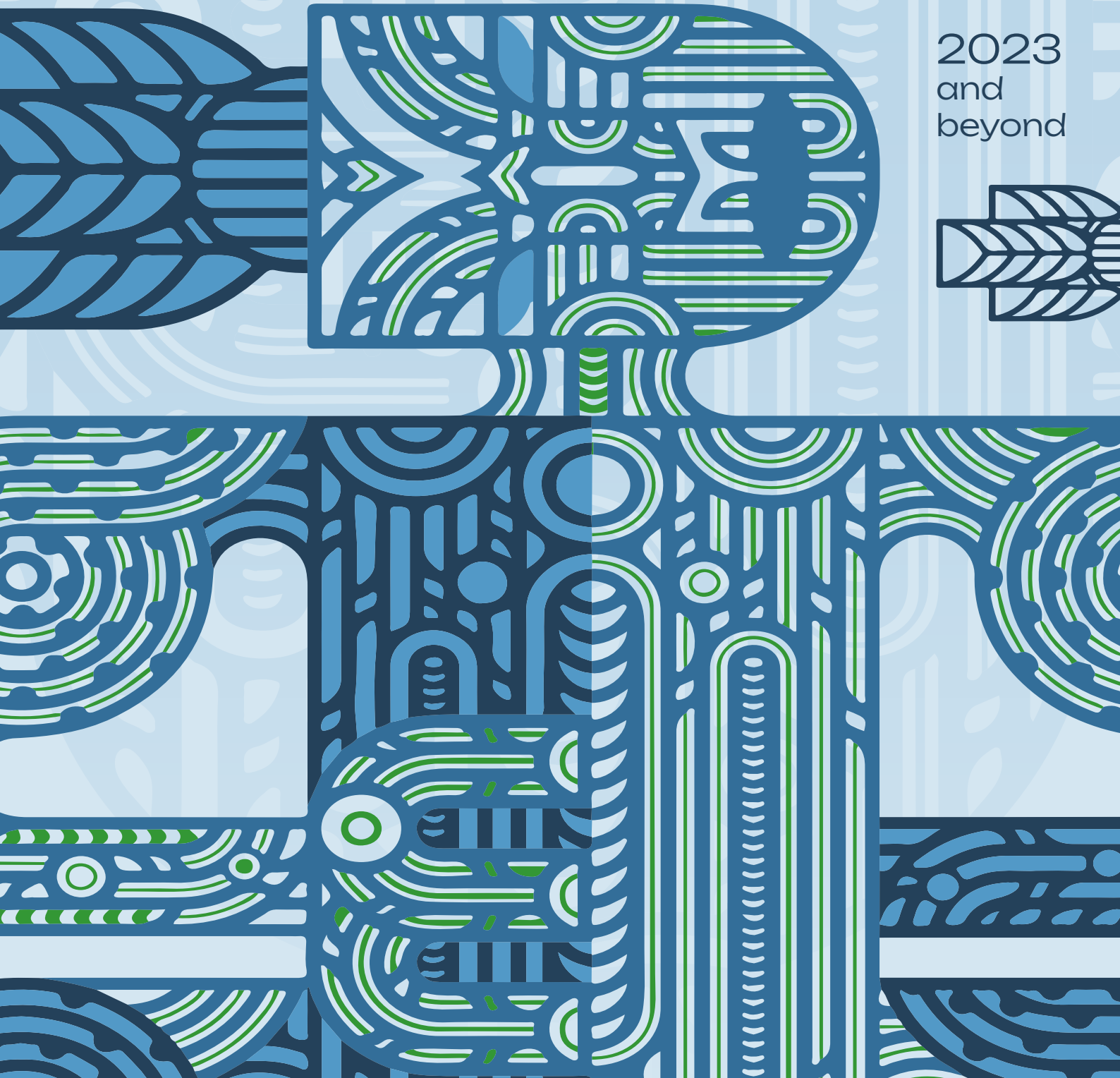
Mapping the Māori Tech Sector

Interviews

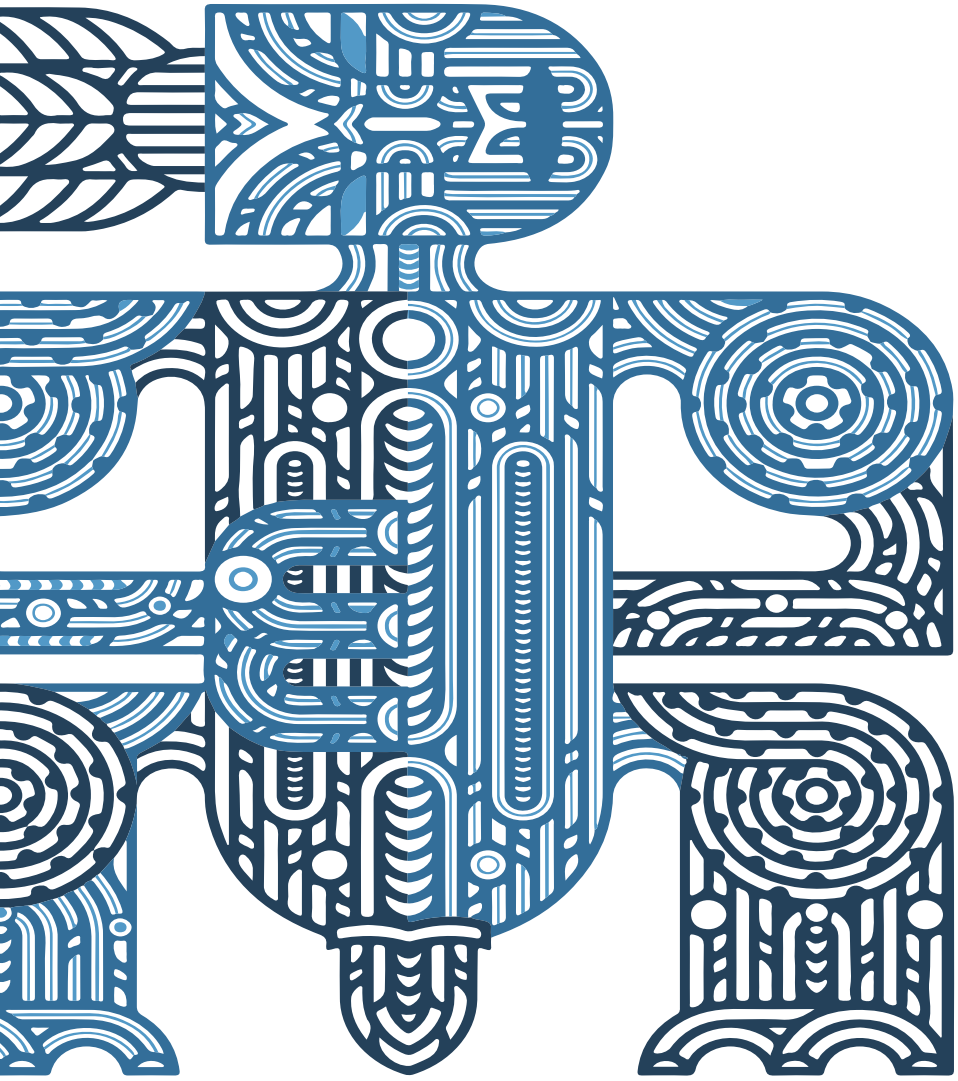
2023 and beyond



Kia ngana ki te hau!

Stick to your track in the oncoming wind!

Huirangi Waikerepuru



He Kōrero

These interviews were captured as part of the Māori Tech Mapping Research Project funded by the Ministry of Business, Innovation and Employment (MBIE) with the support of NZTech, Te Whare Wānanga o Awanuiārangi and Making Everything Achievable (MEA).

This report is dedicated to each of you - the unspoken heroes and heroines, many Tōhunga in your respective fields - the nerds, content creators, company owners, gamers, animators, engineers, researchers, data scientists, Māori data practitioners, Animators, Coders, Programmers, Dreamers, Doers, Influencers, scrappers, the parents who scrimped and saved to buy their kids their first computer, to the dreamers and to the entrepreneur who put everything on the line to grow your tech idea, we acknowledge you. We thank each of you for your efforts to ensure Māori in technology is no longer hidden.

MEA also wish to acknowledge participants from Te Tai Rāwhiti who were involved in sharing their challenges, hopes, dreams and aspirations of technology for their own whānau, hapū and iwi.

Many thanks to Cinema East - Canaan Akuhata-Brown for capturing their kōrero.

Patrick Tangaere - Hinepare Marae
Lily Stender - Tolaga Bay Innovation Hub
Tena Baker-Clark - Tolaga Bay Innovation Hub
Jodie Reid - Human Design Reader from the Motherland
Shanon O'Connor - Tōnui Collab
Cain Kerehoma - Tāiki E!
Cherish Wilkinson - Tāiki E!

These interviews are but a small glimpse into the worlds of these practitioners, how they entered the tech world, the challenges they have faced and overcome and their dreams for the future.

Enjoy, as it has been a joy to help bring these stories to life. Share these stories with your whānau, hapū, marae and community and for more information please visit our website www.mea.nz

Kaye-Maree Dunn
Hautūtū and Human Engineer

Editorial Note: These stories have been crafted from research interviews. Because the kōrero was so rich we felt it would be ideal to share these interviews with a broader audience. Please read this alongside the Māori Tech Mapping Report 2023 for context.

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI
TE WHARE WĀNANGA O AWANUIĀRANGI
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Mā te Huruhuru
ka rere te manu

A special thank you to the MEA team namely Rachel Taniwha and Hazel Heal for your editing ninja skills, Sophia and Kris Benjamin for helping to bring all of these important stories together.

Māori Tech Practitioner Interviews

Dr Warren Williams

Digital Taniwha | www.digitaltaniwha.com

Ko Maataatua, Ko Tainui ōku waka,
Ko Tūhoe, Ko Waikato ōku Iwi.

Ko Te Urewera, Ko Ngāti Māhanga ōku hapū.

Ko Warren Williams tōku ingoa.

warrenwilliams

What is your definition of Māori digital technology?

Dr Williams completed his PhD research in Māori in the IT industry and says there has been a Māori technology, or IT, industry in Aotearoa and globally for a number of years; however, he says it is not 'necessarily visible' to the non-Māori tech industry.

"Sadly, the non-Māori tech industry thinks that a Māori tech industry doesn't exist."

He says how Māori approach technology is different; that Māori approach technology in a way that positively impacts those around them.

"I believe in a Māori perspective; a view of Māori technology is what can this do for our people, our whānau, our marae? But, also, not the 'now' but the generations to come. For Māori technology I strongly believe when we look at technology it's what can we do not just for now, but actually for my kids, my grandkids, my family, extended family, my marae and my community and local businesses. There's a more future-focused, inter-generational view."

Given the importance of technology, why do you think there are low participation rates?

Over the years Warren has discovered that the current industry doesn't allow for culture, and given that te reo Māori has only been recognised as an official language in the past few decades, it is not the fault of the sector.

"It's just the fact of what's happened over generations – language, culture has been put to the side."

He says rangatahi are coming through yearning to express their culture, but the IT sector doesn't do that.

"It doesn't quite allow you; and it's not that they don't want to, they don't know how to. So the Māori tech sector is evolving itself because it embraces its culture, it embraces its tikanga; it creates spaces and allows spaces for that. I think that's where participation is happening, that's where they're creating their own gaming companies, design companies, infrastructure companies, even within their own Māori tech sector."

Warren also says there is this misconception that culture and language are not global.

"For some reason in the tech sector, they believe that the only language is computer language. The one thing that we have is shared values and principles with other cultures across the world."

He thinks that is a pathway for increasing participation, as well as having more role models or leaders visible reflecting our rangatahi.

"So role modelling, mentoring, we have a responsibility - those of us in IT - to not just be seen, but to champion and create pathways for those to come through, and step out of their way."

One of the key things is that Māori want to be shapers of technology, not consumers of technology. What are your thoughts?

Warren says if he stood in a room and called out the people who shape technology, the majority of them are probably not from New Zealand.

"Often they are probably more global organisations because of their credibility in the industry. Apparently, you can only be credible if you've gone global, which again I don't get. The other part is you have to be a big business. You have had to make lots of money. Unless you're a large company or listed or you make a minimum of five million dollars, then you're considered a shaper in the industry. You're considered someone of credibility, so they're invited to the group."

He says at the end of the day there are only very few shapers in those spaces.

"My view would be that if you want to create something, authentically have a look at who will actually make the decisions. If Māori and indigenous representatives of this society aren't making the decisions, then it's never going to serve society."

Where do you see the future of Māori tech?

"I'd like it to be 'rangatahi Māori, wāhine Māori driven'. I think there was an article that just came out that wāhine Māori are driving more business. We've literally got evidence and data that shows that. Why say otherwise? I'd like it to be driven that way. I would like to see that Māori have their own mana in technology globally, and not be told that this is how technology should be. It really annoys me, they go, 'oh, well, this is technology and this is how we do it; so you can have it and this is how you should use it.' I'm like, 'yeah, no.' I'll take what I want and I'll create a space that my people help me drive, that is best for them. That mana motuhake is important I think."

He says he would love to see te reo culturally grounded and strengthened.

"When I walk into places I see vision statements on a wall that have been translated into Māori. You see examples of whakataukī. I'm sure it comes from a good place, I look at the people and the actions don't quite reflect what's happening here."

Māori also need to have faith in themselves and back each other up.

"We're gonna make mistakes, you're gonna get it wrong sometimes. But lots of non-Māori get it wrong, lose millions of dollars and do we hear about it? No. So let's back each other, let's awhi each other. When they fall we pick them up, we help them. Let's support ourselves, let's support each other, maintain our mana, and let it take as long as it needs to take.

Amber Taylor

Ara Journeys | www.arajourneys.com

Ki te taha o tōku Pāpā

Ko Taranaki te maunga

Ko Urenui te awa

Ko Tokomaru, ko Aotea ngā waka

Ko Ngāti Mutunga me Te Āti Awa ōku Iwi

Ko Ruapekapeka, Urenui Pā ōku marae

Ko Mutunga tōku Rangatira

Ko Te Mananui Raumati rāua ko Charles Te Nga Ruru ōku mātua tūpuna

Ko Robert Taylor tōku pāpā

Ki te taha o tōku māmā

Ko Tūtāmoe te maunga

Ko Wairoa me Kaipara ngā awa

Ko Mahuhukiterangi me Māmari ngā waka

Ko Ngāti Whātua, Ngāpuhi, me Te Rarawa ōku Iwi

Ko Ahiklwi, Ahipara ōku marae

Ko Nepia Te Morenga tōku Rangatira

Ko Tui rāua ko David Nepia ōku mātua tūpuna

Ko Vicki Nepia-Murray tōku māmā

ambertaylornz

What is your understanding of Māori digital entrepreneurship and/or digital entrepreneurs?

Co-founder and CEO of ARA Journeys, Amber Taylor, says 'the way we operate and undergo business is different: our values, our business models, how we rate ourselves as Māori entrepreneurs in the digital tech space; it's not the same as how other digital entrepreneurs operate or act. If we're talking in terms of definitions, the definition is the way we structure our days and structure our companies and how we look after our team members and our communities, that's where things are different.'

She says one of the first things she and Dr Isaac Warbrick, co-founder of ARA Journeys, did was make sure that how they operated, positioned and brought the company to life was from a Te Ao Māori lens. ARA Journeys is 100 percent Māori owned and Isaac and Amber are the only shareholders in that company which currently has all Māori staff.

"It's definitely a point of difference. We haven't done an investment raise or appointed external investors, we can hand on heart stand up and say we're 100 percent Māori owned."

There are no other influences or people putting pressure on Amber and Isaac to make decisions that don't align with their values and missions that they have set up for their company.

"In the Western traditional tech networks and circles and even across some of our Māori tech networks and communities, some have raised investment or they have other shareholders and external influences associated with their companies that could be influencing some of their decision-making. We can stand up and be the only decision-makers for our company. When we work with Iwi or when we're engaging with our different Māori communities, I think for us, it's been a lot easier to build relationships and navigate in that space because we don't have anyone else coming in who could be looking to take IP from us, or could really misuse some of the information that we're given to use within our platforms."

What do you think the Government should do to encourage Māori entrepreneurship in the digital space?

Amber says more Māori are needed on boards that make decisions on where funding is going.

"I'm not talking about just academics, there needs to be industry representation there as well. One of the struggles that we have all the time is getting Government organisations to understand the way that we operate as a business where we judge ourselves and our value on the impact that we're having in communities. We don't base it on our revenues and our profits that come in every year. Obviously, we want to make money and keep going, but for us, that's second to what we are doing for our communities and for our people. That's not just here, that's overseas as well."

What do you think the barriers are to companies operating in your way?

According to Amber, there is a lack of support in terms of funding from the Government. Furthermore, she says tech moves phenomenally fast. She says for her company they always benchmark everything that they're going to build based on what's happening internationally and what they're predicting for the next 20 years.

"Rather than going, 'oh yeah this is hot now,' we're looking at what international companies are planning for the future, and how we can futureproof our platforms as well as work out what future tech we want to incorporate now."

She says that's the only way they're going to be able to stay ahead of the game if they want to be change-makers and game-makers in the sector.

How can rangatahi become involved in this growing sector?

Amber grew up in South Auckland and says she has gone into schools and event organisers put up these 'big flashy buzz words and all these bright lights.' She says these kids just want to know what they can do now, 'how can I make some money to contribute to my family and how can I do this in a time that's suitable for me because I've got a million other things that I need to do, that I'm committed to doing' - whether that be sport, whānau, part-time job or whatever.'

She thinks there's value in having real people go into these schools and speak with the students, 'and be like, 'you know what, you can do this, and if you do this animation thing why don't you think about selling some of your characters.' Having a realistic option available, rather than pushing traditional educational frameworks.'

Amber says we need more Māori in tech, 'but stop selling the idea based on the current hype of the tech sector, big flashy lights, buzz words, cool tech robots and Star Wars games. Show our rangatahi how they can get involved now. The valuable, readily attainable skills they can actually go out and use now!'

Stop selling the idea based on the current hype of the tech sector, big flashy lights, buzz words, cool tech robots and Star Wars games.

Show our rangatahi how they can get involved now!

Aaron McDonald

Futureverse | www.futureverse.com

Being able to fire up a talent pool of people who are awesome creators and understand the way of working that we want to work, and do actually care about the things that they're doing; that would solve a lot of problems for us – selfishly as owners of these businesses, is creating those pipelines and funnels of people coming into this space.

We have tried, but I think we could do more.

aaron-mcdonald

What is your journey into digital entrepreneurship?

Aaron McDonald (Ngāi Tahu) is based in Auckland and grew up in the Horowhenua and on the East Coast near Tolaga Bay. Aaron has been working in the technology domain for over 20 years but has been an entrepreneur for the last decade when he left the corporate world to create his first start-up. His main focus has been helping other entrepreneurs find success. Aaron has co-founded five companies that are now worth over $100,000,000.

Aaron says that usually the difference between someone who is really successful, from a financial perspective, and someone who is not, comes down to the amount of risk they're prepared to take.

"The more risk you're prepared to take, often the bigger the reward is. I put everything on the line; all my savings, living off my wife's credit card – you have to put your nuts on the line to do that kind of stuff, and that's really, really scary. And for people who haven't had privilege in their lives, it's even scarier, because the number of things that can go wrong for you is higher and the opportunities you get are lower."

In 2016 he started a venture studio, 'with the goal to take a thesis we had around businesses working together to become stronger and grow faster as a kind of collective unit, more than what you would normally get as individual start-ups trying to compete on your own. So now I have about 60 ventures in that portfolio; so that's 60 different start-ups around the world, which I'm an investor or a board member or a co-founder of.'

What is your definition of Māori digital entrepreneurship?

Aaron says that quite a few of the companies he has founded, or been involved with or invested in are also founded by Māori; 'so we have like a bias in our portfolio to Māori founders and leaders. It's not just my own work, but there are a bunch of others in that group of companies that are either Māori led or Māori founded companies; so we're trying to lift the profile of those people in general.'

"I guess we've always tried to see that our people have something that's a little bit different and a little bit special in the way that they work together. And if you think about our business model of this kind of ecosystem effect; you can only pull that off if everyone believes in the shared goals and the shared vision, and in the collective good. I don't mean good in terms of charity – we have that side of things, I mean in terms of the idea that if we work together, we're going to be stronger."

He says the idea that there isn't a zero-sum game where one person wins at the expense of everybody else is a concept that they have brought into their business model and practices.

"The other thing that has been really under-appreciated is the idea of storytelling at the centre. Being able to take great storytellers and artistic vision and bring that into the digital space has been really interesting, because in Māoridom, it's a part of the DNA of the people. Their creative thinking is really different from what you get out of mainstream creative education."

How do Māori digital entrepreneurs integrate tikanga and Māori practices into their business?

While Aaron says he isn't an expert in this space, there is a fair amount of knowledge across the group of leaders within his organisations.

"We're always tapping into it, we're always thinking about those principles when we're deciding how to build relationships and structures and create value. The goals and visions that we're trying to achieve; they're always centred on those ideas. We're just not this island, we exist in a system. We're part of that system and we have to look after it as much as it looks after us. That's a really deeply centred value across our organisations. Being able to create value that is extended to the world around us is really important."

How do you engage rangatahi coming through into the digital technology space?

Aaron says there are several types of ways that they have been engaging rangatahi.

"We have graduate programmes where people can come in. We've been really deliberate in our recruiting process, going out of our way to find Māori people to participate in or go through those programmes. They don't normally stick their hands up, and if you're not deliberate about it, then you kind of just get the same old thing every time, the same people coming through. That's something that we're really keen on developing more of."

He says there is a huge lack of talent and resources within the industry and getting enough people to do the work is an issue.

"Being able to fire up a talent pool of people who are awesome creators and understand the way of working that we want to work, and do actually care about the things that they're doing; that would solve a lot of problems for us – selfishly as owners of these businesses, is creating those pipelines and funnels of people coming into this space. I think we could do more – we have tried, but I think we could do more."

What do you think are barriers to our Māori coming forward in the digital technology space?

In Aaron's personal experience, 'they just don't rate themselves.' He thinks it is a confidence thing and also could be the lack of role models to aspire to.

"The young kids don't have heroes that are doing those things. Who's the person that they're looking up to and saying, 'I want to be like that person when I grow up?' Like who are the heroes they look up to and say, 'well that guy started that business and he was a Māori and he's being successful now; I can be successful too.'"

He thinks that finding and highlighting those people would be helpful.

"It is a bit of a self-fulfilling prophecy, because if we don't get the next generation in, then they don't become successful, their kids don't have someone to look up to. So you've got to put that extra effort in to show that that success can happen and have those stars that they look up to and be like, 'oh shit, I want to be like that person; they're like me and I can be that.'"

