

**SCIENCE FOR
TECHNOLOGICAL
INNOVATION**

Kia kotahi mai –
Te Ao Pūtaiao me
Te Ao Hangarau

National
SCIENCE
Challenges



FINAL CAPACITY DEVELOPMENT REPORT

Accelerating science innovation through human and relational skills development

AUGUST 2024



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Overview

SfTI viewed its Capacity Development Programme as possibly the most comprehensive available to New Zealand researchers, and substantially augmenting what is available in the rest of the research system.

In 2014, the Science for Technological Innovation (SfTI) National Science Challenge (NSC) was given its Mission by the New Zealand Government to “*enhance the capacity of Aotearoa-New Zealand to use physical sciences and engineering for economic growth and prosperity*”. What makes SfTI unique amongst the NSCs is that this mission incorporates both behavioural and technical aspects.

As part of its suite of activities, SfTI established a Capacity Development Programme available and promoted to any researcher supported by SfTI. SfTI’s Capacity Development (CD) Programme was allocated dedicated funding for developing the human and relational skills of scientists, which represented a major extension to traditional funding approaches and recognised that researchers’ impact can be enhanced through developing skills beyond the technical.

The Capacity Development Programme targeted two skill areas: relational and human capacity:

- **Relational capacity** refers to the ability of researchers to network with the wide range of stakeholders necessary for developing a technology that is relevant and impactful to society at large, and for bringing it to market. Specifically, this involves relationships with industry, Māori and researchers from other disciplines.

- **Human capacity** encompasses the skills that enable scientists to influence, manage, collaborate, and communicate with others. Traditionally this hasn’t been seen as a necessary part of a scientists’ training, but it is essential for scientists working together in teams, and for connecting science with societal impact.

THE INTERIM CAPACITY DEVELOPMENT REPORT

An Interim Capacity Development Report was produced in 2022 to communicate what the programme set out to do, how it was implemented, and early results about how it appeared to be changing researcher behaviour.

That report categorised the various Capacity Development Programme activities into three types according to the processes they supported. These processes were:

1. **Priority-sourcing:** Ensuring that research questions, approaches and investment align with industry and Māori aspirations;
2. **Collaborating:** Empowering multi and interdisciplinary teams to collaborate; and
3. **Implementing:** Getting ideas out of the lab and into the market where their social and economic benefits can be realised.

Alongside directly upskilling researchers' relational and human capacities, SfTI also developed and normalised novel processes for forming and managing research projects into business-as-usual. This enabled researchers to carry out collaborative, impactful research through authentic partnership with Māori and industry using their enhanced abilities.

THE FINAL CAPACITY DEVELOPMENT REPORT

This Final Report focuses on the last two years of the programme, sharing qualitative feedback from attendees and quantitative analysis. It also explores participation, including researchers' reasons for not making use of this opportunity, and potential solutions to non-participation. Finally, it comments on if and how the initiative has changed researcher behaviour and created positive impact.

We have drawn on the Interim Report as well as data generated by SfTI, including survey data, past published reports, Annual Reports, administrative data and news items produced by the SfTI communications team.

FINDINGS

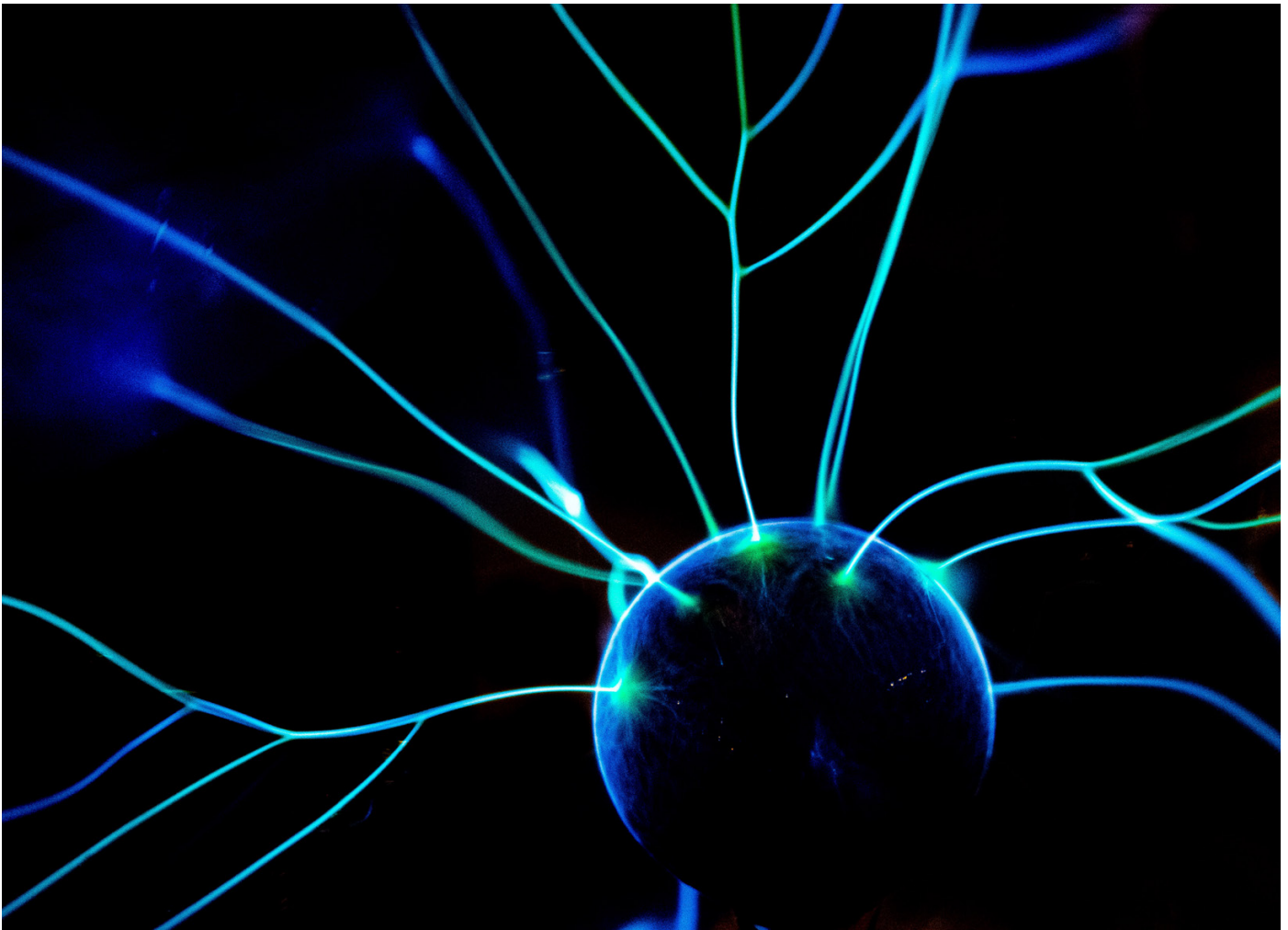
In terms of the broad impacts created by SfTI's capacity development work through to the end of 2021, the Interim Report identified four broad impacts for the SfTI research community, which still hold true as the Challenge comes to a close. These are:

1. enhanced personal confidence
2. improved ability and willingness to seek out others' perspectives and to integrate subsequent new understanding into the research
3. increased networks inside and outside the research community, and that
4. guided practice of new behaviours appears to cement behaviour change.

With regard to enablers and barriers to engaging with capacity development activities, it is clear that the range of offerings from SfTI has met identified researcher needs related to current projects, engagement, and exposure to alternative worldviews. Time was identified as the greatest barrier, and online courses would seem to provide the best solution to this issue.



1. Introduction



This Final Capacity Development Report builds on the Interim Capacity Development Report released in 2022.

Capacity Development was one of several experiments the Challenge originally put in place to see if and how innovation could be accelerated and made more equitable; it became a significant contributor to the impact SfTI has made, for researchers, industry and Māori communities.

SfTI was one of 11 National Science Challenges whose Mission was:

To enhance the capacity of Aotearoa-New Zealand to use physical sciences and engineering for economic growth and prosperity.

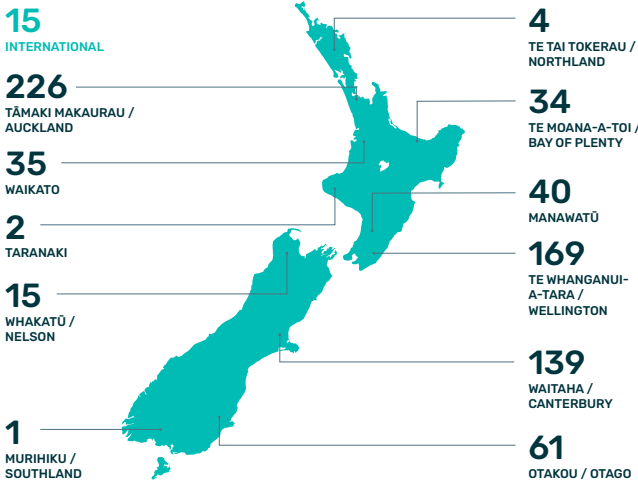
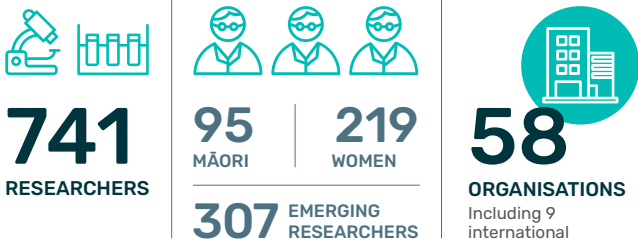
Achieving this Mission was intended to contribute to a future Aotearoa New Zealand with a vibrant, prosperous, technology-driven economy in which researchers could fully integrate with, and contribute to, government policies and industry strategy, and where industry would deliver novel high-value products and services to meet market demand. As the Challenge progressed, it soon prioritised collaboration between researchers and Māori communities and businesses to ensure research activities could be applied to achieving their aspirations.

Over its lifetime, SFTI invested in 741 researchers across 11 large Spearhead projects, 86 smaller Seeds, and 10 Ending With Impact (EWIP) projects. Each project aligned with one or more of four research themes, and researchers joined from across 58 separate organisations, nine of which were based overseas.

SCIENCE FOR TECHNOLOGICAL INNOVATION

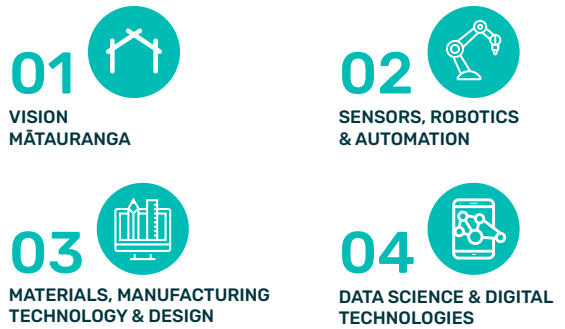
At a Glance

OUR PEOPLE

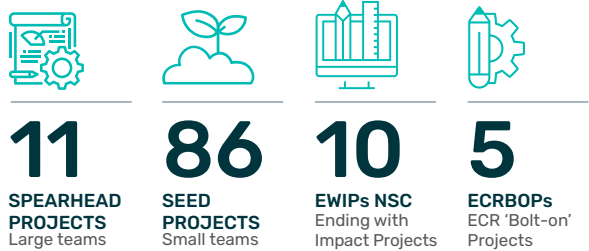


OUR PROJECTS

4 THEMES



STRETCH SCIENCE



OUR DEVELOPMENT

- COMMERCIALISATION
 - INNOVATION
 - MEDIA TRAINING
 - ENTREPRENEURSHIP
 - MĀORI ECONOMY
 - BUSINESS AWARDS
 - TECHNOLOGY
 - LEADERSHIP
 - SPEAKING WITH PURPOSE
- PITCHING SKILLS
 - MISSION LED SCIENCE
 - COMPANY VISITS
 - STAKEHOLDER ENGAGEMENT



OUR ATTENDANCE RECORD



VISION MĀTAURANGA



\$33m PHASE 1 (2014 - 2019) + **\$73m** PHASE 2 (2019 - 2024) = **\$106m**

RESEARCH THEMES | ARIĀ RANGAHAU

SfTI has collaborated widely with industry and Māori to create relevant science and technology, and its research themes were designed to be multidisciplinary topics that supported real world application across business sectors and communities:

1

Vision Mātauranga

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



2

Materials, manufacturing technology and design | Ngā matū, te whakanao me te hoahoa

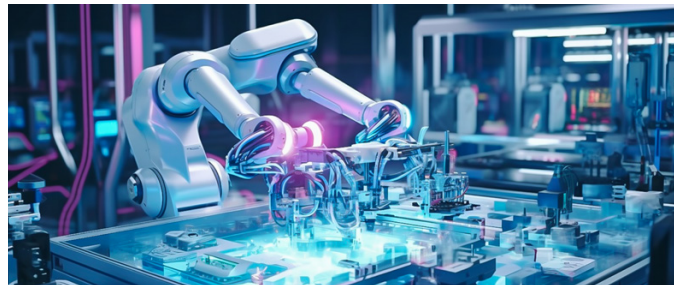
New Zealand has a small, vibrant hi-tech processing and manufacturing sector. This theme aimed to advance the sector's reputation as a leader in smart, green manufacturing processes and materials.



