UPSKILLING AND RESKILLING IN THE DIGITAL TECHNOLOGY SECTOR - A DEEP DIVE

Seeking your views on what is working well and what needs to change

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IT Professionals
NEW ZEALAND

Te Pou Hangarau Ngaio

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SUMMARY

PURPOSE

The Skills Steering Group for the Digital Tech Industry Transformation Plan is doing a deep dive into upskilling and reskilling in the New Zealand digital technology sector, to ensure that investment in this area will help meet the demand for experienced digital technology professionals.

The purpose of this paper is to get your views on:

- Existing opportunities for upskilling and reskilling: what's out there and is it any good?

- What is getting in the way of people being able to upskill and reskill: do the barriers and problems identified so far resonate with you? What else might be going on?

- How to change things up so more people have the chance to upskill and reskill in the digital technology sector: what are the most effective things that could be done?

CURRENT STATE TO FUTURE STATE

The digital technology industry is suffering greatly from a mismatch of skill supply and demand at different stages of the skills pipeline.

This makes it difficult for firms to find the experienced people they need, for graduates to get their first job, tech workers to get career progression, and for the sector to grow and in turn support the New Zealand economy.

Upskilling and reskilling is one of the ways we can address the skills mismatch in the digital technology sector by helping to fill the demand, especially for the senior roles where we have the greatest shortage. The only way we are going to fix this long-term is if we invest in the development of domestic talent.

The future state is one where there is clear career progression for the people joining and working in our digital technology sector. They know the skills they need to develop, there is training appropriate to their needs, and they have support to do it. And employers have the people they need, because they have helped develop them.

While immigration will remain important, investment in domestic talent, coupled with less reliance on the immigration pipeline, will bring more benefits for employers, people working in the sector, and New Zealand as a whole. This is not just a question of investing for the long term. There are global skills shortages and immigration constraints that mean the time is right, right now.

WORK TO DATE

The Digital Skills for Our Future report (released in January 2021) provided an updated analysis of the digital skills landscape in Aotearoa New Zealand, highlighting a number of system wide challenges needing urgent national attention.

The Skills and Talent Plan (released late 2021) proposed 10 actions[1], addressing all parts of the pipeline. It identified upskilling and reskilling as a key way to address

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[1] The ten actions were:
      Action 1: A strong strategic focus on reskilling and upskilling
      Action 2: Rapidly expand pathway options to industry
      Action 3: Refine the immigration system to be more targeted
      Action 4: Industry to step up and lead the transformation
      Action 5: Māori to be a crucial partner in skills
      Action 6: Expand the Tech Story to a local audience
      Action 7: An All-of-Government strategic approach to skills
      Action 8: Increased support for digital tech learning in schools
      Action 9: Radically re-defined standardised job "roles"
      Action 10: Strengthen the tech sector through greater diversity

the mismatch, but found a lack of opportunities and coordination in this area. It recommended a strong strategic focus on re-skilling and upskilling (Action 1).

The Skills and Talent Plan was commissioned as part of the skills workstream for the [Digital Technologies Industry Transformation Plan,](#) which is an industry/government collaboration.

WHAT'S HAPPENING NOW

The Skills Steering Group is working on the first action in the Skills and Talent Plan. It is undertaking a deep dive into existing opportunities for upskilling and reskilling, the barriers to it happening, and what needs to happen to encourage more upskilling and reskilling.

Our focus is on:

- **Upskilling people already working in the digital technology sector** in Aotearoa New Zealand to be able to take on more senior roles that are in greater shortage

- **Reskilling people already working in the digital technology sector** in Aotearoa New Zealand to be able to make sideways moves into the areas of higher demand and opportunity

- **Reskilling folks to move into digital technology from other sectors.** The focus here is on people already in the workforce with transferrable skills who could be awesome in tech.

Other actions from the Skills and Talent Plan focus on rangatahi (younger learners).

The results of this deep dive will help us put together an Upskilling and Reskilling Plan. This document isn't that plan, but it is a step along the way.

WHAT WE KNOW (OR HAVE HEARD) SO FAR

An initial scan found there are various opportunities for upskilling and reskilling across all three areas of upskilling and reskilling (listed above). We found a number of tertiary qualifications, short courses, intensive training opportunities such as boot camps, certifications, and on the job opportunities.

But while there are some excellent initiatives, the current landscape is fairly ad hoc and uncoordinated. There are barriers to accessing the opportunities, and in some areas gaps in what is being provided. Research and engagement to date suggests:

- Employers and hiring managers often don't have the skills, knowledge, resources or incentives to support their people with career development and provide an environment that is welcoming for a diverse workforce. Or they don't know how this can benefit their business. As a result, structured on the job training and other support tends to be limited to some employers –

usually larger employers, and those who recognise and understand the value of retaining and upskilling staff.

- Despite being a fast-changing industry, digital and tech workers often don't focus on upskilling and moving ahead in their career to the same extent as other professions. Often workers only "move ahead" with a change of employer rather than within their workplace.

- There isn't specific enough information on the exact skills that are in demand now (and ongoing), and those needed to support emerging areas of digital technology. Without this information, employers, people working in digital technology, and education providers don't know what to invest in.

- The current Reform of Vocational Education brings the potential for better industry alignment and more innovation, but this hasn't been realised yet.

- It can be difficult to know what upskilling and reskilling training is available, what would best suit a person on a particular path, and what is acceptable to employers.

