MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Stats NZ
Tatauranga Aotearoa

Digital Nation
Domain Plan 2019




New Zealand Government

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Foreword

Our ability to understand and respond to the many impacts of New Zealand's digital transformation will be dependent on the availability of timely, accurate, fit-for-purpose data.

But what should we measure? And how will we go about it? These are difficult questions to answer. One thing is certain: it is time to set some strategic priorities for data relating to the digital domain.

This domain plan will help us take advantage of an opportunity to improve the way information on our digital industries is collected and co-ordinated across the data system.

It will also help us build a better knowledge of the way digital technologies are impacting the social, cultural and economic wellbeing of New Zealanders.

Here we ask the big questions we must answer to make this vision a reality. Here we examine the critical gaps in our data and set out a plan to fill them. Here we make an enduring commitment to pool our efforts and tackle these challenges head on.

Ultimately, the aim of this work will be to ensure that policy makers have a rich and credible evidence base to hand as they grapple with the effects of digital transformation on our society and economy.

As we move ahead, it is vital that we continue to ensure New Zealanders have trust and confidence in the way their data is collected and used.

Across the world, governments and international bodies are struggling to keep up with the pace of new developments in the digital sector. With this plan, we are taking a ground-breaking approach to ensure New Zealand is ready to measure its digital future.

Liz MacPherson
Government Statistician
Government Chief Data Steward

Foreword

Digital technologies are increasingly transforming how we work, where we work, and the skills we need to undertake this work.

They are also changing the products we make, how we make them and how those products are consumed and traded.

This digital transformation is generating increased complexity in our economy, society and everyday lives. Understanding this transformation and its impacts has opened up new statistical challenges.

The domain plan is the first step towards how we begin to think about measuring our transformation into a digital nation. It also helps us to ensure we are collecting the right data now and into the future that will support evidence-based decisions.

The plan is the result of a collaborative effort across both the public sector and the New Zealand digital technology sector.

Over the past two years the project team from Stats NZ and the Ministry of Business, Innovation and Employment has carried out a series of meetings and workshops to discuss how we might more effectively measure New Zealand's transformation into a digital nation.

This collaborative approach will also further enable us to implement this domain plan and achieve the results we seek.

Carolyn Tremain
CEO Ministry of Business, Innovation and Employment

Executive Summary

This plan will help set New Zealand's strategic priorities for data relating to the digital domain

The Digital Nation Domain Plan sets out the main priorities for government data collection relating to New Zealand's digital transformation[1]. These priorities have been selected following extensive engagement with government and industry stakeholders to identify the most significant gaps in our current collection.

The need for this plan emerged from the increasing challenges posed by digital transformation

Digital technologies have given rise to increasing complexity in our economy and society, creating new policy and operational challenges for government. To adequately respond to these challenges, we need a solid evidence base, to measure the extent and impact of these challenges. Our current measurement and data collection systems were not designed with these challenges in mind.

MBIE and Stats NZ developed this plan with extensive stakeholder engagement

The domain plan was developed by the Ministry of Business, Innovation and Employment (MBIE) and Statistics New Zealand (Stats NZ). A Governance Group consisting of representatives from MBIE, Stats NZ and the Department of Internal Affairs (DIA) provided oversight to the process.

At all stages of the process, the project team relied on stakeholder feedback to inform their analysis. The first stage of the process, identifying the government's long-term strategic information needs through a set of 'enduring questions[2]' was done through a series of workshops with key government and industry stakeholders. The second stage of the process, a stocktake of existing data, was conducted through a survey of government and industry bodies. The third and final stage, the gap analysis and prioritisation, was an iterative process. A series of potential data priorities was proposed based on the enduring questions and data stocktake. These were then tested in a series of workshops and survey of government stakeholders. From this, a set of ten possible priorities was identified and a final workshop narrowed this down to four key priorities.

Key strategic priorities

1. **Digital inclusion**

   Appropriate measures of digital inclusion and exclusion were identified as a core gap in our data collection. It is an emerging area of great importance, but data currently collected is inadequate for policy work.

2. **Defining and valuing the digital sector**

   The 'digital sector' is an amorphous term, with boundaries that are difficult to define precisely. Nevertheless, there is a clear need across government to define the sector, and show its value and economic contribution, building on the international work in this space. Current data collections are insufficient for this task.

3. **Digital security**

   Digital security is a crucial issue to enable good outcomes from digital technologies. Both the perception and reality of security is important to understand. Most data collected in this realm is administrative and operational data, and not necessarily the right data for addressing policy concerns.

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1 Digital transformation is defined in Section 1.5 Definition of key terms. The use of this term is intended to focus on broader digital phenomena rather than solely on digital change processes (the stage and rate of digital integration).
2 Enduring questions reflect the strategic information needs of government and stakeholder decision makers.

4. Impacts of digital technologies

The impact of digital technologies, or more specifically the role of digital technologies in promoting productivity and improving wellbeing while growing the economy was identified as the final key priority. This is a broad area that is pervasive across multiple sectors of the economy and may have actions that focus more on research than data collection. Impacts are not expected to all be positive. However, by answering these questions we will be better placed to mitigate negative effects while promoting positive outcomes.

The domain plan is just the first step in a data improvement process

The domain plan process has directed us to four key priority areas that require immediate attention. The actions that will follow on from this domain plan are focused on further work to provide solutions to these data gaps. Solving the issues will require discussions around balancing this set of priorities against broader data priorities and is beyond the scope of the domain plan itself.

