



2021 Kaupapa kākano Seed project fund Call for Proposals (CfP)

About the Seed Project Fund

The Seed Project Fund is to bring in new ideas to the Science for Technological Innovation (SfTI) community. This open call will initiate about 15 new Seed projects from 1 October 2021.

Seed projects will generally have a single Principal Investigator (PI), who can be at any stage in their research career, and may include other funded contributors such as a post-doctoral researcher, post-graduate student or a research assistant. **Seed projects are funded for up to two years with a maximum of \$200,000 per project.**

More information about the background and objectives of SfTI are outlined in Appendix 2.

Priorities for 2021

Early Career Researchers

In the 2021 round, the main priority is to support Early Career Researchers (ECRs), particularly those impacted by Covid-19, whilst encouraging more applications from women, Māori and Pacific researchers. See section 'ECR criteria' for a detailed description of what SfTI considers an ECR.

Vision Mātauranga

In addition, projects with strong Vision Mātauranga (VM) alignment will receive higher prioritisation. All VM projects must have sufficient Māori participation and involvement in the development and execution of the project for consideration under the VM priority. See the following section titled 'Vision Mātauranga Guide', for more information about the VM assessment criteria and scoring system.

Key Differences in this Funding Round

The 2021 Seed project funding round is the fifth, and last, SfTI Seed funding round before the second tranche of the Challenge closes in 2024. The key differences for this round are:

- **Financial grants are available in 2021** to support preparation of Seed project proposals and development of researcher proposal preparation skills. See following section 'Seed Proposal Development Grants (PDGs)' for more information.
- The submission date for 2021 is three months later than in prior years.
- There is no technical research theme prioritisation in the 2021 round.

Early Career Researcher (ECR) Criteria

SfTI considers ECR and emerging researchers to be synonymous. An ECR/emerging researcher has spent no more than seven (7) years full-time equivalent in an active research role after completing their highest research degree. The census date for the 7 year criteria will be 1 October 2021.

If the ECR is the primary-caregiver then the eligibility period may be increased by 2 years per dependent child born in the period (e.g. two dependent children born in the 7 years post highest degree could extend the eligible period to 11 years). If the ECR has had part-time employment as a researcher or significant periods of sickness leave, then the contribution to the 7 years full-time equivalent is pro-rata.

Any ECR who is unsure whether they meet the eligibility criteria (e.g. has worked in non-research role post highest degree) or is claiming extension to the eligibility period due to a dependent child, part-time research employment or sickness leave should confirm their eligibility prior to submitting their proposal by emailing SfTIChallenge@callaghaninnovation.govt.nz.

To be eligible for the ECR priority, ALL the researchers in the team must be ECRs noting that a postgraduate student undertaking a research degree is an ECR irrespective of age by default.

A team of ECRs may have a senior researcher as an unfunded (zero FTE) mentor. Mentors play a role in advising the ECR on various aspects of project management, career guidance and professional development but they should not have a scholarly input into the proposed research (if they do, they should be listed as researchers instead). Mentors should ideally be based at the ECRs organisation.

Seed Project Characteristics

Seed Projects must:

- Propose clever stretch science and risky new ideas or address a potentially disruptive technology area.
- Focus on physical sciences and engineering research although the context of the project may be in another field e.g. health, biological sciences, food processing or business.
- Align with at least one of the SfTI *technical* research Theme areas: Sensors, Robotics and Automation (SRA); Data Science and Digital Technologies (DSDT); and Materials, Manufacturing Technology and Design (MMTD).
- Make a strong case for the New Zealand context and niche, and if successful, a likely strong contribution in the longer-term to New Zealand's economic growth.
- Align with least one of the SfTI *technical* Themes AND have tangible Māori participation and/or leadership to be considered for Vision Mātauranga alignment.

Favourable Seed Projects will also have one or more of the following:

- Involve a team of ECRs (including the PI) pursuing their own independent research for consideration under the ECR priority. To be eligible for this priority, senior researchers may only be included as non-funded (zero FTE) mentors to the ECRs.
- Show clear plans for building Māori research capacity and capability for consideration under the Vision Mātauranga priority.
- Result in a technology at the proof of concept stage or an initial prototype (up to Technology Readiness Level 4 (TRL4) as defined in Appendix 3). Note: SfTI does not fund the commercialisation of ideas through Seed project funding.
- Include support for research assistants, post-doctoral fellows or Masters students for up to two years. If support for a PhD student (three years funding) is proposed, the case for a PhD rather than other types of researchers must be made in the application.
- Use social science methodologies and expertise to explore how to build New Zealand's innovation capacity including the social dimensions of technology development and its uptake in alignment with the aims of the [Building New Zealand's Innovation Capacity Spearhead](#). Note: Such proposals must also have a primary technical theme alignment. Applicants seeking funding for a BNZIC aligned project MUST contact SfTI to confirm eligibility before submitting a proposal.

All proposals must demonstrate:

- A strong research plan, explicit stage gate steps (i.e. stop/go/pivot points in the research) and clear sequencing of critical tasks (each stating a proposed, measurable achievement and date of completion) to assist in effective management of the project.

- A commitment of all Seed project members to participate in [SfTI Capacity Development initiatives](#). (Capacity Development for Vision Mātauranga is compulsory regardless of whether the project aligns to the Vision Mātauranga Theme.)
- A willingness to seek and accept advice on the Seed project direction from mentors such as business, Māori, end-users or commercialisation experts.
- That the project is not an extension of an existing research programme but instead represents a significant new idea or direction.

Funding Period

All successful projects will normally be contracted as soon as possible after 1 October 2021 and are to begin as soon as possible after contracting. Projects will not be allowed to commence until all researchers required in the first 6 months of the project are in NZ and available to start including students and those unnamed in the proposal. Project commencement dates may be deferred up to 9 months to accommodate this. For projects longer than 15 months' duration, mandatory stage-gates will be required 9-12 months into the project.

Indicative Funding 2021/22

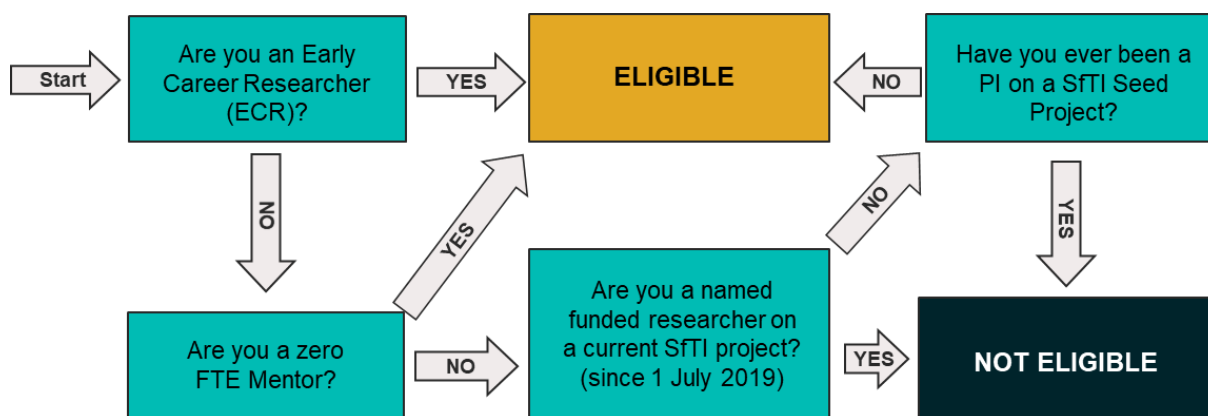
Total Funds (NZ\$)	Indicative funding per proposal	Term
\$3,000,000 over 2 years	Up to \$200,000 in total (smaller projects are welcome)	Up to 2 years total (shorter terms with higher researcher FTE are welcome)