- There are gaps in current training offerings. This includes a shortage of:
  - Earn while you learn options, which are needed to bring greater equity and diversity to the sector
  - Programmes designed for and by Māori and Pacific
  - Bare minimum programmes to allow faster upskilling and reskilling for people already working in digital technology
  - The work experience opportunities needed to go alongside reskilling training (especially important for those reskilling into digital technology from other sectors)
  - Intensive training opportunities (such as the Dev Academy model to retrain to become a software developer) at scale and for a broader range of digital technology roles.

SO WHAT NEEDS TO HAPPEN?

Some initial ideas

The evidence and insights from initial engagement and research suggest some steps we can take to fix these problems and fill the gaps, which are outlined here.

They include:

- Training and tools for employers to help them realise the benefits of developing and supporting domestic talent and how to go about it
- More leading and learning from example, especially by the bigger employers (including government)
- A simplified and categorised "directory" of digital tech offerings that makes it easy to know what upskilling and reskilling training options are available
- Collaborating on *earn while you learn* options, such as apprenticeship degrees and apprenticeships for those looking to reskill into digital tech
- A greater range of "bare minimum" top up training options for those already in the sector wanting to get to the next level
- An awareness-raising campaign highlighting opportunities and how to move into the digital technology sector.

Prioritisation

The Upskilling and Reskilling Plan will need to:

- Prioritise what will work for the people who are currently under-represented and not well supported in the sector.

Let's make this the starting point rather than an afterthought. There are some significant developments in Māori and Pacific communities to address the challenges outlined above. There could be opportunity to, for example, support the work that has been undertaken within a te ao Māori perspective and in partnership with those leading those initiatives, help scale it to the wider community.

- Shine a light on existing ideas and help these to scale if they can fix the problem. We don't always have to come up with something new.
- Focus on the things that could help us solve more than one problem in the skills pipeline. For example, when we are thinking about reskilling and upskilling we should also be thinking about diversity and inclusion.
- Be mindful of the work being done to support earlier parts of the pipeline.

HOW TO HAVE YOUR SAY

Before making recommendations to government and the digital technology and education sectors, we want to test initial thinking with you and get your perspective on what else could be done.

You can share your thoughts with us by completing the consultation feedback survey: https://survey.zohopublic.com/zs/wJCCvP

If you prefer, you can also email additional comments to consultation@itp.nz

Questions

What have we missed in our summary of the existing opportunities for upskilling and reskilling? What is working really well?

What is getting in the way of people being able to upskill and reskill: do the barriers and problems identified here resonate with you? What else might be going on?

What can be done to give more people the chance to upskill and reskill in the digital technology sector? Tell us what you think of the ideas outlined here, what else could be done, and what would be most effective.

The last day to get your thoughts to us is **22 May 2022**.

NEXT STEPS

The Skills Steering Group will consider all feedback and perspectives, and complete development of the Upskilling and Reskilling Plan. This will then sit alongside the Skills section of the Industry Transformation Plan for the Digital Technology Sector.
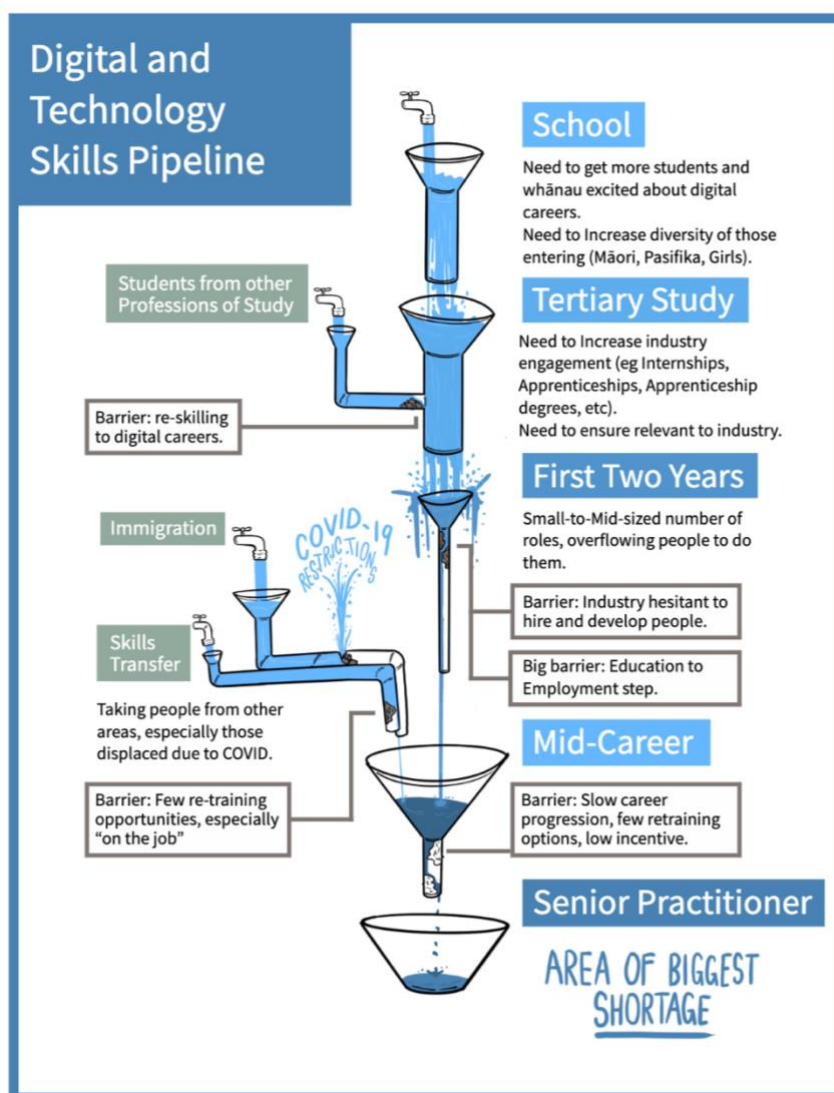
INTRODUCTION

The deep dive into upskilling and reskilling is part of the skills workstream of the Digital Sector Industry Transformation Plan, a partnership between industry and government to transform and grow the sector. The draft transformation plan has recently been out for consultation and will be finalised soon.

