

## Connect Australia Program

### ***Response to DCITA Discussion Paper: Broadband Connect and Clever Networks***

Smart Internet Technology CRC (Smart Internet) makes this contribution, in response to the Clever Networks program Discussion Paper, focusing on the Policy Objective for the program to “support development and use of innovative broadband applications that deliver improved health, education and other services; assist communities to develop skills and capabilities to realise the social and economic benefits broadband can provide.”

Whilst the availability of infrastructure to support the delivery of broadband services is crucial, the development of infrastructure cannot usefully proceed without an understanding of, including recognition of the investment required, the applications which will be delivered across that network. Furthermore the smart implementation of those applications would leverage greater value from the infrastructure deployed.

The discussion paper poses the following questions and Smart Internet CRC has addressed each in the following as appropriate for our response to the *Clever Networks* section of the Broadband Connect and Clever Networks discussion paper.

*What form of broker network will provide the best outcome?*

*Q1 Considering the current DAB program structure - involving State, community and sectoral brokers - is the current arrangement the best model for catalysing broadband developments in regional, rural and remote Australia or how should it evolve?*

The Demand Aggregation Broker network can provide an essential channel for communications in respect of demand and applications for the effective use of broadband services. The model has similarities to the American telecommunications DAB systems that have provided appropriate input into the proceedings as well as providing wide spread access.

*Q2 What role can/should brokers play in promoting or facilitating the effective use of broadband applications in order to enable communities and businesses to capture the transformational benefits of broadband?*

As a channel between users and service (broadband carriage and applications) providers.

*Q3 What other resources or programs should the brokers be aware of in this role?*

As the DAB network bears some similarity with the FCC DAB model, possible lessons can be learnt from their white papers.

FCC model: <http://wireless.fcc.gov/outreach/ruralvision/>

*Q4 Should the broker role include an increased focus on 'effective use' outcomes and, if so, how can this best be achieved?*

Yes, with the effective use focussing on both economic and social effects. Economics effects can be relatively easy to measure (vox pop of usage and effect. Landline has done a lot of coverage on this). A positive social example is the focus on rural telemedicine support systems ([http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-249142A1.doc](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-249142A1.doc)) in the USA and the effects of it since.

*Q5 Should uptake and effective use of broadband by specific groups be targeted and, if so, which ones?*

The targeted uptake and usage by specific groups

*Q6 How might the brokers play a role in facilitating/supporting community-wide connectivity and community-wide (cross-sectoral) networks?*

Again, the FCC has models on this, linked off the previously referred page.

*Q7 Should future demand aggregation activities be focussed in areas that have yet to receive terrestrial broadband services under HiBIS to support the delivery of the new Broadband Connect program?*

This may be a criteria, however also important to consider any area where there are actual or perceived deficiencies in delivery of broadband services.

*Targeted services for Clever Networks initiatives*

*Q8 Are health, education, emergency services and local government the appropriate services for Clever Networks to target?*

These are all appropriate services. In addition, there is benefit in providing high bandwidth web access so regional Australia can participate in the international growth of innovative online communities which are part of disruption trends technologically,

economically and socially – one may argue this kind of international engagement is more important in regional than metropolitan Australia

Information services in the broadest sense should also be included in particular “infotainment” and broader media demand which could be effectively delivered electronically

*Q9 Should there be priorities within this group?*

Yes, the benefits of applications enabled by “broadband” (500kbps and above) are most felt currently in health (e.g. remote tele*medicine*) and education. Emergency services do not yet make extensive use of broadband, even in cities (though there will be future benefits if they do). Online Government services are well served with reasonable web access but there is great scope for use of telepresence for services that will better enable human interaction.

*Q10 What other sectors, if any, should also be considered?*

It is important that regional areas have scope to *export*, as well as use, high value services of all kinds. Such services, may be legal, creative, design, or even high-value aspects of telework (e.g. multimedia call centres). For this reason, all sectors which are rich in information content, or rich human interaction, should be considered. These are the high-growth, high value sectors which will drive economic growth in years to come. A focus on health and education initially should provide the “anchor” value which will prove a foundation for other networked services. Other sectors to be considered are development of online communities and the resulting expertise which can be exported.

