Key information about access to the telephone in Australia

Australia's first Web Captioned Telephony trial for deaf and hearing impaired

Report by Australian Communication Exchange Limited

April 2011

About Australian Communication Exchange (ACE)

Australian Communication Exchange is a dynamic and innovative not-for-profit Australian organisation. We have been delivering the relay service component of the National Relay Service for over 15 years, under a contract with the Commonwealth. We have over 100 staff who relay calls for the Deaf, hearing impaired, speech impaired and the hearing. However, ACE recognises that there are other communication solutions available. We look for new ways to meet the changing communication needs of our communities.

ACE Vision

Access to Communication for Everyone

ACE Mission

ACE is a partnership between people who are Deaf, communication or hearing impaired and the hearing. We are united by our determination that people who are Deaf or are communication or hearing impaired will have access to all forms of communication of their choice. At ACE we will achieve this by facilitating and providing services to meet the changing needs of the partnership

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In this report

PART A

Executive Summary

In 2008, Australian Communication Exchange (ACE) examined the different communication needs and wants for Australians who are Deaf or hearing impaired, or who have acquired hearing loss. In terms of technology it was clear that supplementary text in the form of live captions was the preferred way to access telecommunication. Accordingly, ACE searched for a phone solution which could provide live captioning. The Ultratec CapTel service in the United States of America provided a proven and viable solution for Australia and ACE committed funds to trial the captioned telephony service.

In October 2009, ACE commissioned Australia's first Web Captioned Telephony service as part of a proof of concept 12-month trial. With the assistance of our key partners, ACE launched the service nationally to self-nominating deaf or hearing impaired Australians who believed they could benefit from the service. The trial continued beyond the initial 12-month period and concluded in February 2011. To conclude this work, ACE makes the following recommendations:

Recommendation 1: There is a need for two different services in Australia, Web Captioned Telephony and Captioned Telephones

ACE is currently trialling a Handset Captioned Telephone service which leverages off the same technology as the Web Captioned Telephony service. These two services meet very different community needs as explained on page 14 in this report. As such, it is recommended that both services be considered equally important to improve telecommunications access for deaf and hearing impaired Australians.

Recommendation 2: Further research is required into health related quality of life in the hearing impaired

As part of the trial, ACE commissioned further research titled "The Australian Captioned Telephone Study" or ACTS. The study was conducted by Luke Connelly (Professor of Health Economics and Director of Australian Centre for Economic Research on Health University of Queensland and the Australian National University). The research results suggest that the average quality of life of the participants is low by comparison with the Australian population and with groups who have serious health problems. Further research is required to examine the role that various interventions, including captioned telephony, can have to improve the quality of life for this consumer group.

Background

Existing gap in technology for Deaf and hearing impaired Australians

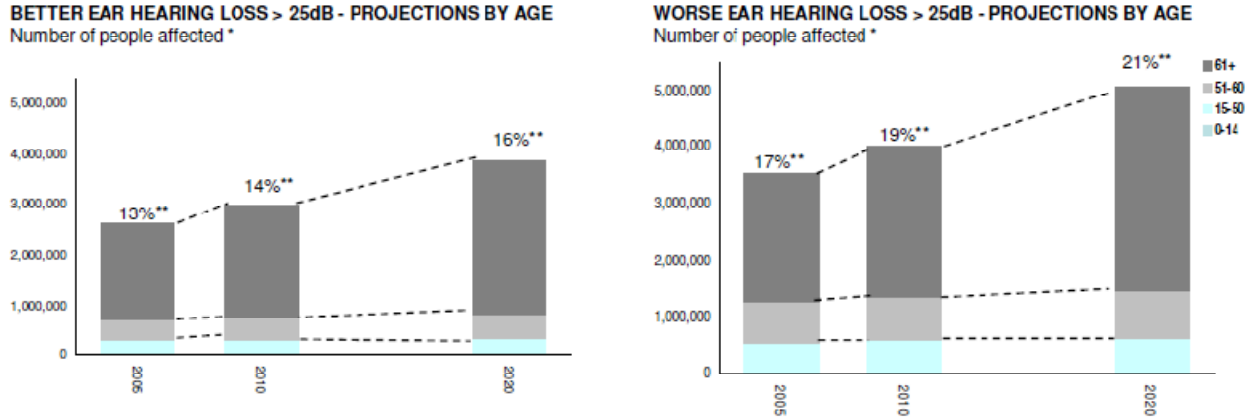
Approximately 200,000 Australians are Deaf or have a hearing impairment, and a further 3 million Australians have an acquired hearing loss through age or industrial deafness[1]. Despite the growing number of Australians with a hearing loss, this group is provided with a communication medium that is outdated and slow. In fact, many Deaf and hearing impaired Australians currently utilise a text communication tool that is only slightly faster than Morse code.

In 2008, ACE examined the different communication needs and wants for Australians who are Deaf or hearing impaired, or who have acquired hearing loss.

	Deaf	Hearing Impaired	Acquired hearing loss
Core needs	- Communication not primarily based on hearing the voice of the other party	- Communication not always based on hearing the voice of the other party	- Additional communication not based on hearing voice of other party
Wants	- Communication in Auslan, speech and/or lip-reading - Two sub markets: those who prefer only Auslan and those who are comfortable with both Auslan and English (in part driven by education/upbringing)	- English preferred language - Technology that allows user to speak directly but has supplementary text or video in other direction	- Normalisation, simulate lost ability to hear - Most acquired hearing loss occurs in adulthood so English is preferred language - Preference for supplementary text

Source: NRS Customer Satisfaction Research 2008, Association Journals

The analysis also revealed the extent to which hearing loss impacts older Australians:



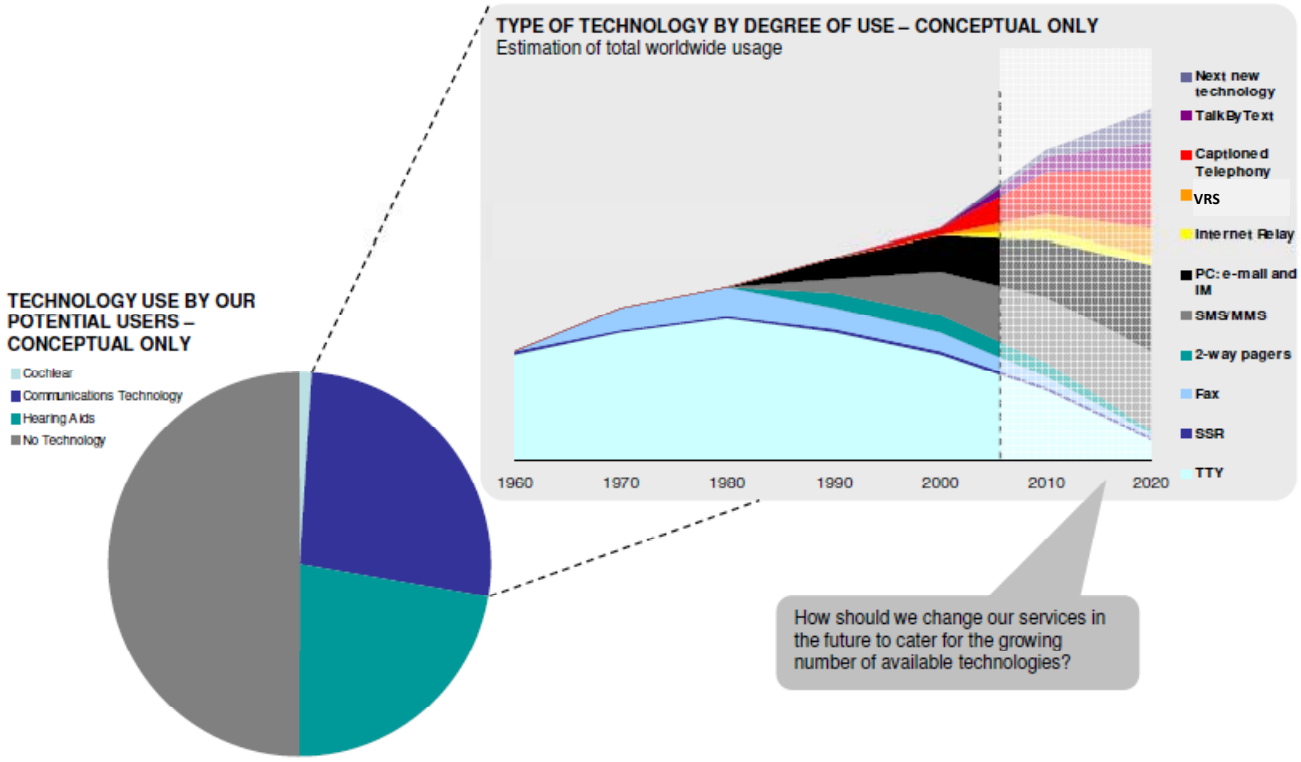
NB: >25dB is the World Health Organization (WHO) definition of hearing loss

- Trend affects two of our user groups – hearing-impaired and ageing
- Total number of people with hearing loss growing considerably with an expected increase of 32% between 2005 and 2020, primarily driven by the baby-boomers
- By 2020 almost all baby-boomers will be part of the ageing user group

* Numbers include those with mild, moderate and severe hearing loss
** Percentage of projected population with hearing loss
Source: Access Economics Listen Hear! Report, Straterjee analysis

[1] Access Economics, Listen Hear Report 2006; Straterjee Analysis, 2008.

The range of technologies available for the hearing impaired is becoming more diverse but in Australia, many do not have access to telecommunication technologies that are available worldwide. ACE estimates that over half of the Australians experiencing hearing difficulties are not seeking any technological assistance:



Source: US trends, Association Journals

Independent research has shown that those who experience hearing loss and do not receive suitable assistance choose to withdraw from society. This has far reaching social and economic impacts for Australia.

Social and economic impact of hearing loss

Social impact

There is no doubt that hearing loss can become a barrier for many people. However, it is not to be assumed that individuals with lower levels of hearing are necessarily more handicapped than those with superior levels of hearing. In 2008, ACE commissioned an independent report on health-related quality of life, hearing loss and the value of assistive technologies (Professor Luke B Connelly, Professor of Health Economics and Director of Australian Centre for Economic Research on Health UQ). The report examined quality of life impacts for both deaf and hearing impaired people.

It is now understood that the degree to which a hearing loss affects health-related quality of life is highly related to the consequences that a hearing deficit has on individual's daily activities (for example, does it restrict their participation at home, at work or at leisure). The findings of a mental distress and quality of life study, showed that:

> ... the hard of hearing tend to have more restricted social lives than those with complete prelingual deafness, as the latter are part of a supportive deaf culture using sign language, while those that are hard of hearing may be cut off from others by their disability and struggle to survive in a culture of those with normal hearing[2].

There is a body of literature to show that acquired hearing loss does result in serious limitations for a person's daily living activities and frequently leads to psychological problems which reduce their health related quality of life.

> [The potential] consequences of hearing loss experienced by older adults include altered psychological behaviour; strained family relations; limited enjoyment of daily activites; jeopardized physical well-being; interference with the ability to live independently and safely; interference with long-distance contacts on the telephone (potentially jeopardizing safety and security); interference with medical diagnosis, treatment and management; and interference with compliance with pharmacologic regiments[3].

Moreover, there is also evidence to show that spouses of people with acquired hearing loss also suffer from poorer psychological, physical and social wellbeing. This effect is stronger for the wives of men with hearing loss than it is for the husbands of women with hearing loss[4].

Another common theme is that older people with acquired hearing loss hide their handicap and are disinclined to admit they could benefit from assistive devices such as hearing aids[5]. There are often feelings of shame and low self-worth as well as using avoidance strategies to cope with the underlying disability[6].

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[2] J. Fellinger, D. Holzing, U. Dobner, J. Gerich, R. Lehner, G. Lena & D. Goldberg. Mental distress and quality of life in a deaf population. *Soc Psychiatry Psychiatr Epidemiol,* 40(9): 737 – 742, Sep 2005

[3] P. B. Kricos. Hearing assistive technology considerations for older individuals with dual sensory loss. Trends Amplif, 11(4):273–279, Dec 2007.