In 2021 the Industry Transformation Plan Steering Group, made up of representatives from government and industry, convened the Skills Steering Group to provide input on digital skills issues, led by IT Professionals NZ.

Its Skills and Talent Plan recommended 10 actions to ensure the digital technology skills pipeline flows. The diagram below shows the stages of the pipeline, from school based learning, tertiary education, first jobs, mid-career then senior roles, and the blockages that can occur.

The Skills and Talent Plan identified upskilling and reskilling at the mid-career level as a key way to address the mismatch. Other actions focus on earlier parts of the pipeline, such as school based learning and community and employer programmes (we are not dealing with these here).

The research undertaken by the Skills Steering Group found that the pipeline isn't just about increasing the numbers and skills of those entering the digital technology profession. This on its own would not change the status quo. A broader focus, including on career flow-through to the areas of

Digital and Technology Skills Pipeline

School
Need to get more students and whānau excited about digital careers.
Need to Increase diversity of those entering (Māori, Pasifika, Girls).

Students from other Professions of Study

Tertiary Study
Need to Increase industry engagement (eg Internships, Apprenticeships, Apprenticeship degrees, etc).
Need to ensure relevant to industry.

Barrier: re-skilling to digital careers.

First Two Years
Small-to-Mid-sized number of roles, overflowing people to do them.

Immigration

COVID-19 RESTRICTIONS

Barrier: Industry hesitant to hire and develop people.

Skills Transfer

Big barrier: Education to Employment step.

Taking people from other areas, especially those displaced due to COVID.

Mid-Career

Barrier: Few re-training opportunities, especially "on the job"

Barrier: Slow career progression, few retraining options, low incentive.

Senior Practitioner

AREA OF BIGGEST SHORTAGE

greatest shortage (specialist roles), was essential. So addressing the slow rate of career progression compared with other professions had to form part of the solution, along with other challenges.

Given the huge disruption to New Zealand's labour market as a result of COVID-19, there is also a significant opportunity for the digital technologies sector to welcome displaced workers from other industries.

THE TEN ACTIONS IN THE SKILLS AND TALENT PLAN

Action 1: A strong strategic focus on reskilling and upskilling

Action 2: Rapidly expand pathway options to industry

Action 3: Refine the immigration system to be more targeted

Action 4: Industry to step up and lead the transformation

Action 5: Māori to be a crucial partner in skills

Action 6: Expand the Tech Story to a local audience

Action 7: An All-of-Government strategic approach to skills

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Action 9: Radically re-defined standardised job "roles"

Action 10: Strengthen the tech sector through greater diversity

WHO IS INVOLVED

Following completion of the Skills and Talent Plan, the Skills Steering Group has re-formed to oversee a deep dive into reskilling and upskilling. This has involved conversations and workshops with a broad range of people involved in education, digital technology and community programmes to help bring together initial ideas to share with you in this consultation document. And has included organisations working to support Māori and Pacific in tech.

We thank everyone for the time they have so generously given so far.

WHAT'S IN SCOPE

The deep dive into upskilling and reskilling in the digital technology sector is looking at specific parts of the skills pipeline:

- **Upskilling people already working in the digital technology sector** in Aotearoa to be able to accelerate their careers and take on more senior roles that are in greater shortage

- **Reskilling people already working in the digital technology sector** in Aotearoa to be able to make sideways moves into the areas of higher demand

- **Reskilling people to move into digital technology from other sectors.** The focus for this component is on people already in the workforce with transferrable skills who could be awesome in digital technology rather than school leavers. Other actions from the Skills and Talent Plan focus on rangatahi (children and young learners).

Looking at the skills pipeline image above, we are focusing on **the upskilling and reskilling of mid-career tech professionals, and the reskilling of people from other industries** with work experience. Pathways from school are an important part of the overall work, but are out of scope for this project.

We are using the definition of **digital technology sector** from the Industry Transformation Plan, which refers to businesses whose primary purpose is to both create and sell digital technology products, services and solutions. This includes computer system design, data processing and software.

However from a skills and profession perspective, these initiatives and outcomes apply equally to the large numbers of **tech professionals who work across other sectors**; but with a focus on technology worker skills rather than general workers who happen to utilise technology.

Or to put it another way, this work looks at the Digital Technologies Profession, including those who work right across the economy, not just those in tech companies.

EXISTING OPPORTUNITIES FOR UPSKILLING AND RESKILLING

An initial scan has been undertaken to identify opportunities which already exist for the three areas of focus:

- Upskilling people already working in the digital technology sector
- Reskilling people already working in the digital technology sector
- Reskilling people to move into digital technology from other sectors.