*Q11 Should there be a focus on particular applications/sectors which will require and drive network or industry capabilities?*

There needs to be a focus on health and education with other applications to naturally follow with the infrastructure availability.

*Q12 What strategies could be incorporated into the program design to ensure that investment under Clever Networks provides the greatest holistic community benefit?*

Government driven services such as Health should be seen as the motivation in building new, up to date infrastructure, but the strategy MUST allow other services to be co-resident on this infrastructure at commercially reasonable rates, and in some case, subsidised rates. New infrastructure has a high capital cost, but once built, the incremental of deploying additional services costs are low. An effective strategy is to use government supported services to break through the capital thresholds, and then encourage a rich set of general services charging only the incremental cost. A secondary part of the strategy is to ensure infrastructure is scalable – in general this means optical

fibre is the medium of choice: alternatives should be considered where fibre cannot be justified for initial implementation. A third part of the strategy is to reserve access for what we would term pre-commercial experiments for new services – this would allow a service provider (carrier or higher level) to test the market and develop appropriate business models before risking undue investment. In addition, strong leadership and coordination at a Department level would facilitate effective and relevant information transfer among groups.

*Infrastructure and application-focussed investment issues*

*Q13 Is there an ideal balance between infrastructure and applications streams and, if so, how can it be identified?*

Our previous experience has shown three things are needed jointly for effective outcomes in broadband networks:

- 1) there must be a significant effort devoted to understanding the people who use new applications,
- 2) investments must allow for the development of new applications, or at least, user-led innovation of existing applications
- 3) no one can really imagine the future without being able to use an advanced network.

This is seen in the experiences of our Domain Director, Dean Economou, who created and ran CeNTIE.

In his experience, approximately 8% of the effort was needed to run focus groups and the remaining resources in an equal mix of application and network innovation. Given the opportunity, the user communities can drive innovation, but they need the resources available to improve or create new applications enabled by the broadband infrastructure. For sustainable innovation budget should be set aside for measuring the effectiveness of new solutions to guide future investments.

The suggested breakup would be

- 10% spent on focus groups and community needs analysis
- 40% on new applications support and development
- 40% on networks
- 10% on evaluation and future investment planning

*Q14 What is the best balance between competitively determined and strategic investment funding?*

The ideal balance would be 50% competitive and 50% strategic based on our previous investment experience.

*Q15 Would potential proposals be improved if the guidelines permit proposals which encompass both infrastructure and applications aspects?*

Absolutely – the two are interdependent because new applications are fostered by new networks, so decoupling one from the other can create inefficiencies. Once new applications have established their value, decoupling can be done.

*Q16 What key strategic investments in broadband infrastructure have the potential to provide the best outcomes?*

Dark fibre is the ultimate infrastructure and should be the first choice. However, Australia is large and difficult. Current wireless systems, with special mention of WiMAX due to its low cost can do much, especially if innovative mesh networks are used and grown “virally” The need for MOBILE broadband solutions in regional Australia should not be overlooked.

Local communities should be encouraged to foster a local broadband approach – community networks based on 802.11, WiMax, copper or fibre can be used to generate the culture which leads to aggregation and therefore justifies high WAN connection investment.

Much longer term, and with considerable investment, there are medium earth orbit satellites which are technically complex but offer far lower latency (essential for voice and high-performance interactive real-time services). There are also less well-known solutions such as high altitude communications platforms which hold promise for being low cost and high performance.

#### *Funding for Clever Networks initiatives*

*Q17 Are there complementary sources of funding/contributions which should be considered in developing the guidelines for the Clever Networks program?*

Applications funding must lead to sustainable outcomes which must include an entity for ongoing support and development, and such an entity should be providing funding and/or in kind contributions appropriate to outcomes. Such guidelines need to be developed to allow effective evaluation of submissions for funding.