Dr Karaitiana Taiuru

Indigenous Data Sovereignty and Technology | www.taiuru.maori.nz

> We need to raise our profile, our professional communities' profile of who is who, what we've done, who is doing what.
>
> Because there really are amazing stories out there. Get some role models, raise awareness.

ktaiuru

What is your understanding of Māori digital entrepreneurship?

Karaitiana (Ngāi Tahu, Ngāti Kahungunu, Ngāti Toa) says the baseline is the same but from a te ao Māori perspective, 'we have different aspirations for our marae, hapū, Iwi, whānau. I think from a Māori perspective it's not always about making money through digital technologies but perhaps trying to save our environment or maximise potential for future generations.'

How do you think Māori values and customs are integrated into daily practice of entrepreneurs?

For those who have their own businesses, Karaitiana says it is a core feature of their business, whereas for those who work for big tech companies, 'they kind of get lost a little bit, or if they've got a number of shareholders who are not Māori, it can sometimes be difficult. I am aware of a few companies who have their own tikanga values which their business runs by. I think that's unique as well to a lot of Māori businesses.'

How important do you think it is for support to be provided to these budding entrepreneurs?

Karaitiana believes it is crucial to have support, but thinks there is a lack of it with Māori start-ups, especially technology start-ups.

"We don't seem to have the mentors or resources around and you could argue it's a whole of New Zealand issue. There are angel investors and they usually go after the more mainstream start-ups as opposed to Māori start-ups."

He says he thinks some of the issues stem from Iwi, that most of our Iwi are not technically savvy and they don't understand. Only recently he saw the wānanga doing the robotics course.

"I was really happy to see that. Kōhanga reo, Kura Kaupapa doesn't really get into digital and I think that we have our very clever business leaders who don't understand the potential of the commercial investments that could be made in digital."

Why do you think the educational institutions don't focus on this area?

Karaitiana says that back in the 1990's there was a saying with kaumātua regarding the internet and computers: 'that's a Pākehā thing. That'll ruin our culture. I know that sentiment is still around.' He says the internet is a classic example that erodes culture.

"It has eroded a number of our day-to-day practices and I guess some people are just scared of it. Probably for some families, it's easier to get their children into commerce, law, business and things that we can actually see and apply at the marae or at the hapū level."

What do you feel are the major issues that stop or hinder Māori getting into the technology industry?

Apart from education, Karaitiana suggests isolation as a factor, saying it's hard to network with other Māori in the digital world. He says while it's becoming easier now, traditionally it wasn't. Another issue is family pressure, as he knows families who think that trades are the best option. He believes that in regards to digital, there are a whole lot of unknowns and it can be expensive.

"You need the money to get started in a number of ways. I don't know what it's like so much now but when I was at high school, Māori were treated differently with maths and sciences, physics. The teachers just were not that present. People could do the maths and the physics and the sciences and they would get everything but they chose not to engage because of the teachers. I think there's a lot of background to these different issues."

How do you think we can overcome some of the difficulties?

Karaitiana believes role models such as successful Māori business people who own digital companies would be a good start. He says there are role models, 'but we just don't see these people in Māori media. I don't hear people talking about them. If it comes to sports everyone knows them all. Everyone will claim them as their whānau but our digital business leaders, no.'

He also thinks that individual Iwi leaders need to understand more about the benefits of investing in digital. He says he knows post-Tiriti of Iwi who have spent hundreds of thousands of dollars on digital infrastructure and then employed external experts when they could have easily invested that money into Iwi-owned businesses or upskilling the right people.

"There is that issue. As far as I know there are no grants or scholarships specifically for anything to do with the technical side or how to start up. Plenty of money for business but not digital."

What do you think Iwi could do that could resolve or address these issues?

Investing in and recognising the existing skill sets within their people are two ways in which Karaitiana thinks could help address the issues regarding Māori involvement in the digital technology space.

"If there's a problem with the ocean or a natural resource we see an Iwi leader on the news or the media or on the marae. But when we see a big digital issue happening there's silence. Probably one of the biggest issues that are happening right now is with digital identity. I have not seen one Iwi actually stand up and say, 'hang on. There are some issues here.'"

What do you think about having Māori in tech centres?

Karaitiana says he doesn't know who could lead it, but he thinks the profile needs to be raised.

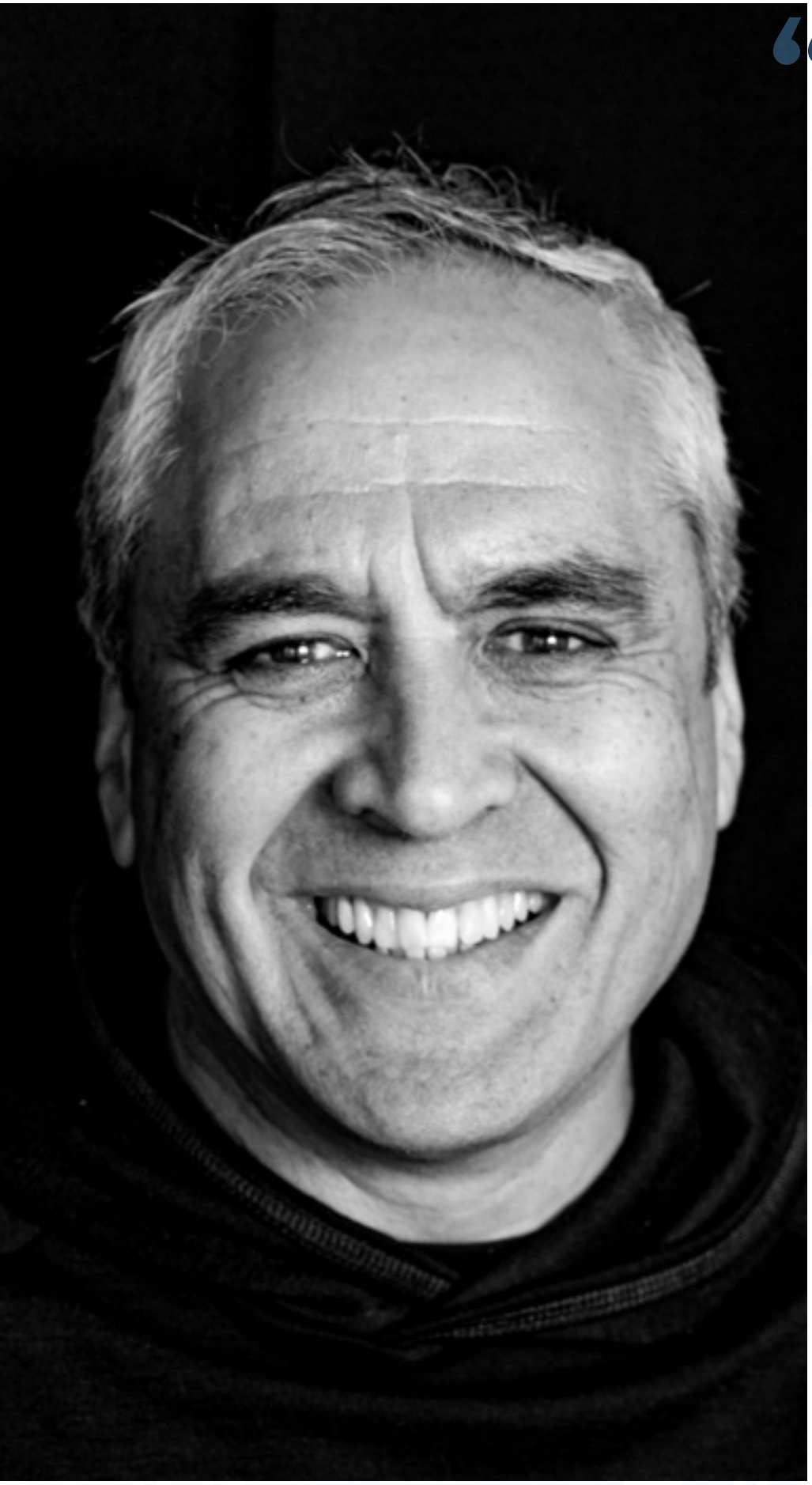
"We need to raise our profile, our professional communities' profile of who is who, what we've done, who is doing what. Because there really are amazing stories out there. Get some role models, raise awareness."

He says a few decades ago it wasn't cool to 'kōrero Māori,' but now it is.

"There's all these different catchphrases and logos. Whether there's a similar marketing strategy to make IT cool it could possibly work. Probably also leveraging the online gaming world, cryptocurrencies and social networking. Things that all our younger generations are using and are familiar with. Raising our profiles there."

Barry Soutar

Toro Studios | www.torostudios.nz



If you have a look at a tribal citizen, what do they want?

There's nothing from a corporate entity like their Settlement Rūnanga that they really want, other than unencumbered financial support if available.

They want to know who they are and they want to connect back to that part of their identity that acknowledges them and is important to them

That's their marae, their whānau and their hapū.

barry-soutar

Barry Soutar
TORO STUDIOS

What is your journey into Māori digital entrepreneurship?

Barry (Ngāti Porou, Ngāti Awa, Ngāi-Tai-ki-Tāmaki, Ngāti Kahungunu-ki-te-Wairoa) is the Head of Technology and Partnership for Toro Technology. He says Toro 'has a social purpose, lifting young Māori workforce capability and regional economic development.'

Barry gained an MBA (Hons) from Massey University the first year that the NZ MBA was accredited to full international recognition. From there he worked for a couple of corporations in Wellington, then Data General, an American hardware computing company. Two and a half years were spent in London employed in computing where he worked for big brands including Reuters, Dun & Bradstreet and BP and he was then headhunted by an IBM company that was partnered with New Zealand Post, running a sales team 'for something that looked like the internet, pre-internet.' From there he joined forces with some business partners, built and ran a company for about 15 years, taking it from a few hundred thousand dollars in revenue to six and a half million in under five years. He was the director and owner who led the sales side of the company.

Barry and his business partners ran that for 15 years until he needed a new challenge - deciding to semi-retire in 2007, he did a bit of life-styling and management consulting with his wife. He then became the first Māori manager hired into the New Zealand Trade and Enterprise (NZTE) Māori team. While at NZTE, he was offered a job in every company he helped.

"I had already been there and done the stuff they were trying to do, they could see from a business point of view it's useful to have, and they could also engage their own personal journey in Māori culture. They found out that I'm not there to train people on culture, you go somewhere else and get that. But if you want to understand how you practise your values in your day-to-day business, just come and hang with me and observe it and then you'll anchor it faster. But don't ask me to do a PhD on it, I'm a practitioner, not an academic lecturer."

He says a reason he went into technology so long ago was because he didn't know anybody in tech.

"When I went into it, there was no one; everybody at university was going into law and accounting, and we couldn't name a single Māori in tech. And that's how I operate, I look for where there is a gap, find the opportunity for Māori development and go there."

What do you think Māori digital entrepreneurship actually is, and is it different from digital entrepreneurship as other people understand it?

Barry says the first problem is defining what digital means.

"It really depends on the loaded definition that you're starting with. I tend to use the word technology because digital is somebody's definition down in MBIE that the public doesn't know. The world of business is now so seamless across technologies, that your better term to use is technology."

He says he doesn't get distracted by the word 'digital,' rather he always focuses on the customer and what the customer needs, which often will be a technology solution to solve their problem.

"Entrepreneurship is two-fold; it's about having the clarity of understanding for their problems and the solution to solve it. Combined with the ability to be able to coalesce the right partners to that solution, and deliver it, for me is entrepreneurship. What that means then, is you've got to have some pretty deep and tested skills and gravitas to pull the right international partners together to come and play."

He says Māori entrepreneurs used to come to him for two specific things; 'help with their business and help on their business.'

"So the help with the business was to support tactically and strategically in terms of creating their product and targeting their market, market validation and channel-to-market. The other side of the business was on themselves as leaders. Nearly all of these cats were on the journey of discovery about themselves as Māori. What they saw in me was a guy who makes no apologies for being deeply Māori in my day-to-day practice, whatever I'm doing. So it doesn't matter whether I'm talking to some deals in New York or whether I'm talking to my bro up in Whāngarā, I just talk the same way and express and exude the same culture."

Barry Soutar
TORO STUDIOS

What is it that Māoridom needs to be aware of or thinking about, so that we can create the ideal growing conditions for Māori in technology?

According to Barry, 'where the mana lies in Māoridom, is in the marae and the hapū.'

"If you have a look at a tribal citizen, what do they want? There's nothing from a corporate entity like their Settlement Rūnanga that they really want, other than unencumbered financial support if available. They want to know who they are and they want to connect back to that part of their identity that acknowledges them and is important to them. That's their marae, their whānau and their hapū."

Barry is involved in building an Indigenous Engagement Platform, using all of their networks around customer engagement and content.

"If you've got nothing to sell them, customers don't come to you. The sticky content that's needed here is the story of who their marae and hapū are. We have proven in a pilot how that works; sticky content driving engagement through the marae, that the Rūnanga can then support by paying for the development, and we create the content and that drives the relationship and gets engagement started."

To do this, Barry says what he has recognised is bypassing everybody 'who slows you down.'

"So I don't go and talk to the Rūnanga necessarily and I don't go talk to the Economic Development Agencies; what I've done is just built the thing and then I've rung up my entrepreneurial mates down the road, a couple of Māori and say 'bro, do you want in on this?' They went, 'hell yeah.' So we just do it by building success through leadership and listening to those who need such solutions, not those who want to control our people."

Lee Timutimu

Te Matarau | www.tematarau.tech

Ko Pūtauaki te maunga,

Ko Ohinemataroa
te awa,

Ko Te Paroa te marae,

Ko Ngāi Taiwhakaea
te hapū,

Ko Ngāti Awa te Iwi,

Ko Mataatua te waka.

lee-timutimu
company/te-matarau

What is your background and journey in Māori tech?

Lee has been working in tech for over 20 years, and seven plus years of that as a business owner. He also founded Te Matarau, the Māori Tech Association, an initiative he viewed as a necessity.

What are your conceptions of Māori in technology or Māori entrepreneurship or Māori digital entrepreneurship?

In Lee's opinion, Māori in tech is a state of being.

"It's a cultural belief, it's a cultural value, it's our perspective of technology in general, it's our Māori world view, it's us being awesome in our Māoriness, albeit Māori being our superpower."

He says what makes Māori different to every other technologist in New Zealand is culture.

"That's the thing that will solve a lot of global problems, the indigenous worldview and how we apply it to an enabler like technology is the thing that's going to help us solve a lot of problems."

What do you think causes low engagement of Māori in tech?

According to Lee one barrier is lack of education.

"Our people don't know what it is, what it looks like and what the potential could be if our children or our youth were to pursue a pathway into technology."

He says there's nothing tangible that whānau can connect into that will make them realise the potential opportunities for their children and grandchildren in the tech space, and thinks that mainstream education is streaming children into certain pathways and subject matter which don't include STEM subjects.

"That's a big problem because already we're setting our kids off on a pathway that doesn't involve them looking into tech and innovation and the stem subjects to support them on that journey."

He also says families need to be inspired as it's the families that have to support these young people on that journey.

What is your opinion of the Industry Transformation Plan?

For Lee, one of the reasons he started Te Matarau was because as a Māori tech entrepreneur, he didn't feel that NZ Tech represented him as a Māori tech entrepreneur. As a result, he tried to create something he thought would better reflect his cultural values, beliefs and philosophies.

Lee thinks it is important for himself and others that are members of the Māori tech community to be at the table to ensure and hold them (MBIE) accountable and keep them honest.

"If we don't then what could happen - and it's happened before - is they'll design something that they think will be good for us, but it will turn out that it won't be good for us."

As long as they're engaging with more Māori tech practitioners that are actually working in the system and working in the sector, Lee says he thinks it's a good thing.

Do you think it is a unique business advantage how Māori shape technology to meet their needs, and that could lead the world in shaping how other indigenous communities can shape technology to meet their particular needs?

According to Lee, as indigenous people, Māori have led the way in many ways, citing language as an example.

"A lot of other indigenous peoples around the world have looked to us as a reference point, and you've got the Hawaiians that have pretty much adopted the language nest concept, so kōhanga reo, to help to revive their language and I think the same can be applied to technology, 100 percent, absolutely."

He says for all the challenges that Māori face living within New Zealand today, particularly with working with Government, that 'we're really quite fortunate actually,' as the Government provides funding to help Māori create initiatives or solutions that will serve the Māori community, 'and if it's good for Māori communities, it will certainly be good for indigenous communities.'

He says if Māori in tech are working for the betterment of their communities, then that same business model can be applied to other indigenous people.

"That's where I'm at ... that's my commitment to other indigenous people around the globe, and it's really just supporting our people that we know pretty much have been through the same colonisation process as we have, understanding the challenges that they have currently and their past, and really just supporting them to get to where they want to a lot faster where technology and innovation is the enabler."

If you had the opportunity to suggest one road map going forward, what would that be?

In Lee's opinion, it is important for NZ Tech and the Government to understand what is currently going on within the Māori tech ecosystem because then they are less likely to go off and replicate what is already being done, 'and we don't want that to happen because we're already scrapping for the breadcrumbs in terms of pūtea.'

"I think NZ Tech needs to take more responsibility for what they create and what they fund specifically for our Māori and Pacific communities. I don't think they should be creating things that are already being done in our communities because it just makes no sense and, to be honest, we could do with that pūtea, we could do with those funding streams to continue the awesome work that we're already doing in that space."

Do you think funding is provided on a short-term vision as opposed to long-term and is there enough follow-up support?

Lee feels with a short-term vision it's much easier for the Government 'to just do stuff without engaging, without the whole process of engaging the community, visibility and that kind of jazz.' He says they'll just do something to get it pushed through, check the box, get the people in, all the metrics. He thinks this happens a lot, and that potentially could be due to the short-term vision of the funding streams but also the objectives they may need to fulfil within a financial year. According to Lee, this could be easily solved with a better-coordinated effort around engaging with the community.

"We've got a list, a database of initiatives and service providers - all they need to do is send an email, like literally and say, hey we've got this funding that's come available from DIA, this is the objective, they're trying to connect with Māori and Pacific communities, what can you do? And we'll be like 'mate, we can do whatever you want us to do,' 'cause look, we're already doing that. Maybe they can just do a little bit better in that space around engaging."

Lee concludes with a reflection that another thing that makes Māori tech different is 'the way we look at the next generation and the next, next generation.'

"It's not about now, it's about what's coming, it's about what can we create now that will create that intergenerational impact."

Dan Walker

Microsoft NZ | www.microsoft.com

He mokopuna tēnei nō ngā iwi kei raro i te korowai o te waka Aotea, arā ko te maunga tītohea.

Ko Tītokowaru te tangata, ko Manuhiakai te hapū, ko Tangahoe, Ngāti Ruanui, Ngā Ruahinerangi ōku iwi matua.

I te taha o tōku koro nō Maniapoto, Tainui, Te Atiawa. I te taha o tōku kui nō Ngāti Kahungunu ki Wairoa me Tūhourangi.

Ko tōku pāpā nō ngā kaipuke o Wikitōria.

Ko Kōtirana me Aerana tōnā iwi.

dan-tewhenua-walker

What do you think Māori technology business or Māori digital entrepreneurship is?

Dan says Māori technology businesses and digital entrepreneurship share many similarities with non-Māori counterparts in terms of core business concepts like accounting, finance, and strategy. Māori entrepreneurship however distinguishes itself by embracing a unique worldview, and Māori entrepreneurs tend to have a more holistic and integrated approach to addressing global challenges such as climate change, poverty, and inequality.

"For Māori entrepreneurs, money is not the central goal but rather an outcome of upholding values like tikanga and manaakitanga. Their primary focus is on contributing to the broader community and environment, with financial success being a byproduct of their actions.

Kaupapa Māori businesses take this approach a step further; by centering their existence around serving their communities and pursuing societal goals. These enterprises prioritise the well-being of the community and the environment above all else, making them a distinct and valuable part of the entrepreneurial landscape."

Do you think the interweaving of Māori values and tikanga gives a business an advantage?

Incorporating Māori values and tikanga into a business can provide a competitive advantage, as well as contribute positively to the world. Dan's research on using Māori values as a framework for digital leadership demonstrates that integrating a Māori-centric approach can redefine how businesses impact the world.

"Rather than focusing on growth at all costs, a business environment guided by Māori values emphasises being a part of an ecosystem and interacting harmoniously within a network approach. Tikanga Māori offers an effective way to achieve this balance, as it encourages a more holistic and sustainable approach to business operations.

The integration of Māori values and tikanga is not only necessary for combating the negative effects of consumption and commercialisation, but also for shaping how businesses contribute to society. By adopting these principles, businesses can prioritise giving back to the world and fostering a more ethical and responsible corporate culture."

Do you think that the approach that Māori are taking could take a leading part in indigenous technology entrepreneurship?

The approach that Māori are taking has the potential to play a significant role in indigenous technology entrepreneurship worldwide. Dan believes that embracing indigenous wisdom and worldviews can help address various global issues, such as social cohesion, nationalism, and the shift towards negative tribalism.

Indigenous perspectives can guide businesses to become genuine contributors to their communities, promote diversity in the workforce, and create more ethical and responsible organisations. Despite the low representation of Māori in the tech sector, Dan sees the potential for an indigenous worldview to improve not only technology but various aspects of society if applied correctly.

As Dan's mentor Pania from NZ Māori Tourism says, the goal is not to commercialise culture but to 'culturise commerce.' By infusing an indigenous lens across business practices, we can redefine our approach to commerce and foster more sustainable, responsible, and ethical businesses that prioritise the well-being of people and the environment.

What do you think the barriers are to Māori engaging in STEM endeavours?

Several barriers hinder Māori engagement in STEM endeavours in Dan's view. A lack of Māori representation in STEM fields may discourage aspiring Māori professionals.

"If we don't see it, we can't be it, so, therefore, a lack of representation will always mean a lack of trust and whānau just won't push their kids that way."

He also says that a majority of our Māori students have to navigate a predominantly colonised educational system that in most cases does not fully acknowledge or support their cultural identity.

There is also bias in the hiring process as interviewers and hiring managers may lack cultural competency, leading to misunderstandings or misconceptions about Māori candidates' behaviours, such as avoiding eye contact, and not talking themselves up. There may be limited career progression, as Māori professionals entering the tech industry may find themselves stuck in entry-level positions, facing misaligned values within the corporate environment.

Other barriers include balancing cultural identity and a lack of mentorship and networks. Māori professionals have to excel at their jobs while preserving their cultural identity, which can be challenging in a predominantly non-Māori work environment. Dan says Māori individuals often miss out on valuable mentorship and networking opportunities that can help them rise through the ranks, as they might not fit the conventional mould of successful professionals.

