MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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Digital Technologies ITP - Data initiative

Background

Through the consultation carried out with industry stakeholders[1] late 2019 concerning potential roadblocks to the growth of the sector, the role of data and its use and application by businesses was a commonly raised theme. In reviewing the feedback overall, there were three specific issues relating to data. These can seem on the face of it to be discrete, but in reality are interrelated. The identified issues are:

- Open data –making more data available for use
- Issues associated with data literacy and education around data – ensuring people know how to use data effectively and can safely and ethically derive value from data
- Data being undervalued –in both the financial and socio-economic sense (and therefore its full potential is not realised).

Defining open data

The Open Data Charter, of which New Zealand is a signatory provides this definition:
Open data is digital data that is made available with the technical and legal characteristics necessary for it to be freely used, reused, and redistributed by anyone, anytime, anywhere.

In addition, for data to be considered 'open' it must be accessible, noting this does not automatically translate to it being free of charge. Accessible data means it can be easily consumed - either via APIs or by apps - that display data in ways that businesses can view and understand the data that is relevant to them.

Government Open Data

To date in excess of 20,000 databases have been listed on data.govt.nz. Government Agencies continue to make data available; however more could be done in opening up the valuable resource of local government data. Through the Data Strategy and Roadmap for New Zealand – Stats NZ have indicated that making the right data available at the right time is a key focus area, this will be reinforced in the refresh of this Strategy due to be completed by May 2021.

Increasing the availability of open data is not merely an area for government intervention, more needs to also happen in the business domain.

[1] A series of workshops was carried out in 2019 with multiple stakeholders from the Tech Alliance, other Tech Associations and Tech businesses.

Data driven innovation

A report undertaken by the Innovation Partnership in 2015 entitled *Data Driven Innovation in New Zealand* outlines the economic benefits associated with the better use of data. The report estimates data driven innovation (DDI) could easily deliver **$4.5 billion in economic benefits** with higher uptake from business and also government. DDI is about harnessing data to make smarter decisions and develop new products and services.

DDI will become increasingly important as the adoption of emerging technologies -such as 5G and IoT, with AI sitting on top – increases. The convergence of these technologies will see an explosion of available data that will ultimately drive DDI.

Globally, the access to and use of data is becoming a competitive and operational differentiator. Data is increasingly being viewed as an economic asset and as a driver for greater productivity and innovation across all sectors of the economy.

At the business level those that recognise and embrace the DDI opportunity will ultimately decide those that prosper and those that falter.

A number of the businesses that were interviewed as part of the 2015 Innovation Partnership research indicated that adoption of DDI in New Zealand is around five years behind that in other leading countries, such as the United States. A common anecdote was that while there are many people in New Zealand organisations that understand and use data, relatively few organisations have embraced data as a basis for making decisions at the upper management and board levels. Instead, many New Zealand decision-makers prefer to rely on gut feel and experience when making important decisions. It would also seem that the dial has not moved in the last five years, according to a recent Productivity Commission report capability at the Board level.[2]

Because of this poor understanding of the value of data particularly within NZ businesses, the adoption of new technologies that are primarily data driven may be slower than anticipated and the benefits associated unlikely to be fully realised, both at a business level but also at the wider economic level.

This indicates that a preparatory piece of work on the value of DDI may be warranted.

Wider support for data driven innovation will help grow the digital technologies sector

We consider there are significant opportunities to support the growth of the digital technologies sector by raising awareness of data driven innovation across the economy. In raising awareness of data and data driven technologies such as AI, 5G and IoT we would expect to see greater opportunity for the sector to respond to this demand. New Zealand businesses

[2] BRG Institute, New Zealand Frontier Firms: A capabilities –based perspective: August 2020.

currently lag behind other countries in terms of their understanding and use of data. Therefore we consider that educating businesses, particularly SMEs, on the value and uses of data, leading to greater uptake of data driven innovation across the economy, will be one of the most effective ways to support the growth of the tech sector itself.

This work can also be aligned to the work government is undertaking on the increased digitisation of SMEs and also the work on amplifying entrepreneurial capital.

