THE LALANGA FOU LANGUAGES AND HIGH TECH FONO REPORT

PACIFIC AOTEAROA
A SHARED VISION FOR PACIFIC PEOPLES IN AOTEAROA

FAKAMALOLO KE HE TAU AMAAMANAKIAGA, KE MAFOLA AI E TAU MATAKAINAGA.”

STRENGTHEN ALL ENDEAVOURS AND THE COMMUNITY WILL BENEFIT.”

26-27 November 2019
The Holiday Inn,
Mangere, Auckland

Ministry for Pacific Peoples

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Finally, a sincere thanks to all who attended and contributed their thoughts to the discussion.

EXECUTIVE SUMMARY

OVER THE TWO DAYS OF THE LALANGA FOU LANGUAGES AND HIGH TECH FONO, SIX KEY THEMES EMERGED FROM THE TALANOA. THESE KEY THEMES HAVE LED US TO CONSIDER SOME CLEAR DIRECTIONS FOR THE FUTURE.

1. The Future of work – The Pacific Workforce at the forefront of the Tech wave.

Currently, Pacific peoples are significantly underrepresented in technology, both as users and creators, making up just 2 percent of the scientific workforce (Census 2013). Further, a large proportion of our workforce sit in occupations ripe for automation. Our task now is to ensure Pacific peoples are skilled and participating in the science and innovation sector in ways that enable prosperous Pacific communities.

"We can change now so our future will mean higher participation, graduates and prosperity."

2. Positive Narratives in Our Communities

Pacific communities are the owners of Pacific wellbeing and culture. Aligning Pacific values with the opportunities in the Science and Technology sector is important to build relevant and positive narratives around Science and Technology in Pacific Communities. Fono talanoa identified community computer literacy and device access will encourage higher participation and engagement in the sector, enabling STEM leadership inside and outside of the community.

"We have this glorification of sports – how do we transfer this glory into tech?"

3. Technology as an enabler for language and culture revitalisation and retention

Fono case studies identified the innovation in Pacific communities, showcasing how science and technology, such as language learning apps, can be utilised for language revitalisation and retention. This relationship sets the scene for a uniquely Pacific pathway to success in science and technology.

"I had thought I would get someone else to do the tech side of things, but after this Fono, I see that the tech side of supporting language is my work – it's a whole of development approach that is required for us to do together."

4. Adding our arts. Moving from STEM to STEAM, unlocking Pacific indigenous knowledge, expertise, and the Pacific edge.

Cultural identity shapes the way we see and approach technology. Art in this context is our collective, human-centred thinking. The Pacific lenses on science, technology can help us create solutions to some of the biggest problems the world is facing right now.

"STEM is what we learn and develop, but Art is intrinsically who we are."

5. Strong Pathways into Technology

There is a continued need to strengthen the pathway at all levels across the STEM continuum for Pacific peoples from early education, tertiary, community, employment, and business. Meaningful targeted intervention will move Pacific communities into sectors of future growth, employment security and higher incomes enabling Pacific peoples to be more successful over the longer term.

"The reason this is so important to me is because I was shocked when I came back from Asia, where I had spent a decade with my wife and children. I came back only to find that there are not that many Tovia's in my industry, and there aren't going to be that many Tovia's coming either because we're only 2 percent of graduates."

6. Reclaiming Pacific Data Sovereignty

A greater level of understanding is required amongst Pacific peoples around how our data is collected, used and stored. Organisations sharing digital data with unknown third parties, and the ability of others to draw deficit-focused conclusions about Pacific communities, were identified as important problems to be addressed. Now is the time for Pacific peoples to decide collectively on acceptable parameters for using our data.

"With digital sovereignty, we have to read between the lines, and we have to ask the questions with confidence. We have the right to challenge."

7. Next Steps

Many solution ideas shared during the Fono are waiting to be further explored and actioned. These include: earlier exposure and education in STEM/STEAM; developing shorter tertiary courses to increase tech currency; satellite learning; creating motivating narratives around technology; building collaborative initiatives that involve communities, business, and the public sector; increasing funders' understanding of Pacific culture and needs; and creating apps that improve both language and tech skills.

"It's a new era and generation to build foundations for the future."

INTRO TO LALANGA FOU LANGUAGES

The Lalanga Fou Languages and High Tech Fono was held over two days (26-27 November 2019), and brought together key stakeholders in the areas of both technology and language. In attendance were Pacific and non-Pacific scientists, technology and innovation business leaders and academics, language experts, community groups, government officials, and broader stakeholders.

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THROUGH THE HIGH-TECH STREAM, WE AIMED TO EXPLORE OPTIONS FOR THE DEVELOPMENT OF A PACIFIC SCIENCE, TECHNOLOGY, AND INNOVATION INITIATIVES.

Further, it was hoped to kickstart the process of co-designing the Pacific economic future in science, technology and innovation with Pacific communities and government.

"The leaves of the coconut tree do not move on their own, they move from the wind."

Discussions and emerging themes will help shape the Ministry for Pacific Peoples set the future for a Pacific Vision, decide what we build in the future and signal directions for the future of Pacific Entrepreneurship and Language.

"We are modern-day navigators setting the direction for future generations."

The Fono covered topics, including future technological disruption, the sciences and technologies that will make a difference to the Pacific economy, the link between technology and language revitalisation, digital data sovereignty, and what businesses and community groups who are actively working with technology and/or language are doing on the ground.

Delegates were asked to consider key questions around what can be done to move towards a regional Pacific Science, Technology, and Innovation strategy:

Growing the sector

» How do we grow the 2 percent Pacific workforce?

» What Pacific programmes do we need in the community?

» What are the barriers to entry for Pacific individuals?

Future of work

How do we ensure that Pacific communities and business are prepared for the future-of-work changes that will occur due to automation?

Strategy

Where do you think the Ministry should invest its efforts and what do you think the Ministry should include in its strategy to ensure that Pacific communities can grow and prosper in the sector?

Unlocking Pacific potential

How do we unlock the potential of Pacific individuals, community groups and organisations, to lead in the business and entrepreneurial space?

How do we open more opportunities for Pacific individuals, communities, and organisations?

1.1 What is the current state?

Despite significant government investment and efforts by those in education and business, just 2% of the science and technology workforce identify as Pacific. Further, the net worth of Pacific Peoples sits at around $12,000, well below the NZ-wide average of $87,000 (Statistics New Zealand, 2016). This is attributed to a high proportion of Pacific peoples working in low skilled, low value, low earning roles.

Meanwhile, the number of Pacific peoples in Aotearoa New Zealand continues to grow, and we will constitute a significant proportion of the workforce over the coming decades. It is forecasted that segments of the workforce will be substituted by technology, for example, in manufacturing, where Pacific peoples are overrepresented.

If we do not begin to strategically invest in Pacific now, or explore how we can enable Pacific peoples to participate and contribute to a changing world, we risk losing the opportunity to influence the future state.

1.2 Why is engagement important?

We recognise that Pacific Communities are the owners of their own wellbeing and culture. Therefore, Pacific Values must inform how things are done. This approach sees Pacific peoples taking leadership roles in decisions that affect our lives and, in the design, and delivery of solutions.

We know Pacific peoples are already achieving success in this sector. Capitalizing on this success requires building effective and meaningful relationships between government and Pacific peoples, both here in New Zealand and across the Pacific region.

1.3 What is the role of government?

While there are existing initiatives to address Pacific participation in the science, technology and innovation sector, there is a need to develop a cohesive and strategic approach for both government and Pacific Communities to scale efforts and increase effectiveness. More specifically, the Ministry aims to create an All-of-Government Regional Pacific Science, Technology, and Innovation Strategy.

The Ministry has an important role in bringing together the community and government to determine the overall impact of investment in outcomes for Pacific peoples in this sector.

1.4 Where should we focus investment?

The Ministry has already identified four focus areas for the investment to an All-of-Government Regional Pacific Science, Technology, and Innovation Strategy.

1. Creating pathways into the STEM sector for Pacific peoples from ECE to tertiary.
2. Increasing the number of Pacific individuals and businesses in the science and tech sectors.
3. Addressing the barriers to entry, unconscious bias and racial stereotypes.
4. Unlocking Pacific indigenous knowledge, expertise and the 'Pacific Edge' to enhance the economy for all New Zealanders.

While this work has already been started, the Fono provided the chance for delegates to explore the details around how these aims will be achieved and add other focus areas.

PACIFIC AOTEAROA; LALANGA FOU VISION

The Pacific Aotearoa; Lalanga Fou report, published in late 2018, involved a year-long talanoa process of consulting with around 2,500 Pacific people representing community organisations, youth, people with disabilities, businesses, nongovernmental organisations and churches. We conducted a series of focus groups to identify the concerns, hopes and aspirations of our people. In doing so, we highlighted: Pacific identity, language, and culture; economic development and income; health and wellness; and Confident, Thriving and Resilient Pacific Young People as four priority focus areas.

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THIS CONSULTATION HAS CULMINATED IN DEVELOPING FOUR BROAD GOALS THAT WILL SUPPORT A THRIVING, PROSPEROUS, RESILIENT AND CONFIDENT PACIFIC FUTURE:

Goal 1: Thriving Pacific languages, cultures and identities

- Pacific languages and cultures are valued and recognised as an asset in Aotearoa.
- More Pacific peoples are speaking their own languages.
- Diversity is recognised and celebrated within Pacific communities.
- Faith, and the role of churches amongst Pacific communities, is recognised as a valuable resource in cultural, social, and economic terms.

