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**BROADBAND CONNECT  
AND  
CLEVER NETWORKS:  
Supporting Investment in Sustainable  
Broadband Infrastructure**

A Response to the Department of Communication,  
Information Technology and the Arts Discussion Paper by  
the **AUSTRALIAN INFORMATION AND COMMUNICATIONS  
TECHNOLOGY IN EDUCATION COMMITTEE  
(AICTEC)**

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## INTRODUCTION

The Australian Information and Communications Technology in Education Committee (AICTEC) is a cross-sectoral, national committee responsible for providing advice on the effective and efficient use of information and communication technologies (ICT) and online services in Australian education and training to enable all sectors of education and training to contribute to the growth and vitality of Australia's society and economy.

Membership of the Committee comprises representatives from all Australian jurisdictions and each of the education sectors (that is: schools, vocational education and training and higher education institutions), including both public and private education and training sector interests.

AICTEC's particular interest in ICT infrastructure issues reflects the significant and growing use of internet and other ICT-based educational content in the school, VET and university sectors. The increased digital availability of this content introduces significant new considerations into the education resource debate.

The information age has the potential to transform education. Maintaining an internationally competitive education system and economy will rely to a significant extent on our ability to effectively harness ICT infrastructure technology in lifting educational performance. Failure to address issues in disparity in access to suitable and comparable ICT infrastructure, regardless of physical location, has the potential to act as a blockage to the real gains that could be made in education through the dynamism of the information age.

The Committee supports programs, such as *Broadband Connect* and *Clever Networks*, which encourage educational achievement through the equitable provision of ICT access.

AICTEC welcomes this review of the *Broadband Connect* and *Clever Networks* programs and is pleased to make the response set out below. AICTEC believes that the provision of appropriate and accessible ICT infrastructure is essential to equitable education outcomes for all students.

### 1. GENERAL COMMENTS

The education sector is supportive of the direction of the *Broadband Connect* and *Clever Networks* programs and the purpose of these two programs to further the significant progress already achieved under the preceding programs. However the sector has concerns relating to the affordability, scalability and sustainability of Australia's regional and remote broadband infrastructure.

National network infrastructure investment decisions that are underpinned by government funds should be informed by an overarching vision and a strategic framework. This framework should be based on information from a comprehensive assessment of community, government, health and education demand and the availability of affordable fibre backhaul in regional areas.

The extension of the *Clever Networks* Program to include effective use of broadband is strongly supported by the education sector. The increasing complexity of ICT in education is driving education systems towards an application service provider model which relies on substantial and affordable broadband connectivity to build secure private networks.

## **2. BROADBAND CONNECT**

### **2.1 Policy objectives**

In general, the principles set out in the discussion paper form a strong basis for the successful operation of the fund including the support of equitable access to broadband services for not-for-profit organisations across regional and remote areas.

### **2.2 Evolutionary opportunities**

It is understood that *Broadband Connect* is an incentive based program like HiBIS which has been very successful in encouraging carriers and ISPs to deploy DSLAMs<sup>1</sup> in local exchanges.

However the availability and affordability of backhaul fibre infrastructure will be critical to the transition from basic ADSL to higher speeds and symmetric services. ADSL and even ADSL2+ are not satisfactory solutions for most educational sites.

AICTEC supports the provision of up-front incentives to carriers who deploy new fibre infrastructure as part of this program provided the infrastructure delivers “open” networks and “neutral” data centres. This type of approach will provide a strategic linkage with the *Clever Networks* program.

Technologies that can be upgraded cost-effectively to provide symmetric services, low latency and scalability should be preferred over those without a clear and/or affordable upgrade path.

Terrestrial solutions should be preferred over satellite as satellite is a last resort for education as it does not support the business needs (eg: latency issues for video-conferencing). However satellite will remain the only solution for approximately 3% of remote schools and remote home based students.

A national state of the art and affordable 2-way satellite solution should be available to all remote education sites including state, independent and Catholic schools regardless of their location. This ideally would then leverage off the Australian Education Digital Network (AEDN) which is being planned to interconnect each state/ territory education network and provide direct access to providers of publicly funded education content.

### **2.3 Eligibility**

The program must be available to all the education sectors – it should not exclude state, Catholic and independent schools and other learning centres such as registered training organisations in eligible areas from obtaining broadband connections at metropolitan pricing. For example, fifty five remote homeland learning centres in the Northern Territory and non-government regional schools connected via poor one-way satellite links were unable to take advantage of the HiBIS subsidy.

