

# **Telecommunications Infrastructure in regional New Zealand:**

## **A case history**

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A well developed telecommunications infrastructure is vital to economic success. In New Zealand the issue of infrastructure is more pressing than in other countries such as Europe and the USA where high quality infrastructure is taken for granted. Infrastructure has both a hard and a soft side. The hard side includes access to telecommunications services, such as mobile telephony and broadband. The soft side is concerned with interactions between organisations such as firms, development agencies, education providers, and voluntary groups.

This qualitative paper explores the relationship between hard and soft infrastructure in the context of regional New Zealand by tracking the case histories of one rural and one urban region. The paper takes an historical approach and focuses on the twenty year period between 1985 and 2005. The focus is on how the soft infrastructure within a region influences the successful adoption of hard infrastructure.

### **1 Background to the research**

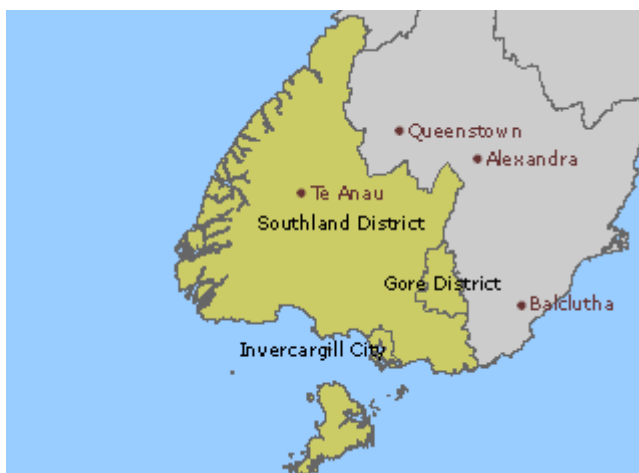
By global standards New Zealand is an isolated country and the use of ICT to overcome the problems this isolation causes is a particularly relevant issue for local researchers. New Zealand's remote location has an international and a national dimension; as well as the country being a long way from the rest of the world; there are poor communications and transport links between regions within the country. This is a particular problem for remote rural regions.

The relationship between telecommunications infrastructure and economic growth is well established, though the exact nature of that relationship is still under investigation (Adams, 2005; NSC, 2004; Parker, 2000). With the exception of a few cynics (Howell, 2006) there is a widespread belief in New Zealand that the introduction of high speed, affordable broadband

will bring economic benefits, the “build it and they will come<sup>1</sup>” approach. This view is shared by many other countries, notably Korea and Canada (Kelly, Gray, & Minges, 2003; Zilber, Schneider, & Djwa, 2005).

While there is no doubt that ICT does have a contribution to make to regional development in New Zealand, both in remote rural regions and in more centrally located urban regions. This paper challenges the “build it and they will come” approach, and argues that in order to unlock the full value of ICT a more nuanced approach is needed. The presence of “institutional thickness” has been shown to be an important indicator of regional success (Amin & Thrift, 1994). This can be identified by lively interactions between firms, business associations, development agencies, innovation centres, unions and community groups. These social networks have a critical role to play in maximising the benefits that can be achieved from ICT.

The research was carried out at two different levels, the national and regional level. The situation right across New Zealand was compared with the situation in two contrasting regions; one urban region, Wellington and one rural region, Southland.



**Figure 1: Southland Region** (source NZ Statistics [www.stats.govt.nz](http://www.stats.govt.nz))

Southland is a remote rural area located at the bottom of the South Island, as shown in Figure 1. Invercargill is the major city in the region. Farming is the mainstay of the local economy; the region also has the country’s only aluminium smelter at Tiwai Point near Bluff. Southland

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<sup>1</sup> Reference to the movie “Field of Dreams” in which the main character hears a voice telling him that if he builds a baseball field on his remote farm, spectators will arrive

Frozen Meat is also a major employer. Southland has many areas of great natural beauty, such as Stewart Island and tourism is of increasing importance to the region. Southland also contains methane gas, oil and lignite deposits with commercial potential.



**Figure 2: Greater Wellington Region** (source NZ Statistics [www.stats.govt.nz](http://www.stats.govt.nz))

The Greater Wellington Region (hereafter referred to as Wellington) as shown in Figure 2 is located at the bottom of the North Island and includes the capital city, Wellington. The three local authorities closest to the capital, Porirua, Lower Hutt and Upper Hutt would be classed as suburban, while Kapiti, Masterton, Carterton and the Wairarapa are more rural areas. The region includes a wide range of different socio-economic groups; there are some high income areas but also areas of deprivation. As Wellington is a capital city, the public sector is of particular importance, as is the service sector. Wellington is the second most important centre for the IT industry in the country after Auckland. The Hutt Valley's economy was traditionally based around manufacturing though this declined throughout the period studied. As in Southland, tourism is of growing importance to the region, and is often associated with events such as the Rugby Sevens or the Arts Festival.