Goal 2: Prosperous Pacific communities

- Pacific peoples' participation in the labour market improves.
- More Pacific people own productive or appreciating assets.
- More successful and sustainable Pacific entrepreneurs and Pacific-owned businesses.
- Pacific volunteer contribution to Aotearoa is recognised and celebrated.
- More affordable and suitable housing for Pacific peoples.
- Improved pathways to residence for Pacific workers who are on repeated temporary work visas.
- Better pastoral care and settlement support for Pacific migrants and their families.

Goal 3: Resilient and healthy Pacific peoples

- Stronger focus on improving preventative and integrated primary and behavioural health and social services for Pacific families and communities and less reliance on acute care.
- Pacific peoples' values and experiences leading the design and delivery of health and wellness services.
- Mental health and wellness are better supported, from both within and outside Pacific communities, with services specifically developed utilising Pacific cultural frameworks and contexts.
- Pacific children have a healthy start in life.

Goal 4: Confident, thriving and resilient Pacific young people

- Pacific young people are confident in their identities.
- Pacific young people have improved experiences in education.
- Pacific young people have better pathways available to them from education to employment in a broad range of careers.
- Youth mental health and resilience is strengthened.

Achieving these goals will require a programme of collaboration, and to this aim, the Ministry for Pacific Peoples has already begun connecting with other government agencies, businesses, non-governmental organisations and wider Pacific communities.

"We know that a prosperous journey can only be realised with the blessing and collective support of our community, and we encourage you to be part of our shared vision for Pacific Aotearoa." (Laulu Mac Leauanae, Pacific Aotearoa; Lalanga Fou)

Importantly, Lalanga Fou acknowledges that Pacific communities, and Pacific values and aspirations, will be front and centre in future-oriented initiatives, to ensure they are fit for purpose and effective for the journey ahead.

KEYNOTE PRESENTATIONS

The Fono provided an opportunity for delegates to hear from experts sharing their wisdom. Our keynote speakers were:

Laulu Mac Leauanae
CEO, Ministry for Pacific Peoples

Misa Tovia Va'aelua
The future value of disruption for Pasifika in Aotearoa

Professor Stephen May
Developing a Pasifika languages policy:
Implications for Aotearoa New Zealand and its Pacific Partners

Ian Taylor
Land of Voyagers

3.1 Laulu Mac Leauanae -
CEO, Ministry for Pacific Peoples

Laulu is currently Chief Executive of the Ministry for Pacific Peoples. His experience includes senior roles with the Pacific Cooperation Foundation, Pure Pasifika, and ProCare Health. In addition to graduating with a Bachelor of Laws degree from Auckland University, Laulu holds an MBA from Henley Management College, UK, with his dissertation focusing on 'Community Participation in Governance'. He is of Samoan descent and holds the Chiefly title of Laulu from Fa'ala. His aiga reigns from Fa'ala, Iva and Sa'anapu.

Laulu is a key figure leading the development of a bold and unifying vision for Pacific communities in New Zealand, not least through securing new investments for Pacific-led initiatives that lift the economic, social and cultural wellbeing of Pacific peoples.

OUR VISION AND GOALS WITHIN LALANGA FOU ARE THE PLATFORM AND FOUNDATION FOR US TO BUILD ON.

In 2018, the Minister for Pacific Peoples launched the Lalanga Fou Report, which outlines our Pacific Vision along with four strategic goals. To arrive at this point, we carried out a full year of engagement with 2500 people around the country, from Invercargill to Whangarei. As a direct result of our Vision and Goals, funding was secured to deliver many of the resulting initiatives we are enjoying today.

What we learned during our year of consultations confirmed several truths, which have become our Vision:

» Pacific values are our anchor, with each generation weaving the foundation for the next to stand on. It is important that this generation does not stand here alone because there are many who have come before us to pave the way. Lalanga Fou articulates the foundations set down for us.

"People such as the late Reverend Sio of Newton PIC and the late Aunty Maina Jones of Community Christian Fellowship – that generation laid the foundations for us, my parents, their stories, our stories, your stories."

» Pacific communities are leading innovation within Aotearoa, the Pacific region and the world.

"When we did this engagement around New Zealand, we got to hear many amazing stories, many amazing innovations, and we're going to hear them today."

» We are confident in our endeavours, we are thriving, we are resilient, we are prosperous Pacific Aotearoa.

"The scriptures say clearly that without a vision, the people will perish. We are not going to perish because we are going to thrive, because we are going to be resilient. We're not going to perish because we are going to be prosperous, prosperous Pacific Aotearoa."

This Fono was made possible through the words of our communities, and the government's commitment to honouring them. Over the next two days, this gathering will focus on Lalanga Fou's Goal 1 (Thriving Pacific Languages, Cultures & Identities) and Goal 2 (Prosperous Pacific Communities).

"I am looking forward to our keynotes, which will articulate this work even more for us."

In terms of Pacific Languages, there is a strong case for change: our languages are dying. Just over half (55%) of our people can't speak our languages, and we are seeing a steady decline over time. A recent UNESCO Report identified Tuvalu, Tokelau, Niue, Cook Islands Māori as being particularly vulnerable or endangered languages. This is an area where we must act decisively, and why we are talking about it today.

In terms of technology and innovation, currently only 2% of New Zealand's IT workforce is Pacific – this is not good enough. We want to unlock our potential through creating pathways into the STEM sector for Pacific Peoples from early childhood education right through to tertiary, increasing the number of Pacific business in tech, and addressing the barriers to entry into the sector. This Fono is an opportunity for you to give us your feedback to help determine our future actions.

Our Vision and Goals within Lalanga Fou are the platform and foundation for us to build on. We have a young and vibrant generation of leaders ready to take on the world today; we need Pacific leaders who are not afraid and who can navigate multiple worlds.

"I want to finish with three words I usually leave with my team at the Ministry: Be hungry – Be humble – Let's Hustle. Let's set up the foundation of technology and languages. Let's be faithful stewards and move. Let's remain hungry, let's go together humbly, let's hustle like our forefathers. Soifua ma ia manuia."

3.2 Misa Tovia Va'aelua

THE FUTURE VALUE OF DISRUPTION FOR PASIFIKA IN AOTEAROA

A twenty-year veteran of the technology sector across Asia Pacific, Tovia has worked with some of the biggest names in the industry. After 15 years of leading various teams at Microsoft, Tovia returned home in 2018 with his family, and is now the General Manager of Rhipe Australasia – Microsoft's largest Cloud-only distributor. More recently, Tovia was appointed as Chairperson of Pasifika in I.T., a not-for-profit organisation that focuses on weaving the technology agenda deeper into the fabric of the Pasifika community. Tovia is a father of four and has spoken to hundreds of schools and educators about cybersecurity, the dilemma of 'creation' versus 'consumption'. He is a major advocate for STEM.

"THE AMOUNT OF CHANGE IN THE NEXT 10 YEARS WILL BE PHENOMENAL, EVEN GREATER THAN THE LAST 40 YEARS."

Based on his longstanding, international experience in the tech sector, Tovia was able to offer delegates a glimpse into a future that is characterised by disruption and opportunity for Pacific peoples. Nevertheless, Tovia is grounded by his family and Pacific beginnings, seeing no conflict for young peop le between this and achieving great things in tomorrow's tech-rich world.

"Often time when I talk to parents, they say, 'What did you study? How did you get to where you are? You must be really clever. You must be really smart.' I'm really fast to shut that conversation down – I'm not clever, I'm not smart. Any Pasifika boy or girl who's worth their weight in gold will be smart enough to quickly acknowledge where they came from. Point being, we are simply a reflection of the collective knowledge that we have gathered so whilst our journey may be individual, our achievements should point to those who have carried us along the way."

The next decade will see technology infiltrate every part of our work and home lives. Now is the time to come together with the smartest minds and biggest hearts to meet this new challenge. But we have a situation where there are few Pacific peoples working in technology, and few new graduates being produced.

"The reason this is so important to me is because I was shocked when I came back from Asia, where I had spent a decade with my wife and children. I came back only to find that there are not that many Tovia's in my industry, and there aren't going to be that many Tovia's coming either because we're only 2% of graduates."

Forecasting the Future

To help us think and plan into the future, Tovia drew from his recent experience as part of the Institute for Future's first Asian cohort to discuss the importance of Forecasting. For example, the Future Forecast for Media shows how we have moved from Mass Media (one voice to many) through to Social Media (everyone has a voice) in the early 2000s. The future will be Ambient Media where every object will have a voice through sensing and responding to stimuli. This is just one example of how the world is shifting, but regardless of where we look, the speed of change is accelerating.

One area that is particularly relevant to us is the Future of Work. Pacific peoples are disproportionally employed in industries where automation will undoubtedly displace workers with low technical skills. Fast food providers are introducing self-service checkouts; 3D printed houses are becoming more common; autonomous robots are deployed to clean large buildings such as airports, and digital twins are reducing the need for physical machinery maintenance checks. The list goes on – no job is safe. If Pacific peoples do not anticipate and reskill for these new scenarios, especially our young people, we will be left behind.

"Our people have never looked past the ceiling. It's our job to actually chase this. We need to get up there and say we can foot it with the best."

Ten Mega shifts indicate where disruption will occur (and is already occurring):

Digitization	Everything that can be digitized, will be.
Robotization	Convergence of all mega shifts will improve exponentially with technological developments.
Anticipation	Predictive data and analytics that allow us to see forward.
Virtualization	Digital twins for tasks such as predictive maintenance.
Automation	Objects and machines will function without human oversight/control
Intelligization (codification)	Every object will be connected to the internet via sensor networks and have AI capability.
Transformation	Organisations (and people) will be oriented towards determining how they need to evolve to meet ever-changing futures.
Disintermediation	Buyers and sellers can deal directly with each other online.
Screenification	Everything will be consumed through screens rather than being printed or by using buttons/ keyboards.
Mobilization (mediazation)	Computing has become invisible (through wearables and intelligent things); connectivity is ubiquitous.