- all funding figures exclude GST
- at least 25% of total funding will be targeted to projects that support Vision Mātauranga objectives
- at least 55% of total funding will be committed to projects that meet the ECR priority

Eligibility

- Researchers at New Zealand based organisations, with research capability relevant to the mission, objectives, scope and research domains/Themes of SfTI are eligible to submit proposals.
- All ECRs are eligible even if they have been previously funded by or are currently funded by SfTI (*this is a change from previous rounds where ALL researchers previously funded by SfTI were ineligible*).
- Named researchers that are not ECRs are NOT eligible (except as zero FTE mentors) if they are already funded by SfTI research projects that are on-going since on 1 July 2019 or they were PIs in earlier Seed projects funded by SfTI at any time since 2016.
- Any submitted proposal not meeting the above researcher eligibility criteria for ALL researchers will be deemed ineligible and will not be assessed.
- All researchers (except zero FTE mentors) must be ECRs for the application to be eligible for the ECR priority ballot.
- The project (or a close variation) cannot already be funded by MBIE or another funding agency and any parallel application(s) must be declared in the proposal.
- A researcher can be involved in a maximum of two Seed project proposals concurrently. They can only be named once as the PI; and involvement in more than one Seed project proposal must be declared in each application.
- Named researchers contracted with SfTI Seed Projects are eligible to be selected for future SfTI Spearhead projects, based on their expertise and capability.

Are you eligible?



Seed Proposal Development Grants (PDGs)

About the PDG

As a new initiative in 2021, up to \$100,000 is budgeted to support researchers preparing Seed project proposals as PIs. Each individual Proposal Development Grant (PDG) will be for up to \$3,000 and will be paid to the recipient's employer but can only be used to fund actions to support preparation of a 2021 Seed project proposal and to develop the recipient's research proposal preparation skills.

PDG will be awarded competitively to the most compelling cases. High priority will be given to ECR applicants most impacted by Covid-19, whilst also encouraging more proposal submissions from currently under-represented groups in physical science and engineering research such as women, Māori and Pacific researchers.

PDG applications open now

You can apply for a PDG by filling out this short online form:

[PDG Application Form](#)

- PDG applications close at **5 pm on Friday, 26 February 2021**.
- Applicants will be notified of the results by Friday, 26 March 2021.
- Applicants are expected to notify and have the support of their employer.

PDG application guidelines

The application is limited to approximately 500 words and should:

- Provide details about the applicant including how they fit the priorities (mainly via tick boxes).
- Summarise the case for receiving the PDG, particularly the impact of Covid-19 on the applicant. The impact may be both in the past and those anticipated in the period leading up to submission of the Seed project proposal in June 2021. Impacts may include: extra family/cultural responsibilities due to lockdown restrictions; reduced ability to meet collaborators or businesses due to travel restrictions; extra work commitments (e.g. creation of on-line teaching resources); reduced employment opportunities (e.g. at end of fixed term contracts or post-PhD); unable to perform exploratory experiments due to restricted lab access.
- Indicate how the grant will be used (e.g. writing support, child-care, teaching support, workload relief, support of VM co-designers affected by Covid-19, travel etc) and why.
- Provide justification for the grant amount sought.

PDG eligibility and criteria

The eligibility rules for Seed project proposals set out above will apply to the PDGs. Each researcher is only eligible for one PDG even if they plan to submit more than one Seed proposal.

The PDG can be used to support any aspect of researcher capacity development (professional development) related to research proposal preparation and any Seed proposal preparation costs. Valid PDG use would include proposal writing support (except if previously successful as a Seed PI), relief from other duties such as teaching, extraordinary child-care support, one-to-one mentoring, travel to meet supporting organisations and collaborators, and support for Māori co-designers whose availability is impacted by Covid-19. Support normally provided by the applicant's employer would be excluded (i.e. the PDG would not reimburse the employer for costs they would otherwise normally incur).

The PDGs would be fully pre-paid to the recipient's employer and there would be an expectation that unspent funds would be repaid to SfTI. If no substantive Seed proposal is received, then the recipient must report on the uses and benefits of the PDG. In such cases, partial or full repayment may be required if the PDG has not been properly applied or there are not valid reasons for the Seed proposal not being completed, noting that capacity development of the recipient for future research applications may be deemed acceptable.

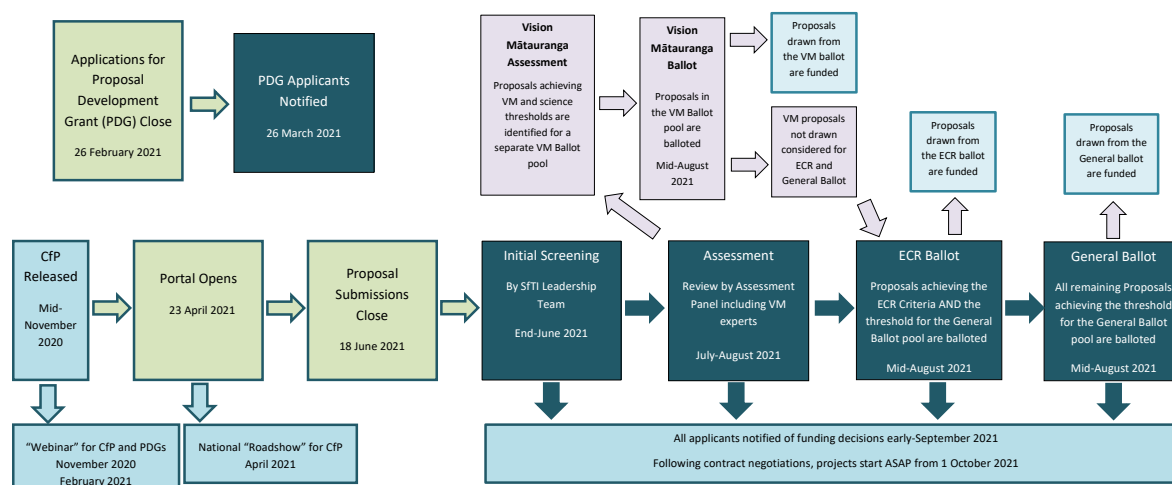
Key Dates

Timeline	Key Dates
2021 Call for Proposals (CfP) released and Proposal Development Grant (PDG) applications open	Mid November 2020
National Webinars about CfP and PDGs	Webinar 1 CfP and PDG: Friday 27 November 2020 10-11am Meeting link: meet.google.com/mkz-xkcy-wij To join by phone: NZ +64 4-889 5206 / PIN: 875 408 749# Webinar 2 CfP only: Friday 5 February 2021 2-3pm Meeting link: meet.google.com/kqn-wtau-eiz To join by phone: NZ 64 4-889 5058 / PIN: 320 330 071#
Applications for Proposal Development Grants (PDGs) close	26 February 2021
Successful and unsuccessful PDG applicants are notified	26 March 2021
Assessment Panel membership including VM experts announced	31 March 2020
Portal opens for proposal submission	23 April 2021
National Roadshow or Webinar about CfP	April 2021
Proposal submissions close	12 noon Friday 18 June 2021
Initial screening for eligibility	End June 2021
Panel assessment of proposals	July to mid-August 2021

