



**Submission to
2025 Task Force
25 September 2009**

Table of Contents

| | | |
|----|--|----|
| 1. | EXECUTIVE SUMMARY | 4 |
| 2. | NATIONAL & INTERNATIONAL BROADBAND INFRASTRUCTURE | 6 |
| 3. | PEOPLE - DIGITAL AWARENESS, DIGITAL LITERACY, UP-SKILLING AND PRODUCTIVITY | 9 |
| 4. | NEW ICT OPPORTUNITIES FOR NZ..... | 11 |
| 5. | RESEARCH & DEVELOPMENT | 15 |

Dr Don Brash
Chairman 2025 Taskforce
Auckland
don.brash@huljich.co.nz

Thank you for the opportunity to make a submission to the Taskforce. This submission is made on behalf of the NZICT Group Members (“NZICT”), and input from related organisations including the Spatial Industries Business Association (SIBA), Health IT Cluster and Sidhe Interactive.

Any enquiries with respect to the attached submissions should be made in the first instance to Brett O’Riley, Chief Executive Officer, NZICT Group, 021 02709021 or via email at brett.oriley@ict.org.nz.

No part of this submission is confidential and the NZICT would be happy for it to be made publicly available.

Thank you for the opportunity to submit. The NZICT would welcome the opportunity to discuss this submission in more detail.

SUBMISSION ON ICT RELATED INITIATIVES TO IMPROVE PRODUCTIVITY AND CLOSE THE INCOME GAP WITH AUSTRALIA

1. EXECUTIVE SUMMARY

- 1.1. The NZICT Group is the information communications and technologies industry body representing the supply side of the industry. NZICT welcomes the approach taken by the Government in establishing the 2025 Taskforce to address initiatives to improve productivity and close the income gap with Australia. ICT is a core platform for the economy, both in terms of providing productivity gains for individual businesses, and in opening up opportunities for generating “weightless” digitally based exports, e.g. software and applications. Australia will be the primary market for these exports, therefore being able to access this market is of critical importance.
- 1.2. There are five areas that need focus, investment and promotion to fully realise the potential returns of an ICT based economy. They are: Infrastructure, People (skills), Applications, Process and Attitude. All are co-dependent and all are equally the weakest link if not developed. Australia has a well developed cohesive plan for their digital economy that New Zealand should at least mirror if it intends to improve productivity and close the income gap with our major trading partner.
- 1.3. Ubiquitous broadband is the base foundation that enables these other areas to become functional and exponentially productive. NZICT supports the Government’s Broadband Infrastructure Investment strategy. The greatest impact of ultra fast broadband for the public and private sector alike is the potential to create ubiquitous network connectivity enabling the accessibility, availability and creation of a comprehensive set of applications which drive productivity gains, including digital literacy and up-skilling, collaboration, new employment and entrepreneurship.
- 1.4. In particular the stated objectives of this investment will ensure New Zealand retains broadband connectivity parity with Australia. This will effectively create a combined trans-Tasman digital economy of over 25 million people. ICT and technology companies can address this potential customer base with on-line services such as software, content (including gaming, television and film), applications and video interactivity. Having low priced international access to this market is of critical importance.
- 1.5. There are a number of areas in the ICT sector that will directly benefit from the availability of broadband in their development and delivery, and significantly contribute to economic growth. These include the further development of Media, Graphics, Gaming, 3D, and Geospatial based applications, and the increasing use of Telepresence as a productivity tool. New Zealand also has the opportunity to

be a global showcase for cloud computing and shared services, with locally developed applications servicing the public and private sectors.