These two regions were selected to highlight different aspects of the New Zealand economy. New Zealand's major exports are primary products and the rural sector has traditionally been the most important area of the economy. Rural Southland will provide data about how the rural economy changed over the twenty year period studied. At the same time the country was attempting to diversify its export base, and IT and biotechnology were viewed as offering great potential. As an important centre for the IT industry, Wellington will provide data about changes in this sector during the period studied.

The second reason for selecting these two regions was that they both had a strong reputation throughout the country for being innovative adopters of ICT networks. In 1995, Wellington was one of the first cities in the world to set up a broadband network in its central business district, and in 2003 Southland made a bold decision to implement a wireless broadband network throughout the region.

## **2 Data Collection**

Data to validate the model was collected by a range of means. During the first round of data collection in 2006, twelve in-depth semi-structured interviews were conducted with key figures involved in the adoption of ICT networks. The interview questions addressed a common set of themes including availability of infrastructure, and the extent of linkages between local organisations. The interviewees worked for a range of organisations including local and regional councils, telecommunications providers, schools, and community groups. Some of the interviewees were selected for their knowledge of the local situation in Southland or Wellington; others had a national focus. In addition to the interviews further documentary evidence such as reports, survey results, statistics and web pages were collected as supporting data. Attendance at three New Zealand conferences<sup>2</sup>, one on Digital Cities and Regional Networks, a second on ICT in the Workplace and Communities with the third being a TUANZ<sup>3</sup> Rural Broadband Symposium, also provided much relevant material in which to frame the interview data. The data collected from the interviews was transcribed using NVivo.

A second round of data collection focused much more strongly on the regional level and also brought in the historical aspects. The aim was to build up a history of the development of soft and hard infrastructure in the regions of Wellington and Southland in the twenty years between 1985 and 2005. The strategy adopted was to carry out both macro and micro level analyses of events in both regions over a 20 year period (Rooney, 1996). The date selected as a starting point for data collection was 1985, shortly after David Lange's labour government introduced the sweeping economic changes known as "Rogernomics" (Clifton, 2004). The

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<sup>2</sup> Digital Cities and Regional Networks, 23 November 2005, Wellington, NZ

ICT in the Workplace and Communities, 28 April 2006, Wellington, NZ

TUANZ Rural Broadband Symposium, 29-31 March 2006, Timaru, NZ

<sup>3</sup> Telecommunications Users Association of New Zealand <https://www.tuanz.org.nz>

end date for data collection is 2005, when New Zealand became the first country in the world to launch a Digital Strategy (NZGovernment, 2005).

Primary sources were used to give an overall picture of developments in each region over the twenty year period, and for three selected years 1985, 1995 and 2005; a more detailed micro analysis was carried out. For each of those dates a selection of regional publications was searched for relevant material. Primary sources for this material included regional newspapers such as the *Southland Times*, *Dominion Post*, *Dominion* and *Evening Post*, magazines such as *National Business Review* and reports produced by Statistics New Zealand.

After the searches had been carried out the next step was to build up a picture of the situation in each region for each of the three years. This was done by combining the results of the searches ordered by category and year for each of the two regions and the national situation. The findings were grouped into two categories, those that covered changes in hard telecommunications infrastructure, and those that covered developments in the soft infrastructure of regional development. This data was used as a basis to describe developments in each region from 1985 to 2005. These findings are discussed in the following two sections.

### **3 Telecommunications**

#### **3.1 1985**

In 1985 telecommunications were looked after by the Post Office which had a number of initiatives in place; it was developing a major new network for handling electronic data, the Digital Data Network, customer records and services were being computerised and it had also developed plans to supply the new electronic funds transfer network (Eftpos). In this last initiative it faced competition as a private organisation, Databank, had also made it clear that they were interested in the Eftpos network.

The Post Office, which operated as a monopoly at the time, was recorded as making a profit of over \$200 million in the 1984 financial year, of which the government took more than \$185 million. There was increasing pressure for the Post Office to be privatised. The Post Office was also beginning to feel pressure from consumers, with the newly formed New

Zealand Telecommunication Users Association (NZTUA)<sup>4</sup> acting as an advocate for customers. The New Zealand Computer Society was also speaking out against the Post Office. The Society published a position paper which expressed the view that a monopoly was not in the national interest and was making the country less competitive in world markets. The paper called for partial deregulation and a full review of the Post Office's role in new telecommunications service areas.

In the Wellington region the Post Office announced that it planned to spend \$46 million on telecommunications development in the next financial year. Though optical fibre had previously been used for the telephone network, 1985 saw the installation of the first optical fibre network link for a local business application. The network was going to be used to transmit information between the Government Printing Office and Parliament, and would potentially form the basis of a Parliamentary Office Information System.

In Southland widespread upgrading of the local telephone service was taking place, as Subscriber Toll Dialling and International Subscriber Dialling were introduced to the region via the Invercargill telephone exchange. Technicians were reported to be working around the clock to introduce the service by the end of the year. Invercargill council was upgrading its telephone system by replacing all the telephones in the Civic Administration building with a new PABX system.

