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# **Adapting Policies and Regulations for Convergence in the Information and Communications Technology (ICT) Sector: A Comparative Analysis of New Zealand and the United States**

Prepared by  
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Since his education in New Zealand and England, Sir Ian has held Professorships at Cornell University and the University of California, and was Vice-Chancellor of Victoria University of Wellington for three years. For many years, Sir Ian was director of the Max Planck Institute for Aeronomy in Germany, where he was involved in the planning of several space missions, including those of the Voyager planetary explorers, the Giotto space probe and the Ulysses galaxy explorer.

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Fiona Alexander  
Wellington, July 2007

## EXECUTIVE SUMMARY

It is incumbent upon policy-makers and regulators at all levels to nurture a policy and regulatory environment that enables competition and encourages investment so that ubiquitous, affordable access to information and communication technologies (ICTs) for all is achieved. This is complicated by the fact that in today's world boundaries between traditional telecommunications and broadcasting transmission platforms are converging into one ICT sector. Convergence is no longer an idea or a future concept. It is technically feasible today and its arrival directly challenges existing global telecommunications and broadcasting policy and regulatory paradigms, as well as business models.

While the reaction to convergence differs by company, it is a fact that differentiated services previously offered on dedicated platforms from multiple providers can now technically come together and be offered by a single firm on a single platform. This paradigm shift in communications will require policy-makers and regulators to re-evaluate existing norms and conventions with respect to key issues. These include: facilitating competition; encouraging investment; ensuring public interest goals and objectives; and addressing human resource considerations.

New Zealand and the United States, while both seeking similar ICT policy goals, are currently taking different paths to meet their shared objectives of enhanced competition and investment, and better services for consumers. This includes their reaction to convergence, and is partly due to the differences in how the industry and policy and regulatory models and associated institutions developed in each respective country.

A comparison of the approaches currently being pursued in New Zealand and the United States reveals several things. Most notably that continuing to stove-pipe platforms, in terms of rules and institutions, that are now able to offer comparable applications and services can often hinder competition and investment. In addition, continued reliance on robust asymmetric sector-specific regulation can make it difficult to truly take advantage of the benefits convergence offers.

It is imperative that, when addressing ICT issues in the context of today's convergence, policy-makers and regulators be forward-looking and attempt to provide the most flexible regime possible so as to not stifle innovation. While not impossible in a robust sector-specific regime, this is somewhat easier to accomplish in the context of deregulation. However, each country's specific circumstances, including its history and the status of its incumbents, will impact the choices it is able to make with respect to convergence. Each country's regulatory disposition will also play a part – either pre-emptively regulating a problem before it occurs, or waiting to regulate once there is a proof that a problem exists.

While there is no magic formula that policy-makers and regulators can apply to adjust their regimes in light of convergence, below is a list of issues for consideration.

- **Competition:** How big is the actual domestic ICT market and how many competitors can it realistically support? Will vertical integration help or hurt competition in the domestic market? Is the goal of government policy and

regulation to encourage facilities sharing or facilities-based competition? Are other traditional as well as non-traditional communications actors prevented from entering the market because of current policy and regulatory approaches? How does convergence change the competitive landscape?

- **Investment:** Is there sufficient competition in the ICT sector for incumbents to invest in upgrading their networks? Are there truly non-replicable assets that need to be opened up for potential new entrants and if so how do you price access to these assets so as not to distort the market? Is it appropriate to consider regulatory safeguards or tax incentives to encourage investment? When government policies are geared toward promoting investment, what type of investment is the government looking for – investment in core networks or investment at the access layer? What impact does the introduction of disruptive technologies and potential changes to policy and regulatory regimes have on investment?
- **Public interest issues, universal access:** Are there parts of the country where market incentives will never deliver ICT applications and services? Does the current universal service scheme take into account new actors that are offering communications services? If the scheme is based on traditional fixed-line voice services, is it monetarily sustainable as these revenue streams taper off? Should broadband and other advanced services be covered by universal service plans?
- **Human Resource issues:** Is there sufficient expertise and staff to support the regulatory model chosen? Are the processes in place for training and keeping staff abreast of changes in technology and how these changes impact existing rules and norms? Is there a need to have multiple regulatory institutions and apparatus involved in a converged ICT sector?

In looking at a contemporary map of the world, New Zealand by its mere distance from the world's trading capitals is often disadvantaged by time and space. A world class ICT sector has the ability to alter this reality by bringing global consumers to New Zealand's cyberspace borders. Failing to get the ICT policy and regulatory regime right, will only hinder New Zealand's economic development. When considering these issues the New Zealand government need not limit its policy options to those being implemented in Europe, nor need it wholeheartedly embrace the United States model. Instead, New Zealand should look to develop its own way, in accordance with its unique characteristics.

Below is list of recommendations for New Zealand ICT stakeholders to consider as they move forward with regulatory reforms in the ICT sphere. These recommendations are not mutually exclusive and in some instances are in fact mutually reinforcing.

1. Develop better coordination between the communications and broadcasting work streams. At a minimum, this could be the merging of ministerial portfolios under a single Minister. A preferable solution is to bring together under one organisation the various ministry offices that have responsibility for the various broadcasting and communications issues. The fact that a large portion of the broadcasting portfolio deals with the development and



protection of local content need not be a hindrance to this consolidation, given the link between content and network deployment.

2. Adjust the status of the Telecommunications Commissioner to bring it in line with international best practices in terms of independence in regulatory decision-making. Create one regulatory institution to deal with telecommunications and broadcasting issues by merging the responsibilities of the existing Telecommunications Commissioner with the numerous regulatory bodies involved in broadcasting issues. This new converged regulator would be separate from the current structure of the Commerce Commission, as the government has moved away from a general reliance on competition law.
3. Continue with efforts to open up the current bottleneck of the existing telecommunications access network through local loop unbundling in order to spur competition at the service-provision level in the short to medium term. Reconsider separation, either structural or operational, of Telecom as it is unclear what problem this is actually attempting to solve while local loop unbundling is being pursued.
4. Give greater priority to a review of the status and regulatory regime of Kordia, a State-owned enterprise, as well as other utilities providers whose participation in the retail side of the ICT sector could potentially support facilities-based competition and investment in the New Zealand market in the long term.
5. Undertake to develop and retain ICT subject-matter experts within government offices – both among officials and policy advisors – and in the regulatory arena. This may necessitate a review of the pay structure and opportunities for advancement in order to attract those with private sector experience to government service. Other options include governmental or academic exchanges where New Zealand experts spend some time abroad, or the development of an externship programme with universities in New Zealand where students alternate school terms between university and government agencies.



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## INTRODUCTION

As has been agreed internationally, most recently at the United Nations World Summit on the Information Society (WSIS), information and communications technologies (ICTs) are facilitative tools that enhance the ability of individuals, communities and peoples to achieve their full potential.<sup>1</sup> Therefore, it is incumbent upon policy-makers at all levels to nurture a policy and regulatory environment that enables competition and encourages investment so that ubiquitous and affordable access to ICTs is achieved.

Previously this might simply have meant a review and updating of telecommunications laws. In today's world, where boundaries between traditional telecommunications and broadcasting transmission platforms have been blurred and the proliferation of the Internet has changed all facets of life, this is no longer the case. Promoting universal access to ICTs now involves a comprehensive approach centred on the development and deployment of communications systems that support broadband networks – the current delivery mechanism for converged services and applications – and, possibly, consideration of policies and marketing practices in closely related areas such as information technology and intellectual property.

The government of New Zealand has been proactive in the area of ICTs by taking specific steps to establish a competitive and open regulatory framework. In the past six years, it has changed the New Zealand telecommunications policy and regulatory environment from a general reliance on competition law to one of sector-specific regulation so that, among other things, the position of an industry-specific Telecommunications Commissioner was established, and regulated telecommunications services were identified. The telecommunications incumbent has also been mandated to offer competitors access to its local access networks at reasonable rates (i.e., local loop unbundling) so as to promote competition in the delivery of services at the network access level (i.e., intra-platform or facilities sharing based competition). Whilst there are emerging wireless providers challenging the existing fixed-line monopoly, this industry has yet to mature in the New Zealand marketplace. Platform competition (i.e., facilities-based competition) in terms of mobile, wireless and satellite is not expected by the government to provide a ubiquitous alternative to the fixed-line incumbent's local access network for delivery of high-bandwidth solutions in the medium term.

New Zealand has also adopted measures to bring broadband access to large underserved areas of the country through government-funded public-private partnerships (Project PROBE). By means of the *Digital Strategy*, the government of New Zealand has put forward a comprehensive plan for addressing communications content, confidence and network connection through a variety of government programmes and initiatives.<sup>2</sup>

In the United States, recent changes in the ICT policy and regulatory regime focus on the 1996 Telecommunications Act. This was a series of amendments to the original 1934 Act in an attempt to facilitate more competition primarily in local phone service.

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<sup>1</sup> United Nations (2005), *World Summit on the Information Society Outcome Documents*

<sup>2</sup> *The Digital Strategy* (May 2005), New Zealand Government

Similar to the approach the New Zealand government is now pursuing, the United States required telecommunications incumbents to open up their networks to competitors via local loop unbundling. However, by 2002, after several court challenges and when the expected levels of network infrastructure investment had failed to materialise, the policy was reversed. At the same time a decision was made not to regulate the cable industry, which by this time was offering Internet and voice services via cable modems. Shifting towards a deregulatory approach the United States began a process of attempting to level the playing field so that all services, regardless of the platform they travelled across, were treated the same way.

Following this President Bush established a national goal of universal, affordable broadband access for all Americans by 2007<sup>3</sup>. To facilitate this goal, the United States government has undertaken a variety of policy initiatives aimed at facilitating an environment in which the entrepreneur can flourish. Specifically, the U.S. approach to radio frequency spectrum management has been reviewed, including seeking ways to increase the amount of radio spectrum available for advanced wireless services. Currently, additional spectrum for advanced wireless services will be made available for commercial provision as well as public safety interoperability once the transition to digital television is complete in 2009. Rules freeing newly-deployed broadband infrastructure from legacy telecommunications regulation have also been adopted, along with standards agreed to facilitate the deployment of emerging technologies like Broadband over Power lines (BPL). These actions are all aimed at encouraging investment in different facilities so that ICT competition can flourish at the platform layer via alternative technology infrastructures (i.e., inter-platform or facilities-based competition).

The United States federal government has also provided tax relief to encourage businesses to invest in broadband technology, including accelerated depreciation for capital-intensive equipment, and a tax credit for research and development spending. To facilitate broadband access specifically in rural areas, the United States, through the U.S. Department of Agriculture, offers two rural communications grant and loan programmes. As well as these federal programmes, a number of state governments have launched similar state-level rural initiatives.

This paper provides a comparative analysis of New Zealand and the United States as both countries try to meet similar national ICT goals through what appear to be divergent policy and regulatory approaches. Chapter 1 describes the market trends related to convergence, provides a definition of convergence for the purposes of this paper, and identifies some of the key policy and regulatory issues associated with convergence. An overview of the current ICT policy and regulatory regime, a snapshot of the ICT market and trends in ICT related policy-making is provided for New Zealand and the United States, in Chapters 2 and 3 respectively. Chapter 4 compares the approaches of both governments and evaluates them against the policy and regulatory issues related to convergence previously identified. Finally, Chapter 5 sums up with a series of issues for policy-makers and regulators to consider, regardless of the policy and regulatory path chosen, and some recommendations specific to the New Zealand situation.

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<sup>3</sup> *Promoting Innovation and Competitiveness: President Bush's Technology Agenda* (2004), United States Government

It should be noted that many of the topics addressed in this paper are impacted by daily policy discussions, both domestically and internationally, as well as technological changes. Therefore, it represents only a snapshot in time of the variety of complex issues included. In addition, the history of ICT development in both New Zealand and the United States is very rich. This paper attempts to cover some of the key highlights and should in no way be construed as a complete record. Lastly, this paper is produced based on the assumption that providing telephone, broadcasting or other communications services are not necessarily natural monopoly structures.





# 1 CONVERGENCE

The concept and promise of convergence in the telecommunications sphere has been around for well over twenty years with academic articles appearing as early as 1980.<sup>4</sup> In the past few years however, it has once again become the mantra driving business plans and marketing, even resulting in the worldwide adoption, via the mass media, of the term information and communications technologies or ICTs. While this may appear to be a simple updating of the nomenclature used to describe voice, video and data services, it in fact represents a fundamental shift in communications network design, policy and regulatory regimes and consumer purchasing, as the convergence that was promised nearly three decades ago is actually beginning to take place. This shift presents both challenges and opportunities for all as expressed by Apple founder Steve Jobs: “A key to succeeding in the converged economy is resisting the temptations to enter certain markets and to know when to say no. I’m as proud of what we don’t do as what we do do.”<sup>5</sup>

Below is a brief summary of the general market trends that can be observed due to convergence; an explanation of convergence from various positions in the service-delivery value chain; a definition of convergence for the purposes of this paper; and finally, a description of some of the key policy and regulatory issues associated with the onset of convergence.

## General Market Trends

A review of current ICT market-related literature, be it newspapers, journals or advertisements, reveals the common theme of convergence. In January of this year at the Consumer Electronics Association International Show, the world’s largest technology trade show with over 140,000 attendees and 1.8 million net square feet of exhibit space, convergence was the key topic.<sup>6</sup> This is not unexpected given the growing interest of senior executives around the world in convergence. For example, in a recent survey conducted by the Economist Intelligence Unit for AT&T, 84% of senior executives around the world “view convergence as critical or important to achieving their strategic IT and business goals, compared with 45% in the 2005 survey.”<sup>7</sup> This is also evident in the work programme of the International Telecommunication Union’s Standardization Sector (ITU-T) where the development of standards for next generation networks (NGN), packet-based networks in which service-related functions are independent of the underlying transport-related technologies, dominates most agendas.