3

Sensors, robotics and automation | Ngā Pūoko, karetao me te aunoatanga

This theme aimed to develop robotics and automation for use in a range of products and applications. The focus was on cost reduction, improved efficiencies, and safety across multiple sectors.

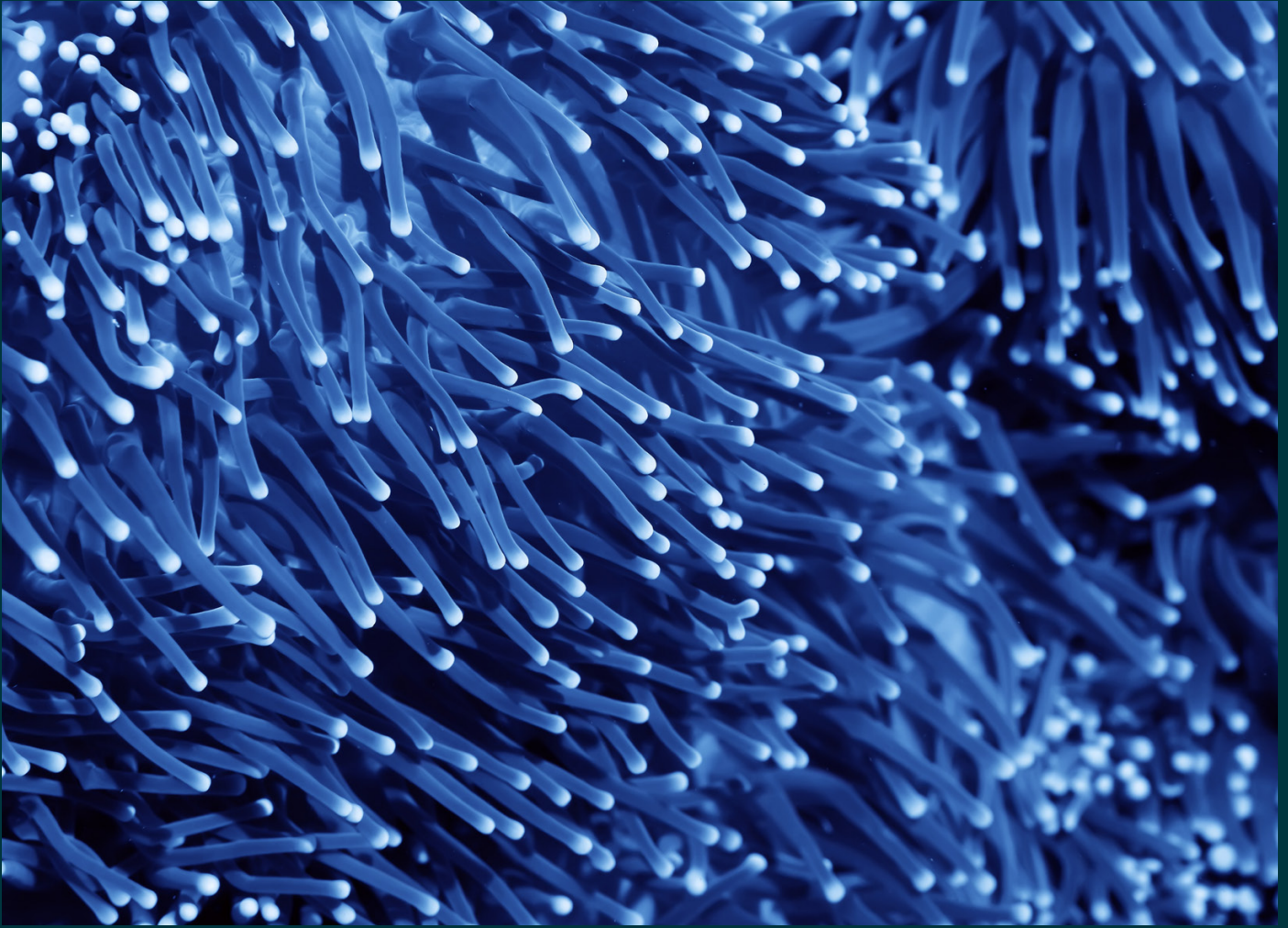


4

Data science and digital technologies | Hangarau Mōhiohio, te tātari raraunga me te whakatauiria

This theme aimed to develop innovative algorithms, models, methods, tools and practices that could underpin new or enhanced business processes, hardware components, systems and software applications.





2. About capacity development

When scientists use people-centred skills in concert with their technical capability, it serves to amplify their ability to create impact from scientific efforts.

SfTI's Capacity Development Programme aimed to stimulate system-level change through elevating both human and relational capacities to a similar level of importance as technical capacity. This is in contrast to a status quo that tends to privilege technical capacities in New Zealand's research system. As one survey participant noted, their CD activity provided "*actionable information that I could not easily get elsewhere.*"

SFTI'S THREE RESEARCHER CAPACITIES

1

Technical capacity

the scientific and technical skills of physical scientists and engineers



2

Human capacity

Skills that enable scientists to influence, manage, collaborate, and communicate with others, and which help them contextualise their work within a global policy push for 'science for society'



3

Relational capacity

The ability to make and maintain networks with industry, Māori, and scientists across multiple disciplines



The extent to which researchers can access non-technical training through their research institutions is not known, however, such offerings may have become more common since the Challenges began a decade ago. SfTI researchers have reported accessing such education via non-SfTI means,¹ most commonly:

- Leadership, including student mentoring
- Cultural competency, including Te Reo Māori, Te Tiriti o Waitangi, Te Ao Māori
- Project management skills such as time management, planning and strategy, funding and administration.

1. BNZIC (2022) SfTI Capacity Development Survey. (unpublished)

RATIONALE

At its heart, increasing science impact relies on moving scientific and technical innovations out of the lab and into the hands of industry, Māori and the rest of society through the process of co-design.

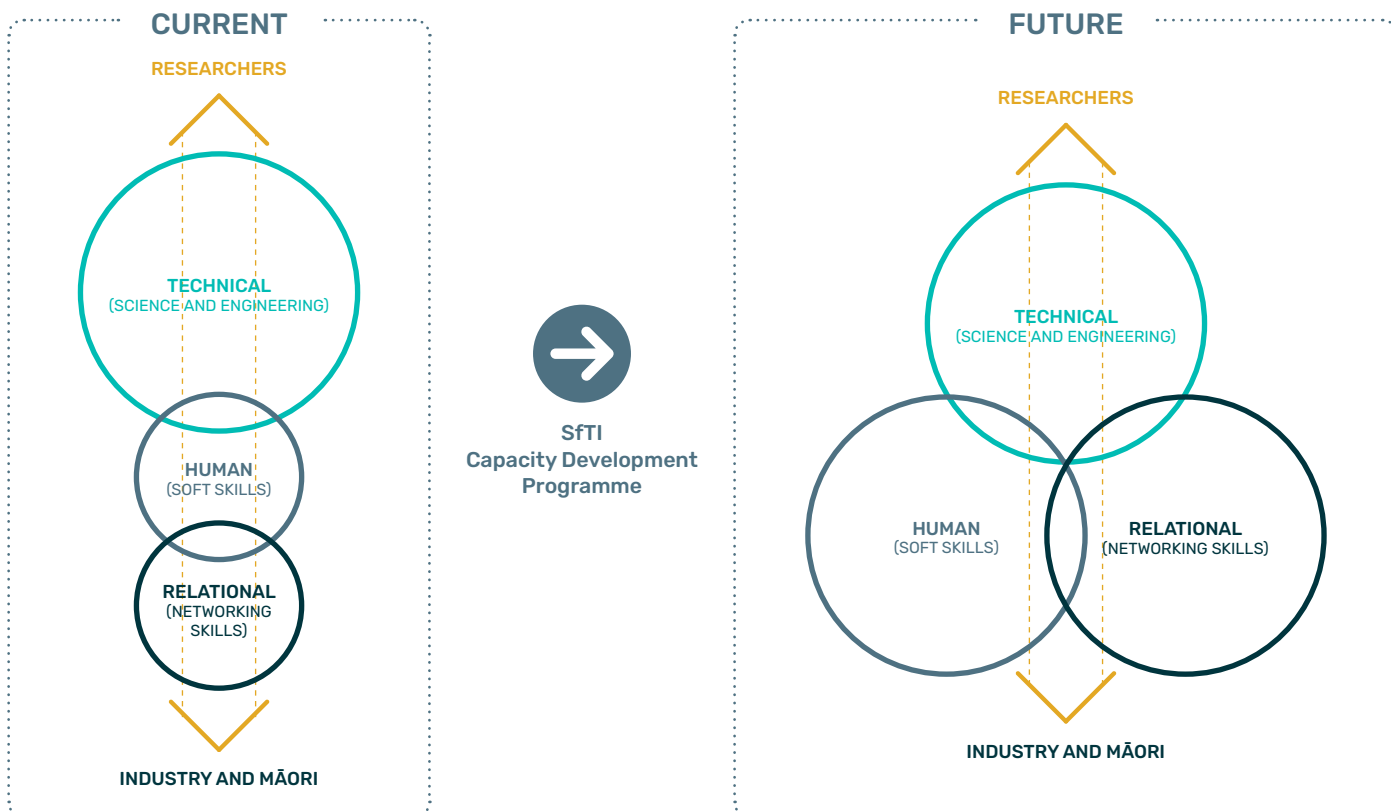
Communication, collaboration, and networking skills are essential if the links between scientists and between science and society are to be strengthened. In the past, it was acceptable for individual scientists' work to focus on advancing fundamental knowledge in their areas of expertise, which often did not require engagement with other scientists, nor beyond their discipline. Now, there is a growing imperative for research to produce societal benefit and impact. To achieve this, scientists need skills in communicating and collaborating with a wide range of people in order to understand their needs rather than developing new innovations in isolation and then attempting to sell them to the public.

The push for Mission-led research represents a continued global effort to reorient scientific endeavours toward the resolution of grand societal challenges such

as climate change. Increasing scientists' human and relational capacity improves the functioning of multi- and inter-disciplinary teams, which is understood to be the most effective approach to solving large scale, complex challenges. Multi- and inter-disciplinary refers to the utilisation of multiple, different disciplines and/or world views to solve a problem; capacity development is usually needed to help researchers facilitate this kind of research.

Human and relational capacity development is similarly useful for bringing new research and solutions into the marketplace. However, limited university-industry and university-Māori collaborations, as well as a lack of diversity in the science and innovation system, are both the symptom and cause of an historical lack of attention paid to researchers' interpersonal skill development. SfTI took the position that making significant system-level changes to the status quo could potentially create the kind of real world impacts they were looking for. At its heart, increasing science impact relies on moving scientific and technical innovations out of the lab and into the hands of industry, Māori and the rest of society through the process of co-design.

The SfTI View of How the Three Researcher Capacities Interrelate



How the Programme was Implemented

From the outset, SfTI created a dedicated fund to develop and implement the Capacity Development Programme so researchers would not have to sacrifice research budget to pay for CD opportunities. This fund was sufficient to create and host a number of workshops annually and, for example, provide leadership and team coaching from qualified coaches, as well as support researchers to attend relevant events provided by third-party organisations. Travel and accommodation were also funded as needed by SfTI to remove barriers to attendance.

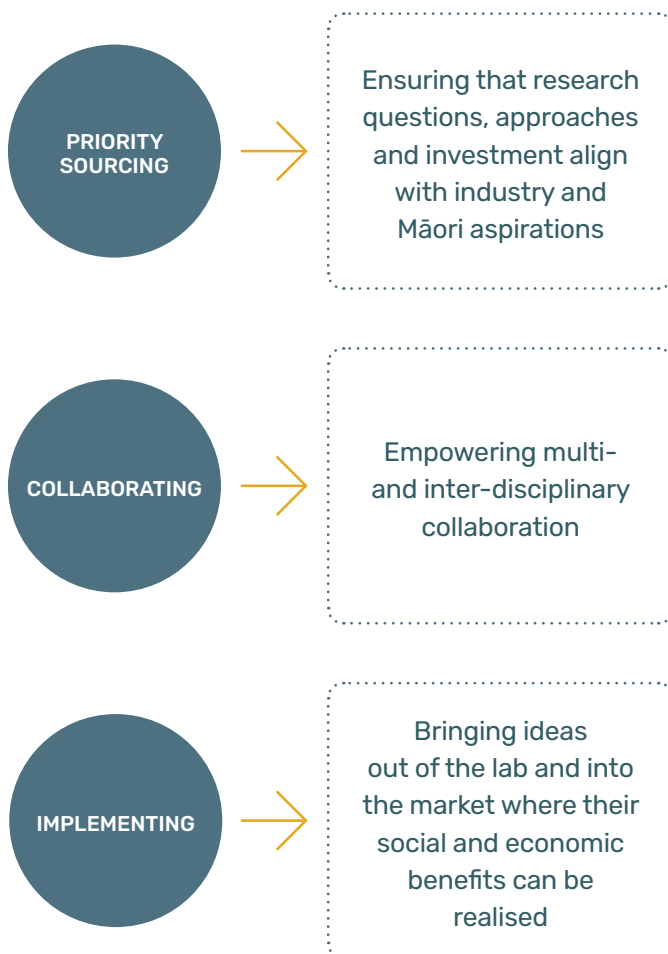
The Challenge’s research contracts required researchers to participate in at least one CD activity per year, although ultimately around half did so. Researchers were free to identify their own training needs, as long as requested courses were related to skill areas not considered part of the typical academic experience. For instance, attending conferences in their scientific discipline was not funded as they contributed to technical capacity development.