Summary of Recommendations in this paper:

- 1. Government support the competitive entry of Kordia into the international broadband infrastructure market to foster competition and reduce cost structure for New Zealand businesses.**
- 2. Taskforce to support additional Government funding to match an investment from the ICT industry in providing more digital devices for students attending primary and secondary schools.**
- 3. Taskforce to note that ICT occupations are typically higher income positions and increasing the number of ICT qualified New Zealanders will have a direct impact on closing the income gap with Australia.**
- 4. Taskforce to note that NZICT is working with MED, Business New Zealand and other stakeholders to develop a comprehensive ICT skills development and training programme for targeted sectors, where the application of ICT is seen as particularly relevant to potential productivity gains.**
- 5. Taskforce to note that NZICT supports the Gaming industry in their objective of establishing a world class and scale sector by the Government extending the existing parcel of screen production incentives to incorporate digital content in a wider sense.**
- 6. Taskforce to note that the Geospatial industry can make an outstanding contribution to productivity by collaboratively working with Central Government, Local Government, and other sectors of the economy. Spatial information must be recognised, then managed as a component of critical national infrastructure including digital infrastructure. Formulation of geospatial policies and action agendas by a joint Public-Private working group consisting of Land Information New Zealand and the Spatial Industries Business Association of New Zealand (SIBA) should be a productivity priority.**
- 7. Government Research and Development funding be closely tied to 2025 productivity and foreign exchange earning goals and initiatives.**

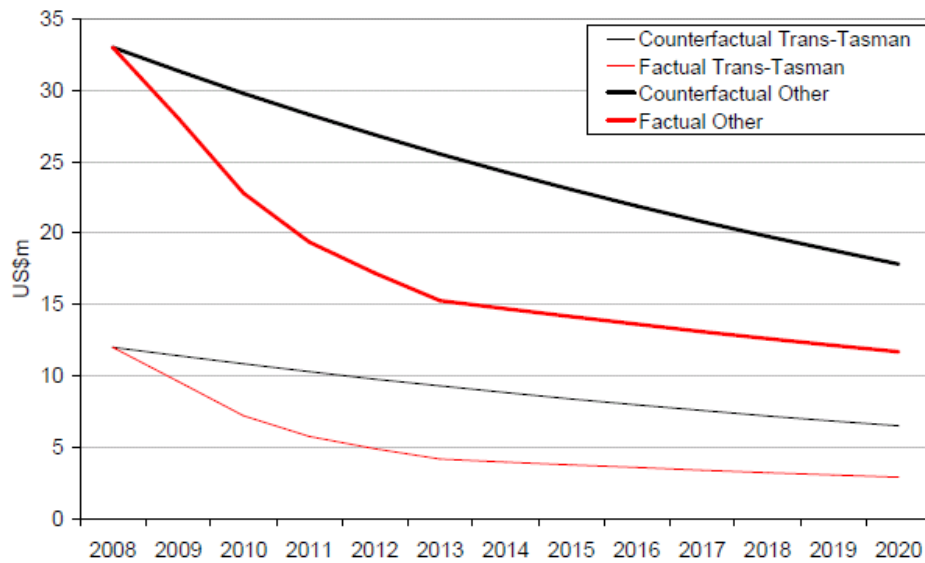
2. NATIONAL & INTERNATIONAL BROADBAND INFRASTRUCTURE

- 2.1. Ultra fast broadband is an essential element in the development of the “cloud computing” environment. These cloud delivered applications can be for domestic and international use and can be commercialised in a “Software As A Service” (SAAS) and Software Operating Environment (SOE) model e.g. services XERO has successfully developed for SME financial systems. Pervasive availability of a large set of applications to end users via a web browser and low cost ultra fast broadband will increase the opportunity for improvements in digital awareness, digital literacy, digital skills and therefore productivity.
- 2.2. The new broadband infrastructure will facilitate productivity gains and new economic opportunities for New Zealand. NZICT is developing a white paper on the economic development opportunities from broadband, for release in December 2009 that further expands on some of the points raised in this document.
- 2.3. The Government as a public sector ICT entity is in a unique position to be the anchor tenant required to support the proposed infrastructure and its service providers. In 2008 the Government expended nearly \$2 billion on ICT services including telecommunications. Benefits for the state sector from adopting SAAS and SOE would accrue immediately from the potential to disinvest in ICT infrastructure e.g. duplicate server and support services, and reinvest in applications that would improve public service delivery. There would also be significant savings on international application procurement, licensing and maintenance charges.
- 2.4. These are significant cost savings, without also quantifying the benefits of increases in productivity, from faster deployment, lower downtime and pervasive access. It is understood the Government’s ICT infrastructure spending on hardware and associated support is forecast to be NZ\$1 - 2 billion alone over the next five years, based on refreshment of existing server resources and growing demand for processing capacity.
- 2.5. NZICT is focused on making a difference in 3 distinct areas over the next 3 years:
 - a) Addressing the \$1.8b annual Government IT expenditure. NZICT believe we can improve innovation and increase the Government return on IT expenditure by 10% equating to \$180m savings per annum with the opportunity for this to be reinvested into applications that can transform sector productivity. This will be achieved by:
 - i. Government Procurement Transformation
 - ii. Service Delivery Transformation