Successful applicants notified and contract negotiations begin	Early September 2021
Projects start	As soon as possible from 1 October 2021
Contract completion date	Max. of 2 years after contracted project start date

Assessment process

The following diagram details the steps in the SfTI Seed Project application and assessment process:



The Seed project investment mechanism is a single-stage process; full proposals are submitted for assessment. It is fully contestable and open to applicants that meet the eligibility criteria.

The key assessment criteria to be used by the science/technical assessment panel in assessing 2021 proposals are:

	Science/Technical Assessment Criteria	Importance
1	Novel and innovative idea, high quality, stretch science aligned with SfTI Technical Themes and not an extension of existing research programmes	Very High
2	Potential contribution in the longer-term to NZ's economic growth, and justification for the NZ context and niche	High
3	Likelihood research objectives will be achieved (i.e. there is tight research planning and clear, measurable critical steps, appropriate team capability)	Medium
4	Well-defined links to Māori, business and/or capacity development initiatives	Medium
5	Other favourable characteristics (e.g. collaborators)	Lower

In addition, in 2021 the following will be priority areas:

	Priority Area	Priority
I	Involve a team of emerging researchers/ECRs	High
II	Strong alignment with Vision Mātauranga	High

Vision Mātauranga Guide

Seed projects will be assessed on Vision Mātauranga alignment based on three principles/*pou* by a separate Vision Mātauranga assessment panel.

Pou 1: Māori Participation

This *pou* relates to how Māori are directly participating in the project.

Questions to consider:

Are Māori part of the leadership or co-leadership of the project?

Are Māori involved in the execution of the project?

Did Māori participate in the design and development of the project? Are they the appropriate networks?

Have sufficient resources (human, infrastructure, financial, time) been set aside for the Vision Mātauranga component of the work as a priority?

Does the proposal manage risk (if any) to te Ao Māori. This might include: knowledge asymmetry, consultation 'fatigue', resourcing for 'stakeholders'?

Pou 2: Māori Knowledge

This *pou* relates to how well Māori knowledge, or mātauranga, is being incorporated and utilised.

Questions to consider:

Have Māori principles or practices been meaningfully incorporated and practised?

Has Māori knowledge been appropriately obtained, understood and applied?

Is intellectual property likely to be discovered that will be of particular benefit or interest to Māori?

Is there any novelty or opportunity by integrating science and technology and mātauranga Māori?

Pou 3: Māori Benefit

While it is anticipated that all New Zealanders will benefit from Vision Mātauranga outcomes, this *pou* aims to articulate how Māori will directly benefit from the project.

Questions to consider:

Will products or services be developed that will be of particular benefit to Māori? Will Māori be able to access these products or services easily?

Will the proposal enhance Māori quadruple bottom lines (i.e., economic, social, environmental, cultural)?

Will the proposal have intergenerational impacts (i.e. benefits and risks) for Māori beyond the life of SfTI and are these acknowledged?

Will the project develop Māori capability in some way?

How will the findings be communicated to Māori?

More information

The Rauika Māngai report "[A Guide to Vision Mātauranga: Lessons From Māori Voices in the New Zealand Science Sector](#)", in particular Section 2 'Bringing Vision Mātauranga to life', provides examples and guidance for working with Māori people, knowledge and resources.

Te Aromatawai - Assessment of Vision Mātauranga alignment

From the three *pou* above, there are a total of seven individual criteria that are possible for each project. Seed proposals will receive either half or a full point for each of the criteria that is meaningfully incorporated in the project.

In 2021, at least one point for criteria 1 and 2 combined (bold) is required for a proposal to be considered eligible for the Vision Mātauranga ballot. Once this condition is met, proposals that score multiple points will be viewed favourably and normally a minimum of 3 points in total will be required for a proposal to be considered for the Vision Mātauranga ballot.

Criteria	Vision Mātauranga Assessment Criteria	Points
Pou Rua: Māori Participation		
1	Māori participation is incorporated in the conception or development of the project	1
2	Māori involvement is incorporated in the execution of the project	1
Pou Tahī: Māori Knowledge		
3	The project incorporates Māori principles or practices	1
4	The project applies Māori knowledge of Māori history or resources	1
5	Tino Mātauranga – the project extends the understanding or application of Māori knowledge	1
Pou Toru: Māori Benefit		
6	The project demonstrates a gain for Māori or Māori capability	1
7	The project addresses a topic of high impact or priority for Māori.	1
TOTAL POSSIBLE SCORE		7

Technical research theme alignment: All Vision Mātauranga projects must align with at least one of the SfTI technical Theme areas: SRA, DSDT and MMTD. Proposals must also fulfil the technical/science requirements for SfTI Seed projects.

Proposals seeking to use or reapply existing technology will not be eligible: For example, storing Mātauranga Māori on an app using existing app technology/coding would generally be ineligible. However, if the development of the app requires the generation of entirely novel algorithms, programming or components to accommodate or respond to Mātauranga Māori, the proposal would then be eligible.

More information

Further information about eligibility and criteria can be found in the FAQ documents:

- [General FAQs](#)
- [Vision Mātauranga FAQs](#)

Application Assessment Process

Phase 1: Initial Screening by the SfTI Leadership Team

The initial proposal screening will be carried out by the SfTI Theme Leaders, plus the Director if required. This is to ensure proposals meet the eligibility criteria, to identify any proposals that are incomplete or clearly not eligible, and to review the alignment of proposals received to SfTI themes and priority areas.

Phase 2: Review by an Assessment Panel

All eligible proposals will be reviewed by a combined assessment panel of up to 20 members comprising both science/technical and Vision Mātauranga experts. Panel members will include 8 Theme leaders from the SfTI Leadership team, plus at least 3 external panel members for each of the science/technical themes, at least 2 Māori researchers for the Vision Mātauranga theme, and an external, independent Chair. The panel members will be announced on the SfTI website before the closing date for applications. Building New Zealand's Innovation Capacity and further Vision Mātauranga expertise will be provided to the assessment panel from the SfTI Leadership Team and the SfTI Programme Office. An opportunity may be provided for one or two rangatahi (emerging

researchers and industry leaders) not involved in submitted proposals to be invited to observe the assessment process.

