NZICT GROUP

Submission on

New Zealand Government

Broadband Investment Initiative

27 April 2009

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This submission is made on behalf of the NZICT Group ("NZICT").

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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.

SUBMISSION ON THE GOVERNMENTS BROADBAND INVESTMENT INITIATIVE

1. EXECUTIVE SUMMARY

1.1. The NZICT Group is the New Zealand information communications and technologies industry body representing the supply side of the industry. NZICT welcomes the approach taken by the Ministry of Economic Development (MED) in the Broadband Investment Initiative paper. This paper sets out our views on:

- **What the proposed Broadband Infrastructure can enable for New Zealand?**
- **How the broadband infrastructure can be developed?**

1.2. 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 usage, digital literacy and up-skilling, collaboration, productivity, and entrepreneurship.

1.3. Deploying high speed broadband infrastructure alone is not a panacea to accelerate New Zealand's economic position, address sluggish GDP and productivity, and move New Zealand up the OECD ladder.

1.4. Broadband infrastructure is one of five areas that need focus, investment and promotion to fully realise the potential returns of an ICT based economy. The others are: Applications, People (skills), Process and Attitude. All are co-dependent and all are equally the weakest link if not developed.

1.5. Ubiquitous ultra fast broadband is the base foundation that enables these other areas to become functional and exponentially productive and is the focus of this submission. Consistent with the aims and objectives of NZICT, NZICT wishes to work with government in all of these five areas to ensure New Zealand moves ahead at the speed of light (fibre), and importantly, does not get left behind.

1.6. The government has an opportunity to underpin the financial returns for the Local Fibre Companies (LFCs), by demonstrating its commitment to utilising the infrastructure for its own ICT requirements. This is beyond the base requirement of connecting hospitals and schools. It includes embracing the "cloud computing" environment and other shared services models including SAAS (Software as a Service) and SOE (Software Operating Environment), which can also deliver operational efficiencies across the public sector, with flow-on benefits to the private sector. NZICT believes the ability to demonstrate the government's commitment to driving traffic growth on the infrastructure from its own use will be critical to attracting private sector investment.

1.7. NZICT believes the infrastructure deployment can step change the development of ICT in schools and improve digital literacy. The availability of the network infrastructure needs to be supported by increased access to software, hardware and services for schools, and NZICT and its members are willing to step up to this challenge. Significant changes also need to be made to address the place of ICT in the core education curriculum to improve digital literacy, increase the number of children pursuing careers in ICT, and as a result lift average incomes and productivity respectively.

1.8. Ultra fast broadband also has a key role in increasing efficiency in the health sector, and in the delivery of social services. The ability for detailed patient information and images to easily and efficiently be communicated through the health system is an essential part of driving productivity in the sector, and improving the experience for patients.

1.9. There are a number of areas in the ICT sector that will directly benefit from the availability of ultra fast broadband in their development and delivery, and significantly contribute to economic growth. These include the further development of Media, Graphics, Gaming and 3D 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

1.10. NZICT and its members are interested in providing appropriate input and assistance, in conjunction with existing industry groups like the Telecommunications Carriers' Forum, in relation to the formulation of standards and specifications associated with the development and operation of the infrastructure.

1.11. NZICT notes that a bottleneck exists in the provision of low cost international capacity from New Zealand. This situation will be exacerbated by the deployment of ultra fast broadband and without lower costs this could constrain the potential economic benefits.

1.12. NZICT notes a number of issues associated with the selection of the regions, and their boundaries, and looks forward to greater clarity on the criteria for LFC infrastructure deployment.

1.13. NZICT is willing to assist in the development of guidelines for the LFCs, their Directors, and identify appropriate people with skills to assist in these roles.

1.14. This submission is made on behalf of the NZICT Group whose members are absoluteIT, ACE, Accredo, Acquire, Adroit Recruitment, Augen, Axcel Institute, Axon, Catch, Cisco, ComputerForensics, Computer Power, Designertech, Edtech, Evolution Group, Express Data, Fronde, Gen-i, Hewlett Packard, Hitachi Data Systems, Hyperion Management Services, IBM, i-Consult, Ingram Micro, Intergen, Lexel Systems, i-BUS, Kinetics, Mako Networks, Microsoft, Optimation, NZTE, Plan-b, Quay Corporate, Show IT, Simpl, SOFTsource, Solnet Solutions, SQL Services, TEAMnetwork, Teleconsultants, TechTonics, Unisys, ViFX, Vodafone, XSOL, Andrew Bonica and Dennis Smith. In addition, some NZICT members intend to make separate submissions to the MED on the paper. The individual views of those members may differ from some of the views expressed in this submission.