- b) Addressing the \$70b annual Government spend. Through the use of IT, NZICT believe we can improve the overall Government spend by 2% equating to \$140m savings per annum with a particular focus on Health and Education.
 - c) Addressing the \$180b annual GDP. Through reducing the cost of compliance and interaction with the Government, and commercializing the IP currently held by Government, NZICT believe we can improve overall productivity by 0.5% equating to \$90m improvement to GDP per annum. Particular focus will be on company compliance costs and the commercial leverage of IP.
- 2.6. International connectivity from New Zealand remains significantly more expensive than comparable bandwidth and costs within Asia-Pacific. Capacity on submarine cable systems like Southern Cross is typically purchased by carriers as Indefeasible Rights of Use (IRUs), a form of capitalised lease. The term of these leases is typically 15-20 years and IRU holders also pay an annual operations and maintenance fee (O&M) of 3-5% of the IRU cost. Alternatively they might pay for their proportion of the overall O&M costs.
- 2.7. Currently Southern Cross is the only submarine cable system able to provide connectivity to the USA directly from New Zealand. Southern Cross and Tasman 2 are the only systems able to provide connectivity to Australia, with the latter having limited capacity. Pricing is however a significant issue. Capacity pricing from New Zealand to the rest of the world is significantly higher than elsewhere in the region. Typically an IRU for 10 Gigabits from North Asian destinations, e.g. Tokyo, Hong Kong, Seoul, to the USA can be purchased for US\$3-5 million for a new customer. Similar capacity on Southern Cross is priced significantly higher, and pricing depends on the size of purchase.
- 2.8. If New Zealand is to be able to capitalise on its investment in domestic national broadband infrastructure, it must have access to lower priced international capacity. Given the size of domestic market and the distances involved, it is unlikely that any new market entrant can afford a new submarine cable build to the USA, which is still the major global internet content hub. However the opportunity exists to build from New Zealand to link with other international submarine cable systems to get to the USA and other markets. These include linking with systems in Australia, including PPC-1 and Australia Japan Cable (both connect to Guam where they link with several major trans-Pacific systems including Tata and Asia-America Gateway), and Endeavour (Telstra system that connects to the USA). Other system interconnection options include New Caledonia (to connect to the Gondwana and the proposed SPIN systems).

- 2.9. NZICT supports efforts to increase competition in this market, including the proposed Kordia Optikor system to Australia, with the view that this will drive lower international connectivity costs in this country:
- a) The estimated cost from Kordia for a complete Optikor system (Auckland CBD to Sydney CBD and interconnection with PPC-1) is NZ\$175m based on today's supplier costs.
 - b) Optikor will directly connect with the PPC-1 cable to the Guam cable hub, facilitating onward connectivity to the rest of the world..
 - c) Note that competitive pressure from Kordia has already significantly improved the commercial arrangements that Southern Cross customers have been able to negotiate in the past 2 years.
 - d) A forward view on pricing curves for wholesale international submarine cable (refer diagram below provided by Kordia) is an output from a Covec study ("Economic Effects of International Internet Bandwidth Competition in New Zealand," dated 7 February 2009). The factual scenario is that OptiKor™ exists as a new cable from Auckland to Sydney; Counterfactual is SCCN only out of NZ. TAS2 provides no competitive pressure. This demonstrates significant benefits to customers from additional competition.
 - e) This pricing would place New Zealand at similar pricing levels as its other trading partners, and at a similar level to domestic Australian bandwidth pricing from Western and South Australia to the eastern states, our major Australian markets.
 - f) It should be noted that the current internet market in New Zealand, in particular data caps or quotas placed on a customer's usage, is a direct consequence of high international transport costs, given the amount of content hosted in the USA and elsewhere internationally.