Clarity around the next steps is important to stakeholders and strong interest has been expressed for an agreed programme and timeline. Access to information stemming from this work, and confidence that this programme will deliver a material improvement in the availability of data, is a priority for stakeholders. As a result, MBIE and Stats NZ propose working together with other agencies and key sector stakeholders in order to progress how to remedy the prioritised data gaps.

1. Introduction

We live in a world that is increasingly influenced by rapid change and advances in digital technology.

These changes are influencing how we live, how and where we work, and how we connect to the world. As a result, new businesses and occupations are being created and the very nature of goods and services is changing. How we create and consume products and services is also affected by the rapid changes and developments in digital technologies.

This digital transformation has led to greater complexity in our economy and society. This gives rise to new challenges for New Zealand's government and its agencies, keen to provide the right support for society, and businesses, to embrace and cope with this change.

We need to ensure that our data and measurement systems remain fit-for-purpose as New Zealand's economy and our everyday lives are increasingly digitised.

1.1 Background to the domain plan

Currently, New Zealand collects a range of statistics relating to digital transformation. Stats NZ collects data for industries within the ICT sector, following international classifications, to measure the growth of that sector as part of a broader view of tracking the development of the digital economy. They also collect data on general business use of technologies, as well as internet usage from a supply perspective. MBIE collects data on broadband access to support its role in overseeing infrastructure. Various other departments collect data on an ad hoc basis or as part of a broader data collection. The Commerce Commission, for example, has an array of telecommunications data.

Faced with the challenges of digital transformation, Stats NZ and MBIE identified an opportunity to improve the content, collection and co-ordination of this data, with a view to ensuring that areas of high policy interest and priority would be provided with evidence-based support.

A broad, cross-agency approach was proposed to review and identify gaps in the current data measurement system, and make recommendations for improvement, with the objective of collecting data that supports long-term decision-making for New Zealand's digital future.

The vehicle for this approach became the Digital Nation Domain Plan 2019, jointly led by MBIE and Stats NZ.

1.2 Domain plans

Domain plans are an established process, intended to ensure that agencies collect relevant, useful and accurate data to help with making long-term impact decisions based on solid evidence.

The value of a domain plan lies in its inherent characteristics. It has the ability to:

- Clearly articulate the big picture.
- Ask the strategic level questions that government and New Zealanders require answers to in order to make evidence-based decisions and policies.
- Identify the gaps in the current datasets in relation to the strategic questions.
- Develop a coordinated plan for addressing the data gaps and issues.
- Represent a long-term commitment from government agencies to improve data collection and data availability.
- Endure beyond changes in policy or government direction.

Using Stats NZ's definition, "Domain plans capture the statistical activity and needs of economic, environmental and social areas," a domain plan is not required for ensuring the quality of existing statistics. Most 'domains' or specific government areas do not have a domain plan, but they continue to have quality assurance, improvement programmes and reviews independent from a domain plan process.

1.3 Purpose of the digital nation domain plan

The purpose of the Digital Nation Domain Plan 2019 is to achieve clarity and agreement from across agencies on the main priorities for statistics in relation to our digital transformation and provide a platform from which those priorities can be addressed over the short to medium term. The domain plan provides:

- Cross-government agreement on the long-term enduring questions that we need to understand in order to support policy development relating to the digital domain.
- A prioritised list of the most significant data gaps in answering those questions.
- A platform from which those data gaps might be addressed.

It must be pointed out that the Digital Nation Domain Plan 2019 operates in a less clearly defined environment compared to other domain plans. Tourism and Transport domain plans fall into traditional and established industries, so it becomes easier to define the scope. With digital transformation, we are looking at adopting a measurement system that is sufficiently robust to withstand technological, economic and social changes that we may not be able to fully anticipate.

1.4 Project team

The domain plan is jointly led by the MBIE Digital Economy Team supported by their subject experts, together with key personnel from Stats NZ.

The Department of Internal Affairs (DIA) has also been involved, specifically in relation to its work on how to measure digital inclusion. Digital inclusion forms part of the key metrics of tracking our social and economic wellbeing as digital technologies become embedded in everything we do, for example, working, learning, communicating, banking and accessing public services.

1.5 Definition of key terms

In this paper, we will frequently use, and make references to, the following terms. Underpinning all these definitions is a particular process of technological change.[3]

Digitalisation is the process of leveraging digitisation to do things better, e.g. improved business processes, and better community engagement with government as a result of digitisation.

Digitisation is the conversion of an analogue signal conveying information (such as a sound, or an image) into binary bits. Effectively moving data from the physical to the digital sphere. This allows information to be collected, used and transmitted easily. The development of supporting technologies, such as the internet, provides the infrastructure through which this information is transmitted. Exponential growth in computing power has made the digitisation process even more powerful.

Digital economy is commonly used to refer to the economic aspects of digital transformation, just as the term digital society refers to social aspects.

Digital nation can be used in an aspirational sense, to refer to the forms of digital transformation that are considered desirable from a nation's perspective. For the purposes of this document, we use it to refer to aspects of digital transformation (social, cultural and economic) that are specific to New Zealand.

Digital technologies are digital systems and applications that store, analyse and communicate information. In general, digital technologies refer to types of electronic equipment and applications that process and use digital information, for example, computers. In addition, the term can be a generic description for recent advances in technology, digital platforms, big data, machine learning and social networks.

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3 Many terms used in the domain plan are also used in the Australian and New Zealand Productivity Commissions' report **Growing the digital economy in Australia and New Zealand: Maximising opportunities for Small Medium Enterprises (SME's)**

Digital transformation is the integration of digital technology into areas of a business, government agencies, or the economy in ways that fundamentally change the way they operate. It is the total and overall economic and societal effects of digitalisation. New ways of working collaboratively online, more ways to interact on social media, and changes in traditional business models are some examples of digital transformation.