While this wide-ranging disruption may seem intimidating, the other side to this is that some things, those uniquely human qualities that cannot be digitised and automated, will become very valuable. For example, empathy. It is important to understand this and remember that Pacific peoples are really good at being human.

[Acknowledgement: Gerd Leonhard, Technology vs Humanity (2016)]

A Pacific Future Focus

So, given the changes that are inevitably coming, where should we focus in order to create the best future? Shifting from a status quo of low household income and low participation in STEM training and employment requires a new perspective and a set of actions.

"We embrace disruption and say, 'I want a part of that.' How do we look at the Mega shifts and say, 'I don't quite understand that, but if you give me a chance and explain it to me, I can actually give you a really rich perspective from a Pasifika individual'. We can change now so that our future will mean higher participation, graduates and prosperity."

Part of Tovia's work at Pasifika in I.T. has been to develop four priority areas for action that will carry us forward over the coming decades. The focus is spread from early childhood education through to workforce participation:

Disruption One:
Educating our Future Leaders.

This is where we start making a difference through teaching our language and culture with a view to technology futures.

- Pre-school and language nest inclusion of tech programmes
- After school community programmes reinforcing school's tech curriculum
- End to end programmes spanning students' formal education
- Innovative integration programmes for new workforce entrants

Disruption Two:
Enabling Today's Workforce.

This is where we start winning, where it really makes a difference for our people to be highly skilled and effective.

- Practical tech programmes focused on community engagement
- Innovation programmes for start-ups and business ideation
- Industry-specific tech programmes for upskilling the workforce
- Digital home and cyber safety programmes

Disruption Three:
Digital Leadership in Our Community.

This is where we create digital literacy within our communities and use technology to bring our stories back to life and preserve our cultures safely for our children's children.

- Plugging technology into community cultural programmes
- Digital archiving and storing of historical data
- Establishing new sustainable practices through digital literacy
- Adaptation of technology around cultural practices and institutions

Disruption Four:
A Valued Voice in the Tech Industry.

This is where we come together collectively and say, 'We love the technology, but it doesn't really work for us – these are our suggestions to ensure the tech works for Pacific peoples.'

- Driving for greater diversity across leadership roles in tech
- Programmes and initiatives that will increase the Pasifika population in IT
- Stronger Pasifika industry groups across the country
- Technology partnership initiatives that serve the Pasifika region

It also can't be stressed enough how important it is to help young people step up to be leaders as soon as possible. This is especially important given the global influences bearing down on all of us. When young people have a strong sense of cultural identity, they can begin to make sense of global influences through a Pacific lens.

Final Thoughts

Tovia left delegates with some final thoughts:

- Have an opinion on tech – be upset, be happy, make a comment. "If no one says anything, tech will move ahead whether we like it or not. But we can influence technology today."
- Support technology in education. "Education begins in the home, it's critical because if we don't do it, who will?"
- Look for FUTURE signals today – those signals are coming in from everywhere, influencing our children, influencing our future leaders. "It's important that we take note of that and take action accordingly."

Using technology for Consumption or Creativity

"I limit my kids' screen time because while my kids are young, they are creative. Every horse has wings, every car has the ability to fly, so I do not want to take that away from them. Until they become conditioned to gravity, I want their creativity to explode. We have this conversation between consumption and creation. If they want to consume, they are given 30 minutes a day, no more. But if they want to create, then they can have as long as they like."

3.3 Professor Stephen May

DEVELOPING A PASIFIKA LANGUAGES POLICY: IMPLICATIONS FOR AOTEAROA NEW ZEALAND AND ITS PACIFIC PARTNERS

Professor Stephen May is an international authority on language rights, language policy, bilingualism and bilingual education, and critical multicultural approaches to education. Since beginning his professional career in the 1980s as a secondary teacher of English and ESL, he has taught in universities in New Zealand, Britain, USA and Canada. Stephen currently works within Te Puna Wānanga (School of Māori and Indigenous Education) in the Faculty of Education and Social Work at the University of Auckland and is also Director of the University's Te Tai Tokerau Campus. He has published 25 books and over 100 articles and chapters exploring language and education and has been internationally recognised for his work on multiple occasions.

PROFESSOR MAY DISCUSSED MANY FACETS OF LANGUAGE BEFORE PROVIDING HIS THOUGHTS ON DEVELOPING A PACIFIC LANGUAGE POLICY FOR NEW ZEALAND.

Language revitalization and Pacific languages

Language sustainability is a significant issue today. There are 7000 languages spoken in the world, with 2500 of them considered to be endangered; some projections assert that up to 90% of the world's languages may not be spoken in 100 years' time.

Internationally, most indigenous languages are spoken by relatively few people and are at significant risk. Forty percent of the global population has no access to education in a language they understand. Closer to home, 19% of the world's languages are spoken across the Pacific, with 344 languages here considered to be in trouble, and 223 of these assessed as dying.

Several key drivers are thought to be at the heart of language shift and loss:

» **Linguistic hierarchies.** Different value and status given to a language will lead to differences in how that language is used. In practice, this means that traditional languages tend to be used privately in closed communities and homes, while 'important' languages (such as English) are used publicly and internationally. Such hierarchies pose a significant threat to Pacific languages in New Zealand, not least because this apparent low value is internalised by young speakers.

» **Low status languages will experience language shift and loss over time.** The important role that language plays in identity is not enough to stop language shift and loss, even when it continues to be spoken in families and communities. Crucially, languages need to be used in the public domain, in education, in media and social media, if they are to be valued and sustained.

"The way we hierarchize languages now is the key problem, and the way that we can change that is by rethinking what 'value' means. It is valuable to be a Pacific language speaker in Aotearoa New Zealand; it is valuable to be a te reo Māori speaker in Aotearoa New Zealand. They are the languages of our place, so we should use them."

» **The rush to English-medium education.** New Zealand's education providers use English almost exclusively in teaching activities. This entrenches English monolingualism. Where the home language is different from the language used at school, research shows there are poorer educational outcomes for children in Aotearoa New Zealand; this early disadvantage follows individuals throughout their lives into training and employment, exacerbating social inequalities.

"PISA calls us [New Zealand] a high quality, low equity school system, and those endemic, enduring patterns of behaviour, I argue, are the result of English medium education. While New Zealand is increasingly demographically diverse, we remain institutionally monolingual."

Superdiversity in Aotearoa New Zealand (and beyond)

We have seen significantly increased rates of migration to Aotearoa New Zealand over the past 20-30 years, which has led to a far more diverse population. Additionally, due to technological advancements, people tend to be more mobile, moving between home and adopted countries (transmigration), and use communications technology such as email and social media; both of which enable stronger ties to be maintained with countries of origin.

"Previously you would migrate somewhere, you might lose contact with your immediate family or they might visit from time to time. But now we transmigrate, we go to and fro, and we have technology to keep us in contact, and so there are a whole range of different patterns involved in migration, but what we see most of all is the rapid diversification of populations."

Around one hundred and sixty languages are now spoken across Auckland, a city where half of New Zealand's multilingual speakers live. We are seeing similar trends of rapid ethnic and linguistic diversification throughout the globe. How do we accommodate this in a bicultural context, particularly in Tāmaki Makaurau?

Pacific peoples now account for 8.9% of New Zealand's population (2018 Census), with Samoan, Tongan, Cook Islands Māori predominating. Over time we have seen widely different patterns of language shift towards English. It is particularly evident among smaller communities, including Cook Island Māori, Niuean, Tokelauan and Tuvaluan. However, even among Samoan and Tongan communities, where the national languages are still widely spoken among families and in church, young people are becoming less and less likely to use Pacific languages.

"This brings me back to identity. We need to rethink identity not just as our cultural traditions and our religious heritage, which are incredibly important, but also the context in which we live our daily lives today. So again, thinking about Pacific languages that we would use in educational technology as a way of [expressing] our identity in the present as well as our identity from those things from the past that still shape and influence us. This is a key way of getting young people on board."

First language speakers can become less enamoured with their less 'dominant' language when they become adolescents because it is no longer 'cool' to speak it. Professor May shared an example from Wales where the rise to prominence of several Welsh language pop groups saw teens renew their interest in Welsh, which they had previously thought was 'old fashioned'. The influence of popular culture is very important here if we think of the Pasifika Festival and the rise and visibility of Pasifika languages in Aotearoa and the Pacific; this needs to be actively fostered.

Bilingualism in Pacific languages and English: Advantages and opportunities

Projecting forward, there is good reason to expect dwindling Pacific language ability over time if the status quo remains unchallenged. But there are good reasons to encourage bilingualism. First, English monolingualism is an increasing disadvantage in today's globalized world.

"The idea of English as the language of social mobility, of course it's important, we should learn it, but we shouldn't learn it at the expense of the languages we already know. In fact, the new power brokers of the world today will be multilingual speakers who have English."

When valued and promoted, multilingualism in any combination of languages is a cognitive, educational and social advantage. Further, you don't have to learn an international language such as French or German to reap the benefits; you can be bilingual in a Pacific language and English, and the benefits will still apply.

A key reason bilingualism is an advantage is because all language learning is interconnected, this is called linguistic interdependence: knowledge of one language always helps in learning another language. In practice, this means that if you ask a child to stop speaking a language they know and learn English from scratch, it should be no surprise that the student will fall behind over time.

