



# SUBMISSION

## Inquiry into Wireless Broadband Technologies

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### EXECUTIVE SUMMARY

Australian Communication Exchange (ACE) commends the Commonwealth Government for initiating this important inquiry and strongly urges that the very specific communication needs of people with a disability become a key consideration in deliberations and recommendations, especially in relation to the current rollout of wireless technologies; the examination of the relationships between technologies; and the potential to provide the “last mile” using wireless broadband technologies.

ACE is a strong believer in innovation and looks forward to sharing the benefits of emerging technologies. ACE acknowledges that the nature of telecommunications will move from the current voice-centric model to incorporate information-rich alternative media.

The current regulatory regime does not adequately address the changes occurring in telecommunications in Australia. We do not advocate “no change” - we advocate “considered change”. We believe that the critical “any-to-any connectivity” mantra for network communications services needs to be expanded and embraced to read “any-to-any connectivity – for everyone”.

This paper questions the future integrity of accessible telecommunications and forecasts opportunities to examine the regulatory regime to ensure that the lives of Australians with a disability are enhanced.

ACE recommends an extensive consumer consultation process to address these concerns and identify solutions. As a significant service provider in the area of communications access for people with a disability, ACE is keen to contribute and participate in such a process.

## INTRODUCTION

In 1995, Australians who are Deaf or who have a speech or hearing impairment rejoiced with the introduction of the National Relay Service (NRS)<sup>1</sup>. This service offered long-awaited access to the broad range of telecommunications services enjoyed by other Australians. In December 2000 this was further enhanced by the introduction of the world's first dedicated text emergency call service using the number 106<sup>2</sup>.

Unfortunately these wins were short lived.

The elimination of the AMPS network meant that text telephony from mobile devices was no longer available. The existing digital mobile networks do not currently support the textphones used by people with a disability. The "equivalent access" safety net has a significant hole in it. While these technologies may be used to transmit text in proprietary or other protocols, they are unable to communicate with the extensive installed-base of textphone technologies in common use.

To put this in perspective, it would be unacceptable if, before you could make a voice call, you had to know what network is used by the person you wished to call, and what telephone customer premises equipment (CPE) they used before you were sure you could hold a conversation. Yet this is the position we may regress to for people with a disability unless action is taken immediately.

Advances in communications technology create new barriers and challenges for people with a disability, and they can also offer solutions if deployed thoughtfully. This is very much the case for video conferencing. Broadband video conferencing offers exciting and enabling opportunities for people who use Sign language, who rely on lip reading or who could benefit from the use of facial expressions and gestures while communicating.

The greatest benefits for people with a disability will be if their needs are considered at the time technology is implemented – during the planning and development stages and certainly before wide spread deployment. Retrofitting accessibility features after deployment is usually very difficult and almost certainly very expensive.

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<sup>1</sup> For more information about the National Relay Service, please see the Australian Communication Exchange website [www.aceinfo.net.au](http://www.aceinfo.net.au)

<sup>2</sup> For more information about the 106 Text Emergency Service, please see the Australian Communication Exchange website [www.aceinfo.net.au](http://www.aceinfo.net.au)

## 1.0 ANY-TO-ANY CONNECTIVITY

The concept of any-to-any connectivity is well understood by the telecommunications industry in terms of designing voice telephone services. The result of any-to-any voice connectivity is that anyone in Australia can make a real-time voice call using a mobile phone, home phone, neighbour's phone, public phone box, motel's phone, etc. The individual who makes the phone call does not need to know what underlying networks are used for a successful voice connection eg. POTS, ISDN, GSM, CDMA, voice over IP, WLL, etc.

The concept of any-to-any voice connectivity needs to be extended to "any-to-any text connectivity for everyone" and "any-to-any video connectivity for everyone". Many Deaf people and people with a hearing or speech impairment cannot use the telephone using voice alone. These individuals currently rely on:

- text (typing and reading) if they are Deaf; or
- a combination of text and voice - listening and typing if they have a speech impairment; or
- a combination of text and voice – reading and speaking if they have a hearing impairment.

Wireless broadband technologies may make the transmission and reception of text more accessible. There are some assumptions that need to be carefully analyzed about future technologies solving all the current text telecommunications access needs experienced by Deaf people and people with a hearing or speech impairment. An example of the assumptions that are currently being made by industry about text communications is enclosed in Appendix A.

Wireless broadband technologies may also make the transmission and reception of high quality video images a viable communication channel. Visual communications via video conferencing may provide the vital link for many people for whom conventional voice telephony is inadequate, and typing conversations in text either not practical or not effective, for example:

- For Deaf people who use Sign language as their first language, and for whom typed English may not be viable;
- For Deaf people who use Sign language, but are in rural or remote areas and cannot access the Sign language interpreting services required for health and other key services due to their isolation. Video conferencing could offer a cost effective method of delivering such services (referred to as Video Remote Interpreting);

- For people with some residual hearing, but who require the addition of lip reading to complete their receptive communications access. This will become increasingly significant as hearing loss becomes a major issue with the ageing population;
- For people with a speech impairment to support their natural spoken language with gestures and facial expressions to make their communications more understandable to others.