Understanding the impact of SfTI’s new processes, including capacity development, was considered essential from very early on in the Challenge. A social science team, Building New Zealand’s Innovation Capacity (BNZIC), was funded to track the evolution of SfTI’s science projects through observation, interviews, and surveys, with a particular focus on how researchers collaborate with each other and with external stakeholders including Māori and businesses. Understanding of the Capacity Development Programme’s impact was part of this work.

Capacity Development Focus Areas

The Interim Capacity Development report identified three target foci of the CD Programme aimed at enhancing the ability of scientists to collaborate with each other, and with those outside of the RSI sector, namely industry and Māori, for positive real world impact. Three processes in particular were identified as having an enabling influence on RSI innovation: priority-sourcing, collaborating, and implementing.

SfTI’s Three Capacity Development Targets





3. Priority-sourcing

Helping scientists to recognise stakeholders' priorities, and/or modify existing assumptions toward more pro-social outcomes

There has been a tendency within Aotearoa New Zealand's RSI sector for scientists to explore new technologies in relative isolation from industry and Māori. Researchers are most likely to determine the areas of enquiry they engage in, and this process is supported by the predominant research funding models which prioritise researcher publication history, for example, over demonstration of past practical application. As a result, business and communities tend to be excluded from driving research agendas and practices. This, in essence, is a system characterised by 'science-push', or science that is developed without a clear sense of social need, market demand, or consumer appetite. Ultimately, this can result in a misalignment between what scientists produce and what the world needs, and puts into question the return on RSI investment.

In contrast, SfTI sought to encourage and enable more of an 'industry/community-pull' space by increasing opportunities for, and the capacity of, researchers to engage early with industry and Māori. In this scenario, stakeholder groups had the opportunity to be co-designers from conception and throughout the entire innovation process, ensuring technology development decisions were informed and shaped by commercial realities, mātauranga Māori, and community needs and interests.

Cultivating the non-technical skills scientists need in order to connect and communicate with businesses, Māori and other communities effectively is vital to maximise this opportunity, not least in helping researchers to develop a sense of where scientific solutions are most needed and what they should look like.

In BNZIC's 2022 Capacity Development Survey, participants were asked which CD activities they had found most useful and why: 15% named VM-related training, including Māori Data Futures Hui, the Māori Economy, and the Federation of Māori Authorities (FOMA) Conference. Specific feedback on impact included:

"It gave me a perspective on the extent of the Māori economy and how we can engage in the long term."

"It helped me to understand the context that my research is situated in with Māori organisations and how I can contribute as a Māori researcher."

FOCUS ON VISION MĀTAURANGA

Vision Mātauranga (VM) training was available to both Māori and non-Māori scientists. One of the most often cited training needs related to cultural competency, with the more commonly asked questions relating to Māori engagement being: 'How do we do it?' and 'Who do we talk to?' Establishing relationships with Māori can be difficult for researchers, particularly those with no pre-existing connections into the Māori world or to Māori business. One outcome of this has been an increased burden placed on Māori scientists to facilitate these relationships, a phenomenon now labelled Aronga Takirua; the need to make non-Māori researchers aware of this has helped shape SfTI's Capacity Development offering.

Given the preponderance of non-Māori within the physical sciences and engineering field, many of the VM offerings were tailored to that audience, so that SfTI-funded researchers could make the necessary connections with and for Māori communities. As revealed through the BNZIC CD Survey (2022):

"Perspectives on mātauranga Māori and how science/learning/knowledge weave into Māori culture (particularly how that differs from current norms in research) I find particularly interesting, largely because this is an area NZ is, and will continue, working through."²

2. BNZIC CD Survey 2022

“Wānanga with kaumātua/mātauranga experts have bolstered my ability to work authentically with my clients and progress issues related to protection and appropriate use of taonga.”³

“The VM focus has helped me become a better and more informed team member and also triggered some research ideas.”⁴

The Challenge offered a variety of more focussed events for researchers and leaders, such as Te Tiriti o Waitangi education, which provided a great deal of information researchers could take into their research:

“I learned so much and was quite confronted with how ignorant I was of Te Tiriti.”

(POST-EVENT FEEDBACK)

“The self-learning part - having the materials available for us to go back to if needed was great - I watched a few videos a couple of times. Part 2 was also great, it was very useful to be able to share our reflections with other participants.”

(POST-EVENT FEEDBACK)

Attendance at the annual Huihuinga Wahine convened by FOMA was supported by SfTI. This event is targeted towards leading and emerging wāhine Māori to come together to share experiences and discuss issues related to developing and strengthening Māori economic outcomes, as well as to foster networks and establish connections. As one researcher who attended said, “*If you're feeling alone as a wāhine Māori or working in a silo, this is the place to be - to connect, talk, laugh and cry with amazing supportive Māori wāhine.*”

Including a Māori focus during SfTI's All of Researchers' Workshops (AoRW)

The AoRWs were a good opportunity to incorporate Māori values and tikanga, for example, through being welcomed onto a Marae or performing karakia and waiata:

“One aspect [of the AoRW] that stood out to me was the emphasis on Mātauranga Māori perspectives throughout the program. It was so great to see a commitment to inclusivity and cultural awareness, as these perspectives came through strongly in discussions and presentations. This added a rich and diverse layer to the content, enhancing the overall educational value of the event.”

(POST-EVENT SURVEY)

In addition, the types of information shared at the AoRWs have added to researchers' understanding of what is important when working with Māori. For example, at the 2023 event, a panel of experts addressed Vision Mātauranga in a post-SfTI world.⁵ Dr Pauline Harris, Prof Hēmi Whaanga and Dr Nancy Garrity made up the panel - all have been integrally involved with SfTI and have a solid understanding of the VM Policy and how it feeds into the RSI system and influences the Challenge.

The discussion was full of valuable insights and thought-provoking questions, and it laid out the scale of the challenge ahead, that is, what are the benefits of bringing mātauranga Māori and western science alongside each other for greater research impact, and how can these benefits can be extended beyond SfTI's lifespan?

The first question Pauline posed was about the impact SfTI has had on the Māori research landscape. Hēmi noted that he had never before been involved in research that accounted for social aspects of the research topic, but in contrast, SfTI was “*encouraging us not to silo ourselves within our own disciplines. Working across disciplines has been encouraged and actually fostered in this programme. It's changed all the ways that we want to conduct our research and the way that we do our research.*” This illustrates the mix of targeted capacity development activities where skills are learned, and the SfTI-wide practices that ensured skills were practiced.

3. BNZIC CD Survey 2022

4. BNZIC CD Survey 2022

5. SfTI News.

3. PRIORITY-SOURCING

For Nancy, an increase in Māori researchers was noticeable as were the skills and drive of the next generation coming through. She also appreciated the care and effort that non-Māori researchers were placing on building partnerships with tangata whenua; something only possible with the requisite skills.

Panellists expressed their concern about what would happen post-SfTI, when without the high level of organisational support provided, the onus would be on individual researchers to continue in the same vein. Nevertheless, the panellists agreed that SfTI's legacy will be seen in the extent to which researchers use their newly developed skills, and take responsibility for moving collaborative relationships with Māori forward.

Another presentation at the AoRW explored Intellectual Property, an issue relevant to all researchers, especially those who are planning to commercialise their research. An extra layer of complexity is added when considering indigenous intellectual property rights, Māori intellectual property and trademark protection. This is not an issue commonly being explored elsewhere in the RSI system, marking the discussion as a unique opportunity for researchers to learn more about this complexity.

Dr Willy-John Martin and Lynell Tuffery Huria discussed Lynell's role in helping SfTI develop its ground-breaking IP Policy in 2019, which recognised the importance of mātauranga Māori and taonga species within Aotearoa New Zealand's research landscape. As she describes it, the policy was *"really quite innovative at the time. I think it was the first National Science Challenge to do that, and, probably one of the first research organisations to do that in Aotearoa. It was a real privilege to be a part of it."*

Lynell urged researchers to consider the value of factors such as IP and goodwill early on in research collaborations, and that this could be supported through investing time in relationship building, something that is particularly important for work that involves Māori, taonga species, or Mātauranga. *"It's critical that you partner with Māori in these spaces,"* she said. *"And engage early on. It's not appropriate anymore to call people two weeks before your application's due."*

The discussion explored the need for a more flexible intellectual property system for Aotearoa; one that reflects, as Willy-John said, *"how we actually live and the types of knowledges we use, and the types of collective ownership that are out there."* As Lynell informed the audience, within Te Ao Māori, there is a drive for *"collective benefit but also a set of obligations underpins that."* The presentation was food for thought for the researchers and administrators in attendance, and provided context for those who were, for example, pursuing commercialisation and/or had attended the IP-related workshops offered through the Capacity Development Programme.



4. Collaborating

Helping scientists to
collaborate effectively
and be impactful influencers

Mission-led science is characteristically complex and is best pursued with input from across diverse disciplines, stakeholder groups and even worldviews. Group dynamics are improved when members bring influence and leadership skills to such tasks as formulating agreed plans, eliciting the best from one another, cooperating and achieving milestones, particularly with the added challenge of working remotely and over extended periods of time.

*"I think the nature of our research system is changing so being able to engage across disciplinary boundaries is incredibly important."*⁶

Being confident in building trustful relationships is important for creating an environment where individuals feel willing to communicate, share information, and give their best. Under such conditions, and over time, technical progress is accelerated, and challenges can be overcome more easily.

The **Narrative for Better Decisions Writing Course** was one offering that assisted researchers to collaborate by improving their communication skills in terms of creating compelling narratives for decision-making purposes. Taught over two weeks, the course enabled participants to understand the essential elements of narrative, practice developing a compelling narrative, and also how to apply these skills to written communications

The training was well-received as indicated in post-event feedback:

"This activity opens your perspective and retrains you to better communicate with a wider audience."

"The material regarding narrative is immediately useful for all genres of writing including articles, opinion pieces, etc."

"The in-depth explanation and the step by step practicing of the five essential elements in writing a story helped me the most."

SfTI has provided several leadership development opportunities, and this has been one of the most well-attended areas of the CD programme. BNZIC's 2022 Capacity Development Survey asked which CD activities

respondents had found most useful and why: two out of five (40%) respondents listed Leadership Training, with many specifically referring to the Science Leaders Programme (SLP). Feedback included:

"Not only were you finding out about your own leadership style, but you become more cognisant of others' styles as well."

"Was useful for going beyond general leadership, to leading teams of 'geeks' when you are also one."

"Provided insight into motivating others and how to influence both what you want and what they want. 1-on-1 coaching subsequently reinforced this learning and use of approaches."

"Through this course, I have learned skills and techniques that I have subsequently used to be a better leader, communicator and researcher this year."

A key element of this training has been helping participants identify the greatest opportunities for impact for themselves and their teams.

The Science Leaders Programme

Lawrence Green developed SfTI's leadership training, the Science Leaders Programme (SLP), as a culmination of learnings from previous leadership offerings: the one-day Relational Leaders Programme, individual coaching, and the three-day intensive Emerging Leaders Programme.

Three themes became evident from working with so many SfTI scientists, many of whom were experiencing difficulties in making the transition from researcher to leader: *"People were struggling with the question of influence, struggling with personal confidence and with leadership intelligence, or bringing their best smart thinking to the leadership problems they were facing,"* says Lawrence. The SLP was developed with these very challenges in mind.

The offering was originally planned as a 3-day intensive, face-to-face training, but due to Covid it was instead moved online through a series of fortnightly 90-minute sessions delivered over six months.

A total of eleven group sessions were delivered in the programme's first year, but this number was reduced to eight group and two individual sessions for 2023, and tasks were set for participants to complete between sessions.

6. BNZIC CD Survey (2022)

4. COLLABORATING

The Objectives of the SLP were to:

1. Strengthen the overall leadership ability of SFTI leaders.
2. Develop the three core leadership capabilities of confidence, influence, and intelligence.
3. Increase the frequency with which these key leadership capabilities are applied.

