



Critical Issues and Emerging Issues:

The Digital Economy in New Zealand, 2017

Executive Summary





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ACKNOWLEDGEMENTS AND LIMITATIONS

All analysis is built upon a foundation laid by peers. References, where immediately relevant, are cited or linked in this summary. A full list of references is provided with the full report. All research has limitations; these are discussed in the full report. Overall, this document presents insights for further discussion.



Executive Summary

This is an executive summary of the report *Critical Issues and Emerging Issues: The Digital Economy in New Zealand, 2017*. The purpose of this summary document is to contribute to informed discussion on the digital economy in New Zealand.

Focusing on the preferred future of New Zealand as a digital nation¹, and utilising an environmental scan, the author identified Critical Issues and conducted an Emerging Issues Analysis².

The analyses show that New Zealand has the potential to become a *leading* digital nation. It is the author's contention that New Zealand can be a world leader, particularly, in the areas of:

- Social equity and population well-being—through conscious economic development in the digital age.
- Regenerative environmental management—through digitization, development and application of advanced technologies, environmental awareness, and informed action.

According to the Organisation for Economic Co-operation and Development (OECD, 2017³), New Zealand is performing well (top ten) in some categories of the Information and Communications Technology (ICT) Industry. This is consistent with some areas of strong performance on both the Network Readiness Index (Baller, Di Battista, Dutta, & Lanvin, 2016⁴) and the Digital Evolution Index (Chakravorti & Chaturvedi, 2017⁵).

However, there are also areas where New Zealand should take urgent action so that development interventions will bring early and significant shifts in performance. These areas include (but are not limited to):

1. Increasing export of ICT-related products and services (including embedded ICT), with clear market-by-market export targets;

¹ Digital nation is defined as a nation with a thriving digital [economy], where our businesses, people and government are all using digital technology to drive innovation, improve productivity and enhance quality of life for all New Zealanders.

² Critical Issues and Emerging Issues are empirically identified policy issues. They are defined later in this summary. Their genealogy and use in policy analysis is further explained in the full report Lynn (2017 [2018]) in the “definition of terms” and the “scope, limitations and method” sections.

³ Organisation for Economic Co-operation and Development, (OECD 2017), OECD Digital Economy Outlook, 2017, OECD Publishing, Paris.

⁴ Baller, S., Dutta, & Lanvin, B. (2016), The Global Information Technology Report 2016: Innovating in the Digital Economy, (Baller, S., Dutta, S., & Lanvin, B. (Eds.), World Economic Forum, INSEAD and Cornell University.

⁵ Chakravorti, B., & Chaturvedi, R.S., (2017), Digital Planet 2017: How competitiveness and trust in digital economies vary across the world, The Fletcher School, Tufts University.

2. Increasing total business expenditure on research and development intensities in the ICT Industry;
3. Investigating the role of ICT-related patents, and of broader forms of intellectual property, in supporting or inhibiting digital innovation in New Zealand; and,
4. Identifying effective business models available to digital innovators that enable development to sustainable economic scale; sufficient to support the establishment of education/training in, and targeted ecosystem support, of those models. This is not about picking winners, it is about finding winning strategies.

Such performance areas are important indicators of innovative capacity (OECD, 2015, p. 47-48; Suarez-Villa, 1990), and for an export nation they are Critical Issues that require urgent Issues Management⁶. Current Issues Management programmes may require further research and careful reflection on their efficacy, as they are embedded in a rapidly evolving economic system influenced by complex and simultaneous technological convergences.

Due to rapid change external to New Zealand an Emerging Issues (that is, exploratory) approach to improving our understanding of these four performance areas is required. However, they are also Critical Issues (requiring early action) in terms of the need to improve performance. An energetic approach to early adoption of new interventions is recommended.

Becoming a leading digital nation will require an inclusive approach, that fully utilises the significant human capital available within New Zealand. In addition, it will require a collaborative approach that embraces the social and economic capital available to New Zealand through partnerships such as the [Digital Five \(D5\) Nations](#).

Becoming a leading digital nation will also be challenging. However, it can bring significant positive impacts for New Zealand, through greater equity, well-being⁷ and environmental sustainability. The analyses undertaken here identified twenty Critical Issues for New Zealand which are enumerated in the next section.



⁶ Issues Management describes an anticipatory strategic management process that helps organisations detect and respond appropriately to emerging trends or changes in the socio-political environment (per, the Institute for Public Relations, at: <http://www.instituteforpr.org/issues-management/>.)

