



# **Delivering Real Broadband to Rural and Remote Australia**

How Next Generation Networks can be Leveraged to Deliver Enhanced Broadband to Rural and Remote Areas in Australia

Submitted by:  
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## ***Axia's solution for Rural and Remote Areas in Australia***

Axia NetMedia Corporation is pleased to offer our recommendations to the Regional Telecommunications Independent Review Committee regarding how to provide advanced broadband services to the more rural and remote regions of Australia. Core to Axia's model is the premise that fibre optic Next Generation Networks, such as the proposed Australian National Broadband Network (NBN), are critical communications infrastructure that requires a regulatory and operating model fundamentally different from the current monolithic vertically integrated telecommunications companies. Vertical integration, where a single company owns the network infrastructure, the operations and wholesale services on that network and still competes in the retail market, results in a fundamentally conflicted telecommunications market where competition and innovation are stifled. A value chain where the supplier of a critical service to a market also competes with each of its customers in that market is simply dysfunctional.

It is rural and remote areas that are some of the biggest casualties of a vertically integrated incumbent dominated market. Geographic dislocation and small populations in rural communities lead to a situation where the incumbent Telco is unwilling to invest in new infrastructure and services in these communities yet still preclude others from these markets by high wholesale and backhaul rates. Axia's Open Access Network model provides a long-term infrastructure solution to this communications dilemma.

## ***Bridging the Digital Divide***

The Digital Divide, in the context of broadband networks, is defined as the discrimination of broadband availability and cost based on location, population and current economic feasibility. Rural communities dispersed across large geographical areas are facing an ever widening Digital Divide where reasonable broadband services are either cost prohibitive or simply unavailable. The vital point to note is that broadband is no longer simply a means to rapidly surfing the internet. Broadband networks, utilizing the Internet Protocol (IP), will come to replace the legacy telecom networks in place today. IP is the 'universal language' of modern networks allowing the delivery of voice video and data services over a single ultra-high speed network. Voice over IP (VoIP) and IPTV are in the process of replacing the existing plain old telephone (POTS) and TV services. Moreover, an infinite array of retail, commercial and government services will be delivered via high performance broadband networks. In the near future a large portion of the education, health, financial and government services we receive will be delivered via such networks. Therefore, a lack of high speed broadband availability means rural and remote communities will not only be disadvantaged from a service perspective, but they will be cut-off from the modern economy.

Governments are now recognizing the necessity of Next Generation Networks as a critical infrastructure required across an entire jurisdiction. In order to bridge the Digital Divide governments are faced with the challenge of developing policies and solutions that facilitate the creation of Next Generation broadband infrastructure that enables every community to be connected to a digital services Global Gateway.

## ***Government Requirements and Challenges***

Contrary to what many believe, the digital divide is not caused by the cost of the local access or "last mile" services to these rural communities. It has been demonstrated that per capita local access costs are essentially equivalent whether you are building such access in a rural community of 300 or a city of three million. The real cause of the Digital Divide is the backhaul cost of connecting that rural community to a global gateway located typically in a metropolitan centre. The Global Gateway is the competitive and completely open digital services market where businesses and retail end-users have complete control over what services they buy and from whom. Therefore, a Next Generation Network initiative should strive to connect all communities, no matter how small, to the fibre grid. However, even with best efforts to bring all communities onto the fibre network, for the foreseeable future there will be individuals or tiny remote

communities where the only viable technology is satellite. Such communities will fall within two percent of the Australian population. However, even when the delivery method is satellite it is possible for the NBN Operator to integrate that satellite service into the NBN to offer all users access to the services offered at the Global Gateway.

In addition to the need to get its communities onto the fibre broadband network, governments around the world have a similar set of requirements:

1. A policy platform that aims to: drive economic development and diversity across the jurisdiction; raise the level of education and health services and utilize technology to deliver a higher level of government services at less cost.
2. A need for a vibrant, competitive and innovative Application Services sector that will drive applications and advances that deliver to the policy platform.

Furthermore, there are some common impediments that hinder governments from implementing a world class, jurisdiction-wide Next Generation Network that serves the current and future needs of its constituents:

1. A regulatory framework that is weighed down in the old paradigm of copper telephone networks with a focus on voice and video services. In most cases existing regulation is ineffective at dealing with converged IP Next Generation Networks.
2. An incumbent Telco that is preoccupied with maintaining its monopoly position by controlling both the old infrastructure and the services that are offered on the old networks plus the new Next Generation Networks.
3. A lack of awareness of alternative business and technology models that take advantage of the inherent benefits and economies offered by fibre optic Next Generation Networks.

## An Open Access Solution

The technology solution to the Digital Divide is to create a jurisdiction-wide Next Generation Network that delivers fibre optic connectivity and IP services to every community within the jurisdiction. The key to delivering on the policy imperatives, while overcoming the common hurdles, is to operate this Next Generation Network on an un-conflicted Open Access basis.

For an un-conflicted Open Access Network to both meet a government's policy goals while encouraging adoption and competition it must have the following characteristics:

1. The network should be segmented horizontally rather than vertically. The appropriate segmentation is:
  - a. A community inter-connect dark fibre grid;
  - b. An operator of the active electronics and wholesale service on the network; and,
  - c. A Local Access and Application Services sector.
2. Each segment can then be regulated and operated in a manner that is appropriate to meet the government's policy goals. Specifically, the fibre grid should be regulated as the natural monopoly that it is. The NGN operator must be required to operate the network on an un-conflicted Open Access basis.
3. The Application Services sector would be regulated as required. For instance, voice and video regulation can be evolved to reflect their delivery over a converged NGN whereas most other digital services would be unregulated. Regulation and/or public policy also define the level of 'cultural governance' that in turn sets appropriate content and usage guidelines.
4. The government should apply strict structural separation between the NBN Owner/Operator and the fully integrated information and telecommunication services sectors. That is to say, Australia should preclude the NBN Owner/Operator from

participating in the local access and retail telecommunications business. This form of structural separation eliminates the existing conflict between the incumbent Telco and the retail services market that they service.