Figure 8 Baseline assumptions about the cost of a 15-year 10 Gbps IRU.



Recommendation: Government support the competitive entry of Kordia into the international broadband infrastructure market to foster competition and reduce cost structure for New Zealand businesses.

3. PEOPLE - DIGITAL AWARENESS, DIGITAL LITERACY, UP-SKILLING AND PRODUCTIVITY

3.1. One of the most significant productivity challenges to be addressed is digital awareness and literacy. A strong downstream focus is required on digital awareness, literacy and training issues, in order for New Zealand to take advantage of high speed broadband infrastructure.

3.2. NZICT is working with the Government to help schools capitalise on the opportunities facilitated by broadband infrastructure, by the provision of software, hardware and services at reduced costs. It is fundamental to the development of digital literacy that the investment in broadband capacity is supported with specifically directed funding for additional digital devices for student use, with the objective of one device per student for use at school and at home. This is a critical policy area to transforming education performance and digital literacy, and programmes like the Computer Clubhouse in Otago evidence the benefit this objective can have in terms of digital literacy, and career aspiration. NZICT are willing to support this policy direction with a significant quantifiable investment of software, hardware and services to underpin the development of youth, and ICT teaching capability. Specific additional funding is

requested from Government on a dollar for dollar basis to support the increase in available digital devices.

Recommendation: NZICT asks the Taskforce to support additional Government funding to match an investment from the ICT industry in providing more digital devices for students attending primary and secondary schools.

- 3.3. NZICT has established a working group with the MED and Ministry of Education (along with other agencies and industry organisations) to develop a timetable and strategy for how New Zealand can capitalise on the opportunity of all schools having access to high speed broadband and ICT assimilated curriculum. NZICT's objective is to increase digital literacy across all students, to equip and incentivise all school leavers with both ICT skills and what can be achieved through ICT - which in turn feeds a pipeline through to tertiary education, entrepreneurship and business, something which is not happening today, with a residual ICT skills shortage across the economy. NZICT's sub-goal is to increase the number of students leaving secondary school to pursue ICT related study at tertiary institutions or vocational based training, with the consequent economic benefit of reducing the skills shortage and increasing average incomes nationally.

Recommendation: NZICT asks the Taskforce to note that ICT occupations are typically higher income positions and increasing the number of ICT qualified New Zealanders will have a direct impact on closing the income gap with Australia.

- 3.4. NZICT is working with a number of stakeholders to address productivity challenges in Small and Medium Enterprises, including the Ministry of Economic Development. NZICT is testing the hypothesis that these businesses have not capitalised on their existing investment in ICT because there is not a business culture of ICT training for all employees. Anecdotal evidence supports this proposition that ICT skills training is not uniformly applied across employees, nor is regularly conducted. With software and applications rapidly evolving, this leaves employees with outdated skills, and has created a DIY approach to ICT.

Recommendation: NZICT asks the Taskforce to note that it is working with MED, Business NZ and other stakeholders to develop a comprehensive ICT skills development and training programme for targeted sectors, where the application of ICT is seen as particularly relevant to potential productivity gains.

- 3.5. NZICT recognises that it must give SME customers confidence that ICT companies will provide software, hardware, services and training to a high level of quality and ethical commercial engagement. NZICT is working with its international affiliate partners on an industry certification programme, which if possible will harmonise with its sister organisation AIIA in Australia.