To overcome these barriers, Dan believes it is essential to increase Māori representation in STEM, encourage cultural competency in the hiring process, and promote mentorship and networking opportunities for Māori professionals. By fostering an inclusive and culturally sensitive environment, we can ensure that Māori individuals have equal opportunities to succeed in STEM fields.

Do you know of any educational programme, any educational offering, anything that addresses the issues you've just brought forward?

Dan mentions the Iwi initiative called 2NuiCode, an educational programme established by his own Iwi, Ngāti Ruanui, to address the barriers faced by Māori in STEM fields. Launched in 2013, 2NuiCode was integrated into the school community in South Taranaki with a focus on coding, software development, programming, and robotics.

The eight-month program was community-driven, with tikanga Māori at its core. The curriculum aimed to foster cultural safety, trust, and a sense of belonging for Māori students. Students would present their work to their community, receiving support and encouragement from their kaumātua and kuia.

2NuiCode also incorporated a tuakana-teina mentorship model, where students who completed the program would return to mentor new participants. Despite challenges posed by the Covid-19 pandemic, the program continued to offer to skill and expanded its reach to include kaumātua and kuia. Dan got to welcome last year's cohort up to Microsoft at the end of the last year and he was so proud of how they turned up hungry to learn.

However, Dan acknowledges that the 2NuiCode's success is difficult to duplicate, as it is highly community-centric and requires strong leadership. He suggests that establishing similar programs in various communities around the country and empowering Māori to lead these initiatives could foster significant positive outcomes. By sharing power with Māori communities and allowing them to run their own programs, an environment can be created that supports Māori students' success in STEM fields.

Hori Mataki

Ariki Creative | www.arikicreative.com

He uri au nō Te Whānau-ā-Apanui, Ngāti Porou, Ngāi Tahu, Te Ātihaunui-a-Pāpārangi me Ngāti Kauwhata.

arikicreative

What is your journey into Māori digital entrepreneurship?

Hori was born and raised in Aranui on the east side of Christchurch and attended Aranui High School under the tutelage of Tihi Puanaki. He achieved a Diploma in Māori Studies at Ara (formerly Christchurch Polytechnic) and started his journey into the career he now has as the owner of Ariki Creative.

In 2006 he completed a Bachelor of Design majoring in Animation and started the business the following year with his wife.

"Now there are 16 of us here that work in Ōtautahi out of the office in Christchurch and we just participate in this thing we call Māori technology with a focus on digital creativity. That's sort of our thing. As well as supporting others that might be interested in this space as a potential career path."

What do you think Māori technology is?

In Hori's view, Māori technology could probably split over, 'like most Māori things we think of the past, the present and the future all collectively connected. I think of technology for Māori in the past, I think of the pre-colonisation Māori technology might have been, those things that we used traditionally, the traditional tools. Our interpretation of our stories and how the world came to be. The stories of the separation of Rangi and Papa, all their children and all the things that came from that was pretty much our paradigm of whakapapa.'

For Hori, 'Māori technology is really our interpretation, our adaptation to the other technologies of the world and how we use them to continue our stories around whakapapa, our pūrākau of atua, and things like that.'

For the future Māori technologies, Hori says, 'well, the world is our oyster. If we boil it all down, I guess our supreme technology is our environment and our interpretation of that within our own framework of whakapapa.'

Do you think integrating Māori values and approaches gives a unique advantage in the international marketplace?

"The global sense now is like globalisation. We're all becoming this one thing, this one being all connected through information. I guess through the internet and through television. For us, I think we still have a real connection to the environment. We still have a real connection to the natural environment and that's something that we've always maintained. We've always championed throughout the generations."

Hori says Māori have always maintained the importance of the environment as if it was kin via whakapapa.

"That's our superpower. That's our strength. That's our point of difference, knowing our place and our role within our environment and not to stretch beyond thinking we're greater than. We can't really exist without it. I feel like globally now there is a sense of urgency with the way things are happening now in the world, shortening of resources and overpopulation."

Do you think there is sufficient support for Māori in this tech space?

Hori feels that there can be more support, but for young people to really feel they belong in these places is most important.

"You could probably go to a lot of young people and ask about what sports teams they like, who are their favourite sports players and can you go and participate in sports and they all probably do. It's just abundant around them. Trying to get something to that level of normality in our community would be awesome. To know that they can feel comfortable in these rooms and take ownership of those things and feel proud."

Do you think an apprenticeship type of approach would help encourage more Māori into this sector?

In regards to apprenticeships, Hori thinks that would be a great idea and says he would have done an apprenticeship if he could have. He went through his training as the only Māori in some of the rooms he was in.

"Others that have come up probably can attest to that, knowing that the environments were pretty mainstream. Not having that pastoral care and support around in some of these spaces."

Do you think one of the things that we should pursue to encourage engagement is creating the environment that people feel comfortable in?

Hori strongly believes that engagement can be improved when people feel comfortable. He says he feels that for Māori employees, 'if we don't feel connected to a place we probably don't want to be there. If we don't have an understanding from our employers about what it is to be Māori, like saying our name correctly. It could be something as simple as just that. There's a lot of stuff these young people are going through getting into any industry.'

Māori culture has always been seen as lower in some of these industries or even society itself.

"It's just breaking through a bunch of these layers is a task that's not easy for any industry or any employer or employee."

He says he would really like to arm young people with equipment and familiarity with the equipment and doesn't know where he would be if he didn't have the computer in 1998 that his dad brought home.

"Every kid should at least have the technology. At the very minimum, have high-speed internet and a device, and along with that a way to understand a career could be built out of those things. No matter where you are or what you're doing, if you had just those simple things you could go a lot further than taking those things away."

Hori says that what got him into this industry was his passion and enjoyment.

"I just loved the space just to enjoy it really. When you're a little kid and the thing that you did the most as a kid. Mine was playing video games and I would always be told, 'get off that game' or even not to draw and stuff. I remember as a kid I guess that passion that I could have spent hours and hours on my computer playing games and all my games with all my friends. It's how we passed the time."

He says he always has to remind himself that he wanted to get into this industry because he enjoyed it.

"It wasn't about money. It wasn't about a career. It wasn't about owning something. I just wanted to do something and get paid for it that I enjoy. I guess if you're doing what you enjoy whether it's in digital or not in digital then to me that's a sign of success and a sign of a good career."

He says there is money in all sorts of industries, but not to just get Māori focussed on it because of the money and not to just do it because it could be financially better than another job they might love.

"If you want to get kids into it I guess build on their passions and their love for it as opposed to the dollars and all the other stuff because it's a bit of a distraction... Just making sure that our people are invited into it correctly and not build up these big hopes and dreams of a better future financially because they're in this digital stuff. That's the way some people are selling it, that it's this golden goose. They might get there and find out they hate it and it's not as golden as they had hoped it to be."

Belinda Allen

Healthpoint | www.healthpointltd.health

Ka mimiti te puna
i Taumārere

Ka toto te puna
i Hokianga

Ka toto te puna
i Taumārere

Ka mimiti te puna
i Hokianga

belindaallennz

Belinda Allen
HEALTHPOINT

What is your journey into Māori digital technology?

Belinda (Ngāti Hine, Te Whiu, Ngāpuhi) has always worked for cause-based organisations and has spent many years in the digital health sector. She works for Healthpoint Ltd, owner of Healthpoint, Aotearoa's health and social services directory, and Medinz, the service used by public health authorities to communicate critical clinically relevant information for GPs and other Primary and Community healthcare providers during states of emergency, natural disasters, power outages, pandemics, or significant cyber security attacks.

Belinda is on the Board of NZTech, the peak body for Aotearoa's tech industry that is driven to help create a more equitable, sustainable, and prosperous country, by creating jobs, export growth and impact through tech for good. She is also on another board called Precision Driven Health, a public/private partnership that's focused on pairing up clinicians, private companies and data scientists, to research and develop digital tools that give people the knowledge to better manage their health or the health of their patients.

How would you define Māori technology?

Belinda says that in the context of Māori technology and digital platforms, it incorporates any digital solution that is meeting the needs of a Māori individual/whānau/community and is designed with a Māori mindset and heart. Tech companies that are Māori owned and are specifically solving problems for Māori (by Māori for Māori) and include enterprises that are owned by Māori and solving problems for all people.

"I also think about the positions we can play as individuals working in non-Māori tech companies. For those of us who are working or have worked in multinational technology companies, we can bring a te ao Māori and mātauranga Māori way of being to the office, and leverage our positions to influence product design, company culture, and create job and commercial partnership opportunities to manaaki other Māori."

Do you think an apprenticeship model could encourage more rangatahi into the Māori tech field?

Belinda is supportive of an apprenticeship model, comparing it to the benefits of the Māori Trade Training Scheme that created opportunities for many whānau that were moving to the cities in the 1960s.

"The Trade Training Scheme will still be in the memories of many whānau. And many rangatahi will be the first in their whānau to enter the tech sector. By offering paid training and job security, we help alleviate any collective feelings of uncertainty around what a career in tech might lead to. I'm a great advocate for digital apprenticeships and think we should make it easy for whānau to say yes."

What challenges are there in the Māori tech health sector?

Belinda says developing technology for good, that is sustainable and secure, needs a big investment. One of the challenges of working in the Aotearoa health sector is that for most health technology companies to scale and have a big impact, they need to be export focused, to attract that investment.

"And therein lies the rub. You have companies who are primarily building technology for an overseas customer base and not Māori. Which is such a shame, because in the health sector, understanding Māori needs and designing from a Māori perspective, often leads to models of care and digital solutions that are beautiful and beneficial for Māori and non-Māori."

How can we promote this concept of Māori technology?

For Aotearoa's health sector, Belinda places great hope that Hauora Aotearoa (Te Aka Whai Ora, Te Whatu Ora, Manatū Hauora) will promote the commissioning of technology that has been designed by and with Māori at the centre, incorporating a Māori world view, and that is squarely focused on improving Māori health outcomes.

"If the health sector is to walk the talk of a Pae Ora future for Māori that is driven by transformation, then prioritised investment in Māori technology is essential."

He manawa tahi, he manawa ora, he manawa toa.
A united heart, a vibrant heart, a determined heart.

Te Tau Hou Nohotima

ANZ | https://www.anz.com.au

How we keep Māori in this environment, it's keeping that environment safe for them.

To be honest, if you are a tūtū and if you want to be in technology there's no other way; you just go there, because that's where your mind wants to be.

What was your journey into technology?

Te Tau Hou has been working for ANZ for 15 years and is currently an Enterprise Solutions Specialist for the bank. He was introduced to his first computer, an Omega 24, by an uncle who was a teacher at Ruātoki School. He says he was at his uncle's house nearly every day and started learning coding using basics from a very young, aged eight to ten.

When his uncle moved to Maraenui, Te Tau Hou had no other way to nurture his growing passion for technology as Ruātoki didn't have any computers. For two years he had no outlet to help him develop, however, he would go on holidays nearly every weekend to his uncle's, telling his parents he was going fishing and to see the whānau, though he would mainly play the computer and develop games.

"That's how the journey started with technology. What made it easier was the language; as we spoke about being Māori and being a part of the Māori environment, you had to be very good at negotiating your time with your brothers and sisters, and knowing that you can configure the video player, the TV to whatever you want because you understood how components worked. So, I became that technical person that could help Dad and Mum configure the video player, the TV and connect appliances that they didn't have."

He says his school was merging to become a Kura Kaupapa Māori, and they didn't have the computer facilities he wanted, so he went to Trident High School, where they had some IBM computers that he could code using Cobal. English wasn't his first language, and trying to explain to a Pākehā teacher that he was interested in computers was difficult.

"All I was wanting to do was sit down in front of that computer, load up some software and learn."

He asked a Māori teacher for help, and had to show that he was competent in doing basics in Cobal and able to build functions that could do mathematical calculations.

"That was my journey from going from a Māori language school into a Pākehā system, and realising that I can't just go in there without permission, and there was a process that I needed to go through to use this equipment. I was going to my uncle's place and he was nurturing that; there was no roadblock. He says, 'haere tonu, haere tonu.' So, that was my first roadblock, was how to interact with a Pākehā teacher and get him to trust me."

Would you have conversations around the use of the computer and what you were learning and discovering in te reo?

Te Tau Hou says half the time when he was trying to read the language, some parts of the coding area he didn't understand so he needed someone to translate that for him. For loop systems or for dimensions, as the word dimension wasn't in his vocabulary, he would have to ask his uncle, who would try and explain it in te ao Māori.

"He didn't push me away. He just encouraged me, he goes, 'anei.' He also helped me to translate the English words that I didn't know."

Te Tau Hou's main focus as a rangatahi was to build games.

"That was my journey. That was the driver; to build games in the environment where I was learning."

He built a Donkey Kong from moving objects, saying it looked really basic but thought Donkey Kong was a cool game to build. He says what helped his growing talent was the 'environment side.' His parents were encouraging.

"I still had to do my mahi. I still had to get the wood to light the fire. I still had to do my marae work. I still had to do all my mahi at home. I still had to go to karakia. I had to still do all the normal tikanga Māori, mahi Māori, mahi whānau, mahi māra. I still had to do that, but I still made the time to have technology and do something with technology."

How did you come to the decision that programming or computer science was going to be your huarahi?

After Te Tau Hou finished intermediate school, his brother went to Australia. His wife worked in a software company that built PC games for Microsoft, and when Te Tau Hou went on holidays there once a year he would work for her company, testing their game software and identifying bugs around their development. He didn't see it as work or mahi.

"I went over and worked for three weeks. I didn't work for three weeks, I just played games for 24 hours. That's what people do, no? I haven't played for 24 hours, but I had to document the faults or things that I think could be improved."

He would write down some of it in Māori and some of it in English and then get his brother to help translate it and give it to his wife. This nurtured him to realise there was income to be made, and when he went back to school after the holidays he knew that the environment with computers is where he wanted to go.

"Creating games was always in the forefront, but the design of a game and to actually code it, develop it and test it was the ultimate." He knew there was a future in computers in the outside world.

Where did you study your computer science degree? Did you go straight from school to uni, or did you take some time and then go?

After High School Te Tau Hou took a one-year sabbatical. He moved in with his uncle, who was a Māori teacher at Waiariki College by then. His uncle wanted him to do part-time papers in business studies, to understand the business process of computing. All Te Tau Hou wanted to do was code and test, however he believes his uncle knew that the goal, to be a good developer and good engineer, was to understand the whole spectrum from business computing all the way to engineering, to development.

His uncle didn't want him to go to Waikato because he had all his family there, or to go to Auckland, so Te Tau Hou was sent to Otago, where he gained an Honours Degree in Computer Science. After four years of study, he took another couple of years sabbatical and went and followed his now wife to Taiwan.

He worked as a software engineer for an insurance company then the company sent him to Dubai for three months for a project, where he worked in software development. Before heading back to New Zealand he worked in Singapore as a software engineer. For two and a half years he says he was 'bouncing around, just following the wife really.' At the end of it, it was his mode.

"Technology was a way for me to get around the world. Software development was how I did it."

Prior to working at ANZ, Te Tau Hou was employed at IBM as a software developer and software engineer, helping support IBM products. After that, he developed software for insurance companies, and then created insurance software for organisations such as Tower and Westpac for three years. He then decided he wanted to move and earn more money so created his own business around website development.

At ANZ, Te Tau Hou began as an entrant software developer, 'but they soon found out that I was a lot more than that. I was moved to senior quite quickly.' He thinks within a year he became a senior, and then the idea of having impact on the direction of ANZ to develop infrastructure and applications for the bank intrigued him.

He picked up a role to look at voice systems and networking, helping deploy the digital and VOIP banking system, and introduced the whole voice over digital. He says there were two of them who were the engineers around that and it took four years – 'two years constantly doing the mahi.'

"I was so happy that it went through. That was pretty much the segue which led me to be the Enterprise Solutions specialist or architect that I am now, it's the mahi that I did with voice systems, and bringing digital into the bank for IVRs. Where does it bring me now? It's brought me a whole lot of mahi. I still love designing and developing infrastructure in software, and being a part of a team that can guide the bank for that goal. That's the pinnacle for me: is to see my design and for me to develop it and implement it, is the most satisfying thing for me."

What do you think are the ideal conditions that would encourage young people to get into technology?

For rangatahi now, Te Tau Hou says it's different from when he grew up.

"Technology is here it is around us, on our phones, our laptops, everywhere. I believe that there's going to be a difference in how we nurture them now, because technology is here. Regardless, if we don't help them, they're going to have some type of interaction with technology."

He believes it is up to the rangatahi themselves.

"We are naturally inquisitive and curious."

His children have laptops but not cellphones - he tells them if they want to beat a game, such as Minecraft and Roblox, they need to understand the programming behind it.

"I used that as my advantage to show them that this is how you develop and this is how you code."

He says technology is different for rangatahi.

"It's there. It's in our universities, our kura our kura Kaupapa. My concern is that we might lose our rangatahi and we may lose that essence of our Māoritanga in technology. That's my fear. Do we have enough mitigation around their upbringing? Technology can be your world and can lose your whole being in the game or the world that you have developed."

What do you think the tech sector needs to do, to not only attract Māori talent but retain Māori talent?

Te Tau Hou is trying to build an environment for Māori in ANZ to be comfortable. He says it was easy for him to go into technology because that's what he wanted.

"How we keep Māori in this environment, it's keeping that environment safe for them. To be honest, if you are a tūtū and if you want to be in technology there's no other way; you just go there, because that's where your mind wants to be."

His concern, when going into technology and where technology is leading, is that there is going to be an era where tikanga is going to be learnt on technology.

"The technology is going to be around. It's going to evolve. It's going to leave us behind. We've got to safeguard our Māoritanga, our Tūhoetanga, our whānautanga, our hapūtanga. That's my biggest fear. that we lose our identity as individuals and our connectivity to each other, and we just live in a world where we have more meaning around technology than ourselves."

Raynor Cocker

Gametan | www.haututu.com

Ko Te Pane O Mataoho tōku maunga

Ko Waikato tōku awa

Nō Mangere ahau

Ko Cocker tōku whānau

Ko Raynor tōku ingoa

raynor-cocker

What attracted you to become involved in the technology space and what is your definition of Māori digital entrepreneurship?

Raynor was exposed to technology at a young age when his uncle offered his Dad a PC for $200.

"Back then they were pretty rare. My dad said yes and bought this PC and that's how it began. I was poor. Grew up poor in Mangere so I was lucky to have that opportunity to be exposed to technology."

His father forked out for a graphics card to help run the games he was playing, and his uncle showed him how to install it.

From there Raynor kept going, 'just being exposed to computers and seeing the world of computers and how interesting it was at the time for me.' He says probably only one kid from school had a PC back then, so they both started printing out pictures for the other kids and sold them. He also downloaded music and games and copied them to CDs for a profit. He defines Māori digital entrepreneurship as giving back to the people.

"Most of the business is about giving back and helping whānau and things like that. It's like service."

What formal educational training have you undertaken?

Raynor studied at MIT - Manukau Institute of Technology. He recommends Māori or Pacific Islanders go into tech accelerator programs where they only focus on that one thing they want to study rather than university.

"You could do a year's worth of study or less and you're industry ready. Whereas if you go to university you could study something for three or four years and then by the time you come out all your knowledge is obsolete and then you've got to retrain anyway. It depends on what you study".

What do you think of an apprenticeship concept?

Raynor says a lot of his whānau and friends weren't really exposed to tech so there was no communication around technology.

"It's only what they heard from other people and sometimes it's not good. They're like, 'technology's bad' or whatever it may be. You don't really talk about potential career pathways in the future with people that aren't exposed to tech."

He supports an apprenticeship-type scheme as he thinks being in an environment where you're able to communicate with other like-minded individuals in technology would be helpful.

What are the benefits that you see from innovation hubs?

Raynor says he never experienced that when he was studying. Currently, he is running one.

"I think it's awesome because a lot of kids love video games so we draw them in with video games and then we show them what's behind the video games, the back end of it. And, we show them the different opportunities. We love to show families so we would invite the kids. The kids will come, 100 percent they will be there and sometimes the parents turn up. Sometimes they just drop them off. But we like to try and capture the parents and show them the different prosperous lifestyles after joining the tech industry. "

What are your thoughts on the funding models out there?

"It's an ideal world if they were to fund organisations for the long term, 15 years and 20 years, however long. It would be very nice to have and it should be that way but there are others out there who don't have that intention so I guess maybe that's the reason why it's only yearly. People aren't really putting out the results."

Raynor thinks if they see results from different companies and organisations, 'then maybe once they're past a five-year mark where they've done well they should maybe consider funding indefinitely for however long is required.'

How can Māori become shapers, not just consumers of technology?

Raynor says being exposed to technology is important - at home and not just school.

"For me when we run our programs for kids we like to run tech expos where we have different stations. We could have videography, 3D printing, eCommerce, hardware, programming, gaming and the kids just rotate through so it keeps exposing them to different things in tech and what is available to them and how they can make a living through tech."

A lot of rural areas lack opportunities. Would it be viable to do that in a rural setting?

Raynor says they ran a program in the small town of Raetihi.

"They were shocked when we came there and ran it."

He says the Iwi there told them to come down.

"It's definitely possible to run it nationwide. I'm a firm believer in locals working with locals. If we were to run something like that in Raetihi then I'll get people trained up in Raetihi to run it, because they can relate to them so much more. I'm a firm believer in empowering people to be able to teach their own people. It definitely can be done."

The concept of exposure is a really good one but it's got to be driven by the community itself?

"Yes. By people who are interested in tech and in the community itself because they will see this guy who is down the road from me is a programmer. Then they have that powerful connection."

He says it is also the approach. When he studied, the teacher did just enough to move along and then he would leave and then he would come back.

"Didn't really help us. Didn't really care too much. He was just doing his job."

Raynor says Māori and Pasifika love to socialise and have fun, 'and with that vibe it's powerful and makes them want to turn up to class. Makes them want to turn up to programs and activities. They do and they keep turning up.'

It's bound by Māori tikanga and values really isn't it?

Raynor says they try to take care of their whole well-being.

"When they come in we give them that social aspect. We give them that love, food, learning."

He says the kids love it and keep coming back.

"We want to capture them when they're young. We're also realistic. In a world like this when they're kids we give them all of this but we tell them when you guys grow up it's not going to actually be like this in the tech industry. You have to work hard."

He tells them, 'we still live in a white man's world.'

"Not being racist or anything but that's the world we live in. If you don't provide any value to them they're not going to want you to work for them. They're going to go for another person. So, we also try to instil those mindset values. Help them understand mindset like, don't give up. Why are you doing this?"