Consideration needs to be given to the size of uphill and downhill bandwidth to ensure that it is large enough to send and receive video images at a quality suitable for communicating fluently in Sign language. Our research has shown that for effective Sign language or other visual communication via real-time video a bandwidth of at least 128K (eg. for a social chat between two Deaf people), and preferably 384K (eg. for video remote interpreting), is required.

Any-to-any connectivity for text and video needs to be incorporated in the regulatory framework for wireless broadband technologies. That way, Deaf people and people with a hearing or speech impairment will be able to make a text or video real-time call using a mobile phone, home phone, neighbour's phone, public phone box, motel's phone, etc assuming that they have with them a suitable device capable of generating and receiving text or video. The individual who makes the text or video telephone call will not need to know what underlying networks are used for a successful connection eg. POTS, ISDN, GSM, CDMA, 3G, voice over IP, WLL, etc.

The concept of any-to-any connectivity for everyone for voice, text and video is a significant challenge that needs to be addressed at the standards making, regulatory and planning stage. Without such consideration many Australians with a disability may have inconsistent and inadequate access to telecommunications access. As senior Australians and people with a disability are often heavily reliant on emergency services it would be unacceptable to allow the implementation of emerging technologies to degrade the standards of care and support offered through emergency services access. This is a real risk if these issues are not addressed immediately.

The *Disability Discrimination Act 1992* (DDA) does offer recourse through litigation where services have been eroded and access to basic services denied. However, that approach is resource intensive and can result in industry-wide issues being addressed slowly on an adhoc case-by-case basis. Likewise the community could wait for a fatality or catastrophe to force action through legislation. A preferable approach is to protect people's rights, and to give surety to Carriers and CSPs via systemic industry-wide regulatory changes.

## 2.0 LESSONS AUSTRALIA HAS LEARNT

The telecommunications industry has learnt lessons in recent years in terms of telecommunications access for Australians. For example, the closure of the analogue mobile network on 1st January 2000 deprived the following individuals of access to a mobile phone:

### 2.1 **People who have a hearing impairment and wear a hearing aid**

Prior to the closure of the analogue mobile network, people with a hearing aid were able to use a mobile phone. When GSM mobile networks were the only mobile networks in Australia, people with a hearing aid were unable to use a mobile phone. The introduction of CDMA networks has largely resolved this issue for most people who use a hearing aid. GSM mobile phones still cause significant interference with a hearing aid. A complaint made by hearing impaired consumers to the Human Rights and Equal Opportunity Commission resulted in the telecommunications carriers offering relief to hearing impaired individuals by allowing them to transfer to a CDMA mobile phone contract without penalty or by issuing individuals with a neckloop compatible with their hearing aid and a GSM mobile phone.

### 2.2 **People who are Deaf or have a hearing or speech impairment and who use a Teletypewriter (TTY)**

Prior to the closure of the analogue network, Deaf people and people with a hearing or speech impairment were able to use a mobile phone. This issue is still not resolved and there is currently no effective real-time mobile phone access (GSM or CDMA) for Deaf people and people with a hearing or speech impairment and therefore no mobile access to emergency services. There has been no relief offered by the telecommunications carriers.

Learning from these lessons, it would be preferable for the impacts of telecommunications changes to be researched, reported and solutions identified, if required, prior to the removal of an existing service.

Similarly, when new services are introduced the impact of the new service needs to be researched, reported and solutions identified, if required, prior to the introduction of a new service.

### **3.0 ARE WE SEEING ANOTHER HOLE APPEAR IN THE SAFETY NET ?**

ACE is aware that Telstra is considering deploying a wireless local loop in regional and remote areas in Australia in the near future. A TTY will not work with a wireless local loop so access to the standard telephone service for Deaf people and people with a hearing or speech impairment will currently not be possible in an area serviced by a wireless local loop.

It has been suggested to ACE that a carrier intending to deploy a wireless local loop in an area could meet its carrier license conditions by:

- interviewing local residents to determine if a family member is Deaf or has a hearing or speech impairment prior to the deployment of a wireless local loop in an area; and
- offering a plain old telephone service (POTS), as an alternative to a wireless local loop, to residences where there is a family member who is Deaf or has a hearing or speech impairment.

ACE considers that this is an extremely short-sighted strategy fraught with numerous “human” weaknesses as follows:

- an interview will reflect the current situation only and will not be “future-proof”;
- the decision to install a wireless local loop will not take into account future household circumstances eg. the house is sold to someone else, a family member loses his/her hearing or speech by an accident, stroke, cancer, etc;
- visitors or passing travelers who are Deaf or have a hearing or speech impairment to an area serviced by a wireless local loop will not be able to use the telephone eg. to ring fire, police or ambulance via 106 (the text emergency call service provided on 106 is the legislated equivalent of “000” for people who are Deaf or have a hearing or speech impairment);
- people who are Deaf or have a hearing or speech impairment will not be able to make any telephone calls outside their own home eg. they won’t be able to make a telephone call from work, the local hospital, shopping center, railway station, or if they are staying with a friend;
- The carrier will be required to install and maintain an expensive POTS infrastructure for individual homes in areas that may move exclusively towards wireless services in the future.

