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 5:42:42 p.m.

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
James Hutchinson

Name of organisation or institutional affiliation
Kiwi Innovation Network (KiwiNet)

Role within organisation
CEO

Email address (in case we would like to follow up with you further about your submission)
james@kiwinet.org.nz

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)
Non-profit, Start-up, Professional services, Interface of research and industry

If you selected other, please specify here:

How large is your organisation (in number of full-time-equivalent employees)?
8

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.

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KIWINET SUBMISSION TO GOVERNMENT RSI STRATEGY

NOVEMBER 2019

EXECUTIVE SUMMARY

KiwiNet commends MBIE on its ambition for the research, science and innovation system. The importance of this strategy and those of other government agencies aligning with one another will be critical for achieving maximum benefit from this strategy. The areas within the draft strategy that require the greatest focus for improvement are around the integration of commercialisation as a pathway-to-impact, opportunities to scale research commercialisation, management of intellectual property (IP) and measuring commercial outcomes.

We have referred to Technology Transfer Offices (TTOs), Crown Research Institute (CRI) and Independent Research Organisation (IRO) commercial teams and the supporting funding and infrastructure collectively as "the Commercialisation Partner Network (CPN)" throughout the document.

KIWINET RECOMMENDATIONS

1. The Strategy could better articulate the role that research commercialisation plays in delivering impact from publicly funded research
2. The strategy could better articulate the important role that the CPN alongside the PreSeed Accelerator Fund (PreSeed) will continue to play in delivering impact for NZ from publicly-funded research
3. Clearly articulate how the CPN fits within the broader Government strategic framework – across the RSI Strategy, Industry Strategy, Tertiary Education Strategy and the increased focus on impact in the Performance Based Research Fund
4. Clearly distinguish the roles of the CPN and Callaghan Innovation
5. Enhance the Connections Section by integrating interventions such as the CPN, incubators, Venture Capital Fund etc that are critical to leveraging value from connections created.
6. Integrate the important role of university Tech Transfer Offices (TTOs) and CRI commercial groups (collectively as the CPN) into the *Develop a global best-practice research commercialisation system* section
7. Include complementary commercialisation pathways in areas of the document that discuss start-ups
8. Engage with the CPN community to develop further thinking on policies governing IP with research organisations to ensure any regulatory steps are fit-for-purpose
9. Empower commercialisation teams within PROs to scale faster by providing supporting operational funding
10. Provide greater stability for the CPN ecosystem by confirming CPN and PreSeed Accelerator Funding (PreSeed) for the lifetime of the strategy (through to 2027).
11. Work in partnership with the CPN sector to develop and articulate output and outcome measures to better assess and reward steps along a commercialisation pathway-to-impact.
12. Earmark a portion of Endeavour Fund grants to be directed to commercialisation teams to undertake early market and commercial validation of Endeavour programmes (for

applications that are able to draw a line directly to commercialisation) to drive commercial iteration as the research matures.

13. Establish a doctoral training programme for PhD candidates that sits alongside their research, to upskill them in important skills relating to entrepreneurship and commercialisation

RESEARCH COMMERCIALISATION DELIVERS IMPACT

The Strategy could better articulate the role that research commercialisation plays in delivering impact from publicly funded research (MBIE Q3, Q4, Q7, Q9, Q23-26, Q30-31)

How this would enhance the strategy

- Help the broader RSI community, and the public, to understand and value commercialisation, how it works, and how it delivers impact so that they can engage effectively. The strategy states that value arises from the utilisation and implementation of an idea – this value will not arise without a clear and understood pathway for creating this value.
- Enhance participation of the research community with commercialisation leading to a stronger pipeline of research discoveries following a commercial pathway
- Distinguish different impact pathways that are typically available in broad terms such as publication, commercialisation, contract research, engagement with policymakers etc.
- Make it clear to the RSI community that commercialisation brings new innovations into the world that provide solutions to national and global challenges, and deliver "public good", including those that will aid our transition to a clean, green, carbon-neutral New Zealand. Commercialisation accelerates the time to (and extent of) the impact achieved from our research efforts
- Commercialisation offers an essential route for public research innovations to be accessible to New Zealanders. Without commercial and market viability, public research innovations can struggle to reach the people that they're created for.

The commercialisation process fits well within the Connections section (MBIE Q10, Q16-18, Q23-26)

Commercialisation is fundamentally based on Connections – connections between an inventing research team, commercialisation expertise and with investors and industry to take the innovation to market. KiwiNet member organisations tell us that commercialisation is a delicate art. More meaningful and impactful activity occurs when the TTO builds deeper and longer-standing relationships with researchers within their institutions.