Raynor says he did this because he wanted his family to be in a better place. While he says they are in a way better place than before, there's always room for improvement.

"That was my drive and that was my reason to keep going even though it was hard in terms of starting a business. We teach them about mindset at a young age too. "

He says they want to capture them at a young age to try and build those strong foundations so that when they do get to high school or university they still have that mindset to keep going.

"They're not going to get all their needs met like they are receiving now in our programs. They're not going to receive that when they go to university. They're not going to get food or possibly a teacher who is going to care for them. But, as long as we've built that resilience in them when they're young with mindset then hopefully that's enough to keep pushing them forward like the experience that I went through as well. That's what we try to do."

One of the programs they run is the mindset program teaching growth and fixed mindset.

"The way we teach it is we make them play a video game like Mario ... we let them play for a little while and then we come back and we teach them about mindset and we say this is exactly what you guys have done. You guys may have fallen into the pit that one time but you kept going and then you made it to the end. That's what life is going to be like when you grow up. You might fail your essay or you might fail your assignment and you might fail in school but that doesn't mean you give up. It means you look elsewhere. You look elsewhere and you keep going."

At the end of the presentation, they show real people - Taika Waititi, Jonah Lomu, other famous kiwi people and actors.

"We show them all that stuff, all that good stuff to show them that they can relate to these people as well who are also Māori and Pasifika. That's all part of our mindset."

Raynor hopes their program becomes a 'normal thing in New Zealand' and ends up worldwide.

"I just want to say that our people are born entrepreneurs. Just looking at the ancient stories. People weaved items they used, they sold it, they traded it. They were the ones creating things. We're creators and we run businesses and stuff. It's just finding our way back to those pathways that we were once so strong in."

Whaowhia te kete mataurangaFill your knowledge basket

Ben Tairea

Āhau | https://ahau.io

Māori values and practices have a huge influence on the operation of a business, from the way that we talk about what we do, how we build business models and our ways of interacting with people.

The vocabulary used is of utmost importance and has an impact, also the people we hire is an important decision as well as the people that we work with and the relationships we build.

ben-tairea

What is your understanding of Māori digital entrepreneurship?

According to Ben, there are a number of factors including how Māori operate as entrepreneurs and the definition of what Māori entrepreneurship is and what it looks like. Additionally, when considering the ecosystem: what it is and what other businesses are doing. What brings digital and Māori entrepreneurship together is the social enterprise element to it, Ben says it has a different culture.

Māori digital entrepreneurs are trying to look after each other, either trying to improve the world through their mahi and make a difference in the world whether it be environmentally or socially, or they are doing whatever they can using whatever their gifts or passions are, to be able to generate some money to be able to support their whānau.

What is your thinking around Māori values and practices? Do they influence the way you might operate your business?

Māori values and practices have a huge influence on the operation of Ben's business, from the way that they talk about what they do, how they build business models and their ways of interacting with people. He thinks vocabulary used is of utmost importance and has an impact, also the people they hire are an important decision as well as the people that they work with and the relationships they build. In his opinion, this offers a real opportunity that a lot of Western businesses could get a lot of value out of.

Ben firmly believes integrating Māori values and practices offers a competitive edge, not perhaps in the way in which a competitive edge might be viewed from a standard business model. He says it may not make them more money, but that is not what they are trying to do with the businesses. While they want the business to be sustainable, they would take a loss if it meant that they could help somebody that was in need.

In his view, therein lies the competitive edge: having trust in their community. Ben says they have people that will come to them who prefer to deal with people that are nice to them and actually care about the work that they're doing, or the service that they're providing, and who aren't leaving them alone. That narrative isn't lost on people and people remember that.

How important is the provision of mentorship, or education and training to grow Māori digital entrepreneurship?

According to Ben, it is hugely important and not enough is currently being done. He believes there is real power in having somebody to talk to, at whatever stage you're in, just knowing somebody. A tuakana/teina relationship is pivotal and Ben says he has tried to mimic that role for others.

"You can't be what you can't see. Māori entrepreneurial technology community could do more in terms of support and creating pathways. There are some industry-minded rangatahi out there who know how to make some money. While they know how to think about it in that way, it is the execution of it where it gets hard."

Do you feel that Māori enterprises might face some difficulty in the international market?

Ben believes there could be some difficulty in the international market, citing mentorship as a reason. While he would love his company to go global, he questions who they would talk to. He doesn't know of other Māori businesses that have had that experience and can provide that mentorship. While he is sure there are a lot of Western businesses and Europeans that they could lean on for that, it is not the same. He thinks there is a huge gap in that space and lists that as one of the main reasons why we haven't seen a lot of Māori digital solutions go global.

In your opinion what are the most important factors or obstacles that limit the growth of our people and our own Māori entrepreneurship in New Zealand?

"There is still a large percentage of the population without a device and without access to technology. How we are meant to grow strong Māori technology businesses when there are still kids growing up without computers. There are still rural schools out there that don't have a technology programme because there aren't technology teachers and the Crown doesn't recognise that it is a valuable investment to have somebody that can kōrero Māori to go through Teaching School."

He doesn't think that they see that they could train up 30 kids that could be really technology proficient and that one out of ten of those could be entrepreneurs that will start businesses. He says there's a lot of talking about it and a lot of inequality and investing is vital.

He believes it's still a big problem - not enough training and not enough connection. He says there are no developers in a rural community that doesn't have internet. There's no technology entrepreneurs in a community that doesn't have any internet. So, number one: get people access. Then number two: training. Then number three: support.

If Māori and indigenous representatives of this society aren't making the decisions, **then it's never going to serve society.**

Sara Stratton

Māori Labs | www.maorilab.maori.nz

> This is a time of trialling and testing. If you've got an idea you go and just try it out. People are afraid to do that but that's what needs to happen, Māori need to get up and give something a go. 'Oh, that didn't work, we move on.' Now is the time with digital technology and this new age, that is what we are needing to do – make it okay. Keep going though, keep trying out new stuff.

saracolestratton

What do you think Māori digital technology actually is? What is a Māori technologist?

According to Sara (Ngāti Hine, Ngāti Kahu), technology is anything that you create to improve your life in some way, like fire was technology.

"Māori digital technologist is somebody, who is Māori, who works in the digital technology space. They will be creating digital technology; they will be mastering it, whatever that mastering could mean. They will be involved in the lifecycle of it, and beyond. Because if they're Māori they'll be having to be responsible for the monitoring of whatever it is that they've done after, unless they dispose of that responsibility."

Do you think the interweaving of values, traditions and tikanga, is an important part of being a Māori digital entrepreneur?

Sara says these can't be separated.

"Just like you can't separate a Western, a British person; they've got their thinking, they're building their technology for reasons that they've determined from the research they've done, their way, which will provide predictions and outcomes based on that material that they've researched themselves in their methodology."

She believes you can't separate being Māori: 'what is being Māori is absolutely individual in that sense, in the sense that every Māori person who says they are Māori is different from the next person, but there might be commonalities, but we can't lump everyone together as if we're all going do the same thing and think the same way.'

Why does Māori seem to be reluctant to enter these technology spaces?

Visibility is key.

"I think they've got to see it, they've got to be talking. What they have to do is see themselves as more than users. They've got to see that they could actually make this."

Education is another factor, and a digital curriculum in primary schools is where she thinks it needs to start. She believes our biggest value is being Māori.

"That's my dream is to go around every school and say, 'do you know that your biggest value right now is just being you, being Māori; and help kids who aren't connected get connected. And all the rest of the digital stuff, that's just going to come; because if they feel like, 'woah, I am valuable as I am,' then they might have a little bit more confidence to try something as unusual as digital technology, as a career."

We can raise awareness and then we can provide infrastructure and then they cut the infrastructure off – where's that awareness going to go?

According to Sara, there is a lot of short-sightedness and unwillingness of the Government to take risks.

"This is a time of trialling and testing. If you've got an idea you go and just try it out. People are afraid to do that but that's what needs to happen, Māori need to get up and give something a go. 'Oh, that didn't work, we move on.' Now is the time with digital technology and this new age, that is what we are needing to do – make it okay. Keep going though, keep trying out new stuff."

The digital space is an area of real interest in data sovereignty and protection. How can we encourage that passion in this space?

Sara says it's about going to schools, kura, all of them and saying, 'we need you, we need you now,' and starting that conversation with the kids.

"Never mind people my age and over, just the kids. We just have to go and do it. If we think the kids need to be there we need to show them what's needed; why they are needed, and then how; how you can go about doing it."

She says it's no good a company saying, 'how can we make our place more inviting for Māori to come in and visit us and stay here?'

"That's never gonna work anymore. What needs to happen is, they need to go – organisations, like a law firm, or an advertising firm, or a recruitment firm. They need to stop thinking like that. They need to go to schools as well and say, 'teach us. Teach us how to make us a place that can help you be you, in whatever area.' Instead of, 'how can we get them into us?' No. They need to now start going to them and learning from the kids themselves."

Ina tere ngā kapua, he hau kei muri

When the clouds move, there is wind behind them - we are never alone.

Vincent Egan

Māui Studios | www.mauistudios.co.nz

> We're thinking about the quality over the quantity, and the relationship is something that's got to be meaningful, not only for this lifetime.

vincent-egan

What is your definition of Māori technology?

Vincent thinks Māori technology is 'essentially tools and devices that Māori developed to be able to make our lives easier, things we could use to achieve specific goals.'

"Technology was never just a modern concept, it's something that has been with our people since the dawn of time. It's essentially what we would use, develop, create and share with others to make our lives more efficient, make our jobs easier, and communicate certain ideas. They're an extension of ourselves I suppose, whether it's our physical hands and what our hands or bodies can do, but also an extension of our minds, of our voices, of our ability to hear things, an extension of our senses."

He says when it comes to what a technological thing is, 'I suppose it's something that is separate from ourselves that we've manifested or created and it's something that we use to extend upon ourselves.'

Why do you think there is a poor uptake by Māori and Pasifika in the tertiary technology space?

One of the reasons Vincent thinks that this is occurring is because of how education is being portrayed or viewed.

"If you look at a lot of tohu that represent different tertiary organisations they are shields, they're coats of arms, and for Māori that have grown up with our symbology and toi Māori and the way that we express ourselves creatively, the shield is not a technology that we have ever used or been familiar with so a lot of our education system is skinned with these shields and symbology that we can't relate to easily."

In Vincent's view, there is room to work on how tertiary level education or higher education is portrayed and communicated to Māori and Pasifika people.

Do you know of any educational offerings anywhere that are encouraging Māori involvement?

Vincent names Toihoukura in terms of Māori artist streams and Te Wānanga o Aotearoa as examples.

"I know that tertiary level education providers are beginning to make more of an effort and there are some shifts in how those organisations are communicated."

He encountered a 'unique surprise' when he was studying at Otago Polytechnic, not traditionally a Māori space with very few Māori students involved with their courses.

"I was one of four, I believe in the entire cohort for our year, but what I really appreciated was they were really accommodating to the sorts of creative projects that were specific to Māori. And they did one thing, they encouraged each of us Māori creative practitioners to come and work on kaupapa Māori projects together and even created spaces where we could go and work on those projects and be a little more immersed in our own culture. Those things definitely made a real difference."

What would your thoughts be on a Māori apprenticeship scheme?

Vincent supports this concept, describing it as 'fantastic.'

"It mirrors the tuakana-teina relationship we know works for organisations; Māori organisations that we've worked alongside."

He says they have similar programmes at Māui studios when it comes to putting in internships. Junior staff sit with senior staff and work closely on projects.

"Our tuakana are taking their teina into meetings, demonstrating how to communicate effectively, demonstrating how to use the technology - what are some shortcuts, what are some ways to be able to solve problems with Google and the internet, and just for our teina to be able to see and hear and get a real-world viewpoint of how things should be done, is a hugely meaningful thing and we've done that in our villages since the beginning of time as well, and it worked back then and we know it works now."

Do you have any suggestions that you would ask the Government to implement

To Vincent, the obvious one would be to create more funding opportunities, 'but there is so much bureaucracy and paperwork, like even just applying for funds, in my viewpoint, can be a real waste of time - because heaps of people are putting in so much effort and energy to be able to access all this funding and then, like 80 percent of the applications that are put in, receive a massive no; and all that hard work that people put in disappears into the ether.'

He says when it comes to policy, what has worked in the past was having access to individuals that can create meaningful teaching and learning environments and networks.

"When it comes to support, when it comes to Government organisations it's good to have like an eternal tuakana - someone we can always continue to talk to that has the viewpoint from within Government and knows what's happening and connection to all these different initiatives, funds or opportunities, being able to relay that information in a way that is digestible and easy to access without it coming across as spammy."

While working with Te Puni Kokiri (TPK), he says they have had one of their tuakana doing a needs assessment with them.

"it was just basically being able to access public servants and being able to sit down with the knowledgeable people, and utilising their time for them do an assessment of where we currently were, how things could improve, real tangible outcomes and action points that we can use that would come as a result of that solid dialogue. Having more of those sorts of opportunities works."

What is your opinion on the Government's funding models?

Vincent says Maui Studios have worked with TPK for a number of years, so conversing with people who know an organisation's whakapapa makes it a lot easier.

"Maybe when it comes to the policy side of things I don't really see too much of this happening within Government, but, staff that have worked there for a lot of years, the attrition rate for Government organisations is pretty poor. Working with the Ministry of Education we are always up sometimes only within a few months, we are working with a different key contact person because it's either too stressful, they are not being looked after on their side, or they have moved along to the next opportunity. But maybe if there is a way for those public servants to be working with a Government organisation for a lot longer, it could be something that is meaningful to organisations like ours, and even younger ones, or students."

Do you think there is added value by being a Māori company? What differentiates a Māori entrepreneurial company?

In regards to working with clients, Vincent says it's all built upon whakawhanaungatanga and building long-lasting relationships that are of mutual benefit over a long time. His organisation thinks multi-generationally, and he says tikanga practices are imperative.

"We allocate a significant amount of time for getting to know - whakawhanaungatanga. If it's a creative project then we like to go to the space where the mana whenua are situated and get to know all the relevant players, all the kaumātua, the cultural leaders, the tamāriki. If it's a creative outcome, then it's working with their descendants and their creatives within that organisation and spending that significant amount of time getting to know one another."

Tikanga practices are integrated including manaakitanga and karakia timatanga before starting a significant project, 'meeting those people where they are, where they are from, so at the marae or their wāhi tapu.'

"It's just who we are, and how we approach our business is based on all our tūpuna values and the ways we were brought up. And I know that's different because it's not like a sort of hard and fast, get the money kind of thing when it comes to those relationships. It's not like sales calls and you get from those Australians that are spamming your phones and they are keen to sell you some sort of thing. It doesn't feel like that's how we as Māori do business. We're thinking about the quality over the quantity, and the relationship is something that's got to be meaningful, not only for this lifetime of us and ourselves, but also, ideally, our kids are connecting with their kids in future engagements if that's something that makes sense for those organisations to do as well. And it's not like business is something that is separate from our Māoritanga and where we come from. They are all part of the same ecosystem of sharing resources to one another and building the overall community of what it is that we are doing."

He says his organisation will employ young Māori because they know 'they have either siblings or something like this, that they'll share that information through to, or bring mana to their whānau.'

"We like to understand who is in their whānau that have skill sets that can feed into the wider ecosystem, 'oh mean you live with your uncle now, he's mean at te reo Māori and teaches that, mean we need some te reo Māori being taught in our organisation is that person keen to come and work and develop us in that way.' So, it's just considering each of the individuals, where we are currently at, what we know, what we don't know and then factoring skill sets and whatnot to be able to grow all of us overall, over time."

The concept that you are allowed to fail, but learn from your failure does not seem to be promoted. If you have a good group around you to support you, failure actually becomes a success story. What is your opinion?

Vincent believes failure can be a necessary step to achieving success and people should change their relationship about what failure means to them.

"It's not so much a thing to be held back or something that they stop themselves doing but instead it should be something that they are pushing to do as often as they can."

He says obviously people should not self-sabotage, but put themselves in enough discomfort so that they are in a place where they are likely to fail but learn a valuable lesson from it.

"It's often those failures that give us the kick up the butt that we need to push a little bit harder or give us a dose of reality, so that we know, 'oh yes, ok that didn't feel too good what are some things to put in place so that it doesn't happen again.' So I don't think it's like okay to fail, I think it's more like we need to fail in order to achieve the success that we feel that we're worthy of.'

E iti noa, nā te aroha
A small thing given with love

Te Taka Keegan

Te Whare Wānanga o Waikato | www.waikato.ac.nz

Ko Pirongia te maunga, ko Waipā te awa, ko Pūrekireki te marae. Nō Waikato-Maniapoto.

He taha anō nō Te Whanau a Kauai ki Ngāti Porou, nō Ngāti Whakaue hoki ki Te Arawa.

te-taka-keegan

What is your journey into Māori digital entrepreneurship?

When Te Taka left school he got a Diploma in Computer Engineering and spent five years fixing computers as a hardware engineer. After a couple of years in New Zealand, Australia and then a couple of years back in New Zealand he gave all that up in 1991, to gain his Bachelor's and Master's degrees in Māori at Waikato University.

An opportunity came up at the University, as they wanted to start teaching computer science in te reo Māori. Te Taka helped translate that paper and then tutored it for a year, then taught te reo Māori before making the switch to work in the Computer Science Department. He has been at Waikato University for over 30 years now and says while he has been there, his focus has been on how technology can support te reo Māori.

He feels the Computer Science team at Waikato has given him a lot of avenues to do that, and multiple projects have been created including Te Kete Ipurangi, a bilingual website created through the Ministry of Education to support Māori medium teachers, a collaboration with Microsoft to translate Windows and Office in te reo Māori, the Google Translator Toolkit and Google Translate, the Niupepa Collection, the Macroniser and the development of the SwiftKey keyboard for phones and tablets.

How do you integrate te ao Māori into this space?

Te Taka feels technology isn't 'so separate.'

"I don't really feel it's a whole new world. It's not really another world: it's just kind of an enhancement or a bunch of tools that are useful to our world."

He thinks computing should be able to be used seamlessly in te reo Māori, but can't, as computers have been aligned to be more specific for the English language.

"The classic example is you type a lowercase 'i' and then it changes it to an uppercase 'I.' Somebody has told the computer to do that. It's not the computer's fault that it keeps doing that, it's just the instructions. We have just got to get in there and change the instructions."

He says computers are just as good for Chinese and Japanese as they can be for te reo Māori or Spanish; 'so why can't we make them work for te reo Māori in the same way, in the same environment?' He says the culture is there, it's working out how to enable technology to integrate the culture.

"Early on we figured that a lot of people are using Microsoft Word, so let's make sure that Microsoft can be in te reo Māori. And, a lot of people are using Google, so let's get in with Google and make sure that can be in te reo Māori."

Te Taka did some investigation with Facebook, to translate Facebook into te reo Māori, but it didn't eventuate.

"It wasn't that people weren't interested and didn't want to do it; it was just that nobody had the time and no one was prepared to support it financially. So, if there is no money then people have got to do it in their own time and people have got to eat. It just didn't happen."

He said Microsoft translation happened because Microsoft paid people to do it and the Google translation occurred when he spent six months in the Google office in California. Everybody at Google was concerned about their own things and their own languages and it became apparent to him that if we wanted things done for Māori it was not going to be a big international company that would save the Māori language or provide all the tools.

"Māori have to do it themselves. Māori have to be the people that provide those tools. In some ways, it's actually better, because we then have control; our own tino rangatiratanga over our own language technologies. If we do it ourselves we have control to do it in the way we want to do it and not in the way that other people think is the best way it should be for Māori. Because we have to do it, sometimes things don't happen. Facebook is the classic example: lots of people wanted to do it, and some key translators wanted to get involved, but no one has got the time, or the money to do that kind of thing … If Māori want things to happen, we have to do it for ourselves."

What are your thoughts around capacity? How do you think we could encourage more Māori getting into the development architecture space, alongside the end-user side?

Recent historical behaviours suggest that if you are Māori and you want to help Māori you become a lawyer, or you do management, or environmental science. Those are some of the key areas. He thinks children need to be more aware that there is this other field of science called computer science that's got a whole range of fields in it.

"It's encouraging Māori students to understand the opportunities. It's not just the opportunities, but I think computer science is a really fun subject. You can do lots of really, really cool things. You can change the world and the Māori world in much better ways."

He says there is a dearth of rangatahi coming into universities to learn or see an exciting field in computer science.

"For me, it's kind of ironic, because Māori are more like a tūtū than anybody else in the world. If you're a tūtū computer scientist, you can really make advancements in many fields. Just looking at something and think 'what happens if I do this? What happens if I change this? What happens if I figure this out?' We get it from Māui. Māui was the biggest tūtū around and look what he did: he slowed down the sun and he brought us many innovations. He was the OG technology innovator. So, it's inherent in Māori to be a tūtū."

He says that's what makes really good computer scientists.

"Whether you are 'tūtū-ing' from a hardware, software, gaming, interaction or reo Māori perspective, there's a whole bunch of different subject areas that you can be shaped for an ao Māori benefit."

What does a technical mind look like?

Te Taka says some of the cleverest minds he has worked with have taken a really complex problem and broken it down into smaller parts and simplified it. He says a technical mind comprises two things: having the ability to break things down simply and having inquisitiveness.

"This is how this works. Let me try this. Let me try that. You can try four different things and three of them aren't going to work but one of them is going to produce something really brilliant. It's that kind of inquisitiveness and that kind of different angle of looking at things is what I think Māori students and Māori computer scientists bring naturally that Pākehā computer scientists have to work harder to create. Some of them are inquisitive but they are all thinking about things in the same way; whereas Māori students are coming from a different perspective, so they can see this way, but then they can also see this other, completely different and seemingly random way. That combination of those two sciences really enables them to take things a bit further, or take research into a totally new area."

If Te Taka has the opportunity to employ researchers he will develop Māori ones because they have a wider view of perspectives.

"They're more inquisitive, and if they are onto it enough, they can break things down and make things simple. That's computer science. At its heart, it's just simple basic maths really."

What are your thoughts on the thinking capability of the Māori Artificial Intelligence (AI) of the future?

Te Taka admits he needs to be careful of this - he has no fear of technology. He isn't worried technology will take over and take control, rather he is more worried about the people driving and programming the technology, especially in terms of some of the algorithms. He says it's not the technology itself's fault.

"Technology will do what it's basically been told to do. It's simply a tool. The worry is that the artificial intelligence that's been built has been built from a Pākehā perspective and has been built on primarily Pākehā data. I don't think we need to be so much the drivers of the technology, but we have to be able to influence the technology in Māori ways."

