COMMUNITY INVESTMENT IN TELECOMMUNICATION INFRASTRUCTURE: BENEFITS AND BARRIERS

Ross Kelso
Email: kelso@melbpc.org.au

ABSTRACT

The onslaught of 'deregulation' and increasing competition has lead to the ready availability of specialized skills that were previously the domain of Telstra. Documented processes and prices for interconnection are now in the public domain and access agreements between carriers are commonplace. Furthermore, the provision of telecommunications hardware and software, plus systems operations and management, has become highly competitive. Alternative sources of finance can now also be accessed. Against this backdrop of significant change there has been an ongoing trend for continually increasing capacity of optical fibre and increased access to radio spectrum. Together these factors are significantly contributing to falling input costs for both basic and enhanced telecommunications services.

Despite the competitive supply of services to end-users, there remains considerable scope for new arrangements that can contribute to a significant decline in prices for traditional services as well as opportunities to exploit wider bandwidth services that are de-coupled from historic pricing regimes. Canada, United States of America and Sweden experience shows that community control of infrastructure (often underpinned by community financing) can lead to significantly cheaper services as of now and into the foreseeable future, plus greater flexibility in the deployment of advanced services. Such control can take varied forms and doesn't necessarily imply ownership, operation or the actual delivery of services by those in the community group..

A rural or regional community desirous of improving their telecommunications future could directly invest in their own optical fibre cable, negotiate for an 'irrevocable right of use' of an existing cable, or co-invest in a new roll-out planned by a carrier or non-telecommunications utility. Control could exist over one or more individual fibres or merely one or more optical wavelengths of a shared fibre.

As an example of new approaches to financing (new for telecommunications but not uncommon for other utility services), land developers in Canada and the United States of America are now bundling the cost of fibre-to-the-home services in with house and land prices. Through such means, cutting edge service provision for decades to come can be provided at the outset for new communities rather than waiting years for carriers to finance upgrades to legacy networks. There are also similar solutions for existing communities.

The paper discusses the benefits possible to accrue from community investment strategies and suggests ways to address the expected barriers to successful investment. The project initially grew out of meetings and discussions held with parties throughout Canada, the USA and Sweden during 2000 and 2001. Subsequent research identified a number of pertinent case studies that have since been evaluated in detail.

Introduction

The onslaught of 'deregulation' and increasing competition has lead to the ready availability of specialized skills that were previously the domain only of Telstra. In a sense, such skills have been commoditised. Documented processes and prices for interconnection are now in the public domain and access agreements between carriers are commonplace. Furthermore, the provision of telecommunications hardware and software, plus systems operations and management, has become highly competitive. Alternative sources of finance can now also be accessed. Against this backdrop of significant change there has been an ongoing trend for continually increasing capacity of optical fibre and increased access to radio spectrum. Together these factors are significantly contributing to falling input costs for both basic and enhanced telecommunications services.

Against this backdrop of significant change there has been an ongoing trend for steadily increased capacity of optical fibre and increased access to radio spectrum. Together these factors are significantly contributing to falling input costs for both basic and enhanced telecommunications services. However, despite the competitive supply of services to end-users, there remains considerable scope for new arrangements that can contribute to a significant decline in prices for traditional services as well as opportunities to exploit wider bandwidth services that are de-coupled from historic pricing regimes.

Canada, the USA and Sweden experience shows that community control of infrastructure (often underpinned by community financing) can lead to significantly cheaper services, plus greater flexibility in the deployment of advanced services. Such control can take varied forms and doesn't necessarily imply ownership, operation or the actual delivery of services by those in the community group. Third parties are commonly used to deliver the latter.

For the purposes of this paper, the term 'community' is taken to refer to a group of members of the public with common interests who more than likely live in a particular area. Their common interest is that of being telecommunication end-users and the telecommunication service is typically, but not always, delivered on a not-for-profit basis. At times their interest may be served through a representative organisation such as municipal government (in which case the end-users could be an agency that is closely associated with the general public) or an association such as a co-operative.

The activity of 'investment' is regarded here as taking on the traditional monetary understanding, rather than one of creating 'social capital' through activities such as training, co-operation and the building of trust within a community. A common interpretation of 'infrastructure' implies things that are physical such as a duct, tower or cable, although a telecommunications system can also entail computers and computing software.

Benefits Possible from Community Investment

Some communities within Canada, the USA and Sweden have successfully invested in telecommunications infrastructure that, in their opinion, better serves their needs than would apply if infrastructure were controlled by private investors. Overseas case studies examined included:

- Affluents Condominium Dark Fibre Network (Canada);

- Blacksberg Electronic Village (USA);
- Community Wireless Local Area Networks (USA);
- Harlan Municipal Telecommunications (USA);
- Kanal Tierp (Sweden);
- Northwest Open Access Network (USA);
- Regional Fiber and Fiber South Consortia (USA);
- Stokab AB (Sweden); and
- Upper Canada Networks (Canada)

TransACT in Australia was also considered examined. The benefits to each community are perceived in terms of local circumstances and these differ from one community to another. The following propositions are a synthesis of all possible benefits and in particular instances some may apply to a greater or lesser extent than others.

Open Access

Private investment implies private ownership and/or control of how the infrastructure is to be used. Financial risk taking is rewarded by a degree of rent taking and this is usually achieved through operating a vertically integrated business. Depending on the nature of governmental regulatory control, such private infrastructure operators may be required to permit access by other service providers on agreed terms. Typical problems (for the access seeker) arising from regulated open access regimes include delay in gaining access, excessive charges and proprietary interfaces. Communities can argue that where such private infrastructure is a monopoly or multiple private operators behave as an oligopoly, telecommunication services to end-users may be more expensive than necessary and may be less likely to satisfy evolving needs.

Now that optical fibre technology offers virtually unlimited bandwidth capacity, the incremental cost of additional bandwidth approaches zero. Advocates of unfettered open access contend that ownership of fibre infrastructure should be structurally separated (ie. in a business sense, if not also in technical implementation) from the provision of services.

To date, the most successful example of structural separation of infrastructure from services resulting in easy availability of dark fibre to competitive carriers and service providers is that of Stokab which is a municipally-owned operation in and around Stockholm, Sweden. The Swedish case for separation is also presented by Odhnoff et al (2001, p.14) who argues 'the infrastructure will be open to everybody, on non-discriminatory terms at cost-based prices'.

Another example now being implemented is that of the Regional Fiber and Fiber South Consortia in South Western Oregon, USA. Controlled by a number of municipal governments whose only desire is to promote economic development and not themselves deliver services to end users, the Consortia gained control of approximately 320 km of twelve strands of fibre which is now being utilized by a private sector partner but as an 'open platform' to encourage competition among a wide variety of service providers.

The provision of high-bandwidth advanced network services to whole communities, such as via fibre-to-the-curb or fibre-to-the-home technologies, is calculated to be a rather expensive proposition. With initial low take-up by consumers causing high financial risk for investors, the issue of closed or open access is very real. Some commentators consider that such infrastructure would be 'the end game' in that a natural monopoly would inevitably arise. To

keep the cost of installation at a reasonable level, it would be necessary to wire (or re-wire) a whole neighbourhood at the same time and that necessitates collective decision-making. Clark (1999) contends that:

> *Given the risks to the private investor, and the inability of the individual consumer to act independently, it is possible that the future picture is one in which the access technology is a recognized monopoly or a non-profit or government sponsored facility, but there is open competition for all the services that run on top of it, including telephone, television and the Internet.*

Cost Effectiveness

For community enterprises to adequately differentiate themselves from private investor businesses, they are generally run on a not-for-profit basis, since their rationale is to provide reliable and quality services to community members at the lowest possible cost. Where the community body is a local government, legislation may specifically prevent operation on a for-profit basis. In Canada, the USA and Sweden it has been common (although not universally the case) for such telecommunication enterprises to be municipally run or otherwise facilitated by municipally owned electricity utilities. At least in Canada and the USA, municipal governments can levy fees for use of public rights-of-way by carriers or can reach a contra-deal by which such fees are waived in return for ownership or control of strands of optical fibre. In the above situations, community investment in telecommunications can become even more financially attractive.

As part of its investigation into how to create technically enabled communities, the Smart Winnipeg Corporation documented what it saw as the benefits of a municipal telecommunication network that would result in reduced communication costs between municipal owned buildings, libraries, schools and hospitals among others. The benefits it noted with an economic element included:[1]

- Excellent return on investment;
- Short pay back period, typically less than 3 years;
- A potential source of continuing revenue for the municipality;
- Relatively small amount of resources needed if the services of a Electric Utility are involved;
- Ability to capitalize telecom costs, rather than paying on-going operational costs that will, over a relatively short time, exceed the capital cost; and
- Condominium arrangements (involving partnerships between municipalities, utilities and industry) can substantially reduce the initial costs.

This list omitted another benefit that is often quoted, viz. community investment (generally in dark fibre) can lessen or prevent costly overbuilding of identical cable infrastructure and in some cases avoid unnecessary reduction in the economic life of roads and footpaths that would otherwise be repeatedly excavated by multiple carriers.

Economic evaluations of community investments are difficult to find but the following examples illustrate that some can be quite cost effective, as well as providing intangible benefits (Kelso, 2001: section 3.5.4):

- Affluents Condominium Dark Fibre Network - An independently conducted post implementation review determined a break-even point of 44 months;
- Peel Region Public Sector Network - Constructed by the Region of Peel, the City of Brampton, the City of Mississauga and the Town of Caledon, a rough savings calculation showed that the initial investment would be paid back in three years or even earlier as further network subscribers are added;
- Iowa Communications Network - This state government-run network serving selected state agencies has achieved a 25 per cent rate of return on investment for each of the last four fiscal years.

Responsive to Needs

Harlan Municipal Telecommunications illustrates a community dissatisfied with the poor and unresponsive service delivered by private investment. A municipal ballot gave majority support for the municipal electricity utility to establish a communication system that now provides cable television, high-speed Internet and telephony services. Local voters directly elect the utility board of trustees.

Many of the rural USA telecommunications carriers are constituted as co-operative organisations. They came into being mainly after 1949 legislation created a source of federal loan funds to finance rural telephone systems. The Bell and other large telephone companies were already well established in the cities and growing suburban areas, but most neglected the sparsely populated rural areas due to the high costs involved. This unfilled need for a telephone service caused rural communities to join together, finance and build their own telephone systems. Citizens canvassed the countryside, knocked on doors and talked their neighbours into signing up and paying a small equity fee. Directors were elected, articles of incorporation drawn up, loans applied for and network construction commenced. There are now more than 500 rural telecommunication companies serving approximately 2.6 million subscribers.

A 1998 report published by the peak body representing these rural telcos noted:[2]

> *Because these companies are socially embedded in their local communities, their managers can employ their skills and expertise not just to encourage network diffusion and technology transfer, but also to assure that rural networks build on local strengths and resources and are tailored to local needs.*

Economic and Strategic Development

Proponents of community investment argue that, just as access to roads over past decades have spurred local economic development, so will access to optical fibre infrastructure and services influence the success or failure of future community economic development. Road access was open to all – no operator could exclude others and new services could not be withheld. Nowadays, the services derived from optical fibre infrastructure servicing a community must meet local needs and be affordable.

It is argued that community investment retains more of the dollars earned within the community. The lower service tariffs arising from not-for-profit operation act as a direct inducement to new industry to come and for existing industry to remain. Dark fibre, once paid for, offers the potential for much greater bandwidth at lower tariffs than before and this

translates into lower latency, more applications being developed and greater overall use. Municipally owned fibre also presents opportunities for new alliances and partnerships with industry that promise further long-term benefits.

An FCC inquiry into the availability of advanced telecommunications capability in the USA observed that once local communities build their own advanced facilities:

> *Businesses in the community that previously feared being left behind in a digital age, no longer fear being forced to relocate to have access to the modern communications they need.* (FCC, 2000: p. 73)

It also noted the importance of incorporating telecommunications needs into other (strategic) planning efforts in the community such as economic development, education and healthcare:

> *Through these efforts community leaders can understand the potential uses and demand for high-speed services. Then, by combining this knowledge with an understanding of the existing infrastructure and the service options available, community leaders can strategize on how to obtain the advanced services they need.*

Encouragement of Competition

The case of Harlan Municipal Telecommunications further illustrates that competition from local municipal utilities has caused the incumbent private cable television company, viz. TCI, to offer more channels and at a lower price. (Haug, 2001) The threat of competition from city utilities was also reported to be the cause for TCI to be spending on a network re-build that may not otherwise have taken place.

Haug (2001) also makes the case that municipal utilities can be a 'yardstick for competition' against which the rates and services of other (private investor) utilities can be measured, although this claim is disputed by a report that noted:

> *..these hidden subsidies permit public utilities to undercut the prices charged by private competitors, they distort the marketplace, deter entry by real competitors, and thus prevent the marketplace from setting cost-based prices.* (Eisenach, 2001: p.15)

Underlying the creation of dark fibre networks, which in the absence of appropriate legislation are only ever likely to be decreed to be 'open access' when operated by a community-based enterprise, is the expectation that such platforms will encourage competition between service providers. Such competition can lead to lower cost services or even the development of superior services. The impact of municipal networks on private providers in some rural USA communities was noted to be beneficial:

> *If municipal provision of high-speed infrastructure encourages growth and establishes the demand for high-speed services, other providers such as cable and telephone may then find a sufficient client base to begin to offer their own services.*
>
> *Municipal utilities-based deployment may also allow private providers to realize time and cost savings, for example, by sharing unused dark fiber capacity and using public right-of-ways.* (FCC, 2000: p.64)

Addressing Barriers to Successful Investment

Although the case studies cover a range of experiences, they may not be representative of all possibilities. Information about successful initiatives is always easier to obtain than for those

that failed and even the successful ones may at times be documented in misleading terms. Nevertheless, from these case studies, associated interviews and other readings it is possible to appreciate the likely barriers to success and how these may be ameliorated or overcome.

Financing and Funding

Whilst individual projects will always call for project-specific advice, there is a need for generic 'how to' material of a financial nature to better advise community telecommunications aspirants. Such material should be freely available from government agencies and cover topics including financial comparisons, business case modelling, funding sources, types of finance and risk assessment. Investment proposals are most difficult to scope with any certainty without information such as:

- Indicative service tariffs from carriers, particularly at the wholesale/interconnect level;
- Indicative per-unit costs of construction and maintenance of new telecommunication infrastructure.

Until now, this sort of information has been considered commercial-in-confidence within the telecommunications industry and generally obtainable either via confidential agreement with carriers or payment for expensive consultancy advice. New infrastructure opportunities of value (for example, the availability of partners, synergies with carrier plans) may only have a short time window of value or may be quite focussed on specific localities. Speedy planning and decision making is therefore of the utmost importance.

Local governments are more than likely to be significant partners in ventures to create community telecommunications infrastructure. Depending on particular state jurisdictions, they can be constrained as to their ability to borrow funds, to form businesses or to enter into partnerships. Constraints of these natures need to be substantially lessened or totally removed, subject to normal requirements for good governance.

A recent study of high bandwidth initiatives developed in Canada, the USA and Sweden noted that unless a munificent third party such as a municipally-owned electricity utility agrees to make the capital investment and charge back lease fees, the community aspirants will be required to commit upfront capital expenditure. Funding sources can include a mix of private sector loans, government treasury loans, government grants or deferral of other capital projects, and need to be supported by local accounting arrangements that retain credit for consequential operational savings. (Kelso, 2001) In Canada and the USA, right-of-way fees are also a particularly valuable source of funds and can also be directly traded for infrastructure via contra-deals with carriers. Upfront capital expenditure constitutes the major component of the risk taking and poses particular difficulties for the community sector. Staging the expenditure over a number of years may lessen the burden but can also diminish initial savings.

Due to the potential for unique demonstrator value within Australia, it is important that a few pioneering yet representative examples of community investment in telecommunication infrastructure are facilitated. Specific compensation may be necessary in recognition that initial projects are likely to encounter greater barriers than subsequent ones for the following reasons:

- It may be more difficult to attract sufficient suitable partners to share total construction costs until the strategic and social importance becomes more widely appreciated; and
- Tender prices may be higher than normal due to the small project size, novelty in specification and/or uncertainty as to repeat orders.

For these reasons, such projects will need seed funding via government grants, perhaps along the lines of a much expanded and more widely accessible version of the Commonwealth government's recently announced National Communications Fund.

Organisation and Collaboration

It is particularly important for community organisations to maintain cohesiveness within their membership during the lengthy gestation period from initial concept, through the planning period and culminating with implementation. Key emphasis needs to be given to thorough planning and policy development, maintenance of good record keeping and frequent communication with stakeholders.

Kelso (2001) has observed that a pivotal third party is generally required to facilitate access to affordable advanced telecommunications infrastructure and that such parties tended to involve governments at one level or another – often a municipal government, but sometimes a state government. These entities can directly intervene as one or more of:

- Implementers of a strategic vision, commonly favouring institutional users;
- Providers of capital expenditure, either directly for a closed-user institutional private network or communally for a public open-access network;
- Controllers of rights-of-way underground along highways and/or aerially via electricity utility poles;
- Licensed owners of network infrastructure, in the case of government-owned utilities.

Although not common, a privately owned utility or carrier may decide to favour the community or institutional sector, either in the public good or for a perceived strategic advantage. Other partners in any condominium dark fibre network are also crucial in their role of reducing the overall financial risk. The major challenge for the community aspirants is to reconcile such support with their usual requirement for independence.

Within Australia, the initial prospects for municipal government involvement are likely to be poorer because:

- A number of Australian municipal governments once owned and operated electricity utilities but relinquished that role during the last 10 years;
- They have no significant regulatory role or leverage opportunity regarding telecommunications, except for the recently-gained responsibility for approving 'high impact' facilities installation such as aerial cabling and the possible right to rate carriers owning cabling;
- Since the espousal of National Competition Policy in 1995, and the 'de-regulation' of telecommunications between 1991 and 1997, state and federal governments have tended to move away from direct participation in the delivery of telecommunications infrastructure or services.

Instead, local governments (particularly in regional areas) and certain state government agencies could be more likely to serve as condominium partners, by sharing the costs (and risks) of constructing and operating dark fibre wide area networks or WANs. Without the support of an agreeable (government-owned) utility, Australian community aspirants would then need to take the unusual step of creating their own telecommunications carrier or otherwise relying on cooperation from a carrier under a Nominated Carrier Declaration arrangement.

The availability of a few viable demonstrator examples of community infrastructure in Australia would act as exemplars against which more sustainable organisational and collaborative arrangements could be developed.

Legal and Regulatory

Closer examination of the overseas case studies illustrates the relative ease that community-based organisations experience in deploying and operating a telecommunications network in both Sweden and Canada, with the situation in the United States being more variable.

Sweden has adopted perhaps the most liberal regulatory regime in the world. As an example of the low barrier to new entrants, all that is required for a company, or municipal government for that matter, to deploy a telecommunications network is for that organisation to declare its intention to operate as a non-dominant carrier.

In Canada, cable television companies were recognised as common carriers in 1996 and thereby gained access rights to the poles and conduits of the incumbent carriers and the electricity distribution companies or 'Hydros'. By 1997, various school boards, universities, municipalities and small carriers began to realise that they (or a broker acting on their behalf) could register as non-dominant carriers and thereby gain the right to build their own fibre networks. The Canadian Radio-television and Telecommunications Commission only requires a non-dominant carrier licence to demonstrate Canadian ownership plus evidence of plans for creating telecommunications facilities – a relatively small administrative task plus a small application fee. In practice, many of the Quebec condominium dark fibre networks have been created under the umbrella of a cooperative carrier or cable television company.

The regulatory scene is more complex in the USA. Within the federal domain of the US Communications Act and related legal precedence, networks serving schools, other educational institutions and public sector agencies are be generally exempt from common carrier regulation provided they are closed to the external public. (Thorne, 1995: p.127) Apart from national rules and regulations administered by the Federal Communications Commission or FCC, every state has its own public utilities commission and most cities and towns also exert a degree of local control regarding right-of-way fees. The result is a decided lack of uniformity across the country in regulatory approach and a plethora of legal judgements within many jurisdictions that are being constantly challenged and re-interpreted.

Within Australia, the present regulatory regime recognises two broad categories of owners and operators of telecommunication networks – commercial carriers operating without geographical or service limitation, and private networks that are not open to the public. To facilitate the development of community investment in infrastructure and services, there is scope for creation of a new 'not-for-profit' category for a network unit owner. Not-for-profit

networks need not be limited in terms of either geographical reach or carried traffic, except for a requirement that they operate on an open access basis for all service providers. They would be exempt from most of the obligations applicable to commercial carriers. The legal status of the controlling entity would be similar to that of any not-for-profit social, cultural, artistic or educational body and could be incorporated as a cooperative or association.

Technology and its Application

In Australia, the dominance of Telstra and limited competition has resulted in information on the whereabouts and nature of telecommunication facilities being mainly treated as commercial-in-confidence. Where some information is publicly accessible, it is held in a disjointed manner and is difficult to verify. The reporting requirements imposed by regulators are minimal.

There is a widespread need for data about telecommunications infrastructure and services presented in numeric and geo-spatial formats, and for such data to be held in the public domain. A 'telecommunications atlas' would store and present data on facilities such as optical fibre routes, radio transmission tower locations, Internet points of presence and service tariffs in a geospatial format.

Optical fibre constitutes infrastructure of the most basic type and one that provides unparalleled capacity for innovative applications. Direct control of fibres, through ownership or perhaps a lease agreement, offers the key to affordable high bandwidth for communities. Ethernet protocol operating over such fibre is preferred for the interconnection of institutional local area networks or LANs (such as those of schools, municipal governments) to form wide area networks or WANs. The case studies, supported by Kelso (2001), highlight the desirability of employing affordable unlit or 'dark' fibre for such applications. Regardless of the geographic spread of LAN sites across tens or hundreds of kilometres, network servers can then be rationalised wherever desired with no deterioration in network performance. The dark fibre-enabled WAN then becomes an aggregated LAN whose traffic may comprise a mix of data, video, Internet and telephony services. (St Arnaud, 2001)

Further economies arise from adopting the 'condominium' approach to fibre cable construction. A condominium fibre is operated like a multi-storey apartment building, in that separate parties can exercise sole discretion on how to use their fibre assets. Each party is free to carry any type of traffic and terminate the fibre any way it chooses, rather than accept managed services from a carrier.

Although optical fibre provides the only viable means of carrying high bandwidth data over long distances without impairment, radio-based technologies can be cost effective in less populated areas whilst bandwidth requirements remain modest. Most radio spectrum is accessible only under licensed conditions and the payment of licence or access fees. Community and even some commercial users instead exploit a few unlicensed bands but without any guarantee as to quality of service.

Unlicensed spectrum is increasingly being used for providing 'tetherless' LANs within schools (typically providing shared bandwidths of the order of 10 Mb/s) and for connecting hard to reach schools to distant Points of Presence. Other applications deliver backbone transmission by microwave systems atop towers. The latter instances are demonstrated by

Upper Canada Networks where the 2.4 GHz band is exploited to deliver 11 Mbps point-to-point and 5 Mbps point-to-multipoint bandwidth and services to rural users.

Conclusion

The concept of customers investing in telecommunications infrastructure is not new. Before the days of a universal service obligation (let's say, pre-1990), those subscribers living remote from the last point of connection offered by the then PMG Department or Telecom Australia (now Telstra Corporation) were required to contribute towards, and in some cases, fully provide the last mile or few miles of telephone cabling. Since 1990 with the deregulation of customer cabling, all subscribers, even those in metropolitan areas, have been responsible for providing a trench on their own property to accommodate a conduit for underground telephone cabling. Many of us now are now willing to spend a few thousand dollars to purchase a computer, modem and software to access the Internet, whereas in earlier years the only item of 'customer premises equipment' required, the telephone handset, was rented at a small charge from the PMG Department or Telecom Australia.

This paper has instead examined the proposition of a group of members of the public with common interests and more than likely living in a particular area, directly investing in telecommunication infrastructure of a certain type that is installed beyond their private property, ie. cabling along streets and roads, or perhaps using radio means, but arranged to serve the community at large. Of course, an equivalent outcome could always be achieved in the traditional manner, with investment from persons other than those directly served in a given community. Such private investors have the prime objective of making a return or profit from their investment. In contrast, community investors are primarily interested in their future needs being met by a new telecommunication service that is generally delivered on a not-for-profit basis. These investors prefer to plough back any investment return into the delivery of new services or otherwise to achieve a discounted price for their services. Such objectives are more those of a cooperative or community association where no one member has a greater say than another, and any return on an investment is distributed equally to all.

A number of community investment enterprises have been observed in Canada, the USA and Sweden that are now successful or are on the way to success. However, it must be emphasized that even in these countries, unless the conditions for community investment in telecommunication infrastructure are favourable, such enterprises are the exceptions rather than the norm. To be a success, they must either be positively encouraged as in Sweden or take advantage of certain local opportunities as in parts of Canada and the USA. As such opportunities may be temporal, speedy planning and decision-making are often essential.

All types of common infrastructure, as in roads, maritime ports, sewers, dams and airports, are seen to be beneficial in enabling economic development since such facilities are more economically efficient as the basis for delivering cost effective services in the long term. Telecommunication infrastructure is no different. The community uses or consumes services rather than infrastructure, but in some situations where left to solely to the initiative of private investment, existing infrastructure may not be adequately exploited to deliver the services required by the community in a timely or affordable manner, or the necessary infrastructure may not exist in the first place (or be created in time to deliver the affordable services when required). Community investment groups are generally uninterested in the business operations of service provision, which is recognised as more the domain of specialist service providers. Rather they tend to argue that service providers should compete for delivery over a

common set of telecommunication infrastructure in the same way as competing delivery trucks access a common roadway. This implies infrastructure operating under an open access regime, which also accords with good public policy principles where public monies are also involved.

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[1] Refer to http://www.smartwinnipeg.mb.ca/connectivity_manitoba.htm#_Toc508697363

[2] Refer to http://www.ntca.org/leg_reg/white/white_paper-1.pdf (page 14).