The assessment criteria and indicators of importance will be used to inform determination of the overall ranking for each of the proposals. Proposals will be divided into 3 categories:

- Category 1: high-quality proposals meeting the assessment criteria (certain to be included in the ballot)
- Category 2: proposals with some weaknesses (may be included in the ballot)
- Category 3: proposals with major deficiencies

Proposals with sufficient Vision Mātauranga alignment will be identified for consideration in the Vision Mātauranga Ballot pool.

The panel will also consider the funding level requested by each successful proposal and may decide to recommend allocation of a smaller amount than requested.

Phase 3: Vision Mātauranga Ballot

The top-ranked proposals in the Vision Mātauranga pool will be selected for the Vision Mātauranga ballot. The number of proposals selected for the ballot will be the maximum of:

- all proposals in the Vision Mātauranga pool assessed as category 1 proposals
- the top proposals in the Vision Mātauranga pool to a combined value of 25% of the available funding.

SfTI reserves the right to select fewer proposals for the Vision Mātauranga ballot if proposals received are not of sufficient quality. Proposals will be randomly drawn from the ballot pool until approximately 25% of total funding has been reached or all proposals in the ballot are selected. Unfunded proposals from the Vision Mātauranga ballot pool will be considered to enter the ECR ballot (if eligible) and the general ballot.

Phase 4: ECR Ballot

The top-ranked proposals (excluding those already selected for funding in the Vision Mātauranga ballot) that meet the ECR priority criteria will be selected for the ECR ballot. The number of proposals selected for the ballot will be the maximum of:

- all proposals in the ECR pool assessed as category 1 proposals
- the top proposals in the ECR pool to a combined value of 55% of the available funding.

SfTI reserves the right to select fewer proposals for the ECR ballot if proposals received are not of sufficient quality. Proposals will be randomly drawn from the ballot pool until approximately 55% of total funding has been reached or all proposals in the ballot are selected. Unfunded proposals from the ECR ballot pool will be considered to enter the general ballot.

Phase 5: General Ballot

The top ranked proposals (excluding those already selected for funding in the Vision Mātauranga or ECR ballots) are considered for the general ballot. The number of proposals selected for the ballot will be the maximum of:

- all proposals assessed as category 1 proposals
- the top ranked proposals to a combined value of 100% of the available remaining funding.

SfTI reserves the right to select fewer proposals for the general ballot if proposals received are not of sufficient quality. Proposals will be randomly drawn from the ballot pool until the budgeted funding is allocated or all proposals in the ballot are selected.

Application Process

Submitting your Proposal

All applications must be submitted through the Investment Management System (IMS) Portal (“the portal”) by **12 noon on Friday 18 June 2021**. The portal will be open from 3 May 2021.

A link will be posted to the SfTI website when the portal opens.

To access the portal, you will require a username and password:

- If you have not used the portal before, you will need to apply for access via your organisation’s Research Office
- If you already have access to the portal but wish to change details or need further information, contact: SfTIChallenge@callaghaninnovation.govt.nz

Some notes when using the portal:

- When the portal opens, select the correct investment process - **2021 NSC Science for Technological Innovation Seed Projects** - and ‘create’ an application
- Ensure you have your information prepared – please refer to the guidance notes below in Appendix 1
- You need to create a single application in the portal for each proposal you are submitting
- You may amend or withdraw your application at any time prior to the closing date. To withdraw an application, notify SfTIChallenge@callaghaninnovation.govt.nz and identify the application to be withdrawn
- When the application is complete ensure it is submitted (not merely created) before the closing date. Once it is submitted it cannot be edited. To access a submitted application (before the closing date) email SfTIChallenge@callaghaninnovation.govt.nz
- SfTI may not acknowledge the submission of applications or the withdrawal of any application. To understand if your proposal has been submitted or not, your proposal will display one of the following statuses in the portal:

Submitted to IMS – means your application has been received by SfTI

Submitted for QA - means you do not have the organisational rights to submit an application for funding. Contact your Research Office or SfTI SfTIChallenge@callaghaninnovation.govt.nz

In Progress – means your application has not been submitted and not been received by SfTI

Not Progressing or Not Submitted – means the application has been withdrawn (and will not be assessed)

Guidelines for preparing your proposal are detailed in Appendix 1. This includes brief, explanatory statements about what information is required.

Notification and Feedback

Applicants will receive indication of their funding category and brief feedback based on the assessment panel’s consensus comments, subject to accepting the funding decision as final.

Contracting and Reporting Process

Contracts

If your proposal is successful, the organisation of the Contact Person (Contracting Organisation) will be responsible for arranging and signing the Contract with Callaghan Innovation (Challenge Contractor and SfTI host). The administration Contact Person on the Seed Project proposal is

normally part of the institution's Research Office. A standard contract for research services template will be agreed between SfTI partners prior to contracting and will be the preferred contract for all funded projects.

The Contracting Organisation will be responsible for the fulfilment of the Contract and will be required to guarantee that resources and research time are available.

Projects will be contracted to start on or as soon as possible after 1 October 2021. Project commencement dates and the project timeline may be flexibly deferred by up to 9 months. Projects will not be allowed to commence until all researchers for the first 6 months of the project are available including students and those unnamed in the proposal. Projects must end less than 2 years from when they commence (i.e. the end date could be up to 33 months after signing the contract).

Post-graduate student scholarship support for longer than the 2-year term of the project (e.g. PhD students) may be included in the budget but the Contracting Organisation is responsible for any accrual of project funds beyond the project end date to allow this to occur. Further, any student research critical to achieving the project critical steps must be completed within the contracted term of the project (maximum of 2 years).

For projects longer than 15 months duration, mandatory stage-gate critical steps will be expected around 9 to 12 months into the project.

Projects longer than 15 months duration will be allowed to pivot (i.e. make a significant change in critical steps) once over the project term without penalty, subject to approval by the SfTI Leadership Team.

If critical steps, particularly stage gates, are not achieved and a satisfactory pivot is not agreed, then subsequent funding may be reduced or withdrawn based on an assessment by the SfTI Leadership Team. If so, any support for students (e.g. scholarships) will be maintained so long as they continue to research in an area that aligns with the SfTI mission. The project team will remain eligible to participate in SfTI events and activities, and the PI must continue reporting any further progress with the project to SfTI, as set out in the contract.

Wherever possible, contracts will be based on the information contained in the proposal. Prior to contracting the SfTI Commercialisation Manager will review successful applications in collaboration with the Technology Transfer Office or equivalent from the applications' host organisation. The review will consider the commercial potential of the research and how impact from the research can be maximised. This review may result in some recommended changes to the research programme or critical steps to improve the likelihood of high commercial potential and impact.

Reporting

A contract requirement will be the completion and submission of information describing the progress of the research.