The CRC system is in a good position to contribute to satellite, fixed network and applications development. In the case of the Smart Internet CRC, we also have skills to foster and measure user-led innovation. Other programs such as the ANP, or its

evolution should not be ignored. In the case of Health, there are state and federal programs aimed at fostering communications infrastructure (e.g. Health Connect).

*Utilising new and emerging technologies*

*Q18 Should there be specified minimum broadband specifications (eg. bandwidth, latency etc) for Clever Networks and, if so, what should they be and how should they be determined?*

The definition of “broadband” tends to be a moving feast. Sustainable broadband is likely to be different in different markets. Nevertheless the performance of links needs to be adequate to give the user an acceptable experience for the services/applications to be supported at the price the user is prepared to pay (on a sustainable basis). A minimum may need to be set in the context of acceptable user experience.

Ideally 10Mbps full-duplex minimum should be the aim, since this allows 2-way high-quality video, which will give the best foundation for rich human interaction over a distance.

Latency and loss must be low enough to provide good quality VoIP service as an alternative to traditional telephony.

*Q19 What steps / mechanisms can or should be incorporated, if any, into Clever Networks to enable regional, rural and remote communities progressively to transition to high / higher bandwidth networks?*

As noted in Q13, the program should balance user-led innovation, application development, network infrastructure and measurement of the effectiveness of new solutions, using Health and Education as the essential services which justify the capital investment. Such a balance will foster continuous innovation from the communities and will lead to richer services, of higher value, which then will commercially justify higher bandwidth networks. Ultimately whatever is proposed needs to meet the sustainability test.

*Q20 New technologies are showing considerable promise in providing broadband access to users well outside the current DSL limitations. What strategies should be adopted to encourage and support deployment of these new technologies, and to ensure newly emerged technologies are not precluded during the lifecycle of the program?*

The best solutions are those which do not have inherent limitations built into the architecture. In practice this means users have access to the raw medium – e.g. copper

for DSL (with no intermediate carrier owned electronic bottlenecks), dark fibre or wavelengths, and spectrum in the case of wireless. The closer access users have to the medium, the easier it is to upgrade and take advantage of new technology

### *Sustainability of Clever Networks initiatives*

*Q21 What supporting information should be required in Clever Networks proposals in order for their sustainability beyond the life of the program to be evaluated effectively, and what factors should be considered in determining sustainability?*

The key point to consider is that sustainable business models for broadband in regional Australia are not yet known. Consequently proposals should contain a credible method for developing, testing and implementing new business models for new, broadband enabled services. Business models may include components of public good, so that savings in government services delivered to regional areas may be used to subsidise other activities in the region.

Ultimately, proposals must be supported by a business case which should demonstrate a pathway to sustainability including, if appropriate, public good components.

### *New infrastructure access arrangements*

*Q22 For any new infrastructure created or made available, should there be specified minimum infrastructure access arrangements for parties other than infrastructure owners, such as a wholesale-rate for backhaul?*

Yes, but in order to encourage investors there should be a period of allowable monopoly – perhaps 12-18 months. Special provision should be made for research activities, including “pre-commercial trials” since these will lead to sustainable business models. Following this, it is desirable that commercial and sustainable interconnection arrangements be available for non owner use of infrastructure (this will need to reflect the level of government funding provided).

Where a substantial component of funding is provided from the public purse, an interconnection obligation commensurate with the public contribution should be mandated.

*Q23 How realistic is such a requirement, and how tangible are the likely benefits of the approach?*

All parties need to be realistic and, if it makes commercial sense, all parties should be able to derive a commensurate benefit. Trade offs in long-term fairness against the unfairness of a region never getting a service because no carrier would invest would need to be carried out.

*Q24 How can an appropriate charging regime for such access be determined?*

User demand led costing.

*Q25 What other program activities should be taken into consideration in determining Clever Network program eligibility and entitlement?*

No comments. Purpose of question is unclear.

*Embedding and undertaking program evaluation*

*Q26 Having regard to the possible diversity of the activities under Clever Networks, what strategies can/should be considered?*

No comments. Purpose of question is unclear.