⁷ Well-being is a multidimensional concept that goes beyond the level or rate of growth of GDP or GDP per capita. It incorporates those measures, but extends to include measures of personal wealth (incl. median wage, asset wealth, disposable income, housing affordability etc.), as well as health, mortality, security, life satisfaction etc. Well-being should also include measures that show whether there is equal access to opportunity, and whether economic benefits are distributed equitably.

Summary of Critical Issues for New Zealand

The following are the Critical Issues New Zealand must address if it is to become a leading digital nation. **Critical Issues are defined as follows:** Data is available for these issues, their impacts are likely to occur in the next 5 years, and they require immediate Issues Management.

1. Set strategic targets for the OECD Information and Communications Technology (ICT) [Digital Economy Outlook](#) measures, [Network Readiness Index](#) (NRI) and [Digital Evolution Index](#) (DEI) rankings: Top ten in both the NRI and DEI, relevant category targets in the OECD ICT Industry measures.
2. Increase export of ICT-related products and services (including embedded ICT), with clear market-by-market export targets.
3. Increase investment in research and development in ICTs, and ICT-integrated technologies. Two broad research foci: (1) Fundamental research, and (2) Commercialisable outputs.
4. Improve the Intellectual Property (IP) ecosystem. Investigate the role of patents and broader forms of IP, for example, copyright, trademarks, trade secrets, strategic partnership agreements, and employment contracts etc., in either enabling or constraining digital innovation of ICT services and ICT goods. Factor into this analysis, the quality of legal (human) capital available to support informed IP strategies and products both within New Zealand and from international “best in class” comparators⁸.
5. Identify effective business models available to digital innovators that enable development to sustainable economic scale; establish education in and business support of those models. Factor into this analysis the range of traditional and new capital raising mechanisms appropriate to different business models and technologies, and the economic impacts of different models.
6. Investigate the two faces of equity—equity *between* nations and equity *within* New Zealand—and implement data-informed policy, strategy and interventions to improve equity from both perspectives. **New Zealand can lead the world in social equity and population well-being in the digital age, but it has not achieved that—yet.**
7. Address comparatively high total taxation rate (TTR)⁹. This requires investigation of equity of contribution across the tax base, and efficacy of tax law in dealing with cross-border entities and transactions.

⁸ China, Korea and China Taipei are best in class for ICT-related patents (OECD, 2017, p. 130)

⁹Total Taxation Rate (TTR)—Defined as: “The sum of profit tax, labour tax and social contributions, property taxes, turnover taxes, and other taxes, as a share (%) of commercial profits” (Baller et al., 2016, p. 214)

8. Building on the work of the [Information Law and Policy Project](#); collaborate with The Law Foundation on an overarching plan for law reform in relation to the digital economy.
9. Investigate barriers to adoption of the latest technology by government. Develop a plan to increase government procurement of advanced technology.
10. Investigate best in class¹⁰ examples of management schools and compare these to New Zealand exemplars. Focus on improvements to digital-age pedagogy, and approaches to digitization change management.
11. Improve Mobile Network Coverage.
12. Investigate status and impacts of new generation mobile, analyse best approach to improve speeds, and develop an infrastructure optimisation plan for copper, fibre and wireless across New Zealand.
13. Maintain continuous improvement of International Internet Bandwidth kb/s per user.
14. Reduce mobile cellular tariffs.
15. Reduce fixed broadband Internet tariffs.
16. Increase households with Internet access, and Internet-enabled devices per household.
17. Investigate barriers to increased ICT use for Business to Business transactions and develop a plan to address the top five barriers.
18. Continuously improve government ICT promotion.
19. Ensure New Zealand is included on the Freedom on the Net index; and, investigate impacts of decreasing Internet openness on New Zealand.
20. Analyse and implement continuous improvements to cyber security at government, institutional and individual household levels.

There is already substantial work underway within government and in the private sector to address these Critical Issues. New interventions underway include the formation of the [Tax Working Group](#); formation of the [Ministerial Advisory Group on the Digital Economy and Digital Inclusion](#); the reconvening of the [Working Group on Pay Equity](#); and the recruitment of a [Chief Technology Officer](#). These initiatives were foreshadowed in [The Future of Work](#) (Future of Work Commission, 2016), released by the New Zealand Labour Party prior to the 2017 elections.

A good next step, is a stocktake of current actions and gap analysis that will collate current initiatives in the private, public and NFP sectors, investigate key points in cross-agency collaboration, and target double-ups and redundant programmes. When that is achieved, a “Critical Issues

¹⁰ Best in class in 2016, according to Baller et al. (2016, p. 219), were Switzerland (1 of 139) and Belgium (2 of 139).