Annual reporting linked to the information supplied in your proposal including:

- information to assist SfTI complete an Annual Progress Report for MBIE, such as reporting against SfTI KPIs and providing project-level achievements

Regular reporting:

- tracking progress towards and achievement of contracted critical steps including stage-gate critical steps
- any significant risks and issues that arise that will affect achievement of the project objectives

Ad hoc reporting

- "no surprises" updates
- involvement in and response to reviews such as science quality reviews
- significant deviations from the budget
- revisions to the research plan and critical steps and stage gates if changes are proposed

- written reports on research achievements for publicity purposes

Closure reporting at the end of the project providing an overview of what the project achieved including:

- key results and outcomes of the project (including what went well/didn't go well in the project)
- what are the future plans the next research stages and/or commercialisation
- reporting against SfTI KPIs

Post-project updates to keep SfTI informed about progress of technologies developed from the project including Technology Readiness Level, to enable SfTI to report on its "impact" KPIs to MBIE.

Confidentiality

SfTI will treat your proposal as confidential, but you should be aware that SfTI is subject to the Official Information Act 1982 and may be required to release information supplied in your proposal in accordance with that Act, or as otherwise required by law. You will be consulted before the release of any information under the Official Information Act. SfTI may confidentially share your proposal with MBIE.

If your proposal contains confidential or sensitive material, please indicate this at the start of the "Summary" section of your proposal.

Conflicts of Interest

Any conflicts of interest you are aware of should be noted in your proposal, including the reason why you consider them conflicts. Conflicts could arise with SfTI Leadership Team members and the external panel members. SfTI will post a list of panellists on the SfTI website as soon as panellists are confirmed.

The assessment panel will operate a Conflicts of Interest register. Panellists will be excluded from assessment of a proposal for which they have a significant Conflict of Interest.

SfTI Seed Project Contact Details

SfTI Seed Project contact details:

Email: SfTIChallenge@callaghaninnovation.govt.nz

APPENDIX 1: Application and Guidelines for Completing Proposals

This section describes what information is required for your proposal and is intended for use in the preparation of your SfTI Seed Project funding application in the portal.

For information about your Application or help with the portal email:

SfTIChallenge@callaghaninnovation.govt.nz

Formatting Guidelines

Please follow these rules when completing your application in the portal.

- Use the downloadable templates provided and follow instructions and formatting guidelines. You will find a word doc template in the portal for the Research Proposal section; and an excel template in the portal for the Budget section
- CVs should use the standard RSNZ format (5 pages maximum each, with both Part 1 and Part 2 completed)
- No additional attachments are allowed.

Content

In the preparation of your application, please ensure that the following key elements of your research proposal are addressed:

- alignment with SfTI Technical Theme(s)
- the physical sciences and engineering research focus, particularly if the context of the research is another field e.g. health, biological sciences, food processing or business
- novelty and potential of the idea (stretch), citing current supporting evidence
- justification for the New Zealand context and niche
- detailed research plan including measurable critical steps, stating which critical steps are to be *stage-gates*, timelines, and intended Technology Readiness Level (TRL) at project completion
- details of the research team capability and competencies, track record, including any industry or end-user mentor or collaborators, and how this capability will contribute to the project success
- any planned capacity development initiatives
- the budget and justification for the funding sought
- any impacts that Covid-19 had on your application and could have on your research plus mitigation measures

What characteristics do we consider make a “Good” application?

- concise wording
- a strong focus on alignment with the assessment criteria
- clear descriptions and justifications of the science/research novelty and/or stretch
- clear descriptions of measurable critical steps and stage-gates
- the stretch in the research is clearly defined especially for research in applied fields and technology development
- careful and minimal use of jargon

Audiences

The *Project Title* and *Summary of Research* section will be made publicly available if your proposal is funded. This should be written in plain language for an audience with a general understanding and contain **no** confidential information.

The *Proposed Research* section should address panellists with broad scientific knowledge rather than specialists in the field.

Seed Projects Application Guidelines

SECTION 1: APPLICATION SUMMARY	
Contracting Organisation:	<ul style="list-style-type: none"> The Contracting Organisation is the organisation that will be responsible for signing the Contract for Research Services should this application be successful. This information is populated automatically based on the selection at the time of creating an application. It is not editable.
Postal and Courier address	<ul style="list-style-type: none"> This information is populated automatically based on the Contracting Organisation, it is not editable. If there are changes required, please email: investmentsupport@callaghaninnovation.govt.nz
Total Funding Requested:	<ul style="list-style-type: none"> This section is populated automatically from the Requested Funding section 2.4
Project Short Title:	<ul style="list-style-type: none"> Please use fewer than 10 words
Investment Mechanism:	<ul style="list-style-type: none"> Please select "SfTI Seed Project" from the drop-down list
Contact Person in Contracting Organisation	<ul style="list-style-type: none"> Please state name and email of Contact Person (normally this would be a relevant person based in the Contracting Organisation's Research Office)
Number of years Funding Requested:	<ul style="list-style-type: none"> Up to 2 years
Alignment with SfTI Theme areas: (Primary and Secondary)	<ul style="list-style-type: none"> Please indicate SfTI Theme/s alignment All proposals must have primary alignment with one of the SfTI science/technical themes: <ul style="list-style-type: none"> Materials, Manufacturing Technology and Design Sensors, Robotics and Automation Data Science and Digital Technologies In addition to the science/technical themes above, proposals <i>may</i> indicate secondary alignment to: <ul style="list-style-type: none"> Vision Mātauranga Building NZ's Innovation Capacity (BNZIC SfTI Spearhead) One of the above science/technical themes <p>See details of the SfTI Themes in Appendix 1 of the CfP. Only claim secondary alignment if a significant part of the proposed research matches the other domain. Applicants seeking funding for a BNZIC aligned Seed project MUST contact SfTI to confirm eligibility before submitting a proposal.</p>
Early Career Researcher (ECR) Priority:	<ul style="list-style-type: none"> Indicate if you are claiming ECR priority because the whole research team except 0 FTE mentors are ECRs.

SECTION 2: RESEARCH PROPOSAL	
SUBSECTION 2.1: RESEARCH PROPOSAL	
a) Summary of Research Proposal (maximum 250 words)	<ul style="list-style-type: none"> Summarise your proposed research project using plain language, but without over-simplification. This should be a structured or semi-structured abstract covering background/context, science stretch and question, methods, and potential science and economic impact. This summary will be made publicly available should your proposal be successful. Write it in plain language for a general audience. Do not include confidential or sensitive material.