Early engagement and desktop research has identified a number of tertiary qualifications, short courses, intensive training opportunities such as boot camps, certifications, and on the job options that provide upskilling and reskilling opportunities across these three areas. We have themed these up below. Most of these opportunities could be employer supported and funded or self-directed and funded.

YOUR THOUGHTS

As you read though the description of existing opportunities, and fill in the feedback survey or write up your comments, please let us know if there are other sorts of upskilling and reskilling opportunities that haven't been identified, that currently exist. We would also like to hear your take on what is working really well.

After the existing opportunities, you'll find some initial conclusions around the gaps and limitations in what is currently available and what might be done to improve it.

TRADITIONAL TERTIARY QUALIFICATIONS

Across all three categories there is the option of studying for a new tertiary qualification: degree, diploma, post graduate diploma, certificate or micro credential. These are available through universities, polytechnics (Te Pūkenga), and private training establishments.

This involves either:

- pausing work to study full time for a degree or diploma (perhaps more likely for those who haven't worked in digital technology before, but still a possibility for those in tech wanting to move into a new area)

- studying for a degree part time while working, although this is generally logistically difficult for learners and could take 6-7 years

- part time study to top up an existing degree with an area of further or new specialisation (e.g. someone who has already worked in tech doing a diploma or micro credential in cyber security or data ethics)

- taking papers or courses to gain new knowledge and skills but not necessarily studying for a qualification.

Most qualifications in digital technology now have a practical or work experience component. Some providers (such as the [Developers Institute](#)) go further and continue to support their graduates as they start employment, which is especially useful for people who are reskilling into digital technology from another industry.

The next section discusses some limitations of this set of options for upskilling and reskilling, including the costs of leaving employment for full time study, the equity issues inherent in this model, the time it can take, the difficulty of getting the level of specialisation just right, and expectations of work experience from employers.

SHORT COURSES AND VENDOR CERTIFICATION

There are a variety of short courses offered by private training establishments, IT vendors and online platforms and providers. These are useful for people already working in the digital technology sector to top up their skills. There are also online courses at an introductory level which can be useful for those in other industries who want to build up skills in digital technology, although these usually won't be sufficient on their own.

For example:

- Vendor specific training and certification (e.g. AWS, Google and Microsoft). This can be offered by the vendors or local training providers.

- Massive open online courses (MOOCs) offered by organisations such as Udacity, Acumen and Harvard Business School. These can have very high drop-off rates for those who haven't previously undertaken study.

- Other platforms that offer skills training, sometimes offering a combination of tertiary qualifications, short courses, and on the job experience. Examples include Udemy, Coursera, General Assembly, ITProTV, Pluralsight, and Skills Campus.

- Methodology training and certification in areas such as project management (e.g. Prince 2 and Agile), technology frameworks (such as TOGAF), and technology standards (e.g. ISO 27002 on security techniques). These can include vendor and professional-style certifications.
- Short courses offered by professional bodies such as IT Professionals NZ to cover soft skills and fill gaps in existing offerings.

INTENSIVE/ACCELERATED TRAINING

A number of providers offer intensive and immersive training programmes, such as bootcamps. The aim is to learn a new set of skills quickly and get a job at the end. These are usually tailored towards individuals looking to reskill into digital technology from another career (but could work for someone in tech who is able to take time out to reskill into another area). Most are in the software development area. Examples include:

- [Dev Academy](#) (become a software programmer in 16 weeks)
- [Mission Ready](#) (12-19 week accelerator programmes to become a developer or UX designer). Mission Ready also collaborate with community organisations such as Haututu (in South Auckland) to run intensive training for Māori and Pacific with employment at the end
- [Industry Connect](#) (6 week intro courses with 3 month internships for software developers, business intelligence/data analysis, and software testing)
- [Toro Studios](#) (piloting a 16 week 3D animation and production course)
- [Rea Coach](#) (a new organisation offering employment after 6 months learning technical foundations and soft, cultural and project skills)
- [Tech Futures Lab](#) (more about the use of technology in other areas).

STRUCTURED "ON THE JOB" TRAINING AND CAREER DEVELOPMENT

Some employers offer **structured** in-house training and career development opportunities that can be useful for upskilling and reskilling. This is far from universal and is discussed later in the section on barriers and gaps.

The support that is (or could be) on offer includes:

- **Training while on the job**. Larger organisations (such as Datacom, Xero and Spark) have structured in-house training programmes. Some also facilitate group study preparations for certifications and other external training that is being funded or supported.

- **Mentoring.** This can be part of an employer specific programme or an external programme. Examples of external programmes include the large IT Professionals NZ Mentoring Programme, TechWomen Mentoring Circles, and the Canterbury Tech Mentoring Programme.

- **Career development**. This can include supporting staff to do career development plans, job rotations, secondments, acting roles, job shadowing, job enlargement, in house networking, learn how to coach others, and pastoral care. As part of career development planning, some employers are paying for external training to help with upskilling and reskilling.

SELF-DIRECTED LEARNING AND DEVELOPMENT

Many take advantage of opportunities for self-directed learning (for example, online), gaining skills and experience from projects and working with others in an organisation.

This could include:

- Upskilling and learning individually via online resources, such as "learn to code" websites and apps, online reference libraries, Youtube and other video channels, etc

- Learning about a new area from being on a multidisciplinary project team

- Befriending the team you want to work with, going to meetings and asking what skills are needed and where to build them

- Seeking coaching from a manager or someone in your team or another team

- Research collaboration as a way to learn about new areas.