One issue that was receiving attention was the Post Office's decision to charge farmers business rates for calls, despite the fact that their telephones were for personal use as well as business. The Post Office confirmed that as from July about 70,000 farmers would be charged business rentals. Federated Farmers argued that all farmers should pay only residential rates, not just those on party lines and manual exchanges.

1985 saw the beginning of mobile telecommunications, with both Swedish company Ericsson and the New Zealand Post Office showing interest in this area. The Post Office announced plans to introduce a mobile telephone service in Auckland by 1987, extending it to Wellington and Christchurch in 1988. The Post Office was also investigating whether mobile services might provide a cheaper alternative to traditional services for rural areas. One article

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<sup>4</sup> NZTUA later changed its name to TUANZ

speculated on whether the introduction of a cellular radio-telephone network might result in the Post Office taking a back seat in telecommunications. In 1991 Telecom was launched as a public company and the Post Office had no more involvement in telecommunications.

### 3.2 1995

1995 saw growth in telecommunications links both within the country and between New Zealand and the rest of the world. Much of this expansion was a response to increasing use of the internet. The main internet link to the USA was NZGate, based at Waikato University, which doubled its capacity in May and expected to have 100,000 users by the end of the year. Waikato University was also spearheading the development of a nationwide high speed broadband network. New Internet Service Providers were setting up networks around the country. Telecom itself had also noted the rise of internet traffic over the telephone lines and announced its intention to set up a broadband network for business customers. This was shortly followed by a similar announcement from Clear Communications.

In 1991 Telecom was listed on the New Zealand and New York stock exchanges at \$2 a share. By 1995 share prices had trebled while net earnings had doubled. The company was on target to make a \$630 million profit by March 1985. This success brought criticism from other telecommunications companies and an accusation of “*breathhtaking greed*” from MP Jim Anderton when line rentals increased by 4%. The telecommunications market was competitive and dynamic. Telecom’s main rival was Clear Communications and there were many smaller companies, such as BellSouth, who set up a new mobile phone service. Telecom was also under pressure from users lobby group TUANZ who were concerned about disruptions to services.

The vision of Wellington Mayor Fran Wilde for an “InfoCity” was being put into place with the setting up of City Link as an agency to provide a high speed broadband links throughout the central business district. CityLink<sup>5</sup> was a single 13 square mile local area network (LAN) that covered Wellington’s CBD. CityLink was based on a fibre optic cable network that offered an open networking model for all “Service Providers” and “Clients”. This meant that any provider could offer services over the network, and any client was able to choose from a

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<sup>5</sup> : <http://www.citylink.co.nz>

range of providers. All network traffic was peered on a local peering exchange, which meant that local business to business traffic stayed local and was free.

The future of the World Communication Laboratory was in doubt as it neared the end of its three years of government funding. The Lab had been set up with the idea of encouraging overseas companies to use New Zealand's deregulated environment to experiment with broadband, and projects had included telemedicine and video-conferencing. Another local project was the setting up of a video surveillance system in Porirua City Centre. There were concerns about the building of cell phone transmitters in Wellington City.

In Southland the main issue was building a reliable network. Party lines were phased out as remote parts of the region were connected to computerised exchanges, and Telecom was working to reduce the overload on its cell phone network.

### **3.3 2005**

In 2005 telecommunications was a "hot topic", there was pressure from both consumers and the government to make high speed broadband available throughout the whole country, and the launch of the IPSTAR satellite made broadband available to remote rural areas. There was intense competition in both the broadband and mobile telephony markets. The key player in both was Telecom, which managed to increase profits by 19% on the previous year. In the broadband market Telecom's main rival was Telstra Clear, plus a number of smaller providers, Woosh, Counties Power, iHug and CallPlus. In the mobile sector the main challenger was Vodafone. Both Telecom and Telstra Clear were accused of unfair competition by the other telecommunications providers. Challenging Telecom's dominance of the market could be expensive. Woosh lost \$18.9 million in 2005 even though it claimed to be picking up 40% of all new broadband connections; the loss was due to the costs involved in setting up its own wireless infrastructure.

New Zealand's success in rolling out broadband to the whole country was a matter of debate. The country jumped up two places in the ICT world rankings compiled by the World Economic Forum, and British researchers reported that broadband penetration in New Zealand grew faster than in Australia, Western Europe and North America in the first half of 2005. However according to the OECD rankings New Zealand was still only 22<sup>nd</sup> in the league table that measured household take-up of broadband. As of 2006, following pressure

from the business sector and telecommunications providers, the Government announced legislation to unbundle the local loop, a move that was anticipated to make the telecommunications sector more competitive and thereby result in cheaper faster broadband provision, though there was some debate about the impact this would have in the less profitable rural areas.

Interviewees all felt that improving ICT infrastructure and access would bring economic benefits. However, no-one could give an example of a direct relationship between ICT and improved regional income. As one interviewee put it: *“It’s a chicken and egg thing – broadband uptake follows economic performance, improved economic performance will be one consequence of having broadband.”*

Those interviewees from local and regional government regarded the setting up of telecommunications networks as a form of infrastructure development similar to building roads, railway networks or a sewage system. The applications that will run on the network were compared to the trucks on a road. One interviewee made the following comment: *“You don’t really know what people are going to do with the road after you build it, but you know intuitively that it’s a good thing to do.”* However, another interviewee felt that there had been too much focus on building infrastructure, instead of building useful applications for that infrastructure.