<p>b) Proposed Research (maximum 2500 words plus up to 1 page of references)</p>	<p>Download the Proposed Research template from the portal and complete; please include section headings</p> <ul style="list-style-type: none"> • Background/Context - provide context by detailing the state of knowledge in this field (about 300 words). • Aims and Objectives – state the overall goal and specific aims/objective(s) of the research (about 200 words). • Science Stretch and Novelty (about 200 words) – explain how the science is new and high-risk. • Describe the potential contribution to NZ economic growth and links to NZ businesses if any, and how the research aligns to the assessment criteria detailed in the CfP, including justification of the New Zealand context and niche (about 200 words). Indicate if the proposal addresses an NZPA “missing science” area. • Detailed Methodology – describe the research plan– the hypothesis/ses being tested, methodology being used, methods of analysis. This should cover the total funding period and include contributions from collaborators (about 600 words) • Intellectual Property (IP) – describe the IP that might arise from the project and the proposed methods to protect the IP before publication (about 200 words). If relevant, also include results from a scan of existing technologies and patents in the field of interest (about 200 words) • State the TRL level target for the project and possible future work if this project is successful (about 200 words). • Identify the key risks to the research and methods to mitigate them. In particular, explain both any negative impacts of Covid-19 on the preparation of the application and the anticipated Covid-19 impacts on the research proposed (up to 300 words). <p>Upload the completed template to the portal</p>
<p>SUBSECTION 2.2: CRITICAL STEPS, STAGE-GATES AND TIMELINE</p>	
<p>a) Critical Steps, Stage-gates and Timeline</p>	<p>Input the research aims and specific objectives for the project in the following format to match the portal:</p> <ul style="list-style-type: none"> • Impact Statement Title ONLY ONE IMPACT STATEMENT IS PERMITTED - enter the overall goal of your project (maximum 20 words) • Research Aim Title – enter a brief description • Research Aim Statement – clearly describe the specific aim(s)/objective(s) of the research under each Research Aim • Critical Step Title - enter a brief title of fewer than 10 words • Critical Step Statement - enter a brief description • Critical Step Achievement Measure - clearly describe in specific and measurable terms what is needed to achieve or successfully complete the critical step** • Stage Gate – write “Stage Gate” in the Critical Step Title if the Critical Step is also a Stage Gate. The stage gate/s are stop/go/pivot points in the research plan that are essential to achieving the research objectives and economic potential. • Enter due date for each critical step and/or stage gate critical step <p>These critical steps will form the basis of contracting and of your regular reporting requirements, if your proposal is successful. There is a minimum two critical steps required, but it is recommended not to have too many defined critical steps.</p> <p>If your project duration is greater than 15 months, one of your critical steps <i>must</i> be identified as a stage-gate about 9 to 12 months after project commencement.</p>

	<p>Measurable critical steps/stage gates will be confirmed at contracting by the SFTI Leadership Team member assigned to your project.</p> <p>**Achievement Measures should usually be quantitative performance or quality targets that need to be achieved at that stage in the research if the project is to remain on track to achieve its economic potential. The measures may be related to the performance of competing/existing methods or technology that the research hopes to supersede and often may reflect the criteria that investors will demand to justify further research/commercialisation funding. For example – the “performance” will be higher than ... or xx% higher than ... e.g. an existing benchmark; the projected cost is less than \$yyy or yy% lower than... etc. Performance might be defined as yield, cost, purity, customer satisfaction, prediction accuracy, strength, efficiency or equivalent for the research topic.</p>
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SUBSECTION 2.3: ALIGNMENT WITH SFTI AND RELATIONSHIP WITH OTHER WORK

<p>a) Alignment with SftI (maximum of 200 words)</p>	<ul style="list-style-type: none"> Describe how the proposed research aligns with SftI Themes and describe any direct relationships with other research teams and projects within SFTI. Alignment with SftI Spearhead BNZIC should only be claimed if eligibility to do so has been confirmed by the SftI leadership Team (refer Appendix 2).
<p>b) Relationship with other research (maximum of 200 words)</p>	<ul style="list-style-type: none"> Provide details of the relationship between this research and other work being undertaken elsewhere - the proposal should demonstrate the research is novel and not an evolutionary extension or next stage of an existing research programme. The project will not be funded if funding is already in place for this or closely related research or the proposed research appeared to be “business as usual” for the research group applying. State if you are a named researcher in another SftI Seed Project application. Indicate whether other funding has been received, or is currently being applied for, for this research or for research relevant to this proposal - e.g. MBIE, Marsden, CoRE.

SUBSECTION 2.4: REQUESTED FUNDING BY YEAR

<p>Requested Funding by year</p>	<ul style="list-style-type: none"> Enter the amount of funding requested for each year of your project Year 1 \$000 ex gst Year 2 \$000 ex gst
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SECTION 3: VISION MĀTAURANGA

<p>Giving effect to Vision Mātauranga (maximum of 400 words)</p>	<ul style="list-style-type: none"> Describe how the research gives effect to Vision Mātauranga, including benefits to Māori (iwi/hapū, communities, businesses or groups)? If your research is of relevance to Māori, or involves Māori, outline the steps you have taken to identify research opportunities relevant to Māori interests, including te reo Māori, how Māori have been or will be engaged, what Māori innovations/bodies of knowledge you will draw from and integrate into the research and what Vision Mātauranga outcome benefits are envisioned. Financial support for Māori engagement or for Māori advisors is strongly supported such that Māori participation is deep and meaningful. Vision Mātauranga should be given serious consideration on all proposals, but alignment it is not compulsory. Only confirmed Vision
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	<p>Mātauranga alignment or actions should be included in your application.</p> <ul style="list-style-type: none"> • Vision Mātauranga capacity development is a compulsory expectation for all research teams, even if Vision Mātauranga alignment is not claimed. • Please refer to the Vision Mātauranga Guide in the CfP for further information on how Vision Mātauranga proposals will be assessed. Only claim Vision Mātauranga alignment if you believe your proposal meaningfully addresses more than 1 of the 7 assessment criteria and has a strong case for criteria 1 and/or 2 which are compulsory for eligibility.
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SECTION 4: RESEARCH TEAM AND CAPACITY DEVELOPMENT

SUBSECTION 4.1: PROJECT TEAM

Project Team	<ul style="list-style-type: none"> • Create one entry for each person funded by SfTI in the project • Indicate the name, organisation, role and annual full-time equivalent (FTE) commitment to the project for each person listed • If a person is yet to be appointed, list as “Unnamed” in the name field • Significant FTE is expected for the PI e.g. at least 0.1 FTE • Supervision time of postgraduate students should NOT be included in the supervisor’s FTE • Key researchers may be from the Contracting Organisation or from a sub-contracted organisation • Create an entry for any unfunded individuals (zero FTE) where their involvement is critical for project support e.g. mentor to emerging researcher(s). Clearly identify any 0 FTE mentors –they should not undertake any active scholarly research; rather they should only provide mentorship for the named and funded researchers. • Upload CVs of all named researchers with funded FTE using standard RSNZ CV format (both Part 1 and Part 2 should be completed) • CVs must NOT be included for individuals such as mentors involved in the project at zero FTE (unfunded) • Within the portal, the project roles available are: <ul style="list-style-type: none"> ○ Science Leader (= Principal Investigator) ○ Key Researcher (= Associate Investigator) ○ Post-Doctoral Researcher ○ Masters student ○ PhD Student ○ Student i.e. summer student or intern ○ Other (e.g. Mentor) ○ Contact Person (= Contact from Contracting Organisation’s Research Office)
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SUBSECTION 4.2: ROLES AND RESPONSIBILITIES