PROFESSIONAL CERTIFICATION

There are organisations that award professional certifications based on an assessment of competency and prior learning. Certification helps put people on a path to ongoing upskilling and reskilling while both recognising those who have reached an industry-agreed level of competency and providing a target level for developing professionals.

These professional certifications differ from vendor or technology certifications in that they focus on how work is undertaken and ensuring that work meets expectations defined within a code of ethics, and competency within an area of practice. They also provide an opportunity to recognise self-directed and on the job learning.

Professional certification or licensing is a key component of almost every other profession and vocation, whether it be accountants, engineers, nurses, architects, builders and more.

In the digital technology sector in New Zealand, IT Professionals offers industry-wide professional certification through the Certified Technologist (CTech) and Chartered IT Professional NZ (CITPNZ) certification, both based on international standards and closely linked to similar initiatives in Australia, the US, the UK, Europe, part of Asia and elsewhere.

SUMMARY TABLE

This table provides a very high level indication of the types of opportunities available across the three categories of upskilling and reskilling.

	Upskilling to more senior roles in digital tech	Reskilling into other areas in digital tech	Reskilling into digital tech from other sectors
Traditional tertiary qualifications	Quals can be too long or not right sized, but more scope with micro credentials	Quals can be too long or not right sized, but more scope with micro credentials	A good option if folks have the time and resources for full time study
Short courses (e.g. offered by PTEs, vendors, online platforms and providers)	Lots available but difficult to navigate. Some gaps in the provision of bare minimum top ups	Lots available but difficult to navigate. Some gaps in the provision of bare minimum top ups	Some introductory short courses but generally not enough on their own
Intensive training (e.g. bootcamps)	Current offerings not designed for upskilling to more senior roles	A possibility for folks who can take the time out, but mainly available for software development	Some employers offer programmes Most programmes focus on software development
On the job (training and other support)	Lots of possibilities but depends on employer	Lots of possibilities but depends on employer	Lots of possibilities but depends on employer
Professional Certification	CITP and industry verticals	CITP, CTech, and industry verticals	CTech

BARRIERS AND GAPS – AND HOW TO FIX THEM

This section explores some of the barriers that may be preventing people from upskilling and reskilling. This is a combination of issues that may make the existing opportunities inaccessible for some, and gaps in the current offerings.

Examples include:

- Employers not focusing on, or investing in, the development of their people and potential new talent, and not providing a supportive environment and workplace culture

- A lack of information on the exact skills that are in demand and that already exist

- Difficulty knowing what upskilling and reskilling opportunities are available

- Some gaps and limitations in the training currently offered

- A missed opportunity with certification.

Some possible actions to resolve these issues, identified by the research and earlier engagement, have also been outlined. Some of these ideas, combined and others identified through this consultation, will form the basis of the final Upskilling and Reskilling Plan.

YOUR THOUGHTS

As you read through the possible barriers and solutions, and fill in the feedback survey or write up your comments, we would appreciate your feedback on:

- Looking at the barriers and problems, what resonates with you?

- Looking at the possible solutions, what would have most impact?

- Are there other problems or solutions we haven't identified here? What are they?

- Are there existing initiatives we could get behind rather than recommend something new?

- If you had to choose, what is the most important thing to sort out?

A LOT OF EMPLOYERS AND MANAGERS AREN'T FOCUSING ON DEVELOPING PEOPLE

Previous research identified that a lot of employers are very busy (partly as a result of the difficulty in finding enough people with the right skills) and consequently aren't focusing on the development of their people. Because of this, the sorts of structured "in house" opportunities we discussed earlier in this paper are not widely available.

Initial engagement also suggests that a lack of support from some employers in areas such as mentoring, coaching and pastoral care, and in providing a welcoming workplace culture for all workers, also contributes to the **lack of diversity** in the digital tech sector. This has all led to reduced **retention** across the board.

There are additional challenges for people reskilling into digital technology from elsewhere. It is a big deal to change careers at the best of times, let alone with the challenges outlined above, and workers have noted a lack of change management support through this process.

This could all be because:

- Some employers don't have the necessary skills, knowledge, resources or tools to provide this sort of support to their people (i.e. they don't know the "how")

- There is a definite perception that it's easier to "buy in" skills needed, through immigration or from competitors, rather than developing existing talent

- There is an implicit or explicit perception from some employers that investing in staff development doesn't always provide a return, as workers will then take their skills (and thus the investment) with them to a new employer

- Employers don't always draw a link between professional development and how it will help their business (they don't know the "why")

- With a significant shortage of people with skills in some areas, finding time to upskill against a backlog of current work can be difficult

- Cost can be a barrier, especially for smaller firms.

How could this be fixed?

There are different ways we could approach this problem: capacity building, information sharing and providing incentives. Initial ideas include:

- A set of **training** modules (possibly with a qualification and certification) for tech leaders and managers on how to support the career development of their people. Alternatively, directing them to generic training in this area. Such training could cover things like mentoring, feedback, career planning,

diversity, pastoral care (including whanau involvement), how to provide a safe and more welcoming workplace for people from diverse backgrounds, and culture and mindset.

- There is much we can **learn from programmes, pilots and employers who are already doing this well.** For example pilot programmes being supported by the Ministry for Pacific Peoples that have a focus on getting pastoral and cultural care right, and how this requires focus on the employee and the organisation. PWC and Snapper have had great success bringing in cohorts of new starters to their organisations who can support each other.