4. NEW ICT OPPORTUNITIES FOR NZ

- 4.1. The ICT industry is moving from a piece-meal network, software, hardware, services orientation to a focus on delivering solutions, for business and residential customers alike. This paradigm change in the industry will see greater industry collaboration and partnering to deliver complex solutions to business customers, incorporating all of these required components. These solutions can enable the New Zealand private and public sectors to operate better, faster and cheaper, achieving measurable productivity improvements.
- 4.2. There are applications that have potential across the private and public sectors, and to develop IP that can generate digital export earnings for New Zealand ICT companies, communities and individuals. They include:

- a) Media and Graphics - Film, 3D and computer gaming applications, production and technologies building off the world leading initiatives and capabilities by New Zealand ICT companies like Weta Digital, Massive, Right Hemisphere, Sidhe Interactive and Nextspace. High speed broadband coupled with investment, incentives, policy and promotion could enable New Zealand to be the “Film, 3D and Gaming global development lab” to commercialise applications based on this technology, which typically requires high speed broadband links. These applications could be paradigm changing for the New Zealand economy, and generate significant foreign exchange from their international commercialisation. In addition this development activity could have other spin-offs including nationwide 3D training for private and public sector workers, sports coaches and participants, health professionals, teachers and their students.

New Zealand has already recognised the potential for promoting and supporting our Media and Entertainment creativity for digital export earnings. An immediate opportunity to expand now is the opportunity to get that model right to attract investment and create a growth industry sector that delivers on its potential. NZICT believes this could provide New Zealand with another credible heavyweight foreign exchange earning industry. Digital content is a developing global industry. Spinoff technology from major film projects has already helped develop exciting new software companies like Massive Software, Intergrid and Weta Digital in New Zealand.

Incentives have become part of the landscape of producing film, television, digital content and games. Game projects are largely human resource based and involve highly paid and qualified ICT skilled staff, and as a result are incredibly lucrative from a tax perspective. The carbon footprint is very low, and there is no physical product being

manufactured in New Zealand. Foreign exchange generates games to be created in New Zealand, a set of master DVDs are then sent overseas at the end. This model is true for game projects from \$1m - \$40m in size.

Warner Brothers Interactive stressed the importance of incentives in its decision-making in terms of choosing companies to undertake their development. For example, the Canadian parcel of 30 percent labour rebates was significant in influencing it to move some of its operations from Burbank, California to Montreal. Leading New Zealand gaming developer, Sidhe Interactive, has advocated the extension of existing screen production incentives to include gaming activity. Its arguments include, but are not restricted to the following:

- i. Combined screen and gaming incentives would allow the sector to take full advantage of convergence occurring naturally in the global market;
- ii. They would reduce the impact of foreign competitive advantages and bring New Zealand in line with other nations;
- iii. They would allow New Zealand firms to offer a more cost competitive proposal on fee-for-service deals;
- iv. They would break down the existing division between film, television and animation and gaming, to reflect the cross pollination that occurs in the industry;
- v. Globally, gaming is a large and expanding industry, experiencing stronger growth than the film or television sectors and has commercial promise that could add weight to a commercial imperative for an extension of incentives to cover gaming;
- vi. Technological sophistication has allowed development processes, story lines, visual presentation and emotional impact to be comparable to filmed entertainment;
- vii. Should the Government hypothetically approve financial incentive assistance to a film of 'The Hobbit', without offering comparable assistance to the game – and is this meant to imply that one form of creative expression more worthy than another when they tell the same story, employ similarly talented people, and involve comparable creativity.

Recommendation: NZICT supports the Gaming industry in its objective of establishing a world class and scale sector by the Government extending the existing parcel of screen production incentives to incorporate digital content in a wider sense, including gaming; consider a move from a cultural imperative to an economic one by (slightly) modifying the SPIF criteria, or create an alternative with a focus on generating economic activity without strict cultural requirements; make the SPIF per episode thresholds lower so that animation (with its lower per episode cost) can feasibly qualify for assistance.

