



**Centre for
Appropriate
Technology**

SECURING SUSTAINABLE LIVELIHOODS
through appropriate technology

**Submission to the
Department of Communications, Information
Technology and the Arts**

on the

Backing Indigenous Ability program

from the

**Centre for Appropriate Technology Inc
PO Box 8044
Alice Springs NT 0871**

**08 8951 4311
www.icat.org.au**

1. Introduction

The Centre for Appropriate Technology (CAT) is making this submission to the Department of Communications, Information Technology and the Arts in response to the discussion paper *Backing Indigenous Ability: delivering a comprehensive telecommunications package in Indigenous communities*.

CAT is a non-profit Indigenous organisation with specialist expertise in technology, infrastructure and participatory engagement practices in remote Indigenous communities. CAT's vision is of happy and safe communities of Indigenous peoples and its purpose is to secure sustainable livelihoods through appropriate technology. CAT provides information and practical assistance with housing, water supply, wastewater, energy, solid waste, communications, transport and other infrastructure issues. CAT supports communities through community development and planning, training programs, project management and knowledge dissemination via CAT's *Our Place* magazine and radio programs. CAT was established in Alice Springs in 1980, and now has regional offices in Derby, Kununurra, Darwin and Cairns.

CAT has undertaken a range of research relating to ICT's and remote Indigenous communities including contributions to the *Connecting Our Communities Report, 2003*, an overview of lessons from international ICTs and development initiatives relevant to Australia (Wilson 2003), the role of ICTs in the uptake of flexible learning initiatives including the Australian Flexible Learning Framework report *Digital Disconnections: e-learning and remote indigenous communities (2005)*. In addition, CAT recently has had substantial involvement as a Regional Agent in the delivery of the Community Phones Project in the NT.

CAT also administers and manages the Bushlight program, a four year project that supports the livelihoods choices of targeted remote Indigenous communities through increasing access to sustainable (affordable, consistent and reliable) renewable energy services. Access to reliable and affordable energy services has a direct relationship to the uptake and use of telecommunications services and there are significant insights from the Bushlight approach that are relevant to facilitating access to telecommunications services.

2. Response to fundamental design principles of BIA

CAT has a number of comments about the overall design of BIA. As package of measures, the BIA seems to struggle with the distinct policy objectives of:

- Providing equitable access to basic telephone services which are entitlements under the telecommunications regulation;
- Facilitating strategies through which Indigenous communities can harness available telecommunications capacities (which extend beyond basic services).

While these can be seen as mutually complementary measures, CAT would argue that the policy and programming logic to pursue these strategies are distinct, and that the BIA effectiveness may be limited by failure to fully consider these issues.

In addition, there are 3 particular issues that should be looked at. Firstly, BIA proposes continued significant investment in the rollout of Community Phones. We understand that it is still unclear whether and to what extent current and proposed Community Phone rollout will be supported as part of the USO. In the absence of clarity on this, the general approach to delivering and supporting Community Phones and securing their sustainability as a telecommunications service is difficult to determine. Operating outside the USO, Community phones may require substantial greater investment through BIA on community capacity issues and arguably should only be delivered where Community Phones form part of broader community wide planning around telecommunications role in the social and economic development of community. The USO coverage issue should be resolved as soon as possible and certainly before further Community Phones investment. This discussed further below.

Secondly, it is unclear whether BIA has a consistent framework for engaging communities in development of planned strategies for them to harness available telecommunications capacity (including that offered through BIA) in advancing development objectives. While the BIA discussion paper hints at various models of engagement and planning for BIA investment, it does not include any proposal for systemic engagement with communities around telecommunications needs and opportunities in development. CAT believes that at least some resources proposed in BIA should be targeted to more systemic engagement and planning processes and we propose one model for doing so below.

Lastly, we note that BIA is largely focussed on existing telecommunications technology, but we are aware of some emerging technology innovations which may have considerable potential to address some of the main barriers to access telecommunications services for Indigenous communities. In particular we are assisting work being developed by the Desert Knowledge Cooperative Research Centre on sparse ad hoc networks that may have potential to provide low cost and flexible connectivity for remote communities. While BIA may not direct funds to emerging technologies, DCITA should consider investigating community engagement strategies which focus on emerging technologies at local and regional levels.