Established relationships between EMBEDDED commercialisation teams and researchers are built on trust and are critical to building a high-performing commercial pipeline within each research organisation. Strong and productive relationships between the commercialisation team and the research community drive success and for this reason it is important that commercialisation teams are located within their institution, and are well-resourced, valued and empowered. High-performing commercialisation teams respond to the unique challenges and culture within their institution and nurture connections and relationships with researchers.

Other countries, such as Ireland, have experimented with centralised tech transfer offices – these were unsuccessful because the model did not enable institutional knowledge and trusted relationships between researchers and commercialisation professionals to be established.

How commercialisation could be described

Research commercialisation is a pathway-to-impact for publicly funded research to deliver economic, social, cultural and environmental impact, where the vehicle for impact is a new product or service. Commercialisation in this context is different from contract research or direct transfer of knowledge to an end-user, in that it starts with a research discovery and explores new applications and new markets that may lead to entirely new lines of business, start-up companies, and sectors for New Zealand.

Commercialisation also enables research to improve existing systems, processes, business models, produces and services.

Public research commercialisation can in this way contribute to both *Innovation at the Frontier* and *Innovation Behind the Frontier*.

Commercialisation brings new innovations into the world that provide solutions to national and global challenges, including those that will aid our transition to a clean, green, carbon-neutral New Zealand.

A commercialisation pathway is often an appropriate pathway to enable researchers to "innovate for public good" by bringing new innovations into the world as a product or service that have positive impacts on human health, the environment, society etc.

A key early step in the commercialisation process is a researcher making a technology 'disclosure' to the commercialisation team within their research organisation. The disclosure describes a new research discovery as intellectual property (IP) and identifies possible applications for the research as a new product or service.

A disclosure is rarely the first connection between the researcher and the commercial team to trigger the commercialisation process. It is common for commercial teams to work with researchers to integrate IP planning and commercial strategy into research programmes from the outset through an iterative rather than linear process. The Endeavour Fund process is a good example of this. This is because the commercialisation system has matured and because of an increase in focus on impact planning. In this way, commercialisation teams and researchers and connecting through multiple interactions as the research matures from an early stage.

The commercialisation process:

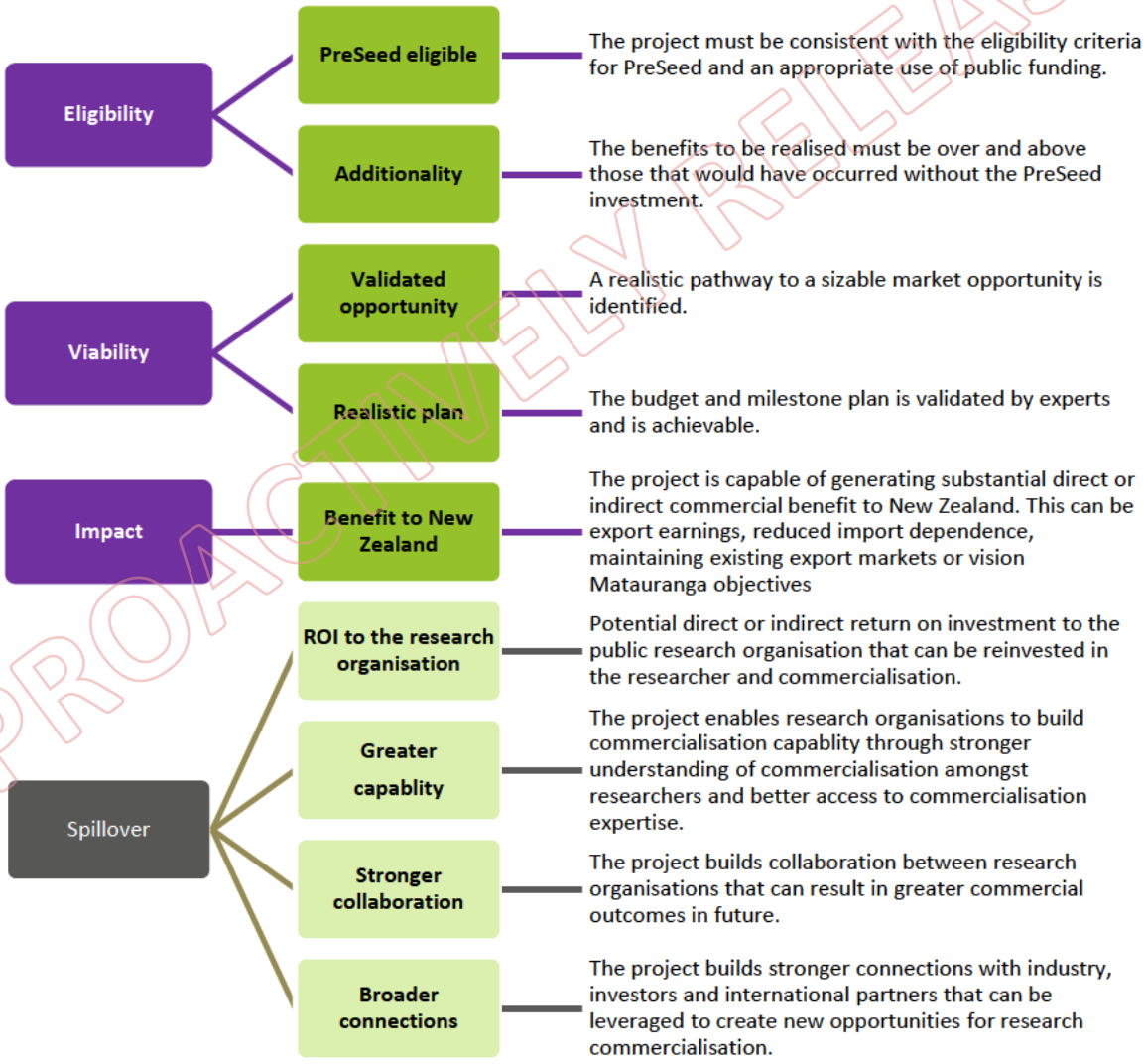
- validates applications and markets for the IP
- prioritises which of these to pursue
- establishes a pathway to market
- establishes and IP management strategy, including IP protection
- develops technical proof-of-concept or a working prototype
- wraps these strands together into feasible business model