He believes Māori AI needs to be grounded on Māori data and traditional knowledge, but also needs to be aware of current things that are happening in the current day, so that it can supply accurate but Māori relevant output. He is excited about it.

"Wouldn't it be cool if we could have an AI agent that was talking to us about some of our traditional history? I am walking around and I've got my maunga over there. Wouldn't it be cool if someone could explain why this particular stream does this, this and this. Because my people there that know the streams around me at the moment aren't around anymore. But, that information is still here not just in my people's minds. Wouldn't it be cool if I was walking somewhere and then a voice popped up and says, 'you realise that you're crossing so and so's stream, and this is the name of it. This hill here, this event happened.' That would be awesome."

He has faith that it can happen and the good it can bring.

"It can be great for us, if we have control of our own data; if we have sovereignty over our own data and we are feeding it with our own mātauranga based data, for it to react in a way that's specific – not to Māori, but specific to Iwi."

What do you see as the future of Māori technology?

In Te Taka's opinion, there are a lot of Māori who haven't yet had the opportunity to learn about their background and identity.

"One of the things that we really need to do is enable pathways for Māori people to become Māori. You are Māori by whakapapa, no matter what learning you have, the colour of your skin, or what level of language you can speak. You are Māori by whakapapa."

He tries to encourage those who are Māori by whakapapa to be proud of their identity, proud to be Māori.

"The future for Māori technology is very bright, but as Māori, we have to lead this."

Mauri tū, Mauri ora

An active energy, an energy full of life

Māui Hudson

Te Whare Wānanga o Waikato | www.waikato.ac.nz

Supporting more digital products that can highlight our uniqueness – because it's that uniqueness that has emerged into an international environment; that's going to create a greater return for the country and obviously, a greater return for us. I think there's a value proposition for the Government to support more things in this space.

I think our work will resonate with other indigenous people, but then there's a general sensitivity emerging around the world or general openness to diversity, inclusion, equity, indigenous – all of these different ways of thinking.

mauihudson

What is your understanding of Māori digital entrepreneurship?

Māui (Whakatohea, Ngāruahine, Te Māhurehure) is part of Te Mana Raraunga (the Māori Data Sovereignty Network) and says it is interesting to think about what people are thinking about in terms of data, and then what they think about in terms of digital. He was part of a data and digital working group alongside the Māori Health Authority and says one of the things he has always been conscious of, 'as we've been making the push for greater indigenous control or Māori control of Māori data, is that's only useful if you've got people that can do something for it, and do something with it.'

From his point of view, it wasn't just about the protection element; it was also about maintaining the opportunity for Māori to do it, rather than someone else. He says that required digital entrepreneurs: 'people that could do something with that data and create something that adds value.' Digital entrepreneurs could turn it into something that potentially makes money and creates a business in order to sustain that activity.

"I think there's always this kind of natural alignment; I don't know if we've worked particularly well to support or promote that kind of Māori digital tech sector. Maybe we could've been better advocates for other resourcing and support to go into that space."

Do you think there's a traditional model of Māori digital as opposed to moving forward into entrepreneurship?

According to Māui, 'it's an interesting one.'

"I think we can often look to other places for models of what works, and I think I'd be looking to other Māori sectors and thinking about what are the different things that have been in place that have helped them develop. And when you've had something like that, it's specifically supporting Māori things, I think they're in a better position to be open to Māori approaches or Māori value-centric ways of doing things; whether that's traditional or kind of more contemporary ones, but ones that allow Māori values and processes to support the activity."

Do you weave Māori values and tikanga into your mahi?

Māui says a lot of his work has been about trying to think about what sort of tikanga might have been applied to similar activities, and then how it could be applied within his mahi. For example, they might have looked at what sort of tikanga was associated with sharing mātauranga, and then considered how to relate that to data, 'and then, can you then turn it into other tools and so that was partly how we created Ngā Tikanga Paihere[1].'

1 https://data.govt.nz/toolkit/data-ethics/nga-tikanga-paihere/

Do you have a mentorship or education programme within your mahi?

Māui says while there aren't any formal programmes as such, he believes there are probably some elements in place that could support this, 'it's just everyone's too busy to do the mahi to get it done.' He thinks there's definitely interest in some type of training element and education, and that would be different from a mentorship as the mentorship requires more of a hands-on approach.

Do you think there is a difficulty for rural Māori who want to become entrepreneurs, as opposed to urban entrepreneurs?

Māui believes there are difficulties for rural Māori, particularly regarding accessibility. He says at one level it's the infrastructure, and while rural broadband will help to some degree, economic disparities can affect the types of technology and equipment available to whānau.

"But even if you can get the good stuff, whether or not it can operate effectively from some of the rural places, I think this becomes a different question."

He explains that within smaller rural communities, there may be a lack of places to go that offer connection and support, which can be an additional challenge.

In terms of your mahi, is there a connection or a partnership with other indigenous peoples?

Māui says that within the data sovereignty space, there is the Global Indigenous Data Alliance, a collaboration of different indigenous sovereignty networks. He says that when working in a global environment and digital space, connections with like-minded groups that are dealing with similar challenges and problems, solutions are made more quickly than in a physical space.

What do you think could be done to increase digital entrepreneurship in Aotearoa?

In regards to the digital space, Iwi should be trying to create an enabling environment to allow whānau to flourish, and consider what sort of things can they put in place to support that

"I think both Local and Central Government, if they're wanting to see more digital entrepreneurship in Māori spaces, they have to do something. Like you can't just say in a plan, 'we want you to do this,' there's got to be something that follows it; either in resources or infrastructures or networks, there's got to be an action that results in that kind of change or supports that behaviour change or growth. I think that will be the same for Iwi; what's the thing that we do that supports that? And if we can partner with Local and Central Government to get those things in place, that's great."

He believes that increasing digital entrepreneurship is worthy of being supported and says if a product is created with 'sort of a Māori story in that product,' there is additional value and interest in an international context.

"Supporting more digital products that can highlight our uniqueness – because it's that uniqueness that has emerged into an international environment; that's going to create a greater return for the country and obviously a greater return for us. I think there's a value proposition for the Government to support more things in this space. I think our work will resonate with other indigenous people, but then there's a general sensitivity emerging around the world or general openness to diversity, inclusion, equity, indigenous – all of these different ways of thinking."

Do you see a growing body of research coming through around your kaupapa, Māori data sovereignty?

Māui says that overseas there is a lot of work emerging around indigenous data sovereignty in the academic space, and that in New Zealand there is a lot of action around agencies and people working out what they should do rather than academics only.

"Probably more so than overseas where it's still the academic discussion and not so much is being pushed into some of those operational/community spaces. It's needed. And so our people that are doing stuff, that'll be setting them up for the future."

Mel Gollan

Ripa Global | www.ripaglobal.com

Ko Tinana te waka
Ko Tarakeha te maunga
Ko Moerangi te awa
Ko Te Tao Māui te hapū
Ko Te Rarawa te Iwi
Ko Matihetihe te marae

melissa-gollan-te-rarawa

What is Māori digital technology or Māori entrepreneurship to you?

Founder and CEO of RIPA Global Mel grew up in Wainuiōmata and lived in Tairāwhiti for seven years. Her mother was part of the urbanisation of Māori from Northland. It was in Kaiti where Mel designed her product on her lounge floor.

For Mel, Māori digital technology or Māori entrepreneurship means starting out 'quietly disadvantaged.'

"Disadvantaged from the start, from money, and relationships. New Zealand's all about who you know not what you know and if you come from the same sort of background as me, there aren't too many billionaires, millionaires walking out of the high school that I went to, which is how most other tech founders start raising their money. So, I think you're behind from the start with regards to raising capital, although the flip side of that, nobody knows how to fight harder, or work around obstacles or do something with nothing, than somebody like me."

She says grit is the number one personality type for a founder.

"There's a different lens on things I think - it makes me fight harder, because I'm not just fighting for my shareholders and my team, but to shift the needle for Māori as well."

In terms of finance, a lot of the founding shareholders in her business were Māori blue-collar workers from Gisborne, forestry workers, people that have given me their hard-earned cash.

"That's blood sweat and tears money, that ain't money made from some job at a bank. So it makes you fight harder."

Was there any other available support besides finance, like mentorship or business advice?

Mel says support has come from individuals rather than entities. Her company is part of the Māori team for New Zealand Trade and Enterprise, and they have been involved with Callaghan Innovation, and 'a little bit' with Te Puni Kōkiri. She thinks if they were running a different type of business then there would be more support available.

"We're running a globally focused software enterprise platform. Nobody has ever built that in New Zealand before."

She says mentorship and support came from individuals within their shareholder group, and she found that dealing with Government support organisations slowed them down.

"We're running. We have to make decisions, we don't have time to sit around and have a hui about every single thing. We need it done last week, not eight weeks from now. So, that's just the reality of innovating in this country."

One thing that the Government should do to encourage Māori entrepreneurship?

"See it and be it. I think we're a little bit polite and it would be really nice for the Government to actually have some people in there who are actually doing something. Everybody's a lot of talking, a lot of hui, not a lot of do-ey. You gotta run hard and fast, otherwise, your global opportunity dies."

Do you think that for globally focused New Zealand tech companies, often international adoption of our tech is required before the local market will trust it?

Mel believes people need to be a lot more focused on where their money is being spent, particularly in the next five years.

"Every single cent of our money that goes offshore hurts my heart, so our app itself has an integration into Zoomy for example, so as part of expenses, you have to catch taxis and Ubers - no New Zealander should be riding in an Uber. They should all be riding in a Zoomy which is a New Zealand-owned company. We hard coded into our software, call up a Zoomy and it automates all of your receipts and everything in your expense management app. We made a conscious decision to go with a New Zealand-based company, so where is the equity, where is the honour in the way that we're doing procurement as New Zealanders. We need to be conscious about our procurement decisions."

How can we get the young to be involved in enterprises like yours?

Mel says the question is 'what are the roadblocks?' When she was in high school, technology was only for the smart kids.

"What are the jobs in technology? What is a product manager, what is a CTO, what is a developer, what is an engineer, what is an architect, and again it's that 'see it and be it.

We actually pulled together the Wāhine Toa Level Up programme, the idea behind that was to invite every Iwi in New Zealand to send two young wāhine along to a conference for two days where we have a product owner, we have a CTO, we have an architect, and say, 'hi my name is such and such and this is how I do my job.' Immediately demystifying technology, and making it really, really simple, but again, see it and be it. There's only 25 percent engagement of women in technology. I don't know what the numbers are for Māori, I imagine it's less."

Do you think telling just that story about how this is generated is one of the ways that we can move forward?

Mel says encouraging confidence is a big thing. She ran a mentor program for some kids out of her old high school at Wainuiōmata High School and said they were so awkward and embarrassed, but they sat around and talked, and showed them how coding is actually done.

"They were like, 'oh, well I could do that,' and like 'yeah, and you could earn $150,000 a year and travel anywhere around the world too, or work from home in Tolaga bay. No problems."

She says it's about taking the mystery away from technology and encouraging the young into it, so when you look into all of the different roles within a technology company, there's bound to be something in there that each person could do.'

Do you think the community should be pushing for more Māori technologists?

Mel thinks communities should be pushing for more Māori technologists from within their own community.

"I don't want to ship people in, because that just pushes up the house prices and displaces people, and creates a rich and a poor situation, that's not going to work. It needs to come from within the community and benefit the people there."

Do you think that Māori values and approaches actually enable them to uptake a technology quicker?

Mel says Māori are 'born to it, it's the culture.' She says the basis of Māori culture is agile, with a level hierarchy, which is also the basis of how successful technology companies operate.

"People have to learn how to be a scrum-master, have to learn how to be agile, and talk to each other. It comes naturally to the Māori community, so I think that's a massive advantage. It just needs to be nurtured and encouraged. It's confidence too."

Do you think the Government could encourage engagement of Māori technologists not only with the indigenous world, but the world itself?

As a salesperson, Mel says whatever they build she wants to sell as much of it as possible.

"I want our country, our people to have a lot more money, and there's no reason why we can't fight for that. I have a slide that I show all the Government and it's the top 10 - 20 tech companies, $500 million, 1 billion, $500 billion, all of the money that they make, and then I say, 'well put your hand up if you think the Chinese or the Americans are smarter than us?' They're not. They're just more confident with bigger starting markets and get backed early so they can dominate a global market. Singapore has five million people but they're the fifth largest technology exporting country in the world. How did that happen? They know how to sell their stuff. And New Zealanders tend to back quietly into a new market – we gotta start pushing harder. We're great at building relationships, we're great at communicating, but we need to learn how to sell better and move faster.

You need some gun salespeople at the top end, in the market looking for growth opportunities to pull New Zealand companies in.' It's about growth. New growth. Not maintenance, we need growth."

What do you think the role of Iwi and hapū is in tech?

"Be more agile, move faster. Set up the framework, have a community Iwi marketplace where you do your procurement from there, and then take that framework to the Government and say 'this is how well it's working.' So it's almost like a pilot test case."

Are there any other pressing issues that you would like to reinforce?

Mel stresses urgency is required in the Māori tech space.

"We want action from an entrepreneur and innovation perspective, it does not have to be perfect, what it needs to have is momentum. It needs to be moving forward, and you're learning stuff on the journey anyway and that's what we do wrong. They try to mitigate every risk and make it all perfect and end up doing nothing. So, having the confidence to push and that's really what entrepreneurs do. We push!"

I orea te tuatara ka puta ki waho

A problem is solved by continuing to find solutions

Petera Hudson

Emergent Technologies | www. emergenttechnologies.com

Ko ngā maunga whakahi e tū ra ko Mākeo rāua ko Maungarangi

Ko ngā awa e teretere nei ko Waiaua rāua ko Otara

Ko ngā marae e kiritahi nei ia tatou ko Ōmarūmutu raua ko Terere

Ko ngā hapū e pupuru nei i ngā taonga tuku ihu ko Ngati Rua rāua ko Ngāti Ngāhere

Ko ngā Iwi a pīkau nei i te mana whenua ko te Whakatōhea

Ko te tupuna waka e heke nei ko te Nukutere

Tūtāmure te tangata

petera-hudson

What is your definition of Māori digital entrepreneurship or Māori technology?

In Petera's view, there are contradictions of interest and dialectic tension between Pākehā and Māori points of view or world views. He says within our Pākehā world there is an egocentric component, whereas with mātauranga Māori, or te ao Māori, the focus is on the collective, 'so individualism versus collectivism is an underpinning Pūtahitanga.'

"We are not going to get rid of our Pākehā algorithms, or Pākehā this or Pākehā that, but we can take the structure of an algorithm and create a Māori algorithm and put it within our Māori data to train our algorithm and that's going to create an AI (artificial intelligence) system that's going to promote Māori wellbeing. So, even though there are tensions within those two worlds of sciences, I believe that there is a 're-borning;' a 'separating' of Rangi and Papa to create that together. That's where I see myself in creating those. But, to answer that question: two opposing muscles hitting each other. We are in that world to create something from the big bang theory."

What do you think the barriers are to Māori engagement in this space?

According to Petera, we have got to 'decolonialise' ourselves to dig deep into our own mātauranga. He says we have had 250 years of colonisation, so to scale back the paste that has been glued upon us is what we have to do. We also have to have role models within those positions.

"I look at myself and I'm just a little babe in this world of AI and emerging technologies, but I can sit there and hold space, so that when our next generation of people are coming through that space is held for them to take charge and to walk on through there."

He thinks colonisation has placed Māori in a realm of capacity building.

"That's not just in the world of emerging technologies; that's throughout our realms that we work in. It's going to take another couple of three generations before this koroua can step aside for our young and emerging. We just have to hurry up and wait until I can hop off that seat of keeping it warm until our rangatahi come through and guide us into that next world, whatever that may be; especially in this virtual realm that we have."

Do you know of any educational courses that are based on Māori values and principles that will engage learners in them?

Petera says Covid-19 lockdowns forced a new realm of online teaching and learning - 'probably every whare wānanga, every tertiary institute is now offering an online component of some description.' He believes however, the tikanga or the frameworks that promote Māori scholars or Māori learners aspirations are still within a Pākehā frame of technology and kaupapa.

He says until we are able to create a frame that promotes Māori scholarly aspirations, 'we still are ruled by the one that has the pen.

"Until we can discuss what partnership might be within that online teaching and learning, we're still gathering the crumbs."

What are your thoughts about how the Government is supporting Māori tech?

Petera says for Māori, tikanga, mātauranga and te ao Māori has never changed. What has constantly changed is the Government's kaupapa, 'however, it's not listening or watching what our tikanga is doing and not integrating that into their models.'

When Petera started in the early 2000s with Te Hiringa i te Mahara, he says they were helping to integrate laptop technologies into a Māori secondary school and Māori teachers' worker frame. He says the Government pulled the pin, and the project ran into problems as the band width they were getting was a lot more than they could afford when funding was cut.

While he says sustainability is vital, there needs to be realistic perceptions of longevity.

"We talk longevity, because I'm talking about making the world better for my mokos. If that concept is not grasped within a framework in which our partners or Government are trying to support us, we're down the stream without a paddle." He says it can't be ignored and 'we can't not take the challenge.

We're in between a bit of a rock and a hard place at present, because we are fighting against the challenges set upon us by the Pākehā frames that we need to work in, considering that our frames are tikanga tūturu, that have come with our ancestors from back then. I think we have just got to stay solid and we've got to have our voices exchanging and communicating and letting the Ministry know and letting the Government know, whatever discipline we are in, of the challenges that we are facing."

Petera believes it goes back to his original kōrero regarding two different models of life - a Eurocentric model and a collective model. He says the two tensions collide straight away, and when it comes to economic models.

"Again, the European economic model is very Eurocentric; whereas mātauranga Māori is kaupapa centric. We circle the wagons with the best resources that we can. Ranginui, Papatūānuku, is kaupapa driven and not Eurocentric driven."

How can we get whānau more engaged?

Petera says we are fighting against 'de-colonialised time,' and need to regenerate and rejuvenate our tamariki.

"How do we build capacity? We've got to wait patiently or hurry up and wait until that generation comes through. I think we are in a holding pattern. We're not just holding the space, we've got a voice in there too of whatever discipline we are in; but basically, we have to wait until that capacity builds. That's time. But, while we are there, those of us in a privileged position, keep shouting, keep performing, keep negotiating, keep offering what we can from mātauranga and changing that narrative around what partnership really looks like."

What are your thoughts on innovation hubs?

According to Petera, kaupapa Māori says 'if we are going to do something for Māori with Māori by Māori then make sure it has a positive outcome.'

"We shouldn't have to sit. For the last 250 years, we have been sitting in the realm of failure. We've got to change that kaupapa and look at ways and means in which the experience that we are going to have is going to be a positive thing. That's what has to change. We've got to be pretty staunch and strong about that. The shoulders that we stand on, they've provided a pathway. They have slipped and fallen and we've got to learn from those."

Petera says his experience comes from education and the realm of social change.

"Whether we are Māori in business, Māori in science, or Māori in education, we all struggle with the same thing; how we have been 'colonialised' and how we now work at peeling back the layers, so that we can be the masters of our wellbeing. That's my perspective."

While he is more detached from the business happenings and Māori digital entrepreneurship, he says he thinks he can sit strongly within the underpinning kaupapa.

"Using the tools we now have, thanks to the kōrero from Āpirana Ngata[2], and learning about those tools and bringing them back to our whānau to use for the promotion of wellbeing within our whānau. I leave you with that.'

2 E tipu e rea

Kevin Shedlock

Te Whare Wānanga o Wikitoria

Ko Kevin Shedlock (nee Walker) tōku ingoa.

Ko Ngapuhi rāua ko Ngati Porou me ki Whakatohea te Iwi.

Ko Ngati Hau rāua ko Te Kapotai, Te Aitanga a Hauiti ngā hapū.

www.people.wgtn.ac.nz/kevin.shedlock

What is your understanding of Māori technology?

In Kevin's view, 'there is no real version of Māori technology.

"We are up against it, it's a battleground out there and we've got a hell of a lot of work to do."

He refers to technology as a recent concept for Māori introduced within a Western science lens.

"We as Māori have a lot of ground to catch up whilst also acknowledging the great mahi by many people in a lot of areas, however the low numbers of students enrolled in STEM subjects suggests the challenge is not really being transposed out into communities.

Another concern is the students who are able to successfully engage in the STEM sector being targeted early by employees creating a disconnect between industry and academia i.e. students leaving early to pursue employment careers as opposed to advancing post qualifications.

"Students as early career graduates are attracting significant incomes around $80, $90, $100,000K being promised as they're studying through their courses - and so they're going to work."

He says when they go to work they're going to work either in one of the big cities or offshore, 'and whānau will not see them for another 20 or 30 years.' Not to mention enrolled computer science and engineering students struggling to deal with the complex math-related topics.

"I have often attended hui with whānau around the rōpū, that say: 'we send you our kids, and you don't send them back, and when they do come back, they look different. They're not the kids that we sent.'"

He says there is also a current generation gap, where 'Māori kids taking up tech or tech skills is disproportionate to the rest of the communities out there.

"It's quite a significant gap, hence the term "it's a battleground" at the moment. But it's not that there aren't a lot of people doing a lot of stuff. We're doing a lot of stuff and admirable stuff too, very, very good stuff. My part of the picture I believe is to build stuff as an academic but also as Māori, in response to the pātai, what the IT artefact looks like for indigenous communities? What the construction processes are, how it looks within an indigenous Māori lens to build technology in that space."

Why do you think there is a lack of engagement of Māori in technology?

According to Kevin, before considering relationships with the likes of Universities, 'we should take a step back, to reflect on the language to be used within this type of relationship.'

"The channel we use to communicate and how we apply language to the likes of technology and the construction of IT artefacts. Our kids are coming through and speaking te reo then all of a sudden they're being asked to speak in a language that's binary, it's a bit of a disconnect there."

He says it's a completely different language with no clear Māori version of understanding.

"We inherit the work of Socrates, we inherit their numerical systems, we celebrate Einstein and his work, and so I don't think it's just about the engagement processes. We could consider the deeper links into our own ancestral Māori knowledge systems as a guiding influence with technology and the construction of IT artefacts - especially when dealing with Universities!

Our children are learning to speak te reo, I'm speaking te reo, I'm speaking te reo, hello? I'm being asked to speak binary, hexadecimal, pixels, and that's even before we get to the algorithms."

For progress to be made, do you think Māori have to be shapers of technology rather than consumers of technology?

Kevin says it would be great if there was the infrastructure and enough capacity to do that.

