

**THALES SUBMISSION TO THE
REGIONAL TELECOMMUNICATIONS
INDEPENDENT REVIEW COMMITTEE
ROLE AND POTENTIAL OF NBN
SATELLITE NETWORK TO RURAL AND
REGIONAL AUSTRALIA**

1. OVERVIEW

The NBNC Co Satellite component of the proposed national broadband network is designed to provide coverage to about three percent of the Australian population, mostly in rural and remote areas of the country. This service, known as the Long Term Satellite Solution (LTSS), is based on latest generation Ka-band satellite technology and is scheduled to be launched in 2015, providing services equivalent to terrestrial wireless capabilities. The satellites will provide broadband speeds of at least double that delivered by the current, Interim Satellite Solution (ISS), operating in the Ku-band frequency. The benefits of the Ka-band satellite solution are:

- Ubiquitous national connection for all of Australia and its remote islands
- A narrowing of the digital divide between rural and aboriginal communities and the remainder of urban Australia
- The provision of a suitable platform upon which social, educational, commercial, scientific, and resource sector applications can be developed for all Australians
- A fostering of economic development, market efficiencies and further commercialization opportunities in rural and remote Australia

2. INTRODUCTION

As the world's largest producer of commercial spacecraft (including the next generation of Iridium satellites to be used for the Satellite Phone Subsidy Scheme), Thales will confine its remarks in this submission to the space and associated ground systems component of the NBN plan. Our rationale for submitting this paper to the Committee is to highlight the positive impacts of the LTSS for regional and rural Australia.

Thales has a long history of government systems and solutions in Australia, and we see the proposed broadband vision for Australia as an important step in our nation's ability to compete in the global market place alongside other technologically advanced societies.

3. A LONG TERM SATELLITE SOLUTION FOR REMOTE AUSTRALIA

Current Ku-band satellites operating over Australia are technically best suited for broadcast applications such as television distribution but are not optimized in capacity terms, to satisfy broadband applications. Ka multi-beam satellites provide the most efficient use of spectrum while matching capacity to meet a diverse population distribution.

NBNC Co's Ku-band Interim Satellite Service (ISS) represents a substantial improvement on the current Australian Broadband Guarantee since the upgrade made on the existing Ku-band satellite network. However, even with these improvements, the 6Mbps download and 1Mbps upload speed delivered by the ISS is unable to sustain critical applications needed for efficient operation of e-health and e-education systems.

Rural and Aboriginal communities as well as the Royal Flying Doctor have already raised concerns regarding the risk of saturation of the Ku-band satellite or terrestrial wireless networks with the forthcoming rollout of the Personally Controlled E-Health Record system (PCEHR). These groups have warned that the current IT facilities are unsatisfactory and that

they fear the PCEHR will degrade basic internet services such as e-mails and web browsing within the remote medical communities.

On the other hand, the multi-spot beam Ka-band satellites designed for the NBN LTSS will dramatically increase the broadband speed to regional and rural Australia with up to 12Mbps download and 4Mbps upload. These improvements can be achieved through an optimized spacecraft design adjusting the power, bandwidth and coverage of individual spot beams to accommodate subscriber demand and density as needed.

The space and ground segment solution has been optimized to provide the highest availability and reliability in order to achieve Australia's broadband needs:

- Two multi-spot beams Ka-band satellites in geosynchronous orbit
- Multiple gateway sites and a spare facility, located around Australia
- Two Telemetry, Tracking and Command (TT&C) facilities, a primary and spare, to control and monitor the on-orbit performance of the satellites

NBNCo's satellites have been specified for high reliability and redundancy with a minimum fifteen year design life. With two on-orbit satellites, the NBN Co space segment can be expected to provide end users with a high speed broadband solution providing a service that they can depend on under network stressed conditions, such as heavy rain and high demand. Providing ubiquitous coverage—from the Cocos Islands in the West, to Norfolk Island in the East and from Christmas Island in the North to Macquarie Island in the far Southern Ocean—the NBN Co satellite solution truly closes the digital divide between urban and rural Australians.