The level of consolidation and investment occurring in the communications industry is an example of how ICT convergence is impacting traditional telecommunications service providers. In the United States, Verizon, one of former regional bell operating companies, is aggressively installing fibre to the home (FTTH) so as to provide

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<sup>4</sup> Raggett, R.J. (1980), ‘A Happy Marriage Predicted for Computer, Phone’, *Telephony*

<sup>5</sup> ‘Big Bang! Digital convergence is finally happening – and that means new opportunities for upstarts and challenges for tech icons’, *Business Week*, 21 June 2004

<sup>6</sup> ‘At Las Vegas Electronics Show, Convergence Grabs Spotlight’, *International Herald Tribune*, 9 January 2007, p. 13

<sup>7</sup> ‘*Convergence Takes Hold in the Enterprise*’ (2006), AT&T Survey and White Paper in cooperation with the Economist Intelligence Unit

television services over an Internet Protocol (IP)-based platform. Dubbed the FiOS project, this relatively expensive upgrade (given that fibre-optic cable is installed directly to the customer's premises), will allow Verizon to compete with local cable operators who are able to offer voice, video and data services over their existing networks. The new AT&T (a consolidation of SBC, Bell South, Cingular Wireless and AT&T long distance) has undertaken a similar project and is offering its own version of triple play services via their U-verse package. It should be noted that the AT&T offering is slightly different from Verizon as AT&T is installing fibre to a central node and then connecting to the customer via various copper solutions.

Convergence is also impacting the business models and production plans of manufacturers. As the various platforms are upgraded to support triple and quadruple play services, the devices that shift in and amongst these platforms are also being upgraded. Quite often multiple device functionalities are merging onto a single piece of equipment changing the type of equipment now available to consumers. According to Nokia CEO Olli-Pekka Kallasvuo: "Single purposes devices are becoming less attractive... and the converged devices taking their place are increasingly powerful and easy to use,"<sup>8</sup>

There are however some companies that are unwilling to fully jump on the ICT convergence bandwagon at this stage. "Orange believes that true convergence is actually still a long way off and the journey will be incremental," explains Alastair MacLeod, vice president of Orange Business Services UK. Therefore, the company continues to offer a variety of services across multiple platforms in order to meet customer needs today and in the future.<sup>9</sup> Telecom Italia also appears to be taking a different route. Bucking the trend of industry consolidation, they instead attempted to separate off mobile and fixed-line into separate business units so the company could focus on content.<sup>10</sup>

Another interesting trend is the way convergence is shaping competition in different parts of the world. As mentioned above, traditional telecommunications operators in the United States are consolidating and upgrading their networks in some manner with fibre so as to compete with the cable operators. Driven by the current policy and regulatory approach of encouraging facilities-based competition, telecom and cable are competing with each other as well as other alternatives available in the United States, such as wireless, satellite and BPL. In places such as Europe where local loop unbundling is being aggressively pursued, the focus is on DSL distribution via the telecommunications operators with eventual upgrades to fibre. Eli Noam has characterised these developing network systems as 2.5 in the United States and 1.5 in Europe. "1.5 platform systems are more profitable, safer for investors, but also have a much greater gatekeeper power over content providers and pricing power over consumers. That's why they require more regulation of access and prices. A 2.5 platform system is riskier for investors, though as an oligopoly it's likely to keep price

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<sup>8</sup> 'Nokia CEO Outlines the Company's Vision on Convergence', *Telecomworldwire*, 8 January 2007

<sup>9</sup> Vernon, Mark, 'FT Report – Understanding Mobile Communications: Surfing the Wave of the Mobile Internet', *FT Reports*, 17 November 2006, p. 10

<sup>10</sup> Barry, Colleen, 'Telecom Italia Takes a Detour on Road to Convergence Amid Controversy', *AP DataStream*, 1 October 2006

competition under control. It is also most likely to vertically integrate network and content operators, and this creates incentives to keep content rivals out.”<sup>11</sup>

## **What Is Convergence?**

There are numerous ways to describe or define convergence. The most appropriate often depends on where you reside in the value chain of communications service provision. Below are characterisations of convergence from the perspective of businesses, consumers, and policy-makers and regulators.

### **Convergence From A Business Operator’s Perspective**

For business operators, convergence directly impacts network design, equipment purchased or sold, investment patterns, and recognition of market competitors. Simply put, advances in digitization and processing speeds now allow physical network infrastructure originally deployed for a single purpose (e.g., transmission of voice or cable TV) to be used for multiple purposes (e.g., additional transmission of voice, video and data on any physical infrastructure). Thus, voice, video and data transmissions are now able to take place or converge on a single core technology platform, be it a fixed or non-fixed network.

Various telecommunications, cable, wireless, satellite and electricity providers are now offering these core platforms around the world, fundamentally changing the business model of communications. “Digital convergence increases the flexibility of products and services, but also increases the substitutability of products that were previously part of distinct industries, therefore presenting a critical trade-off for managers making technological and platform scope choices.”<sup>12</sup>

### **Convergence From A Consumer Perspective**

While convergence brings challenges to existing business models and policy and regulatory regimes, it is widely recognised that the main beneficiary on the communications service value chain of convergence is the consumer. To date, this has most often has been the business customer or high-end private user. These new core communications networks described by *The Economist* as “access agnostic”, meaning device neutral, further enhance consumer choice and independence from the network provider.<sup>13</sup> No longer are consumers bound to an individual provider for a specific service. Today’s consumers can often choose the device or devices, generally with more features and taking up less space, that suit their lifestyles and connect them to one or more network providers of their choosing. In most developed economies, consumers can choose between subscribing to triple (voice, video, data in the form of Internet service) or quadruple play (voice, video, data in the form of Internet service, and wireless) from one provider or they can mix and match service offerings.<sup>14</sup>

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<sup>11</sup> Noam, Eli, ‘Broadband Wagons at the Crossroad’, *The Financial Times*, 6 March 2006

<sup>12</sup> Mantena, Ravi and Arun Sundarajan, (June 2004), ‘Competing in Markets with Digital Convergence’, p.1

<sup>13</sup> ‘A Survey of Telecoms Convergence’, *The Economist*, 14 October 2006, p. 50

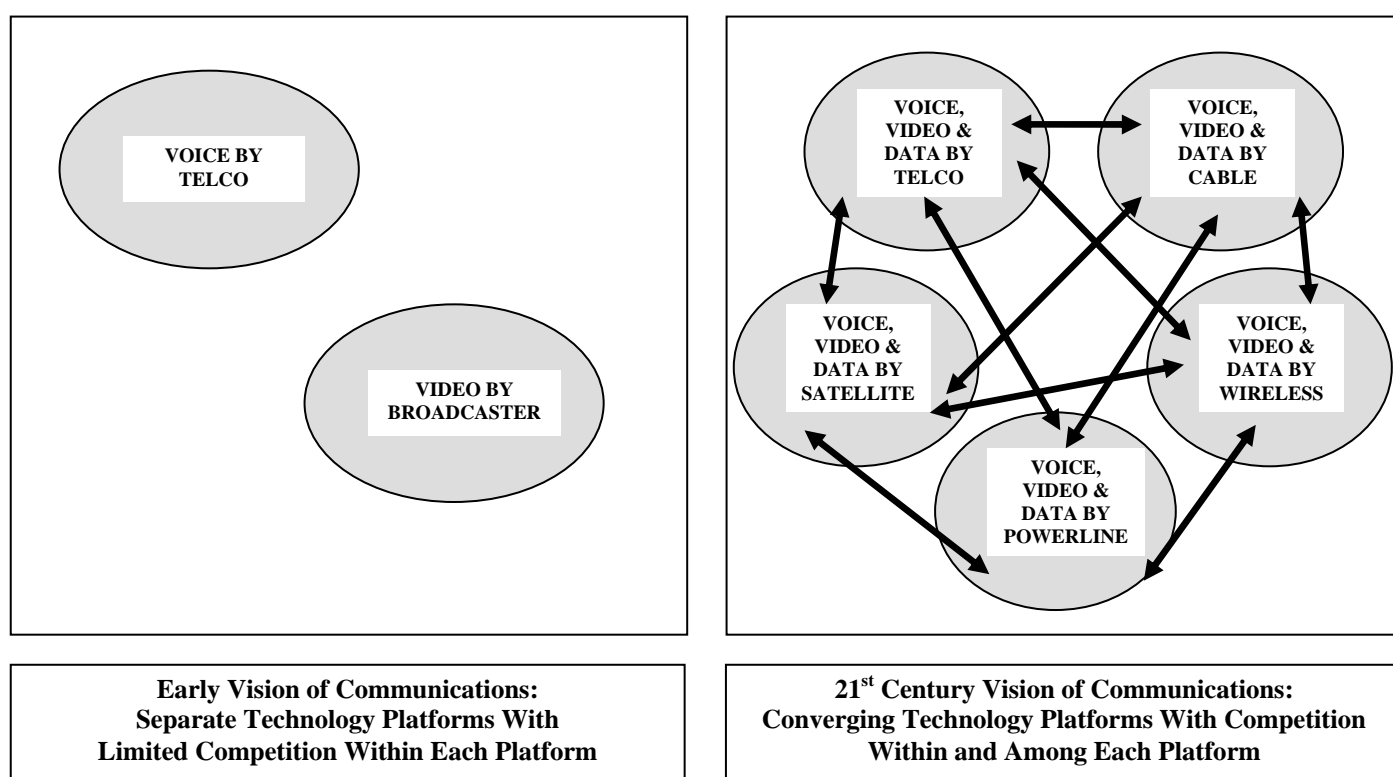
<sup>14</sup> *Multiple Play: Pricing and Policy Trends* (April 2006), Organization for Economic Co-operation and Development, p. 6

## Convergence From A Policy-maker and Regulator Perspective

For policy-makers and regulators, the proliferation of converged services almost always directly challenges existing policy and regulatory regimes. Going back to the early days of the telephone and broadcasting industries it was assumed that these services, similar to their predecessor, the telegraph, were natural monopolies, and completely separate industries. As such, the regulatory regimes that developed around them were based on stove-piped technology platforms with different rules of the road for each distinctly perceived industry. In addition, each industry was often accountable to different policy and regulatory processes and institutions.

The development of connectionless packet-switching, liberalisation of international and national data transmission backbones, and the resulting proliferation of the Internet, combined with advances in digitization, processing speeds and compression technologies has significantly altered the communications landscape. With traditional telecom voice providers now able to provide video and high speed data, and traditional broadcasting providers now able to provide voice and high speed data, regulatory regimes based on a historical distinction that no longer exists are increasingly becoming outdated. According to the World Bank,:

In times of rapid technology changes and business models, the big risk we see is regulatory lags – the risk that the regulatory regime does not stay ahead of the curve, does not stay in tune with rapidly moving business models...it is critical for regulators and policy-makers to enact legislation and policies that recognise ongoing convergence in the telecommunication sector.<sup>15</sup>



*Figure 1: Shift in the Communications Paradigm*

<sup>15</sup> 'Regulatory Delays Pose Risk to Telecom Convergence', *AFX Asia Focus*, 8 December 2006

This shift in communications service provision, as illustrated above in Figure 1, is not only creating technological convergence, it is bringing about the need to consider institutional and regulatory convergence as well.<sup>16</sup>

### **Convergence In The Context of This Paper**

For the purposes of this paper, convergence will refer to the definition put forward in 2004 by the Organization for Co-operation and Economic Development (OECD):

“Convergence refers to the process by which communications networks and services, which were previously considered separate, are being transformed such that:

- Different network platforms carry a similar range of voice, audiovisual and data transmission services;
- Different consumer appliances receive a similar range of services; and
- New services are being created.”<sup>17</sup>

While the OECD definition is more of a policy description, it is important to note that there are a variety of ongoing technical standards development activities related to convergence. Among them includes work in the ITU-T on NGN issues. As defined by the ITU:

A Next Generation Network (NGN) is a packet-based network able to provide Telecommunication Services to users and able to make use of multiple broadband, quality of service-enabled transport technologies and in which service-related functions are independent of the underlying transport-related technologies. It enables unfettered access for users to networks and to competing service providers and services of their choice. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.<sup>18</sup>

In some business circles bundling services, for example packaging your network offering with those of another type of network provider, are considered convergence.<sup>19</sup> For the purposes of this paper, convergence will not include the bundling of services on different networks but rather it will refer to service offerings coming together on a single platform be it a fixed digital subscriber line (DSL), cable, wireless, satellite or electrical power lines.

### **Policy and Regulatory Issues Associated with Convergence**

While the reaction to convergence differs by company, it is a fact that differentiated services previously offered on dedicated platforms from multiple providers can now technically come together and be offered by a single firm on a single platform. This

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<sup>16</sup> Wild, Kate (October 2006), ‘The Importance of Convergence in the ICT Policy Environment’, p. 2

<sup>17</sup> *The Implications of Convergence for Regulation of Electronic Communications* (2004), OECD, p. 5

<sup>18</sup> ‘ITU-T Recommendation Y.2001 (12/2004) -General overview of NGN’, International Telecommunication Union

<sup>19</sup> Morris, Anne, ‘Convergence, anyone?’, *Total Telecom*, 20 October 2006

paradigm shift in communications, as illustrated in Figure 1, should cause policy-makers and regulators to re-evaluate existing norms and conventions. “Because of increasing convergence across different delivery platforms, more coherent and comprehensive regulations across these platforms are seen as an important policy objective in OECD countries.”<sup>20</sup> Below is a summary of some of the key policy and regulatory issues associated with convergence. This paper assumes that the goal of policy-makers and regulators is to facilitate private companies in the provision of communications services as opposed to direct government investment. As a consequence, the idea of government-owned or sponsored core networks provided on an open access basis to entrants is not discussed at length.