ICT (Information and communication technologies) includes telecommunications, broadcast media and information technology. ICT is a more encompassing term than IT.

ICT sector is the collection of firms in an economy whose main activity is the production of software, computer or communications hardware, or information and communications services.

IT (Information technology) is computer-based information systems, networks and software.

2. The Domain Plan Process

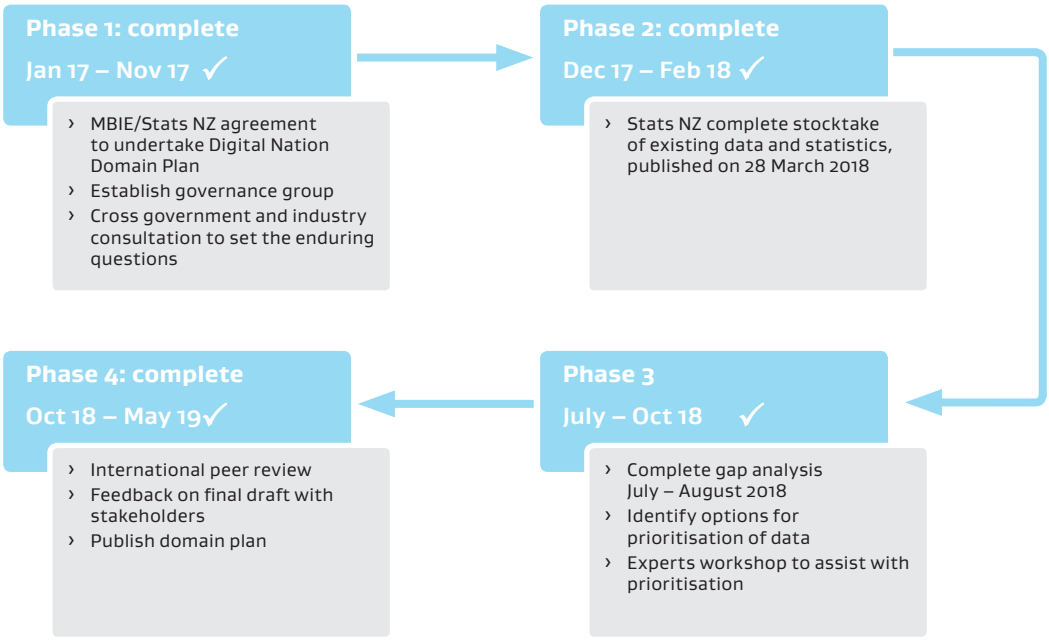
After establishing the project plan and setting up governance structures, the first step in the domain plan process was to identify the overarching strategic level questions that stakeholders and policy makers need answers to in order to make evidence-based decisions in relation to New Zealand's digital transformation. These questions, referred to as the 'Enduring Questions', are designed to cover a long-term perspective, for the next five to eight years.

The second step was to undertake a stocktake of currently collected data relating to the digital nation.

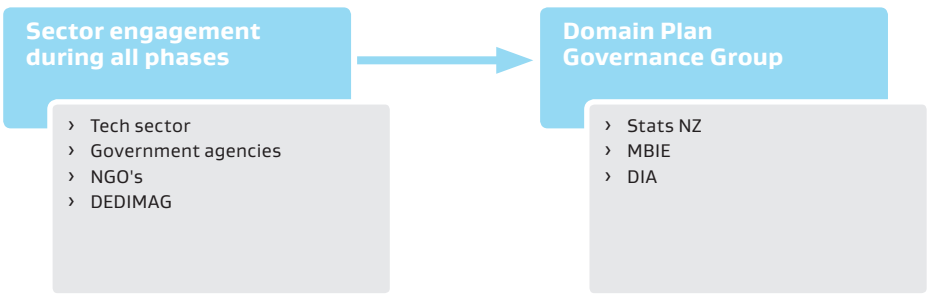
The final step involved working with stakeholders to identify the key gaps and prioritizing them in terms of the urgency of data needs, cost effectiveness and potential benefits.

The following diagram sets out the domain plan process.[4]

Digital Nation Domain Plan 2019: High level process and timeframes



Who has been involved with the Domain Plan Process?



4 Definitions used in the table that are not already defined include: NGO's (Non-government organisations) and DEDIMag (Digital economy and digital inclusion ministerial advisory group).

3. The Nature of the Problem

Today's breed of fast growing companies often exist virtually as online platforms: Uber, the world's largest taxi company, owns no vehicles; Facebook, the world's most popular media owner, creates no content; Alibaba, the most valuable retailer, has no inventory, and Airbnb, the world's largest accommodation provider, owns no real estate.[5] Yet Uber, Facebook, Alibaba and Airbnb hold tremendous economic power.

How do you begin to capture and accurately measure these economic activities?

This challenge is not unique to New Zealand. It includes both capturing the activity and secondly, being able to see the activity within the data that is available. We have the comparative example where the full range of tourism activity cannot be seen in macro-economic estimates (though from a significance point of view is captured in our economic estimates) unless we look at the tourism satellite account[6] which provides a more detailed view of the macro-economic estimates.

New Zealand's industry classification[7], which is similar to the International Standard Industrial Classification of all Economic Activities (ISIC) is not designed to show the growth of the digital economy, separately. For example, the standard definition of Information and Communications Technology (ICT) and the associated SIC codes under this classification have been criticised as being too narrowly defined for this purpose. This raises concerns that we cannot see the true contribution of the digital economy towards New Zealand's Gross Domestic Product (GDP) and economic growth.