[4] M. I. Wallhagen, W. J. Strawbridge, S. J. Shema, and G. A.Kaplan. Impact of self-assessed hearing loss on a spouse: a longitudinal analysis of couples. *J Gerontol B Psychol Sci Soc Sci*, 59(3):S190–S196, May 2004

[5] J. Jerger, R. Chmiel, N. Wilson, and R. Luchi. Hearing impairment in older adults: new concepts. *J Am Geriatr Soc*, 43(8):928–935, Aug 1995

[6] P. C. Kerr and R. I. Cowie. Acquired deafness: a multidimensional experience. *Br J Audiol*, 31(3):177–188, Jun 1997

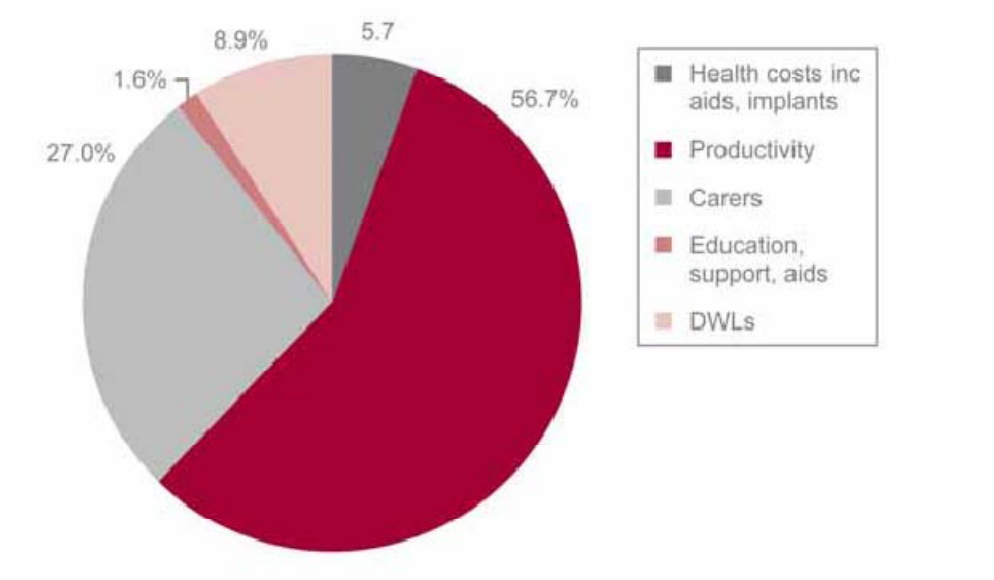
Social isolation can become a way of coping with interaction problems in social settings, and this can lead to anxiety and depression problems[7].

Economic impact

There are two important economic impacts associated with hearing loss. Firstly, people with a hearing loss are less likely to earn higher incomes and have lower employment rates. Secondly, those who experience hearing loss are more likely to retire early. The report which highlights this is the Access Economics (2006) Listen Hear – The Economic Impact and Cost of Hearing Loss in Australia.

Access Economics highlighted that people with a hearing loss are 25% less likely to be earning high incomes than people without hearing loss. People with hearing problems are also 6.8% less likely to be in paid work. For people with hearing problems, aged 15-64, 12.1% reported being retired versus 4.3% of people without hearing problems[8].

Access Economics also outlined the overall financial cost that hearing loss has for Australian in terms of health costs, productivity costs, carer, education support/aids and deadweight losses. Ultimately, the real financial cost of hearing loss is $11.75 billion or 1.4% of GDP per annum.