The concept of moving from the known to the unknown is well used in education, however, it is seldom applied to language. New Zealand's English-medium school systems are based on the notion of 'time on task'. In terms of language, focusing on English (at the expense of all other languages) is expected to help students learn English more quickly. Other languages are viewed as an obstacle or a threat to learning English effectively. However, research consistently shows us that 'time on task' is the least effective way to teach bilingual students.

Given that bilinguals consistently outperform monolinguals in cognitive flexibility, communicative sensitivity and metalinguistic awareness, it is important to question why we are persisting with only English medium education, which often does not serve many of our bilingual students well. Why not maintain our heritage languages, our cultural languages, alongside English, via bilingual education, for example?

"If we actually build on the languages that students know, that's the best way of learning an additional language."

Key principles for developing a Pacific languages policy - Implications for Aotearoa NZ and its Pacific Partners.

Professor May discussed the benefits of developing relevant public policy and offered a number of strategies that might increase Pacific language use in New Zealand.

There are many potentially positive impacts of developing a Pacific bilingual languages policy:

- Maintain Pacific languages for identity, family and community purposes, and as a valued societal language
- Enhance educational achievement, particularly for bilingual students
- Enhance productivity, engagement and social mobility for Pacific peoples. Some say it could even increase GDP by up to 15% over the next 20 years
- Leverage and strengthen existing bilingualism rather than suppressing non-English language ability
- Add to societal bilingual capacity

Particular principles and processes that might prove helpful in developing and actioning a Pacific bilingual languages policy include:

1. Acknowledge value. At a basic level, acknowledging bi/multilingualism as desirable and valuable within Aotearoa New Zealand's bicultural and bilingual context (which is largely absent in public policy currently), would help provide impetus. It can be argued that it is part of New Zealand's constitutional responsibility in the Pacific, given our colonial history, to actively support Pacific languages. Further, where there are sufficient numbers of speakers, for example, Samoan, it may be unreasonable not to provide bilingual services, including bilingual education.
2. Collaboration. Establishing a cross sector, all-of-government initiative to tackle this issue would ensure it does not become siloed or sidelined.
3. Highlight language as integral to culture and identity. Language is often excluded from the culture and identity discourse, however, incorporating clear language pathways will be vital within educational organisations and across other sectors of society. One example would be expanding Pasifika bilingual education provision particularly for Levels 1 and 2, comparable to Māori-medium education.
4. Initial costs versus medium-long term benefits (GDP). Initial costs are often overstated when this kind of bilingual education initiative is mooted, and don't necessarily factor in the immense benefits to the target population or the community at large in the medium and long terms. It will be vital to ensure grounded discussion of costs and benefits is developed.
5. A varied, community-focused, and proactive approach. This is not an issue the government can solve alone. A multipronged approach will reap greater impacts, with Pacific communities needing to be front and center.
6. A wider family, community and public information dissemination strategy. Strong communications will underpin any successful Pacific Language Revitalization initiative.
7. A multi-modal approach. Using technology and popular culture to expand and enhance language learning will pay dividends. This could include bilingual dictionaries, internet, and social media to enhance traditional teaching methods.

"If we are to rethink English as the dominant language of education then we need to think about how we can expand Pasifika bilingual education in New Zealand schools that helps to maintain Pasifika languages, but it's also very educationally effective for a number of reasons."

3.4 Ian Taylor

LAND OF VOYAGERS

In 2019, Ian Taylor (Ngāti Kahungunu) was named Innovator of the Year at the annual New Zealander of the Year Awards for his business and innovation brilliance over many decades – it's the latest in a long line of accolades. During his early years, Ian joined a band, served in the military, worked in a brewery, earned a Bachelor of Laws, and presented children's television. It was in 1989 that he established Taylormade Media, and soon after, Animation Research (ARL), which excelled in television advertising and sports graphics. The company is now world-renowned for applying its computer graphics software to yacht racing, golf and cricket to bring spectators close to the action.

Ian's latest project is 'Land of Voyagers' a website dedicated to telling the story of how early Polynesian explorers made their way to Aotearoa.

"THE FOOTSTEPS LAID DOWN BY OUR ANCESTORS CENTURIES AGO CREATE THE PAVING STONES UPON WHICH WE STAND TODAY."

The Hidden History of Pacific Innovation

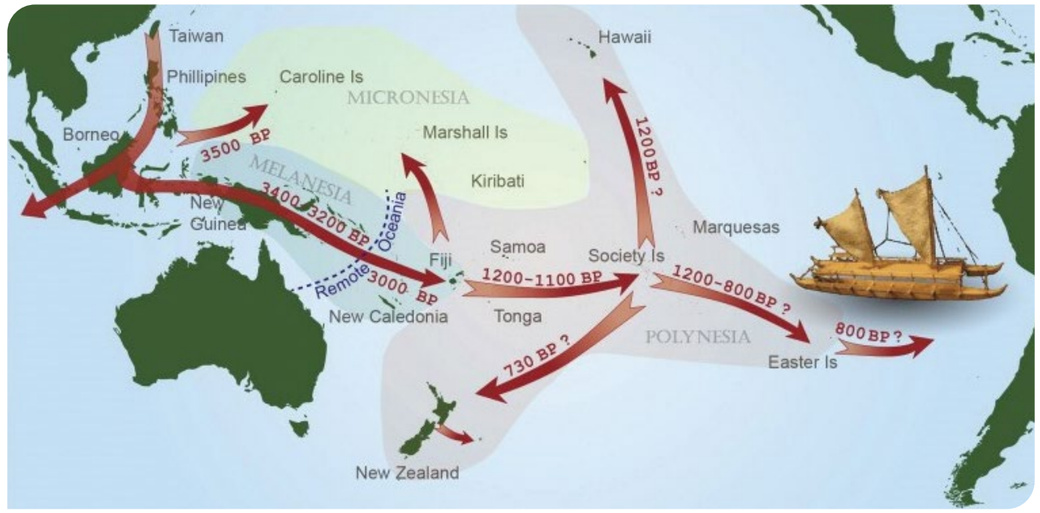
Early in life, Ian learned about the history of his Pākehā ancestors, including that Captain Cook had sailed halfway around the world to discover New Zealand. But he was never taught the amazing story of his other tūpuna, Polynesian ancestors who had sailed here 500 years earlier; this is a relatively recent realisation for him. Now, Ian wants an accurate historical account of human migration across the Pacific to be mainstreamed to correct this blind spot.

"As a boy, I never realised that even before the Vikings launched their ships to sail to Britannia, Polynesians had already launched their waka across the massive Te Moananui a Kiwa, the Pacific Ocean, destined ultimately for Aotearoa. They crossed a third of the planet in state-of-the-art sailing craft, guided by the stars and ocean currents. To make it to these shores, the tūpuna on my mother's side had to be more than just sailors – they had to be astronomers, astrologers, scientists, engineers, mathematicians, they had to be innovators. The voyage they made, as we are only just beginning to discover, is arguably the greatest story of human migration in the history of mankind."

The well-accepted story within New Zealand has been that a fishing expedition of early Māori were accidentally blown to these shores by a storm and arrived starving and desperate. This very narrative is illustrated in Goldie's 1898 painting, 'The Arrival of the Māori in New Zealand'.

More recently, Professor Lisa Matisoo-Smith has conducted thorough DNA-based research into migration (From Africa to Aotearoa), which provides a significantly different account. Here is the story: three and a half thousand years ago, while the Egyptians were building pyramids, our Polynesian ancestors left Southeast Asia.

This is what the map should look like



They travelled for 500 years to make it all the way to Samoa. From there they spent 2,000 years developing new technologies before venturing to Tahiti. One thousand years ago they made the fastest migration in the history of mankind – they landed in Hawaii and sailed across to South America (where the kumara came from) before arriving in Aotearoa 750 years ago.

"That's the story we want to share with our Rangatahi. We want them to grow up knowing that you don't do something like that without science, technology, engineering, math, it just doesn't happen. They were the greatest scientists, astronomers, astrologers in the world at the time."

The anniversary of Captain Cook landing in New Zealand and meeting Māori was commemorated in 2019 with Tuia 250. The government's aim was to celebrate Polynesians at the same time. Unfortunately, there was little thinking beyond the official European history; missing was the 4,000 km voyage of Kupe, meaning the real story of Polynesian migration was not being told or remembered at all.

However, one of the boats involved, a double-hulled voyaging canoe named Fa'afaite, sailed from Tahiti to join the celebration here in New Zealand. Ian provided the tech and helped raise $1 million to create a website, Land of Voyagers, which tracked the vessel's three-week journey across the Pacific. The 15-strong crew were captained by 26-year-old India Tabellini without any modern navigational equipment. This initiative illustrated the navigational excellence of early Polynesian explorers.

The Tuia 250 celebrations ended at Mahia Peninsula – the first place on the planet to see the light of the new day, and a place where, in a partnership between Māori and Pākehā, we are sending state of the art craft back to the stars that brought us here. This is a beautiful metaphor for New Zealand and Polynesian cultures taking our kids into the future.

Bringing Together Science, Technology and Art

Ian's involvement in establishing Land of Voyagers is really a continuation of a lifetime of combining technology with art. Thirty years ago, Ian met a group of computer programmers, and together, they decided to start a technology business. By 1992, they had changed the way the world watched the America's Cup, and went on to enhance the spectator experience for golf and cricket too. Ian's team has also developed training simulators for Formula 1 racing and air traffic controllers, which are used internationally.