An SLP Evaluation was carried out each year by the facilitator⁷ in order to capture any changes experienced by attendees, and to reveal areas for improvement. Looking at the 2023 Evaluation, participants were asked the same set of questions before and after the course -

these related to perceptions of their own core leadership capabilities of confidence, influence and intelligence, as well as overall perceptions of leadership skill. Responses showed a positive movement from lower pre-attendance ratings, to higher ratings after programme completion, and this is seen across all four metrics.



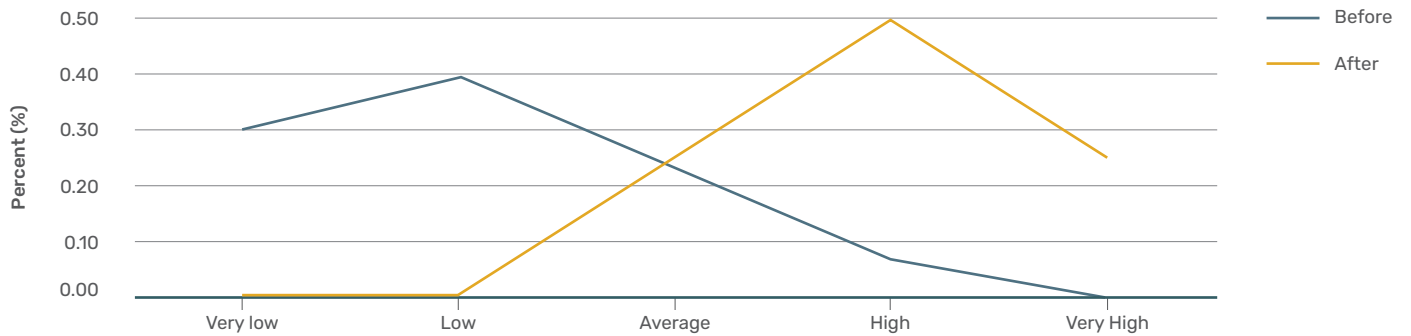
7. Lawrence Green facilitated the programme in 2021, with Esther Bukholt taking on this role for 2022 and 2023.

4. COLLABORATING

Attendees were asked to rate their confidence in their own ability as leaders. Prior to the training, more than two thirds (70%) gave a rating of *very low* or *low*, while a further (23%) described their confidence as average. In contrast, after completing the programme, around half (50%) had a *high* level of confidence, while a further 25% of attendees rated their confidence as *very high*.

“My confidence level increased 100%.”

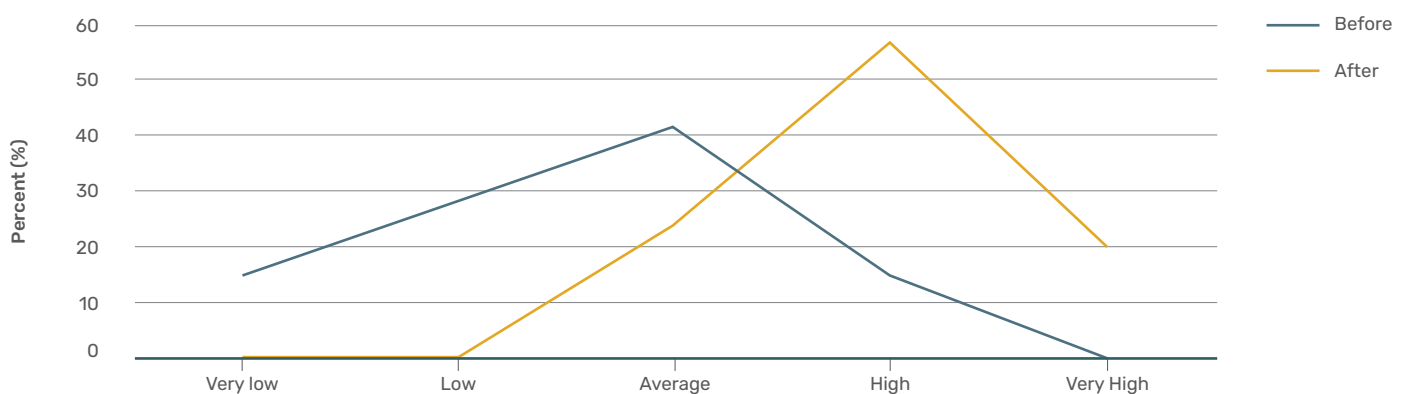
Changes in leadership confidence



Programme participants were also asked about their ability to influence others. Prior to the course, almost half (44%) rated this metric as either *very low* or *low*, while 41% said it was average. Just 15% thought they had a *high* level of ability to influence others. In contrast, after completing this training, three quarters (76%) rated their leadership influence as *high* or *very high*, with the remainder considering it *average*.

“I feel braver to have the difficult conversations as I am connecting with people on a more informed level (TetraMap!).”

Changes in leadership influence



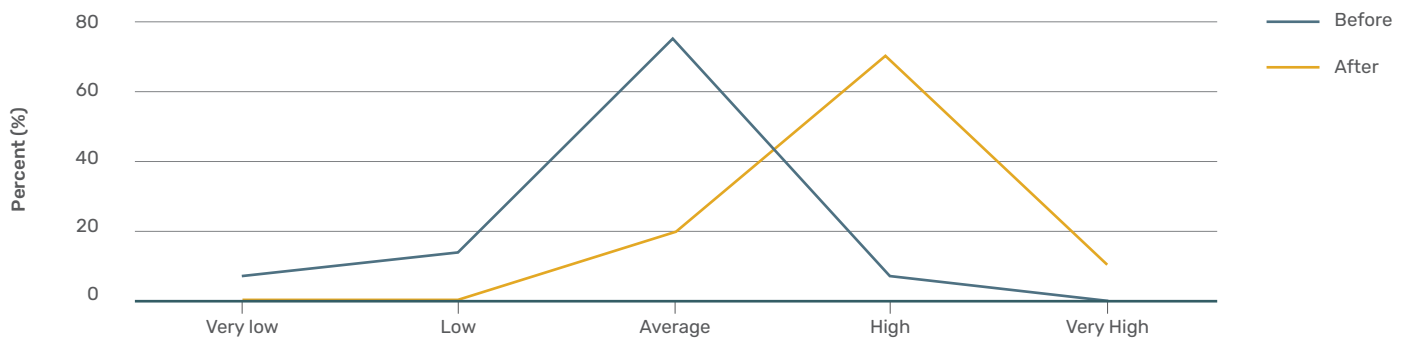
4. COLLABORATING

Prior to SLP, the greatest share of participants (73%) rated their leadership intelligence as *average*, while just 7% rated it as *high*, and the remainder (20%) considering it either *low* or *very low*. After the programme, four out of five (81%) considered their ability with this element of leadership to be either *high* or *very high*.

“Whilst I always thought of myself as a dynamic leader who got things done, I think the programme has given me extra strategies to work with difficult people and challenging problems and allows me to consider more complex situations.”

“Through this course I learnt how I can be influential in the midst of thinking that I have no influence.”

Changes in leadership intelligence



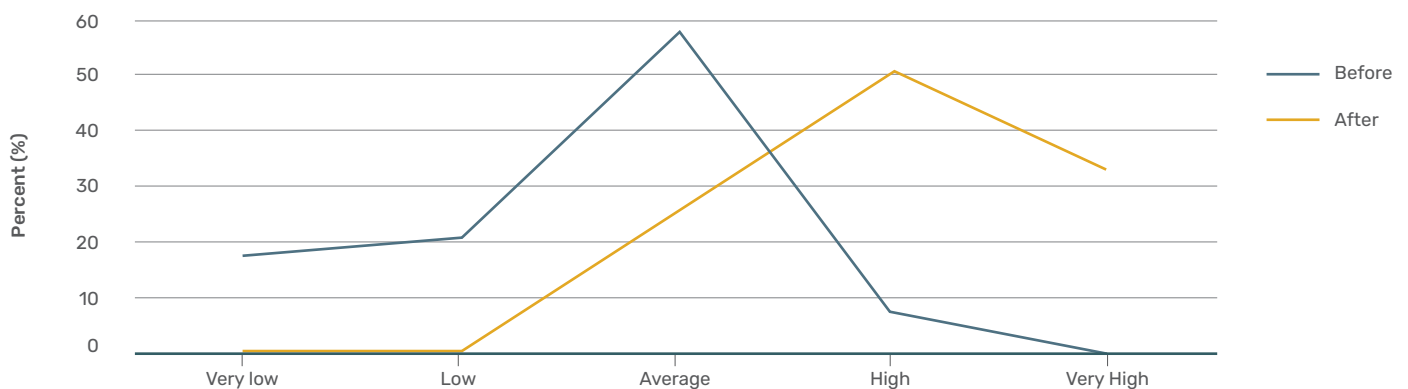
In the end, did participants increase their overall level of leadership skills due to being in the programme?

Again we see an improvement, with almost two in five (37%) rating their leadership skills as *very low* or *low* prior to completing the programme, and another 57% considering them to be *average*. This compares with post-training self-assessments where three quarters (75%) rated their overall leadership skills as either *high* or *very high*.

“The course has increased all aspects of my leadership.”

“This programme immensely informed and gave me tools to navigate through my leadership skills. I feel that I have improved on all levels, but most of all, I have grown into a more confident person. Thank you!!”

Overall change in leadership skills



4. COLLABORATING

When asked if they had applied the knowledge and skills gained during the programme, there were four areas in particular where the 2023 SLP participants reported they had tried a particular skill and achieved concrete and worthwhile results:

- Four out of five (81%) said they had successfully *understood and applied their own leadership style*.
- Between 70% and 75% said they *'paid more attention to the needs and concerns of others'*, had *'reflected on their experience as a basis for improvements'*, could *'work more easily with others'*, and/or could *'take on more challenging tasks or goals'*.

In terms of whether participants believed their learnings had helped them deliver positive outcomes, a range of impacts were reported:

- Three quarters (75%) of respondents said they could *'understand what leadership meant for them in their world'*, could *'build stronger working relationships'*, and/or could *'think more deeply about the challenges and possibilities for their world'*.
- Around 70% of respondents noted that they *'had greater confidence in their leadership style or approach after the training'*, and/or they *'had greater confidence in working with others'*.

Finally in terms of the overall value of the programme, 69% said they *'found it very valuable, and it has helped produce very positive, concrete impact'*, while one quarter reported that they *'found it very valuable, but I cannot say it has helped produce a concrete impact yet'*.

The remaining few said that although they found the course personally valuable, they did not think it was relevant for their workplace. Specific comments included:

"I feel that it was necessary to complete the entire programme to be able to really apply learning. It will also take time to see results."

"My world is changeable. I need to apply different leadership skills depending on which world I am operating in. I behave differently in a Te Ao Māori context compared with when I lead in my role at the university. I'm still working out my place in Te Ao Māori and tikanga over rides some of the leadership skills and behaviours that we apply in other contexts... I think: still working it all out."



4. COLLABORATING

Qualitative feedback⁸ from successive cohorts of the SLP shows the positive effects course attendance has had, whether it was assisting in **team management** for a specific project, being a **better researcher**, improving work relationships, enhancing **communication** skills, or supporting **career progression**:

“The leadership programme helped me to become a more coherent and assertive researcher.”

“I really benefited from Science Leadership. It made me feel more confident, gave me tools/skills for influencing others and making complex decisions.”

“The Science Leadership Programme was really good in terms of identifying my leadership style and those of others. It helped me to assess and navigate my relationships with my colleagues. I also had some one-on-one coaching with Stephen Neale about leadership and relationships which was also a really good activity to enhance my leadership and confidence.”

“I have taken part in the science leadership course this year, so the skills I have learned and am still learning/improving have helped me to understand how I communicate in a leadership situation and to make changes to be better using TetraMap⁹ communication strategies, skills to understand influence, and better decision making and by having greater confidence in my abilities and instincts.”

“Reflecting on my leadership style and applying some of the learnings from the Science Leadership Programme, such as practising active listening and setting clear goals and expectations, has improved the way I collaborate with my project team.”

Facilitator Esther Bukholt notes that SfTI participants had their own unique needs when it came to developing leadership skills. Many came to this training thinking they did not have real potential to be great leaders – there was a common perception that leaders are ‘charismatic visionaries’ possessing quite a different skill set to those honed by scientists. “*What was different was that the science brain, or science training, drove some people in the programme to be very particular and want to understand every detail of it and drill down to the scientific evidence, and find things that weren’t true or didn’t work. The system drives them into critical thinking, so they were quite tough on themselves and also tough on the leadership journey. They strived for perfection.*”

Perhaps one of the advantages of the elongated online approach was that it helped reveal the experiential aspect of developing this skill, that is, leadership is not necessarily something to be critically understood with a scientific eye, rather, it is something that is performed.