THE PWC PACIFIC VILLAGE

Pacific Village is the Pacific network for PWC staff working in Aotearoa New Zealand and offshore. Its purpose is to grow and nurture the PWC Pacific community, and drive and support personal, community and business success.

The Village is led by Pacific staff and has adopted the collective model that works for Pacific. It has changed the approach to recruitment and training, using community outreach and networks to raise awareness of career opportunities. There is support for new starters (with mentoring and learning and development) and a focus on career progression. Also cultural awareness for PWC as a whole.

With the Pacific Village in place PWC has seen attraction, retention and progression rates improve significantly for Pacific staff. There are now over 50 Pacific staff (up from 10 in 2018), four partners in the last three years, and a healthy pipeline of people coming through.

Key to its success is a model that gives the Village the lead role in Pacific-developed and -led solutions, which are then supported by PWC. Having Pacific leaders as role models in leadership positions and with strong community networks, and non-Pacific champions has also been important.

- Providing **tools and resources** for employers. For example:
  - A **play book** on what employers can do if they want to support and invest in domestic talent with different levels of ambition depending on where an organisation is at. This could include testimonials from companies doing this well and seeing the benefits. This testimonial element could also be a stand-alone action. *We would be interested to hear whether you think a playbook would be useful.*
  - Raising awareness of (and providing support to use) the [SFIA skills framework](#), and how it can be used to develop upskilling plans, as well as help map the future skills needs of an organisation. SFIA describes skills by category and identifies what is needed at different levels of responsibility.

- o **Templates** for things like career development plans and conversations, and how to do a skills based CV. For example, the [Singapore Skills Framework for Infocomm Tech](#) provides templates for training blueprints and performance discussions for various digital technology roles.

- o A **cost/benefit analysis** of the costs of buying in talent versus developing people.

> There are studies looking at the costs and benefits of upskilling and reskilling. A 2019 study from the World Economic Forum points to benefits in productivity, avoided severance and hiring costs, and talent retention and loyalty. A recent study by AphaBeta (commissioned by AWS) found **84 per cent of employers who provided digital skills training reported it had boosted their attractiveness to potential recruits, and 83 per cent reported increased employee retention.**

- **Large employers** of digital technology workers (including government) could lead by example. On the reskilling side, government departments who are reducing staff numbers as a result of transformation projects could support those people to reskill into a more up-to-date and in demand digital technology area. Government could direct agencies to take steps, and influence third party IT firms through its procurement policies.

- **Incentives** to encourage employers to invest in developing their people, for example:
  - o A quid pro quo for immigration entitlements
  - o Grants support to small businesses to help them develop their staff
  - o A tax incentive similar to the Research and Development Tax Incentive.

- **Funding incentives** directed to **digital tech workers** rather than firms. For example:
  - o Making fees free study available for a wider range of programmes (e.g. vendor certified training programmes)
  - o Funded support for the transition from study to work
  - o A voucher scheme to incentivise reskilling.

THERE ISN'T GOOD ENOUGH INFORMATION ABOUT THE SKILLS THAT ARE IN DEMAND

There are a few issues here:

- We don't have specific enough information about the exact skills that are in demand, or a process to keep this information current on an ongoing basis. This applies to current demand, skills needed to support emerging areas of technology, and the sunset skills that won't be needed for long.

- Being clear about what skills are valued by digital technology employers. Many of these will be non-technical skills that are valued in any role.

- Employers not realising what skills their staff already have, and how they could be used to meet current needs.

Without this information it is difficult for people to know the areas they should upskill or reskill in, education providers to frame their offerings, and employers to understand where they might have difficulty in recruitment, in time to implement internal training instead.

How could this be fixed?

Greater use of the SFIA framework (introduced above) can help with this, as a foundational tool to track skills. For example:

- Using the SFIA framework to help employers better describe and plan their skills needs. This would give us a common language and help standardise how roles are described across the sector

- Using SFIA as a foundation for career development plans

- Encourage recruiters to use the SFIA framework when recruiting roles (for example, as extensively utilised in the UK and Australia and other countries where a higher level of skills maturity exists)

- Toi Mai and MBIE are already talking about how the skills in SFIA could be mapped to New Zealand qualifications.

Other ideas include:

- Recommendations from the 2021 Digital Skills for Our Future report, to introduce annual data collection from Statistics NZ, in collaboration with industry, on current and forecast demand (page 79).

- An organisation, such as IT Professionals NZ (the professional body) or Toi Mai (the workforce development council) – or possibly both in partnership – collecting information from employers and recruiters on the skills that are currently mismatched, and in over or under supply, and making that available to education providers and people in the digital technology sector. The

regional skills leadership groups may also have an interest in or be able to help provide this information.

IT'S DIFFICULT TO KNOW WHAT UPSKILLING AND RESKILLING OPPORTUNITIES ARE OUT THERE

A very strong theme from the engagement so far is a need to better curate and navigate the upskilling and reskilling opportunities that currently exist. At the moment partial information is available in several places, and in some cases is just available on the websites of training providers.

It is difficult to know:

- What training or development is available for what areas of digital tech

- What is needed to advance in a particular area

- What training is accepted or valued by employers

- What is good quality

- The alternatives available and how to choose between them.

For people who could potentially reskill into the digital tech sector from another industry there are additional barriers:

- Understanding the digital technology sector and the careers that are possible (the use of technical language can be a barrier)

- Understanding the types of roles it is easier to transition into, and the existing skills that make you a likely candidate.