- b) Telepresence applications typically require significant bandwidth of greater than 10 M/bits, e.g. 100 M/bits. These applications will help businesses and individuals within New Zealand to communicate better, while reducing travel costs (and the opportunity cost associated with travel time) and reducing their carbon footprint. Telepresence also has the significant potential to address the “tyranny of distance” that New Zealand businesses face in looking to expand internationally, by bringing interaction with customers into a virtual environment. Clearly some of the effectiveness of international telepresence is dependent on similar broadband infrastructure being available in New Zealand’s major trading partners, and on low cost international bandwidth or services being available (see international connectivity section). NZICT’s research indicates that major trading partners Australia, USA, China, Korea, Japan, Taiwan and Singapore can be expected to have deployed broadband infrastructure to enable end to end telepresence connectivity.

- c) Geospatial is another key area where productivity gains can be derived from.

When Government and industry organise a national approach to spatial information it is estimated this will help deliver a \$0.5 billion annual productivity boost to the economy. A recent economics report provides empirical and other evidence:

Had key barriers been removed it is estimated that New Zealand could have benefited from an additional \$481 million in productivity-related benefits in 2008, generating at least \$100 million in Government revenue. This ‘cost’ of the presence of barriers will rise with each year that passes, as the nation’s capacity to adopt is increasing continually and pent-up demand is growing (1).¹

- 4.3. The recently released ACIL Tasman report provides robust economic analysis that quantifies the contribution spatial information makes to the New Zealand economy, as well as opportunities for this contribution to grow. The report concludes that the use and re-use of spatial information is estimated to have added \$1.2 billion in productivity related benefits to the New Zealand economy in 2008.

- 4.4. It also declares that other (non-productivity) benefits linked to the increasing use of spatial information are probably worth a multiple of this.

¹ [Spatial Information in the New Zealand economy: Realising Productivity Gains](#). ACIL Tasman, SKM, Ecological Associates, July 2009.

- 4.5. Underpinning New Zealand's infrastructures is a vital platform: spatial information system(s). The increasing need for quality location intelligence is why the spatial technologies are increasingly referred to as the 'platform for infrastructure'. Only spatial information systems can adequately represent every essential characteristic of the physical world, which is critical to enabling infrastructure to be planned well, maintained and managed better.
- 4.6. However, New Zealand's spatial information policies and systems need significant renovation. We need to collectively transform these into a modern, nationally coherent, world-class digital spatial data infrastructure. This will address many of the barriers to low productivity that has been highlighted by the ACIL Tasman analysis.
- 4.7. Commensurate renovation of the underpinning national spatial information systems will ensure that continuing investments in the physical infrastructures will not perpetuate current inefficiencies with spatial information management. Low productivity caused by duplicated capture of spatial information, inefficient management of spatial information, low re-use of national spatial data, all contribute to our economy currently losing at least half a billion annually in productivity related benefits.

Recommendation: The Geospatial industry can make an outstanding contribution to productivity by collaboratively working with Central Government, Local Government, and other sectors of the economy. Spatial information must be recognised, then managed as a component of critical national infrastructure including digital infrastructure. Formulation of geospatial policies and action agendas by a joint Public-Private working group consisting of Land Information New Zealand and the Spatial Industries Business Association of New Zealand (SIBA) should be a productivity priority.

5. RESEARCH & DEVELOPMENT

- 5.1. Ultra fast broadband can play an important part in fostering research and development within New Zealand. On a pure science and research basis, faster lower cost local broadband will stimulate usage on networks such as the KAREN network, and facilitate information exchange domestically and internationally. It will also enable the establishment of virtual research and development between New Zealand companies and their international counterparts. Collaboration tools like telepresence could be enabled by high speed broadband, which could then be used by researchers to exchange information and ideas and help New Zealand participate in major research projects like the Australia Square Kilometre Array Pilot (ASKAP) project, and other major multi-lateral initiatives.
- 5.2. Research and development funding should also be focussed on improving processes and services, as a direct driver to improved productivity. In this respect Tertiary institutions and CRIs have the opportunity to tie their research to direct industry engagement, ensuring short-term gains are achieved.
- 5.3. NZICT supports much closer links between Government funded research and development and the private sector. Commercialisation potential should be key criteria in any investment by Government with tertiary institutions, Crown Research Institutes and private enterprise.

Recommendation: Government Research and Development funding be closely tied to 2025 productivity and foreign exchange earning goals and initiatives.