The comments from these two interviewees are indicative of the two different schools of thought that existed in New Zealand at the time of the research. The majority were of the “build it and they will come” school and believed that setting up broadband infrastructure was in itself a good thing, and that it would automatically lead to economic and social benefits. However a vocal minority argued that any development of infrastructure should be driven by demand for applications, and merely making the infrastructure available would not automatically lead to it being widely used (Howell, 2006).

One interviewee explained that a telecommunications network differed from a gas or electricity network in that it is a communications network rather than a utility network. With a utility network if one person is not connected it affects only them, but with a communications network, if one person is not connected it disadvantages everyone else. For example, if one customer is not connected to an electricity network it doesn’t directly affect

other customers or the provider. However, with a communications network if a message can't reach 100% of customers, then an alternative method must be found of getting messages to those who aren't connected. The interviewee provided an example to illustrate this. In the 1990s, New Zealand Post decided to charge for rural deliveries. The reaction of the farmers in Southland was to cancel their deliveries. Initially only the farmers themselves were disadvantaged, but when the 20<sup>th</sup> of the next month came around all the businesses in town needed to post out invoices to the farmers and they couldn't do it. So New Zealand Post quickly got the message not just from the farmers, but also from the townsfolk. This is why the goal of local councils is to get 100% coverage, even if it means taking the network out to some really remote areas. Though it can be expensive to take a telecommunications network out to rural areas, there was a broad agreement by interviewees that it was a good thing to do.

Some interviewees took the view that though broadband was definitely of benefit to the New Zealand economy potential uses could not be predicted: *"You need bigger pipes to do all sorts of things that people haven't even thought of doing. If bandwidth cost nothing what would you do with it?"* As one telecommunications consultant pointed out, it may be a decade or more before the social and economic benefits of ICT infrastructure appear and some interviewees questioned whether broadband would add value to the economy at all without suitable value adding applications.

Where a sector saw a real benefit in adopting broadband, for example the Fonterra dairy farmers who link up to FencePost<sup>6</sup>, adoption rates were high. For other sectors the "take it out there and they will come" attitude did not necessarily follow. Often those who had broadband were using it for entertainment purposes rather than to add any value to the economy. The most visited local site in New Zealand was TradeMe<sup>7</sup>, and most of the international traffic in and out of New Zealand was taken up by peer-to-peer applications such as music and video. Though it was only a small proportion of users, it was a high proportion of bandwidth.

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<sup>6</sup> <http://www.FencePost.com>

The FencePost website operated by dairy co-operative Fonterra consisted of a range of information and tools relevant to the dairying community, such as accurate regional weather forecasts, agricultural news, classified advertising and a rural jobs marketplace.

<sup>7</sup> Online auction site used by general public to buy and sell new and used goods

The rural sector is vital to the New Zealand economy, and broadband offers the opportunity to add value to agricultural products (Oram, 2006). In the view of interviewees who were involved in the rural sector, New Zealand economic policy tends to be driven by “*Auckland Centric*” or “*Wellington Centric*” thinking. Policy makers are seen to be completely out of touch with provincial New Zealand. This was exacerbated by the fact that at the time of the research the Labour Party, which had been traditionally viewed by farmers as favouring urban New Zealand, had been in power for three terms. Telecommunications providers were also criticised for failing to perceive farms as the large businesses they actually were: “*There was a complete lack of any idea of what rural New Zealand was about. Just a complete lack.*”

On the other side evidence from the interviews and other sources (Locke, 2006; Oram, 2006) suggested that most farmers had a narrow view of the potential of ICT, and didn’t understand how a technology like broadband could add value to their business. A contributing factor was the fact that in 2005 the average age of farmers was 57, which meant that most of them had not grown up with ICT.

Though there was widespread agreement that telecommunications were making a huge impact on the rural sector, there were concerns that Telecom had a poor record of delivering services in rural areas, with a Federated Farmers survey showing that 50% of farmers found it hard to maintain a connection to the internet and that almost 75% considered their connection speed to be slow. In a typical scenario a farmer might turn on the computer in the morning, log on to the internet, start off the download of an Xtra homepage, then go away to have breakfast and make coffee, then go back and check the computer. If they were lucky the download might be complete. This had given most farmers a very narrow view of the potential of broadband.

Interviewees commented that when farmers are shown packages such as FencePost they are amazed. They hadn’t thought of the internet as something that could add value to their business. The few that had were more than happy to go out and invest in a satellite dish, and they would have worked out in advance exactly what they were going to do when they were connected. Broadband could make a huge difference even to everyday buying and selling, and farmers did a lot of that. As one interviewee put it “*they make \$1000 decisions everyday.*” Interviewees felt that if being hooked up to broadband brought farmers some

critical extra information. It could make a world of difference, and one broadband enabled business deal could potentially pay for ten years of broadband access. Farmers' wives were also mentioned as being often very quick adopters of new technology.