"The shapers of the technologies are obviously the philosophers, the deliverers of policy are Governments, the managers implement the systems. Whilst multiple complexities exist, an aspiration should be to pursue tino-rangatiratanga where we (as Māori) have the skilled academics to look into the future, the skilled Māori who understand Māori processes, we have Māori developed hardware, we have Māori developed software as a technical system guided by our social rules and values, or a generalised version of that.' An indigenous socio-technical system[3].

But, he says, 'if we have a deep look into those boxes, we'll see that it's a bigger problem than we think and that's just for a social-technical system[4]. We haven't even implemented the kaupapa Māori part of that, which is an indigenous social-technical system, a kaupapa Māori system.'

3 K. Shedlock and M. Vos, "Indigeneity and technology: Assigning indigenous properties to the agent-based IT artefact ensemble," presented at the Pacific Asia Conference on Information Systems, Xi'an, China, Xi'an, China, 2019

4 K. Shedlock and M. Vos, "A conceptual model of indigenous knowledge applied to the construction of the IT artefact," presented at the 31st Annual CITRENZ conference, Wellington, Wellington, 2018, p. 1 to 8.

In Kevin's opinion, 'we would like to be instigators of our own worlds, we just need more people on the ground.' He says a lot of his work is around, 'first capture our kids aye, 'you guys, you're here to serve, you're not here for yourself, so there's an Iwi out there - if that's your Iwi, if that's their problem, you go and fix their problem. And Iwi, you go and find some money to pay these kids.'

He hopes that if solutions are found this way then resources can be shared through that type of processing.

"But that's going to take a long time. Again, we don't have the infrastructure – we've got a good knowledge base, but it's just not good enough right now. So, we got a lot of work to do."

What's your thinking around innovation in a rural setting?

Kevin says he works with a couple of whānau groups in rural New Zealand in different ways.

"I value technical hubs that focus on the likes of learning whakapapa, learning about the whenua, learning about awa, learning about rongo, as a kōrero that uses technology; so using technology to enhance that kōrero. Inside there is a tuākana-tēina type of programme. The focus should not just be about learning technology such as virtual reality for gaming or building mobile applications."

He says it's about whakapapa and a sense of connectedness.

"It's not about how intelligent are you –allow the whānau to take responsibility and accountability over their kids, and so let's not go and look for the smart IQ kids because they'll look after themselves, let's deal with the layers of kids disconnected from their identity and get more kids into that space, first celebrating them in a tuakana-teina type of system."

The next thing he says is coming together in the process of wānanga and getting them to understand what wānanga may look like.

"How technical kōrero may look from the eyes of the marae as opposed from the eyes of academics looking in."

What do you think about the concept of apprenticeships where you earn as you learn?

According to Kevin, 'anything that can contribute to our wellbeing and our forward momentum, is well valued and highly asked for.' He says the notion of apprenticeships is 'very, very hands,' on so it's something that Māori like to do, get into it.

"But I still think there is room to increase our representation as Māori in the engineering and computer science space with only a handful of numbers in Universities across New Zealand. That's a travesty.'"

If an apprenticeship system can be a stepping pathway, 'that's fantastic,' and if more Māori are encouraged into this space, 'it's even better, so anything that contributes to that.'

"I think the apprenticeship programme would contribute to a lot of that but it's about having the right vision of getting more people in this space by getting a lot more people into this higher level academic space."

I timu noa te tai

Certain conditions are best left to work themselves out

Tim Worth

Toi Mai | www.toimai.nz

I whānau mai au i raro i a Mauao.

I tipu ake au ki ngā tahataha o Waikato.

Kei Te Whanganui-a-Tara ahau e noho ana ināianei.

Ko Tim Worth ahau.

timdworth

What is your current role?

Tim works as a research analyst for Toi Mai in the Taumata Tirotiro, the research insights team. His current task is looking into the specific lack of diversity in the tech sector. The main focus is reviewing all of the barriers that different under-represented groups are facing, from the home environment into primary and secondary schools, tertiary education, and then also in the transition and in the workforce. Tim says Māori fall into that wider group of under-represented groups.

Why do you think there is a lack of engagement of Māori and Pasifika undertaking study in technology?

In terms of the education space itself, Tim thinks some of the reasons include how tertiary education is delivered.

"I think we still rely very much on a kind of typical Western framework of education delivery, even though any given teacher or polytechnic might be informed by different methods. I think overall the delivery and lack of mainstream polytechnic or otherwise, university especially, is still pretty standard."

He says history shows that some of the results that Māori are getting in the education system compared to some other groups are not as high.

"If we are seeing that's not working in the primary and secondary stages of education then it's not altogether surprising that in tertiary we're getting the same kind of results; that Māori aren't feeling that either their experience is acknowledged strongly enough in tertiary education; that the kind of learning delivery that they need isn't being done. Just the approaches I guess. I think our tertiary education system is still predominantly one-size-fits-all."

He says there is this idea of having this equal delivery method, 'which actually just means that a lot of people end up getting missed out.' A question he was exploring in his research, and at the time of interview hadn't come to an answer, was that as far as the digital divide goes, a lot of people were still excluded from access to digital technologies.

"Whether it's devices, or whether it's internet connections; dependable or reliable internet connections. And, something that still wonders is, how much does that then go on to influence or block this pathway into technology."

That said, he knows that rangatahi are super active on social media, TikTok content creation and that kind of thing; 'so it's not that it doesn't happen: it's just somehow the jump between that content creation and actually getting into a career in that kind of thing, or a learning pathway in that kind of thing, there's something in between there isn't working. I'm still curious to know what some of those reasons may be.'

Why do you think there's a resistance to offerings of micro-credentials to help improve engagement of Māori in this space?

According to Tim, there is quite a big push to try to get more micro-credentials up and going, as this need has been recognised. He thinks that is probably through the reform of vocational education and says there are a few in the works and doesn't know why they haven't existed previously.

"My impression could just be that again we still have this framework of how information is delivered; that in larger block courses you have a course and then that's part of a programme, and then that programme is completed; and then after that you get your certificate, diploma, or whatever it is. With the changing nature of work and the changing nature of education, the need for micro-credentials is growing and people are recognising it."

What are your thoughts on the concept of innovation hubs?

In Tim's opinion, it's the way forward, 'especially if we are talking about people who can't access devices and reliable connections easily.' He visited the Southern Initiative in Auckland and spoke to some of the rangatahi involved who said they wanted to see more of those kinds of places in South Auckland. Tim is aware of a couple of Pasifika organisations in South Auckland and one in Pukekohe trying to get hubs going; 'and basically exactly for that, so people have that face-to-face hands-on kind of experience of working with technologies. They can tūtū and play around and explore.'

He also visited Digital Native's Academy in Rotorua, which provided the space, support and know-how.

"I think it gives people an opportunity to kind of feel at home in the hub; it's like, 'this is our space. This is where we go to hang out with our mates and play around with these technologies.' You get that ownership of it as well. I think that's probably important."

What are your thoughts about an apprenticeship or similar type of scheme in technology?

In Tim's opinion, 'earn while you learn' opportunities would be useful for people, saying it's a huge incentive to go and study if you know that you actually still have an income.

"Most people from a lower socio-economic position can't just put life on hold so they can go away and study for two years, or whatever it might be. It's not feasible."

The concept is something he has heard talk of, but is unsure where it is at in terms of being implemented.

"I think it's definitely a positive way to go. My impression is that it's going to need more take-up from industry as well. Industry keeps saying they want skilled people. They're going to have to follow that up by actually taking on apprentices, if this kind of programme is started. One of the potentially frustrating things is that industries say they want more people and they want diverse people, but are they actually going to take them on when those people arrive? Are they going to be there to support them? Also, are there going to be provisions in place to support industry to take these people on, because they need to know how to deal with young people as well."

He thinks if there was a model where apprenticeship was the norm, like in trades including building construction, masonry and plumbing, then it would be easier, 'like this is the norm in the industry, this is how we get people skilled up, these are the support services that we have for it.' He does however think businesses would need an incentive to take on apprentices; but if there's a well-founded strong apprenticeship scheme then that can only help them to do that.

"I think it could be positive for sure."

What are your thoughts on that transition from the educational/ academic space, to a space where people are learning in the workplace, which is a totally different environment?

According to Tim, it appears to be the trend at the moment that work-based learning is preferred. He says maybe it is because there is a massive skill shortage and a people shortage or maybe the motivation is to reduce that gap between the education space and the workspace.

"I think it is coming out of this need for people with the right skills." In regards to the vocational education system, he thinks it seems to have kind of broken down a little bit. "It's not serving learners in the way that they need, and it's not serving industry in the way that they need. That's not just in tech."

Tama Kirikiri

Toi Mai | www.toimai.nz

> That's been another sort of kaupapa, that's been reinforced by our education system, about the individual learner, about how you've gotta really grow the individual learner, give them all the tools to be successful by themselves.
>
> Which again goes completely in the face of the way that we do things in te ao Māori, which is about being successful together.

tama-kirikiri

What do you think Māori technology is?

Tama (Te Whānau-a-Apanui, Ngāti Konohi, Ngāti Rākaipaaka, Ngāti Kahungunu, Kāi Tahu) says usually his rebuttal would be 'is Māori technology in your mind a Māori person that uses technology? Or, is Māori technology in your mind the development of technological advance or how you may use technology that is driven from a Māori perspective or a te ao Māori worldview?'

In a broader sense, he defines Māori technology as 'what is being innovated and developed by our tīpuna since they decided to conquer Te Moana nui a Kiwa.'

"They had to be courageous, they had to be inventive, they had to be responsive to their environment, they had to be at one with te taiao; and then they came up with solutions in order to make their lives better to keep themselves safe." In a nutshell, Māori technology is 'our innate ability to adapt to new things, to see the benefits of stuff that we've never seen before.'

What do you think the barriers are to Māori engaging in technology?

"I would say the very essence of the model is the issue."

He says when universities were imported to New Zealand, the intent then and to a large extent still the intent now, was to replicate what had been created in Britain. The whole basis of the university model at that time was to maintain the status, to maintain certain people in that power space - the thinkers, the decision-makers, everything, and so the elite colleges or high schools as we call them were linked to the elite universities.

In his view, the New Zealand university model hasn't changed much from a very Western-centric, male, paternal perspective. This is opposite to the idea of mātauranga, of pūrākau, 'of how we utilise what our tīpuna have given us in a way to inform going forward. In fact, it's quite the opposite.' He says the education model sits very much in that 'neo-liberalist mindset.'

"That's been another sort of kaupapa that's been reinforced by our education system about the individual learner, about how you've gotta really grow the individual learner, give them all the tools to be successful by themselves. Which again goes completely in the face of the way that we do things in te ao Māori, which is about being successful together."

While there are numerous reasons for a lack of engagement, he believes 'it's just a place that you don't see yourself in, there's nothing in there that reflects who you are.' Looking back at his own experience at Te Herenga Waka, it was Te Herenga Waka that got him through.

"It wasn't Victoria University, it was Te Herenga Waka, the marae, all the Māori students and all the Māori staff. They were like my lifeline there, that was where I went. I would go across the road to a lecture theatre and then I'd go straight back over there because that's where I felt comfortable, where I could just be who I was, like I didn't have to explain."

He chooses the word refuge purposefully, and says if people don't have that place of refuge, 'then it should be no surprise that large numbers of our young people who are spending lots of money to go to these places aren't being successful.'

What are your thoughts about the concept of innovation hubs?

According to Tama, this space already exists - 'it's called a marae. That's not a new concept.' In his view it's almost 'blind faith' that if something is successful educationally overseas then it can be transplanted in New Zealand with the same success.

He says the reality is, anybody who has been in education long enough knows that you can't do that.

"What is the context? Are the exemplars and stuff that you're going to be using relevant? There is so much stuff, and you end up doing a whole lot more mahi trying to retrofit it here. All these strategies - Māori strategies, Pacific strategies, are written up to try and make this thing that doesn't work in the first place here work … mine has always been, we've got all the mātauranga here. We've got all the brains, not just Māori but we've got so many amazing, incredible people that are being innovative and doing so much… and we can create something here out of our own whenua that works for our own people. And no one else in the world has the environment that we have."

He taonga nui te tūpato

Caution is highly prized

Antony Royal

Māori Spectrum Trust | www.maorispectrum.nz

If you go back and look at early Māori social structure, the head of the hapū was driven to make sure that the resources were there for all of his whānau or hapū.

The hapū leader was the last to eat because he needed to make sure everyone was looked after.

antonyroyal

What is your background and your journey into Māori tech?

Antony Turoa Hukehuke Royal (Ngāti Tamaterā, Ngāti Raukawa, Ngā Puhi) was born in Auckland and has five brothers. In 1970 the family moved to Silverstream, Upper Hutt as his father was working for the Department of Education in Wellington. Antony attended Silverstream High School and Saint Patrick's College. He studied te reo Māori by correspondence as it wasn't available at the school and the experience wasn't necessarily the best.

At the age of seven, he decided to become an aeronautical engineer, completed high school (including a year in Australia) and did Engineering Intermediate at Victoria University. Subsequently, he was accepted into the engineering school in Auckland. During his first professional year, he decided to switch and to study as an electrical and electronics engineer to explore opportunities in minicomputers. Back then, there was only one other Māori studying engineering.

"The students were mainly pakeha males with some Malaysians, a couple of Māori and one Pacific Islander."

He says he 'wasn't a particularly good student,' but really enjoyed the last couple of years and started doing his Master's in engineering, however, he was offered two jobs before he had completed his degree.

One was as an engineer at the Northland Electric Power Board and the other was working for an American company called Accuray. He chose the latter, moving to Tokoroa, working at the Kinleith Mill and then went to Tasman in Kawerau and then after that the company took him to the United States where he did some training over there before going to Asia.

He spent a number of years there working as a project manager, and became a Paper Process Control Engineer working mainly in Taiwan and South Korea. Following that he returned to Aotearoa and built a career in Information Technology working in TPK, Health and other Government departments along with a stint in Banking.

Then followed several years with the Dairy Board (Fonterra) as the Regional IS Manager, Global Infrastructure Manager and then as their Web Initiatives Manager. He says they deployed one of the very first intranets, that provided information to all of the Dairy Board offices across the world.

What is your journey into Māori digital entrepreneurship?

His father had headed up the transformation of the Wellington High School and then was employed to establish Whitireia Polytech out in Porirua, and was the first CEO. At the time, his father, along with Whatarangi Winiata, set up Te Wānanga o Raukawa.

Antony names Whatarangi as 'probably the big influence in my life,' describing him as not afraid to get into the technology space.

"He'd collar me and my Dad and we'd sit in an office, often until well after midnight, scheming and plotting how we were going to use technology to support Māoridom, and in particular at Te Wānanga o Raukawa."

Antony mapped out a strategy for Te Wānanga o Raukawa and set up a company called Raukawa Computer Services. He says PCs were a fairly new thing.

"We decided we'd get word processors and spreadsheets into the Wānanga, we couldn't afford a suite of PCs, they were very expensive at the time, so we convinced Unisys to give us a Unix computer which used terminals to run word processing and spreadsheets, this is what we taught the earliest students on. We progressed to PC's and networked, and installed an email system which Whatarangi would often use at all hours of the day and night. Over time they networked the whole campus, installed our own private fibre."

In the 1990s, Whatarangi Winiata told him they needed to figure out how to get more technology in the hands of Māori. They came up with a plan - every single student that came to Te Wānanga o Raukawa had to study computers, as well as te reo and hapū and Iwi studies. Implemented in 2000, he says it was quite a challenge.

If the students didn't have a computer, they would fund it and get them one.

"Students would come to noho, get trained and be able to take their computer home with them. Our next challenge was getting our students online. At that time, we didn't have broadband, but used modems connected to phone lines. It was a challenge to get Internet Service Providers to take our students on as customers so we set up our ISP and helpdesk. This ran for many years until the rest of the world caught up. During that time we impacted thousands of Māori homes and normalised the use of technology. Now it's very simple to get a laptop and some internet connectivity."

How important is it to integrate tikanga and a mātauranga Māori lens into the digital tech space?

Antony says they didn't see that they had to integrate tikanga Māori, 'you didn't need to cause it was already there.' He says that Te Wānanga o Raukawa was an organisation that was tikanga based.

"We didn't need to apply or integrate it. We just sat down and figured out what the best way was for us to use these digital tools for the benefit of Māori. We developed a lot of values-based approaches. I remember one day working on a contract and the lawyer came back with this dispute resolution and I thought, 'I don't like these dispute resolutions, this doesn't sound particularly Māori.' So, Whatarangi and I sat down and we came up with a tikanga Māori based dispute resolution, which at the time, nobody else had really been thinking about this stuff, but in hindsight, that was quite advanced for the time."

What is your interpretation of Māori digital entrepreneurship?

As Chair of the advisory group for the Ka Hao Fund, Antony says they were funding Māori digital entrepreneurs and had to make some decisions as to how to approach it. He says they had to draw this line about what a tech company was.

"If you wanted Ka Hao to fund building a website, sorry, no, that's not tech entrepreneurship, that's just a digital skill."

Defining what a Māori company was provided a challenge.

"It's not an on-off switch because you could be Māori that owns a company that's not Māori at all. You could actually have Pākehā that own companies that look way more Māori than some of the Māori companies. It's a sliding scale which has a number of elements including te reo, what sort of tikanga do you follow, are you comfortable in that environment, how do you look after your staff, what support do you give them, what is the topic that you're engaged in, what's your outcome you're looking for, is it purely financial or are you looking for a better outcome?"

According to Antony, there is no clear-cut answer, it's a combination of these things, but key to all of this is whakapapa.

In regards to entrepreneurship, he says there are a huge number of examples of Māori being entrepreneurs and he thinks the difference is Māori are driven by outcomes for Māori whereas Pākehā companies tend to drive for commercial return. That's not to say that commercial return isn't important, but it's the motivation that's important.

"If you go back and look at early Māori social structure, the head of the hapū was driven to make sure that the resources were there for all of his whānau or hapū … what I find quite disappointing about today's commercial structures is you tend to have the CEO at the top who gets the most, then it dribbles down to the bottom. Whereas, in early Māoridom, the hapū leader was the last to eat because he needed to make sure everyone was looked after."

He thinks Māori entrepreneurship is seeking an outcome for Māori, not just getting a share price or exit dollars higher.

What are your thoughts about education and training in this space?

While Antony thinks there are some great programmes, he says there is no one comprehensive programme. He thinks schooling has been a challenge as Māori have typically not been supported in technology-based science, maths and physics.

"Māori tend to be pushed into the softer kind of subject matters and if you want to do technology-based jobs, maths and physics are absolutely critical. I think that that is a fundamental building block we are missing right across the schooling system for Māori."

Antony was instrumental in setting up Te Mana o Kupe Trust which assists schools and whanau in Porirua East access digital equipment so that students can learn in a digital environment. This has been a huge success for whanau living in the area and the Trust continues its work today.

Antony says, 'when we talk about digital tech, people immediately start to think about rangatahi and my experience is that's not always the path for everyone. There are a lot of experienced pākeke who have made the transition into digital tech.'

He says support is needed not just for rangatahi but for everyone.

"You have to know how to learn on a continuous basis. You need to continuously be learning and it's a habit that people need to get into. There is no reason why people in their fifties, sixties, seventies are not doing digital tech, even if they might not have been trained in it, there's plenty of opportunity to transition into it."

He says he cringes when people say they are too old.

"That's probably going to be my final words, don't tell me you're too old, that just tells me you're too lazy."

He maurea kai whiria

Ignore small matters and direct effort towards what matters

Potaua Biasany-Tule

Digital Natives Academy | www.digitalnatives.academy

Ko Potaua tōku ingoa.
He Māori ahau.

He uri o Ngāti Whakaue o Ngāti Pikiao o Ngāti Rere me Te Waimana.

He hoa rangatira ki a Nikolasa. He Pāpā ki a Atutahi rāua ko Hiona.

He tino tūtū ahau.

potaua

What is your definition of Māori technology?

In Potaua's view, Māori technology is any tool or way of thinking that has helped Māori.

"I guess anthropologically if someone had sharpened a stick then that stick is now a tool; so if Māori are sharpening sticks, then that's part of our tool kit. It can be as advanced as a waka hourua and everything around celestial navigation, knowing from the karakia and the construction of the waka, from the crew and how you're determining where you're going, destination, pathfinding, all of that thinking and the execution is a perfect example of Māori technology and Māori innovation. It's not about the computer. Then I can also say it's what Māori do with the computer that could actually have some profound impacts."

How important do you think it is to include the values and the traditions and the concepts to make it truly a Māori technology field?

Potaua says the thing that defines and differentiates Māori, 'is that we go back to the source, we go back to our atua; it doesn't matter what we are doing, our atua will play an important role in what we're developing.'

"We're not doing it in isolation, most times our tīpuna have done this before us, so for us, it's a re-discovery, a re-imagining or re-implementation of what's already been done, so our atua, they're in there guiding us, that's why we keep those values close. A lot of the intrinsic knowledge is already there and it's for us to draw it out."

Why do you think we have poor engagement in technology from Māori and Pasifika communities?

Potaua used to think poor engagement was due to racism, 'because Pākehā didn't want us there.'

"It turns out that we've got a higher aptitude for teamwork, collaboration, communication; you can't shut a Māori up. If you've got the right team, the right kaupapa and everyone's collaborating and connecting and communicating, for us that's beautiful but I think for the system, it's quite dangerous to watch us re-empower ourselves and to start re-imagining and to build a ladder out of the hole that colonisation and poverty has put us in."

He says nowadays, 'our kaumātua, they're not having that anymore.'

"They took so much racism, so much colonisation, how are they gonna let their moko's go through it? So they're gathering all of us, the oldest of the moko's to make sure we can develop programmes that are essentially Māori but all the gadgets are still part of that, doesn't matter the gadget, you've still got to be about your whānau, your whakapapa, your whenua. There is a real want and a need in our community, 'because we all know we missed out, so we're trying to just catch up. But we're not trying to keep up with the Jones', we're trying to do our own thing."

How important do you think digital hubs are?

Potaua compares the importance of these spaces to a wharenui, which Māori would be 'lost' without.

"Why aren't there digital spaces so that Māori can come together and shape our own future and plot our own path instead of having to go to a university or library, which you've still got to pay and it's still within their timelines, within nine to five o'clock and all that, which isn't conducive to us, we might be working and we can't get out until after the kids are asleep or we might be a night owl and those places don't allow that. I think our place allows that. If you've got kids, bring them in. If you're night shift or a night owl, we'll give you the code. We've got to customise it for ourselves."

How do you think we can encourage that sense of try and fail but keep trying?