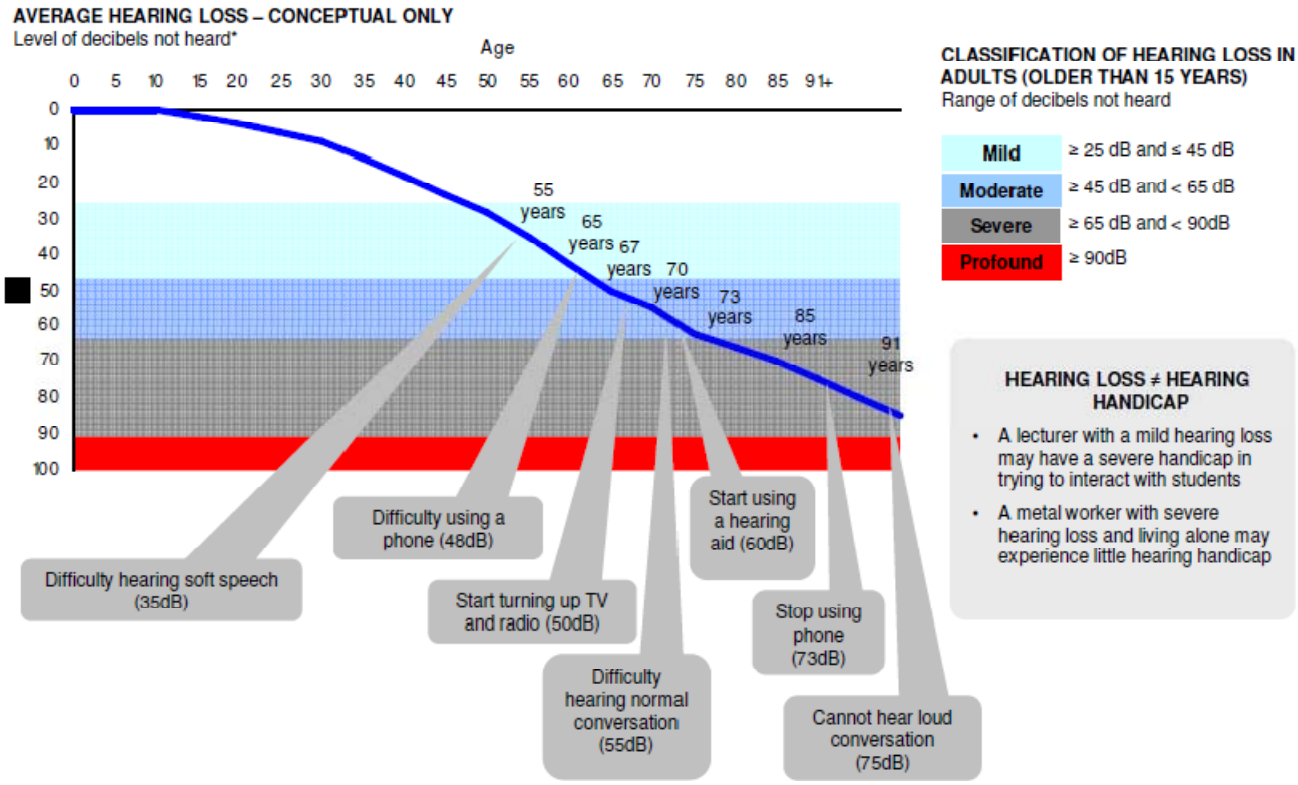


Source: Access Economics 2006, Listen Hear Report

[7] A. Hogan. Hearing rehabilitation for deafened adults: a psychosocial approach. Taylor and Francis, London, 2001
[8] South Australian Omnibus Data, 1994

Hearing loss and the telephone

The graph below highlights that telephone usage becomes difficult for those with mild hearing loss and particularly around the age of 65 years.

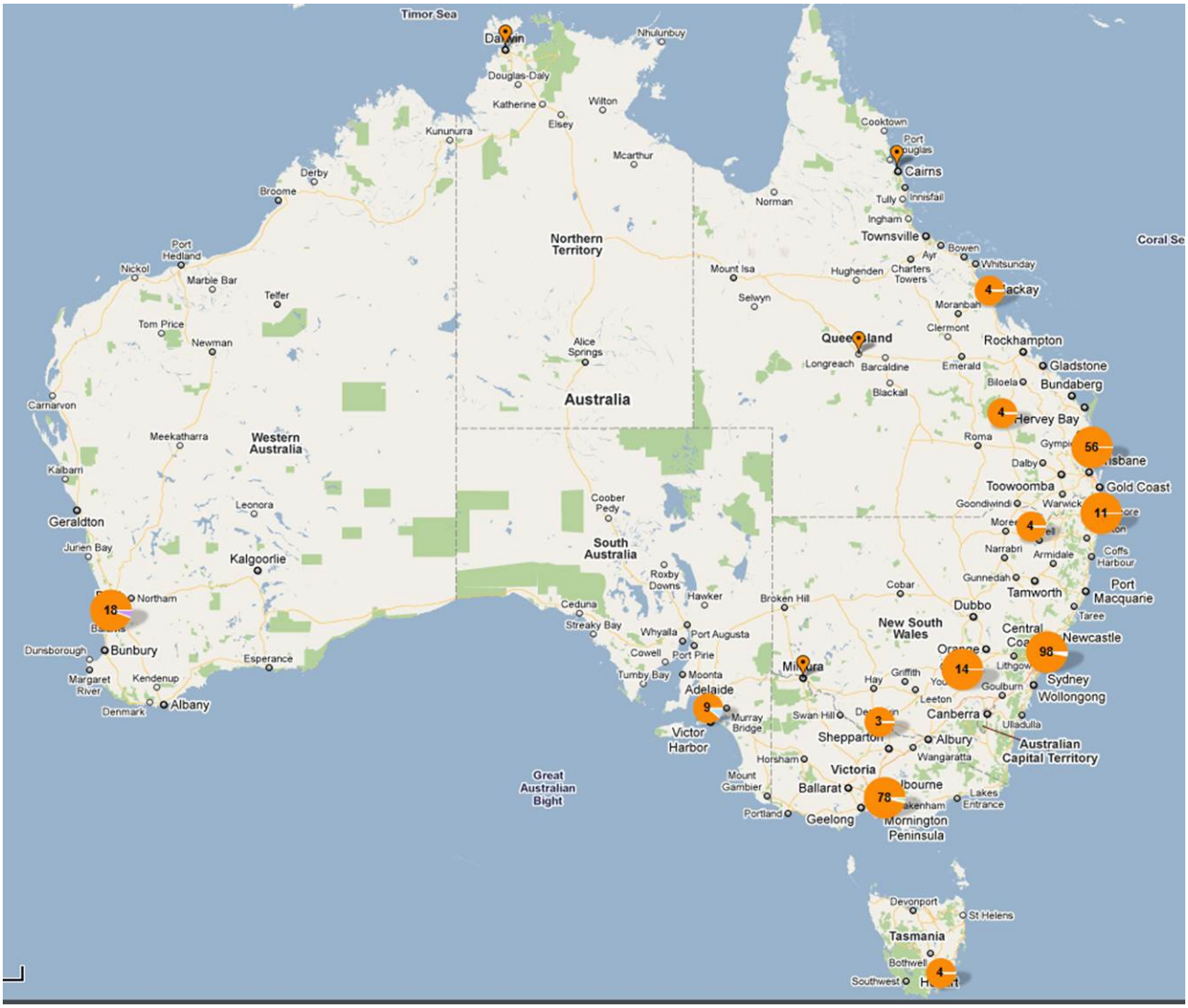


Source: Access Economic Listen Hear! Report, Australian Hearing, ACE estimates

While the SMS, email and instant messaging can provide alternative ways of making contact, nothing replaces the need to phone colleagues, families, friends and key services. The telephone is still an essential communication device in the workplace, to make appointments and to access emergency assistance. The Australian Communication Exchange is trialling new technologies that can provide improved and equal access to telecommunication services.