Though many farmers were not clear about which applications would add value until they tried them, there were a few who had well thought-out ideas about how they could use ICT. What they were interested in were applications like online banking, specific farming packages, or specialist agricultural websites like FencePost. Rural people went online specifically to look for information relevant to their daily work. For example, the weather site at Venture Southland was very popular: "*Weather is number one.*" Farmers also liked to check wool prices, cattle exports and similar. Another popular site was the Alliance Freezing works company that priced the lamb. All those sites affected how farmers were running their business on a day to day basis, whether they were going to sell their lambs or not today.

When farmers did see clear benefits they were fast adopters; the Fonterra farmers only started buying broadband two years ago (in 2004) and already had 32% take up, and by 2007 that take up will be up to 45 or 50% (Walker, 2006). Brent Paterson, the 2005 E-Farmer of the year, used a range of software applications; his pasture management system alone saved him thousands on fertiliser. He was not interested in whether it was broadband or video streaming; all he needed was connectivity and reliable access to his main applications (Paterson, 2006).

One interviewee from Southland viewed farmers as being caught in a triple bind; they have hopeless dial up, they are distance challenged and they can't get economical broadband. In some cases farmers who had access to broadband lost it when Telecom had to lift their specifications, effectively dropping them off the end of the line.

As one of the larger city councils, Wellington has a history of being involved in initiatives around ICT. During 2006 Wellington, like all local councils was developing a Long-term Community Plan. This was a ten-year plan structured around seven strategic areas based on the local government act. Four areas covered the local council's need to be responsible for the social, economic, environmental and cultural well-being of their communities. The other three areas are transport, urban development and governance. ICT seemed to fall under three of those areas, building a broadband network came under economic development, initiatives

that involve using ICT for community development fell under the social area, and e-democracy type initiatives were in the governance area. Wellington City Council recognised that ICT issues cut across three different areas; economic development, community development and improving citizen participation in council decision making through e-democracy. By early 2006 they had produced ICT strategies for community development and e-democracy, but as of early 2010 no strategy had yet been produced for economic development (WCC, 2006).

Telecom announced that it was boosting its investment in Wellington by 45% due to strong growth in the region. However, broadband still hadn't reached some of the more remote parts of the Wellington region such as in the Wairarapa area. As in 1995 there were concerns about building cell phone towers near schools.

CityLink were still going strong, though a move to extend their network out to the Wellington suburbs was dropped by the city council. Hutt, Upper Hutt and Porirua were setting up their own version of CityLink, as a public/private partnership called Smartlinx3. In Wellington, as in Southland, the aim of developing locally based telecommunications was strongly rooted in a desire to make high speed ICT connections available to the whole of the community. To date few areas of New Zealand had actually managed to make community owned telecommunications work, especially where a mixture of public and private funding was involved. Smartlinx3 recognised the role of the community by setting aside two places on the board for representatives of community groups who would not have the financial resources to become shareholders.

One issue faced by Smartlinx3 was that public sector organisations such as the education and health sectors tended to be organised in silos. For example, one company may cover all the telecommunication needs of the health providers in the North Island. That made it difficult to persuade a local health provider to sign up to a regional network, as the key decision maker was located outside the region. As one interviewee commented; *“The biggest benefit that central government could bring to Smartlinx3 would be for the key central government departments located within the region to become clients of Smartlinx3.”*

The silo issue also worked against regional community telecommunications projects. When Hutt City Council was setting up Smartlinx3, it had the experience of being approached by

Telecom and offered a new contract based on forming a silo with other local councils up and down the country. Though this would have resulted in cheaper telecommunications, accepting the deal would have worked against the council's desire to develop regional linkages. However it can be a contentious issue for a local council, as paying higher prices for telecommunications will impact on the ratepayers of the region, and incumbent providers are usually keen to advertise that fact to local voters.

Southland experienced similar issues. As one interviewee pointed out, it became apparent at an early stage that if you looked at just the local business, the local traffic and the local use of the internet, there was insufficient activity to justify regional investment. One potential solution was to persuade the national government to offer the region part of its business at a regional level, rather than contracting services vertically throughout the country. In this case the Economic Development Agency managed to persuade national government to do this: *“So that was quite a paradigm shift from the government state sector perspective to offer those services at a regional level as part of a demand aggregation. The theory was that if you could offer a slice of the government financial activity at a regional level then you could make investment possible in a region like Southland.”*

As one interviewee explained, the responsibility for funding the development of telecommunication networks within a regional setting is not always clear. It falls partly under the responsibilities of the regional councils and also of the local councils. The role of regional councils is to manage environmental issues such as land use, air quality, water discharge and transport. Telecommunications isn't something that has been traditionally part of what regional councils do. However, there is some latitude in the legislation, as regional councils are mandated to act in the interests of regional ratepayers. So some regional councils such as Auckland have been proactive in promoting connectivity within their region, whereas other regional councils, such as Wellington have chosen to: *“stick to their knitting in the sense that they're about air discharges, water, land and public transport and not anything else.”*

