research, Science and Innovation Strategy

Submission form

The Government is developing a Research, Science and Innovation (RSI) Strategy to set out our vision for RSI in New Zealand and its role in delivering a productive, sustainable, and inclusive future.

We are keen to hear the views of New Zealanders on the draft Strategy so that we can get a better understanding of what our country needs from RSI. We also are looking for feedback on how we can take action to ensure New Zealand's RSI system is optimised for success. These views will inform the direction of Government investment in RSI and the research and innovation areas for us to focus on as a country, as well as help us understand the challenges we need to overcome.

We encourage anyone with an interest to make a written submission.

How to have a say

We have included a number of questions in the draft RSI Strategy document to highlight issues on which we would like further input. We encourage you to use these questions as a guide when submitting your feedback.

This document provides a template for you to provide your answers. Please upload the completed document using our online submission page.

You do not have to fill out every section – we welcome submissions on some or all of the questions.

The closing date for submissions is 10 November 2019.

After the consultation period finishes, we will analyse the submissions received and incorporate the feedback in the final version of the strategy.

Confidentiality

Please note: All information you provide to MBIE in your submission could be subject to release under the Official Information Act. This includes personal details such as your name or email address, as well as your responses to the questions. MBIE generally releases the information it holds from consultation when requested, and will sometimes publish it by making it available on the MBIE website.

If you do not want some or all the information you provide as part of this consultation to be made public, please let us know when you upload your submission. This does not guarantee that we will not release this information as we may be required to by law. It does mean that we will contact you if we are considering releasing information that you have asked that we keep in confidence, and we will take your reasons for seeking confidentiality into account when making a decision on whether to release it.

If you do not specify that you would prefer that information you provide is kept in confidence, your submission will be made public. While we will do our best to let you know that we plan to publish your submission before we do so, we cannot guarantee that we will be able to do this.

Contribution of Research, Science and Innovation

This strategy is about New Zealand's Research, Science and Innovation (RSI) at a high-level. Its aim is to identify challenges and opportunities that will have the broadest impact on our research and innovation activities. For this reason, it mentions few specific areas or sectors of research and innovation. For this draft version of the Strategy, we are keen to hear from researchers, innovators, businesses, and providers of public services on what the RSI system could be doing to accelerate progress on Government's priorities.

Question 1: Where can the RSI system make the greatest contribution towards the transition to a clean, green, carbon-neutral New Zealand?

Question 2: Where else do you see it making a major contribution?

Question 3: What else could else the RSI system be doing to accelerate the progress towards the Government's priorities*?

* see list of the Government's twelve prioritiesincluded in Part 1 of the draft Strategy.

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 1. Reflect on if industry partnership/consortium models predominately used to date are really delivering solutions? Just because govt gets $$ leverage from industry peak bodies it does not necessarily equate to value nor outcomes and could be false economy long term. More promising 'greentech' seems to be stemming from fresh thinking via CoREs (e.g., MacDiarmid) and Universities who are applying leading sciences from other disciplines and 'fresh minds' from non-traditional sectors (e.g., drug delivery to controlled release of N-inhibitors, etc). The system also need to build scientific demand and literacy in users of research (regional councils, Ministries) and embed science-based metrics in regulatory regimes / national policy statements.

Qu 2. RSI can make major contributions to all areas and priorities within these. Rather than 'pick winners' create a system the encourages/incentivises greater connectivity between providers and users, and fluid flow of ideas and people between these organisations. The 'winners' will then pick themselves.

Qu 3. Strongly support the focus on encouraging greater connectivity as articulated in this strategy but critical that this is alongside RSI excellence. These are two sides of same coin.

Remove organisational incentives to 'hold on' to people and IP. Use postgrads/emerging researchers as "agents of knowledge flow" between organisations. Revamp Callaghan studentships along lines of UK Knowledge Transfer Partnerships (KTPs). Encourage simpler connectivity between SMEs and research capacity / expertise / equipment via redeemable voucher or similar. Make things more 'fluid' across these divides.

Also, build social licence for RSI by up ramping initiatives like Curious Minds – massive impact for small investment, and builds genuine connections across the full RSI system.

Researching and innovating towards the frontier

Question 4:	Do you agree that the RSI Strategy should be focused on innovation at the "frontier" (creating new knowledge) rather than behind the frontier (using existing knowledge to improve the ways we do things)?
Question 5:	In which research and innovation areas does New Zealand have an ability to solve problems that nobody else in the world has solved? Why?
Question 6:	In which areas does New Zealand have a unique opportunity to become a world leader? Why?
Question 7:	What do you consider to be the unique opportunities or advantages available to the RSI system in New Zealand?
Question 8:	What RSI challenges are unique to New Zealand, that New Zealand is the only country likely to address?
Question 9:	What are the challenges of innovating in the public sector? How do they differ from those in the private sector?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 4. Need both. Frontiers need world leading and fresh ideas. Applying existing knowledge is still critical (both NZ generated and that from o'seas) but that requires more translational and industry engaged expertise.