### **Facilitating Competition**

The technical and economic realities of convergence are facilitating the consolidation of industry players in some markets, while at the same time introducing new players into previously well established markets.

Emerging new infrastructures with more capacity, development in the traditional networks enabling them to offer more capacity to end users, and developments in compression and coding technologies resulting in less bandwidth requirements for audio and video services all have diminished the technically-based limitations for different networks to provide an increasing variety of different types of services.<sup>21</sup>

As technological advancements in digitization and computerization allow previously not-substitutable technology platforms to support a plethora of ICT services and applications, the competitive landscape of communications provision is changing. Given that consumers generally have a fixed amount of money to spend on communications goods and services and that the market can realistically only sustain a certain number of competitors, consolidation is occurring. It is thought by some that “convergence will have the effect of intensifying competition, dividing the industry into winners and losers and leading to a round of further consolidation.”<sup>22</sup>

For policy-makers and regulators whose goals are aimed at facilitating intra-modal or intra-platform competition in the telecommunications sector, this trend of corporate consolidation in some markets can appear to be problematic given the potential for market power at the various layers of communications provision to correspondingly consolidate. With what can seem to be a dwindling number of actors involved, ensuring competition and preventing collusion to provide consumers with better goods and services at lower prices is increasingly more of a challenge. Although the consolidation is driven by a desire for better economies of scale and scope, it can leave a company or set of companies in a perceived or actual dominant position, potentially distorting the market.

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<sup>20</sup> *Digital Broadband Content: Digital Content Strategies and Policies* (May 2006), Organization for Economic Co-operation and Development, p. 20

<sup>21</sup> Henton, Anders, Rohan Samarajiva, and William Melody, ‘The Next Step for Telecom Regulation: ICT Convergence Regulation or Multi-sector Utilities Regulation?’, *Learning Information Networking Knowledge Centre*.

<sup>22</sup> ‘A Survey of Telecoms Convergence’, *The Economist*, 14 October 2006, p. 35

Much has been written on what to do about the vertical integration of infrastructure, services and content brought about by convergence and subsequent industry consolidation. The OECD has suggested that one of the major concerns facing governments is that such a combination inevitably leads to an abuse of dominance and that “international vertically integrated enterprises could also reduce the effectiveness of regulations governing market entry into broadcasting such as restrictions on foreign ownership and cross-media ownership.”<sup>23</sup> Some believe that it is critical for the government to take steps to separate out the provision of the access network from wholesale and or/retail services through some sort of corporate separation. Others however argue that forced structural or operational separation of now vertically integrated companies is a “non-remedy for a non-problem” and a move towards “managed competition” which “obscure(s) the self-evident position that every footrace must have a winner and a loser.”<sup>24</sup> Separation also reduces the ability of the network investor to exploit potential new revenue streams if it is no longer integrated with other aspects of the value chain. A separated company is less able to bear strategic investment risks than a larger diversified company, which can be important given the nature of the risky investments that convergence is driving.

Another approach being used in various parts of the world to deal with perceived problems of market dominance and competitive bottlenecks is to mandate the opening up of portions of an incumbent’s networks to competitors under regulated conditions and prices in the form of local loop unbundling (LLU). While the goal of this policy and regulatory tactic is often to promote competition, this paper will address the approach in more detail in the next section in conjunction with issues associated with encouraging investment.

In addition, while policy-makers and regulators must struggle with how best to address this vertical integration relative to their domestic circumstances, the sphere of competition is being simultaneously widened to include non-traditional players, allowing inter-modal or inter-platform competition (e.g., telecommunications providers competing with cable, wireless, satellite or electricity providers). These new players may or may not be subject to similar policy and regulatory goals, pressures or regimes, even though they are now effectively offering substitutable services.

### **Encouraging Investment**

The need for policy-makers and regulators to establish an enabling environment that supports and encourages investment in communications infrastructures as well as the development of new applications and services is tied inextricably to the need to promote competition. It is widely believed that a consistent, transparent, stable and predictable policy and regulatory legal framework is a pre-requisite to commercial entities investing the massive amounts of monies needed to design, build, operate and maintain ICT networks.<sup>25</sup> As convergence begins to take place the competitive landscape changes as outlined above, and policy-makers and regulators grasp with the

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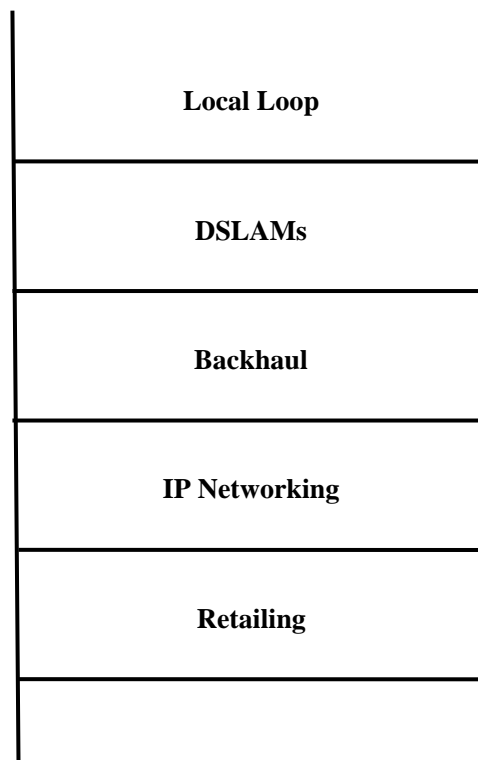
<sup>23</sup> *The Implications of Convergence for Regulation of Electronic Communications* (July 2004), OECD, p. 14

<sup>24</sup> Sidak, J. Gregory and Robert W. Crandall (2002), ‘Is Structural Separation of Incumbent Local Exchange Carriers Necessary for Competition?’, *Yale Journal on Regulation*, p. 411

<sup>25</sup> United Nations (2005), *World Summit on the Information Society Outcome Documents*

changing paradigm. Guaranteeing investment returns, on the scale required for ICT networks, to shareholders can be a real challenge for commercial players who tend to be beholden to their shareholder's concerns regarding maximizing profits.

One widely known approach to encouraging investment in telecommunications that has been embraced by policy-makers and regulators in parts of the world where telecommunications networks were historically a state monopoly is the concept of the "ladder of investment". This theory is based on the notion that the way to facilitate competition across the communications value chain is to mandate non-discriminatory access to the parts of the incumbent's network that are not easily replicable, under regulated terms and conditions. The underlying idea is that if policy-makers and regulators are able to spur competition at the lower rungs of the ladder and entice new entrants into the sector, those new entrants, after seeing a profit and acquiring customers, will be encouraged to move up the ladder and invest in the next layer or rung of the ladder, or with the opening of the networks additional new entrants will be



*Figure 2: Ladder of Replicability for Broadband<sup>26</sup>*

encouraged to invest. Underpinning this theory is the ultimate goal of facilitating full competition across the entire value chain. See Figure 2 for an example of this concept with respect to the provision of broadband networks and services. This model assumes that policy-makers and regulators can correspondingly provide the necessary stimulus for the incumbent to continue to invest as well. In addition credibly signally that access conditions will change over time policy-makers and regulators "must also ensure that the ascent of the ladder is demanding, but feasible, in terms of the distance

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<sup>26</sup> Cave, Martin (2006), 'Encouraging Infrastructure Competition Via the Ladder of Investment', *Telecommunications Policy*, p.226



between the rungs (the incremental investment to be undertaken) and the speed of the ladder's climb."<sup>27</sup>

To implement the ladder of investment concept, policy-makers and regulators in a majority of European countries, where there is general agreement that the local loop is a natural monopoly, have mandated some form of LLU. "As the telecommunications sector was liberalised, the initial focus was on access by an operator to another's conveyance network, to ensure interconnectivity of networks. More recently the focus has shifted to unbundling the local loop."<sup>28</sup> LLU refers to the regulatory process of granting competitors access to the incumbents' telephone exchange central office physical wire connection to the customer or end-user's premises in order to provide competing services further up the ICT value chain or ladder.

As with most policy options, LLU has its supporters and detractors and the implementation of the practice around the world has had mixed results. Some believe that the only way to level the playing field so that competition and investment can occur, in particular where the economic feasibility of duplicating certain assets is questionable is to open up those assets to competitors on clear, transparent and non-discriminatory terms. Proponents argue that it is critical for policy-makers and regulators to continue to regulate asymmetrically so as to "develop mechanisms to promote new entry in order to mitigate the incumbents' very real market power over last-mile access."<sup>29</sup> Others believe that LLU does not take into account the irreversible sunk costs and capital investment that incumbents made while bearing the brunt of market uncertainty. Critics assert that "when regulation reallocates rights from network owners to other users, it substantially impacts investment incentives to create, expand, or modernize telephone networks."<sup>30</sup>

Another concept used to describe some of the investment issues associated with convergence and the deployment of broadband networks is the broadband incentive problem. This theory takes into account that the majority of the converged applications and services being offered are bandwidth-intensive. Given that many of the producers of the bandwidth-intensive applications and services are not owners of the infrastructure but instead have their customers access their products and services via a connection procured from a third party vendor, often using a flat rate pricing model, the third party broadband operator's network is pushed to its limit the more the consumer accesses the products and services of the bandwidth intensive producer (see Figure 3). This requires the broadband operator to invest more to upgrade its' network's capacity, but in a manner that allows them to retain their customers (i.e., avoid dramatic price increases). "Today's prevailing revenue models for mass-market access give broadband operators a perverse incentive: to throttle many innovative, high bandwidth uses of the Internet, rather than to invest in the additional network

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<sup>27</sup> Cave, Martin (2006), 'Encouraging Infrastructure Competition Via the Ladder of Investment', *Telecommunications Policy*, p. 224

<sup>28</sup> Cave, Martin and Ingo Vogelsang (2003), 'How Access Pricing and Entry Interact', *Telecommunications Policy*, p. 718

<sup>29</sup> 'The Broadband Loophole: Is Symmetrical Regulation in the Face of Asymmetrical Market Power Good Public Policy?' (2003), *Phoenix Center Policy Bulletin*, p. 9

<sup>30</sup> Pindyck, Robert S. (2003), 'Mandatory Unbundling and Irreversible Investment in Telecom Networks', *MIT Sloan School of Management Working Paper*, p. 2

capacity needed to support the next generation of bandwidth intensive applications.”<sup>31</sup> This is the basis of the debate on network neutrality where the broadband operators have proposed tiered access pricing on high bandwidth applications in order to recoup their infrastructure investment network costs. This has been opposed by traditional Internet entrepreneurs who believe in the concept of an open Internet that operates unencumbered consistent with the end to end principle. In some markets, the broadband incentive problem is being addressed through the development of local or community-based networks which are then offered on an open access basis to users. In this context the various participants share the investments and maintenance cost of the network.

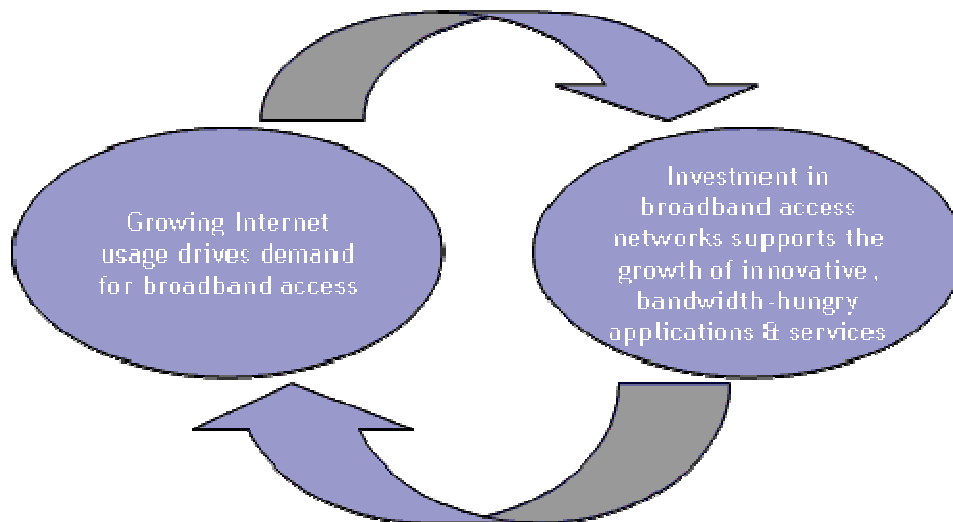


Figure 3: *Broadband cycle of Investment*<sup>32</sup>

### Ensuring Public Interest Goals and Objectives

As with the provision of most goods and services, policy-makers and regulators tend to get involved in the telecommunications sector to ensure that public interest goals and objectives are achieved. These goals and objectives are driven by domestic politics and conditions, but common across most governments when it comes to telecommunications is the concern of universal access. A universal access framework is generally some method of a social pact whereby telecommunications services for consumers, in geographic areas of a country whose location prevents market forces alone from resulting in the provision of telecommunications services (e.g., rural and remote areas), are subsidised. Universal access programmes can take many forms, from industries levies to taxes on consumers in urban areas. Most programmes cover basic voice services provided by the circuit-switched telephony model. “With the advent of convergence, an emerging question is whether access to IP-based networks, in particular via high-speed links, should also be subject to universal access/service provisions.”<sup>33</sup> Correspondingly, policy-makers and regulators are forced by the proliferation of converged services where voice, video and data are indistinguishable,

<sup>31</sup> ‘The Broadband Incentive Problem’ (2005), *MIT Communications Futures Programme Broadband Working Group*

<sup>32</sup> *ibid.*

<sup>33</sup> *A Handbook on Internet Protocol (IP)-Based Networks and Related Topics and Issues*, International Telecommunication Union, p. 13

to consider whether access to broadband services should be included as opposed to access being limited only to circuit-switched voice which as a standalone service is diminishing. Similar concerns are raised by convergence with respect to consumer protection as well as security and privacy.