- enables access to business expertise resources and mentors, specialised in the sector of interest

An initial outcome from the early-stage commercialisation process is to progress (or de-risk) the IP to a point where it can be taken on by the private sector, for instance via licensing into an existing business or forming a start-up company as a vehicle to continue commercialisation.

The early-stage commercialisation of publicly funded research in New Zealand can be viewed as *Innovation at the Frontier* and is carried out within the Commercialisation Partner Network (CPN) with supporting funding from the PreSeed Accelerator Fund (PreSeed).

KiwiNet Investment Committee Principles:



THE COMMERCIALISATION PARTNER NETWORK (CPN)

The strategy could better articulate the important role that the CPN alongside the PreSeed Accelerator Fund (PreSeed) will continue to play in delivering impact for NZ from publicly funded research (MBIE Q6-7, Q9-10, Q17-18, Q23-26, Q27-28)

How this would enhance the strategy

- Improve the visibility and clarity of the role of the CPN across the RSI ecosystem – the CPN alongside PreSeed is the first step in the commercialisation pathway-to-impact for publicly-funded research.
- Acknowledge the critical role that university Tech Transfer Offices (TTOs) and commercialisation teams in CRIs (working together as part of the CPN) play as custodians and drivers of research commercialisation
- Provide a mechanism to build in the critical connectors such as CPN and incubators that are part of the soft infrastructure that enables the system to operate
- Provide an opportunity for Government to deliver on many of the goals of the RSI strategy by signposting an intervention that is already actively delivering impact
- Signpost a clear end-to-end commercialisation pathway-to-impact for RSI stakeholders, especially for researchers.
- The CPN is the major route by which public research is transformed into new products and services since public research organisations by default own the IP that is create by researchers within their respective institutions.
- Enhance the ability of the CPN as a well-primed and adapted mechanism for identifying, triaging and translating innovation out of public research organisations, as its members are integrated within research organisation structures.

The internationally recognised Commercialisation Partner Network (CPN) model was designed and implemented to respond to the specific challenges facing New Zealand. The commercialisation teams of all the major public research organisations are active members of the CPN, working together to accelerate public research discoveries with commercial promise through to a point where they can be taken on by the private sector.

The CPN creates an integrated approach to commercialisation. It's a network of those involved in all aspects of public research commercialisation working together to create scale, enhance capability, improve collaboration, and leverage unique skillsets across the network. It has been built recognising that by working together rather than in isolation, New Zealand's research organisations can achieve much more in commercialising promising discoveries emerging from publicly funded research.

The CPN is more than just a network. The Investment Committee process (and CPN programmes) both supplies specialist expertise to shape commercial propositions and teaches/builds entrepreneurial and commercialisation skills and capacity.

The CPN and PreSeed interventions have an excellent track record and MBIE has committed to scaling the model with enhanced investment through to June 2021.

We challenge the broad assertion that New Zealand has been less successful in converting research into products and services. For the size of the investment that Government has made into public research commercialisation, the CPN has delivered robust outcomes. The measures that MBIE has chosen as proxies of success may not be the right indicators.

The **$40.6M** in PreSeed invested by KiwiNet partner organisations to date has delivered **$340M** in known revenue to NZ businesses and research organisations, including new export earnings, generating **49 start-up** companies and over **440 jobs**. These projects have collectively stimulated around **$40M** in follow-on Business Expenditure on R&D (BERD) within NZ firms.