"We thought we'd take on the world from here. Not only is it the bottom of the world, the next stop is Antarctica. We had a dream: how could we get to all the best sports events in the world for free. The cool thing is, you don't know what you don't know, so we just started doing stuff."

Much has happened over the intervening years. Ian's continued innovation and commercial success see him travel all over the world. Recently, he delivered a keynote speech to 22,000 delegates at one of the biggest tech conferences in the world. It gave him pause to consider how he has reached such heights.

"How did I get here? My answer had always been that I surrounded myself with really clever white people. And I used to believe it. I used to think that I couldn't have got here if I hadn't run into all these clever white people. And what this has done, as I've discovered over the last one and half years as I've explored my Polynesian history, it has devalued my other tūpuna (ancestors) and all the things that we bring to this story."

The distinction between STEM and STEAM is important here because Art can help us create solutions to some of the biggest problems the world is facing right now. We already know that Māori and Pacific peoples are not reaching our full potential in science and technology, but given our ancestors' achievements, we should excel. Ian considers that the mainstream separation of Science, Technology, Engineering and Maths (STEM) from Art is a key contributor to this; it simply does not make sense for non-Pākehā. STEM and Art need to be integrally connected in education and beyond.

"When we add in our own art, our stories, music, carving ... Art in this context is our library, our knowledge base. In those days when they stopped my mother from speaking Māori in school, that was the equivalent of burning the books. All of our knowledge was in our language, in all our languages."

As we start to think about the really big issues of sustainability and climate change, we are collectively looking to science for the answers. But what about Mātauranga? Fa'afaite's journey from Tahiti reminds us that our wisdom enables great things to be achieved.

"On the boat, they talked about how you had to be one with everything. One with the ocean and one with Rangi, one with Tangaroa, you had to be one with the Fa'afaite. The Fa'afaite would look after you if you looked after her. That's the waka story that drives everything. We are all travelling on the greatest waka in the universe - the Earth. If we take the lesson from our culture that the waka will look after us if we look after her, it's really clear that we aren't looking after our part of the deal."

One of Ian's key messages is that Māori and Pacific peoples have a tremendous opportunity to use Western science, as well as our own Mātauranga, with a different lens to Pākehā. When our Art is brought to bear, positive outcomes for our people and our land will follow.

Ian described a recent project that enabled his team to utilise technology for good when someone came to him saying they were teaching literacy and numeracy in prisons but having to use the same techniques that had already failed prisoners when they were young. His solution was to create a virtual garage that the men could 'enter' using headsets, and use reading and math to fix engines.

"Our people are overrepresented in prisons and we are going to take them out and make sure they don't go back. That's the great thing about technology and the kind of thing we can do."

Ian's hope is that, armed with the true history of how our Polynesian ancestors used their scientific and technological skills to not only find their way across Te Moananui a Kiwa to Aotearoa, but also survive and thrive here, Māori and Pacific youth will gain the confidence in their own innovation potential to change the world.

KEY THEMES

From bringing together the Fono's High Tech stream presentations as well as group discussions, six specific themes have emerged that will help guide our future-oriented work in this space:

1. The Future of work – The Pacific Workforce at the forefront of the Tech wave.

2. Positive Narratives in Our Communities

3. Technology as an enabler for language and culture, revitalisation and retention

4. Adding our arts. Moving from STEM to STEAM, unlocking Pacific indigenous knowledge, expertise, and the Pacific edge.

5. Strong Pathways into Technology

6. Reclaiming Pacific Data Sovereignty

04

As Misa Tovia Va'aelua acknowledged several times during the Fono, Pacific peoples have an enormous ability and opportunity to think innovatively about how we approach upcoming tech disruption, and we should feel confident in doing that:

"We don't need to catch up, we can leap ahead and use everyone else's mistakes to our benefit so that we can get ahead. This is how we should approach this whole disruptive era – from an angle of using everyone else's learning to help propel me, my people, my children forward."

"How do we walk into an era of disruption and think: 'I have got this. I can handle it.'?" (Misa Tovia Va'aelua)

4.1. The Future of work – The Pacific Workforce at the forefront of the Tech wave.

"When you walk into tech, you're uncommon. And then when you move into leadership, you're the uncommon of the uncommon."

Why do we need to be at the forefront of creating a Tech-fluent Pacific in Aotearoa?

Disruptive technological change is happening faster, and the impact of this revolution on the world of work will be remarkable. What will this mean for our young people now and in the future?

Currently, Pacific peoples are significantly underrepresented in technology, both as users and creators; we make up just 2% of the scientific workforce. Further, a large proportion of our workforce sits in occupations ripe for automation. At the same time, part-time and casualised work is becoming more prevalent, while some employees are working too long and missing time with their families.

While it was acknowledged that the government will be a key partner in supporting Pacific aspirations for the future, they are not currently taking the lead, nor are they adequately funding the work Pacific communities are left to do on our own.

In this environment, we need to prepare and respond faster, or risk being left behind.

Of course, economic success is only part of the story. We as Pacific peoples also need to be at the forefront of protecting our languages and cultures, and ideally, we will use technology to help us.

The opportunity for change

Our task now is to ensure our children (and adults) are skilled and participating in the science and innovation sector in ways that enable a more equitable future, economically and culturally.

"Twenty years ago, social media didn't exist, but it now creates 21 million jobs. Many more jobs are still to be created. There's a lot of opportunity."

To disrupt our status quo, we need a mega shift away from the 'now' and into the future we want. We need more Pacific scientists and technicians, we need to enable our existing workforce, and we need to understand the importance and impact of technology. We have no choice but to embrace this.

"The other side of chaos is opportunity – embrace the opportunities."

As we see more Pacific scientists and technology experts coming through into the sector, we also have the opportunity to direct how technology itself is applied. One example mentioned at the Fono was start-up projects: "We need to disrupt the idea that start-ups are all about profits so that with new initiatives, the concept of profit is not at the forefront, instead it's the concept of service to the community that comes to the forefront, and how we can support this financially."

Given that New Zealand's median age for Pasifika is 22 years compared with 42 years for Europeans, growth in the future will come from Pacific people: as thinkers, as activists, as entrepreneurs. We want everyone to fulfil their purpose.

What might this mean in practice?

This theme is about establishing the impetus to focus on science and technology, and it triggers us to think about the nature of our efforts in this space. For instance, acting together here will be essential. The community has a key role to play, and this is discussed in more detail later.

Further, Pacific peoples bring diverse perspectives to everything we do which is valuable, and language is an important part of that. Ideally, we will ensure a reciprocal connection between Pacific cultures and technology that allows our values to impact the upcoming disruption, rather than simply reacting to inevitable tech changes. For example, how do we ensure technology helps create jobs at all levels for our people. How might we encourage a sea change away from funding tech start-ups for their potential profitability, and instead refocus technological expertise onto supporting Pacific wellbeing and aspirations. How do we make sure investment decisions make sense for the majority and minority?

One potential strategy mentioned several times at the Fono was joining forces with Māori as they hold a lot of knowledge, and have a head start in this space.

However, we do it, the time to start is now.

4.2. Positive Narratives in Our Communities

"We have this glorification of sports – how do we transfer this glory into tech?"

The status quo

Within Pacific communities, there is some reluctance to engage in STEM (or STEAM – STEM + Art), which springs from a number of places: the church's reluctance to embrace social media and other tech tools; older people's unfamiliarity with computers; and younger people who don't see a future for themselves in scientific endeavours. Many parents want their children to study to be a lawyer or accountant, but some of these jobs are becoming redundant due to automation, making tech a better option.

Those already making positive changes in the community note they are working in isolation and struggle to know what other Pacific nationalities are doing in this space, and as a result, are not making the connections that could enhance their own activities.

Pasifika might be considered the weakest link in the science and technology sector, and we may be limiting ourselves through a lack of confidence and negative self-talk. But growing from 2% in tech is vitally important, so how do we encourage our young people (and their parents) to consider STEM/STEAM for their futures?

The opportunity for change

There was a strong call at the Fono to create relevant, diverse and positive narratives around technology that encourage exploration and participation.

"Adopting technology should be the new doctor-lawyer benchmark. We need something to say: 'Hey, this is a goldmine. If you know how to use this, it's going to take you far.' When the mining came up in Perth, every man and his dog went over there. How do you build that same situation for technology?"

Robots will soon take over tasks that can be completed without human intervention, these are the menial jobs where Pacific peoples predominate. While this appears to be a huge threat, it will actually free up space and create an opportunity for us to focus on what we are good at, things that are bred into us through our families, and that are meaningful – we are good at being human.

Diversity is critical for our success, both as NZ and as Pacific people, and our job now is to understand where our new place in the world will be. How do we bring Nana and Poppa on the journey so they can continue to familiarise and teach smaller children about genealogy and language? How do we work together co-operatively to a unified plan for enabling a prosperous future?

What action can we take?

Changing the narratives about 'our people in technology' is expected to enable our young people, communities and the existing workforce, to increase participation in science and technology. Bringing successful Pacific people to speak within communities is a practice already used to inspire young people, although this can have unexpected outcomes:

"It's funny that we arrange these for young people but it's the older people who are sitting up front."

Another approach discussed at the Fono was daylighting the potential benefits of technology, for example, through energy conservation. What if we worked with our churches to install solar panels on their rooves so we could distribute power to our people at a cheaper rate?

There is also a narrative around how Pacific peoples contribute to our adoptive home of Aotearoa New Zealand. Retelling stories of our ancestors' great achievements was raised a number of times during the Fono as a way of inspiring self confidence in young people. Our tūpuna travelled across the oceans using the most advanced science and technology of their time, which they themselves had developed. We don't want handouts; we can create great things ourselves using technology.

