

From: no-reply@mbie.govt.nz
To: [Research, Science and Innovation Strategy Secretariat](#)
Subject: Draft Research, Science and Innovation Strategy submission
Date: Friday, 8 November 2019 9:20:08 a.m.
Attachments: [Online-submission-form-uploadsdraft-research-science-and-innovation-strategy-submissionsAuckland-UniServices-submission-form-research-science-and-innovation-strategy.docx](#)

Submission on Draft Research, Science and Innovation Strategy received:

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

Organisation

Name

Andy Shenk

Name of organisation or institutional affiliation

Auckland UniServices Ltd.

Role within organisation

CEO

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

In which sector does your organisation operate: (Please select all that apply)

Research , Start-up, Interface of research and industry

If you selected other, please specify here:

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

360

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.

None

Please upload your submission document here

Auckland-UniServices-submission-form-research-science-and-innovation-strategy.docx - [Download File](#)



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 the RSI system be doing to accelerate the progress towards the Government's priorities*?

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

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

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.

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)?

Answer: If we are to grow the number of globally scaled start-up companies, we have to be able to create our own Intellectual Property portfolio as a nation. This requires us to be innovating at the frontier, creating new ways of solving challenges, creating transformational solutions. Without a contribution to the “frontier” our ability to increase our global connectedness is significantly reduced as we will always be reduced to being “importers” of new knowledge and our relevance globally falls away. Finally, if we are reliant on being “behind the frontier” we risk an industrial base that will not have freedom to operate.

However, this does not mean that “behind the frontier” should be ignored as the RSI strategy needs to consider how research outputs can be further developed and implemented to create impact. As pointed out in the consultation document research and innovation is required for both the public and private sector and there needs to be an infrastructure to support this transition. Public, private partnerships are an excellent way to achieve this and recognise that in many cases both the public and private sector benefit from the successful implementation of research and innovation. Such partnerships have the added benefit of building the absorptive capacity of the private sector and develops non-academic, commercially focused career pathways. In addition, this reinforces the importance of research and innovation in commercial organisations that will translate into a growth in BERD investment in the future.

Question 5 and Question 6: In which research and innovation areas does New Zealand have an ability to solve problems that nobody else in the world has

solved and in and In which areas does New Zealand have a unique opportunity to become a world leader.

Answer: There are a number of answers to this question. The first answer is yes, where we currently have “best in class” research and development that continues to demonstrate connectedness and global value. Examples from the University of Auckland include wireless power transfer and power electronics (required for an increase in the use of renewable energy in the electrification of transportation, both for people moving and materials handling), the development of new medicines, medical and surgical devices, agritech, bioengineering, AI and Data Science, new functional materials and population health, amongst others.

The second answer is yes, where we have demonstrated a responsive and pragmatic regulatory environment and our geography, population and easily-accessed diverse environments contribute to a natural advantage that we should exploit. We have a unique flora and fauna which can be used as a competitive advantage and we also have a vastly diverse population, allowing for research that develops new knowledge of genetics and disease that would be very hard to replicate in less diverse populations. Our regulatory environment and the engagement of government officials in the research and innovation equation are also key advantages. Examples here include expediting trials in the automation of transportation, opening up New Zealander’s access to space, supporting the ethical testing of new medical technologies (drugs, diagnostics and medical devices), and the development and promotion of geothermal power and the use of renewable electricity resources.

This being said, trying to predict the future is impossible. Ten years ago almost no one predicted that space technology would be a source of significant competitive advantage for New Zealand. In addition, New Zealand’s 20-year leadership position in wireless power transfer technologies was funded by careful management of IP, and shared development with Industry, rather than by large public-good grants.

It is therefore important to develop an RSI strategy that is less reliant on “picking the future” and rather one that backs its winners (best people) with pragmatic regulatory regimes that allow speed to market, market validation and global relevance and connectivity. Finally, it is important that the RSI strategy develops around an understanding of global, multi-tiered supply chains and where added value is found and captured. New Zealand industry is typically either based on the primary sector or on industries with simple supply chains to final value, and a successful RSI strategy needs to address the opportunities that these supply chains offer.

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.

Question 10, 12 and 13.

Innovation must be global, and we must contribute globally. Connectivity requires relevance, originality and excellence. If we are simply copiers, “fast followers” we will cease to be relevant to the “before the curve” innovators and won’t be invited to this table and our connectivity will fall away. In addition, at least at a tertiary level, research is an embedded part of education and if we are to attract and retain high quality people, we must be able to fund high quality, “before the curve” research to build and grow connectivity.