5. A single rate structure for the entire network must be adopted. Distance charges must be eliminated. Metro-equivalent pricing at any point on the network eliminates the Digital Divide experienced in the rural communities.

While there are other elements of an un-conflicted open access market that create significant benefit for a jurisdiction, the attributes identified above specifically address the community interconnect issue and in doing so solves the Digital Divide.

## ***Serving the Community through Local Access Service Providers***

The un-conflicted Open Access Network model described above is specifically designed to encourage and foster provision of broadband services in even the most rural of communities. Under Axia's proposed market model the existing fully integrated Telecom companies typically become service providers on the NGN. However, since the NBN wholesale operator is not a competitive threat in the local access sector and access terms and rates are identical for the small operator as they are for the large incumbent operators, specialty niche Local Access Service Providers (LASPs) will emerge to serve the specific needs in each market.

The NBN wholesale operator is motivated to encourage such LASPs and assist them in being successful as their success will generate increased bandwidth requirements of the network. The LASPs are truly the network operator's customers, not competitors. LASPs have the freedom to bundle or un-bundle their services to optimize their market position.

### **Stimulating the Market – Providing Quality Services**

Axia's experience has demonstrated that adopting this Open Access Network approach stimulates formation and entry of Local Access Service Providers that range from entrepreneurial small business owners that become a LASP to serve their own needs and perhaps the 30 families and businesses that exist in the community to fully integrated national players with a sophisticated selection of products and services.

The common rate structure that leverages the inherent efficiencies and economies of scale that are created by these Next Generation fibre optic networks make these smaller, specialized LASPs economically viable. Rural communities who have been un-served or underserved have access to broadband connectivity at a comparable rate to urban areas and in many cases have competitive services where none existed before.

Given its technological and market dynamics, Axia suggests the local access component of the NBN have the following market and regulatory characteristics:

1. Market driven demand of local access technologies. Unless it is the Government's intention as part of its NBN initiative to create another virtual monopoly in retail and commercial NBN services, the government should not dictate a single local access network technology. The preferred approach is to encourage and support competition in the local access market by allowing the various segments of the market (e.g. metropolitan, regional and rural) to drive demand for the appropriate technology for that segment. However, in other communities DSL and/or wireless technologies may be more appropriate and completely viable.
2. Vibrant competition in the local access market. Competition is desired and healthy for the local access market and competition in this sector will help drive lower prices and ensure innovation and a choice of technologies to the marketplace.
3. Functional and truly open regulated access to copper local loops throughout Australia.

4. Regulated access to Telstra nodes and central offices to enable easy interface between the new no-conflict open access back-haul network and the copper local loops.
5. Create competitive and affordable access to wireless spectrum to create viable wireless alternatives for fixed wireline local access solutions.

Together these elements will foster the emergence of a dynamic and competitive local access market in small regional and rural communities wherever they have truly open access to an ultra-high performance community inter-connect network.

## ***Economics of a Next Generation Network***

Axia's Open Access Network model is a flexible technology and commercial framework that allows it to be fully tailored to the specific requirements of a particular jurisdiction. The core principles of the model such as un-conflicted open access, structural separation from the services sector, and a common rate structure with no additional tariffs on distance, are all specifically designed to address the fundamental issues facing governments today in their telecommunication sectors. These core principles combined with a flexible set of economic and regulatory 'levers' in the model allow Axia to address the specific demands from a government.

Axia starts with the fact that the economics of Next Generation Networks are vastly superior to those of the existing incumbent copper networks. The economies of scale created by a state-of-the-art all fibre network are absolutely compelling. Next Generation Networks leverage the virtually limitless capacity of fibre optic cables to deliver incremental bandwidth speeds and prices that simply cannot be matched by copper. Axia leverages these economies to create a set of services and affordable rates that are simply unavailable in Australia today.

Incumbent Telcos will claim the same benefits of the fibre that exists in their networks, but the reality is that their's is a hodge-podge of aging copper together with some fibre integrated together with various electronics and communication protocols that are tied to the voice communication technologies of the past. The personnel, system, regulatory and process overheads of an incumbent Telco simply preclude it from being able to efficiently own and operate an NGN and then pass the associated economies of sales savings back to the market and community.

Given the economics of a Next Generation Network, the options available to governments to procure this critical infrastructure are numerous. The Public-Private Partnership (PPP) model is being effectively used around the world to build new infrastructure. The combination of public and private capital not only provides valuable leverage on government spending, but it creates an economic alignment that results in better market-driven outcomes for the public benefit. In addition, since these networks truly are critical infrastructure, it only follows that government should use the network for its own business once the network is in place. The government as anchor tenant not only delivers world-class government services, but it ensures viability of the network in the marketplace.

In some cases the government serving as anchor tenant is enough to fund the construction of the network. In other cases one time capital grants are required to complete the build out and ensure it stretches to every community that the government selects. In all cases Axia maximizes the use of appropriate existing infrastructure to minimize build costs. In the case of the Alberta SuperNet, thirty percent of the 11,000 kms of fibre is either leased from a third party (including the incumbent) or co-built with other parties.

The combination of compelling economics together with Axia's flexible commercial model result in the cost of building and operating a Next Generation Network being smaller than many governments think possible. The ultimate goal is the creation of critical broadband infrastructure throughout an entire jurisdiction – not only metropolitan centres, but regional, rural and remote areas as well. With its Open Access Network model Axia NetMedia Corporation hopes to help the Australian Government fulfill this goal.