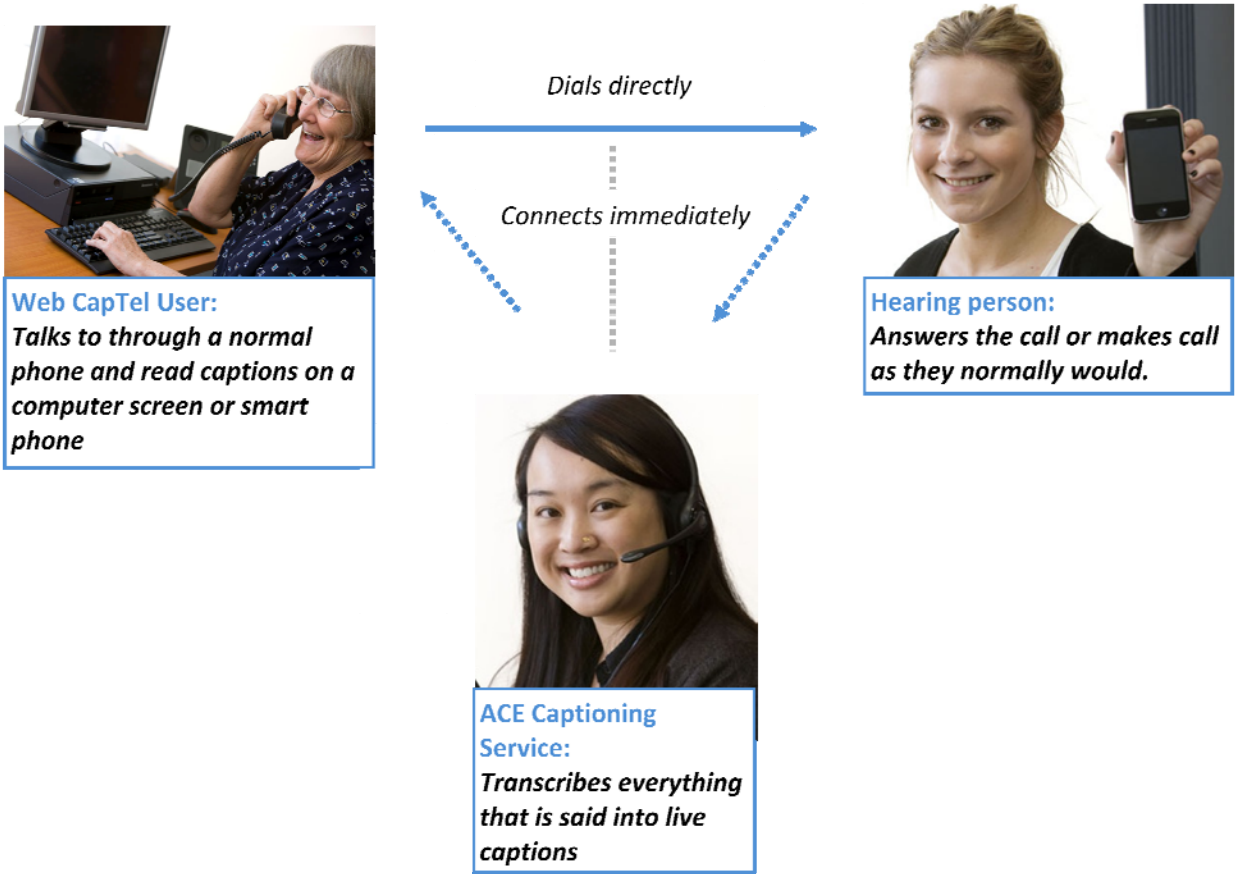
Australian Web Captioned Telephony Trial

In October 2009, ACE commissioned Australia's first Web Captioned Telephony service as part of a proof of concept trial. With the assistance of our key partners, ACE launched the service nationally to self-nominating deaf or hearing impaired Australians who believed they could benefit from the service. Over a 14 month period, ACE accommodated 195 participants nationally and provided 13,686 calls totalling 55,980 minutes of web captioned telephone calls.



National spread of trial participants (Oct 2009 – Feb 2011)

How the service works?



Service availability

Web Captioned Telephony trial participants had access to the service 9:00 am – 5:00 pm (AEST) Monday to Friday (excluding public holidays). There was no cost to make phone calls or to access the service.

Key functionality differences between Text Typewriters and Web Captioned Telephony

The Web Captioned Telephony service has distinct advantages over previous devices designed for deaf phone calls. Below is a short comparison:

	Text Typewriters (TTYs)	Web Captioned Telephony
Overview	 - The Text Typewriter (TTY) can be used to contact another TTY directly and have a combination of typed and voice conversation. The TTY can also be used to contact a standard telephone through a relay service operator such as the National Relay Service.	 - The Web Captioned Telephony service uses voice recognition software to provide live captions of what the other person is saying. The user needs the internet and any phone to access the service.
Speed of text support	- App. 45 words per minute	- App. 180 words per minute
Flow of conversation	- Users report that conversations are slow and stop/start in nature.	- Designed to operate at natural conversation speed.
Control of conversation	- When using a TTY the two parties on the phone call cannot send messages at the same time. Users must adopt special protocol such as ending sentences with Go Ahead or GA to indicate when the other party can speak.	- The two parties can constantly communicate with one another. Neither party must wait for the other party to finish speaking, providing users with independence and control over the phone conversations.
Specialist equipment req'd	- The Text Typewriter is a specialist device which is currently covered under the Disability Equipment Program.	- No specialist equipment required. The service works with an internet connection and any phone.
Portability	- Equipment plugs into an analogue telephone line and power source making it difficult to move between locations	- Web Captioned Telephony can be accessed in any location which has broadband access including through smart phones. Accordingly, this telecommunication solution is very mobile.
Visibility	- The Text Typewriter has a small screen to display conversation text. Users with vision impairments can find this challenging.	- The captions on Web Captioned Telephony are provided with versatile text sizes, fonts and colours.

Key functionality difference between Web Captioned Telephony and Handset Captioned Telephones

ACE is also trialling a Handset Captioned Telephone service which leverages off the same technology as the Web Captioned Telephony service. These services meet different needs as explained below:

	Web Captioned Telephony	Handset Captioned Telephones
Overview	 - The web captioned telephony service uses voice recognition software to provide live captions of what the other person is saying. The user needs broadband internet and any phone to access the service.	 - The handset captioned telephone looks like a normal telephone with an extra screen to display the live captions. The phone plugs to a standard analogue line and needs broadband internet to provide the captions. **NB:** The phone has additional features such as volume adjustments, tone adjustments and hearing loops/audio jacks which can be used with or without the live captions.
Speed of text support	- App. 180 words per minute	- App. 180 words per minute
Flow of conversation	- Designed to operate at natural conversation speed.	- Designed to operate at natural conversation speed.
Specialist equipment req'd	- No specialist equipment required. Service works with an internet connection and any phone.	- The captioned telephone is a specialist device which is not currently available in Australia (except in trial format through ACE).
Portability	- Web captioned telephony can be accessed through smart phones making this telecommunication solution very mobile.	- Equipment plugs into an analogue telephone line, power source and broadband internet making it more difficult to move than web captioned telephony.
Visibility	- The captions on web captioned telephony are provided with versatile text sizes, fonts and colours.	- The captions on handset captioned telephony are provided with versatile text sizes, fonts and colours.