Qu 5. Odd question. RSI has potential to contribute/solve across all areas. Countless examples of NZ solving problems others cannot and equally vice-versa. Is intent more to do with what problems NZ might have to solve as others won't (eg kauri dieback)? Talent and science does not care about geographic boundaries, it is how it is applied to what questions/problem that differentiates it.

Qu 6. Avoid a desire to pick winner…science system has tried to do this since Foresight process and Knowledge Wave conference (Growth & Innovation Framework) and failed then…so what's changed? Back 'connected excellence' – i.e., invest in leading science and encourage mobility of ideas/people across the provider<>user/stakeholder silo. Excellence in industry will seek out excellence in RSI; just make it easy for both sides to connect. Also build RSI capacity in industry/users by providing more internships/support for postgrads to work in these organisations and create a bridge between research community and industry/users.

Qu 7. Ability to work collaboratively and across disciplines and sectors as we are a small country…but only if system/incentives encourage this – i.e., competitive advantage is potentially agility of how we develop and apply RSI.

Qu 8. As noted above, those issues that are 'endemic' to NZ and unlikely to be tacked elsewhere (e.g., kauri dieback; kakapo diseases)

Qu 9. Public sector tends to be inherently conservative/risk adverse. Procurement could be great driver of RS&T demand and flow. Tends to be a focus on science for compliance than science for improvement, which is generally where industry focuses. As a result, RSI for public sector users tends to appear to be incremental. Also slower flux on personnel in public sector tends to create inertia relative to private sector.

Have found Curious Minds funding has been positive at engaging likes of RCs in research programmes, as it identifies the most relevant community issue. In addition, if the community backs a problem/issue, it is very hard for a RC to then ignore so 'forces their hand' to commit to also monitoring/researching more than previously.

Our key challenge – Connectivity

Question 10: Do you agree that a key challenge for the RSI system is enabling stronger connections? Why or why not?

Please type your submission below.

Yes.

NZ's RSI system is characterised by silos of both providers and funding pools, with high focus on competitive funding systems. This creates a focus on trying to achieve market share of funding not externalising the research outcomes or capability developed. Success of CRIs and Univ's at trying to commercialise IP has been largely poor.

With a country characterised more by SMEs we need a mechanism to get more RSI talent into a broader range of companies. This speaks to use more internships/studentships, etc to encourage greater connections.

Also encouraging more inter-provider partnerships at researcher level (not organisational level like with NSCs) will bring together genuine (rather than coerced) talent! To date, we have found the Curious Minds programmes the most effective means of building genuine connections – helps brings together people onto a common focus with the community alongside, and from that much deeper research (& community) relationships and programmes have developed. It does require the ability to think and cost research differently however to deliver effectively.

Guiding Policy – Excellence

Question 11:	Do you agree with the definition of excellence presented here as the best thing possible in its context? Why or why not?
Question 12:	How can we achieve diversity within our research workforce? What are the current barriers preventing a diverse range of talent from thriving in the RSI system?
Question 13:	Do you agree that excellence must be seen in a global context, and draw from the best technology, people, and ideas internationally? Why or why not?
Question 14:	Do you agree that excellence is strengthened by stronger connections?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 11. Yes – good way of framing

Qu 12. Difficult. To start with, raising awareness of the diversity gap would be positive first step. That will enable providers/sectors/disciplines to recognise the scale of the issue and therefore catalyse them to respond. Needs to be driven by organisations to be a genuine cultural change rather than incentivised by funding carrots I suspect (encourage gaming for $$ not for real long term change)

Qu 13. Definitely globally benchmarked and connected, as science is a global profession. Opportunity is to connect our younger talent with the best overseas, and build bridges back to utility of science back in NZ

Qu 14. Yes. Evidence in literature that impact increases with greater interdisciplinary approaches.

Guiding Policy – Impact

Question 15: How can we improve the way we measure the impact of research?

Please type your submission below.

Recent impact document looked sound. Issue is always one of attribution.

Funding system needs to move greater proportion to a performance (review) rather than promise based (proposal) system. Use on site reviews of independent scientists/users to assess performance of programmes so they can test impact of science and relevance, and make on-going investment based on back of this rather than yet another promise-based proposal.

Impact should also include has the research helped improve scientific literacy or social licence. Currently most research programmes stop at technical publications or outputs to users, rather than wider community showcase/demonstration of insights. This will be critical to build public (& hence downstream stakeholder) understanding off and demand for future research results.