This represents a **greater than eight-fold economic return to NZ on the PreSeed invested,** alongside a range of social, environmental and cultural impacts.

INCREASED RATES OF FORMATION OF TECH OR IP THAT FIRMS CAN USE	383	COMMERCIAL DEALS ACROSS 167 PROJECTS
INCREASED RATES OF FORMATION OF INVESTIBLE ENTITIES	50	START-UPS CREATED
IMPROVED COMMERCIALISATION CAPABILITIES IN COMMERCIALISATION UNITS	1068	SUGGESTIONS, RECOMMENDATIONS AND CONNECTIONS PROVIDED
	20+	DEEPER CROSS-PRO COLLABORATIONS
	44	EMERGING INNOVATORS
	100+	CORPORATE PARTNER PROGRAMME PROJECTS
	10	COMMERCIALISATION INTERNS
STRONGER LINKAGES FORMED BETWEEN RESEARCH ORGANISATIONS, INDIVIDUALS, ORGANISATIONS AND FIRMS WITH CAPABILITIES AND INTERESTS IN COMMERCIALISATION	28	PROJECTS THAT HAVE UNDERGONE DUE DILIGENCE BY TECH INCUBATORS
	199	BUSINESS CO-INVESTORS
	90+	COMMERCIAL MENTOR DEPLOYMENTS SINCE PROGRAMME BEGAN IN 2015
	1420+	COMMERCIALISATION AWARDS ATTENDEES

RECOMMENDATIONS TO ENHANCE COMMERCIALISATION IN THE STRATEGY

1. Be clear how the CPN fits within the broader Government strategic framework – across the RSI Strategy, Industry Strategy, Tertiary Education Strategy and the increased focus on impact in the Performance Based Research Fund (Q3, Q4, Q23-26)

How this would enhance the strategy

- This would ensure our world-class research commercialisation model does not fall between the gaps between different government strategies.
- *Innovation at the Frontier* – Early stage commercialisation supported through the CPN are early steps in "introducing products, services and processes that are new to the world" from publicly-funded research.

How this can be incorporated

- Integrate the CPN as a mechanism to introduce products, services and processes from publicly funded research.
- The CPN members are accelerating public research discoveries with investment from the PreSeed Accelerator Fund to a point where they can be transferred to the private sector. In this way, The CPN alongside PreSeed is acting as an enabler for research discoveries with commercial promise to deliver impact faster and at larger scale
- Include the CPN as an agent of change within the "functions that are vital to the delivery of the RSI Strategy, particularly with regards to our focus on improving connections" on p.30

2. Include the role of the CPN within the introductory narrative to *Part 4 – Actions* on p.30 and clearly distinguish the roles of the CPN and Callaghan Innovation (MBIE Q3, Q4, Q17-18, Q23-24)

How this would enhance the strategy

- A clear distinction would empower RSI stakeholders with the understanding of the unique and complementary roles of Callaghan and the CPN
- This would enable stakeholders to identify how they can best engage and gain value with different entities
- Callaghan Innovation is still a relatively new and unproven part of our RSI system with most of its activity so far focused on supporting the industry side of the system.
- Through this Callaghan obviously holds a key role in the future as businesses seek to increase their levels of innovation.
- However, how Callaghan's role would align with other research providers in improving commercialisation and tech transfer is not clear within the strategy.
- Building on the current CPN base would seem both more effective and less risky than developing a new capability within Callaghan Innovation for instance.

How this can be incorporated

- The role of Callaghan is currently defined in the strategy as "Callaghan Innovation's core role is to support science and technology-based innovation, and its functions include to facilitate networking and collaboration between businesses and research providers, and to facilitate the transfer of knowledge and technology".
- We would see the role of Callaghan Innovation as fulfilling this for innovation originating from (or led by) the private sector.
- Define the role of the CPN is to fulfil this for innovation originating from (or led by) public research organisations

3. Enhance the Connections Section by integrating interventions such as the CPN, incubators, Venture Capital Fund etc that will be critical to leveraging value from connections that are created (MBIE Q10, Q23-26, Q27-28).

How this would enhance the strategy

- The CPN was established to tackle many of the connection challenges outlined in the bullets on p. 23 of the strategy and has been highly successful.
- The research commercialisation pathway is well established, mature and sophisticated with strong participation of key stakeholders.
- This will provide an important opportunity for MBIE to signpost next steps in selected impact pathways to the RSI community
- Government already funds and supports several components of the commercialisation impact pathway (such as the CPN, PreSeed, accelerators, and incubators) – signposting these within the strategy will help to drive further connection across the ecosystem.
- These interventions provide the critical activation energy to overcome barriers to collaboration such as gaps in expectations, purpose and capability that often exist when, for instance, research and business comes together.
- This will help RSI stakeholders to understand that the 'Connections' concept is not entirely new and that MBIE is building on existing infrastructure.
- Signposting and enhancing existing interventions that are working well will ramp up the flow of research and innovation through the system, into start-ups, existing businesses and the public. Working with the current system as a starting point to scale it to a higher level of performance.