In terms of the course schedule, Lawrence Green has been approached by past SLP alumni who have expressed their appreciation for how information was delivered in small bites throughout the programme. Short teaching videos allowed participants to reflect individually on the guidance being shared before exploring further during the facilitated sessions. As Lawrence says of the learning cohorts, “*the most powerful thing about that kind of group is that they have committed to learning and they’re committed to turning up on an ongoing basis. The frequency of turning up in community, in a place that you feel comfortable and with good facilitation is what makes a big difference.*”

Esther agrees, saying, “*you can make small incremental changes and keep layering and layering them. Great leaders aren’t born; you grow into a great leader, and you do that by incremental changes over time. Six months is long enough to see the change in people.*” That said, one insight from the 2022 SLP Evaluation Report was the potential for online sessions to be delivered fortnightly rather than monthly, which would shorten the overall programme length while still allowing enough time to practice techniques in between.

8. This includes the SLP Evaluations (2021, 2022, 2023), ongoing SfTI Programme Office Surveys, and the BNZIC CD Survey (2022).

9. TetraMap is a framework, tool and process that enables positive ways of communicating. It is especially valuable in an environment of change and emergent leadership.

10. BNZIC CD Survey 2022

4. COLLABORATING

Why are leadership skills important? As Lawrence explains, the small changes that leadership training graduates make, for example, becoming more skilled listeners when communicating with their team members, actually have very significant impacts: *“when you listen to someone, you’re not just listening to them, you are actually demonstrating deep respect for them, showing that you value what they say and who they are.”* Esther highlights that once attained, such leadership skills can be applied across multiple settings and should continue to grow with time, making science leadership a concrete SfTI legacy. *“We are sending these scientists out into the world having had this experience, so in my mind, we weren’t just building their capability for the particular projects that they were working on, but for the rest of their career.”*

Great leaders aren’t born; you grow into a great leader, and you do that by incremental changes over time.





5. Implementing

Helping scientists to disseminate innovation and create impact through implementation and commercialisation.

Learning about what is possible in terms of implementation, commercialisation in particular, has helped scientists to understand when and how to interact with groups outside of research institutions. For example, how should they negotiate the needs of both researchers and the businesses and/or Māori communities they are working with to align outcomes.

Progressing research and innovation through to implementation is a journey requiring different people, skill sets and activities, at different stages. Whether a scientist wishes to put more focus on taking their work out of the lab is an individual choice, but the key is to first understand the possibilities, and then know how to navigate the phases they see themselves involved with and, of course, how to collaborate with others at the appropriate times.

In BNZIC's 2022 CD Survey, 25% of respondents considered activities related to commercialisation to be the most useful for themselves. These courses included Rewa Ake, GetFUNDED!, Patent Search Workshop, Developing IP and Market Access. Specific reasons given included:

"It was useful because as a biophysical scientist I have had limited experience developing IP."

"Customer conversations led to new research opportunities."

"Rewa was an intense deep dive into commercialisation that taught me so much."

A close second with regards to an implementation-focus, was Media and Communications, considered most useful by 21% of survey respondents. These courses included Media Savvy, Pitching, Making Video Presentations, and Policy Writing:

"I have quite often been interviewed by media and this helped me to feel more confident and prepared."

"It taught me how to communicate my research in a clear and concise manner to the general public."

FOCUS ON COMMERCIALISATION

The SfTI Challenge elevated the importance of commercialisation during Tranche 2, investing more in capacity development that would help researchers bring their discoveries out of the lab and into the real world. While recognising commercialisation as an incredible opportunity for researchers, the RSI system, communities, industry and consumers, SfTI was also clear that 'doing' commercialisation was not its role as it did not own any IP. Rather, 'supporting' the process was where SfTI could add value. And, of course, putting mechanisms in place that would continue to support researchers beyond mid-2024 was also a key task over the final years.

Partnering with **KiwiNet** was a useful strategy for connecting researchers with a range of opportunities to think differently about commercialisation of their work, and to gain skills needed to move in that direction. Specific offerings have included:

- KiwiNet Emerging Innovator Programme - this six-month course enabled scientists to build industry connections and learn how to demonstrate proof-of-principle of disruptive new inventions.
- Rewa Ake - delivered online, this end-user discovery workshop series imparted practical skills needed for commercialisation, particularly in terms of understanding their potential market, for example, through end user/customer engagement.

"The focus is on understanding what the actual problems are for business. I discovered from talking to end users that their problems were slightly different to what our tech was solving. We were able to take that on board and make some adjustments."

(POST-EVENT FEEDBACK, 2023)

"As scientists, we use a lot of jargon, and we need to find the same language as the end user."

(POST-EVENT FEEDBACK, 2023)

"The Rewa Ake workshop has been an eye opener on many new concepts that I have missed by and large so far. The concept of managing the silence was in particular very useful in planning and performing at critical meetings with industry partners."

(BNZIC CD SURVEY, 2022)

5. IMPLEMENTING

"Rewa workshop provided me with the tools to understand the pains and needs of the customers. It also allowed me to understand the language of investors. It gave me a set of tools to address customer and investors needs while accounting for all the risks and implementing mitigation strategies for the best outcome." (BNZIC CD Survey, 2022)

SfTI's Commercialisation Manager, Deborah Crowe, has paired researchers with **Angel Association New Zealand** events, such as the networking event for founders and investors. This put researchers and investors in the same room where those with aspirations for commercialising their technology could learn more about what was needed to get there. Qualitative feedback was gathered after the event, and showed it was a revelatory experience.

"I thought the event was brilliant. The panel sessions were inspiring and the conversations with investors and other founders were really insightful. Giving space to begin those relationship building aspects was great."

"The AANZ Runway Event provided me with an amazing opportunity to learn about the mindset of an investor and where my start up needs to be before engaging with potential investors. I came out of the event with an expanded network in the business space and clarified the path to market I should take for my start up."

"It was great to meet so many different people from such a range of backgrounds – founders that now invest, investors that just love all things science, scientists and engineers keen to get their tech out there. It was awesome! I learnt so much from everyone and made lots of really useful connections. 10/10 day."

"I was a little nervous about going as I'm so early on in my journey, but it was great to meet a load of people, learn heaps, and just soak up the atmosphere. Lunch was an hour and a half to allow us to network with investors – and that wasn't enough time! Luckily we had a 'speed dating' session in the afternoon where we got 3 mins to pitch to the investors and ask for something. This was the best part of the day for me as I go to speak to a range of people with a plethora of experience. Have a lot of people to follow up with today!"

One attendee provided a detailed description of key takeaways from their Angel Investors experience:

- Focus on momentum – *direction and pace are more important than milestones.*
- Spending more does not necessarily drive growth – *this was really interesting at a time where I am sorting out cashflow for the next few years. I was previously of the opinion that the more staff we have budget for the more productive we can be. Staggering hires is going to be super important to make sure staff are adequately trained but only brought in as needed.*
- Understand metrics for progress and success and communicate that to investors – *this was interesting and got me thinking about how we will measure success in the coming months, years, 10+ years.*
- "Best time to plant a tree was 20 years ago, second best time is today" – *loved this quote and the relationship building focus that I need to embrace and take on in a big way to engage with clinicians and health professionals early.*

The **Patent Searching Workshop** was another commercialisation-focused offering from SfTI that was well-received by budding tech entrepreneurs.

Facilitated by Tim Stirrup (PhD), a Registered NZ and Australian Patent Attorney at Prime Innovation, participants learned to enhance their patent-searching skills. They also discovered valuable technical knowledge, improved their grant applications and identified potential collaborators and competitors over the course of the workshop's three sessions. In high demand, this workshop was offered on multiple occasions: in the 2021-22 reporting period alone it was offered twice with over 100 people attending.

In a post-2023 workshop survey, participants were asked how likely they were to recommend the course to others: 10 of the 12 survey respondents gave a rating of at least 9 out of 10, with the remaining two respondents giving ratings of 8. The reasons for recommending the course included:

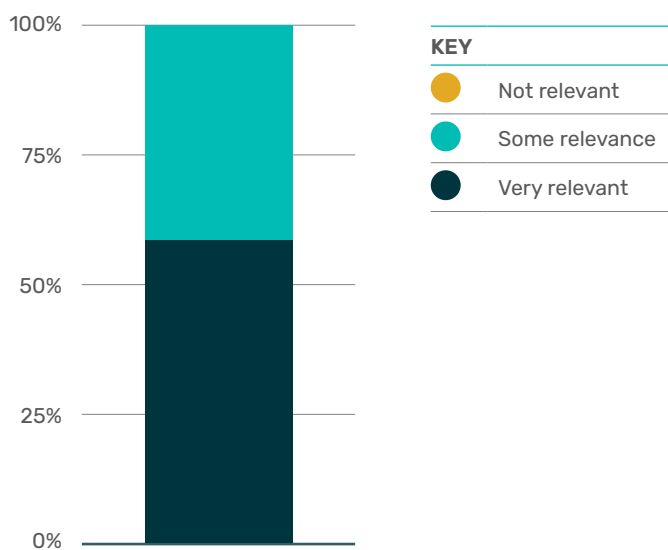
"It was informative, easy to understand, valuable."

"Very good overview of the patenting process, hands-on patent searching and how to find answers to questions researchers ask or should ask."

“I would highly recommend it to colleagues in science and research teams. It was a really informative introduction to the value of patent searching when conducting research.”

The Workshop had a high level of relevance for attendees with all survey respondents stating it either had *some relevance* (42%) or was *very relevant* for their role (58%).

Relevance of the Patent Searching Workshop (n=12, 2023)



Attendees reported learning many practical skills at the course:

“I found the timelines slide a really good summary resource which I can refer back to.”

“I know some free searching databases for patent search.”

“The ability to drill down into patent families, applicants, etc.”

“Navigating what information to look for when searching for a patent was really helpful, in particular the insights that can be taken from the analytics tabs before even reading the patent.”

At the same time, attendees understood there was still more to learn, and listed additional areas to explore including: more about relevant policies and the patent grant process, more hands-on practice, more real-world examples, and more emphasis on Commercialisation of Research by KiwiNet, and the gap between Patents and Product.

Overall, however, **Patent Searching** was well-received by successive cohorts:

“The patent searching workshop gave me knowledge that others in the team didn’t have and so I have been leading the patent searching related work.”
(BNZIC CD SURVEY 2022)

“Recent workshops on entrepreneurial stuff and patent searching have really improved my understanding of how my work could make a sustainable difference through a commercial pathway. This helps the development of long term vision and planning which has a positive effect on grant applications etc.”
(BNZIC CD SURVEY 2022)

“It was a great beginner intro to patents, how TTO’s and researchers can collaborate well for good - it will be really valuable for me going forward.”
(Post-event Survey, 2023)

“Tim was simply amazing! He explained every detail in plain English.”
(POST-EVENT SURVEY, 2023)

5. IMPLEMENTING

GetFUNDED! is a one-day course offered by Kiwinet, which helps researchers:

- **Identify a value proposition:** assessing an opportunity and narrowing down the core value proposition that will appeal to an identified market need
- **Understand the three 'abilities':** feasibility, viability and desirability
- **Prepare an investment/funding case:** combine a realistic implementation plan with a strong value proposition

This course was offered multiple times to the SfTI community, and was frequently praised in feedback surveys, for example:

"The GetFUNDED! workshop helped me in formulating my business idea. As a result, I did a successful pitch to a potential investor, which boosted my confidence in pitching my ideas to more audiences."

(BNZIC CD SURVEY, 2022)

"My research is at the stage of Proof of Concept, and the GetFUNDED! programme helped me in preparing a compelling business case for fundraising."

(BNZIC CD SURVEY 2022)

A number of **Communication** courses were offered by SfTI. For example, the *Video Storytelling* workshop, facilitated by ex-reality TV producer and veteran cameraman, Baz Caitcheon in 2021 and again in 2023. Communication skills have been highly valued by members of the SfTI community, particularly once they start to learn these new ways of telling non-scientific audiences about their work. Baz's background as a producer for reality television means that he is highly skilled in identifying content that will emotionally engage, and this skill is sometimes needed by scientists looking to persuade an audience. The *Pitching* course was considered particularly useful by attendees, as was the *Media SAVVY* training offered by the Science Media Centre. Feedback on these various communication-focused offerings show the myriad ways new skills have been applied:

"I won the Pitching Award one year. Had a huge influence on my subsequent presentations at meetings, conference etc. Also gave me confidence to pitch ideas to industry and funders."

(BNZIC CD SURVEY 2022)

"The Science Media Workshop helped me solidify concepts in my own research. This in turn helped me communicate it better to other people. This has made me a better researcher as I now try and frame a research question in a manner that helps me easily identify its merits and shortcomings."

(POST-EVENT FEEDBACK)

"I really enjoyed the Media SAVVY course. The Science Media Centre does a fabulous job for science reporting in NZ, and how they organised the course was commendable. I really learned a lot from the course, and also had some great experiences in the practical sessions - facing an interview, being video recorded, delivering a pitch etc."