AICTEC believes that the availability of ISDN to an “eligible customer” should not impact the Australian Government subsidy paid to providers as it constrains the funding available to these providers to deploy new infrastructure for the provision of true broadband under the *Broadband Connect* program. Inclusion

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<sup>1</sup> DSL Access Module

of ISDN as a minimum standard for broadband availability provides an unfair commercial advantage to the dominant market company without providing a sufficient bandwidth level of service.

## **2.4 Quality of service**

The provision of broadband services above the minimum level is supported as this would move some way to providing improved connectivity for regional and remote schools. Quality of service will make or break the useability of many education broadband applications. Service level commitments (eg: contention ratios, latency) need to be included in the funding agreements with suppliers.

## **3. CLEVER NETWORKS**

### **3.1 Policy objectives**

The aims set out in the discussion paper to increase access to, and the effective use of broadband networks with a focus on government services such as health and education is fully supported.

Health and education stakeholders as well as local government should be anchor tenants in broadband aggregation projects in regional locations as their traffic is often essential to a sustainable business case.

Measures to improve on the Co-ordinated Communications Infrastructure Fund (CCIF) by increasing the availability of information about infrastructure coverage to assist consortia and inform the evaluation of proposals are encouraged.

Educational sites need scalable and symmetric services that can be upgraded easily and cost effectively (e.g. from 4 to 10 to 100Mbps etc.) as the use and complexity of ICT in education grows and learning content moves from text to video.

This will require fibre to the school (FTTS) and fibre backhaul from regional aggregation points. Often backbone capacity is physically available but the pricing is prohibitive and/or the owners of fibre assets that operate in vertical markets will not make the capacity available on a wholesale basis.

Dark fibre is what is increasingly needed for regional connectivity. The current cost-per-megabit-per-month from the dominant carrier for intra-state backhaul circuits is approximately 20 times too high<sup>2</sup> to make those circuits viable for broadband service provision by competitors.

*Clever Networks* proposals that build or provide access to fibre infrastructure through regional and cross sector collaboration and that are dedicated to backhaul and complement last mile *Broadband Connect* initiatives should be favoured.

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<sup>2</sup> Comment from Agile Communications at the DCITA Clever Networks Briefing, Adelaide 12 December 2005

### 3.2 Strategic focus

The guidelines should encourage strong strategic relationships between *Broadband Connect* and *Clever Network* submissions.

The development of horizontal markets should be supported (eg: “last mile” infrastructure providers, open access network aggregation points, wholesale fibre backhaul providers, broadband application providers and content providers).

For example, education and hospital sites in a regional town close to an existing exchange should be considered as possible locations for open-access network access points. The targeting of infrastructure investment to improve the ability of regional infrastructure to link into the national inter-capital city networks and to support the deployment of new and advanced services is essential to education as well as the wider regional community.

It would be useful to consider three levels within the guidelines to assist in the assessment process namely:

- a) Larger regional centres – eg: significant government aggregation with fibre backhaul capacity;
- b) Smaller regional centres – eg: maybe radio is the only solution for backhaul if not close to existing inter-city fibre; and,
- c) Remote – eg: radio and satellite backhaul.

It is worth noting that the US Government operates a \$US2.25 billion per annum eRate funding program which provides discounts of up to 90% of the cost of telecommunication services, internet access and internal connections to eligible schools and libraries. This program has been extended in 2006 to include discounts on Virtual Private Networks including the equipment needed in schools for VPNs.

Also the UK Government set bandwidth targets in 2001 for schools with 2Mb for primary and 8Mb for secondary to be met by 2006 with total funding of £500m 2001-2006. These targets have not only been met but largely exceeded with 99% of secondary schools having met or exceeded the target of 8Mb and 71% of primary schools have 2Mb and this is increasing at 5% per quarter.

### 3.3 Accessing existing infrastructure

Many of the existing inter-capital city communication networks did not consider regional breakout as a design or business criteria. Proposals to light-up existing fibre (eg: utility fibre), upgrade optical equipment or assist in fibre tail builds to improve the business case for sustainable regional high capacity services should be highly regarded.