How this could be incorporated

- Include a diagram, alongside or as part of the investment system map on p.15 that outlines key 'connectors' and pathways-to-impact that Government currently provides
- This diagram should include the CPN – Building meaningful, lasting and valuable connections are at the heart of the CPN mandate and core to our value proposition.
- Include existing connectors such as the CPN in box 2 – "Connecting Research and Innovation" – of the Guiding Principles Diagram on p.3
- Include CPN in the list of examples of "structures within our research and innovation system that already encourage deliberate, coordinated collaboration that are working well" (p.29)

4. Integrate the important role of university TTOs and CRI commercial groups (collectively as the CPN) into the *Develop a global best-practice research commercialisation system* section on p.32 (MBIE Q16-18, Q23-26).

How this will enhance the strategy

- A world-class research commercialisation system will have a good regulatory framework and good incubation of developed ideas and concepts. It will also have well developed parts of research institutions which help the process on identifying 'commercialisable' ideas and technologies and help them along the journey towards incubation or transfer.
- The tech transfer offices in NZ universities and CRIs grouped within the CPN are such an improving network that have made many past contributions which continue to build.
- Strong connections are a fundamental key to the success of the CPN. It is critical that the RSI strategy supports strong connections between commercialisation teams and the research community within their institution to facilitate and iterative commercialisation process from the early stages of research programmes.
- The CPN is a critical bridge between public research organisations and the private sector. Empowering university TTOs and CRI commercial teams through strategic integration of the CPN with the commercialisation model in the RSI strategy will be critical to strengthening this bridge.
- Research organisations hold ownership of the IP created within their respective institutions. A commercialisation pathway cannot therefore be formed around a public research discovery without the leadership, buy-in and authority of the TTO or commercial group.
- Explicitly including TTOs and commercial teams (collectively as the CPN) within the commercialisation model within the RSI strategy would recognise their role as custodians of this IP and the engine rooms for research commercialisation.

How this can be incorporated

- Integrate the CPN into the narrative on p.32 as an existing high-performing 'connecting' component of our research commercialisation system that can be built upon and scaled.

5. Include complementary commercialisation pathways in areas of the document that discuss start-ups – these pathways must be equally supported and valued (MBIE Q10, Q16-18, Q23-26, Q30-31)

How this will enhance the strategy

- There are other important commercialisation pathways for public research discoveries that add significant value to New Zealand alongside the start-up route.
- These include high-value licensing into existing NZ companies or entities.
- These include high-value licensing into global partners to create impact from NZ science by making products available to the NZ public via global supply chains and creating economic returns for government owned entities, which reinvest returns into further public research.
- While the scale in IP commercialisation will likely come in part through growing the pipeline of start-ups, the channel into existing businesses and the public sector will also grow and remain an important pathway.

How this can be incorporated

- Articulate the importance of commercialisation pathways into existing firms within the Connecting Research and Innovation narrative on p.32
- The Innovating in the Public Sector box on p.19 is an example of a how a commercialisation pathway can lead directly into the public sector instead of a start-up route.
- Articulate the importance of the commercialisation system in bringing innovation into the world that delivers public good within the Innovating for the public good narrative on p.34

6. CPN programmes add value to *Making New Zealand a Magnet for Talent* (MBIE Q19-22, Q27-28, Q33)

How this will enhance the strategy

- There are mature world-class interventions that already exist to build the talent pipeline New Zealand will need to achieve the aims outlined in the strategy
- KiwiNet's Emerging Innovator programme is developing and retaining innovative researchers by providing a pathway to nurture and grow emerging researchers within New Zealand.
- The Emerging Innovator programme identifies researchers with an entrepreneurial spark and fast-tracks them to success.
- The programme is helping to develop, support, retain talented researchers in New Zealand. 44 Emerging Innovators have entered the programme since 2015, from 12 institutions. 32 have graduated to date. Key outcomes have been, 4 new start-ups, 2 Business development units (pre-spin out), and 12 successfully securing KiwiNet PreSeed investment totalling over $2M. Many successful graduates of the programme are from overseas and in many instances the programme has enabled them to be retained within our RSI ecosystem.

KiwiNet Emerging Innovators

44 AWARDED
32 GRADUATES TO DATE
17 CURRENTLY IN THE PROGRAMME
4 START-UP COMPANIES
20 FUTURE RECIPIENTS TO BE AWARDED PER ANNUM BY 2023

- KiwiNet's Women in Leadership Develop (WILD) programme (being developed in partnership with Brandon Capital), GetFUNDED workshop series, Exponential Founders programme, Commercialisation Internship Scheme and Auckland UniServices' Momentum programme are examples of initiatives that are supporting and developing excellent people across the RSI ecosystem.