(POST-EVENT FEEDBACK)





6. All of Researchers' Workshop

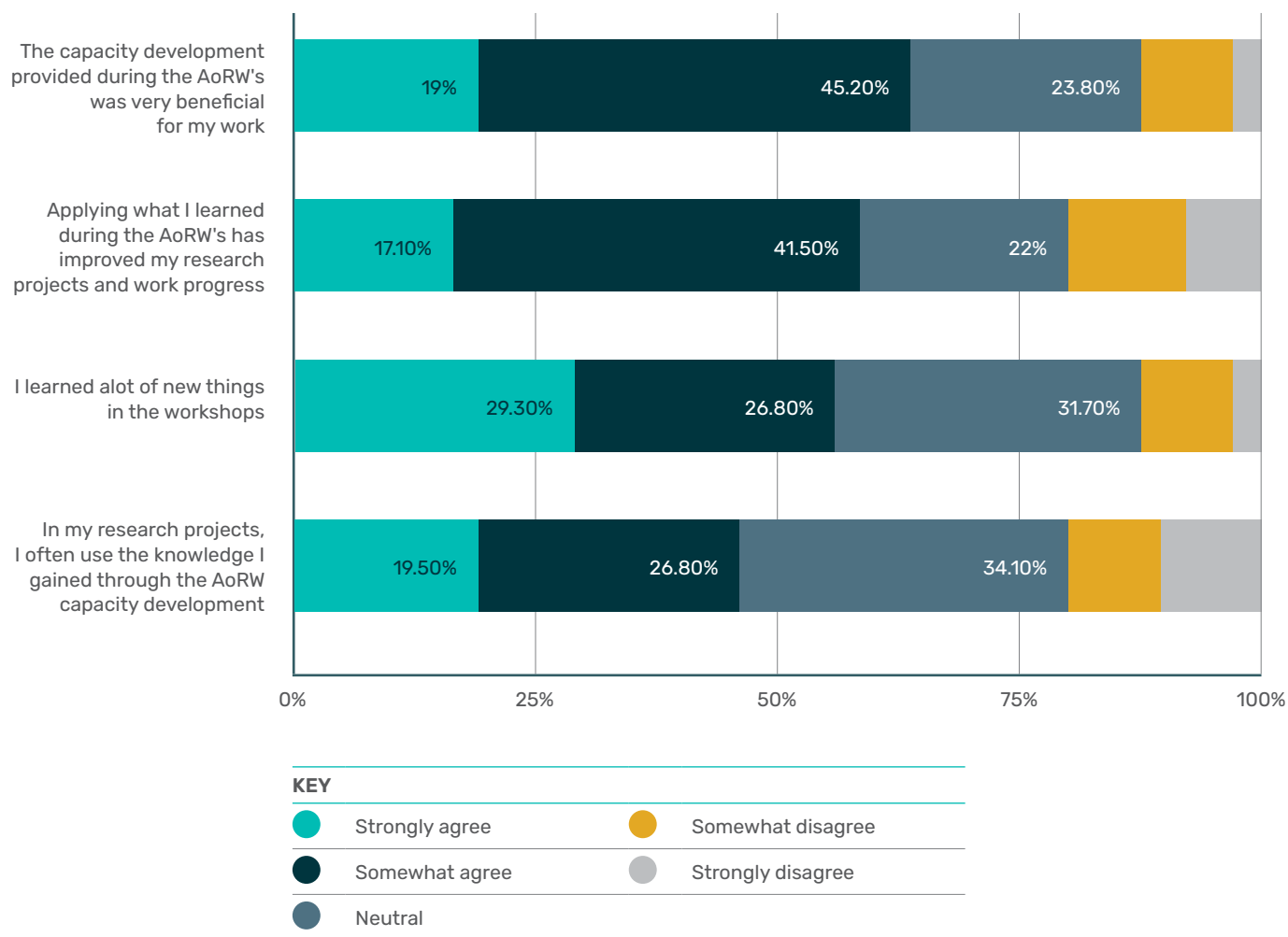
All of Researchers' Workshops (AoRWs) were SfTI's largest Capacity Development events, attended by 618 people were held in 2016, 2017, 2018 and 2019 and 2023 (with a Covid-related hiatus).

Throughout the final workshop in 2023, themed Kia whakatōmuri te haere whakamua - Looking Backward Towards the Future, many people talked about the strength of the relationships within the SfTI community.

It was clear that these relationships, which reach across technical disciplines and out of the lab into the community, could potentially be the most lasting legacy of SfTI. Attendees at the workshop talked about how this sense of connection enabled the scientific outcomes and technological breakthroughs.

The 2022 BNZIC CD Survey explored how SfTI's Capacity Development offerings were regarded by researchers. Forty-six per cent of respondents had attended at least one AoRW. When asked to evaluate these events on four metrics, most participants indicated a positive impact on their knowledge and/or work. Almost two thirds (64%) reported they either *somewhat or strongly agreed* that the capacity development provided during the AoRWs was very beneficial for their work, while almost three in ten (29%) *strongly agreed* that they had learned a lot of new things in the workshops.

Participant Evaluations of SfTI's All of Researchers' Workshops. (n=41)¹⁰



11. BNZIC CD Survey 2022

In terms of what was considered most memorable and useful about attending the workshop, some clear themes arose:

Networking (19/34)

Over half of the responses mentioned meeting with other researchers and leaders – both previously known and new acquaintances – to be a highlight:

“Most helpful was the off-duty catch ups with Challenge/Theme leaders and other people like Enrico [Tronchin]. This often led to connections with their networks.”

“Meeting and growing the community of researchers across a wide range of skills, listening to different perspectives.”

“Meeting like-minded individuals.”

Speakers and Workshops (10/34)

Many attendees especially appreciated learning new skills or improving existing abilities as a result of the training sessions, presentations and panels offered at AoRWs:

“The session we did on personality types was useful in understanding differences in teams. Guest speakers from industry and facilitated panels brought in new perspectives and/or provided an understanding of industries/organisations I would not normally have found out about otherwise.”

“Most useful was also the pitching competition – my elevator pitch has been used many, many times since then!”

“I asked my SfTI funded PhD student to attend the capacity building workshops that greatly helped to build their confidence.”

Other projects and domains (8/34)

Hearing about other projects and learning from researchers in other domains was beneficial for AoRW attendees:

“Being exposed to different fields, knowledges, ways of doing things.”

“Seeing the range of research going on under SfTI was interesting and inspiring.”

“Hearing about different projects which suggests different ways of doing your own work.”

“Group activities mixed with people from other Spearheads was helpful to gain new perspectives.”

Meeting with fellow researchers (8/34)

Some respondents reported that it was a good opportunity to meet other members of their own research team in person, and to learn from others working in similar fields:

“Engaging at a personal level with other researchers – helpful in that this built trust to do the next phases of research.”

“What was most memorable was the collective learning, learning from experts, but also from each other in the group.”

“Informal conversations on own progress, testing ideas, arranging next meetings.”

Vision-Mātauranga-related learning (5/34)

Learning more about how to work with Māori was a specific benefit noted by a small number of participants:

“The experience on marae (both organised by SfTI and by our own team) made the strongest impact on me.”

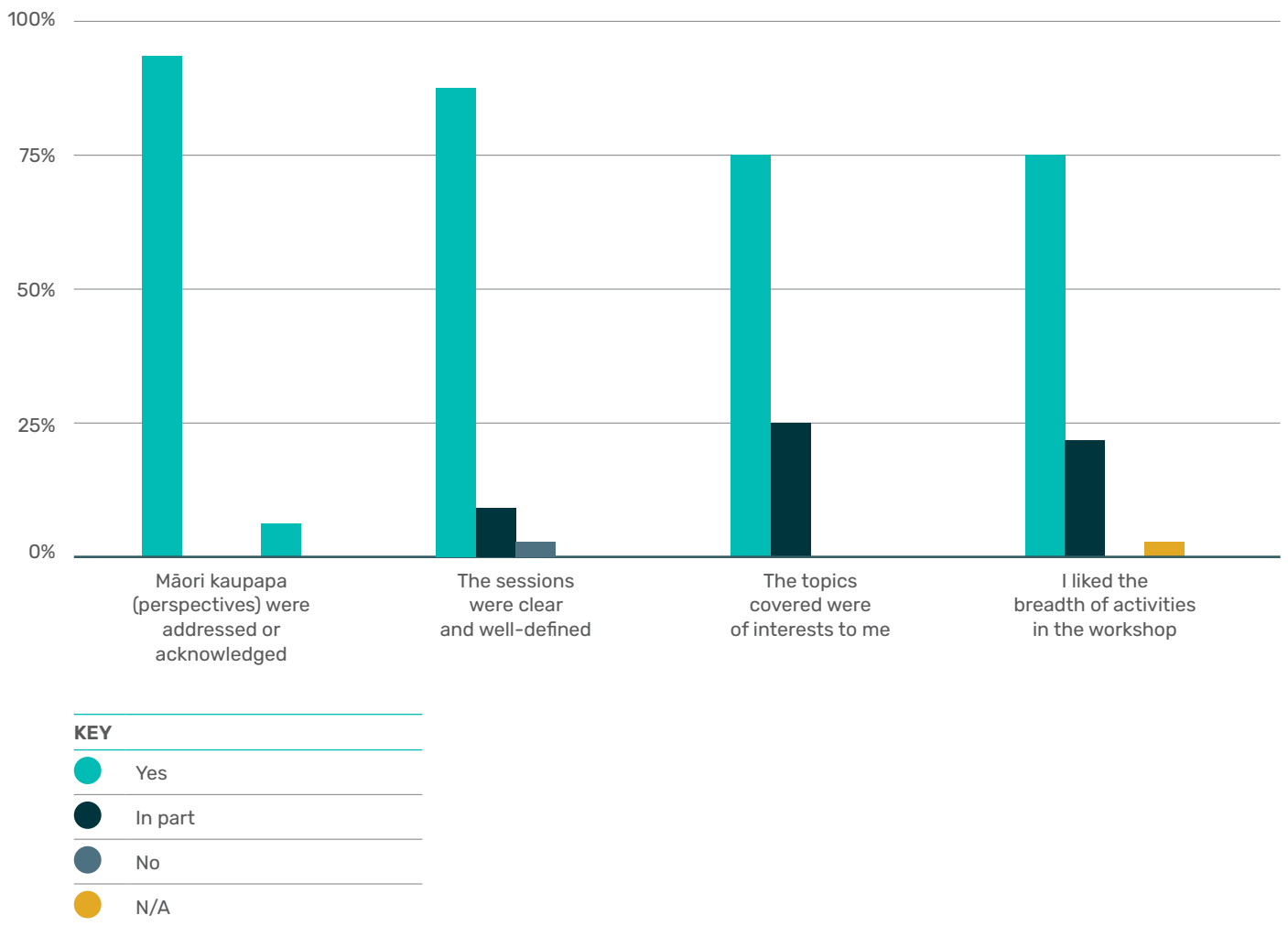
“Learning about the extent of the Māori economy was very useful in changing my perspective.”

“Developing greater awareness about and managing the implications of Māori and industry involvement in projects.”

SfTI’s Programme Office ran a survey to better understand thoughts around the final AoRW. Participants were asked to provide an overall rating for the event: the average was 4.4 out of 5, with 84% rating it as either *very good* (4) or *excellent* (5), and 13% rating it as *good* (3).

In terms of content, participants were almost unanimous in agreeing that Māori kaupapa (perspectives) were addressed or acknowledged, while 9 out of 10 (87.5%) respondents thought the AoRW sessions were clear and well-defined.

Evaluation of Content at the 2023 AoRW (n=32)



As noted above, **networking** was considered one of the most valuable aspects of AoRW attendance overall¹¹, and this was still the case in 2023. Most people were satisfied with the networking opportunities presented by the Workshop: 91% of survey respondents agreed that there was a *real sense of camaraderie and community*, and 88% said there was *enough time to network*.

“The networking opportunities were abundant and incredibly valuable. Connecting with professionals and like-minded individuals provided a platform for exchanging ideas and building potential collaborations.”

“The poster session was a fantastic opportunity to connect with project teams, fostering meaningful conversations and expanding my understanding of different perspectives.”

The **speakers and workshops** have also been a highlight for past AoRWs, and in 2023, survey participants similarly considered the speakers to be *knowledgeable* (88%), *engaging* (81%) and covering topics of *interest* (75%).

“Pauline’s panel was excellent – it was a special privilege to witness that *kōrero* in person.”

“Prof Rangi Mātāmua was the best speaker. I enjoyed hearing his personal story of how the Matariki public holiday came into being. Ratu Mataira gave a very interesting presentation covering both ground-breaking technology development and commercialisation/investment concepts (with personal experience).”

“The media training was really useful to learn how to communicate our research using common language.”

12. Quant work by Angela. *Capacity Development Participation*.





7. CD Participation

While the intent was for everyone funded by SfTI to attend capacity development activities, 56% (178) of Spearhead team members participated, 59% (207) of Seed researchers, 51% (52) of Ending With Impact (EWIP) team members, and 47% (30) of Early Career Researcher Bolt-On¹². So while the opportunity for this type of training was offered to all, only around half took advantage of the opportunity.

