



## **TELECOMMUNICATIONS INDUSTRY GROUP GOVERNMENTS BROADBAND INVESTMENT INITIATIVE**

### **1. INTRODUCTION**

- 1.1. The Telecommunications Industry Group (TIG) was formed in May 2009 to provide a single voice for the Telecommunications Industry and to increase the contribution of Telecommunications to New Zealand Society and Economy.
- 1.2. Submissions on the Ministry of Economic Development (MED) in the Broadband Investment Initiative (BII) draft proposal were due on 27 April 2009, which is prior to the TIG being formally established. While many of our members made submissions on the MED's BII draft proposal, we thought it would be useful to set out in this paper areas where there is common agreement amongst our members on matters being considered, or which need to be considered, as part of the BII, and which the TIG believe are fundamental to creating the co-operative environment which will enable the success of the BII.
- 1.3. The TIG believe the following areas are key:
  - a) Standards;
  - b) Network Investment Drivers;
  - c) Prioritising areas of investment; and
  - d) Regulatory Environment.
- 1.4. As a group, we are progressing work with the Telecommunications Carriers Forum on the standards that will be used to build the network(s) and define the products provided as a result of the BII, and we would welcome Government involvement in this process. With respect to the other three key areas – Network investment Drivers, Prioritisation of areas for investment and the regulatory environment - we discuss the key elements of each below, and look forward to further engagement with the Government on them in the course of the BII process.

- 1.5. This paper has been prepared by the TIG whose members are Baycity Communications, CallPlus, Citylink, Compass Communications, FX Networks, Kordia, Telecom, WorldxChange, Vector and Vodafone. TIG members support the views expressed in this paper.
- 1.6. No part of this paper is confidential and the TIG would be happy for it to be made publicly available.
- 1.7. Whilst the TIG fully supports a fibre solution where it is economically justified we believe that a ubiquitous national fibre network is aspirational but not practical. Other access technologies such as 3/4G Wireless, WiMax and Satellite should be included in the government initiative, especially in underserved rural areas. These access technologies may at some stage be replaced with Fibre but could be used as a bridging technology which can deliver speeds in excess of 2mbps to rural New Zealand now. This model has been successfully used in other countries such as Australia.

## **2. STANDARDS**

- 2.1. The success of a fibre to the premises (FTTP) network will be critically dependant on all Wholesalers and Retailers using the network knowing the exact specifications and capability of the products they can buy and service experience they will receive from an LFC. In addition, if there is more than one Local Fibre Company (LFC), users of the network will need to be able to rely on the products and service experience being universally consistent across the country. For this reason, the Government needs to be very clear about the products and services they require the networks to have the capability to deliver. The criticality of this is irrespective of whether the services are to be based on dark or lit fibre.
- 2.2. To achieve the required level of product specification and uniformity, it will be essential that the industry, through the Telecommunications Carriers' Forum (TCF), develops the standards that will be used to build the network and define the products. We recommend the government and the TCF work together to define the scope of standards development.
- 2.3. Ideally, the standards will be completed prior to an RFI/RFP being issued. If this is not possible due to time constraints, then the standards should be completed in parallel with LFC negotiations, and in any event must be completed before any agreements with LCF's are finalised.
- 2.4. The standards that will be required fit into three broad categories:
  - a) Product capabilities;
  - b) Interface standards; and

- c) Infrastructure technology standards.

### Product Capabilities

- 2.5. The importance of product capabilities for LFC's to comply with is to ensure that there is a common input service for Wholesalers/Retailers to enable them to construct a uniform product set for on-selling to their customers on a consistent basis irrespective of geography.
- 2.6. Key elements of the product capability standard will include minimum standards for the following:
  - a) Core product definition – Depending on the type of service, this would define the physical access products – dark fibre - (e.g. point-to-point fibre, GPON connection or GPON network elements) or the specification for Layer 2 services. Clearly, the more complex the product set, the more critical it will be to fully define all product elements;
  - b) Ancillary product definitions – There will need to be a number of ancillary products that will also need to be defined including things like co-location space at points of presence; and
  - c) Service levels – All the service levels associated with the delivery of the core and ancillary products will need to be clearly defined. This will include things like provisioning new access circuits, restore commitments, and event notification and management. The accountabilities of the respective parties will need to be carefully defined.