2.1 Evidence based approaches

International experience highlights the importance of viewing improved access to telecommunications services as one element of a community development or capacity building initiative (Gerster and Zimmerman 2005; Global Knowledge Partnership Secretariat 2004). Strong community demand and active participation in the planning and implementation of projects increases use, ‘appropriation’ of the technology for local purposes, and sustainability. However, building informed demand and increased usage of telecommunications services requires an understanding of the organisational culture, the specific aspirations of a community and the ways that information flows through the community. This assists in identifying the most suitable technologies and media to support community outcomes.

The experience of the Bushlight program at CAT, as well as lessons derived from our involvement with the Community Phones Project, reinforce the importance of aligning access to telecommunications and other services with desired community outcomes. This requires developing the capabilities to make informed choices about technologies and their use, as well linking service access to community planning

processes, including consideration of affordability and user pays arrangements. The Bushlight Community Energy Planning process is a participatory and highly successful approach to working alongside community residents to plan energy systems that meet their current and future energy needs and support the aspirations they have for themselves and their communities (Bushlight 2004). The planning process builds understanding of the technical options and limitations as well as financial considerations which are all key ingredients for building sustainability. The process can offer some key insights for planning community telecommunications interventions.

2.2 Remote communities

Significant information about the spatial and physical characteristics of remote Indigenous communities has become available in recent years. Information from the Community Housing and Infrastructure survey (ABS 2002) and the National Aboriginal and Torres Strait Islander Social Survey (ABS 2004) has enabled identification of some 1291 discrete communities, the majority with populations less than 50 people and all with significant infrastructure challenges. A stock take of infrastructure services in discrete indigenous communities was also undertaken by TAPRIC. The issues of remoteness, small dispersed and highly mobile populations, limited access to education and health services, high unemployment and escalating social dysfunction are characteristics of remote Indigenous communities that are well documented. Such factors and relationships are important in supporting improved services to communities and homelands.

Facilitating access to telecommunication services is generally conceived as a critical response to remoteness especially in relation to lifeline connectivity, education and health services. Generally however discrete communities are generally viewed as isolated and unconnected small settlements. This belies the nature of settlement development, the inherent hierarchy amongst settlements and the very real flows of people (Memmott *et al* 2006), services and information between them. Mapping the links between settlements and the nature of these resource and information flows would provide information about priority points for telecommunications service access and the type of technologies appropriate. For example, a settlement of 150 people may have two or three outstations surrounding it, and may have one or two larger settlements (including a major service town) to which its residents relate for service and/or family reasons. Identification of these settlement networks, the suite of telecommunications infrastructure already in place – some in use, some redundant – and the nature of engagement with these would provide a leverage point for community telecommunications planning processes and prioritisation of services to meet community aspirations. This process would also enable some problem solving around appropriate technologies and the innovative piloting of new technologies such as mobile telephony via ad hoc networks. CAT is currently working in partnership with Telecommunications and IT Research Institute (TITR) University of Wollongong on a Desert Knowledge CRC project investigating adhoc networking techniques to extend the reach of fixed infrastructure, which may already exist, and to improve communication services between and within communities and homelands (Abolhasan 2005; Wright 2006).

3. Response to key elements of the BIA discussion paper

CAT has aggregated its responses to the issues and questions raised in the discussion paper under the five broad policy areas of services, engagement, content development, training and support, and sustainability recognising that individual elements of the BIA program are mapped against each area. The stated objective of these policy areas is to enable communities, especially those in remote and rural areas of Australia, to enhance economic development and develop self sufficiency. CAT suggests that a more sophisticated understanding of demand for services and links to community aspirations would leverage greater benefits from services including improved sustainability.