How this can be incorporated

- Include CPN programmes in the list of initiatives that Government plans to expand and build upon to drive further success on p.31
- Establish a doctoral training programme for PhD candidates that sits alongside their research, to upskill them in important skills relating to entrepreneurship and commercialisation – provide additional funding for PhD candidates to pursue a commercial endeavour upon completion of their PhD to build a workforce of entrepreneurial scientists and leaders that will drive the next generation of deep-tech start-ups.

7. Recognise the role of the CPN in building scale – growing the number of high-tech, high-growth firms, including start-ups (MBIE Q27-28)

How this will enhance the strategy

- The CPN has already built and is strengthening connections and activity with other parts of the RSI ecosystem to drive connectivity and build scale. Government has already committed additional funding over the next two years to enable KiwiNet and Return on Science to do this
- KiwiNet members have catalysed the formation of 49 start-up companies since 2003, providing a strong track record and experience to grow the number of high-tech start-ups in New Zealand.
- The CPN is a critical bridge between raw public research discoveries and the formation of new start-up companies – it is already successful and is currently scaling.
- KiwiNet collaborates closely with the technology-focused incubators to provide incubators with early visibility of technologies progressing through the PreSeed pipeline and supporting appropriate technologies into tech incubation.

How this can be incorporated

- Articulate the important role that the expansion of the CPN will play in growing the pipeline of deep-tech start-ups from public research organisations within the *Start-up* narrative on p.33.

- Include the CPN and PreSeed within the examples of interventions where Government is seeking to build scale on p.35

SCALING COMMERCIALISATION FOR GREATER IMPACT (MBIE Q23-26, Q27-29, Q33)

KiwiNet welcomes the strategy's focus on scaling the RSI ecosystem to meet New Zealand's R&D targets and impact goals. We also acknowledge the objective to scale the research commercialisation ecosystem as a critical contributor towards these goals.

KiwiNet and our partners are implementing an ambitious programme to scale the impact of the research commercialisation system. This is being predominantly funded by MBIE CPN and PreSeed funds through to June 2021.

GOVERNMENT CAN SUPPORT THE CPN TO SCALE FASTER

1. We note the intention to take a regulatory systems approach to policies that govern IP within research organisations and would welcome a discussion with MBIE to explore this further.

IP policy is highly dependent on organisational context and there is a broad range of organisations within the NZ CRI and University environment. For example, a CRI whose primary research impact is delivered through publication and policy impact requires a different policy to a CRI whose impact is largely delivered through the development of novel technologies and solutions. Centrally regulating IP through a single policy may hamstring some organisations while putting undue pressure on others.

How to enhance this aspect of the strategy

- provide clearer direction to universities, CRIs and IROs (and therefore set clearer expectations for researchers) on what they should do with their IP under different circumstances. For instance commercialisation, transfer to industry bodies, publication, make freely available etc.
- KiwiNet member organisations represent the IP custodians of a large proportion of public research organisations
- We could help MBIE to explore and validate the specific challenges that Government has identified with management of IP within research organisations and how this is being evidenced.
- We need to be careful about asking researchers to "connect and share freely" to ensure that IP and value is protected in the process. Giving IP with commercial potential away freely would have the opposite effect to that intended and would be at odds with what MBIE is requesting from recipients of contestable research funding.

2. Government could empower commercialisation teams within PROs to scale faster by providing supporting operational funding

3. Provide greater stability for the CPN ecosystem by confirming CPN and PreSeed Accelerator Funding (PreSeed) for the lifetime of the strategy (through to 2027). This would recognise the role that the CPN plays to create a platform for research commercialisation in New Zealand. The distributed model is important – commercialisation is a delicate art that fundamentally relies on deep relationships with researchers.

4. Earmark a portion of Endeavour Fund grants to be directed to commercialisation teams to undertake early market and commercial validation of Endeavour programmes (for applications that are able to draw a line directly to commercialisation) to drive commercial iteration as the research matures. This would make a big impact in informing and shaping Endeavour projects along a validated commercialisation pathway from the outset to maximise benefit to NZ from these investments.

5. Establish a doctoral training programme for PhD candidates that sits alongside their research, to upskill them in important skills relating to entrepreneurship and commercialisation – provide additional funding for PhD candidates to pursue a commercial endeavour upon completion of their PhD to build a workforce of entrepreneurial scientists and leaders that will drive the next generation of deep-tech start-ups.

MEASURING THE IMPACT OF RESEARCH (MBIE Q15, Q23-25)

Work in partnership with the CPN sector to develop and articulate output and outcome measures to better assess and reward steps along a commercialisation pathway-to-impact.