1.15. NZICT wish to acknowledge additional assistance and input from Business New Zealand, Tauranga City Council, and the Wireless & Broadband Forum in the preparation of this submission.

1.16. The NZICT welcomes further dialogue on the recommendations in this submission, and has outlined specific areas where it has offered to provide assistance. NZICT welcome the opportunity to work with the government to help create the desired step-change in the provision of broadband services to New Zealanders.

1.17. A summary of the recommendations detailed in this submission are set out below:

Recommendation:

Recommendation: The government stimulate the development of cloud computing, SOE and SAAS applications through its own use, and underpin the return for the proposed infrastructure investors as one of the largest users.

Recommendation: The government can realise cost savings and operational efficiencies by adopting a cloud computing or shared services model utilising the ultra fast broadband infrastructure.

Recommendation: The government stimulate the development of regional data centres by adopting a cloud computing or shared services model.

Recommendation: The government can reduce its carbon footprint and meet its sustainability goals by stimulating the development of regional data centres.

Recommendation: NZICT establish a working group with the MED and State Services Commission to develop a cloud computing and shared services strategy.

Recommendation: NZICT and the MED develop targeted campaigns to drive awareness and uptake of high speed broadband services and its applications.

Recommendation: NZICT, the MED and the State Services Commission develop targeted campaigns to drive the awareness of the benefits that ICT can provide to the delivery of government services.

Recommendation: Specific targeted funding be made available to schools to ensure they utilise opportunities to connect and use ultra fast broadband infrastructure.

Recommendation: Schools and health facilities be targeted to host community wireless nodes to enable broadband access and expanded wireless coverage, particularly in regional areas.

Recommendation: NZICT establish a task force with the MED and Ministry of Education to develop a timetable and strategy for how schools and the education system can capitalise on access to ultra fast broadband infrastructure, by increasing the ICT skills capability of all school leavers.

Recommendation: NZICT establish a task force with the MED and NZTE to develop a sector development strategy to capitalise on the opportunities facilitated by the ultra fast broadband network.

Recommendation: NZICT, the MED and Ministry of Health establish a task force to develop a timetable and strategy for how the health sector can capitalise on access to ultra fast broadband infrastructure.

Recommendation: Access to the ultra fast broadband infrastructure for research institutions and field sites should be part of the initial coverage priorities.

Recommendation: NZICT is willing to assist the MED in a facilitator role to actively engage existing infrastructure owners and related parties, to ensure unnecessary duplication infrastructure investment is avoided.

Recommendation: NZICT members are keen to be involved in providing input with existing industry groups, e.g. Telecommunications Carriers' Forum, to developed common standards and specifications for the development and operation of the ultra fast broadband infrastructure, including inter-operability.

Recommendation: The Government consider Research and Development incentives technology suppliers to the LFCs to encourage them to use New Zealand as a test bed.

Recommendation: NZICT proposes that further emphasis be placed on the development of defined Layer 2 services by the LFCs.

Recommendation: NZICT proposes working with the MED and Telecommunications Carriers' Forum to define minimum standards for a defined wholesale bitstream service.

Recommendation: NZICT is willing to work with the MED regarding issues involving prioritisation of types of cable deployment, along with general maintenance/fault issues.

Recommendation: That the MED explore opportunities to encourage the development of competitive international ultra fast broadband infrastructure.

Recommendation: That the government provides greater clarity in relation to its expectations concerning the geographic boundaries of all identified regions.

Recommendation: That the government only looks to finalise and deploy funding solutions for the remaining 25% of the general population until at least the proposals have been received and approved.

Recommendation: NZICT is willing to work with the MED on issues relating to the composition of local fibre companies boards including the development of Director guidelines and a list of potential candidates with the requisite experience to contribute to the operation of each LFC Board.

Recommendation: NZICT is willing to work, in conjunction with industry bodies like the Telecommunications Carriers' Forum, with the MED to develop greater detail relating to how local fibre companies will work/co-ordinate on common issues that have a national focus/theme.

A. What the proposed Broadband Infrastructure can enable for New Zealand

Response to Government Objective and Demand Side Initiatives section 90 – 95.

2. NETWORKING, APPLICATIONS, ATTITUDE & THE PUBLIC AND PRIVATE SECTOR

2.1. The greatest impact of ultra fast broadband for the public and private sector alike is the potential to create ubiquitous network connectivity. This enables ICT service models like "cloud computing" "grid computing" and "virtualisation". The certainty of complementary policy, incentives and lower priced high speed broadband provided by the Local Fibre Companies (LFCs), that is available in all major locations nationally, will further advance the plans of NZICT members to enter this market.

2.2. High speed broadband is an essential element in the development of the "cloud computing" environment. A number of NZICT members are entering this market with the goal of providing centralised data processing, storage and disaster recovery services. Availability of fibre based broadband is a dependant factor in the incentive and market opportunity for New Zealand ICT businesses to invest in developing and deploying a wide set of business, government, community and personal software applications. These applications can be for domestic and international use. They can be commercialised in a "Software As A Service" (SAAS) and Software Operating Environment (SOE) model e.g. the application that New Zealand company XERO has successfully developed for SME financial systems.

2.3. 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 in both the home and business.

2.4. There is significant opportunity to drive productivity in the economy in the business sector from shared services and concepts like cloud computing. These services offer the opportunity for collective use of processing power and applications. This can reduce costs for businesses in terms of space (for housing their own server farm or computer room), power consumption and labour costs. Access to a ubiquitous high speed broadband network, with redundancy and diversity built into the offerings from service providers, is central to achieving this. From our preliminary research into broadband offerings in other countries, quality of service is available contractually, to guarantee latency and availability, which is of particular importance for some business customers and their application requirements. Therefore NZICT welcomes the government's proposed initiative to ensure infrastructure capable of supporting ultra fast broadband is available to 75% of the population within 10 years. NZICT believes it is important that this infrastructure, and additional regional infrastructure, is completed as soon as possible to facilitate ubiquitous services nationally.

2.5. A number of NZICT members are already entering this market with the goal of providing centralised data processing, storage and disaster recovery services. The government's initiative will greatly enhance their chances of success.

2.6. The government as a public sector ICT entity is in a unique position to be the anchor tenant required to support the proposed infrastructure, by the ICT activities of its agencies driving usage for the customers of the LFCs. This can serve to encourage private sector investment in the infrastructure and network enabled applications, with carriers and service providers investing in lighting the dark fibre and offering appropriate data services, or in purchasing layer 2 "wholesale bitstream" type services directly from the LFCs.

2.7. NZICT proposes that the government stimulate the development of cloud computing and New Zealand developed SOE and SAAS applications. This could drive demand for capacity on the new broadband infrastructure as a nationwide "anchor tenant" or user of services being provided on the LFC infrastructure (purchased from carriers and service providers that are LFC customers). This will send a positive signal to potential private sector investors and give them added confidence with regard to the potential return on their investment, given the size of the public sector's likely usage, and the stimulation to other sectors of their commitment to cloud computing or shared services. This can be achieved by establishing a strategic policy for government departments and agencies to embrace a vision and direction of a tripartite alliance of cloud computing, New Zealand SAAS web applications and a shared data processing environment for their own requirements. A high level policy direction will be required to drive this outcome, for the benefit of the state sector, and the wider business community.

Recommendation: The government stimulate the development of cloud computing, SOE and SAAS applications through its own use, and underpin the return for the proposed infrastructure investors as one of the largest users.

2.8. Benefits for the state sector would accrue immediately from the potential to reduce government spending on ICT infrastructure e.g. duplicate server and support services. There would also be significant savings on international application procurement, licensing and maintenance charges. 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 over the next five years, based on refreshment of existing server resources and growing demand for processing capacity.

Recommendation: The government can realise cost savings and operational efficiencies by adopting a cloud computing or shared services model utilising the ultra fast broadband infrastructure.

2.9. The data centre resources created by the LFCs or their customers for supporting the government's ICT services, particularly in regional areas, could also stimulate services for local businesses and residential customers alike. There is demand in a number of regional locations for independent data centres given the unwillingness of some existing infrastructure owners who are not bound by regulation to enable third party access to their data centres, or the lack of suitable space and facilities.

Recommendation: The government stimulate the development of regional data centres by adopting a cloud computing or shared services model.

2.10. Cloud computing would also have a positive carbon footprint for the sector and meet the government's own sustainability goals. Centralised data centres would result in reduced power consumption, a smaller real estate requirement and reduced ICT management costs for the public sector. The data centre resources created, particularly in regional areas, could also stimulate services for local businesses and residential customers alike.

Recommendation: The government can reduce its carbon footprint and meet its sustainability goals by stimulating the development of regional data centres.

2.11. For this opportunity to be capitalised on requires strong top down policy direction by government. Previous attempts to develop shared infrastructure or resources within the state sector have failed, partly as a result of the structure of state sector agency responsibilities and deliverables, with individual departments primarily responsible to their Minister for outcomes. NZICT would like to establish a working group with the MED and State Services Commission to develop a strategy that would enable New Zealand to take advantage of this opportunity to create a networked public (both central and local government) and private sector.

Recommendation: NZICT establish a working group with the MED and State Services Commission to develop a cloud computing and shared services strategy.

2.12. Ultra fast broadband infrastructure and application availability, and accessibility, should be combined with targeted campaigns in awareness and promotion of what's available and what's possible with ICT. This is a vital element in driving usage and uptake, up-skilling, creativity and productivity - and therefore returns on investment.

2.13. These campaigns would be designed to change existing attitudes towards ICT and are a dual industry and government responsibility. NZICT has relationships with most of the major ICT skills related groups and associations. They point out the importance of assimilating ICT education throughout primary, intermediate, high-school, NCEA and tertiary curriculum to enable not only students, but parents, caregivers, grandparents and others valuable exposure to what ICT can deliver not only as a career path but also to all users.

Recommendation: NZICT and the MED develop targeted campaigns to drive awareness and uptake of high speed broadband services and its applications.

2.14. NZICT and its skills partners want to work with the MED, Ministry of Education, NZQA and others to advise on required curriculum changes to achieve this goal.

2.15. An opportunity also exists in the State Sector to change legacy attitudes surrounding ICT. With the top-down sponsorship and encouragement of the aforementioned networked and net-enabled technologies, comes the ability for public sector management and staff to change attitudes towards information accessibility, collaboration and sharing. Not with-standing the needs for security and privacy of information, the fragmented, demarcated and disparate topology and nature of the government network environment, has arguably not evolved nor is delivering maximum value to New Zealand.

2.16. Isolated information sets has created an attitude of separate and isolated thinking by users, as collaboration, information sharing and leveraging gets all too hard and costly to achieve via traditional networking and application connectivity. Whilst this problem is well acknowledged and progress has been made between various departments, the opportunity exists to step change this area through modern networking and web enabled application capabilities. This will eventually have positive flow on effects with government staff.

Recommendation: NZICT, the MED and the State Services Commission develop targeted campaigns to drive the awareness of the benefits that ICT can provide to the delivery of government services.

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

3.1. One of the most significant challenges to be addressed from the deployment of the ultra fast broadband infrastructure 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, including residential customers, SMEs, corporate, government, health and educational institutions.

3.2. NZICT supports the view that the investment in Broadband Infrastructure can have a positive impact on increasing digital literacy, up skilling the national workforce, and on driving productivity. However this cannot be achieved via infrastructure alone. Changes are required to policy settings in key areas like education and government and ICT industry sponsored media campaigns.

3.3. For example, a high speed broadband network (provided by Vector Communications) exists in North Shore City today, with the objective of linking up primary, intermediate and secondary schools (along with business customers). This network can deliver a range of benefits including lower IT costs for schools (from cloud computing type services), on-line teaching of specialist courses between multiple schools, sharing of pupil information from a common database as they progress through the school system, and development of on-line testing through the E-ASTELL programme. It also creates the opportunity for pupils to directly experience modern ICT services and improve their digital literacy. However funding has not been provided to schools to connect to the network. It is essential that targeted funding be provided for individual schools to encourage them to become networked, where the competing demands for funding often result in these opportunities not being capitalised on.

Recommendation: Specific targeted funding be made available to schools to ensure they utilise opportunities to connect and use ultra fast broadband infrastructure.

3.4. Programmes have been developed in other countries to assist in the development of a viable model for schools utilising broadband connectivity. One of these programmes that NZICT has researched, being developed in Western Australia, involves developing community wireless nodes that could be hosted by schools or health centres, with an open access to mobile carriers and local wireless providers alike. This has the benefit of the school or health provider and the wireless providers being able to share the costs of the backhaul, and the school developing a revenue stream from hosting the node on their grounds. NZICT recommends this approach for New Zealand, understanding the sensitivities that exist in relation to some school boards and concerns over the environmental effects of wireless infrastructure. Where these issues can be addressed, the use of schools or health centres as community wireless nodes would have the impact of increasing wireless broadband services and coverage, and potentially reducing compliance costs for industry participants, while ensuring all schools and health centres can take advantage of broadband connectivity, particularly in regional areas. This could also enable the initial investment by the LFCs to have expanded broadband coverage utilising wireless.

Recommendation: Schools and health facilities be targeted to host community wireless nodes to enable broadband access and expanded wireless coverage, particularly in regional areas.

3.5. While ultra fast broadband delivered via fibre-optic cable is important, the ability for it to also facilitate this back-haul for mobile and wireless operators is also of great importance. New Zealand is a world leader in the development of wireless based services, particularly telemetry and Machine to Machine (M2M) communications. These services directly drive productivity across multiple sectors in the economy. The ability to extend coverage and facilitate greater speeds is an important factor in the provision of ubiquitous service level commitments. NZICT is able to provide more specific details on these applications and the consequent economic benefits if required.

3.6. NZICT and its members are willing to work with the government to help New Zealand 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 broadband capacity is utilised by schools with specifically directed funding or other funding opportunities (like the community wireless nodes) to facilitate broadband connectivity, utilisation, and expansion to regional areas. This is a critical policy area to transforming New Zealand schools. NZICT and its members are willing to support this policy direction with a significant quantifiable investment of software, hardware and services to underpin the development of New Zealand's youth, and ICT teaching capability.

3.7. With connectivity achieved, and infrastructure in place, the second education priority is the place ICT has in the national curriculum. NZICT proposes that the mutual goal for the government and ICT industry should be for ICT to become a core part of the primary, intermediate, NCEA and tertiary curriculum, to meet the joint goals of increasing digital literacy, and increasing average incomes by developing a more highly skilled and productive workforce.

3.8. NZICT proposes establishing a taskforce 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 an ICT assimilated curriculum. This will build on the work done to date in expanding ICT's role in the education lifecycle. But importantly NZICT will support this by a cohesive approach to ensuring schools have appropriate ICT resources, including hardware, software and services, to manage greater pupil numbers and ICT curriculum content. 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. 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 establish a task force with the MED and Ministry of Education to develop a timetable and strategy for how schools and the education system can capitalise on access to ultra fast broadband infrastructure, by increasing the ICT skills capability of all school leavers.

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. The availability of ultra fast broadband will enable the development of the base delivery and enablement environment for these complex solutions. It will ensure a plethora of new or existing applications can be developed or further enabled. These applications have potential across the private and public sectors in New Zealand, and also the potential 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 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 of 100 Mbs plus. These applications could include nationwide 3D training for private and public sector workers, sports coaches and participants, health professionals, teachers and their students. These applications could be paradigm changing for the New Zealand economy, and generate significant foreign exchange from their international commercialisation.

   New Zealand has already recognised the potential for promoting and supporting our Media and Entertainment creativity for digital export earnings. 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.

NZICT wants to work with MED and NZTE, and provide leadership to other organisations and companies in this area such as the New Zealand Institute for Screen Innovation to develop this industry cluster and make it successful.

Recommendation: NZICT establish a task force with the MED and NZTE to develop a sector development strategy to capitalise on the opportunities facilitated by the ultra fast broadband network.

b) Telepresence applications that 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 better communicate, 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.

5. SOCIAL DELIVERY

5.1. In addition to the example of the Media, 3D and Gaming cluster, another example of this could be a New Zealand centre of excellence (COE) for development of SAAS applications, processes and frameworks for public and private ICT requirements. For example, this COE could develop an all of government portal application for developing nations to reduce reliance on in country infrastructure, applications, maintenance and skills.

5.2. The investment in ultra fast broadband will also have significant benefits for the delivery of social services on-line, including the health sector. This will include delivery of patient records and files through digital imaging available throughout the health eco-system. This will enable significant productivity improvements and better case management. Other countries are already advanced with their use of remote diagnosis via video or telepresence, which could provide better health services for regional and remote areas, with access to specialists in main centres and potentially internationally.

Recommendation: NZICT, the MED and Ministry of Health establish a task force to develop a timetable and strategy for how the health sector can capitalise on access to ultra fast broadband infrastructure.

6. RESEARCH AND DEVELOPMENT OPPORTUNITIES

6.1. 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. In particular New Zealand can capitalise on time zone differences to take part in collaborative research internationally.

6.2. Collaboration tools like telepresence could be enabled by ultra fast 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.

6.3. Lastly it will encourage and greatly assist in collaboration between enterprises within New Zealand, and with their international associate companies or partners. This will reduce the time required for exchanging information, and allow the use of collaboration tools like telepresence, which is critical for a country located across the Pacific from its major markets. This can ensure that feedback from partners and customers is captured in real time accurately, and factored into the research and development process.

Recommendation: Access to the ultra fast broadband infrastructure for research institutions and field sites should be part of the initial coverage priorities.

B. How the Broadband Infrastructure can be developed

7. EXISTING INFRASTRUCTURE & INTERPERABILITY

7.1. NZICT supports all efforts to ensure that the proposed investment programme does not unnecessarily duplicate existing fibre-optic infrastructure, and takes advantage of a number of existing regional fibre infrastructure initiatives, e.g. Tauranga City, Nelson City, Whangarei, North Shore City.

Recommendation: NZICT is willing to assist the MED in a facilitator role to actively engage existing infrastructure owners and related parties, to ensure unnecessary duplication infrastructure investment is avoided.

7.2. The development of more extensive fibre-optic infrastructure is a goal supported by NZICT. Careful consideration needs to be made into how to optimise the design to enable simple interconnection with existing networks, and to offer prospective fibre pair or layer 2 service purchaser's ubiquitous access to commonly designed infrastructure nationally. NZICT and its members are willing to provide assistance with the development of common standards and specifications for the LFCs, including network interfaces, conduit standards and data centre design.

7.3. Interoperability between the LFCs is important to critical to ensuring this opportunity truly delivers national integrated infrastructure, rather than 25 regional point to point networks.

7.4. This standards and specifications work shouldn't lock out or preclude the opportunity to incorporate and adopt new and emerging technologies into the infrastructure where it makes technological, economic and service capability sense.

Recommendation: NZICT members are keen to be involved in providing input with existing industry groups, e.g. Telecommunications Carriers' Forum, to developed common standards and specifications for the development and operation of the ultra fast broadband infrastructure, including inter-operability.

8. WORKING WITH ICT TECHNOLOGY SUPPLIERS

8.1. There is the opportunity for New Zealand to leverage its position as an ideal market demographic pilot site for international technologies and investors. As the development of broadband infrastructure is becoming a national interest issue in many countries, including Australia, similar deployment and technology challenges are being addressed. Given New Zealand's size there is an opportunity to encourage research and development specifically in relation to ultra fast broadband. This should be included as part of the government's review of its Research and Development incentives programme.

Recommendation: The Government consider Research and Development incentives technology suppliers to the LFCs to encourage them to use New Zealand as a test bed.

8.2. NZICT believes that in order to successfully deliver both regional and national retail services, further emphasis should be placed on the importance and availability of defined Layer 2 wholesale bitstream services. The regional and national availability of such defined services will enable consumer and business retail entities to efficiently and reliably take broadband services to market, given predictable bitstream features, performance characteristics, and pricing.

Recommendation: NZICT proposes that further emphasis be placed on the development of defined Layer 2 services by the LFCs.

8.3. NZICT would encourage the development, according to the EOI (Equivalence of Inputs) process, of minimum standards for defined wholesale bitstream services. Contained within such standards would be the physical and Layer 2 specification for network interconnection, and the definition of minimum network performance and availability attributes. Bitstream service features, such as those supporting differentiated QoS (Quality of Service), should also be defined in order to support both business real time communications services and consumer triple play applications.

Recommendation: NZICT proposes working with the MED and Telecommunications Carriers' Forum to define minimum standards for a defined wholesale bitstream service.

8.4. Where new construction in the form of underground burial is required for the LFC to deploy fibre-optic cable, particularly in urban or built-up areas, conduit should be specified for the installation. This will enable additional cables to be installed in the future without the need to reopen the trenches. A number of options exist for conduit including "uniduct" and PVC pipe. NZICT is willing to work with the Crown Fibre Investment Company (CFIC) to establish appropriate standards and specifications for the LFCs to use in this deployment. These standards can then be applied consistently to all Council consents and Resource Management Act activity, to assist in the efficient processing of this activity.

8.5. NZICT believes the capability exists within the industry to support and supply multiple infrastructure projects undertaken by the LFCs. Construction activity and the deployment of transmission equipment of the scale envisaged will generate significant economic activity and new employment opportunities, across all skill levels.

8.6. NZICT members engaged in the training business have the facilities and staff to be able to support the likely training requirements of the LFCs and their contractors.

8.7. NZICT and its members support the efficient deployment of the infrastructure capitalising on existing infrastructure, and methodologies that can reduce costs. There are a number of opportunities for the LFCs to reduce fibre-optic deployment costs and timeframes including:

a) Use of existing poles, e.g. working with power companies.

b) Combining the underground burial programme with power company plans for undergrounding electricity or gas infrastructure.

c) Use of uniduct in urban areas enabling much narrower and efficient trenching.