Management Plan” should be constructed, consultations completed, and implementation should begin as soon as possible.

Much work has already been done to make New Zealand a “stand out” digital nation (Chakravorti & Chaturvedi, 2017), and capitalising on past momentum will assist us to target limited resources in the most effective manner possible. In addition, the analyses undertaken here identified eleven Emerging Issues for New Zealand which are enumerated in the next section.



Summary of Emerging Issues for New Zealand

The following are the Emerging Issues New Zealand must address to become a leading digital nation. **Emerging Issues are defined as follows:** These issues require definition, contextualising, awareness-raising or initial philosophical examination in preparation for data collection and Issues Management. These issues are longer term and likely to have effects within 20 years, thus requiring immediate exploration.

1. Extend the analyses conducted by the Future of Work Commission (2016), through Futures analysis of the changing work environment on an industry by industry basis. Create a series of Future of Work (FoW) indicators that enable the development of FoW data sets.
2. Investigate economic resilience¹¹ of the digital economy in New Zealand.
3. Investigate the rising influence of China on digital innovation and exports, and how this is likely to impact New Zealand's export market potential.
4. Investigate systems for anticipatory governance¹² of emerging technologies, and the potential impacts of anticipatory governance on digital innovation in New Zealand.
5. Conduct philosophical investigations of the structure and role of government and the evolution of the rule of law in New Zealand; along with the impacts of technological change on government and law.
6. Investigate energy security: sustainable, reliable and affordable electricity in a mobile, connected and digitally-dependent New Zealand.
7. Populating a preferred future – investigation of population targets for a digital nation; realising the full potential of human capital; and, encouraging and rewarding economic participation for all New Zealanders across their life span.
8. Define and explore New Zealand's comparative and competitive advantages in the digital economy – gain a new perspective for a new economy.
9. Define and investigate New Zealand's innovative capacity in relation to the digital economy.
10. Explore the role of geographic isolation in enabling or constraining the digital economy in New Zealand.

¹¹ Economic resilience is defined as the policy-induced ability of an economy to withstand or recover from the effects of exogenous (or, indeed, endogenous) shocks. Conversely, economic vulnerability describes the exposure of an economy to such shocks especially in relation to vulnerabilities created by economic openness.

¹² Anticipatory governance is a broad-based capacity extended through society that can act on a variety of inputs to manage emerging knowledge-based technologies while such management is still possible.

11. Explore and define the role of environmental technologies—how digitization can both measure and positively impact environmental, economic and social well-being, and how New Zealand can lead the world in data-informed, regenerative development¹³.

New Zealand is not “starting from zero” in relation to understanding the Emerging Issues delineated here. Rather, there are authoritative sources globally and locally that provide a starting point. The emphasis, here, is on a *conscious* approach to each Emerging Issue that informs policy-makers, political influencers and the population.

Raising awareness through the sourcing and provision of good information, and being both consultative and fair, will support effective future Issues Management. It will assist us to influence an inclusive future we prefer; rather than becoming the passive recipients of a future, divided. This leads to the conclusion of this summary, which follows in the next section.



¹³ Regenerative development evolves the ethos of sustainability into one of regeneration of resources.

Conclusion

New Zealand can become a leading digital nation, with foundations of social equity and population well-being through conscious economic development in the digital age. It can, and should, lead the world in regenerative environmental management through digitization, development and application of advanced technologies, environmental awareness, and informed action.

The New Zealand Government has envisioned a preferred future in the form of New Zealand as a digital nation. New Zealand can become a *leading* digital nation, that promotes the equity and well-being of all New Zealanders. To assist in achieving this, the author has outlined twenty Critical Issues and eleven Emerging Issues to be addressed.

Philosophical reflection is needed as we discover who we really are in the new, digital paradigm. Consciousness and effort are required to ensure that changes are positive for all New Zealanders. If leading as a digital nation seems a mountainous task, it is a mountain we are co-creating and climbing together, and an endeavour we should not shy away from.

Substantial benefits can be achieved, and by continuously analysing and managing Critical Issues and Emerging Issues, New Zealand has the potential to overcome many of its persistent social, economic and environmental challenges. We can lead the world to the top of this mountain, by creating our own pathway, and addressing our issues. For, as Sir Edmund Hillary is cited as saying:

“It is not the mountain we conquer, but ourselves.”

(in, DeVyre, 2007 [2000]¹⁴)



¹⁴ DeVyre, C. (2007 [2000]), Hot Lemon and Honey: Reflections for Success in Times of Change, Everest Press.