Building a telecommunications network is a large strategic project; it is common for local councils to band together to create a regional vision and to pool their resources to achieve it. For example Venture Southland looks after telecommunications projects for three local authorities. Smartlinx3 is an example of a joint initiative between three local councils. The three councils considered pooling resources to create demand aggregation, but rejected this

idea due to the fact that there was no unbundled local loop at that time, and also because of high wholesale price offerings. Different community telecommunication initiatives have adopted different funding models. Smartlinx3 is a public/private partnership; the primary focus is on business, but there is also a commitment to community groups and residential customers. CityLink in Wellington started off with a similar model, but when the initial shareholders left, it moved to a pure business model. Technically the two models are identical, but they have differences in their strategic goals, with Smartlinx3 having more of a community focus.

As of 2005, the government was recommending that community telecommunications adopt an open access structure, where the network itself is owned by the community, but any provider may offer services over the network (NZGovernment, 2005). This vindicated the model adopted for the Smartlinx3 project.

The concerns of rural customers about the quality of their telecommunications services have already been discussed. In 1990 Telecom New Zealand was privatised and interviewees in Southland noticed that from that time there appeared to be a general degradation of services into rural areas. Though independent research carried out in 2000 by Amos Aked Swift indicated that all was fine in rural areas, this did not seem to match up with the complaints about low quality telecommunications that the Southland local authorities were receiving from their residents. Southland's vision for the region was dependent on rural people being able to engage with the rural economy. The region-wide availability of good quality communication was essential to underpin this.

In 2002, the New Zealand government launched the Project PROBE initiative to bring broadband to every rural school in the country. The aim was to use ICT to share scarce resources and to overcome the barriers of rural isolation. When Project PROBE funding was put out to tender in Southland, it was awarded to Woosh, which came as a shock to Telecom NZ, who were viewed to have largely forgotten about the rural areas. Their reaction was to start rolling out their network to all the small towns in Southland, so the metropolitan and urban areas are now covered by Jetstream<sup>8</sup>, but ADSL doesn't extend beyond that.

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<sup>8</sup> Telecom New Zealand's broadband product <http://jetstream.xtra.co.nz>

Southland was the only region to choose Woosh as its broadband provider as part of the Project PROBE initiative and in 2006 the company was busy rolling out its wireless network throughout the region. Venture Southland manager Steve Canny claimed that: “*Southland is now the most connected region.*” As of 2006, 85% of Southland was covered by the Woosh wireless network<sup>9</sup>, with another three sites still to go in. The goal was to get 92 to 98% coverage in the region; in the remoter parts of the region this required the use of specialised equipment such as of booster antennae and external director vents. As in Wellington, the communication towers being built for the wireless network were causing some concerns for local residents. The majority of customers that Woosh was picking up in Southland were from the rural sector; the reason is that a lot of the dairy farmers were required to go on the internet a couple of times a day to post information back to Fonterra using the FencePost website

The telecommunications networks in both Southland and Wellington used peering exchanges to route communications locally rather than sending them via Auckland or San Francisco. In Invercargill the peering exchange was situated in the library, which was felt to be appropriate as the library is the hub of information. Venture Southland wanted to take this idea further, and had designed a fibre optic cable network for the City of Invercargill, that could tie in with the peering exchange and could also be used to hook into the Advanced Network currently being developed to link the Universities, Crown Research Institutes and National Library.

#### **4 Regional development**

##### **4.1 1985**

Nationally the government announced plans to restructure regional government and make it more autonomous. A task force was set up with three main aims; firstly to achieve greater co-operation, secondly to look at the scope for change and thirdly to advance regional identity. In both regions plans for local government restructuring resulted in much public debate. The Local Government Commission has asked all the local bodies in the country to investigate the possibility of sharing resources and services with their neighbouring local authorities. They were all to report back by October 1st. The national government view, as expressed by Local

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<sup>9</sup> Woosh wireless (formerly Walker Wireless) a private sector portable broadband provider  
<http://www.woosh.com>

Government Commissioner Brian Elwood, was that smaller units of local government were not equipped to meet the needs of modern New Zealand.

In December the national government approved a system of incentives for regional governments who showed significant improvements in their operating systems. The Local Government Minister, Michael Bassett, announced that the role of regional government would widen and that they would be encouraged to take over many of central government's functions.

In Wellington the local councils at Eastbourne, Petone and Lower Hutt met to discuss the benefits and disadvantages of possible council unions for the people of the region. In general there was an attitude of resistance to any proposed changes, with the Mayor of Lower Hutt, John Kennedy-Good, proposing that consultants be employed to study the financial implications of the amalgamation of local councils. The majority of councillors in Lower Hutt rejected the arguments for local authority amalgamation, and both Upper Hutt and Porirua were concerned that they might lose their representation on the Wellington Regional Council. Tawa favoured remaining independent, and relations between Upper Hutt and neighbouring district of Heretaunga-Pinehaven became strained. There was more evidence of turf wars between Wellington City Council and Wellington Regional Council, with the City Council wanting to increase its representation on the Regional Council from six seats to seven, but being turned down, and the Regional Council reporting that it was often left out of meetings on important regional matters.