How could this be fixed?

There is a lot of appetite for the independent curation of the various upskilling and reskilling opportunities that are available. Ideas include:

- Some form of **directory** or guide to what is available. An upskilling and reskilling portal was suggested in the Digital Skills for Our Future report. One suggestion was to build on the existing TechHub directory, currently maintained by IT Professionals as the professional body in partnership with NZTech. Toi Mai was also mentioned as potential kaitiaki for such a directory.

- Arranging the information on such a portal so it is easy to see **roles, skills and training options**. The training options need to cover the full gambit, such as community initiatives, corporate placements and vendor programmes, not just the tertiary path. This could lend itself to a more comprehensive directory of pathways in digital technology, which would bring in initial training not just upskilling and reskilling. Another function could be to offer information on the quality of the training opportunities.

- Including the information as **part of a broader initiative**, such as the replacement being developed by the Tertiary Education Commission for the Careers NZ website and portal. In the past, work has been undertaken by IT Professionals NZ and Careers NZ to ensure consistency of roles across Careers NZ and TechHub.

- An awareness raising **campaign** (by government and the sector) to promote reskilling into the sector from elsewhere. This could:

  o Be part of a broader campaign attracting the under-served groups and people at different stages of their lives and how they can join the sector

  o Use personas or real life people so it's easier for people to see themselves in the sector

  o Be part of a domestic version of the [Tech Story](#)

  o Put digital technology in context by showing the impacts it can have on community and society

  o Show the breadth of roles and how it's possible to start in one area and move to another (e.g. project manager to user experience designer)

  o Use plain (not technical) language

  o Build on insights from pilot programmes seeking to encourage Māori and Pacific and others to join the digital tech sector.

- Arguably, other actions would need to happen before launching a campaign, so employers are ready to welcome and support new entrants, especially those who are currently under-represented and under-supported including Pacific, Māori, women and people with disabilities.

THERE ARE GAPS IN (OR ISSUES WITH) THE CURRENT TRAINING OFFERINGS

While navigating the various options is an issue, early engagement also suggests there are gaps or short-comings in the training on offer.

These include:

- **Earn while you learn options** (through **work integrated learning**), which are needed to bring greater equity and diversity to the sector. Many of the more traditional tertiary qualifications and the intensive training opportunities require people to not be in work (e.g. studying full-time). Many cannot afford to be without an income while they train and cover training costs.

This creates an equity issue and contributes to the under representation of women, Māori, Pacific and people with disability in the industry and the subsequent challenges this has created.

As well as addressing part of the equity and diversity issue, earn while you learn opportunities enable a greater practical component to learning – gaining valuable experience while studying. They also bring in important soft skills such as project management, customer engagement and work readiness.

Earn while you earn might be in the form of apprenticeships (modified from the previous model in New Zealand), apprenticeship degrees, or other forms of structured learning while working.

- **Bare minimum programmes to allow faster upskilling and reskilling.** The initial engagement seems to suggest that many existing offerings are too broad or take too long, or are too introductory to be useful to people already working in the sector. More "right-sized" courses, developed by clever educators in association with digital tech experts, and directed to providing just the right amount of top up, are needed.

  The flip side of this is that tech is complex – often a broad understanding is needed to be best equipped to deal with a narrow challenge, making these options better suited to those with a broad understanding already, looking to upskill in a specific area (rather than as an initial education offering).

- The **work experience opportunities needed to go alongside reskilling training**. This is mainly an issue for those retraining from other industries into digital technology, but can also be a problem for people working in digital tech who have invested in their own reskilling and can't get a job in a new area without experience.

- The absence of **wrap around support and pastoral care** for under-represented groups while reskilling.

- **Intensive training opportunities tend to be limited to certain technology areas**. Most of the options we found were to become software developers, not a wide range of in-demand digital technology skills. There is also a question of scale.

- Most employer programmes and training providers are **located in main centres**. This can create an access issue for those in the regions. Although online options can address this to some extent.

- Ensuring **funding and study support** is available for a range of approaches.

How can this be fixed?

These challenges aren't easily overcome within many of the current educational offerings and structure, meaning that expansion in approach and innovation in education will be needed.

Importantly, these changes need to be implemented as **additional pathways**; while the existing pathways aren't suitable for everyone, they do meet the needs of many and should be retained.

Additional pathways will need a joint approach from industry, education providers and government. Some ideas are discussed below.

Education providers working with industry to develop and offer more earn while you learn and other work integrated learning options, especially those that would support underrepresented groups in the digital technology sector.

The education framework is arguably flexible enough to enable this right now and some work has commenced:

- NZQA can assess and approve a set of stackable micro credentials under changes made to the NZ Qualifications Framework.

- Ngai Tahu has started a process to co-design a digital apprenticeship. Waikato and Weltec are also looking at this approach, as are others.

- CITRENZ, the organisation representing digital tech provision in the Institute of Technology and Polytechnic (Te Pūkenga) space, are currently working to co-design a nationwide degree. This could be developed in a way that could also be taught as an Apprenticeship Degree.

- Most education agencies such as the Tertiary Education Commission, Ministry of Education, Te Pūkenga, Toi Mai, and IT Professionals NZ have indicated initial support for the development of apprenticeship and apprenticeship degree options for digital technology.