Potaua believes without failing then the team can't reflect on how to make itself better. "No one walks in perfect like God. So, it's just allowing humans to be human and allowing Māori to fail and to say, 'we can't do it,' cause it's not a sign of weakness. We don't like when it's weak, that's why we don't like to fail but in the IT world, strength comes from figuring out what not to do, you might have tried a hundred times and now you know a hundred times what not to do.'

He thinks it takes a lot of patience, empathy and sympathy, 'especially if you're the one failing, you're banging your head against the wall, so there has to be tuakana who just keep walking through and saying the reason that you're doing this, is so that you can keep improving.'

He says Māori are pretty bad for not allowing themselves to fail, or to talk about failure or to celebrate success in failing.

"Whānau, this is how hard we sucked and this is where we need to celebrate that suckiness.' I've never been to that hui. We all know in the back of our minds, it's like we all failed, but I don't want to be the one to say it, 'cause I might get all the negative attention, so we just won't talk about it, bottle it deep, bottle it up, push it deep down inside, next kaupapa."

Do you think the metrics the Government measures success on are not quite meeting the goal?

To Potaua, Pākehā frameworks don't fit Māori.

"For the last 170 years, they've been trying to take our roundness and smash it in their square hole. Nearly every framework I've come across is square, but every Māori rōpū I've dealt with is round. It doesn't matter if they're north, south, east, west, not one person is in love with the Government framework. Doesn't matter what agency, or which department, we are continuously up against it. Doesn't matter what sector, our people are being set up to fail, we all know that."

Do you think the concept of community gives Māori a competitive edge in the industry?

Potaua says many hands make light work and it comes down to good leadership.

"If you've imbued with leadership, you culturally are on to it and technologically at least are curious enough. I think we'll flock to them, like a beacon. It's by collaborating with others like how we used to do in the old days, our whānau would help that whānau."

If I gave you the opportunity to do two things that you would think would improve the technology sector within New Zealand, what would they be?

"First would be to start at the top. A Māori Minister of Tech, 'cause it's all top down in this country, it's really hard to do anything grassroots. The Government controls everything. A Māori Prime Minister is going over to the colleague, the Māori Minister of Technology and they've brought in the Minister of Education, all the other ministers then become more collaborative and centred on our people."

Potaua says it's a made up scenario, but he would love it if the caucus, cabinet, and Government started caring about the potential of rangatahi.

"So, they've put down a 25-year plan, fully resourced to get Māori tino rangatiratanga in the digital space, that would be a great start. Then it shows that our leaders care, they've actually put some time and effort into planning, brought the best brains together, us, we've all contributed to a wider project, fully funded. It doesn't actually need to be the Government, our Iwi are now in a position to do this, they can fully bring us together and fully fund us. Perhaps not for 25 years but at least for five years. At least we know the head is in the right space and then it's just bringing people together and it's the hands and feet and making sure that the kaupapa stays pono, like our heart. The head's lined up, the heart's happy and now the feet and the hands can move in the same direction. So, the first thing I'd do is go to the top and the second thing I'd do is bring us all together."

Whare Kupenga-Keefe

Aatea | www.aatea.co.nz

> A Government transformation that allows us the freedom to still be ourselves inside that space, is a safe space.
>
> If it's not anything like that, then it ain't safe, and our people do not want to engage.

whare-kupenga-keefe

What do you think Māori technology is?

Whare's father was a carver and also made traps for food trapping, while her mother weaved. Her parents were also part of building the marae, whare tupuna, and other types of buildings.

"This is what I've learnt from my parents, that whatever you can think of that is a tool that helps you to either complete a task, or connect with others, then that is technology."

She believes it wasn't hard for Māori to get involved in tech.

"It was easy, and because all of us had a basic understanding of whakapapa, and things like that, and how things connect, how humans connect; our interrelationships, our intimate relationships with our universe, with our environment, with each other, with the tools that we have at hand, it wasn't hard to jump into tech."

Why do you think we have that low uptake, or low engagement in technology by Māori?

Whare didn't grow up with digital technology around her. She went to High School in the eighties when digital technology was introduced. She says learning digital technology came from taking a computer home, taking parts off and putting them back together to see how they worked.

"It gave me the insight into learning about digital technology, in terms of making connections; how they connected up to other computers, and stuff like that. But in terms of being able to learn, working this technology, it was more about learning about parts of the computer, rather than how they connected to each other."

She thinks there is a huge gap where education is concerned.

"Even when they do get in there there's a lack of mentorship, and then sometimes it's not so much the mentorship it's just getting to tech. Their personal environments aren't matching up with their desire to pursue that particular education, or any education for that matter."

One young person wanted to do tech, but couldn't readily recognise the path she wanted to follow.

Other complaints were there was too much writing for the work they were going to do, and what was being taught at tertiary did not match what was being expected of them in the sector, and even when they get into the sector and were hired for specific jobs and given a title they were not even doing that job.

How can we encourage more Māori into this space?

Whare's background is in social services and education, and health. Jumping into this space she relied heavily on her whakapapa.

"This is where I think tech is, to me that's what tech is. I relied heavily on our whakapapa, and it didn't matter to me whether you are the tuakana, the teina, the neighbour's dogs, friends, because the Māori perspective is everybody is he tapu tō te tangata ahakoa ko wai; and we're all part of the bigger picture."

She says practising tikanga as the premise for engagements is an inherent part of being Māori, and when she interviews people within her role.

"I realise that I have to be able to manaaki you. I have to have all of that stuff in place, and that's a common thing that we carry with us wherever we go, and no matter what that person's attitude is, they could be having the baddest period day; I don't care, it's not my problem. That's only one aspect of them, because essentially he tangata tātou. So, we all believe the good, and the good."

Ideally, Government wouldn't judge people, 'pocket them into little boxes, confine them into spaces that before we've even had an opportunity to understand what that even sounds like, and experience the taste of it, for ourselves.'

"A Government transformation that allows us the freedom to still be ourselves inside that space, is a safe space. If it's not anything like that, then it ain't safe, and our people do not want to engage."

In terms of the people she has interviewed, namely, the kaihautū, the tech leaders, the educationalists, and the mana whenua; they have pointed out that they would like the Government to fund an apprenticeship kaupapa.

Some people have mentioned that Māori want to be intergenerational, and they want long-term gains, yet the funding that they often give people is over a short term. What are your thoughts?

Whare stresses Māori don't want to be intergenerational.

"We are intergenerational and that's just whakapapa from even before Io; and I think the Pākehā equivalent is the big bang theory, and I don't care to debate that, but we are intergenerational."

She says Māori are very accommodating and always meeting Pākehā requirements

"What more do you want, give us our money! These paradigms, this land that you've helped yourself to, and a whole lot of other of our resources without arguments. Let's practise your compensation methods then; give the money so that we can train our children into those spaces that you continuously shove in our faces in terms of your reports, your depictions of us, your narratives about us. Actually, your whole world view about us. So that we can just get on with it; we're a get on with it people."

She doesn't think the Government knows how to consider long term, because they're not longevity themselves: 'today it's Labour, tomorrow it's National.'

In terms of technology, Whare says she is disappointed that it is not visible enough.

"Tech leaders are not visible enough, opportunity in technology is not visible enough. The training itself, and training that is applicable to the times in which we are living, the environments, the economic environment in which we are living is not visible enough. They don't talk to each other."

She says it needs more exposure.

"I think stick to the way that we do things in terms of our kūmara vine. In terms of getting things done for our people, a trustworthy network, and just sticking to our own stuff I think are the way we want to be visualised, and even if that means taking our marae Ātea forum, taking the framework from that and bringing it over into the tech sector, then why not create something like that. Get all those creative types to do us a marae Ātea for the tech sector; so our kids can see it clearly."

Naomi Manu

Auraki Group | www.aurakigroup.com

I te taha o tōku Pāpā
He uri no Rangitāne
Ko Te Ore Ore te marae
Ko Ngā Tau e
Waru te whare
Ko Hamua te tangata
Ko Ngāti Hamua te hapū
He hononga hoki ki Ngāti
Raukawa ki te Tonga
Ko Kikopiri te marae
Ko Marara Kuiti
te tīpuna kuia
Ko Ngāti Kikopiri te hapū
I te taha o tōku Māmā
Ko Ngāti Kahungunu
te Iwi
Ko Te Waihīrere te marae
Ko Takitimu te whare
Ko Tapuwae te tangata
Ko Ngāi te Apatu te hapū
He hononga anō
ki Hinemihi
Ko Hinemihi te marae
Ko Te Poho o
Hinemihi te whare
Ko Maata Pumaranga
te tipuna kuia
Ko Ngāti Hinemihi
te hapū

naomi-manu

What is Māori tech or Māori digital technology to you?

Naomi says she was told something that resonated with her: 'what we are trying to do is we are kind of leaning towards our old ways of knowing with new ways of doing, and that's what I feel like Māori Tech is for me.'

What do you think are some of the barriers for Māori participating in this sector?

Naomi says one of the key barriers is the lack of clarity around pathways in tech.

"There isn't real clarity around what that looks like. Typically or traditionally, a pathway might be that you are going to be doing a Computer Science degree or an IT degree and that's your pathway entity. It's not really the case now. There are so many different pathways but there is also a lot of lack of clarity around."

Another barrier is a lack of visibility around Māori tech leaders.

"Our rangatahi who are doing IT degrees are faced with barriers by being Māori in STEM-related qualifications, and as the only brown-faced in the classroom this can leave them feeling very isolated being away from family, plus affordability - having to move away from home, and being unable to afford to go to hostels."

If technology is seen as beneficial to Iwi and hapū, do you think this will help encourage more Māori into the sector?

According to Naomi, young people are likely to transition into careers similar to their parents or their parents' social network.

"If there are gaps in terms of having relationships with those who are in tech, how do people gain exposure? How do people understand the pathways and opportunities? There are also issues around digital poverty and connectivity as well."

Covid-19 exposed that for many whānau Māori, a lot of rangatahi didn't have connectivity at home and also didn't have tech such as laptops, nor iPad, she says.

"They were doing and submitting their assessments using their phones. If we are experiencing that level of digital poverty in some areas then how do we even support our whānau to participate in tech if it is not affordable in the first place. In some communities, there is not enough opportunity, exposure or privilege to have this space to be able to even think about the opportunities that tech could bring."

What would you advise the Government to do to encourage Māori engagement in digital technology?

Naomi says she would advise the Government to reframe and redevelop education for clear pathways into qualifications and the industry. She thinks a lack of clear pathways, barriers around visibility of Māori leaders in tech and issues around tertiary participation affect engagement. If education was reframed where Māori can learn as they earn, she believes there would be a greater level of participation.

"If we had some very clear pathways direct into work whilst at the same time gaining qualifications that will lead into high-value careers, the benefit is twofold: more Māori in tech and an investment into a population, a structurally youthful population where we'll receive a return on that investment for 40-50 years of their working life. But more than that, we'll receive a return on that investment and they'll have an intergenerational impact. I think if we have issues around Māori engagement in the tech workforce, then it just makes sense to me that we pay them to work."

Ko ia kāhore nei i rapu , tē kitea

He who doesn't seek, shall not find

Megan Tapsell

ANZ Bank | www.anz.com.au

I te taha o tōku papa
Mai Ngā Kuri o
Whārei o Tihirau
Mai Maketū ki Tongariro
I te taha o tōku mama
Ko Tararua te maunga
Ko Ngāti Raukawa
ki te tonga te Iwi
I tipu ai ahau i Maketū

mtapsell

What do you think Māori digital entrepreneurship is compared to traditional conceptions of digital entrepreneurship?

Megan summarises Māori digital technology as applications and software designed by Māori or accessed by Māori, 'those who are doing all the thinking and the innovation around those designs that are applied and used by our people.'

How can we integrate Māori values and customs into digital tech?

When Megan is working on design principles, she ensures there is a Te Ao Māori perspective at every level of software design and development. The simplest one is checking that an application can integrate Te Reo Māori such as accepting macrons, 'because with our reo comes our history and identity.' Megan's company designs products from the bank's perspective, so they need to ensure when designing a credit card product or a loan product that they are starting with the fact a Māori will be a user of this product and include their worldview. She ensures they are coding from a Te Ao Māori perspective, inputting core principles including kaitiakitanga and manaakitanga into design. Decisions are made in terms of impact on the environment and long-term sustainability, questioning, 'are we coding it for today or are we guiding it for the future? Furthermore, how will the physical assets be disposed of? When we apply kaitiakitanga to that, what are we doing with our physical assets at the end of it?" Recycling and regeneration and sustainability are paramount.

"If you're not doing that with kaitiakitanga in mind, then you're not doing it."

Do you think integrating values offers Māori an advantage on the world stage and that other indigenous organisations could follow this initiative?

Megan has seen various industries in New Zealand, including digital technology, become more aware of indigenous thinking and a lot of organisations have applied a Te Ao Māori worldview.

"There's this recognition that to play in Aotearoa you need to have that."

She says Māori technologists are in demand as organisations are aware that it's to their advantage.

"Māori technology talent is difficult to get so in order to retain it in these workplaces we need to make culturally safe places for Māori to come into."

What do you think about the Industry Transformation Plan?

According to Megan, 'we just need to take our opportunity to influence it.' While the Industry Transformation Plan is focusing on the right areas, she says there's a whole lot more work that needs to underpin it and that is when the next level of detail should unfold.

How do we encourage rangatahi to get involved?

Megan says within ANZ, they are building a community proposition around working with some of the schools to encourage students to get involved in STEM subjects (science, technology, engineering and maths). She thinks science and technology is focused on so much within the 'STEM piece,' but considers technology as much broader than that.

She says the designers of their technology are not the traditional design technologists, but people who have come through art and media. She believes we need to be more open to encourage involvement and not pocket technology into certain fields, and that the problem with defining technology can be due to the employers.

What role do you think the Government, Iwi, the transformation plan, have on funding initiatives to increase participation of Māori digital technologists?

Megan strongly believes the Government has a role around needing to participate, protect and grow Māori involvement, particularly in regards to Te Tiriti principles. Technology is going to be the fastest-growing sector so she says Iwi need to invest in technology in one way, shape or form.

"We want to be party to that success and if we don't get on and if we don't start to understand and get onto that now we are going to miss the boat."

She says Iwi need to decide whether to invest in themselves, or potential successful technology businesses, or grow the skill sets within the Iwi.

"I think we've hit a number of different targets around growing our local communities and access to technology, whether that's down to an educational provider perspective or something different I'm not sure."

What do you think are the enablers of Māori starting their own enterprises in New Zealand?

In Megan's opinion, having access to funds and having real-world examples showing there is success and how they can be successful will help inspire more Māori. It has to start with being able to see what they could be and showing them how to do it.

Te tōia, te haumatia

Nothing can be achieved without a plan, a team and a way of getting things done

Hiria Te Rangi

Tuaiwi Labs | www.tuaiwi.nz **Whare Hauora** | www.wharehauora.nz

Ko Hikurangi te Maunga
Ko Waiapu te Awa
Ko Maungahanea te Marae
Ko Ngāti Porou te Iwi

I te taha o toku Papa
Ko Tongariro te Maunga
Ko Tongariro te Awa
Ko Hirangi te Marae
Ko Tūrangitukua te hapū
Ko Ngāti Tūwharetoa te Iwi
Ko Hiria Te Ata Te Rangikaiamokura ahau

hiriaterangi

What was your journey into tech?

Hiria got into tech when she was about 22 and pregnant with twin boys. She says she was on the benefit, the house was cold and damp and the internet was just beginning to be a thing. She managed to convince her mother-in-law to buy her a computer. She believes that in order to be really good at tech, you have to have a certain personality type because otherwise, it's boring. She says she already knew the hustle.

"So, to me learning how to build websites, Google was not even a thing then. There was no such thing as courses. I essentially asked friends how to type real fast and then pulled apart old websites in order to build new ones. Then you went and volunteered with organisations. That's how I started. Because you need to have experience, right? I was trying to tick all those boxes."

As soon as she had two websites up and running she applied for a job and got one at $12 an hour.

"It was horrific, I have to say. This is why I don't think we should be jamming Māori into coding courses. The level to learn so that you are good enough to be intermediate is four years, five years. That's too long. It's way too long. So, of course I understand when people quit so they can be a builder because they get paid faster."

What do you consider Māori technology to actually be?

In Hiria's point of view, Māori technology is derived from tikanga Māori essentially.

"You can see when tikanga Māori has been used, especially when it has been used in order to engage with Māori."

Why do you think there is this low engagement by Pasifika and Māori in technology?

According to Hiria, 'because it's not built for us or by us,' there is low engagement.

"If some kind of value is derived then Māori will use it. Case in point is Facebook, TikTok. The ability to connect. We see the value in that and so we use it. But, if you look at things like TikTok and their live streaming and the way that they pay creators TikTok takes I think over 80 percent of all the money that is kōhā which is literally kōhā to the creator. That is where I have a massive problem."

Any suggestions to get more people educated and engaged in the space?

Hiria thinks the dichotomy or the way we think about how to engage with Māori in technology is 'flawed, utterly flawed ... you can see the coloniser mindset of it.' She says many organisations are jamming rangatahi Māori into courses such as coding, 'but when you have a look at the outcomes you'll find that only one or two have actually completed the course ... There is no value added for the rangatahi at all. No one has actually asked them, "Do you actually want to be a coder or do you just like content creation?" In which case shouldn't we be teaching them business? Shouldn't we be teaching them how to make money from live streams?'

She says Māori are creators.

"We are so fast at picking up technology and making it suit us so I don't know why we're trying to turn everybody into essentially a farmhand for tech. I know that's the way that all of our high schools, our old ways of doing things went ... but that's not where we lie. That's not where our passion lies and that's why the outcomes are so poor."

What do you think of the concept of a digital hub?

Hiria believes the concept is worthwhile for kaumātua as their central means of communication and finding connection is at their marae.

"That's a normal behaviour ... For them going to their marae to figure things out, to wānanga, to learn, is completely normal. But for rangatahi it is not. You need to make the tool fit the needs or the personality or the behaviour that they already express. From my point of view if your target audience is rangatahi then you need to be really good at social media and you should have actually created a social media platform. You have to do a multi-pronged approach if you are trying to engage with Māori because social media is not necessarily where your 40 and 50-year-olds are, which is me but neither is the marae.".

If you had an opportunity to shape a policy or shape an engagement or create a pathway what would be some of the things that you would immediately focus on?

Essentially, Hiria says it's the complete opposite of how the government runs.

"Hapū driven development. They have their own budget. They can do whatever. I don't care what they do with it because hapū will have their own funding in order to figure out what their people need. Their people will feedback on whether they're going the right way or not. From that feedback you can derive whether or not that hapū is doing well or needs more support or needs more funding or whatever. Actually they could probably figure it out themselves."

Too often Māori are treated as consumers of technologies rather than being given the opportunity to shape the technology, what do you think about that?

Hiria says one of the pushes she has discovered is that we don't need more Māori developers, rather more Māori product owners.

"The more Māori that create products the more they will serve their own people which is still our community using funding to find ways to solve a problem that is prevalent in the community."

She says it is that 'whole mindset thing of Māori are only capable of this.'

"No. We should be driving the train. This is our waka. For crying out loud. We know what our people want. Why are you putting someone that doesn't know our people in front to make the decisions? It blows my mind."

Where do you see entrepreneurship in this space?

Hiria believes entrepreneurship is a normal part of us.

"We just roll like that. If you're on the DPB and you need some baby nappies then you just find a way. To me that's entrepreneurship. That's the hustle, the drive, the grind. I think the problem that we actually have is changing Māori mindset from hey, you actually do this all the time. It's just at a bigger level."

She says there are massive gaps in the entrepreneurial ecosystem, 'it's that whole mindset, capitalist-driven mindset because they are looking for money. Return on investment. That's okay but that's not how we roll.'

In Hiria's view, trust is vital. She says 'if trust isn't a part of your pou or a part of your strategy then Māori will not engage. You have to identify that trust is not freely given and you have to have a strategy to create it otherwise you will lose. I don't care what the product is and I don't care what the organisation is. You will lose.'

She says a lot of the fixes come from being humble enough to ask other people for help.

"Being humble enough to understand that you're only actually really good at one thing and you should leave the other things alone which is why I think that the government should just govern and leave tech and finance and the rest of it to other people. You have to think of the ecosystem that you're creating when you create a product. Not just wham bam thank you ma'am. You will lose. You will end up just spending a ton of money for something no one will use."

David Gillespie

Tech Management Group | www.tmg.nz

Ki te taha o tōku mama
Ko Tawhitirahi
te Maunga
Ko Te Awapoka te Awa
Ko Pārengarenga
te Moana
Ko Ngātokimatawhaorua
te Waka
Ko Matatua te Marae
Ko Waimirirangi
te Wharenui
Ko Te Rongopātutaonga
te Wharekai
Ko Te Kao te Kainga
Ko Te Aupouri te Iwi
Tihewa Mauri Ora

davidgillespienz

What do you think Māori technology actually is?

According to David, a Māori company is all about kaupapa and tikanga.

"The two parts of our business that we feel make us a Māori business - especially in technology - is that we have a very special ethos that we drive. We have a set of values that we're very staunch on."

He says it's important to recognise it's about 'doing the do'.

"You know the old saying, 'too much hui, not enough do-ey,' is sometimes something ... it's a bit of stigma that gets held with Māori."

It's not about doing what everyone's always done, but rather showing that Māori businesses and businesses that are delivering Māori kaupapa 'can do just as well if not better than other businesses that perhaps have a slightly different kaupapa.' He says when his team registered as a Māori business it was about trying to put themselves on the forefront of technology.

"To be a Māori company is to feel proud about what you do, is to have a purpose that encourages and makes you proud to be part of a Māori business."

What are your thoughts regarding the relationships being more important than the actual product within Māori businesses?

In David's opinion, it is very much a 'whanaungatanga type approach' as a Māori business.

"It's about the people. First and foremost our business is Māori because we value our staff and we value the people that we employ, and we feel that we're one big whānau. Māori tend to have a sense of whānau more than most, so we feel that whether people here are genetically Māori or Māori by kaupapa we find that people have a sense of belonging, a sense of purpose. They have the ability to feel that it's bigger than them."

It's about how he can help his team and his whānau deliver a better service so it actually reaches more people and has more of a profound effect.

How can more Māori and Pasifika be encouraged to pursue technology as a subject and career path?

Typically by design, Māori and Pasifika have been the workers, 'they are physical, and tend to to be the labourers.' Furthermore, there is the stigmatism of, 'what I call nerds ... it's something that perhaps doesn't sit at the forefront of a lot of Māori as far as your top job description is concerned.' He says a lot of the time Māori want to receive mana, they want to show that they've done something well for their whānau, for their community and they want to get recognised for that.