### **Addressing Human Resource Considerations**

The change in the communications provision paradigm brought about by converging technologies also raises human resource issues for policy-makers and regulators.

Traditionally, [human resource and capacity development] challenges were driven by the ever-evolving telecommunication technology. This has now been overshadowed by the challenges emanated from the restructuring of the telecommunication sector, the convergence of telecommunications with Information Technologies and Multimedia, and the transition towards competition, liberalization and globalization.<sup>34</sup>

As traditional actors innovate, and more and more actors using platforms not previously used for telecommunications services simultaneously develop new applications and services, and it all converges together, policy-makers and regulators struggle to keep up and maintain an environment flexible enough to both support innovation and meet public interest needs. Policy-makers and regulators must also deal with issues of staff retention so as to develop subject matter experts and institutional memory in order to effectively provide a transparent policy and regulatory framework.

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<sup>34</sup> “Human Capacity Building”, International Telecommunication Union



## 2 STATE OF PLAY IN NEW ZEALAND

The telecommunications and broadcasting industries in New Zealand were developed as separate entities through distinct government institutions. Over the years steps have been taken to privatise and liberalise these markets to varying degrees, but little appears have been done to integrate them. Below is a summary of the current ICT regime, including a description of the policy and regulatory structure, and key market players. While this section does address the broadcasting regime in New Zealand, given that the paper deals with convergence of technology platforms, the information presented below is focused on the transmission platforms of the broadcasting industry not on content issues where the government has a sizeable ongoing work portfolio given its commitment to the preservation of national identity and cultural heritage.

### History of ICT Policy and Regulatory Regime

The telephone first made its appearance in New Zealand in 1876. Its development and use, including the training of operators was overseen by the New Zealand Telegraph Department. In 1881, the New Zealand Post Office took over these tasks and the development of a phone network.<sup>35</sup> New Zealand Government intervention in today's ICT sphere was continued in 1903 with the Wireless Telegraphy Act. Through this Act, the government, similar to other government's around the world, laid claim to the country's airwaves and instituted an authorisation regime whereby "every person who erects, constructs, or establishes any station or plant for the purposes of receiving or transmitting communications by wireless telegraphy without having first obtained the consent of the Governor in Council is liable to a penalty."<sup>36</sup> Wireless telegraphy in this case was defined to include every communications method currently known as well as those discovered in the future. Broadcasting, which was studied by a government commission in 1949, did not make its appearance on the New Zealand landscape until 1960. In 1962 the state-owned but independent entity the New Zealand Broadcasting Corporation (NZBC) was formed.<sup>37</sup>

### The Telecommunications Environment

Telephone development in New Zealand continued with the Post Office having a statutory monopoly on the provision of telecommunications services until the late 1980s when, after 15 years of relative economic downturn and recognising global trends, there was a shift in the economic approach of the government towards competitive markets. As a result, telecommunications activities were separated from postal activities and the telecommunications operator was commercialised in the form of Telecom Corporation, a state-owned enterprise. "The aim of this reform was to improve the industry's economic performance and increase consumer benefits by creating a competitive, open entry telecommunications market supported by general competition law."<sup>38</sup> In 1990, Telecom was privatised. As part of the sale conditions, the government negotiated the "Kiwi Share" which required Telecom to meet certain conditions with respect to maintaining phone serve and free local calling. At this time, the government decided not to create a sector-specific telecommunications

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<sup>35</sup> *New Zealand Communications Timeline* (January 2004)

<sup>36</sup> *Wireless Telegraphy Act* (1903), New Zealand Government

<sup>37</sup> 'History of Television', TVNZ

<sup>38</sup> Ministry of Economic Development (2001), 'New Zealand Telecommunications 1987-2001', p. 3

regulator and instead opted to take a light-handed regulatory approach relying largely on generic competition legislation (primarily the New Zealand Commerce Act of 1986 and the Fair Trading Act of 1986) and the Commerce Commission – an economy wide anti-trust regulator.

Ten years later, with competition levels not as high as anticipated, the government launched a Ministerial Inquiry in 2000 to assess whether or not the current regime was working towards meeting its stated objective of ensuring “that the regulatory environment delivers cost efficient, timely, and innovative telecommunications services on an ongoing, fair and equitable basis to all existing and potential users.”<sup>39</sup> The group was tasked with examining issues such as interconnection, the Kiwi Share, network management and numbering, and proposing remedies, as needed. An extensive consultation process revealed continuing concerns about Telecom’s dominance given their ability to leverage a ubiquitous former state-owned network and possibly delay or overcharge new entrants that needed to interconnect, as well as concerns with the existing universal service scheme. Ultimately it was proposed that New Zealand move away from a general reliance on competition law and adopt a sector-specific regulatory regime via an Electronic Communications Act.

Consequently, an industry-specific regulatory regime was introduced into New Zealand in 2001 via the Telecommunications Act. With regulation for the long-term benefit of end users being the touchstone, the Telecommunications Act was developed with the following principles in mind:

- Preference for commercially negotiated outcomes;
- Clear thresholds for removing regulation as well as for imposing it;
- Encouragement of industry self-regulation;
- Flexibility for the regulator to resolve disputes at the request of the parties;
- Transparent formulation and operation of regulations;
- Consistent rules, consistently applied to provide certainty for the industry;
- Maintaining incentives for investment;
- Compliance with international rules on telecommunications; and
- Technology-neutral regulation.<sup>40</sup>

The 2001 Act established a specific Telecommunications Commissioner in the Commerce Commission, identified types of regulated services and, established a dispute resolution process. An industry self-regulation mechanism was incorporated to encourage the industry to agree codes of practice on select issues, which facilitated the creation of the Telecommunications Carrier Forum (TCF). Processes for adding, altering or extending regulation were also established. Lastly, a process was created for costing and allocating universal service through the Telecommunications Service Obligations (TSO) but which continued to be based around the Kiwi Share agreement negotiated between the Crown and Telecom.<sup>41</sup> The Kiwi Share agreement was concurrently re-negotiated and updated in 2001. It was decided not to pursue LLU at that time, but the Telecommunications Act did require the Telecommunications Commissioner to undertake a review of LLU by 2003.

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<sup>39</sup> *Ministerial Inquiry into Telecommunications – Final Report* (2000), New Zealand Government, p.1

<sup>40</sup> Swain, Paul (2007), ‘The New Zealand Telecommunications Sector: An Overview’

<sup>41</sup> *Telecommunications Act 2001* (2001), New Zealand Government

While it was thought these reforms would be sufficient to meet the needs of most New Zealanders, the geographic realities and urban/rural divide of the country caused the government to also undertake an initiative aimed at increasing broadband access in rural areas. Through Project PROBE, which was launched in 2002, the government offered NZ \$45 million in subsidies to set up broadband networks in areas where it believed the commercial incentives were lacking. Aimed primarily at connecting schools it was thought that the “extension of broadband coverage would bring enhanced benefits to rural communities in the form of improved access to health and social services, and to the wide range of other public services and information that is already on the internet.”<sup>42</sup>

In the meantime the Telecommunications Commissioner began the review of LLU and access to, and interconnection with Telecom’s fixed network that was mandated in the 2001 Telecommunications Act. After an extensive review and consultation process, including a last minute offer by Telecom of a market-based solution, the Commission thought that potential benefits of full LLU were limited. Consequently, it advised the Minister against implementing full LLU and instead recommended the introduction of a limited speed Unbundled Bitstream Service (UBS).<sup>43</sup> UBS allows competitors to purchase a data stream from the incumbent so that they can then sell branded services to their customers, thus introducing competition in terms of a type of resale market. In addition, Telecom promised to deliver 250,000 new residential broadband connections by the end of 2005.<sup>44</sup> The government agreed with this recommendation; however, an implementation review of the 2001 Telecommunications Act was requested.

In 2005, the government issued the Digital Strategy, a comprehensive action plan aimed at “ensuring New Zealand is a world leader in using information and technology to realise its economic, environmental, social and cultural goals.”<sup>45</sup> The Digital Strategy set out the enhanced development of content, confidence and connection, as necessary parallel requirements for a world class ICT environment, and identified critical government actions underway as well as evaluation mechanisms. The Digital Strategy was an attempt to bring together all of the ICT-related activities undertaken by the various New Zealand government ministries into one complete package. While a variety of Ministries are involved in the three tracks, the connection track involves only the Ministries of Economic Development and Education as well as the Commerce Commission.

Later that same year, the implementation review of the 2001 Telecommunications Act was completed by the Ministry of Economic Development (MED). It identified a number of problems with the current Act and proposed recommendations for amending the Act to make it more effective, namely streamlining its processes and introducing enhanced procedures to prevent potential gaming of the system by the

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<sup>42</sup> Mallard, Trevor (2003), ‘Gov’t Pushes High Speed Internet Into Rural NZ’, New Zealand Government

<sup>43</sup> Commerce Commission (2003), *Telecommunications Act 2001: Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*

<sup>44</sup> Swain, Paul (2004), ‘Telecommunications in New Zealand 2004’, New Zealand Government

<sup>45</sup> *The Digital Strategy* (May 2005), New Zealand Government

operators.<sup>46</sup> This coupled with concerns over New Zealand's placement in OECD broadband rankings at the time (bottom third of 30 industrialised nations), caused the government to call for a stock-take of the telecommunications sector.

The stock-take revealed that the government's goals were not being furthered in a sufficient manner and confirmed once again that there was limited competition in the New Zealand telecommunications market, particularly in the provision of broadband. In addition, Telecom had failed to live up to its earlier commitments of delivering 250,000 new residential broadband connections by the end of 2005, something it had done to forestall mandatory LLU. Amendments to the 2001 Telecommunications Act were consequently put forward by the Cabinet and ultimately adopted.<sup>47</sup> The key components were implemented via the Telecommunications Amendment Act 2006, which included the introduction of full LLU, the removal of the constraints on the regulated UBS, including providing for "Naked DSL", and the requirement for Telecom to establish operationally separate access network, wholesale and retail groups.

### **The Broadcasting Environment**

The broadcasting regime took a similar path in terms of government involvement and ownership. In addition to the NZBC, a state-owned entity supervising the one channel that was being offered, in 1969 the New Zealand Broadcasting Authority was created to monitor standards as well as review radio license applications.<sup>48</sup> In 1975 a second television station was introduced with both stations operated as independent corporations overseen by the NZBC.<sup>49</sup>

The Broadcasting Act of 1976 slightly altered this structure while reinforcing the legal rationale for continued strong government involvement in the sector. Specifically, the NZBC was dissolved in favour of the Broadcasting Corporation of New Zealand (BCNZ), which in addition to overseeing the two national television stations, collected the television license fee, and served as the principal advisor to the government on broadcasting matters. This Act also established the New Zealand Broadcasting Tribunal to license broadcasting stations.<sup>50</sup> A few years later the two television stations were formally combined as Television New Zealand (TVNZ) under the BCNZ.

A review of the broadcasting regime, consistent with a general re-thinking of New Zealand's economic philosophy, was undertaken in the late 1980s. It was reported that the structure at the time was inefficient and did not facilitate competition given the conflicting commercial and non-commercial responsibilities of the various institutions involved.<sup>51</sup> Ultimately the government decided to amend the 1976 Act to separate the government's commercial and non-commercial objectives. "These objectives were to be met through the continued government ownership of two

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<sup>46</sup> Cunliffe, David (2005), 'Cabinet paper reporting the outcome of the Implementation Review of the 2001 Telecommunications Act', New Zealand Government

<sup>47</sup> *Telecommunications Stock-take*, New Zealand Cabinet Policy Committee, Minutes of Decision

<sup>48</sup> Ministry of Culture and Heritage (2003), '*Broadcasting in New Zealand: A 2003 Stock-take*', p.9

<sup>49</sup> 'History of Television', TVNZ

<sup>50</sup> Ministry of Commerce (1997), '*Broadcasting Policy in New Zealand*'

<sup>51</sup> *ibid.*



television channels and at least two radio networks; through conditions relating to universal coverage and programme content; and through a system of public service broadcast grants, bid for competitively by broadcasters.”<sup>52</sup> In 1988, the BCNZ was dissolved, TVNZ was established as a state-owned enterprise and took over responsibility for TV 1 and TV 2, and the transmission assets (both sites and facilities) of BCNZ were transferred to Broadcast Communications Limited (BCL), a subsidiary of the newly formed TVNZ. In addition, the role of policy advisor to the government was shifted to the Department of Trade and Industry.<sup>53</sup>

The following year, 1989, a new Broadcasting Act was introduced. In addition to attempting to facilitate competition and introduce efficiencies, restrictions on foreign ownership and advertising hours were reduced, and changes were made to election programmes.<sup>54</sup> The same year BCL, a subsidiary of TVNZ operating transmissions assets, was incorporated. Over the next seven years the Broadcasting Act of 1989 was amended three times to further reduce existing restrictions, as well as to establish Te Reo Whakapuaki Iirangi to promote the Maori language and culture.

A stock-take of the broadcasting sector was undertaken in 2003. Driven by the desire of the government to reconsider the commercial drive of broadcasting that emerged from the reforms in the 1990s, the goal of the stock-take was to establish a shared starting point so that discussions could begin about the future of broadcasting in New Zealand.<sup>55</sup> After the stock-take, the Television New Zealand Act 2003 was adopted. The main purpose of the Act was to “provide for the existing State enterprise Television New Zealand Limited to be split into a Crown entity conducting a television business and a State enterprise conducting a transmission business.”<sup>56</sup> A Charter to codify TVNZ public service objectives was adopted and the broadcasting transmission facilities separated out in BCL were transformed into a state-owned enterprise, meaning it is wholly owned by the Crown. In 2006, BCL changed its name to Kordia. In the context of the broadcasting industry in New Zealand it should be noted that underpinning the policy and regulatory approach taken over the years is the government’s commitment to preserving and promoting New Zealand’s cultural identity and heritage.