Any assumptions on this topic need to be carefully considered and questioned.

In a regional or remote area serviced by a wireless local loop, the majority of people who rely on their hearing to use the telephone would have a number of options available if they need to contact emergency services ie. home phone, mobile phone, telephone in a motel, public phone, a neighbour's phone, etc. Comparatively, a person who is Deaf or has a hearing or speech impairment would currently have NO OPTIONS AVAILABLE to contact emergency services in a regional or remote area serviced by a wireless local loop.

The original intent behind the obligations placed on Carriers and Carriage Service Providers in the *Telecommunications (Consumer Protection and Service Standards) Act 1999* needs to be examined to determine whether or not it was the intention of the Act for some Australians to ONLY have telephone access at their place of residence, while other Australians could have telephone access at their place of residence as well as at work, school, hospital, a friend's house, etc.

If this was not the intention of the *Telecommunications (Consumer Protection and Service Standards) Act 1999*, then action needs to be taken to level the playing field and ensure that the telecommunications standards that hearing people take for granted are equally available for people who rely on text and video for their primary telecommunications access.

## 4.0 A WAY FORWARD

Some of the issues to be considered when designing broadband wireless telecommunications access for Deaf people and people with a hearing or speech impairment follow:

- Thorough consultation with consumer organizations who represent Deaf people and people with a hearing or speech impairment, for example the Australian Association of the Deaf (AAD), Better Hearing Australia (BHA), TEDICORE, Communication Aids Users Society (CAUS) etc;
- Any-to-any text and video connectivity;
- Access to suitable customer equipment for people with a disability;
- Backward compatibility – if a practical and cost effective alternative to a TTY is identified, then there is a need for the person who uses it to be able to communicate with people in

- his/her social and support network eg. friend, family member, employer, etc who may have an “old” TTY using baudot code;
- Compatibility with CDMA and GSM mobile networks. CDMA and GSM networks scramble the TTY code with unacceptably high error rates;
  - Compatibility with the National Relay Service (NRS), including the 106 text emergency call service, via ASCII or baudot;
  - The option to use text only, or a combination of voice and text eg. voice carry over (VCO) or hearing carry over (HCO). A VCO caller is hearing impaired and uses the phone by reading and speaking. An HCO caller is speech impaired and uses the phone by listening and typing;
  - Consideration of the size of the uphill and downhill bandwidths to ensure that they are large enough to send and receive video images at a quality suitable for communicating fluently in Sign language;
  - Be International Standards based. A significant body of work, particularly in Europe, has created ITU standards for dealing with text telephony and accessible video conferencing. All future technologies must be standards based to reduce the impact of non-standard CPE (such as the existing ‘legacy’ baudot based TTYs);
  - Compatibility with new network technologies – it would be beneficial to design a solution that can be expanded to accommodate new network technologies (eg. 3G) as they are introduced; and
  - Cost, practicality and ease of use.

## 5.0 CONCLUSION

The National Relay Service and the 106 text emergency call service are part of the national telecommunications infrastructure provided to benefit the community. These services are provided by Australian Communication Exchange on behalf of the Commonwealth Government. As such, ACE is willing to work with consumers, industry and Government to offer expertise in identifying solutions to some of the telecommunications access issues raised in this submission.

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## APPENDIX A – SOME ISSUES TO BE CONSIDERED

It is often suggested by industry members that a future 3G or GPRS phone; a Nokia 9200, Nokia 5510 or a data capable mobile phone with a PDA is the answer to the problem identified ie. that a teletypewriter (TTY) is not compatible with a CDMA or GSM mobile phone. It needs to be noted that:

- None of the devices listed above can converse with a TTY in Australia. This limits its use to the NRS only (if appropriate ASCII terminal applications are installed), with no option to directly communicate with a Deaf, hearing impaired or speech impaired friend, family member, etc;
- A Nokia 9200, Nokia 5510 or a data capable mobile phone with a PDA can only converse with another mobile device using SMS (while it is sometimes technically possible to have a terminal to terminal session with another device, it is highly impractical if not impossible). The person needs to know, before making a call, if the receiving phone has similar capabilities;
- To our knowledge, no Nokia 9200, Nokia 5510 or a data capable mobile phone with a PDA ships “out-of-the-box” with the capacity to work with the NRS, and therefore the 106 text emergency call service. Our experience with sophisticated users using readily-available technical support and access to specialist software is that it is still VERY difficult to achieve a reliable result without substantial effort. These devices are not a viable solution for most people;
- The Nokia 9200, Nokia 5510 and a data capable mobile phone with a PDA are far more expensive than the commonly available “\$0” plans offered by the industry. These are well out of the price range of most people with a disability or senior citizens;
- Often the text size is tiny and the keypad makes real-time communication slow and tedious, if not impossible for someone with a vision or mobility impairment.