CAT also notes the integration of BIA initiatives with a whole-of government approach and the potential utilisation of agreements (SRA's, RPA's) to develop collaborative activities. Utilising the discretionary funds available to support the development of RPA's and SRA's could support community telecommunications planning processes and effective engagement processes. Whilst basic lifeline services such as standard telephone services or community phones would be considered essential rather than discretionary services, additional facilities such as videoconferencing or local content development could be developed as part of a community agreement.

3.1 Services

Facilitating access to appropriate services is essential in enabling the use of telecommunication initiatives by identified Indigenous communities.

Facilitation of telecommunication services does start with providing access to telephone services. Access to standard telephone services is of critical importance for people living in remote communities particularly for safety and social cohesion. As Daisy Campbell from Ritjinka outstation (Our Place Productions 2003) articulates:

We want help. We need the telephone to talk if something goes wrong or the child gets sick, so that we can ring up from home. We have no car, we have no transport whatsoever, we got no car. We use the tractor that's all. We go by tractor to Titjikala and return home after shopping. Today we still haven't got proper transport. That's why we need the telephone.

Lack of access to reliable transportation, a common problem for Indigenous people living in remote communities, reinforces the need for access to a telephone service. The Campbell family's story at Ritjinka outstation describes the situation in 2003. The nearest community is a 30km tractor drive away. If the tractor is not available then the only option is to walk. This is a potentially life threatening situation in an emergency. Lack of access to a telephone further exacerbates existing disadvantage, making it difficult for people living in remote communities to access banking, health, legal and other services from their communities. Efforts to encourage economic development and enterprise by people living in remote communities depend upon people having access to reliable telecommunications in order to interact with customers, suppliers and service providers. In May 2006, Ritjinka outstation community members are still on the waiting "list" for a telephone service – despite applications for services.

CAT has been involved as a Regional Agent in the Community Phones Program in the NT. The Program has been successful in increasing the access points for communities for telephones where there was telecommunications already. However, the program had limited impact on communities who did not have telecommunication infrastructure. We strongly encourage increasing access to telephone services in communities that do not have fixed telecommunications infrastructure within BIA. Moreover, there are number of other improvements that could be made within Community Phones Project, including:

- Improved project management by the service delivery agent and their contractors: The supportive elements of Community Phones Project (including raising awareness of prepaid cards and transfer of maintenance capacity) under TAPRIC were substantially hampered by poor scheduling during infrastructure roll-out
- Allowing choice and building informed demand within the Community Phones Project: Recently under TAPRIC, The Community Phones Project is based around one type of telephone model which may not be the most suitable option for all communities (for example, when there is limited access to prepaid cards)
- Improving application processes for communities: Applications should be at appropriate level to inform community members of the phone service, timeframes, obligations and assessment of prepaid card selling arrangements. The application process should include visual/hands on assessments and pictorial resources and guides of telephone service.
- The Community Phone needs to be recognised under USO: Currently there is limited security or safe guard for communities who are investing in this technology.
- The Community Phone maintenance training should incorporate broader livelihood outcomes: There is potential to develop skills and experiences of a number of people trained with the Community Phones Program to maintain Community Phones. Where possible, BIA should look at building and working with this capacity, by offering additional telecommunications training and looking at processes for engaging community members.

Diverting to a more broad experiences, CAT has been specifically involved in a number of projects funded within the TAPRIC realm and additionally, we have worked within a number of communities that received elements of TAPRIC support. Indeed, TAPRIC was successful at focussing direction and effort towards the real issues of telecommunications in Indigenous communities and has improved access to services to a number of remote Indigenous communities. But, it lacked overarching critical thinking and evaluation on issues such as sustainability and processes for engaging communities in most program areas. BIA may benefit from looking at how telecommunications can support livelihoods in remote communities through ways such as localised call centres, interpreter services and regional technical and maintenance services. Moreover, some of the elements of TAPRIC have not been utilised, including a project that CAT worked on that developed a Telecentre Toolkit, *Your Community Centre Guide*.

3.2 Engagement

Engaging communities to use introduced telecommunications technology will be paramount to achieving the objectives of the program

Participatory planning processes such as that utilised in Bushlight's Community Energy Planning process provides a template for effective engagement processes. The process enables engagement and ownership of decision making about services and builds responsibility, support networks and maintenance arrangements into an agreement process. Regional agents could facilitate such processes and harness the necessary interest and capabilities to develop local champion roles.