## **Current ICT Policy and Regulatory Structure**

In New Zealand telecommunications and broadcasting issues are addressed by two distinct policy and regulatory structures. Telecommunications policy, including spectrum management for commercial entities, is the responsibility of the Minister of Communications who is served by the Information Technology and Telecommunications Team and the Radio Spectrum Management Team at the MED.

As mentioned previously, the Telecommunications Act of 2001 established a sector-specific Commissioner in the Commerce Commission. The Telecommunications Commissioner is appointed by the Governor General on the recommendation of the Minister of Communications. The 2001 Act also empowered the Commission to

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<sup>52</sup> Ministry of Commerce (1997), “*Broadcasting Policy in New Zealand*”

<sup>53</sup> Ministry of Culture and Heritage (2003), ‘Broadcasting in New Zealand: A 2003 Stock-take’, p.9

<sup>54</sup> *ibid.*

<sup>55</sup> *ibid.*, p2

<sup>56</sup> *Television New Zealand Act* (2003), New Zealand Government

resolve disputes, administer the TSO, and approve industry codes of practice developed by the industry through the Telecommunications Carriers Forum. The 2006 Amendment in addition to providing the Commission with more monitoring responsibilities also gave it the ability to develop industry codes of practice.

The Telecommunications Act of 2001 also identified specific types of regulated services which the Telecommunications Commissioner reviews every five years in order to make recommendations to the Minister on what services should continue to be regulated. The same process is used by the Telecommunications Commissioner for recommending regulation of new services. The Minister can accept, reject or request the Commission to reconsider their advice regarding service regulation but cannot modify it. As a result of the Telecommunications Amendment Act of 2006, the Commission is now required to have regard to statements of economic policy of the government to the Commission when considering service regulation. Decisions and/or recommendations of the Telecommunications Commissioner must be supported by two other Commerce Commissioners to be final.

The Commission can now set minimum terms and conditions of access on a multilateral basis to a regulated service on its own initiative without having to wait for a request from an industry player, as was previous practice. From the Ministry's perspective, "the most important function of the Commission is to resolve disputes between service providers to facilitate competition in the provision of telecommunications services."<sup>57</sup> The Commission is funded through levies placed on the industry and an annual purchase agreement is agreed between the Ministry and the Commission for the dispersal of funds.

The broadcasting industry is overseen generally by the Minister of Broadcasting, - supported by staff from the Ministry for Culture and Heritage. The Minister oversees the agencies that address broadcasting issues including the Broadcasting Standards Authority and NZ on Air (Broadcasting Commission). The former is involved in standards and consumer protection and the latter in the development and funding of local content. TVNZ, a Crown entity company, has the Ministers of Broadcasting and Finance as shareholders. The Minister of Broadcasting is also involved in the allocation of spectrum management for non-commercial users.<sup>58</sup>

Kordia which controls the broadcasting transmission facilitates that were initially funded by the New Zealand government is a state-owned enterprise. As such, it is subject to the State-Owned Enterprise Act of 1986 and the Ministers of Finance and State-Owned Enterprises are the shareholding ministers.

The Crown is assisted in the running of SOEs and other Crown-owned companies by the Crown Company Monitoring Advisory Unit (CCMAU), a semi-autonomous unit in the New Zealand Treasury. "This typically relates to the companies' financial performance, position and outlook."<sup>59</sup> CCMAU staff advises the Minister of Broadcasting in relation to TVNZ, while they advise the Minister of State-Owned

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<sup>57</sup> Ministry of Economic Development (2002), *Briefing to Incoming Ministers: Communications and the Information Technology Portfolio*, p.4

<sup>58</sup> Ministry for Culture and Heritage (2005), *Briefing to the Incoming Minister of Broadcasting: Hon Steve Maharey*, p. 18

<sup>59</sup> *ibid.*

Enterprises with respect to Kordia. A Minister is involved in the board appointments of all entities, either directly or indirectly (e.g., advice to the Governor-General, as a shareholding Minister). Shareholding Ministers are accountable to the House of Representatives for “the performance of their functions, powers and duties in respect of Crown companies, while the board of each company remains responsible for compliance by the company with its obligations.”<sup>60</sup>

## Key Market Players

The New Zealand telecommunications market is dominated by the incumbent, Telecom New Zealand. Telecom, as the privatised former government-owned monopoly, owns and operates the only full service network in New Zealand. It is dominant in the provision of fixed network telecommunications services such as telephone access line service, residential telephone calls, and point-to-point fixed-line data services. Telecom also shares duopoly status with Vodafone in the provision of mobile services, and its Internet sub-division, Xtra, is New Zealand's largest ISP. Telecom is the only New Zealand company traded on the New York Stock Exchange, and a majority of current regulatory intervention is targeted at opening up Telecom's access networks to competitors. It is also subject to the TSO, formerly the Kiwi Share, which is a contractual agreement brokered between the government and Telecom when it was privatised so that the government could continue to meet its social objectives in telecommunications. It is New Zealand's equivalent of universal service obligation and among other things maintains free local calling for residential telephone service.

Below is a summary of some other key retail players in the New Zealand ICT environment.

- TelstraClear: The second largest fixed-line network operator in New Zealand. The company operates a national fibre backbone network connecting main metropolitan areas, combined with a local access network providing fixed-line services to Central Business Districts (CBD) and residential areas, focused on medium to large sized business.”<sup>61</sup> It operates a cable network in Wellington and Christchurch on which it offers cable television, phone and Internet service.
- Vodafone: The largest mobile operator in New Zealand. It has national mobile network coverage with significant backhaul capacity and offers voice and data services. The latter are provided by subsidiary ISP ihug which it purchased in 2006, which also offers a fixed-line alternative to Telecom. It currently shares duopoly status with Telecom for mobile service in the New Zealand market. “On the basis of revenue and network coverage, Vodafone is the second largest operator in New Zealand.”<sup>62</sup>

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<sup>60</sup> Crown Company Monitoring Advisory Unit (2005), ‘*Briefing to the Incoming Minister for State-Owned Enterprises*’, p. 21

<sup>61</sup> 2006: *Telecoms Overview, Statistics and Analyses in New Zealand* (December 2005), Paul Buddle Communications, p. 21

<sup>62</sup> *Telecommunications Industry Investment in New Zealand* (April 2006), Network Strategies Final Report for the Ministry of Economic Development, p. 14

- Woosh Wireless: Offers a range of wireless voice and data solutions over its broadband wireless access network, which is currently limited to Auckland, Wellington, Canterbury and Southland. It also offers fixed broadband to existing Telecom customers.
- CallPlus: New Zealand's third largest communications provider, and prides itself on being 100% New Zealand owned. CallPlus is primarily a reseller of Telecom services and "provides residential and business customers with a full range of Internet, voice and data services."<sup>63</sup>
- Kordia: A wholly-owned subsidiary of the state-owned enterprise Transmission Holdings Limited and former transmission arm of Television New Zealand. Kordia supplies transmission and linking services to the broadcast and telecommunications industries in New Zealand with its broadcast network covering over 99.8% of the country. In terms of telecommunications it focuses on wholesale access and is a competitor to Telecom providing an alternate core network in some parts of the country. However "as a wholesale only operator it has avoided most regulatory issues to date."<sup>64</sup>
- Vector: A subsidiary of Vector Limited, a multi-infrastructure network organisation. Vector owns an open-access fibre-optic network that operates in metropolitan areas, primarily Auckland and Wellington. Similar to Kordia, it is a wholesale provider.
- Sky: New Zealand's only pay TV content provider and operates a nationwide satellite network with digital services capable of serving nearly 100% of New Zealand homes. Sky's "position is unrivalled due to its ownership of TV rights to key sports (i.e., rugby) and Hollywood movies and television series."<sup>65</sup>

There are also a number of urban fibre networks that have been or are in the process of being developed. Initially for use by utility companies, some are now being offered on an open access basis and in the North Island are often connected by FX Networks. FX Networks owns and operates a fibre-optic backbone network throughout the North Island, with points of presence at major cities in the South Island via partners.

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<sup>63</sup> 2006: *Telecoms Overview, Statistics and Analyses in New Zealand* (December 2005), Paul Buddle Communications, p. 26

<sup>64</sup> *Telecommunications Industry Investment in New Zealand* (April 2006), Network Strategies Final Report for the Ministry of Economic Development, p. 86

<sup>65</sup> *ibid.*, p. xiv

**Table 1: Major Communications Providers in New Zealand and the Type of Services Offered**

<b>Company</b>	<b>Voice (Fixed)</b>	<b>Video (TV)</b>	<b>Data (Internet)</b>	<b>Wireless</b>
Telecom	X		X	X
TelstraClear	X	X (limited coverage)	X (limited coverage)	
Vodafone	X		X	X
Woosh	X		X	
CallPlus	X		X	
Kordia (wholesale provider only)	X	X	X	
Vector (wholesale provider only)	X (metropolitan coverage only)	X (metropolitan coverage only)	X (metropolitan coverage only)	
Sky		X		

### **Recent Developments**

The New Zealand Government continues to push forward with its reform of the telecommunications sector to facilitate broadband access. In April 2007 a consultation document on the operational separation of Telecom into three separate business units, as mandated by the 2006 Telecommunications Amendment Act, was released. While the document garnered support from most of the New Zealand communications industry, Telecom instead of commenting on the proposal submitted a counter-proposal. Citing concerns of investment incentives, Telecom proposed a structural separation of its access network with a request for a regulatory contract between the government and Telecom guaranteeing certain levels of network investment and rates of return on that investment.

The government responded by putting Telecom's proposal out for comment. Most commenters, even the few that were sympathetic with respect to investment concerns, did not support Telecom's call for a revised regulatory model or accept its guarantees with respect to future deregulation. Nor did they believe that operational separation or the implementation of full LLU should be held up while structural separation is considered. From recent announcements, it seems that the government is committed to moving forward as originally planned. This sentiment was recently voiced by David Cunliffe, Minister of Communications:

In case anyone has missed the implication, let me state this clearly and for the record. We will not go backwards and reverse the Telecommunications Amendment Act or be changing what is a fundamentally now a sound, best practice [European] regulatory framework.<sup>66</sup>

Concurrently, the Commerce Commission has begun the process of determining the standard terms for the implementation of LLU and other regulated services – alongside industry working parties. Telecom has recently requested an extension to provide its first standard terms proposals for LLU but the Commission has declined. The Commissioner responded that:

While I understand Telecom's position, I am concerned by the need to ensure the integrity of the process for all parties and prompt delivery to the market of these key services that will promote competition in telecommunication markets.<sup>67</sup>

Other key issues in the New Zealand telecommunications market include a recent decision by the government to reject the recommendation of the Commerce Commission to regulate mobile termination rates, even though New Zealand's are some of the highest in the world. The reaction to this decision by TelstraClear, a prominent player thought to be a potential third mobile operator, was that it was "highly unlikely" that Telecom and Vodafone would face competition unless regulatory conditions changed."<sup>68</sup> The government, however, believes that the current review of co-location and mobile roaming by the Commerce Commission will address some of these perceived competition concerns. In addition, a review of New Zealand's universal service framework, the TSO, as well as a spectrum auction in the 2.3 and 2.5 GHz bands primarily for wireless broadband, are also pending in the coming year. The latter is seen as particularly promising in terms of the potential development of wireless broadband networks to compete with the current fixed-line monopoly.

With respect to infrastructure issues in the broadcasting space, work streams appear to be rather limited. Although there was a change to the 1989 Broadcasting Act to support government funding of digital content, telecommunications and broadcasting policy and regulatory issues are for the most part viewed as different niche markets. This however, looks poised for potential change with the recent release from the Ministry of Culture and Heritage of the terms of reference for a review of regulation for digital broadcasting. The purpose of the review is to "take broadcasting policy as its starting point, and will address issues under the broad headings of competition law, standards and copyright. It will also, however, consider the implications for regulatory policy of the convergence between broadcasting, telecommunications and the Internet."<sup>69</sup>

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<sup>66</sup> Cunliffe, David (2007), 'Delivering on telecommunications: Address to TUANZ Telecommunications Day Conference.'

<sup>67</sup> 'Regulator to Stick to Local Loop Unbundling Timetable,' *New Zealand Press Association*

<sup>68</sup> Twose, Helen, "TelstraClear: You're Stuck With Big Two," *New Zealand Herald*, 8 June 2006, p. C3

<sup>69</sup> Ministry for Culture and Heritage (2007), '*Review of Regulation for Digital Broadcasting: Terms of Reference*', New Zealand Government

**Table 2: Key New Zealand ICT Statistics**

<b>General</b>	
GDP	US\$98.77 billion*
GDP per capita	US \$26,000*
Population	4,076,140*
Total land area	268,680 sq km*
Percent of population Rural	13.8%**
<b>ICT General</b>	
Effective Teledensity (per 100 inhabitants)	87.61***
Fixed telephone subscribers	1,800,500***
Mobile telephone subscribers	3,530,000***
Internet users	3,200,000***
Digital Broadband subscribers	611,600**
DSL	493,300**
Other (in rank order: cellular, wireless, cable, satellite and other)	118,300**
Digital Broadband subscribers (per 100 inhabitants)	15.00
<b>ICT Pricing</b>	
Mobile	Local calls – US \$0.50*** SMS – US \$0.13***
Broadband (monthly charge)	256 kbps = US \$55.61 2,048 kbps = US \$42.20***
Price per 100 kbps	US \$2.06***
Broadband data cap	97.6% of New Zealanders have a data allowance cap, 2/3 are under 5gbps

\*CIA Factbook (2006 est.), \*\*Stats New Zealand (as of September 30, 2006), \*\*\*International Telecommunication Union (ITU)





### **3 STATE OF PLAY IN THE UNITED STATES**

The telecommunications and broadcasting industries in the United States were developed by private industry, as was the case for their predecessor the telegraph. This was contrary to other parts of the world where direct government ownership and investment was common. However, while both industries were commercially developed and managed, they operated for years in de facto monopoly environments, sanctioned by the government at both federal and state levels. Both industries were and continue to be overseen by the same institutions. While heavily regulated by sector-specific regulation in the earlier years, the United States approach to ICT policy in more recent times has been one of deregulation and encouragement of inter-modal competition between and among converging technology platforms. Below is a brief summary of the key points in the history of the United States ICT policy and regulatory regime, a description of the current structure, identification of some of the key market players and an overview of recent policy and regulatory developments.