Anecdotally, ACE has received important feedback from users who have trialled both web and handset captioned telephony. Many reported that the web captioned telephony services is more suitable for professionals and younger hearing impaired Australians. The web service, as opposed to the handset captioned telephone, is more mobile, more likely to be accommodated by employers and ensures that the use of captioning support is largely inconspicuous.

Call data summary

The first Web Captioned Telephone call was made on 5 October 2009 and the last call was received on 4 February 2011. Throughout the calendar year 2010, there were a total of 13,686 calls totalling 55,980 minutes and the average call duration was 4.1 minutes.

A total of 195 Australians trialled the service and approximately 50 participants were considered regular users. The top 20 users accounted for 65% of total call minutes. In the top 80 per cent of users, the average use per user per month was 68.3 minutes.

Feedback from the community

Below is a snapshot of Australian testimonials from the ACE Web Captioned Telephony trial:

- *"What a breakthrough! I can now use the telephone. I no longer have to rely on my wife to make calls for me, I can look after myself!"* Rob, NSW

- *"I registered with Web CapTel for my 15 year old daughter who has a hearing impairment. Before today, she has never made a phone call. We are really enjoying trying this out."*

- *"Just so you know, this service has changed my life. In fact, I just can't fathom going back to not having it! My clients have commented on how much easier it is to talk to me. As an IT Architect it is now so much easier to show leadership just because I can call people up."*

- *"I have congenital hearing loss and after six years working in the public service without using any assistive technology, I had to take time out from work on stress leave. Since using CapTel at home and in the workplace I have made an easy transition back into the workplace and feel as though I can do my job more effectively with more confidence. This technology has changed my life."* Barney, QLD

- "*I am using Web CapTel at the moment and it is really wonderful and beneficial."* Naomi, NSW

- *"Since participating with this service it has provided a greater degree of autonomy and independence in the workplace. I am less reliant on other staff members to relay messages and conduct telephone calls for me! I can engage more effectively and I don't experience anxiety or uncertainty when speaking on the telephone."* Nina, NSW

- *"I now use this service at home and work and it is fantastic. While I have always produced work of a high standard, my confidence on the phone has increased dramatically. I am no longer guessing what people are saying and can reread the captions before giving a considered response. This is invaluable in negotiating with stakeholders."*

A personal account:

Rob Marich, a 62 year old successful investor from Sydney recently found himself back in the workforce and reconnecting with clients, family and friends over the telephone since discovering web captioned telephony. Many Australians like Rob, find themselves in difficult situations in the workplace where they cannot communicate over the phone and have to reassess their working career.

Captioned telephony was a breakthrough for Rob once he lost almost 90% of his hearing through two bouts of meniere's disease and a hiking incident which left him with no hearing in one ear. Captioned calls were Rob's way to reconnect with clients, regain independence and ensure he can do his job as effectively as a hearing person.

Barriers to introducing Web Captioned Telephony in Australia

ACE believes the Web Captioned Telephony service has important benefits over existing telephone services provided for deaf and hearing impaired Australians. However, there is an important barrier to be addressed before a web based captioned telephone service can be resumed in Australia.

Telecommunication Interception and Access Act

The *Telecommunication Interception and Access Act (1979)*. Section 7 prohibits a person from intercepting a communication passing over the telecommunications system. This includes listening or recording, by any means, communication passing over the telecommunications system. ACE's legal advisers have indicated that the Web Captioned Telephony service could be in breach of this Act if an announcement is not made to the hearing caller at the commencement of all calls.

Captioned telephony was introduced in the United States of America in 2002 and is now available in all States. In this context the captionist is considered, by law, to be part of the telephone wire. As such, the interception laws do not apply.

ACE trialled a process in Australia for one month where we requested all Web CapTel users to announce the presence of the third party before captioning could commence. The participants found this process untenable and there was a 50% drop from the monthly average of 3,563 minutes down to 1,197 call minutes.

In the absence of a practical alternative to the Act, a legislative change may need to be pursued before web captioned telephony becomes available in Australia.

It is important to note that the handset Captioned Telephone Service does not involve interception under the *Telecommunication Interception and Access Act (1979).* A handset captioned telephone call is set up in a different manner to the Web Captioned Telephony call and legal opinion provide to ACE has made it clear, without reservation, that the handset captioned telephony service does not involve an interception under the Act.

The importance of equal access to telecommunication services

Introducing new telecommunication services can dramatically improve access for both deaf and hearing impaired Australians and this can have the following benefits;

- **Access to key services –** Improved telephone access enables greater servicing at homes, reducing stress on key state services such as health and welfare. These technologies will also allow commerce to service customers through the lower cost telephone channel.
- **Savings to health -** The real financial cost of hearing loss is $11.75 billion or 1.4% of GDP per annum (The Economic Impact and Cost of Hearing Loss in Australia, Access Economics, 2006). The total burden of different health issues to the Australia has age-related hearing loss in fourth position in the overall category of non-fatal conditions, just in front of asthma (The Australian Institute of Health and Welfare, The burden of disease and injury in Australia, 2007).
- **Economic benefits –** People who can confidently use the telephone can remain actively engaged in the economy for longer as both a consumer and an employee. This will provide additional tax revenue to the Government.
- **Social benefits –** The telephone is a key communication tool for staying in contact with family and friends. In particular, the ageing population will see various emotional and mental health benefits (further reducing health and welfare costs).
- **Rural benefits –** The new technologies will allow Australians in rural and remote areas to receive the functional equivalent of the standard telephony that hearing users enjoy. This will improve their connections to key services, families and friends.
- **Emergency services –** Equal access to the telephone is vital to maintain connectivity to 000 emergency services.