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.

PROACTIVELY RELEASED

Guiding Policy – Impact

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

Please type your submission below.

Impact

The statement “enabling researchers to make their research more relevant and connected to end-user needs” needs to be articulated better. Current end-users and industries, particularly SME users of research, are typically very poor at defining and adopting transformational technology. History is littered with Kodak stories. What is more important is a dynamic, joined-up research and innovation ecosystem. New Zealand’s current industrial base has very little absorptive capacity and simply putting new technology on top of existing businesses does not work. Rather, a more appropriate strategy is one that develops a systems approach which encourages long term strategic co-investment in research that gives industry the incentive to develop absorptive capacity, even while the research is being done together. This could then be combined with a dynamic start-up ecosystem if impact is to be maximised. The focus should not just be on the need for researchers to somehow change the way they plan for and deliver impact; the private sector’s productivity and ability to develop and communicate coherent innovation needs should also be considered.

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

One of the impacts of research undertaken at Universities is the production of next-generation technical talent. In tertiary education, research undertaken by master’s and PhD students is an integral part of the Research and Innovation Process. In part, we should do Medical Research so that our population has the doctors it deserves, and we should do Engineering Research so we have the engineers our challenges require, etc. In a recent study of 42 companies in the US¹ the number one strategic priority for external technology acquisition was “Access to next-generation technical talent”. Perhaps the greatest impact that Research funding can have is the development of talent that is capable of understanding and developing new knowledge and translating that knowledge into innovative solutions. This has resulted in a number of companies specifically opening innovation centres in or close to Universities. These start as recruitment offices, which then develop into research and engagement centres.

1. Research Technology Management Vol 62, No 2, March – April 2019, 40-47

Measures such as the number of master’s and PhD students sponsored by and recruited by industry is an important measure of connectedness and, importantly, industry absorptive capacity.

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.

Connecting Research and Innovation

We are concerned at the somewhat simplistic view of what Connectedness actually means, and the proposed solutions. There is often a misunderstanding of what intellectual property actually is; that it is somehow a single, tradeable entity and that it is the “management” of IP within research organisations that is a barrier to entry or an inhibitor to innovation. The fact is, the largest current problem in innovation is that most research results are already made freely available to all through publications. “Freely available” means it belongs to everyone and no-one, and there is no incentive for anyone to invest in turning those results into tangible Intellectual Property, and new products and services.

Policies that intervene in this space almost always have unintended consequences, one of the reasons why the CRIs do not produce the number of spinouts that they could is that they are expected to serve the common good and make available all their research to their existing industry stakeholders. Industry that funds research expects rightly to have preferential access to results over those who have not contributed. Policies should not focus on the “management” of intellectual property within research organisations per se, rather they should focus on providing appropriate and shared incentives to reduce the commercial risks inherent in commercialisation and encourage investment in developing and practicing intellectual property into new products and services. These include incentives for researchers and their institutions, as well as companies, to develop new products and services and industry sectors.

Whilst the National Science Challenges have, in part, been successful in driving coordinated collaboration, they have also seen a proliferation of governance and management overhead, and, in particular, a replication of a number of functions that are already provided within research organisations that are not currently leveraged. We would not wish to see this overhead increase across the sector.

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.

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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.

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.

Develop a best-practice research commercialisation system

We would suggest that committing to one Technology Incubator Scheme as the only solution might be premature. The pilot model had mixed success and the new policy is only just being rolled out. There is some evidence emerging that the start-up sector in countries with technology incubators is not driving economic growth greater than other sectors, and the model develops more incubators and is focused on the success of these rather than on successful companies creating real value. We would encourage broader thinking in this regard, such as:

- An increase in the highly successful Pre-Seed Accelerator Fund that encourages Research Organisations to co-invest in developing ideas with global and local investors that can enter the private sector and be invested in by companies and investors (including incubators) and specialised funds (e.g. Medical Research Commercialisation Fund, IP Group, Booster, The University of Auckland Inventors Fund and the Innovate Fund at Victoria.
- Increase the investment in "Open" Investment Committee processes such as Return on Science and Momentum that demonstrate capability, intellectual property, start-up companies and talent in a routine "workflow" way, such that a living database of connectivity is developed. This will also increase the flow of people exposed to commercialisation and develop a talent pool.
- Return on Science already provides the sector direct access to over 50 experts, investors, companies etc. around the globe and, indirectly through networks, to many more. The Momentum Programme will generate a pool of capability that will grow by more than 60 new people every two three years.
- Provide incentives for long term, strategic co-creation of research programmes that develop absorptive capacity for industry and incentives for research organisations in public/private partnerships.