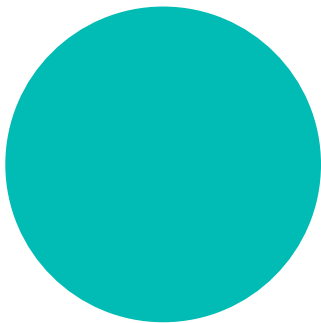
SPEARHEAD PROJECTS

The total number of Spearhead Project team members over the life of the Challenge was 317, comprising 32% female (half of whom attended at least one CD event) and 68% male, who were slightly more likely to attend CD with 3 out of 5 (59%) doing so.

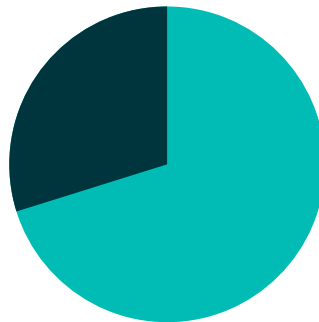
By ethnicity, participation was highest for Māori at 67% (38 out of 57), followed by those identifying as New Zealanders (60%).

There was also a wide range participation levels between individual Spearheads: less than 50% of team members attended for four of the projects, while three projects saw 80% or more attend. The remaining four Spearheads had participation rates of between 52% and 71%.

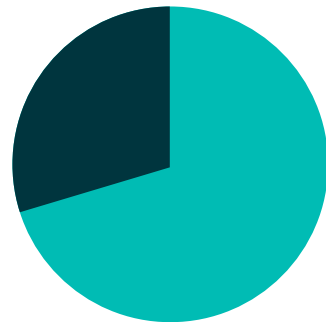
Science leader – CD participation and no CD participation



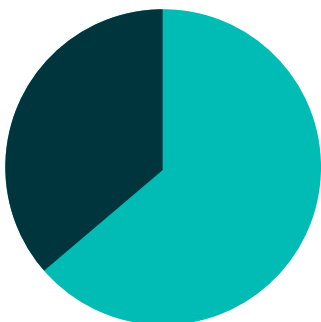
Researcher – CD participation and no CD participation



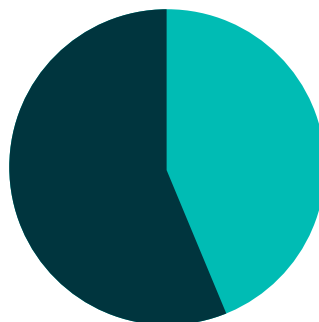
Post-doc – CD participation and no CD participation



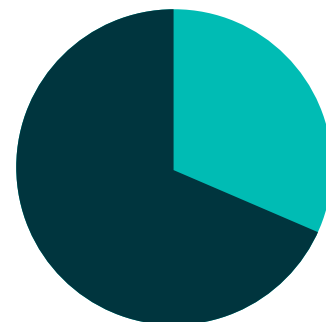
Kāhui Māori – CD participation and no CD participation



Rangatahi – CD participation and no CD participation



Student – CD participation and no CD participation



NB - individuals are only counted within one category

KEY

- CD Participation
- No CD Participation

13. NB: 7 = most influential; 1 = least influential.

SEED PROJECTS

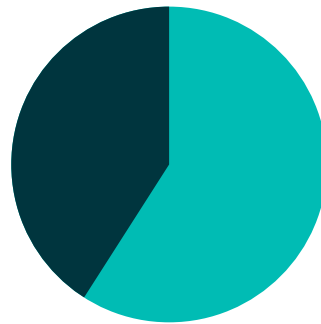
The total number of Seed Project team members was 349, comprising 29% (102) female and 71% (247) male. There was virtually no difference in CD participation rates between women (60%) and men (59%).

Almost three quarters (74%) of Māori team members attended at least one CD event, and Māori men were significantly more likely to take part at 89% compared with 59% of wahine Māori.

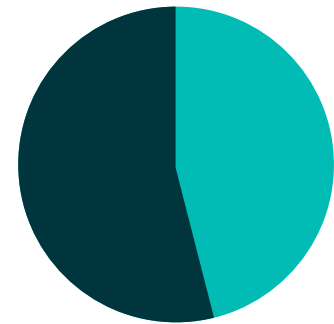
Science leader – CD participation v no CD participation



Researcher – CD participation and no CD participation



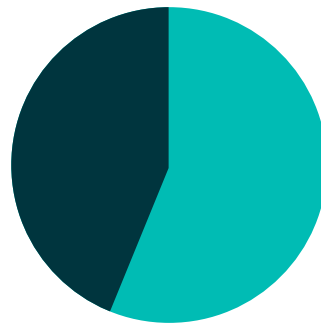
Post-doc – CD participation and no CD participation



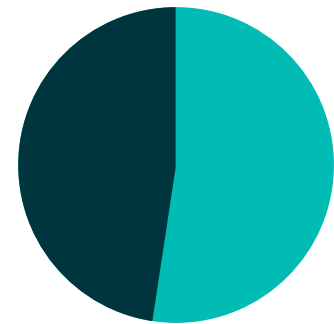
Kāhui Māori, Māori Advisor/Stakeholder – CD participation and no CD participation



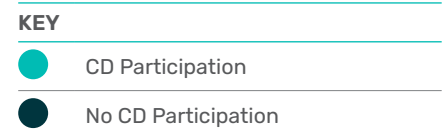
Rangatahi – CD participation and no CD participation



Student – CD participation and no CD participation



NB- some individuals are counted within more than one category



As the pie charts illustrate, in terms of role, Science Leaders were most likely to participate in CD activities for both Spearheads (100%) and Seed projects (67%). For the Spearhead projects, Post-docs (71%) and Researchers (70%) had relatively high participation rates, while less than half of Rangatahi (44%) and Students (32%) attended. Within the Seed projects, two thirds (67%) of Māori Advisors, including Kāhui Māori members attended, as did 58% of researchers, while Post-doc (46%) and Student (47%) team members were least likely to participate.

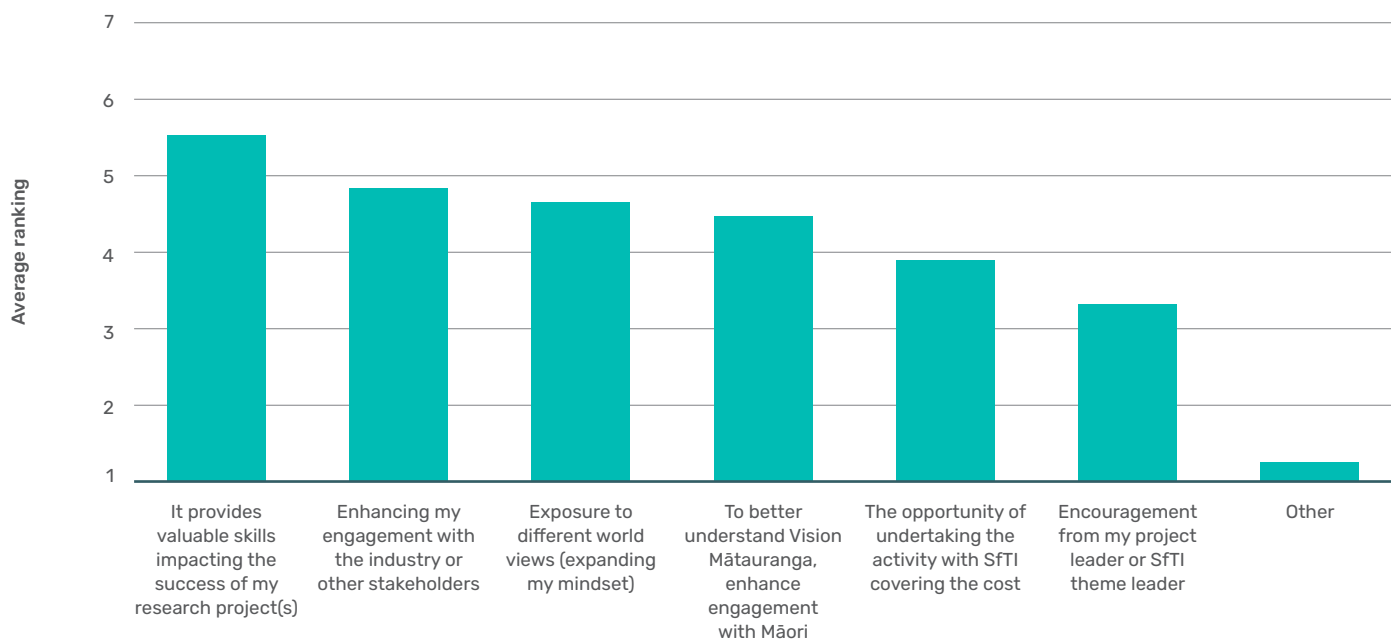
Half (51%) of those working on EWIPs participated in Capacity Development, with a similar story for the ECR projects (47%).

REASONS FOR ATTENDING CD ACTIVITIES

The BNZIC CD Survey 2022 measured the reasons for engaging in CD activities by asking participants to rank their most to least important reasons for undertaking CD activities.

As the graph below shows, the most important reasons related to gaining *valuable skill impacting the success of attendee’s research* (average ranking of 5.6, where 7 = most influential; 1 = least influential), *enhancing engagement with industry or other stakeholders* (4.8), *exposure to different worldviews* (4.7) and to *better understand VM and enhance engagement with Māori* (4.5). People were also influenced by *SfTI covering costs* (3.9), and *encouragement from leaders* (3.3).

Reasons for undertaking SfTI-initiated CD activities¹³



Reasons

When asked how they decided which CD activities to enrol in,¹⁴ the two most common answers included:

Topics that were **interesting and/or relevant** either generally, or that specifically aligned with current needs of projects were more likely to be attended.

“Whether the workshop would contribute to the phase of my project I’m currently working on.”

Some were guided by their own perceptions of **need**, while other participants noted that they receive guidance from seniors and colleagues about what courses may be useful for them.

“Does content match my development needs I have self-identified?”

“Having an understanding of what my weaknesses are therefore what gaps need to be filled

“I have a personal 5-year development plan with key areas that I would like to upskill in. I use this to guide where I invest my time and resources.”

Hearing positive **feedback from colleagues** who have attended a particular training was also persuasive.

“Hearing from colleagues about good workshops or topics they have been exposed to recently (and were good) will often have a large influence on what I sign up for.”

Others noted that they are careful to not repeat the same training or closely aligned trainings, while some say they react to offerings when receiving **communications from SfTI**.

“I look at what is offered via the regular emails and consider what I already know and what I might learn.”

14. BNZIC CD Survey 2022

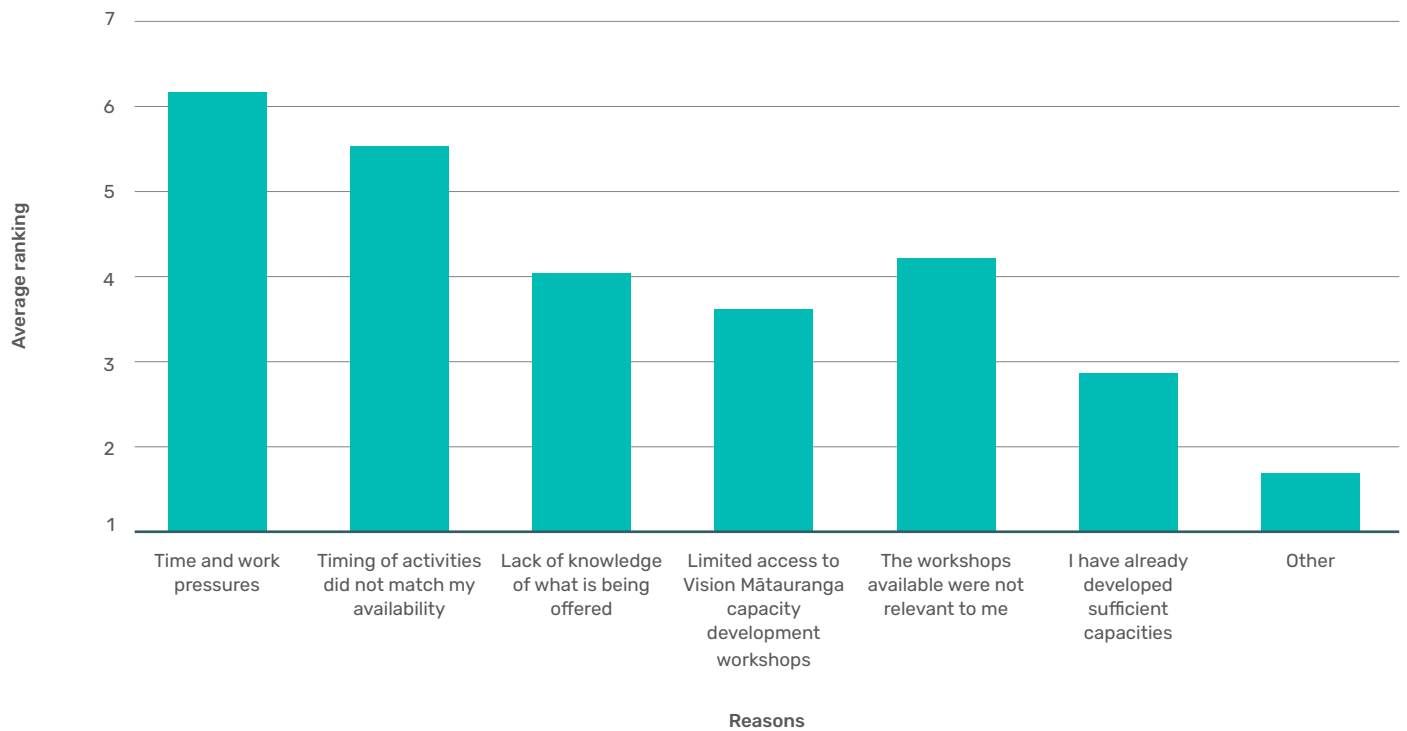
15. BNZIC CD Survey 2022

Reasons for NOT Attending CD Activities

While the CD offerings were made available to all SfTI-funded researchers and advisors, and were overwhelmingly well-received by those who did attend, more than two out of five of those who were eligible to participate, did not.