Recommendations

Recommendation 1: There is a need for two different services in Australia - Web Captioned Telephony and Captioned Telephones

ACE is currently trialling a Handset Captioned Telephone service which leverages off the same technology as the Web Captioned Telephony service. These two services meet very different community needs as explained on page 14 in this report. As such, it is recommended that both services be considered as equally important to improve telecommunications access for deaf and hearing impaired Australians.

Recommendation 2: Further research is required into health related quality of life in the hearing impaired

As part of the trial, ACE commissioned further research titled "The Australian Captioned Telephone Study" or ACTS. The study was conducted by Luke Connelly (Professor of Health Economics and Director of Australian Centre for Economic Research on Health UQ and the Australian National University). The research results suggest that the average quality of life of the participants is low by comparison with the Australian population and with groups who have serious health problems. Further research is required to examine the role that various interventions, including captioned telephony, can have to improve the quality of life for this consumer group.

ACE thanks our trial participants and key partners for their ongoing support

ACE would like to extend our heartfelt thanks to all those who participated in this trial, the research and who provided ongoing feedback to the ACE technical team as we delivered this technology to Australia. We were overwhelmed with the support and humbled by your personal stories about challenges regarding the telephone.

We also thank our key partners who helped inform the community about the trial:

- Australian Communications Consumer Action Network
- Australian Federation of Deaf Societies
- Better Hearing Australia
- Deaf Australia
- Deafness Forum of Australia
- Hear for You
- Livewire (Starlight Children's Foundation)
- National Disability Services (NDS)
- National Seniors Australia
- NEC Broadband for Seniors
- Novita Tech

In particular, ACE would like to recognise Deafness Forum of Australia and National Seniors Australia who were exceptionally active in promoting the trial service to their members.

PART B

Web Captioned Telephony - Health related quality of life research

As part of the trial, ACE commissioned further research titled "The Australian Captioned Telephone Study" or ACTS. The study was conducted by Luke Connelly (Professor of Health Economics and Director of Australian Centre for Economic Research on Health UQ and the Australian National University). A non-technical summary is provided below and the full study is available at: http://www.acerh.edu.au/

The ACTS is a survey-based study of 253 people who participated in the trial. The study collected, amongst other things, data on demographic characteristics (age, gender), employment status and the use of communications technologies. Its main purpose though, was to assess the health related quality of life of this group of consumers and to find out about how hearing losses affect their activities and their lives. The study also collected preliminary data on the value that this group places on CTS. The latter information was collected primarily as a precursor to a trial of CTS using captioned handsets.

Methods and measures

The ACTS used a measure of overall health-related quality of life called the Assessment of Quality of Life instrument (AQoL), which is a validated measure that was developed in Australia and has been used fairly widely, for a range of health conditions and to measure the effects of a range of interventions (e.g. cochlear implants) on quality of life. The AQoL is a good tool for measuring overall health related quality of life. Its results are particularly useful for comparisons across consumer groups and they can be used for economic evaluations of interventions that can improve health-related quality of life.

The Hearing Handicap Inventory for Adults (HHIA) was also used. The HHIA was specifically designed to measure exactly how lower levels of hearing affect people socially and emotionally. This survey tool is useful because it is quite sensitive to differences in the ways that hearing losses, of various levels of severity, affect people's lives. Its results can be split into two subscales: the HHIA Social/Situational Scale (HHIA-S) and the HHIA Emotional Scale (HHIA-E).

Finally, a method called contingent valuation was used to elicit monetary valuations of web-based CTS. Two different contingent valuation approaches were used, but because the purpose of this part of the study was simply to collect pilot data, they are not afforded further discussion in this summary document.

Results

Health related quality of life

The results show that people who responded to the survey have low health-related quality of life by comparison with the Australian population, but also by comparison with groups of people whose illnesses or disabilities are recognised as serious. Table 1 shows how participants' results compared to the results from studies of other groups of consumers and patients, including the general Australian population. The reference values for this Table are one (which represents perfect health) and zero (which represents death). Table 1 shows that the AQoL measures of health-related quality of life for the ACTS sample are lower than those for influenza, depression, cochlear implant users and hospital outpatients. They are close to the values reported by people with major depression, psychosis, and inpatient hospitalisation, for example.

Table I
COMPARISON OF HEALTH-RELATED QUALITY OF LIFE
(AQoL UTILITIES)

Study	Participants	Mean
[2]	General population (Australia)	0.83
[3]	Influenza	0.72
[4]	Other Depression	0.71
[5]	Cochlear implant users	0.64
[6]	Hospital outpatients	0.63
[4]	Major Depression	0.54
[7]	Psychosis	0.50
[1] (this study)	Participants in the ACTS	0.49
[6]	Hospital inpatients	0.47
[8]	Suicidal ideation	0.45
[9]	Stroke	0.40
[3]	Older adults with chronic conditions	0.33
[10]	Elderly patients recently discharged from aged care assessment	0.30

Source: [2], except data in blue.

The detailed results from the AQoL suggest that the results are largely driven by fairly poor results for psychological health and the senses and this finding is consistent with the international literature on the effects of hearing losses. On the other hand, the results also showed that the respondents generally had high degrees of satisfaction with their level of independence and phsyical health. Thus, the sample could be characterised as an independent and physically healthy sample that is quite profoundly affected by hearing loss.

Hearing Handicap Inventory for Adults (HHIA)

The results from the HHIA appear to confirm not only the AQoL results, but the results from the international literature: hearing losses, especially incurred later in life, can have profound effects on social and emotional wellbeing. The effects of hearing loss on social isolation and family conflict, in particular, are well-established.

Responses to two questions from the HHIA, reproduced below, provide a sense of how severely hearing losses affect the well being of most people in this sample. Figure 1 and Figure 2 show that 90% of the sample felt handicapped by their hearing loss, and that the same proportion felt that their hearing loss inhibited their social lives.

Figure 1. Responses to HHIA Item: "Do you feel 'Handicapped' by a hearing problem?"