Another challenging issue we face is how we measure the social, cultural and environmental impacts that digital technologies have on the general wellbeing of people. The OECD recognises the importance of wellbeing indicators in their *How's Life? 2015 – Measuring Well-being* report. In 2018, the New Zealand Treasury in their *Living Standards Framework* published a dashboard of indicators that go beyond economic metrics (Living Standards Framework Dashboard). The dashboard has been developed as a tool to help Treasury advise successive governments on New Zealanders living standards over time.

In parallel, Stats NZ has developed *Indicators Aotearoa New Zealand – Ngā Tūtohu Aotearoa* to track New Zealand's progress over time. This new indicator suite builds on international best practice and includes approximately 100 social, cultural, environmental and economic indicators. It will support a range of government wellbeing reporting and analysis activities.

Stats NZ and Treasury worked together to ensure *Indicators Aotearoa New Zealand- Ngā Tūtohu Aotearoa* aligns with Treasury's Living Standards Framework. It is intended that Treasury will draw on indicators and data from *Indicators Aotearoa New Zealand – Ngā Tūtohu Aotearoa* for the Living Standards Dashboard.

In April 2019, Stats NZ published the list of wellbeing indicators included in *Indicators Aotearoa New Zealand – Ngā Tūtohu Aotearoa.* In June 2019, Stats NZ will launch a dashboard for these indicators, providing a view of current wellbeing, future wellbeing and our impact on the rest of the world (such as waste exports, for example).

Indicators Aotearoa New Zealand – Ngā Tūtohu Aotearoa will continue to be developed and delivered by Stats NZ and supports a wellbeing approach to strategic decision making.

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5 Hamish Mc Rae, "Facebook, Airbnb, Uber and the unstoppable rise of the content non-generator". The Independent, 5 May 2015. In his article H. Mc Rae reported the words of Tom Goodwin, senior vice president of strategy and innovation for Havas Media USA.
6 A satellite account is a term developed by the United Nations to measure the size of economic sectors that are not defined as industries in national accounts.
7 New Zealand uses the Australia and New Zealand Standard Industrial Classification (ANZSIC) industry coding system.

Further work is needed to understand the links between digital transformation and both positive and negative impacts on wellbeing.

Governments of other countries, and internationally recognised bodies, are all grappling with the issues of how to define and measure the emerging and growing digital economy.

3.1 Challenges of Digital Transformation

The definitions in section 1.5 help to define the scope of the domain plan. Government is interested in separately identifying the impact of digitalisation on New Zealand's economy – the extent to which digital technologies are being used, as well as the effect of digitalisation. This includes educational needs and creative contributions.

Traditional levels of detail that show social, economic and cultural progress do not capture these impacts, despite their growing importance.

Compared to other domain plan processes, the project team faced unique challenges in developing the Digital Nation Domain Plan 2019. The definition of what constitutes a digital technology, combined with how we use these technologies, has made clarity around the scope of the domain plan extremely difficult.

Disruptive technologies such as 5G, Data Analytics, the Internet of Things (IoT) and Artificial Intelligence (AI) are rapidly evolving and becoming increasingly interconnected. It is this interconnection or convergence, that is further fuelling change at an unprecedented pace. Therefore, any definition that is developed runs the risk of becoming rapidly obsolete.

Related to this, it is difficult to define exactly what problems the domain plan is trying to solve. The domain plan can highlight specific issues to solve, such as a lack of measures of digital equality, or measuring the contribution of ICT to New Zealand's GDP. However, attempting to bring all these different problems under an overarching framework has proven difficult. No other domain plan has tried to create a measurement framework to cover such a diverse range of activities.

Finding a way around these problems has required a degree of flexibility and practicality in thinking. Addressing the majority of the data needs in a timely fashion is better than trying to develop an all-encompassing framework to address every issue at hand. This domain plan tries to provide practical solutions to prioritised problems.

3.2 Efforts to define the digital economy

Within New Zealand and internationally, work is being progressed to determine what constitutes the digital economy and how to measure it more effectively.

Internationally

The international statistical community in collaboration with national statistical offices (NSOs) have been working through these issues. This work is best advanced through international co-operation.

The frameworks and concepts are generally agreed internationally. Stats NZ is contributing to work led by the OECD and has a representative on the OECD advisory group that is looking to build a framework for measuring GDP in a digitalised economy[8], drawing on efforts taking place in member countries.

The group proposes a digital satellite account[9] as a way of separately showing the economic activity associated with the digital economy. This approach has already been developed and used internationally in a number of other areas. It provides a different view of GDP along with extensions while being consistent with the underlying framework. A notable example for New Zealand is the tourism satellite account.

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8 Original paper with background: Ahmad, N. and P. Schreyer (2016). "Measuring GDP in a Digitalised Economy", OECD Statistics Working Papers, No. 2016/07, OECD Publishing, Paris. **http://dx.doi.org/10.1787/5jlwqd81d09r-en**

9 **http://www.oecd.org/iaos2018/programme/IAOS-OECD2018_Ahmad-Ribarsky.pdf**

It is expected this approach will be endorsed by the OECD in the second half of 2019. The paper 'Defining and Measuring the Digital Economy'[10] from the Bureau of Economic Analysis (BEA) is an example of taking this approach and applying it to existing data. While the underlying framework that underpins economic estimates is thought to be suitable, there is still some work to go to fully develop the envisaged approach, with one of the challenges being getting enough data to show the desired breakdowns.