"We are really, really good at the America's Cup - we are innovators, we are scientists, we design boats like no one else. But if we take a look all the way back along those footsteps, it is inextricably linked to our Polynesian ancestors who designed the first double hull waka to travel across the Pacific Ocean." (Ian Taylor)

One of the National Science Challenges is purposefully going to local communities to help record Mātauranga before it is lost, particularly with regard to fisheries and combatting climate change, a high-tech stream delegate said. Putting science and technology into a more relevant context moves science from being boring to exciting.

"There is so much knowledge out there, old knowledge that is not being captured. Our history needs to be told by the community, not old Missionaries who think they know what happened. What we're finding is that it's engaging the older folk in those communities in real technology, and I think they're going to enlighten their whanau and ask, 'This is really cool, why don't you get involved in it?'"

Underpinning any community-based activities will be the need for resources, particularly financial. Some Fono attendees noted that existing funding processes are not necessarily Pacific-friendly. A positive change would be to ensure decision-makers better understand the issues as Pacific peoples see them. Further, allowing different types of applications to be submitted would allow community initiatives shine, for example, through utilising more visuals rather than written submissions because, "big wordy documents aren't our first medium."

Positive Narratives in Action

Amy Maslen-Miller shared her story of shaping a social media persona: Samoan Scientist. Although science had never really 'clicked' for Amy in her younger years, she went on to complete a master's degree in science. She soon realised there were few other Pacific people in science, and certainly no Samoan scientists on Facebook... so she created Samoan Scientist to show people the good, the bad and the ugly of her science journey. Specifically, she wanted to inspire Māori and Pacific young people.

Now communicating via five different media platforms, Amy tries to:

- Start conversations – e.g. the history of the taro
- Be accessible – anyone can access the material and see what she is doing
- Share her story
- Amy offered advice to others wanting to use social media to connect and inform:
- Create more content about Pacific and our stories
- Know your audience – the platforms do make a difference to the audiences reached
- Understand how you are helping – analyse audience responses to check if your aims are being achieved
- Learn and consume other social media content
- You don't have to like it, but learn from it - learn about what the next generation is thinking

4.3. Technology as an enabler for language and culture revitalisation and retention.

"When the language dies, a culture dies. When culture dies, our stories die. When our stories die, our connections die. When our connections die, our identities die. When our identities die, we will truly be lost people." (Pacific Aotearoa; Lalanga Fou)

While the two Fono streams (High Tech and Languages) were somewhat separate, it became increasingly clear that technology is uniquely placed to assist with the revitalisation of Pacific languages in Aotearoa. Equally, supporting young Pacific people to engage with their own language and culture will ensure they develop strong identities to help them navigate the digital disruption and global influences coming over the next decades.

"At their core, our languages are untouched by colonisation."

1. Status Quo

The use of Pacific languages has been steadily declining since 2001. In New Zealand, 55% of Pacific respondents to the 2013 census reported not being able to speak their heritage language. UNESCO has identified Tuvaluan, Tokelauan, and Cook Islands Māori as endangered or vulnerable.

"Learning English has been necessary for survival, but this has diminished the importance we attach to our own languages."

There are a number of grassroots and national initiatives being driven by communities which aim to teach and strengthen Pacific languages, however, there is currently no cohesive overarching strategic direction in place to share models of best practice, or a recognition of opportunities to collaborate with Pacific language experts from the Pacific region. Issues such as mental wellbeing and climate change have not been fully explored in the language revitalisation space. Importantly, we are yet to create a shared vision and strategy for how to integrate technology into this work.

And yet Pacific peoples are one of the youngest and fastest growing populations in Aotearoa, with over 60% born domestically. It is projected that by 2038, Pacific peoples will make up 10% of New Zealand's overall population. There are also now more blended families: some children can identify with up to five Pacific ethnicities. Māori-Pacific people currently sit under Māori statistics, meaning these figures may be an underestimation.

Despite the significant place Pacific peoples occupy in New Zealand, the government/Oranga workforce is predominantly non-Pacific, and these professionals tend to have limited knowledge of Pacific language, culture or history (e.g. the dawn raids of the 1970s). This has implications for service delivery and wellbeing outcomes. Clearly, the need for language and cultural education extends beyond our own communities.

"Policymakers make assumptions about Pacific people; they lump us all together."

The Opportunity for Linking Technology and Language

With one of the biggest Pacific populations in the world, New Zealand has an opportunity to ensure that Pacific languages and cultures are protected by investing in their revitalisation and retention. As society changes, our languages will help us to ensure it changes in ways that reflect and represent us and our stories, and this should include technology.

Research shows that people must use a language across many facets of their lives in order to maintain proficiency. At the same time, we now use our devices constantly; any language could be easily accessed with the touch of a button. In this environment, learning languages digitally could happen anytime, anywhere, and across a lifetime. Young people feel the lure of digital devices strongly so we can be confident that at least part of the solution lies with technology.

There are many advantages of utilising technology in this space. Tech is:

- Mobile – we can use it anywhere
- Multimodal – this includes voice, text, video, gaming etc
- Accessible – very few people do not have access to at least one digital device in New Zealand
- Personalised - for individual learning needs
- Motivating – for example, gaming is being used more frequently for learning
- Interactive – we don't have to feel alone.

A number of potential benefits of linking technology and language revitalisation were highlighted during the Fono. These include allowing people to see how other languages are being used by peers, and to learn interactively with others. It could create an opportunity for young people to practice their language before leaving for the islands, including speaking with the relatives they will soon visit. Importantly, it could provide examples of both formal and informal use of language and teach culturally appropriate manners for different situations.

"Technology is absolutely vital for opening up new worlds for people that they can return to."

While the Ministry acknowledges that the ownership of Pacific languages sits with Pacific nations, to design effective best practice frameworks for revitalisation and retention of Pacific languages, a collaborative network made up of both domestic and international thought leaders and experts is required.

SIDE BAR

Prior to the Fono, the Ministry had established a set of priorities with regard to language:

1. Engage with and establish a network of regional language and cultural experts and linguists.
2. Share success stories and opportunities for investment/change.
3. Establish a regional collaborative framework for language revitalisation and maintenance.

Language Revitalisation in Action

The Fono showcased several organisations already making the link between language and technology. Some are concurrently teaching technology skills and reviving Pacific languages, for example through apps. The two are mutually beneficial, and this relationship sets the scene for a uniquely Pacific pathway to success in science and technology.

"I had thought I would get someone else to do the tech side of things, but after this Fono, I see that the tech side of supporting language is my work – it's a whole of development approach that is required for us to do together."

The Pasifika Education Centre (PEC) is currently looking at digitising their language courses for the future. However, this is challenging, not least because of the range of tools available, including YouTube, apps, satellite learning, radio, and Talanoa Mai. Each of these tools is isolated and hard to connect into a coherent curriculum.

"Some things can be digitised and automated, but you still need people and interaction with people, so we need to be clever in the way we customise our offering."

Vagahau Niue Trust's Strategic Plan includes social media and developing virtual conferences and other digital resources. The Cook Islands Development Agency NZ (CIDANZ) is looking to establish a digital repository to hold and share their learning content, perhaps in the cloud. As with some of the other organisations represented at the Fono, they do not yet have a clear pathway for digitising their work.

One of the organisations embracing technology fully was Tino e Tasi Preschool. Saul and Zohar Luamanuvae-Su'a create digital content, games and other tools to teach pre-schoolers language. Their games are available through the app store, and have been searched, downloaded and used by people around the world; the highest proportion of users is based in New Zealand (50%), followed the US and Australia. While the games have already proved to be a successful teaching tool, the team are currently adding a set of online storybooks that feature children narrating their own stories.

The interactive mobile app Talanoa Mai is another prime example of how technology can be used to support language and cultural learning. It was developed by Oranga Tamariki to increase confidence and knowledge of staff working with Pacific young people and their families. Seven nations are currently represented in terms of language meaning and pronunciation, protocols and customs, flags, and connecting Pacific names to home villages. With almost 4000 downloads and over 2000 active monthly users, this initiative appears well worth the investment.

4.4. Adding our arts. Moving from STEM – STEAM, unlocking Pacific indigenous knowledge, expertise, and the Pacific edge.

"STEM is what we learn and develop, but Art is intrinsically who we are."

Why is Art important?

Adding Arts into the STEM stable is a natural aspiration for Pacific peoples because it allows us to lay a cultural lens and approach over all things technological and scientific. Importantly, it brings people and relationships into the mix and will undoubtedly attract more Pacific young people into the sector.

"When we add in our own art, our stories, music, carving … Art in this context is our library, our knowledge base. In those days when they stopped my mother from speaking Māori in school, that was the equivalent of burning the books. All of our knowledge was in our language, in all our languages." (Ian Taylor)

That combining Art with STEM might be a legitimate pursuit is a somewhat new revelation to many Pacific peoples. However, various speakers and delegates noted during the Fono that it is a mistake to continue to devalue this facet of ourselves in the face of Western science and technology, or to feel we have to choose one or the other. STEM and Art need to be integrally connected in education and beyond.

"I have worked overseas in tech. In my journey I didn't think I was smart enough; I was the only brown girl. But I have moved from STEM to STEAM, and now my art skills and my emotional intelligence are really valuable. Humour, warmth, love for people are all inherent to Pasifika. Europeans have to be taught how to work together - what is wrong with them?!"

"We aspire to STEM, Arts for us is a state of being, we don't have to train or learn about it, this is us. But what we do have to learn and graduate from is science and tech."