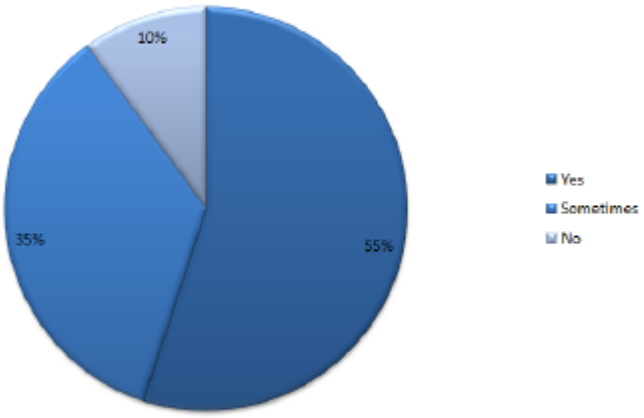
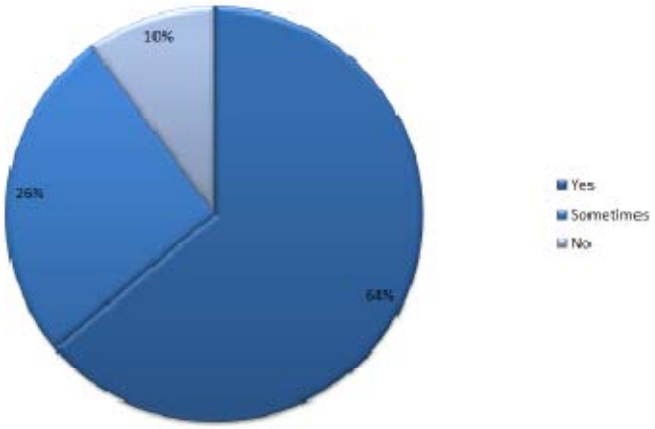


Figure 2. Responses to HHIA Item: "Do you feel that any difficulty with your hearing limits or hampers your personal or social life?"



The overall results from the HHIA also showed that 97% of the sample has hearing losses that were associated, in another large Australian study (called the Blue Mountains Hearing Study)[11], to be associated with a "marked" level of hearing loss. It is estimated that only 1.9% of Australians have a hearing loss in this range. Thus, the ACTS confirms that the market for CTS is comprised primarily of people who not only have substantial hearing loss, but are also severely adversely affected by it.

Conclusion

The ACTS establishes that the target user group for CTS is a high needs group whose members are severely adversely affected by hearing loss. Problems of social isolation and poor mental health utility appear to be driving the results. The results suggest that the average quality of life of ACTS participants is low by comparison with the Australian population and with groups who have serious health problems (e.g. depression). This result is striking, but perhaps not surprising; the symptoms of serious conditions such as depression are amenable to treatment and good management. Hearing-related quality of life losses are also amenable to intervention (e.g. the use of assistive devices such as hearing aids, CTS). However, it is an open question whether or not this group of consumers is generally afforded the same level of attention as consumers whose health needs that are amenable to treatment via pharmacological or therapeutic intervention. In other words, this result could reflect the poor management of hearing losses as well as the seriousness of hearing loss that this group experiences. Given the strong role that social isolation appears to play in this group, which otherwise is generally independent and physically healthy, interventions such as CTS have the potential to lead to considerable improvements in the quality of life of this group of consumers.

References

[1] L. B. Connelly, The Australian Captioned Telephone Study, ACERH Research Report No.9 (July). ACERH: Canberra (Forthcoming), 2010.

[2] G. Hawthorne and R. Osborne, "Population norms and meaningful differences for the assessment of quality of life (aqol) measure." Aust NZ J Public Health, vol. 29, no. 2, pp. 136–142, Apr 2005.

[3] R. H. Osborne, G. Hawthorne, E. A. Lew, and L. C. Gray, "Quality of life assessment in the community-dwelling elderly: validation of the assessment of quality of life (aqol) instrument and comparison with the sf-36." J Clin Epidemiol, vol. 56, no. 2, pp. 138–147, Feb 2003.

[4] G. Hawthorne, F. Cheok, R. Goldney, and L. Fisher, "The excess cost of depression in south australia: a population-based study." Aust N Z J Psychiatry, vol. 37, no. 3, pp. 362–373, Jun 2003.

[5] G. Hawthorne, A. Hogan, E. Giles, M. Stewart, L. Kethel, K. White, B. Plaith, K. Pedley, E. Rushbrooke, and A. Taylor, "Evaluating the health-related quality of life effects of cochlear implants: a prospective study of an adult cochlear implant program." Int J Audiol, vol. 43, no. 4, pp. 183–192, Apr 2004.

[6] G. Hawthorne, J. Richardson, and N. A. Day, "A comparison of the assessment of quality of life (aqol) with four other generic utility instruments." Ann Med, vol. 33, no. 5, pp. 358–370, Jul 2001.

[7] H. Herrman, G. Hawthorne, and R. Thomas, "Quality of life assessment in people living with psychosis." Soc Psychiatry Psychiatr Epidemiol, vol. 37, no. 11, pp. 510–518, Nov 2002. [Online]. Available: http://dx.doi.org/10.1007/s00127-002-0587-y

[8] R. D. Goldney, L. J. Fisher, D. H. Wilson, and F. Cheok, "Suicidal ideation and health-related quality of life in the community." Med J Aust, vol. 175, no. 10, pp. 546–549, Nov 2001.

[9] J. W. Sturm, R. H. Osborne, H. M. Dewey, G. A. Donnan, R. A. L. Macdonell, and A. G. Thrift, "Brief comprehensive quality of life assessment after stroke: the assessment of quality of life instrument in the north east melbourne stroke incidence study (nemesis)." Stroke, vol. 33, no. 12, pp. 2888–2894, Dec 2002.

[10] A. Harris, E. Gospodarevskaya, J. Callaghan, and I. Story, "The cost effectiveness of a pharmacist reviewing medication among the elderly in the community," Australasian Journal on Ageing, vol. 20, pp. 179–186, 2001.

[11] D. Sindhusake, P. Mitchell, W. Smith, M. Golding, P. Newall, D. Hartley, and G. Rubin, "Validation of self-reported hearing loss. the blue mountains hearing study." Int J Epidemiol, vol. 30, no. 6, pp. 1371–1378, Dec 2001.