#### **History of ICT Policy and Regulatory Regime**

The telephone made its appearance in the United States in 1876 when it was introduced by Alexander Graham Bell in Boston, Massachusetts. With two patents in hand and financial backers, Bell went on to found the Bell Telephone Company. Only a few years after Bell's invention, the Bell Telephone Company laid the foundation for what was to become the "Bell Operating System" by opening licensed telephone exchanges in every major city in the United States and being granted a charter by the federal government to build and operate a long distance network. Ultimately the company would evolve into the American Telephone and Telegraph Company (AT&T) and would dominate the development of telecommunications in the United States for generations.<sup>70</sup> Television broadcasting, with its roots in radio broadcasting which is thought to have begun as early as 1909, was developed commercially by the three major operators, the American Broadcast Company (ABC), the National Broadcasting Company (NBC) and the Columbia Broadcasting System (CBS) with all three having regular over the air broadcasting by 1946. Driven by consumer demand and the limited ability of over the air broadcast signals to reach certain geographically isolated locations, the cable television industry developed a few years later.<sup>71</sup>

#### **The Communications Environment**

The first regulatory statute adopted to deal with communications issues in the United States was the 1866 Telegraph Act. Responding to critics of the Western Union telegraph monopoly it was adopted under the guise of facilitating competition. A few years later further legislation, the Mann-Elkin Act of 1910, was passed that named both AT&T in terms of telephony and Western Union, its parent company, in terms of telegraphy, common carriers and thus placed them under the jurisdiction of the first independent federal agency, the Interstate Commerce Commission (ICC). The common carrier designation meant that both companies had to offer services on a non-

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<sup>70</sup> 'Milestones in AT&T History', AT&T

<sup>71</sup> 'Oral History Collection: John Walson', The Cable Center Education and Resource Center

discriminatory basis at reasonable rates set by the ICC.<sup>72</sup> By 1912, the federal government through the Department of Commerce was requiring licenses for radio broadcasting, although the Department did not effectively have the authority to deny any requests. It was under this federal framework that the subsequent communications policy and regulatory regime developed in the United States. It is important to note that intrastate commerce, including communications, was and to some degree today continues to be regulated by each of the 50 State utilities regulatory bodies, further complicating the United States landscape.

By the mid-1920s the proliferation of commercial radio stations had reached nearly 1,000. While licenses were officially required, the Department of Commerce's ability to manage interference issues were limited. In 1927 Congress passed the Radio Act which "established a commission [Federal Radio Commission (FRC)] charged with dividing the spectrum into different classes of stations and issuing licenses to broadcast at particular frequencies, times, locations and power levels."<sup>73</sup> Ultimately the provisions of the Radio Act were merged into the Communications Act of 1934. This Act, which to this day serves as the basis for commercial communications regulation in the United States, created the Federal Communications Commission (FCC). "For the purpose of regulating interstate and foreign commerce", the new Commission was given the powers of the FRC as well as the ability to regulate interstate and international telegraphy and telephony.<sup>74</sup>

Consistent with the United States' balance of power structure amongst the Executive, Legislative and Judicial branches of government, a communications policy and regulatory function has always simultaneously resided in the Executive Branch. For example, in 1922, the Interdepartment Radio Advisory Committee (IRAC) was created by the Commerce Department as an independent agency to advise the President and Executive Branch agencies on frequency allocation and spectrum management issues given the interference issues referenced above. Predating the FRC and the FCC, the IRAC was set up to oversee federal government use of the radio spectrum. The Communications Act of 1934, given the concerns of the military that an independent agency might give insufficient weight to military requirements, "makes it clear that radio stations belonging to and operated by the United States are not subject to regulation by the FCC" and the right to allocate frequencies for government departments resides with the President.<sup>75</sup>

This structure of the FCC dealing with commercial, and state and local spectrum issues in addition to interstate and international telegraphy and telephony, and the IRAC, in some form or another, dealing with government spectrum use continued until 1951 when President Truman established the position of Telecommunications Advisor to the President. "The Telecommunications Advisor was to assist and advise the President on such matters as coordinating the development of telecommunications policies and standards and assuring high standards of telecommunications

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<sup>72</sup> Wu, Tim, 'A Brief History of American Telecommunications Regulation'. Oxford Encyclopedia of Legal History, p. 2

<sup>73</sup> *ibid.*, p. 4

<sup>74</sup> 'Communications Act of 1934: as amended by the Telecommunications Act of 1996', United States Government

<sup>75</sup> Coase, R.H. (1962), 'The Interdepartment Radio Advisory Committee', *Journal of Law and Economics*, vol. 5, p. 17

management in the Executive Branch of government.”<sup>76</sup> This new Advisor was also given the responsibility of overseeing the IRAC and cooperating with the FCC but of course given the separation of powers had no authority over the FCC.

Continued reorganizations saw this Executive Branch role change form but not function several times in the subsequent years. In 1953 the responsibility was shifted under the Director of Defense Mobilization, and in 1962 it moved to the Office of Emergency Planning. In 1970 the functions were moved to the Office of Telecommunications Policy (OTP) by Executive Order 11556. Based on the notion that telecommunications, in particular spectrum management should not be politicised, the functions of the OTP were moved via Executive Order 12046 to the newly created National Telecommunications and Information Administration (NTIA) which was placed inside the Department of Commerce.<sup>77</sup> However, keeping in mind the importance of the issues the Administrator of the NTIA/Assistant Secretary for Communications and Information was tasked with reporting directly to the Secretary of Commerce and the President.

During this period of Executive Branch reorganisation, cable television joined telephone and over the air commercial broadcasting in terms of falling under the jurisdiction of the FCC. “By the late 1950s, cable systems had grown into a potential competitor to broadcast television and the broadcasters launched an effort to protect their markets against cable using state and federal lawsuits.”<sup>78</sup> After a series of court proceedings and public inquiries, the FCC through its First Report and Order on Community Antenna Television (CATV) asserted the power to regulate cable television. Cable television was based on a subscription model as opposed to over the air broadcasting or “free” television, which relies on access to the radio frequency spectrum, and had to this point been left unregulated given the view that it was a supplement to over the air broadcasting not a competitor. The FCC’s policy with respect to broadcasting had been driven by a desire to ensure that localism in broadcasting was preserved and by the late 1950s cable TV challenged this as programming could come from any source.<sup>79</sup> In addition to coming under federal rules, the need to be granted local franchising authority was also imposed on the cable industry, effectively limiting its growth.

Concurrently, telephony in the United States continued primarily under the AT&T vertically integrated (i.e., local calling, long distance calling, equipment production and distribution) monopoly. However, as technologies improved and competitors tried to enter the telecommunications market, AT&T took action to block rivals and the domestic monopoly began to face criticism.<sup>80</sup> What began in 1974 as an anti-trust action by the Department of Justice against AT&T, took almost ten years and a

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<sup>76</sup> Coase, R.H. (1962), ‘The Interdepartment Radio Advisory Committee’, *Journal of Law and Economics*, vol. 5, p. 19

<sup>77</sup> ‘Executive Order 12046--Relating to the transfer of telecommunications functions’, United States Government

<sup>78</sup> Wu, Tim, ‘A Brief History of American Telecommunications Regulation’. Oxford Encyclopedia of Legal History, p. 7

<sup>79</sup> Verrill, Charles O. Jr. (Summer 1969), ‘CATV’s Emerging Role: Cablecaster or Common Carrier’, *Law and Contemporary Problems*, vol. 34, no. 3 Communication: Part 2, pp. 589

<sup>80</sup> Atkin, David A., Tuen-Yu Lau, and Carolyn A. Lin (2006), ‘Still on Hold? A Retrospective Analysis of Competitive Implications of the Telecommunications Act of 1996, on its 10<sup>th</sup> Year Anniversary’, *Telecommunications Policy*, vol. 30, pp. 81

federal judge to finally force the break up of the Regional Bell Operating System under AT&T. Termed the Modified Final Judgement, an agreement was reached whereby the then “twenty two RBOCs were formed into seven regional holding companies (Bell Atlantic, NYNEX, BellSouth, Ameritech, U.S. West, Pacific Telsis, and Southwester Bell). These divested companies were not allowed to provide long-distance services in their territories or manufacture telecommunications equipment, both of which were businesses that remained with AT&T. Likewise, AT&T was precluded from providing local telephone service in competition with the RBOCs and from acquiring stock in any of the RBOCs.”<sup>81</sup>

While onerous sector-specific regulation continued in the 1980s and early 1990s, the next major event in the US ICT landscape was the 1996 Telecommunications Act. In an attempt to deal with changes in technology and the recognition that a stove-piped approach was only hindering competition in local phone service Congress revamped the rules. “The highly deregulatory Act dismantled decades-old barriers separating the cable, broadcasting and telephone industries.”<sup>82</sup> Under the new regime AT&T was permitted to return to selling local phone service and the RBOCs were allowed to merge and enter the long distance market. In addition, the local loops of the RBOCs were to be opened up via LLU so as to encourage new entrants and competition. Termed the unbundled network elements-platform (UNE-P), the FCC set terms and conditions, including prices, that the RBOCs or incumbent local exchange carriers (ILECs) could charge to competitive entrants, referred to in the United States as Competitive Local Exchange Carriers (CLECs). This forcible opening up of telecommunications networks was not similarly imposed on cable operators who, although controlling similar assets, were not considered common carriers and thus not subject to the new rules.

The FCC periodically reviewed the progress of the 1996 Act’s implementation. While there had been growth in the number of CLECs and there were lower prices for consumers, there was however little to no investment in the access networks that all these services depended upon. The ILECs did not invest in or upgrade their networks and the new entrants became little more than resellers and failed to invest in infrastructure. The mandatory unbundling rules that the FCC adopted decreased “the incentives of both ILECs and CLECs to invest in existing facilities and new technologies by lowering the expected returns and increasing the weighted-average cost of capital for each group of firms.”<sup>83</sup> In addition the FCC’s rules detailing the implementation of UNE-P were extensively litigated at multiple judiciary levels.

In the 2002 Triennial Review the FCC reversed its position and decided to phase out UNE-P, effectively ending regulated LLU in the United States. This resulted in a number of CLECs, including AT&T and MCI, being unable to provide services to their customers, as they could not agree on UNE-P pricing terms with the ILECs in an unregulated environment. Ultimately both were acquired by consolidated RBOCs

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<sup>81</sup> Wu, Tim, ‘A Brief History of American Telecommunications Regulation’. Oxford Encyclopedia of Legal History, p. 7

<sup>82</sup> Atkin, David A., Tuen-Yu Lau, and Carolyn A. Lin (2006), ‘Still on Hold? A Retrospective Analysis of Competitive Implications of the Telecommunications Act of 1996, on its 10<sup>th</sup> Year Anniversary’, *Telecommunications Policy*, vol. 30, p. 92

<sup>83</sup> Jorde, Thomas M., J. Gregory Sidak, and David J. Teece (2000), ‘Innovation, Investment and Unbundling’, *Yale Journal on Regulation*, vol. 17, p.5

(e.g., AT&T by SBC which had also acquired Bell South and then re-branded itself as AT&T, and MCI by Verizon which was made up of Bell Atlantic, NYNEX and Ameritech). At the same time, the FCC declined once again to regulate the cable industry, which by this time was offering Internet and voice services via cable modems. Shifting fully towards a deregulatory approach, the United States began a process of attempting to level the playing field so that all services, regardless of the platform they travelled across, were treated the same way. The goal was to encourage facilities-based competition by deregulating once heavily regulated services so they could compete with other platforms that were less regulated (e.g., competition between RBOCs, cable and new technology platforms such as wireless).

## **Current ICT Policy and Regulatory Structure**

While telecommunications and broadcasting are overseen by the same agencies, the dichotomy in United States ICT policymaking and regulation described above continues today. The NTIA serves as the principal advisor to the President on all domestic and international communications and information policy issues as well as the federal spectrum manager. The FCC on the other hand is directly responsible to Congress and is charged with regulating interstate and international communications by radio, television, wire, satellite and cable. FCC decisions are not subject to the approval of the NTIA or any other part of the Executive Branch. The NTIA represents the views of the Executive Branch in FCC's proceedings and the two agencies, given their dual responsibilities for spectrum management, work very closely together. If, however the FCC rules are overturned at a high enough level in the judicial system, it is up to the Administration to defend the FCC's actions at the Supreme Court. Other government agencies involved in ICT policy and regulation include the Department of Justice with respect to anti-trust and merger review, the United States Trade Representative in terms of trade agreements, the State Department as it enters into international treaties, and more active recently the Federal Trade Commission (FTC) which deals with consumer protection issues. However, primary policy and regulatory authority for the telecommunications and broadcasting portions of the ICT sector rests jointly with the NTIA and the FCC.

An Administrator appointed by the sitting President and confirmed by the Senate, who is also the Assistant Secretary for Communications and Information Policy inside the Department of Commerce, heads the NTIA. The Agency is comprised of five offices (i.e., the Office of Spectrum Management, the Office of Policy Analysis and Development, the Office of International Affairs, the Institute for Telecommunication Sciences, and the Office of Telecommunications and Information Applications) and in addition to developing domestic and international policy and managing federal government use of the radio spectrum, it performs engineering research and testing and runs several grant programmes. The NTIA has nearly 250 staff.