"A lot of them are now working out that actually technology can be a good long-term profession for them, it's not just one of those things that you see people do for about a year or two and then they're into something better. I think they realise that once you're in technology they've reached sort of the pinnacle, or towards the pinnacle of their profession."

In some rural and low socio-economic areas a lot of the students want to learn as they earn. What are your thoughts?

According to David, employers want their workers full-time plus have the skills needed to hit the ground running.

"Often people that want to learn and earn they're sort of working off the back of the business to get better, and a lot of businesses are sort of already at either a mature or a maturing state they need people with I guess that commitment. Because a commitment is another thing, learning and earning, the perception is that once you've learnt you'll take that knowledge elsewhere; that the business that you learnt and earned with is I guess a stepping stone to go somewhere else."

He says in the past he has had people that have come to do some learning.

"We haven't really paid them so it's been one of those, you come here, you learn and your learning is your payment and stuff, or you get paid in other ways, so you get paid in vouchers or what have you. We have had that a few times and some of them have eventuated in jobs. But more recently we found that a number of people coming through the tech sector is lower and the quality is probably not as great as it used to be."

David has spoken to some of the tertiary institutes to ask what they are teaching, 'because sometimes the skill sets they're coming out with aren't compatible with the skills sets that we need.'

"To learn and earn it's one of those things we've done historically but probably not as of late and mainly because the business we run in medical and health is so crucial to people's lives that we really need people at a higher level."

How can the Government promote Māori technology and educational opportunities better?

A lot of government contracts are given to big businesses with large infrastructures and thousands of staff.

"The majority of the reasons around that as far as I know is that they do that because it's safe."

Over time he has found that his business has had more exposure now that they're larger to government policy and government agencies. His business has had input into a lot of health policy documents, national and Australasian.

"We've found that as you get bigger and as you get more recognised, and as you've paved your way and made a name for yourself then a lot of people want input as to how to improve the system."

He elaborates that there are technology companies and technology people out there that have a huge amount of input that they could contribute, and 'not to overlook the smaller fish.'

"There is value to be had in not just the top dogs in the technology sector... I think what happens with smaller companies is that if you don't help support and develop smaller companies to become bigger companies, then you won't have many big companies to actually choose from eventually, and a lot of skill set like the brain drain will just go overseas."

Would you agree that there isn't enough visibility around individuals who have achieved well in this space?

In David's opinion, everyone needs people to aspire greatly.

"It is important for people of similar backgrounds, similar upbringings, coming from similar regions or places to understand that perhaps what they thought wasn't possible is possible, and that there is a high level of invisibility in New Zealand around success stories."

He says some people are humble, and are also busy.

"If I was to give some advice around the invisibility it's about trying to make it achievable for those people to have made a difference to help become 'uninvisible,' and also promote it to the right audience. Work out what market you're trying to be part of, or where you're trying to aspire or direct that aspiration towards where you want to go. Tell us your story and give us a little bit of a spiel about what the hardships were that you went through and overcame to get where you were today; and here's the finite period of time I need you for."

It's about people's time to reduce that invisibility and also making sure there is a purpose for their time to really make the best use of that.

What do you think about the concept of Māori being shapers of technology rather than end users only?

David says 'as much as we think we sit on computers and we're on keyboards all day and punch away and that's about it, technology's a very social industry. Māori especially, apart from being humble we're also very social.' He thinks Māori in tech is 'making sure we collaborate and don't forget that there are others doing similar things that perhaps we didn't know about.'

"It'd be great to have a Māori tech-up, a national one, where we could all communicate and stuff. Not necessarily collaborate ideas to improve what we're doing but just get together and I guess appreciate the successes that we've all achieved. Have a little kōrero around what is it you're doing, or how did you come about doing it, do you enjoy it, what would you do if you weren't doing this."

David started his business 13 years ago because he saw a gap in the market.

"It just requires an idea. It requires some confidence and just a bit of 'I can do this' sort of thing and then once you're out there doing it and stuff like that don't shy away because you think you're gonna fail. That I think is a big Māori thing too … I don't wanna do it because I might fail."

He thinks people have got to be less scared of having a go at things.

"Need I say it, less humble, and go out there and be a bit more peacocky."

Iti rearea, teitei ka taea

Although the rearea is small it can ascend to the heights of the Kahikatea tree

Ranui Samuels

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> Kanohi-ki-te-kanohi. These are the true solutions. You only actually add value when you're actually connecting face-to-face.
>
> I think that's what we have to offer. I believe that the world has forgotten this, and that those that run agendas and governments don't know this.

ranuisamuels

What does your mahi involve and what are your thoughts on Māori digital technology entrepreneurship?

Ranui believes entrepreneurship is an intrinsic value of Māori, describing it as a combination of capability, aspiration and opportunity. He thinks that overcoming fear is one of the central components of becoming an entrepreneur, and while most people view entrepreneurship as being motivated by financial means, his own experiences of entrepreneurship are not that. He claims the need for independence, the need to be free to engage with others in a 'free-er' manner, and also the desire to affect change that normally would not come in a situation are the drivers behind his own journey around entrepreneurship.

Ranui started young - making money at age 10, picking up fallen fruit from his neighbours' orchards, selling the produce on the street from a box. He says his family wasn't well off, and he didn't receive pocket money, so he saved if he wanted something. Based in Papua New Guinea, he bought his first pair of new shoes at aged 11, then the second pair at aged 12, with money saved from selling popcorn at the markets.

"I knew that the natives didn't like sweet food but they liked salty food, and I thought well, they've never tried this popcorn stuff before so I sold popcorn! That's how I bought my first new pair of shoes."

His journey has always been one of not really knowing what to do next, rather, 'what you see in your hands to do – what will you do with that?' He says he always put himself out there after learning a new skill. He did a graphic design course for one year and then immediately went and printed business cards and flyers and called himself an agency. Though he says he wasn't a very good designer, he decided to print 2000 flyers, 'because that's how many I needed to drop off. I had calculated every store, and every shop in the whole area, and the printing company I went to, to print off all these flyers, asked me, 'why are you printing off all the flyers?' I said, 'I'm a graphic designer, just moved to the area.' They said, 'would you like a job, we'll hire you now?' So, the very company I went to, to print new flyers, hired me.'

After spending 19 years in Papua New Guinea, then four years in New Zealand he moved to London with his wife, and started a fashion label.

"It was just screen-printing this word on tee shirts. I went through a period of depression where I struggled mentally to be motivated, and so my way of motivating myself was to create this word Rise, and I would print it on a tee-shirt and I'd wear it around and I would use it as a means of clothing. It was clothing my mind, that's how I referred to it."

By that act of printing numerous tee-shirts, he attracted the interest of some people who offered him his first funding round for his first business in 2005. in London. After living in London for a number of years, followed by Birmingham, he came back to New Zealand with his wife. Since 2005 he has been off and on running his fashion label Rise, distributing in a number of stores before realising the margins weren't right for him.

"I didn't like the amount of mahi required. I didn't like the fact that I was selling a product when they were making a 2.3 times markup on my product. It's a difficulty to get correct."

He then decided to go to Business School as he realised his weakness wasn't his design or capability within product or manufacturing, but rather a weakness in finance. Around 2011, he was the Creative Director of an agency in Tauranga, and he chose to give that up to go back to full-time study. He says it was tough as an adult student after over 15 years since leaving school, particularly as he chose a degree in finance and business analysis, 'the degree that would be the most challenging for my knowledge base. I could have chosen a marketing degree and aced it, but I thought, what's the point of choosing something you know? The idea was to challenge yourself to the fullest extent.' During this time of study, Ranui and his wife had four children in a five year period and he was also working nights.

"Again, just doing whatever you can to extend yourself as much as you can, and realise that the only way I could actually achieve the income that was required and not get taxed, was to create my own company where I could split the income with my wife and she could have some contributions. Again, forming companies out of necessity in order to enable us to legally be able to continue to earn what we needed. My days were comprised of going to uni, getting the seat closest to the wall and plugging my laptop in and coding websites for the entire lecture, and taking photos of my mate's notes. That's what I would do."

How do you perceive the integration of values and practices into digital entrepreneurship and is it important

Ranui says he never considered himself an entrepreneur at any time.

"It was just hustle or die."

Regarding values, he says 'it must be bigger than yourself.' While he has met 'many selfish-selfish' businessmen and entrepreneurs, he has found that underneath it all there is still some form of value or values that they're trying to achieve.

"It's either self-worth or maybe achieving something their parents did, or perhaps looking further down the line for their future generations. But, I believe that there has to be something greater than your own interest to truly be something that leads you forward."

How can organisations like yourself build capacity?

According to Ranui, it is challenging for a number of reasons.

"First is we are off the ranks early and we're a future business. We're looking at where things will be and building for that time period. It's difficult to prove your case when you're early."

He wants to remain a Māori enterprise and knows that as they go down successive funding rounds they will lose that equity. As a majority shareholder, he doesn't want to be diluted out of that indigenous ownership in the business, labelling it as a concern. Ideally, he would have an eight percent equity partner that comes from Māori or iwi. He says there is the capacity to build within the organisation, but thinks they're a fairly complex use case.

"We're not just building widgets, and we're not just creating a thing that you can then markup on and then add. We're an outside bet."

What are your thoughts on the Industry Transformation plan?

Ranui thinks it's 'okay as a scoping document,' but says 'the honest truth is, it's the people in trenches digging trenches that often know the most about trenches.' When he read the documents he saw a lot of language.

"I see a road map that's kind of based on hitting achievements in a kind of way. I think what I read from it is, we know the direction we need to head. We're not quite sure how to get there. I know Māori are part of the conversation. We'll figure it out as we go along. That's what I read from that document."

He says he knows about half a dozen entrepreneurs that have been 'killing it' since day one.

"That doesn't necessarily mean wealth, but they have been looking after themselves, choosing their own hours of work, building their own IP, and they never had any roadmap or any way to do it. They just had a reason and opportunity. They gave themselves or found a way to give themselves, or be given permission, psychologically and emotionally to pursue that path." In regards to the Industry Transformation Plan, he sees the roadmap, *'but at the same time, I feel like there needs to be more practical discussions with the people actually out there doing the mahi, who aren't the ones that you would normally talk to. There's a lot of gold to be mined in those discussions I believe."*

What are your thoughts on the international market for Māori digital entrepreneurs?

Growing up in Papua New Guinea, Ranui says his feet were in the soil but it was in another place. He understood what indigenous meant in a different way.

"I almost think I understood it as if I was living two or three hundred years ago during the Māori wars. I grew up with warfare. I grew up watching natives fight for their land. My understanding of indigenous has always been one where it's the indigenous people, they're the ones, and it doesn't matter who has a title, but they're the ones that actually belong to the land."

Ranui believes Māori in digital entrepreneurship contribute something that the world doesn't have. He says there is a concept called Kaizen in Toyota.

"Kaizen methodology is that it's continuous improvement, but it's more than that. Within Kaizen methodology on the production lines in Toyota in Japan, any worker has the right to hit the stop switch for any reason in the production line. It's actually a cultural indigenous concept that everyone serves each other and the good of the company as one."

He says Māori are not that different in their approach, sharing concepts around manaakitanga, kaitiakitanga and kotahitanga.

"It's like we're a single unit."

Having been in the digital space for 25 years, he thinks the more digital the world goes, the more analogue the solutions will become.

"Kanohi-ki-te-kanohi. These are the true solutions. You only actually add value when you're actually connecting face-to-face. I think that's what we have to offer. I believe that the world has forgotten this, and that those that run agendas and governments don't know this."

He says his organisation has an education programme called Nurture, created to train everyone to look at each other, as not just colleagues, but as people.

"We give fifty percent of our lives to our mahi, so it should have meaning and not just in the money; it should have meaning in our interactions. I believe we have a lot to offer."

Kaua e mate wheke, mate ururoa

Don't die like an Octopus, go out like a hammer headshark

Nikora Ngaropo

Nikora Ngaropo Motion Design | www.nnmd.co

I think one of the things I would really like to see, especially in a digital governance space, is making sure that the people that we have here are actually in their communities and know what their people want.

I see a lot of high-flying people who I know do not work in the communities who are making decisions on their behalf.

There is a real need to maintain those connections and to make sure that you are across what your communities need.

nikora-ngaropo

What does the term Māori technology mean to you?

According to Nikora, 'in the wider sense, I think Māori technology relates to any technology that's been used from 'i te tīmatanga mai ko te kore,' so from the beginning right to now. That's anything from celestial navigation and seafaring, traversing the oceans right up to what we're doing right now which is a lot in the digital space, the industrial spaces. But I think it's a very wide term so when we think about technology, a pencil is technology, it just depends at what end of that curve you're looking at. Part of what we do with our mahi is look at some of those higher-end principles and concepts and we try and break them down into a really accessible format so that when we're talking about technology, it's not just at that high summary level that only a few people can partake in.'

What is your definition of a Māori digital entrepreneur?

For Nikora, the definition of a Māori digital entrepreneur would be somebody 'who whakapapas to being Māori, but also has Māori values, connections into their community and are working from a place that is not just about income.' He says there has to be a bigger picture or a larger story and most of the time people are talking about intergenerational plans of wealth around this. Technology is a vehicle for that, 'but we're also talking about how we get to the front of that curve in terms of pushing Māori and Māori-thought leadership to the front of that space.' For him, a Māori entrepreneur is someone who holds those kinds of values as a foundation.

"In their Māoritanga they know who they are at the most basic level, they're able to connect with Māori and there are many of us who have been on that journey where they may not have grown up in a Māori environment and that's why I say that it comes down to Māori values. So you don't necessarily need to have the reo, though that's also important, but it is around those foundational values and the way you are doing business."

What are the barriers for engagement of younger Māori in this sector?

Nikora thinks it comes to exposure and having role models in the space. He says historically there have been Māori moving into these areas, 'but they've been few and far between so the ability to see yourself within that environment, it actually makes a big difference.' For a lot of tamāriki and rangatahi, 'you don't know what you don't know, and you can't see yourself in those spaces unless there's someone there who looks like you.' He says from that kind of lens the role modelling part is a big thing, and being able to articulate the learning into manageable and accessible formats that resonate with those demographics as well.

What do you think about apprenticeships within the industry?

According to Nikora, the learning gained in tertiary is very different from what is applied when working. "It's great to go to university and be studying because you haven't the freedom to be creative, to try different ideas, to try theories, but they are theories so unless you're putting those theories into practice and applying them you actually don't know or have the background to say, 'yes, this works.' In a business scenario, you're going with what works, what's applicable and what's most efficient so you throw away all the dead weight. I do think the trade-to-trade is the great way to go. It is the way that you can upskill people on the way but it's draining, it's intensive, the amount of human resources that you need to prop that up is considerable ... a lot of the time it's a gamble and you're hoping you're picking the right person for the job but there's no guarantee.'

Have you heard of the Industry Transformation Plan?

Nikora has been involved with helping write and articulate the Industry Transformation Plan. He says it's a little late, but it's great.

"I think it'll be really good once it's in play and moving. The other thing is that mapping out the ecosystem is quite hard as well, and you need to see where all the pieces are fitting. So when we talk about the Māori tech ecosystem you've got education issues, you've got businesses, you've got tertiary. There are lots of moving parts."

While he says the Industry Transformation Plan has been a long time coming, he thinks it could take a long time to implement as well.

"What I think is they probably need to choose a few forerunners where they can poster child those particular companies, and they need to be successful, and they need to run, and they need to grow rapidly to basically give wider Aotearoa confidence on what the plan is doing. And then from there you can probably build out a few of the niches and just have that waterfall kind of trickle effect... I'm looking at where the Māori economy sits, and because the Māori economy has money we're seeing a lot of things change quite drastically. The voice that Māori have now is very different to the voice they had 20 years ago."

What do you think of that concept of innovation hubs and the way they're run and the way they are organised at the moment?

Nikora thinks there are some good ones, 'and there are some not-so-good ones.' He says most of the time we only see the successes.

"You do need to fail fast in business. The problem that we have when we're talking about Government is the Government can't afford to fail. Creating those spaces where you are able to pilot, fail and learn and iterate is super important. You get that in the digital space a lot. That's a development mentality in terms of iterating and upgrading. We do that in our programmes all the time so if we're doing any new kind of teaching methodology or even just work in practice we're constantly reviewing, iterating and creating new efficiencies. If it's not working it's gone, kind of thing. It is learning from those mistakes and moving forward with what is working."

Do you think Māori have advantages in being successful in the international market in the way that they're able to pull together networks so quickly

In Nikora's opinion, it comes down to community. He provides tangi as an example, 'you have a kaupapa where everyone pulls together to make something happen and you're able to pull and draw on resources.' He says the reason he uses that example is because it happens all the time, 'it happens at the drop of a hat so you're able to mobilise a community of people very, very quickly as well around the kaupapa. That is a little bit different to business, but the same sorts of ideas and principles still come into play. So when you're talking about mobilising for a kaupapa the relationships that you have become very important, so the strength of those relationships determines whether or not you are able to pull together the necessary human resource and resources that you need to articulate that vision. So two different kaupapa but with the same kind of ideas.'

In regards to companies expanding internationally, he says the people involved in that market or place they are looking to go into may not be Māori, 'and so the strength of those relationships also comes into play.'

"How strong are those relationships? Can you call on them? Because you can't call on everybody. In a business world there are probably only a handful of people that you could probably call on that would be able to mobilise resources to help you, and you don't just want to be mobilising business resources, you want to be mobilising political resources behind you. Who's writing the letters to open up doorways and points of entry into a new market? There's lots of things that kind of need to come into play. I do think onshore back at home we're really good at doing the business back at home, we're really good at making small kaupapa big, kaupapa happen, it's a little bit different when we try to do very large stuff because there are far more moving parts."

He says when money comes into the equation it changes things again.

"Being able to scale that global business, you really do need to have a well-oiled machine that has really good processes as well, and that's processes in terms of how you gather your people, how you're gathering those relationships, how you're communicating together, is all of that information trickling down the waterfall to the people who need it as well."

Is there anything else you would like to articulate

Nikora says currently he is seeing a lot of people making decisions for communities that are not based in the community or don't have their fingers on the pulse in those communities or they may have had their time in the community but they haven't maintained those relationships and may not have an overview which is relevant to today.

He thinks it is very easy to move away from that when moving into a digital governance space and says a lot of people in governance positions do not have connections into their communities on a regular level where they know what's going on.

"I advise to ministers at this end, but I still do work with kids down at the centre as well and it's really important that I do that to make sure that what I'm saying up here is relevant to the people that I'm seeing down here. So that at least I'm across what's happening in my own communities."

He manu hou ahau, he pii ka rere

I am a fledgling ready to fly

Haukainga interviews

Listen to different grassroots stories from Tūranga and Uawa - Te Tai Rāwhiti who shared their aspirations for how Technology and the Internet can better serve their whānau, hapū, iwi and wider community members.

Te Tairāwhiti Tech Haukainga Kōrero
bit.ly/43FqcnK

Patrick Tangaere - Hinepare Marae
bit.ly/43gho7q

Lily Stender
bit.ly/45U29Ue

Tena Baker-Clark
bit.ly/3PJii9i

Jodie Reid
bit.ly/3C8iTt2

Shanon O'Connor
bit.ly/3MPFeR4

Cain Kerehoma
bit.ly/43CvSPv

Cherish Wilkinson
bit.ly/3qlGEez

Ngā Hononga - Connections

National

Te Matarau - National Māori Tech Association http://www.tematarau.tech/

Te Hāpori Matihiko https://www.matihiko.nz/

Te Kāhui Raraunga https://www.kahuiraraunga.io/

Te Mana Raraunga https://www.temanararaunga.maori.nz/

Waihiko https://waihiko.io/

Ko Māui Hangarau https://www.kmh.nz/about-us/

MATCH - Māoriland Tech Creative Hub https://maorilandfilm.co.nz/match/

Victory UP - Gaming Hub https://www.victory-up.com/

Interim Māori Spectrum Trust https://www.maorispectrum.nz/

Kōkiri Entrepreneurship Programme https://kokiri.nz/

STEM Education

Pūhoro STEM Academy https://www.puhoro.org.nz/

Auraki Group Ltd https://aurakigroup.com/

Tōnui Collab https://www.tonuicollab.com/

Te Taitokerau

Te Hiku Media https://tehiku.nz/

NGEN Room https://www.ngenroom.co.nz/

Kaitāia Digital Hub https://www.kaitaiadigitalhub.co.nz/

Te Kona Digital Hub - Kaikohe https://www.tekona.co.nz/

Developers Institute https://www.developers.ac.nz/

Tāmaki Makaurau

Te Pū ā ngā Maara https://www.tpnm.co.nz/

Ngāhere Communities https://www.ngaherecommunities.nz/

GameTan https://www.haututu.com/

3 Bags Full https://3bagsfull.co.nz/

Te Tai Rawhiti

Hui Te Rangiora Code Club https://codeclub.nz/join/2KDii

Tolaga Bay Innnovation Hub https://www.tolagabayinn.co.nz/Home

Taiki E! https://www.taikie.nz/

Te Arawa

Digital Natives Academy https://digitalnatives.academy/

Te Whanganui a Tara

Indigenous Design and Innovation Aotearoa https://www.idia.nz/

Te Waipounamu

Maui Studios https://www.mauistudios.co.nz/

Ariki Creative https://www.arikicreative.com/

Tokona Te Raki https://www.maorifutures.co.nz/

Allies Led Programmes

Fibre Fale https://www.fibrefale.com/

Tuputoa https://tuputoa.org.nz/hikohiko/

Sisters in Tech https://sistersintech.nz/faqs/

Code Avengers https://www.codeavengers.com/

Dev Academy https://devacademy.co.nz/

Pam Fergusson Trust https://www.pamfergusson.org.nz/

Mission Ready HQ https://www.missionreadyhq.com/

Mind Lab https://academyex.com/

Outset Ventures Deep Tech Fund https://outset.ventures/

Sprout Agritech Fund https://www.sproutagritech.com/

Startup Weekend NZ https://startupweekend.co.nz/

InternetNZ https://internetnz.nz/

Spark Foundation https://www.sparknz.co.nz/sustainability/foundation

Rangahau

Atea Project https://www.sftichallenge.govt.nz/our-research/projects/spearhead/atea/

Tikanga in Technology https://www.waikato.ac.nz/rangahau/koi-te-mata-punenga-innovation/TinT

Ripoata

Toihangarau - A Report on Māori Tech Companies https://www.toihangarau.nz/

Te Au Hangarau - Exploring the participation gap of Māori in the Tāmaki Makaurau tech sector – why it exists, and what we can do https://industry.aucklandnz.com/techakl/research/te-au-hangarau

For updates on the report visit www.mea.nz

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