### Business to Business Interface Standards

- 2.7. The business to business interface standards between the LFC and the Wholesaler/Retailer defines the information to be passed between the parties and drives the provisioning and assurance processes within the Wholesaler/Retailer. Supporting multiple processes for a single product depending upon the supplier of that product drives support costs and impacts service experience. Complexity rises exponentially in relation to the number of suppliers. This effect is mitigated by the level of standardisation adopted nationally.
- 2.8. Standardisation of the LFC interfaces for provision, assurance and notification is important to enable Wholesalers/Retailers to manage the build of their Business Support Systems and associated processes.
- 2.9. As an example, the Tele Management Forum's Information Framework (SID) provides a common language and information model designed to align data with pertinent business processes and this would be the logical starting point for the industry to use to agree interface standards. An example of a SID based standard

is the Chorus/Telecom interface standard for provisioning and assure, which has just recently been released <http://www.chorus.co.nz/industry-reports>. This provides a guide to the level of complexity to be agreed and managed by the industry.

- 2.10. However, the issue with flexible frameworks such as SID is not only agreeing the standard and version to use but also each of the fields and associated parameters within the framework. Again, without this level of standardisation the complexity of business logic within the Wholesaler/Retailer becomes extremely challenging.

#### Infrastructure Technology Standards

- 2.11. Inherent in the concept of a national fibre network (regardless of whether it is one network or made up of multiple LFCs) is that it will need to physically interconnect<sup>1</sup> with upstream networks and at customers' premises.
- 2.12. The key requirements for seamless physical network interconnection are the quality, features and interconnect standards. These apply at each layer of the network, with a particular focus on layer 0 to layer 2, and may be implicitly or explicitly detailed in the core product and service level specifications, or outlined in a separate set of technical standards that define the requirements that the network and services must be built to. The extent to which standards for the different layers of the network are required will depend on the types of products that are defined and the layer at which the different networks will physically interconnect.
- 2.13. It will be important to strike a balance between defining specifications that dictate build requirements to ensure minimum reliability performance and allowing the network builder sufficient flexibility to build the network in a cost effective manner taking advantage of existing infrastructure and networks and innovative deployment techniques (e.g. shallow trenching). Allowance will also need to be made to allow for environmental and/or demographic factors that may make the cost/benefit of building to a particular standard impractical. To achieve this balance, build standards should predominantly be outcome and capability based, and in some cases be only objective guidelines, except where they deal with network interfaces, where they will need to be prescriptive.

---

<sup>1</sup> Throughout this section the terms 'interconnect' and 'interconnection' are used in the sense of the physical connection between LFC networks and upstream networks, or between LFC networks and customer premises equipment, and not in the sense of the physical or service connection between two like operators.

2.14. The potential issues where standards may need to be defined at each of the three layers include:

- a) Layer 0/1
  - i. Standards of construction need to be defined to deliver availability, reliability and security. It may be necessary to implement consistent construction and physical security standards such as cable depth, manhole security, route marking, route geotechnical engineering, overhead construction, and redundant fibre paths for availability;
  - ii. Flexibility of architecture to easily support point to point, PON and RF Video distribution;
  - iii. Fibre standards including fibre types, maximum attenuation, dispersion requirements and wavelengths supported. Fibre standards relating to safety and environmental requirements for the fibre and sheath; in particular for in home and in building cabling, will also need to be specified;
  - iv. Handover standards at both the home and at the central office including optical interfaces and connector types;
  - v. Physical access standards at both the home and the central office to allow easy reconfiguration and management of services; and
  - vi. Testing standards including ability to support non-intrusive in service testing of fibre infrastructure.
  
- b) Layer 2
  - i. Ethernet connectivity standards (examples include the IEEE 802.1 standards and MEF specifications), which may including QoS support, VLAN support, traffic management and operational connectivity; and
  - ii. Multiple interface types, including electrical and optical handover.

2.15. In addition to the requirement for standards that define the physical interconnection of networks, there will also need to be standards to define the operational procedures that all network operators will follow to ensure a predictable end-user service experience. As with the physical interconnection standards, some of the operational standards may be implicitly, or explicitly included in product standards, particularly in relation to service level standards.

2.16. Operational procedure issues that may need to be considered include:

- a) Consistency of service support parameters such as order process, fault process, response time, service levels, availability, reliability, event notification and management; and
  
- b) Availability of certain information such as rollout plans, scheduled maintenance windows and unplanned event notifications in a timely and

consistent fashion to enable service providers to plan and develop products and services and communicate with their customers.