In Southland the opposition to the proposed restructuring of local government was intense. In a series of six articles, *Southland Times* reporter Willy Stern discussed the implications of the proposed changes for the region. At the time Southland had 17 territorial authorities, many of them small, and most of the council officials and local residents seemed happy with the status quo. "Proximity of responsibility" was felt to be an important factor, or in other words an official who shops at the same grocery store as the residents they serve is more likely to understand and be sympathetic to the local community's problems. The more local the authority the more personal is the service. An example was given of a borough council in a small Southland town that always sent someone round to collect cheques from a certain old lady who was unable to post them.

The options offered by the Local Government Act of 1974 were to set up district councils, district community councils or community councils, with the district council being the only option with real power. The smaller territorial authorities were worried that they would be downgraded to district community councils or community councils due to their low population. This would take away much of their autonomy. For example they wouldn't be able to borrow money, make a rate, make a bylaw, enter into a contract, hold or dispose of property, or appoint or remove staff. Southland local authorities were given the opportunity to voice these concerns to the chair of the Local Government Commission, Brian Elwood, at a special meeting in Mataura, held in October. However, Mr Elwood's own view was that Southland might be better off with a single territorial authority.

In Southland, local organisations were coming together to set up Southland Promotions Inc., which would develop the Southland region as an attractive venue for conferences, tourism and business, at the same time as working to enhance regional identity and attract talented people to the region.

## **4.2 1995**

In the Wellington region the Kapiti Coast area was experiencing the second highest growth rate of any district in the country. Local politicians developed the "Wellington Charter", which aimed to improve the quality of life for all people in the city. \$2.5 million was earmarked for helping young people find employment, and in Porirua capital works planned over the next 12 years were estimated to cost \$30 million.

An amalgamation between Lower Hutt and Petone was being considered. Hutt City was setting up Community Boards. A proposal for a new development unit to promote Upper Hutt was criticised by local business people. The local Government Commission cut the size of Wellington City Council from 22 to 19. In October, right-wing candidate Mark Blumsky became Mayor of Wellington in a landslide victory, with Kerry Prendegast as Deputy. The newly elected Mayor of Hutt Valley, John Terris, encouraged his constituents to have a more positive image of the area and declared that: "*Hutt City is not a wart on Wellington's bottom.*"

In Southland a new body was being set up to promote tourism in the region, Tourism Southland was replacing Southland Promotions. New staff were being appointed and the

mood was positive. Invercargill City Council was also setting up an economic development unit. Invercargill City had the cheapest rates in the country.

### **4.3 2005**

In Wellington the Regional Strategy Forum was launched as an attempt to provide a vision for developing greater Wellington and the Wairarapa. Though the Wellington region was strong economically there were concerns that it was not keeping up with growth rates in the rest of the country. In 2004 the regional GDP was the highest in the country at \$36,700 per head, 14% higher than the national average. However, between 1998 and 2003, GDP per head rose by 1.6% per year compared to a national average of 2.6% growth. Eight local councils, plus the Greater Wellington Council were involved in drawing up the strategy. The aim was for Wellington to be recognised as one of the top Asia-Pacific cities by 2025, with attributes of strong leadership, a prosperous community, innovation, a healthy environment, a sense of place and strong communities.

In Southland, Venture Southland had been set up in 2000 as the joint enterprise, tourism and community development committee of the Invercargill City and Southland and Gore district councils. The body was under fire from local farmers who felt it lacked any knowledge of primary industry technologies, and resented funding it through their rates. They were particularly annoyed by a reference to farming as a “twilight industry” in the annual report produced by Venture Southland. Environment Southland was also concerned that Venture Southland was duplicating much of its work. There was also trouble over a Deloitte’s survey, commissioned by Venture Southland to find out how Invercargill and Southland were perceived by the rest of New Zealand. In December it was announced that an independent review of venture Southland would be carried out in March 2006. The major project under development was a new velodrome.

## **5 Conclusion**

A region that has good infrastructure should have both good transport and telecommunications network. As well as this hard infrastructure the quality of the soft infrastructure or institutional thickness is also critical. In New Zealand the issue of infrastructure seems to be of more importance than in other country’s with more developed infrastructure, such as Europe and the USA. A well developed infrastructure tends to be taken

for granted; it is when there are gaps that it becomes a more pressing issue. As Kerry Prendergast, Mayor of Wellington stated: *“Broadband technologies and airports are the two most significant investments that cities can make to enable them to compete in the global economy.”*(Prendergast, 2005)

Table 1 summarises the findings, what really stands out over the period is the explosive growth in telecommunications services throughout the entire country. There was a strong belief by both national and local government that high quality telecommunications could add value to the New Zealand economy; broadband was viewed as an integral part of the drive towards developing a knowledge economy. Developing telecommunications infrastructure was a major undertaking that had been tackled by a mixture of national and regional approaches. Ideally these complemented each other, but at times they caused confusion.