The activity you get is the activity you measure – the NZRIS and PBRF must broaden measures beyond bibliometrics and ensure commercialisation measures are fit-for-purpose

Government can inspire, empower and INCENTIVISE researchers to pursue commercialisation where this pathway is appropriate, by putting in place commercialisation output and outcomes measures that are clearly visible, consistent and fit-for-purpose.

Feedback on the measures outlined in the draft strategy

- The current measures are still too heavily focused on publications and patents.
- 'Excellence in Partnership' should capture measures beyond simply 'co-authoring of scientific papers' – KiwiNet for instance captures 'businesses meaningfully engaged' in a project as part of our PreSeed reporting which is defined by some form of formal commitment or collaboration on a commercialisation project
- Number of patents and 'research publications cited by patents' are not great measures of commercialisation and can encourage filing of low-quality patents
- Number of tech start-ups – important to specify the definition of "tech" for reporting purposes and ensure that other meaningful commercialisation measures are captured alongside number of start-ups to discourage registration of new companies simply for reporting purposes. Care would need to be taken to include valuation of start-ups as a measure since valuations are often very hard to agree on and commercially sensitive.
- KiwiNet has measured a dashboard of outputs, outcomes and impact of our PreSeed Accelerator Fund portfolio dating back to 2003 and would suggest this as a starting point for MBIE to identify appropriate commercialisation measures.[1]

[1] https://kiwinet.org.nz/files/AnnualReports/KiwiNet-Annual-PreSeed-Report-2019.pdf

Output and Outcomes measures could be broadened to better assess and reward 'first steps' along a commercialisation pathway-to-impact.

New products and services are often an appropriate vehicle for delivering economic, social, cultural and environmental benefits to NZ. Commercialisation is the process by which public research discoveries (that are owned by a PRO and not owned by a business as the output of contract research) are transformed into new products and services. The ecosystem benefits from the creativity engendered by the commercialisation process, promoting fresh thinking and ingenuity while drawing on our cutting-edge research, science and innovation. KiwiNet member organisations alone have funded well over 1100 research commercialisation projects of this nature since 2003, all of which originated in publicly funded research programmes.

The CPN delivers on the five key impact goals outlined on p.27 of the draft strategy.

The research commercialisation pathway starts with a 'Disclosure'

Research commercialisation in universities is overseen and managed by the institution's TTO or equivalent or commercial team (CRIs and IROs) – herewith collectively referred to as "TTOs". This is because in most cases the university/CRI/IRO owns the IP generated by research activity within the institution. All research commercialisation activity within public research organisations, including patenting and other IP protection, proceeds with the oversight of the TTO.

The commercialisation pathway-to-impact often starts with a researcher having a conversation with their TTO to explore whether a new product or service would be a potential pathway for their research. This is a critical early step in ensuring innovation is accelerated from the public research environment along this pathway.

An early tangible and measurable 'Output' activity could be an IP Disclosure made by a researcher to their TTO. Disclosures are tangible research outputs that are already catalogued by TTOs. The TTO will use the information provided in a disclosure to assess a research discovery for commercial potential, formulating a pathway-to-market and accessing commercialisation funding (including PreSeed) to further develop the opportunity.

However, measuring disclosures alone could have the unintended consequence of driving superficial 'box-ticking' behaviour whereby disclosures were made to the TTO for the purpose of enhancing an impact score without a genuine intention to pursue commercialisation of the underlying discovery.

KiwiNet member organisations tell us that more meaningful and impactful commercial activity occurs when the TTO builds deeper and longer-standing relationships with researchers. This means researchers and the TTO collaborate early in the development of research ideas before the research project has begun to leverage market insight and end-user perspectives. This helps to develop research proposals with clearly defined benefit to New Zealand and a well-validated pathway-to-impact. The TTO will work with researchers as research programmes progress, to facilitate formal IP disclosures to the TTO and accelerate discoveries along the commercialisation pathway. Different research organisations have varying approaches to this.