9. CABLING – DEPLOYMENT, MAINTENANCE AND FAULT ISSUES

9.1. Paragraphs 97 and 98 in the Broadband Initiative paper briefly discuss issues relating to environmental and access issues. More specifically, a range of government departments will be looking at how best to facilitate access to and use of, a range of existing infrastructure both above and below ground in terms of future fibre deployment. This will also require close consultation with Local Government.

9.2. NZICT is in the process of developing a working group with Tauranga City Council to explore issues relating the broadband infrastructure deployment, and local compliance and economic development settings required to capitalise on the infrastructure investment.

9.3. NZICT is aware of previous issues relating to cable deployment, given often strong opposition by local groups in relation to overhead cables (i.e. visual pollution). While it is useful for various options for deployment to be examined, some form of prioritisation should be seriously considered.

9.4. The paper also omits issues relating to maintenance and faults. Typically, these issues occur when a cable (whether it be overhead or buried or ducted) breaks due to external aggression. While proposals put forward may provide some clarity on who is responsible for maintenance issues and 'who pays', some initial guidance/views from the government need to be outlined.

Recommendation: NZICT is willing to work with the MED regarding issues involving prioritisation of types of cable deployment, along with general maintenance/fault issues.

10. INTERNATIONAL CONNECTIVITY

10.1. Potential capacity or cost based bottle necks may be created or exacerbated as a result of the deployment of the infrastructure, e.g. Back-haul, international connectivity.

10.2. International connectivity to and from New Zealand remains significantly more expensive than comparable bandwidth and costs within Asia-Pacific. International 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.

10.3. 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.

10.4. With continued advances in transmission technology, systems like Southern Cross have large amounts of incremental capacity that can be lit or enabled, which means capacity is not an issue.

10.5. Pricing is however a significant issue. Capacity pricing from New Zealand to the rest of the world is significant 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 at US$20 - $30 million for a new wholesale customer. Clearly North Asia is a much larger market for capacity than New Zealand, which has encouraged multiple competitive build activity, and where competition exists there is corresponding downward pressure on price. However New Zealand ICT businesses, and their customers, must have access to similar cost structures as our major trading competitors, which is not the case today.

10.6. 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 New Zealand, 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 and communications hub. However the opportunity exists to build from New Zealand to link with other international submarine cable systems. These include linking with systems in Australia, including Pipe 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 Hawai'i and the USA). There is also the prospect of other new systems being developed from the West Coast of Australia to Asia. Other system interconnection options for New Zealand include New Caledonia (to connect to the Gondwana system and proposed SPIN system) or to Tahiti to connect to the Honotua system (connects to Hawai'i).

10.7. NZICT supports efforts to increase competition in this market with the view that this will drive lower international connectivity costs in this country.

Recommendation: That the MED explore opportunities to encourage the development of competitive international ultra fast broadband infrastructure.

11. REGIONAL CONNECTIVITY AND GROUPINGS

11.1. NZICT is a member of the Affiliated Industries Group of Business New Zealand and supports its submission to the Broadband Infrastructure Initiative. NZICT has reiterated some of these points below, supported with additional information from its members.

11.2. The government's Broadband Initiative Paper is said to be in relation to each of the *regions* making up 75% of the general population. These regions have been based on the ranking of the population of the largest cities and towns in New Zealand as at the 2006 Census. NZICT support the idea of basing the identification of 75% of the popula*tion on* some form of official statistic, any relatively simple measure can also lead to some immediate problems that will have to be worked through.

11.3. While the goal is to achieve 75% coverage for the infrastructure, in reality the private sector may only be willing to become involved in say regions with 100,000 persons to achieve critical mass. This could raise questions regarding to what extent the government should look to provide further funding and/or policies for the remaining regions if take-up of RFPs are low or non-existent for certain regions. NZICT's proposal around the government using cloud computing or network based shared services is an important extra factor for ensuring private sector interest in investing in all of the LFCs.

12. BOUNDARY SETTINGS

12.1. NZICT supports the stance taken by the government in terms of flexibility when it comes to defining and provision to other regions or more than 75% of New Zealand's population. However, we also take the view that the government will need to provide a greater steer on exactly where the boundaries of some of these regions lie, as well as the make-up of these regions, given the issues raised below.