Work on the digitisation of SMEs

COVID-19 has raised awareness that increasing digitalisation is a necessity for business continuity. This is especially true for SMEs. To assist, Government is currently implementing programmes to increase the uptake of digital commerce by SMEs. Increased 'datafication' will come with this increased digitalisation, with the on-going growth of data collected by digital tools.

However, more data does not necessarily equate to more insight. Increasingly the skills to ensure the data can be interpreted and acted on will be critical this may result in the need to upskill across businesses or in the need for more Analytics-as-Service (AaaS) type companies offering Cloud based solutions.

This could lead to increased costs for business, as they purchase the tools and the skills they need. To help mitigate this, there are options for these costs to be actively shared or offset through the adoption of data sharing.

The rise of data sharing and data trusts/consortia

While it may be true to say "Data is the new oil" – the currency to derive value from this new digital commodity - is trust.

The Open Data Institute (ODI) based in the UK was one of the first to promote the concept of trustworthy data stewardship through the formation of data trusts. This work has now evolved into the concept of establishing "data institutions" (a trust now being viewed as just one vehicle of many to achieve trusted data stewardship). In New Zealand, the term data consortia has also been utilised.

Key to establishing any data institution will be designing them in such a way as to build trust around how and where the data is stored (including cybersecurity), as well as who has permission to access this data and what it may be used for.

Work to encourage data sharing and how to establish data institutions/consortia would outline how a business can establish or access such a vehicle, highlighting the associated benefits, not only for the business but also for the consumer whose data may be collected.

Through establishing a data institution, businesses no matter their size will have access to larger datasets opening up the potential for greater insight and innovation across their

business as well as enabling the potential to begin to utilise AI. By combining their data participants in the data institution will have access to insights larger companies take for granted.

Work on how a business may establish or access a data institution could be further supplemented by investigating how to encourage more cross border data institutions through DEPA and also potentially through GAIA-X (European Union).

Digital Twins – the ultimate data institution?

Another avenue to increase the availability of more open data is through the concept of establishing a national digital twin. Digital twins are having a significant impact on the way organisations, cities and even whole countries are leveraging value from their data (as well as better managing their infrastructure and other assets). In 2017 the IoT Alliance's report *Accelerating a Connected New Zealand* called for the establishment of a Smart Cities Strategy – that would unlock data from local government. The establishment of a national digital twin would also look to address this. The Singaporean government through their Virtual Singapore project have stimulated innovation by making available to the research community with the necessary access rights, data from their digital twin which has allowed researchers to innovate and develop new technologies and or capabilities.

In order to establish a Digital Twin, work on ensuring that there are agreed foundational data standards will need to occur – ideally these standards should also be aligned with any international standards work. This could be advanced through conversations with the Centre for a Digitally Built Britain as well as Singapore.

Work on digital twins could also be useful in relation to advanced manufacturing as technologies such as Industrial Internet-of-Things (IIoT) will enable smart factories to become a reality.

Better understanding the issues

In order to determine what initiatives might assist in addressing the issues noted above, MBIE has undertaken targeted consultation with both data scientists and data users in order to test and evaluate the following assumptions:

- That in general New Zealand businesses do not fully realise the value of data and the potential of data driven insight – impacting both the supply and demand side.
- Test the idea that we could create targeted information for businesses to demonstrate the benefits of data. Test ways in which this could be delivered to be effective. Would Biz.govt.nz be a good delivery channel? Investigate other ways to spread the message?
- Test how we could align this work with the SME digitisation initiatives and also the work on amplifying entrepreneurial capital.

- Test the idea of establishing data trusts/consortia or data sharing? How would this be viewed by the sector and others? How could the sector advance this concept – could this be advanced through the Tech Alliance?
- Look to advance discussion around the establishment of a Digital Twin and the need for foundational data standards. Could we look to establish a centre much like the Centre for a Digitally Built Britain – future proofing the construction sector and potentially aligning with the Construction Accord?

The intervention logic:

The desired outcome for the DDI initiative is:
The economic value of data is widely understood and appreciated across all sectors. The adoption and use of data-driven technologies and AI helps to fuel innovation aiding the shift of New Zealand's economy to be more productive, sustainable and inclusive.