The FCC is overseen by five Commissioners appointed by the President and confirmed by the Senate normally for five year terms. While the President designates one of the Commissioners to serve as Chairperson and three of the five Commissioners are generally members of the sitting President's party, the FCC reports to Congress. With nearly 1,500 employees, the FCC has seven operating Bureaus (Consumer & Governmental Affairs, Enforcement, International, Media,

Wireless Telecommunications, Public Safety & Homeland Security and the Wireline Competition) and ten staff offices.

### Key Market Players

Due to the size of the United States population and its topographical layout, the ICT marketplace has historically been divided geographically. Given that in its most recent numbers, the FCC reports that the country is served by 1,323 companies solely for high speed Internet service provision, it would be unrealistic to attempt to capture all the market players in a paper of this nature. It is worth noting however that there are a wide variety of competitors in the market, including the recent proliferation of

**Table 3: Major Communications Providers in the United States and the Type of Services Offered**

Company	Voice (Fixed)	Video (TV)	Data (Internet)	Wireless
Former RBOCs				
AT&T	X	X (limited markets)	X	X
Verizon	X	X (limited markets)	X	X
Qwest	X	X (limited markets)	X	X
Wireless				
T-Mobile				X
Sprint-Nextel				X
Cable Operators				
Cox	X	X	X	
Comcast	X	X	X	
Time Warner Cable	X	X	X	
Charter Communications	X	X	X	
Cablevision	X	X	X	
Mediacom	X	X	X	
Insight	X	X	X	

municipal broadband networks. In addition to local competitors a majority of the country is served by a legacy of the AT&T Bell system in terms of traditional fixed and wireless services, other wireless operators and cable networks. Table 3 summarises the key players in the United States.

## **Recent Developments**

The United States government continues to push ahead with its current deregulatory approach to the ICT sector hoping to spur increased investment and enhanced facilities-based competition amongst existing and new platforms. Under the current leadership it is expected that efforts to remove legacy regulation on the traditional telecommunications providers in order to move away from asymmetrical regulation and towards a more technology neutral regulatory regime will continue.

These policy changes are not without their domestic critics and similar to New Zealand there is concern that the United States is falling behind internationally with respect to broadband deployment and take-up given its recent drop in the OECD rankings from 12 to 15. These latest figures sparked a series of Congressional hearings questioning whether or not the United States even has a broadband policy, as well as a response from the Administration questioning the OECD's data collection methods. The perceived failure of the OECD to include wifi hot-spot users and American's that access broadband at work, both categories of users whose broadband access does not require a subscription, was a specific issue.

The United States supports the OECD's efforts to reflect new technological, economic and policy developments in order to promote and encourage effective use of broadband services. However, we are concerned about the methodology on which the new statistics were based, and their failure to capture important factors, particularly their reliance on user subscriptions as the measure of broadband use.<sup>84</sup>

The retreat from LLU has also led to the current debate in the United States on network neutrality. Given that telecommunications operators are no longer required to open up access to their networks to competitors under regulated terms and prices, it has been suggested that these companies are now in a monopoly like position and have the ability to prioritise their own traffic to the detriment of third parties (i.e., Yahoo, Google). As a result there has been a call to adopt preventative regulation in order to forestall any potential abuse by the telecommunications operators. There have been several Congressional debates and attempts to resolve the issue via legislation but at this point there has been no agreement. In 2005 the FCC issued an Internet Policy statement in which it announced four principles to encourage broadband deployment and encourage competitive markets, and more recently has issued a Notice of Inquiry on Broadband Industry Practices. Specifically the FCC is seeking to understand the nature of the broadband market and "whether network platform providers and others favour or disfavour particular content, how consumers

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<sup>84</sup> Gross, David A., 'Letter to OECD Secretary-General on Broadband Use and Accompanying Statistics,' United States Government

are affected by these policies, and whether consumer choice of broadband providers is sufficient to ensure that all such policies ultimately benefit consumers.”<sup>85</sup>

**Table 4: United States Key Statistics**

<b>General</b>	
GDP	US \$13.22 trillion*
GDP per capita	US \$43,500*
Population	298,444,215*
Total land area	9,161,923 sq km*
Percent of population Rural	21%**
<b>ICT General</b>	
Effective Teledensity (per 100 inhabitants)	67.62****
Fixed telephone subscribers	177,947,000****
Mobile telephone subscribers	201,650,000****
Internet users	185,000,000****
Digital Broadband subscribers	64,614,270***
DSL (ADSL, SDSL and traditional wireline)	23,523,170****
Fibre	700,083****
Cable modem	28,513,500****
Satellite and Wireless	11,872,309****
Powerline and other	5,208****
Digital Broadband subscribers (per 100 inhabitants)	21.65
<b>ICT Pricing</b>	
Mobile	Local calls – US \$0.10**** SMS – US \$0.05****
Broadband (monthly charge)	256 kbps = US \$24.95**** 4,096 kbps = US \$20.00****
US \$ per 100 kbps	US \$0.49****
Broadband data cap	N/A

\*CIA Factbook (2006 est.), \*\*2000 US Census, \*\*\*Federal Communications Commission (*High-Speed Services for Internet Access: Status as of June 30, 2006*), \*\*\*\*International Telecommunication Union (ITU)

<sup>85</sup> Federal Communications Commission (April 2007), ‘Notice of Inquiry on Broadband Industry Practices,’ United States Government, p.1



At the time of writing, the FCC had received over 9,000 comments in this proceeding. Concurrently, the Federal Trade Commission (FTC) has launched its own inquiry into the issue on the grounds of consumer protection and competition, as the deregulatory trend away from sector-specific telecommunications law suggests greater reliance on competition law. The FTC has also established an Internet Access Task Force to look at issues associated with convergence and its impact on regulatory regimes.

The sustainability of the current universal service scheme is also under debate in the United States. With a decline in the traditional source of funding for this programme, fixed-line calls, concerns abound over how to adapt the existing mechanisms so to ensure its continuation. In addition, the current universal service fund is focused on fixed-line access with special provision for Internet access for schools and libraries. It has been suggested that, when the programme is restructured, broadband be included as a basic service and be covered by the programme. There is no agreement in the United States on whether or not broadband should be covered and in fact the split for the most part appears to be a partisan one, with Democrats supporting its inclusion and Republicans rejecting it. There are also currently several conflicting pieces of legislation on the subject that have been introduced in Congress.

Another key ICT issue facing the United States is the shut-off of traditional analogue broadcast television and the transition to digital television. With a legislated hard shut-off date of February 2009, several channels in the 700 MHz band will become free. A portion of the spectrum will be allocated for public safety and the remaining channels will be auctioned for commercial wireless use. While the FCC is currently developing the auctioning rules, the NTIA has been tasked with administering a converter box coupon programme to ensure that all Americans continue to have access to television broadcasting after the transition. Through this programme, the NTIA is managing the distribution of \$990 million in the form of coupons for digital converter boxes to all eligible U.S. households. Senior United States government officials hope that the availability of this additional commercial spectrum from this transition will facilitate the development of a truly national wireless broadband platform to compete with traditional telecommunications and cable operators.

Also lingering in the broadcasting sphere is the issue of local video franchising. As mentioned previously cable broadcasting developed under federal rules as well as the need to get local approval to broadcast in each market. This rule are still in place in most states and have meant that as traditional telecommunications operators invest in fibre and hope to role out IPTV they must get State or local approval before offering video services to fully compete with cable operators. Cable operators however did not need to get the same type of federal approval before offering voice services. Both AT&T and Verizon have begun lobbying campaigns in key States in the hopes of removing these restrictions. Although there have been suggestions made that the federal government should exert jurisdiction and pre-empt these State laws, there has been no movement towards this.



## 4 COMPARATIVE ANALYSIS

New Zealand and the United States, while both seeking similar ICT policy goals, are currently taking different paths to meet their objectives of enhanced competition and investment and better services for consumers. This is partly due to the differences in how the industry, policy and regulatory models, and associated institutions developed in each respective country. In one country the development of the networks were based on government ownership and in the other they were based on private investment. In one country there was a general reliance on first government ownership and then on competition law, and in the other years and years of accumulation of sector-specific regulation. In one country telecommunications and broadcasting have been addressed by multiple institutions and processes and in the other both segments have been responsible to the same institutions, albeit treated slightly differently over the years. In one country broadcasting policy has been in large part driven by the desire to protect the nation's culture and heritage and in the other country this has not been an issue. In one country the current policy and regulatory emphasis has been on taking steps to ensure that facilities sharing based or intra-modal competition can occur and in the other the current focus has been on removing regulatory barriers to further facilities-based or inter-modal competition.

Stepping back and looking at the path each country has taken over the years, it is apparent that the two countries while beginning at opposite ends of the spectrum in terms of regulatory intervention are now moving past each other towards alternative opposites. The shift in the New Zealand regulatory environment is more substantial given the government's ability to making sweeping reforms, in either direction, very quickly. In the United States, where change of any kind is slow and incremental, due to the size of the policymaking apparatus, the influence of lobby groups, and the huge amounts of money at stake, shifts in policy approaches are much more gradual. Figure 4 illustrates this constantly moving pendulum of ICT regulation.

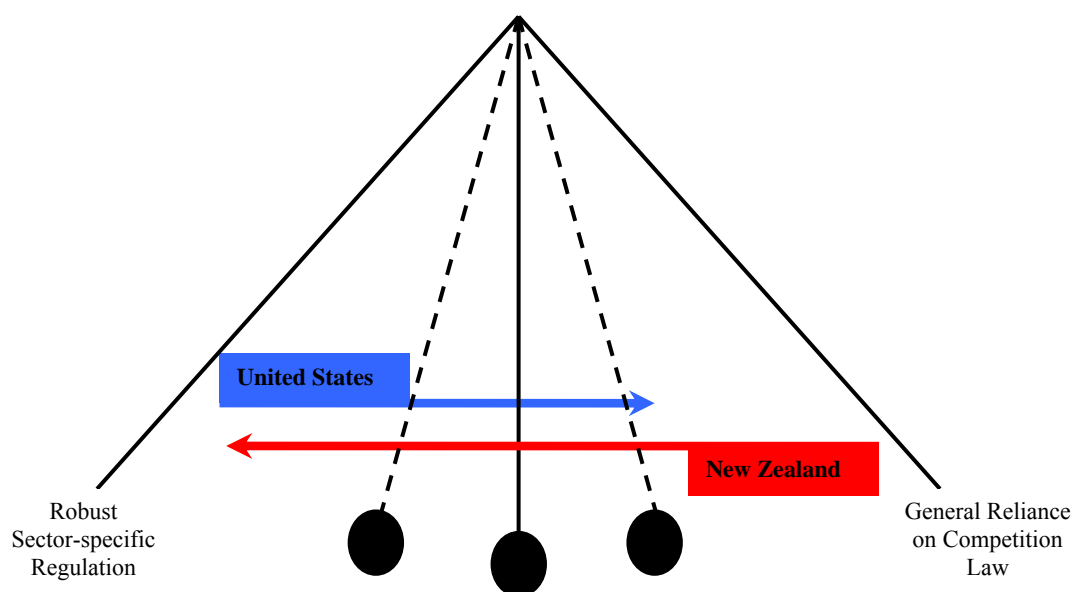


Figure 4: Pendulum of ICT Regulation

Specifically, as the United States is moving away from robust sector-specific regulation and towards a general reliance on competition law given the emergence of inter-modal competition (i.e., telecommunications vs. cable operator), New Zealand is moving away from competition law and implementing more robust sector-specific regulation given the continued dominance of the incumbent and lack of competition in the market. Finding the right balance as technologies and markets changes due to convergence will continue to be a challenge for both countries. Below is an analysis of how New Zealand and the United States are grappling with some of the key policy and regulatory convergence challenges.

## **Competition**

Obviously the competitive landscape in a country that is 268,680 sq km with just over 4 million people versus that of a country that is 9,161,923 sq km with nearly 300 million people will be markedly different. In particular, the smaller New Zealand market cannot support the same number of players or the same level of investment in ICT infrastructure as the United States. While there will be differences based on incumbent status, there are in fact similar challenges in terms of facilitating competition in the ICT sector where competition is viable. These include setting the appropriate policy and regulatory framework to encourage network deployment, innovation in applications and services, and preventing collusion as well as preventing existing actors from disadvantaging new entrants. While the original entrants in the New Zealand and United States telecommunications marketplace were both monopolies of a sort (i.e., one government owned, the other government sanctioned) the differing policy choices made with respect to their development over the years continues to reverberate in today's marketplace, and with each country's respective ability to deal with convergence.

Today, the New Zealand market continues to be dominated by the incumbent Telecom New Zealand. This is in part due to the decision after privatisation to attempt to rely fully on market forces to bring about competition in what had been since its inception a monopoly market. While the shift to sector-specific regulation and the creation of a specialised Telecommunications Commissioner were attempts to deal with the bottlenecks that persisted and hindered competition, the lack of true independence for the regulator and the previous lack of regulatory tools have further complicated efforts to effectively regulate the sector. It should be noted that the ability of the Minister of Communications to in essence overturn through rejection the findings of the regulator are not in keeping with international regulatory best practices. In addition, although the Telecommunications Stock-take recognised the need to facilitate inter-modal competition where it was viable, a majority of the current regulatory effort is focused on the opening up of the incumbents' network so that inter-modal competition can occur. There seems to be little to no formal public consideration of what converging technology platforms could mean for the future competitive landscape in New Zealand, as the emphasis is on dealing with the incumbent telecommunications operator.