As Ian Taylor said so eloquently during his Fono dinner speech, Art can help us create solutions to some of the biggest problems the world is facing right now, particularly sustainability and climate change. Pacific wisdom has much to offer through applying our unique knowledge and perspective.

Māori and Pacific peoples have a tremendous opportunity to use Western science, as well as our own Mātauranga, with a different lens to Pākehā. When our Art is brought to bear, positive outcomes for our people and our land will follow. Ian Taylor shared a story of Sir Āpirana Ngata, who understood this well, giving advice to a young girl asking about her future. He told her:

E tipu e rea mō ngā rā ō tō ao
Grow up young child and throughout your life

Ko tō ringa ki te rāku a te pākeha
Use the tools that Pākehā has to offer

Hei tikitiki mō tō māhunga
As your loadstar to creative inspiration

Art in Action

An important aspect of bringing Pacific Art into the science arena is thinking about what impacts we want to make and who we want to involve. Technology can and should be applied to real world problems and improving wellbeing outcomes for Pacific Peoples.

One delegate shared the example of a school that had to increase the number of students going on to study science from four each year, to around 30. They achieved this through engaging young people in topics that were important to them: "Energy, agriculture, things that can actually be relevant to their culture and the islands. It left the kids wondering: 'Why can't I be a scientist?' They had not thought about it before, but science is actually pretty relevant.

Project Wy is a community project aiming to bring family and community into leadership and technology.

CASE STUDY - PROJECT WY

Project Wy is a leadership development and mentoring programme. The initiative is now delivered in 15 Auckland schools, with over 200 families involved.

In part, the programme stems from the recognition that many Pacific peoples are from a generation whose parents migrated to this country – there has been an expectation that the eldest son would become a doctor or lawyer. These high-status, high-salary professions would support the wider family to be successful and healthy. But more recently, one can see a shift that matches the new technological environment we live in, and many parents want their children to be tech savvy.

Project Wy's approach has been to involve parents in projects directly involved, rather than allowing them to leave STEM lessons to others. As founder Essendon Tuitupou explains, "Most available initiatives are for children, and miss a key factor in success - the parents."

An important aspect of this initiative is supporting the relationship between parent and child and promoting the idea that educating children is not solely the job of schools - parents need to be involved. Partnering with other organisations has had the dual benefit of supporting project development and accessing external resources.

This programme is a good example of how several of the key Fono themes can be put into action: it is led by Pacific peoples; it involves family and community, rather than relying on government departments to teach leadership and technology skills; it is an avenue for adding Art into STEM by bringing parents (and their cultural knowledge) into tech skills development; and it constitutes one step in a pathway into the technology sector.

https://www.facebook.com/ProjectWy

4.5. Strong Pathways into Tech

The Status Quo

The low participation rates of Pacific peoples in science and technology have already been highlighted in this report: we make up just 2% of the scientific workforce. An essential area of focus for us is creating a pipeline of new scientists and technologists. It is widely agreed that young people will ideally be exposed to STEM early in their lives and be encouraged to pursue this line of study and work. This is not necessarily happening to the degree needed due to low tech knowledge in Pacific communities, and New Zealand's English-only education system is not helping.

A wider issue noted at the Fono was the current disconnect between the tech sector, government and education, which has led to a massive shortage of graduates for the roles we need. There is a recognised failure of tertiary training institutions to keep pace with tech disruption, which in large part is caused by the relatively long technology degrees (three to four years) creating graduates with out-of-date skills.

The lack of technology jobs for graduates, particularly across Pacific Islands, was noted as a problem at the end of any tech pathway that might be created. Even when Pacific young people do study STEM to university level, they tend to go on to work in New Zealand or Australia rather than return to their country of origin.

"There are no spaces for these returned graduates to come and use their skills to develop not just themselves but also the nation."

Part of this tendency likely stems from the education system, which prioritises New Zealand history and social studies, and teaches very little about Pacific nations. As one delegate noted, "We know more about New Zealand than we do about our back yard." In this context, there is likely little motivation to seek out opportunities at home. Inserting cultural teachings into any tech pathway seems essential in order to reap the full benefits of more Pasifika in science and technology.

Opportunities for Change

It was the suggested approach of starting with children early in life that really captured the enthusiasm of Fono delegates. Creating future leaders from a young age, well before secondary school, was a favoured strategy. Allowing children to use games for tech familiarisation was noted as a good approach, particularly if they involved creation rather than consumption.

"Kids are born curious, but the mainstream education system blocks that, it teaches kids they aren't good enough."

And yet the need to retrain older people was also recognised. Automation is one of the big disruptions that will impact all facets of working life over the coming years. Pacific peoples must retrain in order to continue participating in the economy. Upskilling also presents the opportunity for greater access to higher paying roles.

The thought of retraining can be disconcerting, especially for older people, so there is a significant need and opportunity to create training programmes that are easy and culturally desirable for mature Pacific peoples.

What is happening in practice?

Online training is already available and proving a useful channel through which to upskill both young people and the older workforce. Companies such as UiPath offer free, scalable and flexible training for companies and individuals in robotic process automation. Users can make use of this resource at any age.

The Ministry for Pacific People's Toloa STEM Programme aims are to increase the number of Pacific peoples employed in STEM careers through providing financial support to students and community groups:

1. Toloa Tertiary Scholarships for Pacific students pursuing STEM related study;
2. Toloa Kenese for Post Primary Pacific students to increase awareness and influence students into STEM study options early on;
3. Toloa Community Fund for Community Groups promoting and delivering STEM activities to our key Pacific influencer groups, including parents, family, and religious ministers.

As Misa Tovia Va'aelua discussed during one of the sessions, Pasifika in I.T. has already developed a set of four priority areas for action to support a strong pathway: Educating our future leaders; Enabling today's workforce; Digital leadership in the community; A valued voice in the tech industry **(see p24 for more detail).**

Community initiatives are already being deployed throughout the country, and each takes a slightly different approach to bringing tech to young people:

CASE STUDY - CREATIVE PATHWAYS OUTREACH

Creative Pathways Outreach uses technology to solve big problems. Founder, Lionel Taito-Matamua, wanted to bring digital literacy and empowerment to low decile schools. He wondered how he might develop a technology initiative that could operate outside of school budgets and allow students to use their creativity while studying STEM.

At the same time, Lionel, a designer who was born in New Zealand to Samoan parents, has been concerned for some time about the problem of tourism-driven plastic pollution in Samoa. There is a lack of money or collection system to solve the issue. He wondered: “How could I use my skills to meet this plastic problem? How could I give back to my people?”

Lionel has sought to bring together both interests through Creative Pathways Outreach. The initiative started in low decile schools with high numbers or Māori and Pacific students, although recently a higher decile girls school expressed an interest, and they have come into the fold – Lionel was happy to involve them with the goal of encouraging more women into science.

The programme centres on 3D printing: taking a waste product (plastic pollution) and making it into something valuable, whether that be tourist trinkets, jewellery, or tools for food preparation that negate the need to cut down trees. Design is an important process that uses science and maths to do something useful. Students carry out practical assignments using CAD software, working out the best 3D materials and processes, and then create real objects. One project involved making 3D printed angels for a children’s hospital ward so the young patients could paint them. “There’s more than just exams and tests. The best way for us to learn is hands on, and then bringing the results to our people,” says Lionel.

4.6. Reclaiming Pacific Data Sovereignty

A greater level of understanding is required amongst Pacific Peoples around how our data is collected, used and stored. Organisations sharing digital data with unknown third parties, and the ability of others to draw deficit-focused conclusions about Pacific communities, were identified as important problems to be addressed. Now is the time for Pacific peoples to decide collectively on acceptable parameters for using our data.

"With digital sovereignty, we have to read between the lines, and we have to ask the questions with confidence. We have the right to challenge."

In addition to sharing his perspective on the overarching technical disruption we can expect over the coming decades, Misa Tovia Va'aelua also zeroed in on one aspect of technology that we generally do not give enough weight to data. In a world ever more saturated in information, Pacific Data Sovereignty can be considered a key issue as the Ministry looks to develop its future Science and Technology Strategy.

Nothing About Us Without Us

Data Collection

The breadth of technological change coming is huge, but one of the most significant disruptions will be around data. This relates to what and how data is collected, what purposes it is being used for and how it is stored, among other things. Pacific peoples need to understand our role in this data cycle, including how we ourselves consume data. Once we make sense of how data is being used, we can decide whether we want to give up the data that belongs to us.

Currently, data gathering tends to happen from a central point of control, for example, by the government, or one of the big five tech companies such as Facebook. Data gathering was originally used to create a single version of the truth, an evidence-based view that was unbreakable, unquestionable, and helped people make sense of the world. In order to make investment decisions, governments need data about citizens, for example, what our people look like, expected growth rates, where are we headed in terms of employment, and many other things.

Centralisation of data capture is efficient and reflects how we do business today, with organisations tending to be controlled by a central head office. However, this approach has disadvantages. It has become clear that 'truth' can become contaminated with incorrect information. Further, it can be weaponised so that it works against us.

"If we think of all the organisations collecting data about our people, they can start drawing massive pictures of what the demographics look like, what the technographics look like, and more importantly what the psychographics look like."

Another significant issue is that the data collected about us is very static and is not necessarily updated when it should be. A calculation at one point of time does not stay relevant, but insights generated at one point in time have echoes into the future. If we are looking at predictive software being applied to employment, events happen in our lives that change our motivations, habits, and effort, but unfortunately, algorithms do not take this into account, and are often operating on old information. Data and algorithms are starting to replace the HR function in large companies, meaning our past work performance can have longstanding repercussions.