Nationally – efforts to define New Zealand's tech sector

NZTech[11] has attempted to define the New Zealand tech sector using existing ANZSIC codes aligned to definitions from the OECD and MBIE's ICT Sector's report (Figure 1). This was an attempt to ascertain the sectors overall contribution to GDP. NZTech has included hi-tech manufacturing as an adjunct to the ICT definitions.

Figure 1: Tech Sector and Subsectors

Tech Sub-Sectors	ANZSIC Code	Categories	Examples
ICT	J580	Telecommunications services	Spark, Vodafone, 2Degrees, M2, Chorus
	M700	Computer systems design	Datacom, Xero, IBM, Microsoft, Orion Health, Fronde, GeoOp, Wynyard, PartsTrader, Serko
	J542	Software publishing	Pingar
	J591	Internet service providers and web search portals	Now, Inspire.net
	J592	Data processing services	Rewera, Gentrack
	F349	Wholesaling of ICT goods	Ingram Micro, Duo
High-tech Manufacturing	C242	Computer and electronic equipment manufacturing	ERoad, Novel Ways, Smartrak, Dynamic Controls
	C2422	Communication equipment manufacturing	Tait Communications
	C2429	Other electronic equipment manufacturing	Rakon
	C241	Professional and scientific equipment manufacturing	AuCom, F&P Healthcare, AD Instruments, Atrak
	C243	Electrical equipment manufacturing	Wellington Drive
	C239	Aircraft manufacturing and repair	Pacific Aerospace
	C184	Pharmaceutical and medicinal product manufacturing	PharmaZen, Argenta
	C244	Domestic appliance manufacturing	F&P Appliances
	C181	Basic chemical and chemical product manufacturing	Nuplex, Zelam, Arotec Diagnostics, Skinfood
	C245 C246 C249	Specialised machinery and equipment manufacturing	Glidepath, Scott Technology, Compac Sort, Skope
	C231 C239	Motor vehicle and other transport manufacturing	Designline, Hamilton Jet

Source: NZTech, *Digital Nation New Zealand, from Tech Sector to Digital Nation*, 2016.

10 **https://www.bea.gov/system/files/papers/WP2018-4.pdf**

11 The New Zealand Technology Industry Association (NZTech) represents organisations from across the technology ecosystem. These organisations range from innovative start-ups and local IT firms to hi-tech manufacturers and global tech leaders.

MBIE's ICT Sector report utilises the OECD definition which includes telecommunications goods and services but excludes internet publishing and broadcasting. The ICT sector is therefore defined as:

- Goods and services which enable the function of information processing and communication by electronic means including transmission and display.
- Goods which use electronic processing to detect, measure and/or record physical phenomena or control a physical process.

However, this definition has been deemed to be not comprehensive enough by sector stakeholders to adequately capture and measure the contribution ICT makes to other sectors of the digital economy, including that of CreaTech,[12] FinTech,[13] and AgriTech.[14]

Stats NZ commenced an initial review of the codes used but decided that the work required to develop measures and indicators aligning with the definitions would be better spent driving the move towards an internationally comparable definition. This includes continuing the work already underway with the OECD and member country statistical offices.

12 CreaTech is an umbrella term used to cover the emerging genre of activities in which technology enables creativity to produce new value-added products, services or experiences. This can include design, story-telling, audio-visual and performance.
13 FinTech is the new applications, processes, products, or business models in the financial services industry.
14 AgriTech is the use of technology in agriculture, horticulture, and aquaculture with the aim of improving yield, efficiency, and profitability.

4. Enduring Questions

Enduring questions reflect the strategic information needs of government and stakeholder decision-makers. While digital technology changes, enduring questions will last over the long-term. They encompass the use of digital technologies for economic, business, creative and artistic purposes. They also tell us where policy interventions might be most effectively targeted and help us evaluate the success of these interventions.

The domain plan did not expect to completely answer all questions, and the correct answer may change over time. However, by identifying and clearly articulating information needs, the domain plan can better prioritise data collection to come closer to answering the enduring questions.

Additionally, the domain plan has not prioritised these questions. The importance of each question might shift over time if there are changes in government objectives and priorities, making consensus more difficult to reach. What is certain is that all questions are important and need to be addressed.

4.1 Enduring question process

The enduring questions were developed over two stages, beginning with a series of two workshops. A draft set of questions was developed in the first workshop, which were then tested and validated at the second workshop.

Some of the major themes arising from the initial workshops were a desire to understand:

- What New Zealanders[15] are doing with digital technologies.
- What New Zealanders want to do with digital technologies.
- What New Zealanders would ideally like to do with digital technologies (which should be identified through a policy process rather than a data process).

A draft set of questions was developed around this initial framework, which was then refined to the current set of enduring questions.

The workshops highlighted the importance of exploring how these issues play out at a regional and sector level, and how they produce different impacts for Māori, Pasifika and other groups. The uneven impacts of digital transformation were identified as a core policy concern, and this is reflected in the enduring questions.

During later workshops it was noted that combining Māori and Pasifika within the same question could misrepresent the distinct issues facing these communities. As a result, the enduring questions were further revised, by distinguishing the communities from each other.

15 In this context, New Zealanders may comprise individuals, businesses, sectors etc.

4.2 Enduring questions

The enduring questions were identified as:

1. **How are New Zealanders engaging with digital technologies?**

   This question provides the base-level information that supports all other enduring questions. Here, we define the nature and size of New Zealand's digital transformation and assess how it is changing over time.