There is also international experience we can look to. For example, Skills Development Scotland oversees different types of apprenticeships that are available in digital technology and other sectors:

- foundation apprenticeships are available for those at school

- modern apprenticeships enable on the job experience to be accredited by the Scottish Qualifications Authority

- graduate apprenticeships enable employers to support work based learning up to masters level.

More employers getting involved in work integrated learning

We need more **employers** to support earn while you learn and other work integrated learning programmes, and offer their own programmes. Earn while you learn will only work with industry support, especially the provision of placements. We need to look at how employers can be incentivised, at least initially, to take on learners. This could perhaps be part of the play book for employers mentioned earlier.

Bare minimum programmes and intensive training

We need clever **educators** to offer the bare minimum programmes, and intensive training in a broader range of areas.

- For example, Dev Academy is looking to offer its intensive training model in areas other than software development.

- More use of **micro credentials**. For example, it has been suggested that targeting micro-credentials at lower levels (below NZQF level 6) could encourage more people to reskill into the sector from other industries. A micro-credential that gives you a badge to show you can work in a specific area, and then learn on the job.

- **Local collaborations** with the Ministry of Social Development could help with the development of targeted reskilling opportunities.

Again, there are international examples. In England Institutes of Technology (IOT) offer 65 short and modular courses. The IOTs are collaborations between leading employers, further education colleges and universities. The courses range from 50 to 138 hours, providing greater flexibility in how and when people learn. 6.4 million pounds was invested to make the courses free and support 4000 working adults to reskill into new careers and help employers find the skilled workers they need.

Making changes to the traditional tertiary training

We have said we need an expansion in approach and innovation in education, because existing pathways aren't suitable for everyone. Most of the ideas presented here have been about new approaches.

The traditional pathways do meet the needs of many and should be retained. But could they be tweaked to meet the needs of more learners and industry?

Whose job is it to make it happen, and where do they start?

The difficulty in saying we need people to develop new types of upskilling and reskilling training is that it could be everyone's job or nobody's job. The education system is flexible enough to allow new approaches, but someone has to develop them.

There are also questions around funding and coordination.

A number of organisations have already shown interest in using the apprenticeship and degree apprenticeship models for digital technology, as an earn while you learn option. Ngai Tahu has started a process to co-design a digital technology apprenticeship, and others are also looking at this approach. Toi Mai has started work in this area.

Rather than duplicate efforts we could start by **supporting the Ngai Tahu pilot,** and back an approach that works for Māori as the foundation for all. A taskforce could work to roll out the model more widely. There is scope for Toi Mai, Te Pūkenga and IT Professionals NZ to help bring this together.

PROFESSIONAL CERTIFICATION ISN'T WIDELY TAKEN UP

Becoming a certified professional isn't an option that is widely taken up in Aotearoa New Zealand at the moment.

Professional certification (such as Certified Technologist and Chartered IT Professional NZ) is crucial for the development of the profession and provides an international standard for the assessment and expectations for skills and competency of practicing professionals. As noted earlier, professional certification is different from vendor certification.

Many people we spoke to thought greater promotion and support for this path by employers would contribute to a culture of upskilling and reskilling. It would also encourage employees to take more responsibility for their own upskilling. The value add of certification is a commitment to ongoing professional development and staying current, not just knowledge held at the time a degree or diploma is awarded.

The barriers include:

- awareness of professional certifications and their benefits
- cost and time required
- a chicken and egg situation – uptake will increase markedly when these are more widely adopted.

How can this be fixed?

Some initial ideas include:

- The professional body needs to undertake a larger promotional exercise to help more workers (and employers) understand the purpose of professional certification.

- By their nature, professional certifications are broad and don't generally exist within specific sub-areas (such as software development or cybersecurity).

One option is to add a component that covers expertise in these and other areas.

- The suggestions earlier in this paper about training for employers on how to develop and support their staff could include information on certification and how to promote it, and the tools that go with it (such as mentoring and the SFIA skills framework).

- Government employers could be required or expected to support certification of their in house staff, and have this flow through into contracts with third party IT providers.

WHAT DO YOU THINK?

In this discussion document we have shared some initial thinking on:

- Existing opportunities for upskilling and reskilling in the digital technology sector
- The barriers that get in the way of upskilling and reskilling happening
- What could be done to make it easier for people to upskill and reskill.

Before making recommendations to government and the digital and education sectors, we would love to hear your reckons on these three things.

WE HAVE A NICE FEEDBACK FORM

You can share your thoughts on these issues by answering the questions in this survey: https://survey.zohopublic.com/zs/wJCCvP. We would really appreciate it if you use the form.

You can also email additional comments to consultation@itp.nz .

Please consider the following areas:

- What have we missed in our summary of the existing opportunities for upskilling and reskilling? And please share examples of upskilling or reskilling initiatives that you think are working really well.

- What is getting in the way of people being able to upskill and reskill: do the barriers and problems identified in this paper resonate with you? What else might be going on?

- What can be done to give more people the chance to upskill and reskill in the digital technology sector? Tell us what you think of the ideas in this paper, what else could be done, and what would be most effective.

We understand everyone has a lot going on at the moment. You don't need to comment on everything raised in this paper, just the things that are important to you.

THE CLOSING DATE

The last day to provide feedback is **22 May 2022.**

NEXT STEPS

The Steering Group will consider all feedback and perspectives, and complete development of the Upskilling and Reskilling Plan. This will then sit alongside the Skills section of the Industry Transformation Plan for the Digital Technology Sector and recommendations will proceed alongside that work.