12.2. There are existing regional infrastructure initiatives that cover more than one of the proposed regions. For example in the Bay of Plenty there are already well developed plans for infrastructure incorporating Tauranga, Whakatane and Rotorua. This would seem a natural grouping and be combining these locations this would potentially reduce the costs of participating in the RFP process for potential investors and partners. Similar issues relate to the potential grouping of Nelson & Marlborough, rather than them being treated separately.

12.3. Local government can play an important role in reviewing these settings, and in identifying opportunities to ensure that the LFC investment provides infrastructure that enables access for the largest number of users.

13. GAPS BETWEEN REGIONS

13.1. Some regions will be more clear-cut in terms of their geographic spread (such as Auckland and Wellington), while others will have surrounding semi-urban areas that leads to questions as to whether they should be included. The aforementioned community wireless node approach serves to ensure that broadband connections made to schools can extend coverage to outlying areas, albeit via wireless.

13.2. For instance, one region (as defined in the Paper) identified is Palmerston North and Feilding. These are approximately 20kms apart with largely rural land separating the two. However, directly between these two urban areas along one of the main roads is Bunnythorpe, which is a very small outlying town. When proposals for Palmerston North & Feilding are put forward, would there be an expectation from government that they should also include Bunnythorpe, particularly given the location of a primary school there. Therefore, should the coverage area for an RFP typically include the gap between the two population areas? The same issues exist with Napier &

Hastings, New Plymouth & Hawera, and Cambridge & Te Awamutu. NZICT believe further inclusion and exclusion issues will most likely be raised during the consultation period. Therefore, we believe greater clarity is required.

Recommendation: That the government provides greater clarity in relation to its expectations concerning the geographic boundaries of all identified regions.

14. HIGH ECONOMIC GROWTH REGIONS

14.1. As stated above, NZICT supports the stance taken by the government, in terms of flexibility when it comes to defining and provision to other regions or more than 75% of New Zealand's population. However, there is a chance that the government may be jumping the gun if the RFP process includes proposals incorporating more than 75% of the general population in total, or an alternative make-up of the 75%. Therefore, we believe the government should not develop any concrete funding solutions for the remaining 25% of the general population until such time as proposals as part of the RFP process have been received and approved.

Recommendation: That the government only looks to finalise and deploy funding solutions for the remaining 25% of the general population until at least the proposals have been received and approved.

15. COMPLIANCE & COMMUNICATION BETWEEN REGIONS

15.1. NZICT believes there will also be certain procedural, compliance and communications issues that will need to be worked through to reach a successful outcome for the initiative.

16. QUANTITY & QUALITY OF REGIONAL BOARD MEMBERS

16.1. A major element of the initiative is the establishment of the Local Fibre Companies (LFCs). While the Paper provides some detail in terms of the structure of the LFCs, there are still some questions that need to be raised.

16.2. When looking at the structure of the LFCs, there is the potential for 25 separate companies to be formed. However, we acknowledge that in paragraph 8 of the Paper it notes that aggregated proposals covering any number or combination of regions will be allowed, so that LFCs may be formed on a smaller number of regions.

16.3. On balance, the prospect of 25 separate LFCs being formed for the population of New Zealand does seem compliance heavy. Also, a high number of boards may lead to a lack of finding appropriate numbers of people with specified skills in the telecommunications industry to sit on the boards. While the final number of the LFCs may alleviate some of these concerns, we still believe that potentially adverse issues relating to quantity and quality of boards should be taken into account going forward.

16.4. NZICT Members have significant experience in managing technology and infrastructure businesses. Many of them would be interested in acting as Board members for the LFC, where this presents no conflict of interest.

Recommendation: NZICT is willing to work with the MED on issues relating to the composition of local fibre companies boards including the development of Director guidelines and a list of potential candidates with the requisite experience to contribute to the operation of each LFC Board.

17. COMMUNICATION/RESPONSIBILITY BETWEEN BOARDS

17.1. There seems to be little discussion in the Paper concerning how the LFCs will work/co-ordinate with each other on common issues, particularly involving national deployment. While there is the ability for focussing on regional issues and requirements, there is the potential for differing views and cost structures across each LFC. For instance, any business wanting to deploy a service nationwide might find differing protocols and timeframes, not to mention issues regarding who would pick up what cost when there are connections across boundaries. We believe further guidance from the government concerning these issues would be useful.

Recommendation: NZICT is willing to work, in conjunction with industry bodies like the Telecommunications Carriers' Forum, with the MED to develop greater detail relating to how local fibre companies will work/co-ordinate on common issues that have a national focus/theme.