Issues identified that are impacting on achieving this outcome are:

- Data being undervalued.
- Issues associated with data literacy (including analytics skills, data science expertise) and lack of data related education
- Open data (or accessible data) – making more available

In order to move to the desired outcome the following inputs should be considered:

- Education – supported by the development of Tools/frameworks (to promote the better use of data)
- Promotion of a data institutions/consortia/Trusts and the concept of data sharing
- Case studies to grow awareness of the potential of DDI
- Work to advance a national digital twin

Proposed Initiatives

The proposed initiatives to progress through this workstream are as follows:

Education at business level

In order to move from the current situation of data being undervalued to one where the economic value of data is widely appreciated and understood a programme of targeted education needs to be implemented. This targeted education needs to happen both at the C-suite level in larger businesses but also with SMEs. This education will also seek to promote the sharing and exchange of data. In addition, this programme of work should look to promote awareness of AI and other data driven technologies in order to increase awareness of the benefits associated with these technologies.

We already know that trusted intermediaries or advisors are the key to getting information across to businesses. In the interviews MBIE carried out, it was suggested that for C-Suite business leaders especially, the Institute of Directors (IoD) is viewed as a trusted advisor. The Institute collaborated with the Productivity Commission on a recent report around improving management capability on boards, which further highlights them as a potential partner to progress this work.

For smaller businesses trusted advisors come in many forms – they can be accountants or industry groups, however biz.govt.nz is also viewed as a useful channel for getting the message out more broadly to the business community.

Actions:

- Set up conversations with trusted advisors such as the IoD on how we might progress establishing a training pilot. This pilot programme would look to educate on data as well as the business benefits associated with the adoption of AI.
- Investigate if providing online training would be useful to progress in relation to the above- including the use of online training courses/MOOC's as a delivery mechanism.
- Discuss with the Digital Boost team at MBIE the work they plan to undertake on training SMEs and if we can further complement this training.

Māori data sovereignty

While a great deal of the emphasis for Maori data sovereignty rests with government data – there may be wider implications for business data. This is an evolving area and one we will keep a watching brief on as policy begins to be formulated.

In the interim – there are ways of highlighting what the aims and aspirations of Māori data sovereignty are – particularly in relation to educating businesses. One potential avenue is making more businesses aware of the Te Mana Raraunga Data Sovereignty Network charter.

Actions:

- Engage with representatives of Te Mana Raraunga on how we might socialise their charter with businesses as a way of raising the issue of Māori data sovereignty.
- Keep a watching brief in relation to any policy developments for government data and Māori data sovereignty and any flow on implications for business data – noting that government open data is out of scope for this initiative.

Frameworks to support training

It is recommended that a set of tools/frameworks be developed that would be available to businesses and will sit alongside the education programme discussed above. These frameworks would be focussed on enabling a business to construct their own data strategy and to consider data governance more broadly. Steps to implement a data audit (including how to improve data quality) in order to gauge the asset and to prepare for implementation of

AI (as applicable) would also be included. Guidance will also be provided to assist any business considering the formation of a data institution that will assist in data sharing and exchange.

Government already plays an important role in collecting data and making data available. It therefore should also seek to promote other data production and governance, focusing on reciprocity, collaboration and exchange.

Included in the training will be awareness of Māori data sovereignty and the Te Mana Raraunga - Māori data sovereignty Network charter. In time, this training could also seek to go wider to assist exporting businesses to consider indigenous data issues more generally.

Why encourage the sharing and exchange of data?

Capitalising on the access to vast swathes of often proprietary data is currently seen as a market differentiator. Companies such as Google have developed economies of scale in data by curating massive and authoritative datasets over a period of time. Meanwhile, Netflix by establishing a sophisticated data strategy have capitalised on their data assets and continue to dominate market share.

In order to better compete, smaller NZ companies must realise firstly the strategic importance of their data and secondly the even greater strategic imperative of pooling and exchanging data with other businesses within a trust framework in order to achieve similar economies of scale but also to boost insight and drive innovation.