In the United States the remnants of the Bell Operating System remain key competitors in the provision of ICT services. However, the preponderance of cable infrastructure around the country has provided the United States government with an alternative policy option that does not currently exist in New Zealand. The actual

appearance of facilities-based or inter-modal competition leaves the United States particularly well placed to continue to deregulate and modify its policy and regulatory environment so to recognise the implications of convergence. However, one has to question whether replacing a monopoly with what in some local markets appears for the time being to be a duopoly, is in the long term interest of consumers. The development of alternative network competitors, such as wireless broadband, will be instrumental in determining if the current United States approach is workable in the long term.

It should be noted that New Zealand, by pursuing the full LLU and separation path, appears to have adopted the European model of competition. The primary focus is on DSL deployment based on the existing facilities of the incumbent, with an eventual upgrade to fibre. While it is true that the level of cable competition in New Zealand is relatively marginal compared to that of the United States, there are other potential competitive platforms in the New Zealand market that are worthy of consideration when looking at facilitating competition. These include Kordia (a state-owned broadcasting transmission provider) which during the drafting of this paper purchased an ISP, Transpower (a state-owned electricity provider) which is installing a fibre network around the country reportedly for its own internal communications purposes as well as other utility networks. Instead of relying so heavily on the European approach, the government of New Zealand could look to develop its own hybrid model for competition that acknowledges the uniqueness of this particular market.

## **Investment**

As mentioned earlier, the links between competition and investment in the ICT sector are quite strong. Without competition incumbents may feel reluctant to invest and without investment there can be limited network upgrades, which are necessary to support competition among advanced services brought about in part by convergence. These links are further complicated by the issue of what economists refer to as network externalities whereby the value of a network increases with every new subscriber. As convergence inevitably changes who the competitors are and challenge business models (e.g., fixed traffic alone is becoming insufficient to support network development and upgrades), and policy-makers and regulators correspondingly adjust their frameworks, guaranteeing returns on investment become very difficult. It is widely accepted internationally that a predictable, stable and transparent policy and regulatory environment is a pre-requisite for the level of investment required for the provision of ICT services. Therefore, when change is introduced alongside the continued development of new disruptive technologies, the level of risk for investors rises. This makes investment arguably the most important issue for ICT policy-makers and regulators to consider in today's environment.

In the context of New Zealand, the ladder of investment theory has been used to justify the policy and regulatory changes that have been introduced to combat the existing investment and competitive bottlenecks in the telecommunications sphere. Most notably there has been the decision to mandate full LLU. Bearing in mind that the government has in the past few years made several attempts to level the playing field, it is much too early to determine whether the decision to mandate full LLU, given that it has yet to be implemented, will change the investment market in any significant way. However, under the circumstances of a continuing monopoly

bottleneck on the fixed-line access network, it appears to be a viable option and one that is supported by a majority of local industry players.

Based on international experience, New Zealand can expect, once LLU is implemented, in the short term to see new market entrants or competitors in the form of resellers. Whether or not these new entrants will actually invest in core network infrastructure is questionable and comes with no guarantee as the ladder of investment theory has yet to be proven in any practical fashion. The same can be said for the incumbent, in particular as it is forced to open up its access network to competitors and operationally separate. As the trend driven by convergence in some markets is to vertically integrate, something that has recently been seen in the New Zealand domestic market with Kordia's purchase of an ISP, the rationale for separation of Telecom is questionable. While it is true that the vertical integration taking place in New Zealand does not give any of the other players the same dominance of Telecom in terms of a ubiquitous national network, it is unclear what problem separation addresses as LLU should deal with opening up the current bottleneck. Regardless of the choices ultimately made, the longer the current regulatory uncertainty continues, the longer it will take for the necessary investment to be made in New Zealand's ICT infrastructure. In addition, the longer the government focuses primarily on the traditional telecommunications space to meet its overall ICT needs, the longer it will take for New Zealanders to actually benefit from the potential of convergence.

The challenges of ICT investment in the United States are slightly different given that convergence and competition amongst and between technology platforms is actually taking place. This competition, driven by technological convergence, has caused the traditional telecommunications operators to deploy fibre around the country and as a result the levels of network investment are increasing. Once the United States retreated from LLU, given the failure of this policy and regulatory option to deliver on infrastructure investment in the domestic market place, its policy and regulatory path diverged from almost all other countries. Therefore, the issues associated with investment in the United States are better captured by the concept of the broadband incentive problem as opposed to the ladder of investment theory. With the move to provide telecommunications operators full property rights of their networks (i.e., not require them to open and share their assets under mandated terms and conditions) similar to the position that cable operators enjoy, the potential for them to disadvantage competitors and third party providers grows. The challenge going forward for the United States will be how to encourage the continued investment that will be required as more intensive bandwidth applications are introduced in a manner that does not preclude innovation or provide infrastructure owners an unfair advantage or bottleneck control. This is why the network neutrality debate sparks such a fervour in the United States in comparison to other parts of the globe.

## **Public Interest Issues and Goals**

With respect to meeting public interest issues and goals, in particular universal access, both New Zealand and the United States find themselves facing very similar problems. When universal service historically referred primarily to fixed-line telephone voice service, it meant that governments tended to focus their efforts on traditional telecommunications operators' services and revenues. As convergence changes the communications paradigm and fixed voice revenues are no longer

sufficient to keep a company afloat this entire model becomes unsustainable. In addition, as voice services can now be procured over a variety of technology platforms, policy-makers and regulators in both countries will need to decide whether these new converging platforms are truly substitutable in terms of quality of service and should be considered in a larger scheme. Also the idea of expanding the notion of universal service to include broadband applications and services will need to be seriously considered in both countries, given the worldwide recognition of the importance of broadband to economic and social goals. The universal service framework in New Zealand, the TSO, is further complicated by the fact that it is primarily a negotiated contract between the government and the incumbent versus a legislated or regulated activity as it is in the United States (certain aspects of each TSO instrument such as monitoring of service, performance compliance and calculation of compensation, are effectively determined under regulation). The current policy and regulatory changes being promulgated in New Zealand, LLU and separation, will alter the incumbent's status and are likely to have yet unknown consequences for the TSO. Both countries will need to conduct a serious and thorough review of these issues with all impacted stakeholders in light of convergence.

## **Human Resource Issues**

The need for adequately trained and incentivised staff is an issue for all organisations, irrespective of their location. In this arena New Zealand and the United States also share some common challenges. These include the further complication that in the ICT policy and regulatory space, government jobs often pay significantly less than private industry. This pay disparity can make staff hire and retention and the ability to build institutional knowledge particularly difficult. In addition, the changes in technology that have facilitated convergence often require the knowledge base of policy-makers and regulators to be much broader than before. Staff are now required to keep up with the changes and the implications of those changes, which are occurring rapidly, on existing rules and norms in order to adapt them if necessary. This often challenges the expectations of both employee and employer and can stretch the institutional machinery. Convergence also means that issues addressed in previously siloed structures begin to overlap, possibly causing institutional jurisdictional disputes and inconsistent government wide policy and regulatory approaches.

In New Zealand hiring and retaining adequately trained staff in the ICT sector is a major challenge. With the current move to sector-specific regulation in the telecommunications area, this staffing need will only grow. The implementation and monitoring of LLU and separation will require more government involvement as time goes by. If LLU in New Zealand is to continue in the context of next generation networks, there will be further changes to the architecture of the access network and thus unbundling requirements, and government involvement and staff requirement will be ongoing. The government will need to take steps to develop subject matter experts and encourage staff retention, which in the context of New Zealand's overseas experience rite of passage (whereby New Zealand graduates after a few years of working are encouraged to travel and work abroad) could be difficult. Additionally, the government may need to consider reviewing salary levels so as to attract individuals from the private sector back to government as opposed to relying on

outside consultants, the current practice. Lastly, the distribution of the broadcasting and communications portfolios among different Ministers, various ministry staff and regulatory institutions should be reviewed and consolidated as these work streams begin to merge.

The United States on the other hand, with its years of sector-specific regulation has developed an entire industry just based on telecommunications policy and regulatory issues. For example, the Federal Communications Bar Association which is a volunteer organisation of attorneys, engineers, consultants, economists and government officials has over 3,000 members, all of whom are somehow involved in the ICT sector at the federal level. As the United States moves away from sector-specific regulation and towards a regime based on competition law, the need for the mammoth bureaucracies currently in place will need to be revisited. This is already evident as both the FCC and the FTC grapple with the issue of network neutrality.



## 5 CONCLUSIONS AND RECOMMENDATIONS

Convergence is no longer an idea or a future concept. It is technically feasible today and its arrival directly challenges existing global telecommunications and broadcasting policy and regulatory paradigms, as well as business models. A comparison of how New Zealand and the United States, countries with shared objectives but diametrically opposite policy approaches, are adapting their regimes in light of these developments reveals several things. Most notably, that continuing to stove-pipe platforms, in terms of rules and institutions, that are now able to offer comparable applications and services can often hinder competition and investment. In addition continued reliance on robust asymmetric sector-specific regulation makes it difficult to truly take advantage of the benefits convergence offers.

It is imperative that when addressing ICT issues in the context of today's convergence, policy-makers and regulators be forward looking and attempt to provide the most flexible regime possible in order not to stifle innovation. While not impossible in a robust sector-specific regime, this is easier to accomplish in the context of deregulation. However each country's specific circumstances, including its history and the status of its incumbents, will impact the choices it is able to make with respect to convergence. As will each country's regulatory disposition – either preemptively regulating a problem before it occurs or waiting to regulate once there is a proof that a problem exists.

While there is no magic formula that policy-makers and regulators can apply to adjust their regimes in light of convergence, below is a list of issues for consideration regardless of where their regime resides on the ICT pendulum of regulation:

- **Competition:** How big is the actual domestic ICT market and how many competitors can it realistically support? Will vertical integration help or hurt competition in the domestic market? Is the goal of government policy and regulation to encourage facilities sharing or facilities-based competition? Are other traditional as well as non-traditional communications actors prevented from entering the market because of currently policy and regulatory approaches? How does convergence change the competitive landscape?
- **Investment:** Is there sufficient competition in the ICT sector for incumbents to invest in upgrading their networks? Are there truly non-replicable assets that need to be opened up for new potential entrants and if so how do you price access to these assets so as not to distort the market? Is it appropriate to consider regulatory safeguards or tax incentives to encourage investment? When government policies are geared toward promoting investment, what type of investment is the government looking for – investment in core networks or investment at the access layer? What impact does the introduction of disruptive technologies and potential changes to policy and regulatory regimes have on investment?
- **Public interest issues, universal access:** Are there parts of the country where market incentives will never deliver ICT applications and services? Does the current universal service scheme take into account new actors that are offering communications services? If the scheme is based on traditional fixed-line voice

services, is it monetarily sustainable as these revenue streams taper off? Should broadband and other advanced services be covered by universal service plans?

- **Human Resource issues:** Is there sufficient expertise and staff to support the regulatory model chosen? Are the processes in place for training and keeping staff abreast of changes in technology and how these changes impact existing rules and norms? Is there a need to have multiple regulatory institutions and apparatus involved in a converged ICT sector?

## **New Zealand Specific Recommendations Relating to Convergence**

In looking at a contemporary map of the world, New Zealand by its mere distance from the world's trading capitals is often disadvantaged by time and space. A world class ICT sector has the ability to alter this reality by bringing global consumers to New Zealand's cyberspace borders. Failing to get the ICT policy and regulatory regime right will only hinder New Zealand's economic development. When considering these issues, the New Zealand government need not limit its policy options to those being implemented in Europe. Nor need it wholeheartedly embrace the United States model. Instead, New Zealand should look to develop its own way, in accordance with its unique characteristics.

An emerging regulatory issue is the process of convergence, which is blurring the boundaries between different forms of electronic communication such as telecommunications, broadcasting and the Internet. Telecommunications and broadcasting have generally been subject to separate sector-specific regulation. To avoid anomalous overlaps or gaps between sector-specific regulations, it is essential that regulation cover all different ways in which the same electronic communications service can be provided. This is in line with the practice beginning to be adopted in other countries

2000 Ministerial Inquiry into Telecommunications-Final Report, New Zealand Government

Even though convergence was recognised and acknowledged by the New Zealand government in 2000, there appears to have been little to no formal consideration of this issue since. Below is list of recommendations for New Zealand ICT stakeholders to consider as they move forward with regulatory reforms in the ICT sphere. These recommendations are not mutually exclusive and in some instances are in fact mutually reinforcing.

1. Develop better coordination between the communications and broadcasting work streams. At a minimum, this could be the merging of ministerial portfolios under a single Minister. A preferable solution is to bring together under one organisation the various ministry offices that have responsibility for the various broadcasting and communications issues. The fact that a large portion of the broadcasting portfolio deals with the development and protection of local content need not be a hindrance to this consolidation given the link between content and network deployment.

2. Adjust the status of the Telecommunications Commissioner to bring it in line with international best practices in terms of independence in regulatory decision-making. Create one regulatory institution to deal with telecommunications and broadcasting issues by merging the responsibilities of the existing Telecommunications Commissioner with the numerous regulatory bodies involved in broadcasting issues. This new converged regulator would be separate from the current structure of the Commerce Commission as the government has moved away from a general reliance on competition law.
3. Continue with efforts to open up the current bottleneck of the existing telecommunications access network through local loop unbundling in order to spur competition at the service provision level in the short to medium term. Reconsider separation, either structural or operational, of Telecom as it is unclear what problem this is actually attempting to solve while local loop unbundling is being pursued.
4. Give greater priority to a review of the status and regulatory regime of Kordia, a State-owned enterprise, as well as other utilities providers whose participation in the retail side of the ICT sector could potentially support facilities-based competition and investment in the New Zealand market in the long term.
5. Undertake to develop and retain ICT subject matter experts within government offices – both among officials and policy advisors, and in the regulatory arena. This may necessitate a review of the pay structure and opportunities for advancement in order to attract those with private sector experience to government service. Other options include governmental or academic exchanges where New Zealand experts spend some time abroad, or the development of an externship programme with universities in New Zealand where students alternate school terms between university and government agencies.



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