a) Roles and Responsibilities (maximum of 300 words)	<p>Clearly explain the role in the project of each team member. Include details of their research expertise and describe how this expertise contributes to the research project. As well as key research and subcontracted personnel, provide details for others such as mentors (non-funded), collaborators, Māori advisors, industry advisors, end-users, etc. If a PhD student is to be involved in the project justify this decision (because other post-graduate student options with shorter terms are preferred in this round).</p>
b) What intentions do these researchers have regarding participation in	<p>Describe any proposed capacity development initiatives directed towards building the human and relational capacity of the research team (refer Appendix 2). These can include facilitated discussions between</p>

capacity development initiatives? (maximum of 200 words)	researchers and industry stakeholders, engagement with iwi, leadership training and other joint activities with industry end users.
c) Early Career Researchers (maximum of 200 words)	If claiming ECR priority, then provide brief information to substantiate the ECR criteria for each researcher especially if claiming extensions beyond 7 years for part-time employment or dependent children. Cross-reference to information in provided researcher CVs to reduce word count. All students undertaking research degrees are ECRs by default.
SUBSECTION 4.3: SUBCONTRACTING	
Detail intended subcontractors	Enter in this section: <ul style="list-style-type: none"> - Name of Subcontracting Organisation - Status of subcontracting (drop down box) e.g. MOU in place - Year 1 \$000 ex gst - Year 2 \$000 ex gst

SECTION 5: BUDGET	
a) Budget (use downloadable template)	<p>Download the Budget template from the portal</p> <p>Complete a budget for the project using the template provided including the following budget lines detailed by year:</p> <ul style="list-style-type: none"> • Personnel Costs - enter team member name (including subcontracted personnel), salary costs (=salary including salary-related costs for ACC, superannuation etc, plus overheads) and FTE contribution to the project. • Masters students will be funded at \$27,500 p.a. tax-free scholarship plus \$7,500 p.a. contribution to tuition fees for a maximum of 2 years (i.e. at the same annual level as PhD students). • PhD students will be funded at \$27,500 p.a. tax-free scholarship plus \$7,500 p.a. contribution to tuition fees for a maximum of 3 years (the 3 years funding will be provided over 2 years) – noting that PhDs are not preferred this round. • Direct Costs / Operational Costs <ul style="list-style-type: none"> ○ travel & accommodation (SfTI only supports travel directly related to project execution and emerging researcher capacity development and does NOT support extensive conference attendance travel) ○ consumables ○ other miscellaneous costs • Equipment depreciation/rental (SfTI does not fund the purchase of equipment directly, but may allow for a contribution to depreciation or rental costs, for access to critical equipment) • Extraordinary expenditure (any special equipment or resources required) <p>Upload the completed budget template</p> <p>Use the text box to provide a justification for any major non-personnel budget items such as travel (200 words maximum).</p>

SECTION 6: OBLIGATIONS AND CONFLICTS OF INTEREST	
SUBSECTION 6.1: CONFLICTS OF INTEREST	
Conflicts of Interest (100 words maximum)	Use the text box to identify any conflicts of interest you are aware of at this stage and why. Refer to SfTI Leadership Team and assessment panel members as appropriate. Conflicts may occur at various levels:

	<ul style="list-style-type: none"> • direct conflicts – when a panellist is directly involved with a proposal or has a close personal relationship with you; • indirect conflicts – when a panellist is employed by an organisation involved in your proposal but is not part of your research programme, or when a panellist has a personal or professional relationship with you; • if a panellist has an involvement (direct or indirect) with a proposal in direct competition with your proposal or where the outcomes proposed by your proposal may compete with the panellist’s business interests. <p>The assessment panel will operate a Conflicts of Interest register. A panellist will be excluded from the assessment of a proposal for which they have a significant Conflict of Interest.</p>
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SUBSECTION 6.2: ETHICAL OR REGULATORY OBLIGATIONS

Ethical or Regulatory Obligations (50 words maximum)	<p>It is your responsibility to ensure that all ethical or regulatory obligations are met (for example, from ERMA, MPI, Animal Ethics, Human Ethics).</p> <p>Detail in the text box any required approvals anticipated or gained necessary to conduct the intended research.</p>
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DECLARATION

This is a tick box in the portal

The person in your organisation submitting the application to SfTI, is asked to declare and acknowledge the following:

- I am authorised to submit the application on behalf of the applicant;
- The applicant is a legal entity capable of entering into a contract with the SfTI host, Callaghan Innovation;
- The information in the application is true and correct;
- All parties mentioned in the proposal who are not employed by the applicant have confirmed that the nature and level of their involvement in the work described in the proposal is correct;
- Information received and generated by SfTI in relation to this application may be released in accordance with SfTI’s external reporting requirements or if required by law, including in accordance with the requirements of the Official Information Act 1982 or the Privacy Act 1993.

APPENDIX 2: SfTI Background and Objectives

The Science for Technological Innovation, Kia Kotahi Mai: Te Ao Pūtaiao me Te Ao Hangarau (SfTI) Challenge’s objective is for a New Zealand that has a vibrant, prosperous, technology-driven economy in which researchers are fully integrated and actively contributing to strategy, government policies, and daily activities with new businesses who are offering high-value products and services that may not yet have been invented.

SfTI has a mandate to support research that makes sense for New Zealand because it can ‘stick’ in New Zealand, building on our unique capabilities and competitive advantages, now and in the future.

The following sections give a brief overview of the themes and the rationale for capacity development.

SfTI Themes and Alignments

Within SfTI there are the following themes, and Seed project proposals must be aligned to at least one of the three science/technical themes.

Data Science and Digital Technologies

This science/technical theme (renamed in 2019 from IT, Data Analytics and Modelling to encompass the recent emphasis on data science, machine learning and artificial intelligence) is aimed at developing innovative algorithms, models, methods, tools and practices that could underpin new or enhanced business processes, hardware components, and systems and software applications, enabling industry to customise and turn these technologies into economically valuable products and services. Some of the research conducted under this theme will seek to develop entirely new data science and digital technology innovations. Research involving the use of existing technologies to transform a range of sectors is acceptable but must clearly define the stretch or novelty of the proposed research (i.e. routine use of an existing technology or methodology to a new field of application will not normally be funded).

Materials, Manufacturing Technology and Design

This science/technical theme (renamed in 2019 from Materials, Manufacturing and Design) focuses on new technologies for future manufacturing, not current manufacturing technologies, as well as materials and design innovation. The aim is to advance the reputation of New Zealand's small, vibrant hi-technology processing and manufacturing sector so it is seen as a leader in smart, green manufacturing processes and materials. As a result, products, services and processes are developed that position New Zealand's brand well in premium export markets. Design is a key factor, as are both materials and production processes.

Sensors, Robotics and Automation

This science/technical theme broadly encompasses research to develop sensors, robotics and automation for use in a wide range of products and applications. The focus includes technologies for precision monitoring, management, and actuation across all sectors, cost reduction that improves NZ's economic outputs, improved productivity by automating tasks currently done by humans, improved safety in dangerous environments, and undertaking tasks which wouldn't be economically viable otherwise.