We do not believe that a regulatory approach to policies that govern ownership and licensing of intellectual property is needed or desirable. Despite most assumptions, these are already open, transparent and predictable. The University of Auckland transacts a license almost once a week to existing companies, starts around 10 companies per year and enters into a research agreement with the private sector (with IP clauses) around 4 times a day. Most problems in this regard are usually caused by inexperienced private sector players who do not

understand that previous commercial arrangements for IP cannot unreasonably be changed, and that Research providers should not have to carry all the commercial risk for the practice of IP. It is unreasonable to ask public-good institutions to provide warranties and indemnities for the practice of IP that they have no control over. Any change is likely to cause uncertainty to companies who license and acquire IP, and to investors who invest in start-up companies, and reduce the amount of commercialisation undertaken in New Zealand.

Start-up/Scale-Up

The recent increases in government support for this area, with the increase in Pre-Seed Accelerator Funding, Commercialisation Partner Network, Technology Incubators and New Zealand Investment Fund are a very good start. We would suggest the following activities would also increase the level of start-ups in New Zealand:

1. Funded PhD workshops on innovation, entrepreneurship, IP, design, production, execution, teamwork etc., alongside the current PhD path. This would recognise that as only a minority of PhDs will have jobs in academia and research and development, the New Zealand one will be a "differentiated PhD" that covers not only excellence in research (we still want great academics of the future) but a wider definition of what it means to be a successful researcher. This does not just have to be for STEM. For example, how does a country's history get developed into a higher-quality tourist experience beyond simple natural beauty; can we be known for not just for the originality and precision of our music but for its value; etc.? It is important for these educational experiences to be broad as this is important in the real world (as we are finding from Momentum). Real value in innovation comes from the creative collisions that come from people of diverse disciplinary backgrounds and from diverse life experiences. This can start the journey towards developing a NZ culture where studying entrepreneurship, and being an entrepreneur, are seen as legitimate study and career choices.
2. Develop An "entrepreneurs scholarship fund" or "entrepreneurial postdoctoral scheme" for carefully selected PhDs to develop their research/learning into a start-up that includes some buy-out for the staff supervisor (typically an entrepreneurial academic) of these PhDs.
3. Encourage mechanisms that increasing consultancy opportunities for academics with start-ups/early-stage companies. It is often these engagements that lead to the academic becoming more aware of the commercial opportunities for their work, and they often go on to develop ideas and company 2, 3 and 4 from these engagements.
4. Provide matched Co-Funding (alongside philanthropy, sponsorship) support for Maker Spaces, Ideas Challenges (Industry Problem Challenges - real-world, open-ended, interdisciplinary challenges proposed by industrial and research project sponsors), Ideas to Business, On-Campus Accelerators and Start-Up Co-Location Spaces. This would provide an incentive for Universities to develop these emerging programmes and provide incentives for venture philanthropy to develop.
5. Develop and simplify the Entrepreneurial Universities' Scheme into a

"start-up" fund for academics with an entrepreneurial track record that would encourage Universities to hire and keep them. This would both incentivise the universities to hire such people and support the new hires to get out of the blocks more quickly. It would also encourage Universities to retain locally-grown stars.

6. Explore and develop incentives for cross-faculty collaboration on teaching and research and conjoint degrees.
7. Fix the tax system for the benefits of being involved in a start-up – option schemes etc. Currently, legal compliance with these tax rules to keep key staff motivated are costing around 10% of each financing round.
8. Provide visa extensions for newly-graduated PhDs going into technology start-ups rather than having to work for someone else.

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.

PROACTIVELY RELEASED

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.

PROACTIVELY RELEASED

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.

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.

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.

PROACTIVELY RELEASED

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.

PROACTIVELY RELEASED

General

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

Please type your submission below.

UniServices response to the RSI Strategy consultation document

Auckland UniServices is pleased to have the opportunity to respond the Research, Science and Innovation Strategy consultation document from the Ministry of Business, Innovation and Employment. It is our understanding that the University of Auckland will make a separate submission, so the UniServices response is confined to those areas in which we feel we have specific expertise and insights to offer to MBIE.