   The following supplementary enduring questions sit beneath it:

   - What digital technologies are being created by New Zealanders?
   - What digital technologies are being used by New Zealanders?
   - How are digital technologies being used by New Zealanders:
     - To connect with and communicate with others?
     - To connect with and express cultural identity?
     - For leisure?
     - For creative and artistic purposes?
     - For trading goods and services?
     - To improve educational and skills attainment?
     - To improve employment outcomes?
     - For managing finances?
     - To improve health outcomes?
     - To improve environmental outcomes?
     - To access public services?
     - For democratic and civic participation?
   - How are digital technologies being used by New Zealand organisations:
     - To introduce new or significantly improved goods or services?
     - To improve production or delivery methods?
     - To improve business practices, workplace organisation or external relations?
     - To promote, market and sell products or services?
     - To access public services and comply with laws and regulations?

2. **What is the impact of New Zealanders' engagement with digital technologies?**

   This question will provide us with information about the importance and value of digital transformation. Crucially, we do not expect all the impacts to be positive. Jobs may disappear and inequality may widen. By answering these questions, we will be in a better position to mitigate these negative effects, while promoting the positive outcomes.

   The following supplementary enduring questions sit beneath it.

   - In what ways are the use and creation of digital technologies affecting:
     - New Zealand's production and productivity?
     - New Zealand's exports and international connectivity?
     - Structural changes in the economy (new firms, new industries, new exports, and new ways of working)?
     - The material welfare of New Zealanders?
     - The health and wellbeing of New Zealanders?
     - New Zealand's natural environment?
     - New Zealand's culture and creative output?
     - The civic and democratic engagement of New Zealanders?
     - Māori development?
     - Pacific development?
     - Regional development?

3. What limits New Zealanders' engagement with digital technologies?

The final question will address the barriers to New Zealanders' engagement with digital technologies. Policy-makers may desire greater levels of uptake in pursuit of particular goals, and this question identifies where the barriers to that uptake lie.

The following supplementary enduring questions sit beneath it:

- To what extent are New Zealanders aware of the availability and potential uses of digital technologies?[16]
- To what extent do New Zealanders have trust and confidence to make full use of digital technologies?
- To what extent do New Zealanders have the skills and capabilities to make full use of digital technologies?
- To what extent do New Zealanders have access to the infrastructure needed to make full use of digital technologies?
- To what extent do New Zealanders have access to the finance needed to make full use of digital technologies?
- To what extent does the regulatory environment and government support the use of digital technologies?

16 Includes the extent to which New Zealanders understand the opportunities and benefits of engaging with digital technologies and the potential impacts on their lives.

5. Stocktake

Answering the enduring questions requires a mixture of theory, judgement, and most importantly evidence. Stats NZ undertook a stocktake of existing data. While the stocktake focusses on government agencies, it also includes selected, significant non-government collections. This was achieved through both survey and interview techniques by an intern at Stats NZ from November 2017 through to the end of March 2018.

The results of this stocktake have been published at **https://www.stats.govt.nz/methods/stocktake-for-the-digital-nation-domain-plan-2018**

The stocktake represents an overview of data and information currently available that inform the key enduring questions, and the supplementary enduring questions. To keep the stocktake manageable, it is generally limited to official statistics (as defined in the Statistics Act 1975), statistics produced by Crown Research Institutes (CRIs), and the data used to compile those statistics. While other significant collections are included it cannot be considered a complete stocktake of available data.

The stocktake primarily focuses on data that is actively maintained. Research reports, administrative data, previously compiled stocktakes, lists of databases or metadata in any storage formats, information published pre-2006 and planned or incomplete work are out of scope.

While every effort was made to include all relevant datasets we acknowledge the stocktake may not be complete. This is especially true in a fast-moving data and information environment.

The main takeaway from the stocktake work was that almost all enduring questions had some data available that allows at least a partial answer, but that no question was able to be fully answered. This increased the importance of identifying what the most important priority issues are for data collection.

6. Gap Analysis and Prioritisation

The final, and most critical step, was the gap analysis. Given what we had learnt about the most important enduring questions, and the data we currently collect, we sought to find where the gaps are, how big they are, and how important it is to fix these gaps.

6.1 Gap analysis process

An initial series of workshops was held to test ideas on where the gaps might be. This was accompanied by a consultation process across government agencies. From this, a series of ten broad areas was developed and considered as potential gaps.

The purpose of these workshops was to confirm that these were the correct gaps and to clarify the nature and importance of them. Through these workshops we narrowed our focus further, to four major gaps.

6.2 Identified gaps

Four major gaps were identified through this process.

1. Digital inclusion

Digital inclusion is the most pressing gap identified in the domain plan process. Digital technologies have become an integral part of how New Zealanders work and live their lives. Therefore those without the motivation, skills, access and trust to fully use those technologies risk becoming economically or socially disadvantaged. Questions about digital inclusion link back to the following five supplementary enduring questions that consider "What limits New Zealanders' engagement with digital technologies?"

- To what extent are New Zealanders aware of the availability and potential uses of digital technologies?
- To what extent do New Zealanders have trust and confidence to make full use of digital technologies?
- To what extent do New Zealanders have the skills and capabilities to make full use of digital technologies?
- To what extent do New Zealanders have access to the infrastructure needed to make full use of digital technologies?
- To what extent do New Zealanders have access to the finance needed to make full use of digital technologies?

There is a fundamental underlying basis that underpins these five questions. To what extent do New Zealanders want to engage with digital technologies? The question of motivation was identified during the gap analysis process as crucial to our understanding of the topic of digital inclusion. Some people choose not to engage with digital technologies because they misunderstand what the value is, or what is required of them to be able to use these technologies. There are cases of some people who choose not to engage with digital technologies even though there are no barriers for them.