### 3. NETWORK INVESTMENT DRIVERS

- 3.1. It is worth articulating the drivers behind network investment and return on that investment. In simple terms take-up has more impact on payback than ARPU (Average Revenue Per User) for the network investor.
- 3.2. The higher the take-up on a network, the lower the capital cost born by each connection as shown in the following table. The numbers shown below are for explanatory purposes only and do not reflect actual costs.

| Connections | Network Length per Connection | Connections Investment | Total Investment | Investment Allocation per Connection |
|-------------|-------------------------------|------------------------|------------------|--------------------------------------|
| 1           | 1,000                         | \$ 1,000               | \$ 101,000       | \$ 101,000                           |
| 10          | 100                           | \$ 10,000              | \$ 110,000       | \$ 11,000                            |
| 100         | 10                            | \$ 100,000             | \$ 200,000       | \$ 2,000                             |

Assumptions:

- Network length is 1,000 metres
- The capital cost per metre of network is \$100
- The total investment for 1,000 metres of network is therefore \$100,000
- The capital cost of a customer connection is \$1,000

- 3.3. The following observations can be made:
- a) The priority sectors (Business, Schools, Hospitals) chosen by the Government are not co-located.
  - b) The lowest cost networks are those built for geographies rather than sectors. To connect other users to networks deployed initial on a sector basis requires careful planning and design so they can be efficiently extended for areas or suburbs.
  - c) Retail service providers will need scale before they invest in new products and services suited to fibre networks.
  - d) Retailers may be unlikely to invest in marketing to a small number of residential customers.

- 3.4. Therefore, a network build focused on delivering to specific sectors that are geographically dispersed will result in a higher cost per connection than a network that is built to geographic areas. This is a policy decision and the Crown may well decide to channel its investments in this way as the economic benefits for the country outweigh the increased costs. This requires the investor to accept a lower (potentially nil or even negative) return on its capital investment.

#### **4. PRIORITISING AREAS OF INVESTMENT**

- 4.1. The TIG has canvassed the issue of where the investment in broadband infrastructure should be focussed. While there is a high level of consensus, it is clear that there is and will likely continue to be, a diversity of views within the membership of the TIG.
- 4.2. Prioritisation of the program will be key from several perspectives. Two factors of the utmost importance are insuring that:
- a) Early investments deliver the highest benefits (success breeds success); and
  - b) The scarce resources (skills) New Zealand has available to execute these plans are used in the most efficient manner possible.
- 4.3. The Australian Broadband Initiative will have significant effects on the availability of scarce skills in New Zealand. The scale of that project will draw a high proportion of our telecommunications professionals to Australia for the period from start of their build 2010 till 2015. The knock on impact will be that key skills in Project Management, Architecture and Design, optical engineering skills and many other areas will be lacking in New Zealand. The correct prioritisation of rollout will ensure that the high priority areas get the available resources. The TIG will be developing policy to mitigate this skills drain, however in our view it cannot be stopped; it can only be measured and managed.
- 4.4. The government's current approach can be characterised as being population focussed in that it proposes that the 75% of the population living in the largest 25 population centres will receive broadband. While the government has signalled that there will be initiatives for rural broadband, those living outside the identified population centres are asking the question as to when they will receive the same benefits as the rest of New Zealand.
- 4.5. The TIG universally believes that the focus of the investment should be on improving productivity. Moving to a productivity focus, from the current population focus, accords closely with the government's concentration in

recent policy statements on the need to lift New Zealand's productivity ranking within the OECD and to decrease the GDP gap with Australia.

- 4.6. For this reason the deployment priority should:
- a) be focused on delivering the greatest productivity gains for NZ;
  - b) build to the areas of the greatest unmet demand first;
  - c) leverage off existing infrastructure where appropriate; and
  - d) aim to maximise economic returns.
- 4.7. Delivery focused on these productivity gains provides quick wins, and will also achieve the government's social inclusiveness objective.

## **5. REGULATORY FRAMEWORK**

- 5.1. We recognise that it is key for the government to get a number of parties prepared to invest, however for the investors, having the government addressing the regulatory risks is conversely key to parties being prepared to invest. Therefore the regulatory environment that will apply to the BII needs to be determined prior to parties committing to invest.
- 5.2. The TIG is preparing studies of further regulatory frameworks that can be evolved to improve the environment for investment and promote this initiative. We will be submitting these in future papers.