Perceived barriers to engaging in more CD activities were measured¹⁵ by asking participants to rank their most to least influential reasons for not engaging in more CD activities. The graph below shows the average ranking for each of such reasons.

Reasons for NOT engaging in more SfTI-initiated CD activities¹⁶



16. NB: 7 = most influential; 1 = least influential.

17. NB: 3 = most preferred; 1 = least preferred.

7. CD PARTICIPATION

Time - this covered both timing in terms of whether an offering clashed with a participant's own schedule and availability, AND the amount of time they would need to allocate to the training, presumably including travel (making location a potentially important factor), attendance, and any associated self-driven activities.

“Timing is the primary decision factor - when it is and if I have time to attend.”

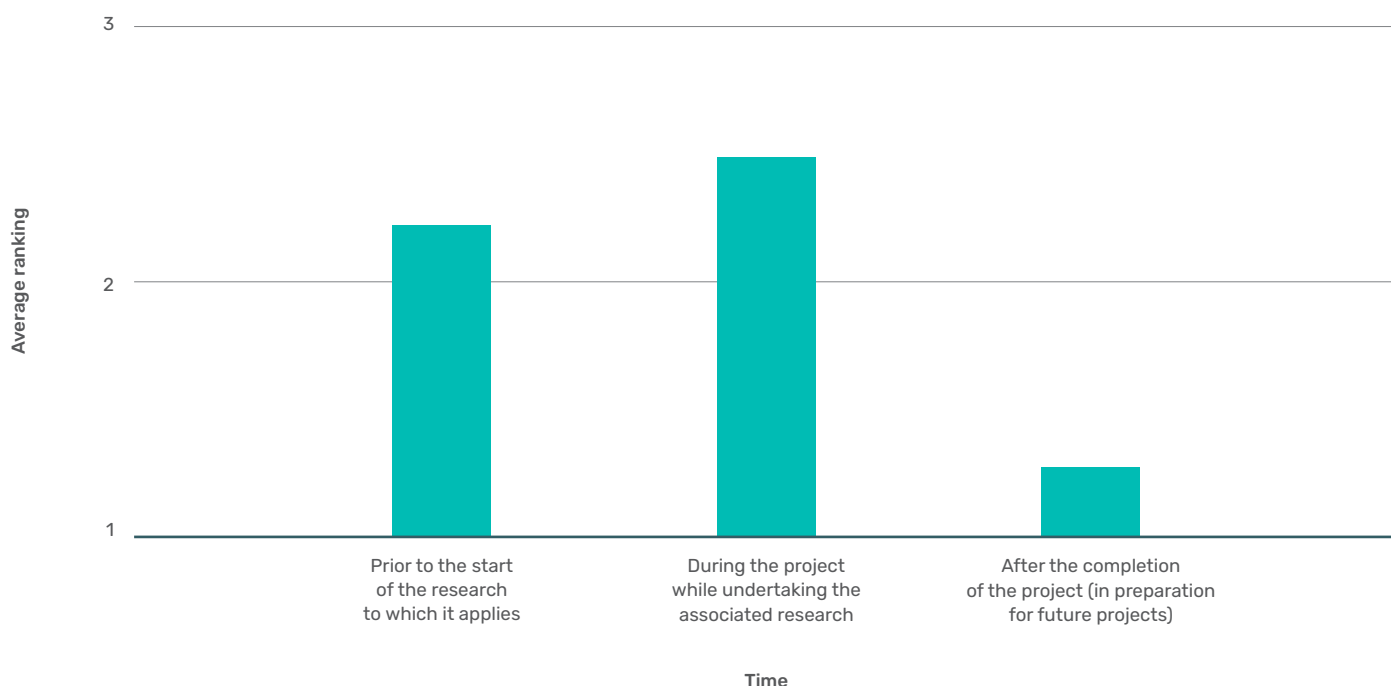
“I found some activities interesting and attended a few but many of them were offered during teaching semesters when I wasn't available.”

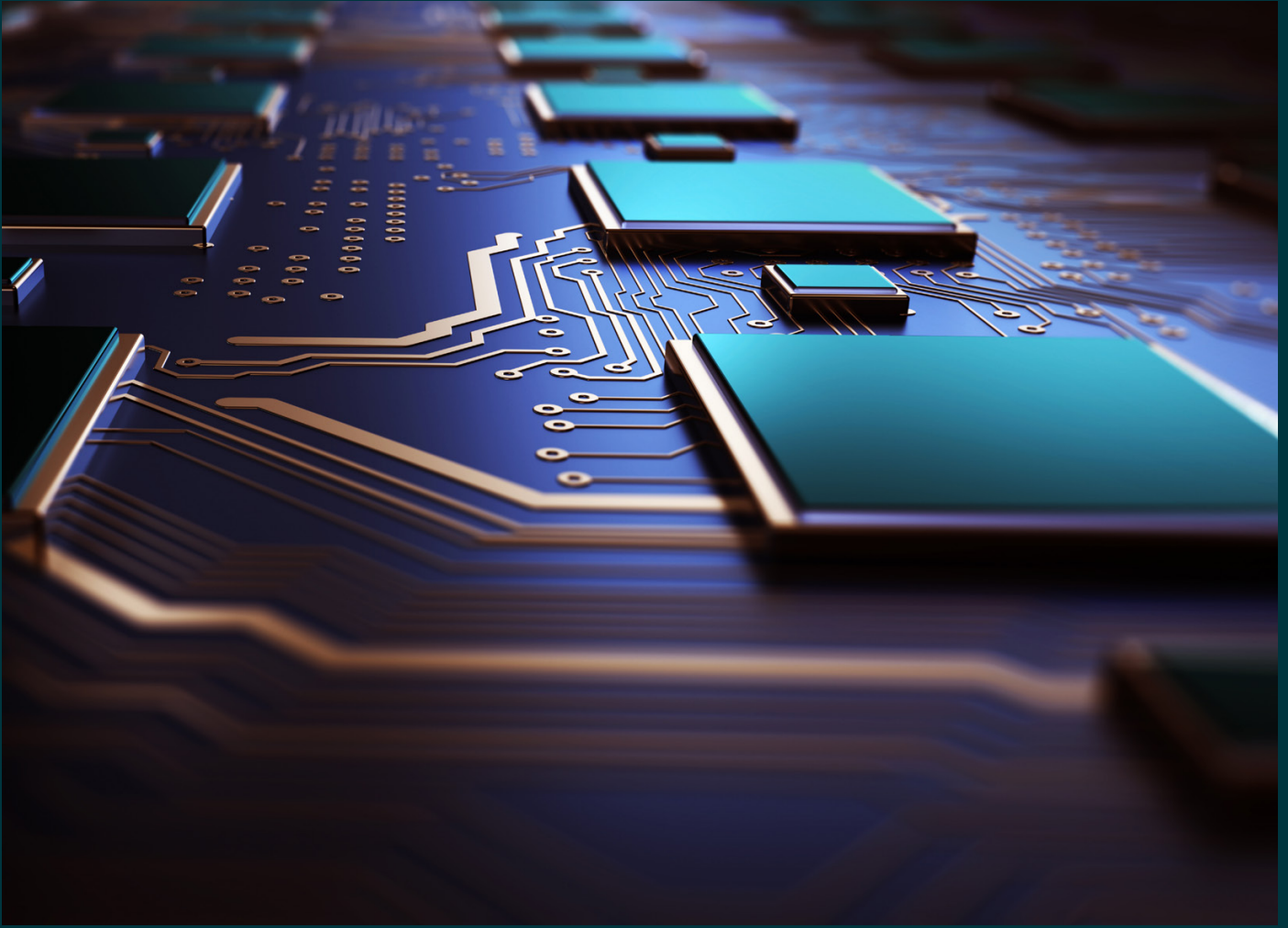
“I have yet to sign up to any capacity development activities as they do not fit in with my availability.”

Not knowing what training was being offered was rated relatively highly, implicating SfTI communication as an area that may have reduced attendance. Given that SfTI not only offered a range of core training opportunities covering a range of topics AND invited researchers to nominate externally offered courses (as long as they focused on human and relational rather than technical capacity development), it is reasonable to assume that available topic areas did not constitute a barrier to uptake.

As noted above, **time** was a key factor in SfTI researchers' decision to participate in CD activities, or not. To provide more detail here, the 2022 BNZIC CD Survey asked respondents to rank time points during the research process when they would prefer to undertake CD activities. As the graph below shows, the period preferred was during the project, although a close second was prior to start of the relevant project.

Preferred time to undertake capacity development activities.¹⁷





8. Conclusions

This Final Capacity Development Report shows that SfTI's CD Programme has continued to deliver significant benefits to its community. Positive feedback has been received related to all three types of capacity development: priority-sourcing, collaborating, and implementing.

ENGAGEMENT IN THE THREE TYPES OF CAPACITY DEVELOPMENT ACTIVITIES

Arguably, a shift can be observed away from the substantial past focus on **Vision Mātauranga** earlier in the Challenge, and this may reflect the growing cultural competency gained throughout the SfTI community over time, to a point where many researchers are now actively building relationships with Māori communities and businesses. Having said that, attendees are still reporting a great deal of value from this class of capacity development offering.

There has been an ongoing focus on building science **leadership** skills throughout the life of the Challenge, with the offering maturing over time to better suit scientists and their unique requirements. This should be considered an important asset for the RSI system moving forward, with the Science Leader Programme ideally finding a new sponsor post-SfTI.

Investment in developing **commercialisation**-related skills has ramped up in the last years of the Challenge, with a myriad of different courses available to researchers, exposing them to a range of different ideas about creating impact from their work. It has opened up a heady world of possibilities for those with an interest and helped spawn several fledgling start-ups.

ENABLERS AND BARRIERS TO ENGAGEMENT

Many factors were identified as increasing participation in CD activities, including relevance to current research projects, the potential for enhancing engagement with industry and other stakeholders. Exposure to different world views and gaining a better understanding of VM and enhancing engagement with Māori were all rated highly. SfTI's broad set of offerings, as well as the ability of researchers to nominate other topics of interest, suggests that in terms of available topics, SfTI has done well.

Time was identified as the greatest barrier, both *when*, and *how much* time would be required. This is a difficult issue to solve given that each researcher has their own unique set of constraints. Online training would seem to be a positive strategy, and certainly SfTI's online offerings have been well attended. In fact, for the SLP, an elongated delivery has allowed participants to practice skills in between sessions, arguably improving learning outcomes.

IMPACTS

With regard to the broad impacts identified in the Interim Capacity Development Report, it is clear that these still apply for the last two years of SfTI.

Enhanced Personal Confidence: Qualitative feedback shows growing confidence in understanding and working with Māori communities and businesses. Leadership confidence has also grown, with participants describing greater willingness to hone new skills, particularly as early attempts show success. With training focused on helping researchers implement their research, there is an almost palpable sense of excitement as researchers have come face-to-face with investors, markets, and practical tools they can apply to become active drivers in their commercialisation journeys.

Improved ability and willingness to seek out others' perspectives and to integrate subsequent new understanding into their research: Some CD participants have expressed surprise at learning about community and business needs and aspirations, however, there is agreement that understanding such alternative perspectives can only strengthen subsequent research. The commercially-focused training has been particularly good at upskilling scientists in eliciting perceptions of those outside of the research community, while science leadership training has enhanced people's abilities to genuinely collaborate with team members through listening and influencing as a way to strengthen research outcomes.

Increased networks inside and outside the research community: The All of Researchers' Workshop was identified as a key networking opportunity where attendees could reconnect with old acquaintances or form new potential research relationships. Events such as those organised by the Angel Association, and courses such as Rewa Ake, have exposed researchers to totally new groups of people outside the research community where new connections have been formed.

Guided practice of new behaviours appears to cement behaviour change: Finally, feedback shows that the new abilities gained through CD activities are being applied in numerous ways, from more intangible cultural and leadership approaches to more targeted skills such as searching patents or pitching to investors.

In closing, the Capacity Development experiment has ultimately enhanced the skills possessed by a group of researchers within the wider SFTI community, who have gone on to apply those skills, and will ideally continue to do so beyond the life of this Challenge.



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