	<b>Telecommunications</b>	<b>Regional Development</b>
<b>1985</b>	Monopoly of Post Office is challenged	Restructure of local government resisted in both regions
<b>1995</b>	Use of the internet sparks growth in telecommunications. Wellington becomes an “Info City” with CityLink	Tourism Southland set up to promote region. Wellington Charter aims to improve quality of life
<b>2005</b>	Explosion of interest in telecommunications especially high-speed broadband. Launch of Digital strategy Smartlinx3 in Wellington & Woosh in Southland	Launch of Wellington Regional Strategy. Venture Southland under fire from farmers

**Table 1: Summary of main findings**

In both Wellington and Southland, building telecommunications infrastructure was being tackled at the regional level by a partnership between three local authorities. Different funding models were used; one was 100% public funding; the second a mix of private and public funding. Funding was available on both a national level through the Digital Strategy and locally through local authorities and trusts such as the Invercargill Licensing Trust. The two projects studied received funding from a mixture of regional and national sources. Ideally, the regional and national funds should complement each other, but the lack of clarity about who should be responsible for the development of telecommunications networks did cause some confusion. Both regions demonstrated innovative use of telecommunications;

Wellington by the development of the CityLink and Smartlinx3 networks and Southland by its decision to adopt the Woosh wireless broadband network.

The soft infrastructure of both regions showed evidence of “turf wars” between both national and local government and regional and local government. There was friction between local government and ratepayers, and in the case of Southland, between the local development body and farmers. In Southland a series of organisations were set up to promote collaboration between local government and private industry and improve both the social and economic aspects of the region. In 1985 Southland Promotions Inc was started. This was replaced by Tourism Southland in 1995 and by Venture Southland in 2000. In Wellington, 2005 saw the launch of a regional strategy which aimed to improve co-operation within the region.

Ideally a region will have a well developed telecommunications and transport infrastructure, together with institutional thickness, as demonstrated by lively interactions between different organisations in the region. At both national and regional levels there was significant investment in telecommunications infrastructure. Despite complaints that New Zealand was not keeping up in global terms, it was clear that successive governments were committed to developing telecommunications and believed it would strengthen the economy.

In both regions there were frictions between local and regional government, which worked against the development of institutional thickness. There was evidence of interaction between the different organisations within a region. However, frequent changes caused by local politics meant it was difficult for these networks to develop and grow.

In terms of infrastructure the general picture that emerged is of a clear linear progression in terms of the development of hard networks, but a more attenuated pattern in terms of soft networks where the same issues were revisited a number of times over the years. Though there was evidence of a relationship between the level of institutional thickness that existed at the regional level and the utilisation of hard ICT networks within a region, it was difficult to quantify.

## REFERENCES

- Adams, G. (2005). Fast Internet: making the business case Retrieved 16 November, 2005, from <http://www.istart.co.nz>
- Amin, A., & Thrift, N. (1994). Living in the Global. In A. Amin & N. Thrift (Eds.), *Globalisation, Institutions and Regional Development in Europe* (pp. 1-22). Oxford: Oxford University Press.
- Clifton, J. (2004, July 24 2004). Days of Thunder. *Listener*, 20-24.
- Howell, B. (2006). *Submission: Telecommunications Amendment Bill Presented to the Finance and Expenditure Select Committee*. Wellington: New Zealand Institute for the Study of Competition and Regulation Inc.
- Kelly, T., Gray, V., & Minges, M. (2003). *Broadband Korea: Internet Case Study*: International Telecommunication Union.
- Locke, S. (2006, 28 April). *ICT use in Rural New Zealand*. Paper presented at the Information and Communication Technologies in the Workplace and Communities, Wellington.
- NSC (2004). *Stronger Communities for a Stronger Canada: The Promise of Broadband*: National Selection Committee.
- NZGovernment (2005). *The Digital Strategy: Creating our Digital Future*. Wellington.
- Oram, R. (2006, 29-31 March). *Keynote Speech*. Paper presented at the TUANZ Rural Broadband Symposium, Timaru.
- Parker, E. (2000). Closing the digital divide in rural America. *Telecommunications Policy*, 24, 281-290.
- Paterson, B. (2006, 29-31 March). *Practical Applications on the Farm*. Paper presented at the TUANZ Rural Broadband Symposium, Timaru.
- Prendegast, K. (2005). *Mayors Welcome*. Paper presented at the Digital Cities & Regional Networks, Wellington, New Zealand.
- Rooney, D. (1996). *Playing Second Fiddle: A history of the relationship between technology and organisation in the Australian music economy (1901-1990)*. Unpublished PhD, Griffith University, Brisbane.
- Walker, D. (2006). *Practical Applications on the Farm*. Paper presented at the TUANZ Rural Broadband Symposium.
- WCC (2006). *Information and Communications Technology Policy*. Wellington: Wellington City Council.
- Zilber, J., Schneider, D., & Djwa, P. (2005). *You Snooze, You Lose: The Economic Impact of Broadband in the Peace River and Similkameen Regions*: 7th Floor Media, Simon Fraser University.