Vision Mātauranga (VM)

In addition to science/technical themes, SfTI has a Vision Mātauranga Theme.

Vision Mātauranga guides researchers on how to integrate technical science with mātauranga Māori (Māori knowledge) to explore new opportunities to build a prosperous, technology-driven economy.

Vision Mātauranga objectives seek to explore innovative and distinctive opportunities for mātauranga Māori, for Māori resources and for relationships with Māori that are beneficial to both Māori and New Zealand as a whole. Applicable research is research that engages with Māori people, practices and/or knowledge in a meaningful way. Research approaches are content specific and may range from full Kaupapa Māori driven research to research likely to improve Māori outcomes and/or raise Māori capacity in hi-tech sectors.

At least 25% of total funding in this round will be committed to projects that support Vision Mātauranga objectives. All projects aligning with Vision Mātauranga must also align to one of SfTI's science/technical themes.

Building New Zealand's Innovation Capacity (SfTI Spearhead)

In addition to the above themes, SfTI has an under-pinning social science Spearhead research project called "Building New Zealand's Innovation Capacity" (BNZIC).

Proposals aligning with BNZIC should also have a **primary alignment** with at least one of the SfTI science/technical themes, although the methodology will be drawn from social science. If BNZIC alignment is claimed there must be relevant expertise in the team to carry out that aspect of the research.

BNZIC's vision is to establish a high-performing seamless New Zealand commercialisation environment that has **enhanced co-innovation capacities** within and between physical sciences and engineering teams and a wide range of industry sectors. This includes:

- Human capacity - the ability of researchers to contextualise their research in terms that business and Māori enterprises can understand, and to place their research in the context of New Zealand and its economic growth;
- Relational capacity - the ways teams of researchers work, network and engage with users (including Māori) organisations.

The research is based on the concept of 'open innovation' which argues that to create value, enterprises need to acquire, assimilate and exploit knowledge from not only their own internal resources but also external sources. How enterprises and research teams connect is dependent on their capacity to connect.

BNZIC is using multiple research approaches including surveys, case studies, action research, ethnography and observations of the process of research and industry engagement in the Spearhead, Seed projects and capacity development programme. The objective is to understand macro (societal), meso (organisational) and micro (team and individual) barriers and enablers in the New Zealand context and then to propose areas for acceleration or improvement. BNZIC research focuses on science **and** industry/Māori technical, human and relational capacity. Since the Māori economy has distinctive features, we are interested in cases of co-innovation between SfTI researchers and Māori organisations.

Capacity Development

SfTI's mission is to **enhance the capacity** of New Zealand to use physical sciences and engineering for economic growth. [Learn more on our website.](#)

This capacity (or capability) development has 3 dimensions – technical, human and relational. SfTI aims to improve the technical capacity of researchers (in the form of new technical knowledge, platforms, and tools) through the research they perform. SfTI researchers will also be expected to improve their ability to connect with end users of research at all of the project concept, design, execution and delivery stages so that technical achievements can be more readily translated into business and economic outcomes. This is the development of their human and relational capacity. Some capacity development initiatives will be funded separately and all SfTI researchers are expected to participate.

SfTI Challenge Partners (under a signed Collaboration Agreement)

Callaghan Innovation (SfTI host)

AgResearch

AUT

Cawthron Institute

GNS Science

Lincoln Agritech Ltd

Lincoln University

Massey University

Scion

University of Auckland

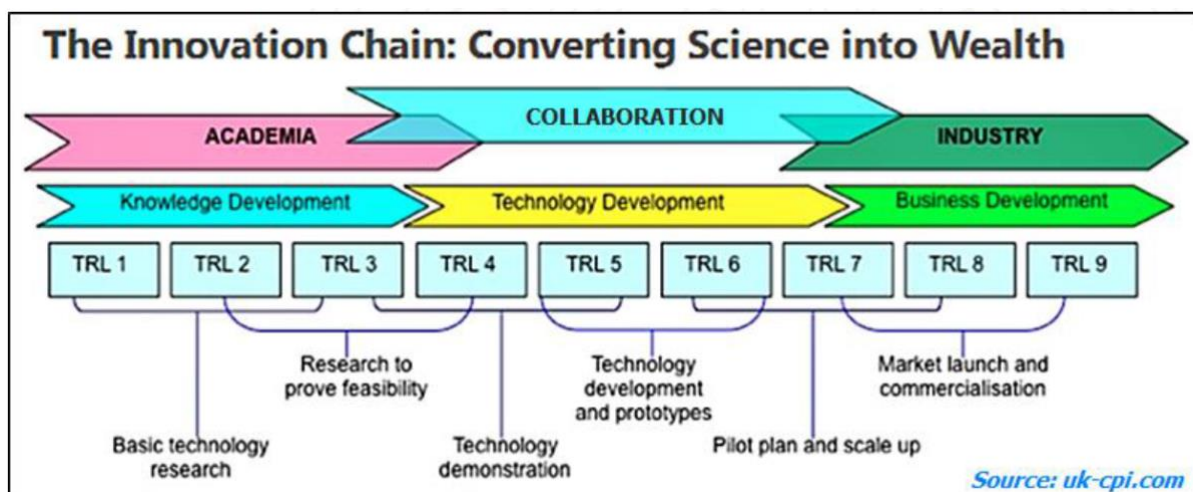
University of Canterbury

University of Otago

University of Waikato

Victoria University of Wellington

APPENDIX 3: Technology Readiness Levels (TRLs)



Summary of the US Department of Energy Technology Readiness Levels. Adapted from *Technology Readiness Assessment Guide (DOE G 413.3-4)*, US DOE Office of Management, 12 October 2009. <http://doe.test.doxcelerate.com/directives/archive-directives/413.3-EGuide-04/view>

Technology Readiness Levels (TRL)	
TRL 1	Scientific research begins translation to applied R&D - Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include paper studies of a technology's basic properties.
TRL 2	Invention begins - Once basic principles are observed, practical applications can be invented. Applications are speculative and there may be no proof or detailed analysis to support the assumptions. Examples are limited to analytic studies.
TRL 3	Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative.
TRL 4	Basic technological components are integrated - Basic technological components are integrated to establish that the pieces will work together.
TRL 5	Fidelity of breadboard technology improves significantly - The basic technological components are integrated with reasonably realistic supporting elements so it can be tested in a simulated environment. Examples include "high fidelity" laboratory integration of components.
TRL 6	Model/prototype is tested in relevant environment - Representative model or prototype system, which is well beyond that of TRL 5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a high-fidelity laboratory environment or in simulated operational environment.
TRL 7	Prototype near or at planned operational system - Represents a major step up from TRL 6, requiring demonstration of an actual system prototype in an operational environment.

TRL 8	Technology is proven to work - Actual technology completed and qualified through test and demonstration.
TRL 9	Actual application of technology is in its final form - Technology proven through successful operations.