The end users will gain access to high speed broadband services through a small outdoor unit with an antenna of 80cm for dry areas and 1.2m for high rain areas. A small state-of-the-art set top box featuring advanced coding provides enhanced performance and user experience. These also include self-diagnostics and network reporting to ensure the user receives the maximum quality of service.

4. LTSS APPLICATIONS FOR REGIONAL AND RURAL AUSTRALIA

The space based component of the NBN network is ideally suited to contribute to the full range of services needed for regional and rural Australia. In many cases the application of satellite communications is not new, however the user experience has not always been satisfactory. What is different is the speed and quality of service provided by the latest generation of Ka-band satellite systems.

Thales has witnessed an example of the social benefits of using its broadband satellite systems to link hospitals in rural areas of southern France, with centres of expertise in larger cities, for the provision of remote consultation services, expertise and interactive training. The use of broadband satellite technology in this way has resulted in continuous medical education for doctors and has attracted new doctors into these disadvantaged areas. The effectiveness of broadband links for medical consultations has reduced the need to transfer people to larger cities for treatment, leaving them close to their families whilst still receiving high quality care. Similar societal benefits are expected for Australia:

- a) **Social applications.** In the areas of education, health and social cohesion, a satellite based broadband communications system will bring high speed and reliable communications to all remote and disadvantaged communities.
- b) **Commercial applications.** Small and remote businesses will be able to access affordable high speed communications to provide logistical, financial and other commercially orientated services with their suppliers and customers.
- c) **Scientific applications.** Ubiquitous, affordable, dependable broadband communications will enable the scientific community to monitor and understand our environment and provide real time monitoring and control of remotely deployed instruments.
- d) **Resources applications.** The continued growth of mining, exploration and survey will place greater and greater demand for data, and even video intensive services, into what are typically remote and hostile environments. The satellite solution will offer fly-in and fly-out communities a greater quality of life by providing displaced workers with high quality programming, interactive video and other communications linking them with friends, family and events back home.

5. BUILDING JOBS IN RURAL AND REGIONAL AUSTRALIA

The ground-based gateways linking the satellites of the LTSS will be located around the country. These complex facilities will be comprised of three large dishes in each location, plus associated buildings for switches, routers, power and air-conditioning. Building and maintaining these facilities over the program life is a significant workload employing local technicians and businesses in supporting ongoing service delivery and performance.

When the space and ground segments are complete, the opportunities for 'downstream' businesses multiply exponentially. Providers of broadband services will deliver satellite-based applications to over 200,000 subscribers employing local workforces for retail distribution and content creation. Businesses, schools and other organisations will develop applications to take advantage of the high-speed satellite network which in turn creates a knock-on effect that spreads outwards into their regional community. Funding a fast and reliable internet access is perhaps the best example of an upstream investment leading to downstream applications that have permeated almost every aspect of our communications environment.

6. BACKGROUND ON THALES

6.1 The Thales Group

Thales is a global company with 68,000 employees in 50 countries generating around A\$17.25 billion in annual revenues. The Group's two main sectors are Aerospace and Transport, representing about 40% of revenue, and Defence and Security accounting for the remaining 60%.

6.2 Thales in Australia

In Australia Thales employs around 3,300 people at over 35 sites, 30% of whom are engineers. In 2011 the company will generate around A\$1 billion dollars of revenue, and in

the past 10 years it has exported more than A\$1.6 billion in products and services. Thirty per cent of Thales's activity in Australia is in the Aerospace, Air Systems, Transport and Security markets, the remaining 70% is in defence business.

6.3 Thales Alenia Space

Thales's space business designs, builds and delivers end-to-end space systems for telecommunications, observation, navigation and exploration. Thales Alenia Space (TAS) employs 7,200 people in five countries generating A\$2.6 billion in revenue in 2010. Telecommunication satellites and systems represent around 53% of all space business making TAS a world leader in this market. Unlike many other organisations, TAS specialises in complete end-to-end solutions from the satellite design phase right through to the delivery of services to customers.