Specific value was placed on better understanding digitally excluded segments, and their motivations and barriers to access, with emphasis on specific population groups such as Māori and Pasifika.

The table below sets out current data collected around digital inclusion. There is a lack of robust and fit-for-purpose data to show the current state of digital inclusion. This arises partly from the current methods employed to collect our data, using mostly phone and online surveys. The digitally excluded, with their lack of access to the internet, and sometimes a phone too, cannot readily participate in these surveys.

Current data sources	Relevant information
Kiwis Count annual report	Use of online public services
New Zealand Census of Population and Dwellings*	Dwellings access to internet, cell phone and telephone
Progress in International Reading Literacy Study	For school children: Access to computer or internet, use of digital devices, capacity for instruction in digital technologies
Trends in International Mathematics and ScienceStudy	For school children: Access to computer or internet, use of digital devices, capacity for instruction in digital technologies
Program for international student assessment	For school children: Access to computer or internet, use of digital devices, capacity for instruction in digital technologies
Survey of Adult Skills	For adults: Use of digital technologies at work, skills required to use digital technologies at work, use of digital technologies in everyday life
Teacher and Learning Survey	For teachers: perceived need of ICT skills, frequency of use of ICT in the classroom
Broadband deployment data	Access to ultra-fast broadband by area
Household Economic Survey*	Household ownership of digital technologies, access to computer

* Source: Stats NZ

2. Defining and valuing the digital sector

How to define and measure the digital sector was another crucial topic that was identified. This topic addresses the following supplementary enduring question:

› What digital technologies are being created by New Zealanders?

It was recognised during workshop consultations that the word ‘digital’ is an amorphous term at present and will continue to evolve in its meaning in an emerging and growing digital industry. For example, it is impossible to create a neatly defined digital sector using ANZSIC codes or any other industrial classification system because there are digital products, services and processes embedded in every industry.

There is a pragmatic need to define the boundaries and definitions in some useful ways to help with decision making on how to begin measuring and valuing the digital sector.

There is a lot of data around businesses that is being collected, and resolving this gap is both a definitional issue and a data issue.

Current data sources	Relevant information
Annual Enterprise Survey*	Income, sales, purchases, expenditure, salaries, profits, stocks, total assets, equities and total liabilities
Business Data Collection*	Sales, purchases, salaries, profit
Business Operations Survey*	Internet use and connection, and purchases and sales of goods and services via the internet
Economic Survey of Manufacturing*	Sales, stocks and purchases of goods and services for selected manufacturing industries
ICT Supply Survey*	Published software, IT tech support services, IT design and development, hosting and IT infrastructure, value and percentage of local and export sales for each
National accounts (industry production and investment)*	Economy wide total software as a total of gross fixed capital formation. Industry group level totals of software gross fixed capital formation. No industry level breakdown available.
Overseas merchandise trade*	Imports and exports of digital devices (computers, cellphones, tablets, etc)
Quarterly Survey of International Trade in Services and Royalties*	Import payments and export receipts of ICT services by country

* Source: Stats NZ

The domain plan process has reinforced the relevance of this work. Defining the size and value of the digital sector is a key priority.

3. Digital security

Digital security is considered to be a critical issue. Digital security is an enabler of good outcomes from digital technologies. If people have confidence and trust in the digital technologies they use, they will be more willing to use them, and use them for greater purposes and to greater effect. This topic relates to two supplementary enduring questions:

- To what extent do New Zealanders have trust and confidence to make full use of digital technologies?
- To what extent do New Zealanders have the skills and capabilities to make full use of digital technologies?

Our workshop respondents emphasised the need to consider the multiple facets of digital security. Individuals will make decisions based on the perception of their security, and the degree of risk they are willing to accept. The reality of their security may be different as a result of the technology they use, their knowledge and digital skills. To complicate matters, security requirements are constantly changing over time.

A digitally secured environment is the result of actions carried out by consumers, producers and governments, and in the latter case, their regulations and infrastructure.

The workshops did not resolve the question of the degree to which digital security skills should be kept distinct from broader digital skills.

There is a degree of administrative data available, but New Zealand lacks an overarching framework for collecting data around digital security and there are many key areas for which there is no information.

4. Understanding impacts of digital technologies

The fourth main issue relates to the impact of digital technologies on wellbeing and productivity. This relates to the supplementary enduring question:

› In what ways are the use and creation of digital technologies affecting New Zealand's production and productivity?

This gap is more readily resolved through research work than data improvements. While workshop respondents agreed about the value of this question, there were mixed reactions about how easy it was to answer this question. For instance, the 'use' and 'creation' cycle times could be of too short time periods to make direct links to productivity levels. A qualitative approach might shed more light on this topic.

7. International peer review and feedback

We have tested the domain plan assumptions with both the Australian Bureau of Statistics and Statistics Netherlands. Below is a synopsis of the feedback received.

Australian Bureau of Statistics

Points of general feedback on the domain plan process are:

- Was data integration considered in the stocktake of existing data? Integration of existing datasets (dimensions) may reduce the need for additional data collection and reduce costs.
- To what extent do the existing data sources fill the knowledge gaps and answer the enduring questions? An overview on the potential outstanding data requirements would be useful.
- The list of enduring questions seems broad and ambitious. Under resource constraints, the research questions should be prioritised, which then determines the data requirements.
- Priority in the enduring questions may change over time due to technological advancements and changes in government etc. Potential collection of new data should have the right balance between scope and cost.
- If international comparison is desirable, then the defined digital sector should be consistent with that in other National Statistical Offices (NSOs) case studies.