Engagement is closely linked to demand. Infrastructure roll out to date, including rural transactions centre, telecentres (WA), community access centres and Indigenous Knowledge centres would appear to have minimal success in realising the objectives of improved access to health, education and other government services. The mismatch between capabilities and content as well as barriers existing along the supply chain, such as the limited capability and infrastructure within registered training organisations to deliver culturally and linguistically appropriate education programs compound effective engagement and equipment utilisation (Sawyer 2004; Young 2004).

Drilling down into where particular effort is needed to engage and the nature of that engagement is also required. Landline or mobile phone services require little engagement to ensure usage but significant effort to develop maintenance regimes and strategies for cost management. The use of videoconferencing and public internet access will require a different level of engagement, one that responds to emerging demand and more intricate problem solving, help desk and support networks. Online submission processes for grants across agencies (e.g. housing and infrastructure grants via e-sub) activities reporting such as that developing under the new arrangements for CDEP and the lifting of remote area exemptions will stimulate different types of demand. For local Indigenous peoples to secure work in these agencies and meet work activity requirements engagement with these higher order tools of the trade will be critical.

Evidence suggests that the use of video conferencing and internet to support networking across and between communities can also drive demand. Such networking also lends itself to developing peer networks and trouble shooting supports in-house, for example across a network of communities rather than being led by contractors or agents at a significant distance.

3.3 Content development

Providing relevant, culturally appropriate content will assist in engaging members of the community and ensure the sustainability of the program

The evidence base does suggest that engagement is facilitated by constructing culturally relevant and required content. There is a suite of knowledge based programs being developed to support cultural maintenance, hold cultural and language information and disseminate locally generated stories and information (see Young *et al.* 2005). It can provide a critical leverage point for engagement that aligns with livelihood and develop aspirations, including economic

development opportunities. Culturally accessible content is rarely utilised to support the interface of services and local communities. Guides and decision making tools, for non-culturally based services and activities within a community, for example managing your energy or water supply system, offer approaches to content development that can build on the skills learned in cultural maintenance type activities. They can also support capacity building and self management of services thus addressing some of the very real gaps in governance structures. One of the foundational arguments for the use of multimedia tools enabled by internet and associated software is that users can construct resources like web pages rather than merely engaging with resources developed elsewhere. This facilitates an appropriation of the technologies that has proven critical to sustainability internationally.

3.4 Training and support

The involvement of Community Champions and Regional Agents will be designed to engage the communities and assist in providing the tools to manage sustainable telecommunications within a community.

Training and support is a key facilitator of engagement and sustainability. DCITA have supported a range of IT and IT support programs. It is necessary to undertake an evaluation of what has worked and what has needs to form the evidence base for future investment in these areas. Like most services to remote communities, formal vocational training occurs on a fly in fly out basis raising issues for attendance, retention and the sustainability of outcomes. In 2003 only 1.7% of Indigenous enrolments across desert Australia were in the field on information technology and in 2004 this has dropped to 1.2% (Guenther et al, 2005; Young et al, 2006, forthcoming), in spite of the increased roll out of technologies across remote communities.

International evidence, and indeed emerging evidence from Australia (eg PYmedia), highlights the need for training and support to be 'just in time'. That is, available and accessible as issues, technical or otherwise, arise. This requires locally based training and technical support or, at the minimum help desk and telephone support on an ongoing basis. There is also a case for a staged rollout of both technologies and the range of supports and resources needed for scaling up and sustainability. A recent study undertaken in Indigenous communities in New Mexico and in the North West Territories in Canada, shows that the roll out of new technologies there has been characterised by a broad based resource support which is virtually non-existent in remote locations of Australia (Webb, 2002). The report highlights the importance of cooperative partnerships between communities, private enterprise and governments and makes the comment that the development of linkages between and across communities has supported better implementation and skills development. Currently the BIA, like many initiatives preceding it, offer stand-alone projects that lack a strategic approach to developing linkages, cooperation or skills or indeed enable a framework for staged implementation responsive to the strength and skills base of the communities targeted.