Unethical Data Use

Having recently deleted his Facebook account, Tovia told delegates that while it had been useful while his family was living and working overseas, now that it had served its purpose, he was no longer prepared to offer his data to the tech giant. In the same vein, Amazon keeps customer records seemingly indefinitely, and uses this data to create benefits for itself; loyalty programmes also collect data related to our purchases. Our community is not aware of these issues, we are not clear on how these big companies are using our information, but we need to ask:

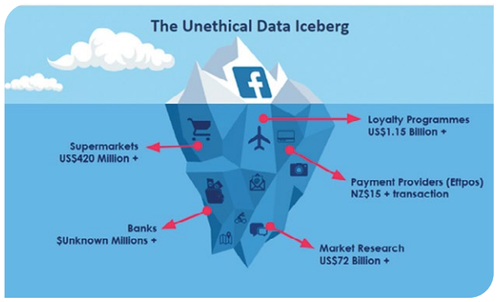
"Do I know it's being captured? Who gets access to it? Is it being stored safely? Who has it? How is it being used? Will it be deleted if I want it to be? When we give up data, we do it in such a way that someone else takes sovereignty over that data."

Tovia believes that those building and running social networks should behave according to a set of data rules and should be held accountable for their treatment of our data. Ideally, the investors of these companies should have asked about data use and privacy, and about whether users would be protected. We are now hearing calls from around the world for big companies to respect their customers' privacy.

"We need to take a step back and say, hang on what's happening with that info, how are you using that info, and what can I do to create a wave of change around that data."

Important Questions to ask about our own data:

- Who has my information?
- What information do they have?
- How are they using it?



Unethical Data Iceberg

The Unethical Data Iceberg shows what consumers do not see in terms of how our data is being used, particularly by supermarkets, loyalty programmes, banks, payments providers (EFTPOS), and market researchers.

"They're not taking my information; I'm giving my information. But who else gets access to it? Who gets to see that I have $2.35 in my bank account … please do not let anyone else see that! There's a lot of information drifting around out there that I freely gave, and that a lot of organisations are giving out or selling to someone else."

The Future of Data: From Centralised to Distributed

"Data gathering will change in the future, and Pacific peoples have to be part of that."

Is there a better way? We can see that business practices are changing, for example, with employees saying they no longer want to work at a central office, or people preferring Bitcoin to traditional banks. These trends are about people taking back control. While this kind of decentralisation allows some freedom and the ability to own our data, it lacks structure. Tovia contends that distributed networks, rather than centralised or decentralised, represent the best option for data practices of the future. This certainly is not a simple change to achieve, and it becomes even more complex if we bring culture and language into the mix. Work towards achieving this disruption is ongoing.

Data Sovereignty in Action

Tovia has been involved with a New Zealand start-up, Āhau, which is investigating how Blockchain can be used to move the authentication of information and data to the edges to make it unnecessary to go back to the origin. The example of families having to return to Samoa and the Land and Titles Tribunal to defend their land ownership and right to title (which has parallels throughout the Pacific and for Māori in Aotearoa) helps us see how this may be useful:

"What if we changed that so we didn't have to go back to a central authority? What if people were authenticated as authoritative states that I could go to have them authenticate my right to that title and that land? Nothing about us without us. If we control the authentication process and we control it from a distributed edge, only then can we control our own information and data."

Āhau is a data management platform for tribes, communities, and individuals. Our kaupapa (mission) is to empower our communities and people with access, ownership and management of personal data, with the hope that this will lead to building stronger healthier communities, greater use of community resources, and a stronger sense of identity amongst the people.

We aim to achieve this kaupapa by using blockchain to develop a digital data platform with a set of tools to enable data collection, storage, management, and access, based on consent or permissions. (https://ahau.io/)

Pacific Data Sovereignty

Digital Leadership in our communities will be key to Pacific peoples taking control of our data. For us, it is not simply the demographic and behavioural data being collected by others, it is also how we digitally record and store our culture, our stories, and our languages. How do we take our cultures into the next 300 years?

"We will continue to tell stories, because they mean a lot to us and they are often more accurate than the interpretations on paper and online."

There are overseas examples to look to for guidance. Tovia shared an example of how the Polynesian deity A'a which was in the form of a wooden statue, was given to the London Missionary Society to mark the people's conversion to Christianity. This statue was then taken and displayed in a museum in London with a description of what and who this represented and the meaning it held for this specific group of people in Polynesia.

When Pacific peoples consider our own cultures, it would be tempting to think about the next decade and develop data strategies to that timeframe. However, we need to be planning for 100 years ahead - Where is our data then? How big are we as a community?

"What we do today matters because it will be repeated and repeated again until it becomes habit and culture for us, and this has to be reflected through our digital representation as well."

Part of our planning must recognise that data is binary information that is meaningless until we make sense of it to create knowledge and insight. The value is in the insight; the value is our story. This makes it absolutely essential for Pacific peoples to approach data innovatively and with purpose.

A starting point may well be storage. As it stands today, it is almost impossible for us to own, hold or control our data:

"If my data sits in someone else's cloud storage and I can't pay that bill, they will send me an email saying that because I didn't meet the bill I have one month to download my data otherwise they will delete it. Now they suddenly have full control over deleting my data, deleting my value, deleting my story. How do I truly take sovereign ownership of this information that applies not just to me today, but also to the next 100, 200 years, to my children and children's children?"

Delegates were offered several ways to help establish and protect Pacific Data Sovereignty:

- Understand data parameters – whether we are submitting or collecting data, we should be clear on why we are doing it and how we are doing it.
- Communicate the importance of data across the community – this applies to why and when people release it, and how that is important. Get people thinking about all the ways their data might be used.
- Update our own data practices today – we should lead by example. If we collect data about people, we do it correctly, openly and we discuss with people why we are collecting it, and when we are using it. Give people the power to delete their data on request.

So, what can we do in practice?

Our thinking is only just beginning to be applied to this issue, so there may be more questions than answers at this time; this is another area where Pacific peoples may benefit from partnering with Māori, who are further ahead.

Questions asked at the Fono included:

- how do we safeguard the storage of our data and stories?
- does it make sense to invest in our own digital infrastructure?
- how might we work with tech companies such as Microsoft to help us create future-proof solutions?

We are still trying to understand our data and use it to forecast the future. We want to ensure a Pacific lens is used to create data insights, and to look not just at deficits, but also positives that help us achieve our aspirations.

Several examples of initiatives involving data were shared during the Fono. Data is being used to support Pacific wellbeing outcomes in the areas of housing, education, renewable energy and artificial intelligence. Ensuring a sufficient cohort of Pacific researchers and practitioners, regardless of the subject area, is important in this type of work to ensure that any data collection activities are necessary, safe, and aimed towards positive benefits for Pacific peoples.

"She/he who write/s the code, rules the world." (Steve Renata, Kiwa Digital CEO)

RECOMMENDATIONS

The Lalanga Fou Languages and High Tech Fono confirmed that Pacific communities hold the keys to collectively build and design a future that allows them to thrive and prosper in Aotearoa. Over the next 12 months, the Ministry for Pacific peoples and partner agencies will work with Pacific communities, Government agencies and sector leaders to realise the future and existing opportunities in the Science, Technology, and Innovation sector.

The way we will work with communities will be informed by the Pacific Aotearoa Vision of “We are confident in our endeavours, we are a thriving, resilient and prosperous Pacific Aotearoa” and the four Lalanga Fou Goals. Our work programme will cover the following phases over the next 12 months.

Engage and develop:

» Report back to Communities, government agencies and sectors on the finding of the Lalanga Fou Languages and High Tech Fono, themes and key objectives.

Connect, innovate, and invest:

» Identify, invest in, and incubate current programmes and initiatives working for Pacific communities that have potential for expansion.

» Incorporate the key themes and objectives to inform a future of work component of the Pacific Employment Action Plan.

Influence and change:

» Report back as part of the Pacific Aotearoa Summit Two to communities, sectors, and government agencies on the results of the connect, innovate, and invest phase, and the next phase.

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DELEGATE FEEDBACK

The Ministry sought feedback from attendees of the two-day Fono. Delegates were positive about the event, particularly because this is an area with a recognised need for change. Several themes emerged:

- It was new unchartered territory to not only speak about technology as a cohort of pacific people from sector, government and community but it was also a unique opportunity to mesh technology and language and culture together.
- There was nearly not enough time. This is something that our community and our leaders have needed and wanted and so there is a high demand for further Fono which directly correlates to the speed of which sciences and technologies are advancing today.
- There is an appetite for a strategy. Our people know that the best way forward is to develop a strategic direction, and they want to contribute.

"Seeing so many Pacific people, sharing their stories and talents, enjoying each other's company, blessed in prayer, respect and love for our peoples - it was so powerful! I enjoyed so much being among them."

"To work together with our communities and other experts in the field to strengthen our identity, values and language. The Fono should be an annual or biannual event."

"This Talanoa needs to be accompanied by the opportunity to sit down with MPP officials and formalise a strategy of actions and a timeline of the plan. Be very useful to be updated on these developments and have ongoing communications."

"Please do not wait for another 30 years to do something! Act now"

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GLOSSARY

Aiga	Family
Aotearoa	New Zealand
Fono	Meeting
Mātauranga	Knowledge, wisdom, understanding, skill
Pākehā	European
Talanoa	To talk, speak
Tāmaki Makaurau	Auckland City
Te Moananui a Kiwa	The Pacific Ocean

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PACIFIC AOTEAROA

A SHARED VISION FOR PACIFIC PEOPLES IN AOTEAROA

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