New Zealand response to ABS feedback

Any possible future approach undertaken in New Zealand will utilise the international frameworks as the basis of the work and adopt the latest international best practice for pragmatic implementation. At this stage full implementation of a digital economy framework or a satellite account requires further development to enable the inclusion of data that is not currently available in New Zealand.

Existing data sources were considered in the gap analysis process (which identified information gaps). The potential of existing data, once integrated with other existing data, was also considered during the gap analysis stage if the data relationships were clear. Datasets were not dissected into component parts and re-matched with other disaggregated datasets to ascertain whether or not newly combined results further contributed to answer the enduring questions.

Statistics Netherlands

Statistics Netherlands are in agreement that the four strategic priorities as outlined in the Digital Nation Domain Plan 2019 are the right ones to address. They are complimentary of the approach taken to identify the enduring questions and how they relate to information needs.

Statistics Netherlands has raised the issue of how New Zealand might address the identified gaps, stressing that getting the right data is an overarching consideration for the success of the domain plan process. They recommend leveraging relationships established through the domain plan process with key stakeholders, as a way to help address some of the data gaps.

Statistics Netherlands also recommended that the domain plan be discussed more broadly internationally as a way to progress defining the digital sector.

New Zealand response to Statistics Netherlands feedback

Statistics Netherlands' innovative approach to gathering statistics in an increasingly fast paced and changing environment directly mirrors the work Stats NZ is progressing on developing data.govt.nz into a one stop shop where users can search and discover data, find guidance, grow capability and get assistance.

The points raised by Statistics Netherlands will be addressed as we progress the next steps and recommendations, after the domain plan is published.

Stats NZ through their work with the OECD is already involved in international discussions on progressing the best way to define and measure the digital economy.

8. Next steps – and recommendations

The domain plan process has resulted in identifying four key priority areas that require attention.

The next step in the process is to identify how the data needs of those priority areas can be met. The table below contains recommendations to lead this work into the future. It also notes the key stakeholders who are best equipped with the relevant skills, experience and expertise to make this happen.

Stats NZ and MBIE will work closely with other key stakeholders to progress initiatives. However, investigating and meeting these data needs requires additional funding for this work to begin. In making decisions on implementing these aspirational recommendations, Stats NZ will also consider its current suite of priorities and continue to work with the OECD[17] and other statistical agencies.

Recommendations	Who's involved
Digital Inclusion	
• Investigate ways in which current household and individual surveys could be adjusted to better capture data on the digitally excluded group. • Focus on the excluded group so we can better understand their motivations and barriers. • Early possibilities might include a small focus group to obtain qualitative data, run by those who are in close contact and support this group. • Recognise the criteria that define the digitally excluded group might rapidly change over time. • Develop a timeframe for reviewing our criteria to ensure that the measurement systems are kept robust and data collected continues to be relevant. • Recognise that the different population groups have different motivations, specifically Māori and Pasifika groups. Each group should be recognised with their own set of drivers, levers, conditions and solutions.	DIA Stats NZ Industry representatives NGOs
Defining and valuing the digital sector	
• Work with relevant agencies to understand the detailed and specific needs of policy groups and other stakeholders. • Identify gaps in answers to policy questions where these are not provided by currently collected data. • Explore data sources and the potential of partnering with others (both government and sector stakeholders) to explore alternative data sources. • Investigate administrative data sources and new initiatives that allow measurement of digital trade, such as Netflix tax[18]. • Review available definitions used to measure and value the digital sector. Ongoing work with the OECD to define broad definitions of 'digital activity'. • Optimise the use of existing data collection vehicles to gather data needed to answer policy questions and measure economic activity.	Stats NZ MBIE Industry representatives

17 Organisation for Economic Cooperation and Development

18 The 'Netflix tax' is imposed on intangible supplies of digital content, games and software. It also extends to consultancy and professional services performed offshore for local customers.

Recommendations	Who's involved
Digital security	
• Develop an overarching framework to underpin our specific digital security data needs. • Ensure the framework captures the multiple facets of digital security. This will include options for measuring the actual security practices that an individual uses versus the perceptions of their security needs. • Ensure the framework captures options for measuring digital security on a broader level by consumers, businesses and government, and in infrastructure and regulations.	MBIE DPMC Industry representatives
• Recognise that digital security skills should form part of the broader set of digital skills when we are measuring digital skills.	MBIE DPMC Industry representatives Ministry of Education
Impact of digital technologies	
• This should be seen as a research question, rather than a data question. It is not easy to directly link the use and creation of digital technologies to New Zealand's production and productivity.	MBIE

9. Ongoing stakeholder inclusion

The importance of each enduring and supplementary enduring question that has been identified in this domain plan may shift over time due to changes in government objectives and priorities, or due to the rate of technological change.

Ongoing participation and support from individuals, agencies and organisations (both government and non-government sectors and industries) that contribute to the aims of this domain plan is encouraged and welcome.

If you would like to be Involved in the next phase, as set out in **Section 8 – Next steps and recommendations**, to:

- Provide further advice.
- Add to the stocktake of relevant information.
- Provide comment on future work planning and prioritisation.
- Comment on funding allocations or applications.
- Address any related matters to support work programmes that help us ensure data and measurement systems remain fit-for-purpose.

Please contact:

The Digital Economy Team, Ministry of Business, Innovation and Employment
DigitalNZ@mbie.govt.nz

Or

Stats NZ
Info@stats.govt.nz.

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