Data and AI are closely aligned; big data requires sophisticated AI models to analyse and derive insights and knowledge, while AI models need the critical mass of big data for training and optimization. By ensuring there is adequate data available we will be encouraging more data driven innovation powered by AI.

Well-defined data institutions/consortia can enable the building and training of very powerful artificial intelligence (AI) engines.

Actions:

- Begin scoping the content for these frameworks with Data specialists.
- Investigate how we might provide a high-level framework (or similar - potentially an info sheet) on establishing a data institution/consortia with MBIE Legal advisors.
- Look to establish (or highlight) an exemplar project where a group of businesses have formed a consortium or similar in order to exchange data. An example may be The Trust Alliance New Zealand (TANZ) or the work being proposed by i4 Accelerator.
- Investigate further the potential GAIA-X opportunities and/or potential opportunities via DEPA for New Zealand businesses to gain access to international data sets.

Establishing a national digital twin

One way government can assist with reciprocity, collaboration and exchange is to establish a platform that will enable this – the creation of a national digital twin. Essential to establishing a digital twin is getting the foundations right by establishing data standards that will govern how data is collected and shared.

At present there are tentative movements to establish numerous digital twins – in order to help maximise the benefits more widely in the establishment of multiple digital twins – the concept of creating a federated national digital twin could be investigated. This preliminary work could look to how we might set out standards to ensure data interoperability between the twins.

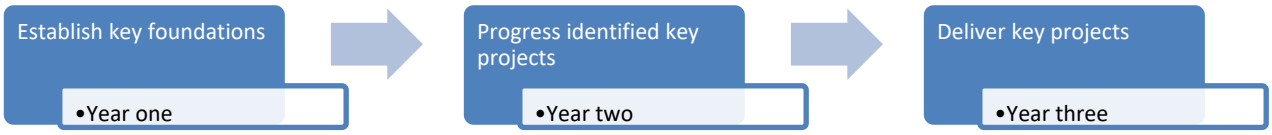
Actions:

- Engage with the New Zealand Quake Centre on how we might progress the standardisation project.
- Engage with other relevant agencies such as LINZ, NZTA, and local government, in order to develop a shared view on next steps towards advancing towards a national digital twin.

Other government initiatives that will assist with data driven innovation

- Consumer data right – MBIE, CCC
- The Digital Boost programme – Looking to digitise NZ SMEs – MBIE, Small Business
- Digital identity framework - DIA
- Refresh of the Data Strategy and roadmap for New Zealand – Stats NZ
- The proposed national AI Strategy – MBIE (lead)

Project phases



Education Initiative		

• Identify key delivery partners – this may also include online distribution partners
  ○ Approach relevant delivery partners early 2021 in order to schedule training offerings and to progress discussion on delivery formats
• Progress the development of Tools/framework for the education initiative as well as overall content – including support for the development of data institutions
  ○ Engage with Subject Matter Experts on the creation of tools early 2021 for the tools to be developed by mid- 2021. Look to engage with Stats NZ on this tool development
• Pilot training and look to evaluate and refine for further rollout
  ○ Run session mid – late 2021 with tools and evaluate effectiveness of sessions
	• Wider dissemination of the education initiative
	• Look to include further training on indigenous data
		• Review the training offerings with the potential to include information on synthetic data- as this technique matures

Digital Twin Initiative		

• Continue to build cross-agency support for a potential budget bid in 2022 for a national digital twin
  ○ Early 2021 undertake workshop with relevant agencies to progress discussions on how to advance establishing a digital twin
• Based on those discussions look to progress the formation of a national digital twin including the necessary data standards by establishing a Joint Technical Centre by mid-2021
  ○ Look to leverage any previous work by NZTA and others
• Creation of prototypes and protocols
• Testing standards & systems
	• Development of commercial models
	• Development of partnering opportunities
	• First iteration of the national digital Twin (Regional or by Sector, i.e. Transport)
		• Creating the model for ongoing success including partnerships with companies and other agencies
		• Identifying and developing commercial and public good opportunities
		• Leading and supporting technological development
		• Identifying and educational and training pathways
		• Seeding and supporting research needs