Guiding Policy – Connections

Question 16:	Where do you think weak connections currently exist, and what are the barriers to connections at present?
Question 17:	What actions will stimulate more connectivity between parts of the RSI system?
Question 18:	How could we improve connections between people within the RSI system and people outside it, including users of innovation, and international experts, business communities, and markets?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 16. Connections are weak in most places. Incredible amount of siloed activity within and across larger organisations. Incentives for providers to try to patent rather than partner early and devolve IP to partners better able to exploit. Exception is probably the likes of CoREs that have demonstrably higher connections at least between research providers (& in less contrived manner than for NSCs).

Qu 17. Please look at Knowledge Transfer Partnerships (KTPs) in UK. An enduring model of building connections and capacity. This would be my primary recommendation. The Callaghan studentships were once Technology in Industry Fellowships (TIFs) and were once the 'premium' scholarship to strive for (stipend wise), but they're now compare poorly with other similar scholarships, so no incentive for our brightest young minds to consider an industry-linked RSI career path.

Currently the Curious Minds suite of programmes (PSP and UCM) are the most effective means of nurturing genuine connections within the science system and across to users of the research. Expand these to more industry and stakeholder community of interests. It is very low investment for huge return and increase in social licence for NZ's RSI investment.

Also, enable applicants for funding to decouple IP from institutional management and elect to let this flow to other project partners such as industry or regional councils. This is treating management of IP more like management of publications, which are not institutionally controlled. Metrics show NZ publishes at high rates as individuals drive this. Our organisations however seem to fail on proxies like patenting, so look for way to 'unblock' this bottleneck.

Qu 18. See KTP suggestion above as starting point for this.

Another key and under-rated/appreciated aspect is the Curious Minds suite of initiatives. PSP and UCM funding has catalysed a huge amount of connections for little investment. It has brought together experts in non-competitive/collaborative fashion and connected this meaningfully with communities, users and industry. Probably the biggest bang-for-buck in

current MBIE investment portfolio.

Actions – Making New Zealand a Magnet for Talent

Question 19:	How can we better nurture and grow emerging researchers within New Zealand and offer stable career pathways to retain young talent in New Zealand?
Question 20:	How could we attract people with unique skills and experience from overseas to New Zealand?
Question 21:	What changes could be made to support career stability for researchers in New Zealand? What would be the advantages and disadvantages of these approaches?
Question 22:	Do you agree with the initiatives proposed in the Strategy to support and attract talented researchers and innovators? Are any changes needed for these initiatives to be successful? Are there any other initiatives needed to achieve these objectives?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 19. Develop a model for costing postdocs in proposals that provides some incentives for organisations to host but does not price them out from inclusion in bids. Could enable a PI to drop to 0.1 FTE at lead if they include a postdoc (rather than 0.15 min.) which would also free $$ to support postdoc in smaller/smart idea proposals/

Qu 20. No expertise in this area

Qu 21. Want stability for those that achieve results, maybe flux is good things for those not?

Qu 22. Refer again to suggestion of KTP model. Need a system that really encourage a new wave for new blood and thinking via studentships, postdocs and Smart Ideas.

Actions – Connecting Research and Innovation

Question 23:	What elements will initiatives to strengthen connections between participants in the RSI system need to be successful?
Question 24:	What elements will initiatives to strengthen connections between participants in the RSI system and users of innovation need to be successful?
Question 25:	What elements will initiatives to strengthen connections between participants in the RSI system and international experts, business communities, and markets need to be successful?
Question 26:	Are there any themes, in addition to those proposed in the Strategy (research commercialisation and international connections), that we need to take into consideration?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 23-26. All these Qu are inter-related. With the inevitable inertia of trying to get institutional change the quickest way of building connections will be by incentivising at the individual/person level. This can be done by KTP model, and more funding for people rather than promise based projects.

See also previous comments around success of Curious Minds as encouraging connections. These are an excellent entrée into a culture of greater connection, given the historic competitive environment will take some time to change culture.

System has to realise that by-&-large provider-led commercialisation is a failed model (funnelling all IP via institutional bottleneck). Back people and let them and their students/younger researchers be as mobile as possible across other providers and into industry/user community.

Actions – Start-up

Question 27:	How can we better support the growth of start-ups?
Question 28:	Do the initiatives proposed in the draft Strategy to support growth of start-ups need to be changed? Are there any other initiatives needed to support start-ups?
Question 29:	What additional barriers, including regulatory barriers, exist that prevent start-ups and other businesses from conducting research and innovation?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 27-29. Refer previous commentary about having little confidence that CRIs or Univ. are skilled at managing this process. Providing a use-or-lose IP policy may help?

Actions – Innovating for the public good

Question 30:	How can we better support innovation for the public good?
Question 31:	What public-good opportunities should our initiatives in this area be focused on?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 31-31. Again first step is building capability in the general public as well as the public sector and not for profits (often 'gate keepers' of public good issues) about the role and benefits of RSI. Refer again to KTPs and extend these to public sector and not for profits. Also refer to Curious Minds programmes which are very effective at engaging researchers and communities together on common or public good issues

Actions – Scale up

Question 32: What is the best way to build scale in focused areas?