There are now over 30 alternative fibre-based backbones in regional Australia and *Clever Networks* needs to leverage these assets as far as possible. Proposals that make available wholesale dark fibre or wavelengths in multiples of 1Gbps to 10Gbps need to be encouraged.

Advice and assistance on managing the complex regulatory and legal issues often inhibiting such initiatives when utility companies and not-for-profit organisations are involved should be available to brokers and consortia.

## Creating new infrastructure

The identification of gaps in the national broadband infrastructure is critical to the *Clever Networks* program. A formal approach to this issue leveraging the mapping undertaken nationally and by state, territory and sector telecommunications entities represented on NBSIG must be a priority.

However the behaviour of the dominant carrier cherry picking a regional market after a successful aggregation project has been announced needs to be rigorously monitored by the government and the ACCC. This behaviour wastes public and investor funds and damages future demand aggregation initiatives.

### 3.5 Criteria

*Clever Networks* has \$113 million compared with \$878 million under Broadband Connect to address regional broadband infrastructure issues. The discussion paper acknowledges that *Clever Networks* funds are seed money, designed to promote investment from other stakeholders. However, the criteria must encourage investment in well focussed proposals.

The potential for funding to go to projects that do not deliver scalable and sustainable outcomes for either the health or the education sector, despite those sectors being identified as priorities, is of concern.

Consideration could be given to assessing projects in a manner that would give greater weight to those which address health or education requirements whilst solving the wider backhaul infrastructure issue for the whole community.

For example, the role of the health and education projects like the Australian Research and Education Network (AREN) in facilitating regional breakouts and making backhaul capacity available to the wider market should be encouraged.

Also *Clever Networks* funding should favour projects where backhaul capacity and interconnection arrangements are available on a cost plus basis. The contracted party should commit to offering wholesale capacity to other suppliers.

Whilst appreciating that these DCITA programs are addressing much wider issues, the AREN initiative adopted a strategic iterative process in order to fund high priority needs in some regions rather than relying on a competitive process to distribute funding. It would be worthwhile providing some flexibility in the *Clever Networks* process so that in some instances an AREN-style approach could be adopted (eg: where competing proposals overlap in terms of backhaul requirements).

### 3.6 Infrastructure versus applications

The primary focus of *Clever Networks* should be on improving national broadband infrastructure however funding of targeted exemplar broadband application deployments and/or proof of concept projects with national applicability is supported.

For example, a broadband project involving 100 independent schools in NSW has applicability across Catholic and independent schools and local government nationally. The digitisation of content and the availability of online resources are crucial to the use of broadband capacity in education at all levels.

The Australian Government requires the states and territories to co-invest in many other areas so projects with state and territory investment to support the development of online content and resources should be encouraged under the *Clever Networks* program.

The future of large enterprise networked applications will lie in “customer-controlled” networks. In these networks, the enterprise does not only manage and control its own internal local area network, but also controls and manages its wide area optical network and the responsibility for direct peering and interconnection with other like-minded networks. These networks will provide the robustness and security needed by large enterprises, government and education but will require affordable optical infrastructure. The AREN is an example of such a customer controlled network.

The *Clever Networks* program could provide support to implement advanced applications (eg: virtual learning environments) in such network environments.

### **3.7 The role of the broker network**

There is a deal of weariness nationally in developing collaborative proposals for broadband funding especially when the business drivers for broadband take-up are not well understood.

The role of the National Broadband Adviser for Education has been closely aligned with the strategic use of ICT in the schools, vocational and technical education (VTE) and higher education & research sectors with a particular focus on affordable access to publicly funded education content. A revised role for brokers driven from a broadband applications focus with aggregation as a means to an end is encouraged.

The suggestion to make more use of geographic brokers would improve alignment between regional activities and the work of the national brokers. Large government agencies like state/territory education departments with many hundreds to several thousand sites to deliver services via broadband cannot realistically manage different broadband solutions for every town or region. The geographic broker approach would help improve the linkage between whole of government decisions and the needs of specific areas.

The appointment of a National Broadband Adviser for Local Government is applauded and the involvement of the three national brokers in *Clever Networks* proposals as well as content and broadband application initiatives needs additional national and state/territory government support.

## **CONCLUSION**

The Committee would be pleased to provide any further detail or to follow up this submission in any way that would clarify the matters raised and assist the government in its consideration.

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