Effective community (or a network of communities) telecommunications planning processes could enable tailored infrastructure and support implementation that

build on the extant skills and infrastructure base. This would then support informed processes for the type of training and support required and local ownership and direction of the purposes to which new telecommunication infrastructure will be put. Depending on the location, the infrastructure and support systems could be utilised to scale up economic activities occurring, for example, art, land management or tourism. This would provide a strategic framework for then deploying the critical supports needed, including the role of local community champions if appropriate. The functionality of a community champion role will be dependent on securing mentoring, supervising and organisational supports for such a role.

With the Indigenous participation rates in formal training across desert communities falling by 25% in 2004 (Young et al, 2006 forthcoming) and Labour force participation rates for Indigenous people in remotes areas of Australia falling steadily from 62.7% in 2002 to 49.2 % in 2005 (ABS 2006) consideration has to be given to more effective models for training delivery and indeed the creation of employment opportunities through the uptake of new telecommunications technologies. The link between training, work and community development is a key motivating factor for Indigenous peoples to participate in training programs (Miller, 2005).

There are numerous examples on remote communities in central Australia, of recently acquired telecommunications equipment under utilised or not utilised at all. Technical difficulties and lack of accessible trouble shooting supports is a factor, as is inappropriate siting of facilities on communities and indeed energy issues. Training and support is as critical at the maintenance and cost management end as it is at the usage end. Innovative models for regular and responsive maintenance and upgrades will need to be put in place.

The issues arising with the management and maintenance of water supply infrastructure, energy systems or housing hardware may indeed be replicated with telecommunications systems. These include lack of access to specialised services, the associated higher costs of maintenance due to distance and poor engagement with local communities to assist them in managing infrastructure and accessing networks of support on a timely basis.

CAT is implementing an Integrated Technical Services approach to address infrastructure and energy maintenance issues on remote communities. The approach identifies the core management and service intervention responsibilities that can be assumed at a local or regional level and backs these up with identified support networks that can be accessed by locals. Regular and critical service and maintenance issues across the range of specialised technical areas (energy, water, electrical etc) can be deployed from a regionally based 'public works' centre to undertake further maintenance and servicing as required. Telecommunications infrastructure services could become one of a suite of services deployed enabling timely responses and local capacity development both on the ground, or more formally as part of the Integrated Technical services team. More information about ITS can be obtained by contacting CAT.

3.5 Sustainability

Telecommunications delivered to Indigenous communities must be technically and financially sustainable

Generally speaking, many of the programs providing ICT infrastructure to remote Indigenous communities have been focused on the provision of technology, as opposed to seriously considering broader community livelihood objectives and issues of long-term sustainability. Technology must not only be technically and financially sustainable but must be integrated into people's livelihood to add purpose and tangible benefits. The current environment is also marked by numerous distinct programs operating in parallel, with little or no coordination of effort or resources. CAT suggests that long term benefits from ICT's in remote Indigenous communities, are most likely to emerge by integrating the technology into strategies to enhance livelihoods. However, the creation of these livelihood opportunities is predicated on having access to cost-effective, meaningful and reliable ICT services.

At present, there is limited involvement of local Indigenous people in the management and maintenance of ICT systems installed within and around remote Indigenous communities. Currently, communities and carriers such as Telstra rely on crews travelling out from regional centres to carry out maintenance and repair. This is both expensive and can lead to poor service levels, through extended downtime following a fault. The ITS model mentioned above would provide a means to address these issues.

Sustainable - that is affordable, reliable and purposeful - telecommunications services will require effective community planning and engagement processes that link directly to community development objectives. BIA has a critical opportunity to assume an evidence based approach that addresses the limitations of past ad hoc approaches and enables the type of infrastructure training and supports that enhance community development and economic opportunities for remote Indigenous communities. Consideration of regulatory frameworks, including the extension of the USO in relation to lifeline services such as community phones or emerging mobile telephony options are essential in ensuring an enabling environment for uptake, usage and sustainability.

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