Question 33: Do the initiatives proposed in the Strategy to build scale in focused areas need to be changed? Are there any other initiatives needed to build scale?

Note: see following page to comment on possible areas of focus

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 32-32. No in-depth expertise to comment

Scale up – Choosing our areas of focus

For this draft iteration of the strategy, **we seek input on the selection of possible areas of focus**. We will consider establishing around five focus areas, but, depending on the eventual selection, are likely to introduce them over time, rather than immediately. In addition to the criteria set out in the Strategy document, we invite stakeholders to consider the following factors in their suggestions –

- The ambition of this strategy to focus efforts in the RSI portfolio at the global frontier of knowledge and innovation.
- Ways in which the RSI system can accelerate progress on the government's goals.
- The focus areas already determined by *From the Knowledge Wave to the Digital Age*.
- Work already underway where we are already seeking to build depth and scale in the RSI system.

The following areas could be a useful start, and are highlighted in *From the Knowledge Wave to the Digital Age:*

- **Aerospace**, including both autonomous vehicles and our growing space industry.
- **Renewable energy**, building on recent investments in the Advanced Energy Technology Platform.
- **Health technologies** to improve delivery of health services and explore opportunities in digital data-driven social and health research.

We invite comment on these suggestions and welcome input on other possible focus areas.

Please type your submission below.

As noted earlier, its unclear how picking winning areas might playout. Preference to encourage much greater mobility of people and ideas in these 'priority' areas., as a 'dispersed' strategy for seeding innovation is more likely to be successful than a centrally planned and orchestrated one. Central planning is greater for setting up regulatory framework (like space agency work), but not necessarily innovation per-se.

Actions – Towards an Extended Vision Mātauranga

This section of the draft Strategy signals our intention to consult and collaborate further with Māori stakeholders to co-design our responses and initiatives. From that perspective, we consider the signals in the draft Strategy to be a start, rather than a set of final decisions. Nonetheless, we are keen on initial feedback in the following areas.

Question 34: Does our suggested approach to extending Vision Mātauranga focus in the right five areas? If not, where should it focus?

Question 35: How can we ensure the RSI system is open to the best Māori thinkers and researchers?

Question 36: How can we ensure that Māori knowledge, culture, and worldviews are integrated throughout our RSI system?

Question 37: How can we strengthen connections between the RSI system and Māori businesses and enterprises?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Qu 34-37. Challenge for system is to not overweight the investment priority to achieve VM aims and focus on genuine, organic growth and not forced/gamed growth that ends up with more growth in consultants than in researcher, research users or matauranga Maori understanding/use.

Actions – Building Firm Foundations

Question 38:	Do the current structures, funding, and policies encourage public research organisations to form a coordinated, dynamic network of research across the horizons of research and innovation? What changes might be made?
Question 39:	Is the CRI operating model appropriately designed to support dynamic, connected institutions and leading edge research? What changes might be made?
Question 40:	What additional research and innovation infrastructure is necessary to achieve the goals of this Strategy? What opportunities are there to share infrastructure across institutions or with international partners?
Question 41:	What elements will initiatives in this area need to be successful?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Please refer previous comments re organisational level culture and processes are not great at encouraging the mobility of people or IP to achieve rapid increase in connectivity. Nor do they have a greater record at direct commercialisation of IP. System needs a circuit breaker to make real change.

We have found organisations like Univ and CRIs are greater to collaborate with outside the competitive funding system but very hard to within it.

Play to organisation's strengths. Univ. and CRIs are relatively poor at science outreach and communication with wider public, yet try to dabble in these areas. More efficient to centralise this public engagement communication capability in more of a hub-&-spoke model/network. Museums for example have a network of over 400 locations around NZ that could provide this reach out of the RSI generated within Univ and CRIs to public and users, but is seldom utilised or even considered, as the expectations of these organisations tends to stop at the research bench rather than the extension and wider public sharing.

Actions – General

Question 42: How should the Government prioritise the areas of action, and the initiatives proposed under each area?

Please type your submission below.

Overall supportive of emphasis on building greater connectivity (so long as its hand-in-glove with a focus on excellence). Introducing schemes like KTPs will serve to send a strong signal of intent. Similarly ramping up existing small / pilot schemes like Curious Minds will also help signal seriousness of commitment to a new model of open collaboration and greater connection. Then building such expectations into Endeavour and Smart Idea proposals as a balanced consideration will help reinforce this message alongside the other criteria.

General

Question 43: Do you have any other comments on the Strategy which have not yet been addressed?

Please type your submission below.

No, thank you for the opportunity to contribute.