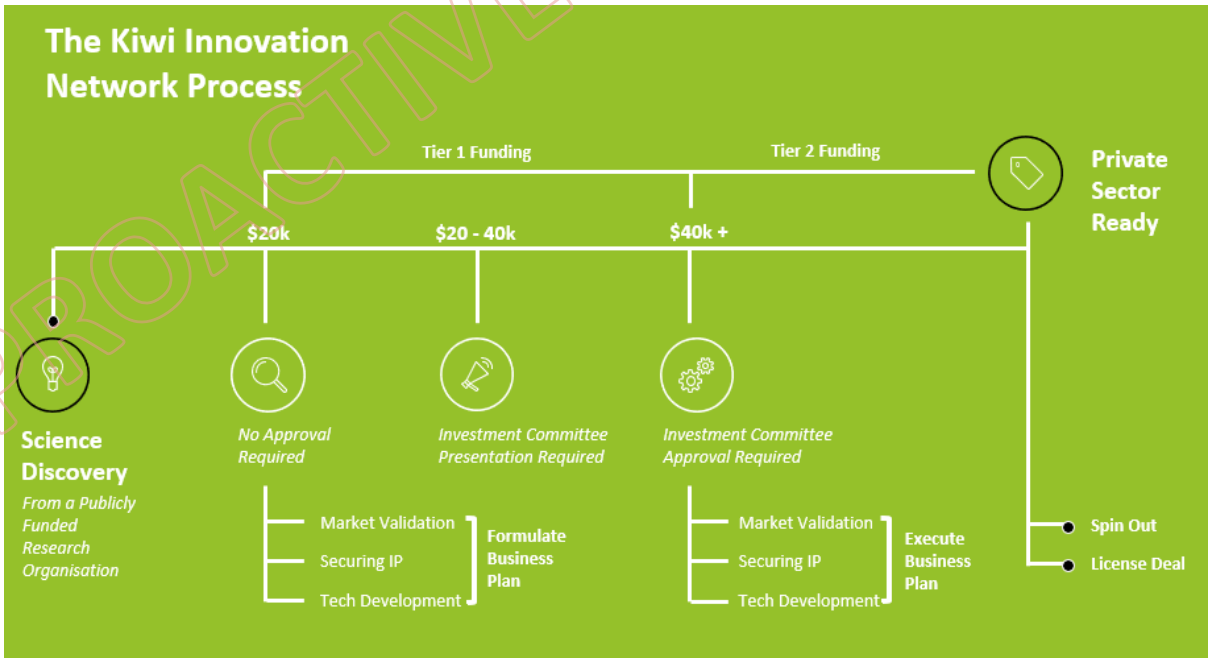
Start-up formation and high-value licensing deals emerging from research commercialisation projects would be tangible and measurable 'Outcome' level activities.

All NZ public research organisations have access to PreSeed funding to accelerate research discoveries along and commercialisation pathway-to-impact – the main eligibility criterion for PreSeed funding is that the IP must have originated from publicly funded research.

PreSeed investment is a critical government intervention at the point where scientific discoveries can be transformed into investible technologies for uptake by the private sector. Early-stage discoveries that enter the PreSeed process begin with limited commercial & market validation, limited intellectual property protection and limited technical validation. The outcome of a PreSeed project is an investable commercial proposition that can be transferred into the private sector in the form of a start-up company (often via a Tech Incubator) or high-value licensing deal – the end-game is an innovative new product or service that is adding value to the economy and delivering impact for New Zealand.

Acceleration is the key, and many projects will be 'fast-failed' alongside those that are successful – the purpose being to scale the process across a maximum number of early-stage research discoveries. The CPN's rigorous PreSeed investment processes, alongside the Public Research Organisations' (PROs') own systems and processes, empower research organisations to accelerate good opportunities to market while maximising benefits to New Zealand.

High-value license deals and spin-out/start-up companies represent tangible milestones at the 'Outcome' level of the 'Results-Chain Framework' for impact.



Measuring start-up/spin-out company formation and high-value license deals as outcomes of research commercialisation should have a minimal impact on compliance costs for research organisations since TTOs have systems already in place to manage and record commercialisation projects.

WHY NOT JUST MEASURE PATENTS?

We suggest that patenting in itself is not the most appropriate Research Contribution measure (at the individual unit of assessment level) for a commercialisation pathway but could be included in a dashboard of measures.

A patent protects an inventors RIGHT to use and leverage value from a research discovery, it doesn't in itself deliver value. A patent only delivers value to the research institution and NZ if it underpins a commercialisation strategy. There are also other forms of formal (copyright, plant variety rights etc.) and informal (trade secret, black box) strategies that will underpin a commercialisation project.

It is not clear how 'research publications cited by patents' is in any way a measure of commercialisation outcomes that deliver benefits to New Zealand.

DOWNSTREAM MEASURES OF COMMERCIALISATION OUTCOMES SHOULD ALSO BE INCLUDED

A suite of commercialisation measures could include:

1. Disclosures
2. Involvement in spin-out/start-up creation
3. Association with licensing deals
4. Patents
5. Quantity and value of grants/income – an indicator that is often driven by impact track record (including commercialisation)

There is precedent for these measures to be used within the Research Excellence Framework in the UK alongside evidenced impact case studies.

TTOs and research offices are the facilitators of engagement with business and any measurable outcomes such as start-up companies, IP licensing deals, contract research arrangements and in some instances collaborative R&D projects with business.

PreSeed Accelerator Fund measures that KiwiNet collates: