



## Mobile Phones and Deaf People Discussion Paper

This discussion paper focuses on the introduction and the use of mobile phones in Australian society with emphasis on use by Deaf Australians who mostly use text messaging (SMS).

The paper contains six sections:-

1. Background to the impact of change from analogue to digital transmission services;
2. Emergence of short text messaging services (SMS), its usage and benefits;
3. Key features that Deaf people need on mobile phones;
4. Cost (Pricing) issues;
5. Access and connectivity issues; and,
6. Emerging mobile phone technology.



At the end of sections 2-6 there are some questions for you to think about. AAD is requesting feedback from you to those questions and any other issue relating to this paper and mobile phones.

### 1. Background



Ericsson A1228C

Until the year 2000, Australia's phone network was based on the analogue system (AMPS). During this time, Deaf people were able to use some mobile phones ('brick' version) with their TTYs to make calls to other TTYs. For the first time Deaf people had access to phone communication outside of a fixed phone setting (eg; home, workplace). It enabled Deaf people to have access to the phone as they went shopping, travelled or for emergency situations (using a portable compact TTY).



Samsung SCH620

However, in 1997 the Federal government decided to shut down the analogue network during 2000 and move to a digital network. This meant that Deaf people no longer had this access. AAD and others protested about this to the government but our pleas were ignored.

GSM (Global System for Mobile communications) mobile phones were introduced to Australia in 1993, but Deaf people couldn't use these phones with TTYs. Also deaf people who use hearing aids found great difficulties accessing the voice

services due to radio signal interference to their hearing aids.

The issue of hearing aid interference was addressed through mediation with the Human Rights and Equal Opportunity Commission (HREOC). People who were having difficulties were offered induction loops or a free transfer over to the CDMA (Code Division Multiple Access) mobile phone network.

Today, Deaf people in Australia are still denied the opportunity to use mobile phones that also work as a TTY or can be wired (via cable) to a TTY to access other TTY's, which is possible in Europe (see Section 5).

## 2. Emergence of short text messaging services (SMS), its usage and benefits



SMS allows you to send and receive text messages. Generally, up to 160 characters can be sent at one time. Some mobile phones are able to send messages with more than 160 characters (eg; 460), but you pay for the cost of two (2-3) SMS calls.

When GSM mobile phones emerged in 1993, their text-messaging feature was not yet 'switched on' until 1995. In the late 1990's, mobile phone networks introduced SMS but it only worked within the same network / carrier service. You could only send an SMS to someone who used the same carrier network as you (eg Optus to Optus). You could not send an SMS to someone who used a different carrier network (eg Optus to Telstra).

Deaf people began to buy GSM mobile phones despite the high costs and minimal use options because of their ability to use text messaging. SMS use was great for quick messages, sending news, urgent family / friend / work communication and so on. However, they were paying for a service that was mostly created for the voice network – SMS was an extra. This meant that in order to use SMS they had to pay for voice-based services that they couldn't use.

Despite the carriers not wanting to offer cross networking for commercial reasons, lobbying efforts by AAD and others fast-forwarded cross-networking accessibility for SMS use in April 2000. Deaf people could now send and receive SMS between different carrier networks (eg Optus to Telstra), so more Deaf people began buying mobile phones.

The benefits of SMS communication for Deaf people included:

- providing greater freedom to make phone contact anywhere (within transmission range)
- ease and speed of communication (simple technology)
- wide access (SMS allowed contact with hearing people, family, businesses, services as well as Deaf people)
- independence (did not need others to assist with phone communications)
- reasonable cost (currently 20-25 cents per SMS - not including network charges).

Eventually, wider coverage became possible with the introduction of CDMA mobile phones (late 2001).

According to current carrier networks' monthly activity statements, over 10-12 million SMS message are sent each month. Individual subscribers send an average of approximately 30 SMS calls per month.

A recent AAD anecdotal survey of Deaf mobile phone users found that Deaf usage was 10 times greater than the average. Some Deaf people were making 300+ SMS calls a month while others may only be using it infrequently (15 - 25 times per month).

## QUESTIONS

2.1 *Is SMS good for Deaf people? Why?*

2.2 *How often do you use SMS?*

2.3 *Do young Deaf people prefer to use mobile phones rather than TTYs?*

2.4 *Should SMS call costs be reduced for Deaf users?*

### 3. **Key features that Deaf people need on mobile phones**

Mobile phones are continually improving their functionality (voice, text, email, etc.) and features (vibrating alarm, predictive text, etc.). We are now moving towards third generation mobile phones.

1st generation: Analogue

2nd generation: GSM - using UMTS (Universal Mobile Telecommunication Systems)  
- GPRS (General Packet Radio Service)  
- Internet Protocol (IP) based networks.  
[Note: IP services available for business use and not generally available to the public at present]

Accessing the Internet, downloading information, pictures, online gaming, video clips are either currently available or so will be possible.

Through consultation with Deaf people around Australia, requests from mobile phone service providers, observation and personal experience we have developed the following list of key features that Deaf people may require on mobile phones.

Essential features:

- Vibrate function
- Predictive text (aids speed of typing messages)
- Small, compact, lightweight
- Large screen
- WAP compatible (able to access text based information)

Other useful features:

- Simple, quick and easy message service protocols (refers to ability to get to the mobile phone numbers you want to send message to - some text message protocols are cumbersome to use);
- Call charges feature (eg; Kyocera 2135 has this feature which allows you to know approx. how much you have spent on recent calls - it is not an accurate indicator)
- Handling comfort (some mobile phones are difficult to hold and do text messaging because either the handset is too small or the location of the keys are difficult for easy one-hand use)
- Character counter (helps to know if you are paying for one or two calls – anything over 160 characters counts as a second call)
  - > 0 - 160 = 1 SMS call
  - > 161 - 320 = 2 SMS calls
  - > 321 - 460 = 3 SMS calls

[Note: CDMA phones only allow 120 characters. If you send an SMS message from GSM to CDMA mobile, the message may be missing or cut because it may be too big].

- A connecting induction loop (if the phone is a GSM version) for those Deaf people who can use voice capacity (currently only available on some Nokia and Ericsson mobiles).

## QUESTIONS

- 3.1 *Are there other essential features of mobile phones for Deaf people?*
- 3.2 *Are there other (non-essential) functions/features you would like to see mobile phones have?*
- 3.3 *What kind of mobile phone do you have?*
- 3.4 *Would you recommend your mobile phone to other Deaf people?*
- 3.5 *Do you have a GSM or CDMA mobile phone?*
- 3.6 *Do you find SMS easy to use?*

## 4. Cost (Pricing) issues



Many Deaf people purchase a mobile phone for its SMS features only. However current pricing plans are mostly designed to cater for voice users. Special offers or deals that include discounts on weekends or overnight do not include SMS calls.

Some mobile phone service providers are beginning to allow their free ‘included calls’ package to include SMS calls if required. For example, you might purchase a \$40 monthly plan and you receive \$40 worth of free ‘included calls’ – the free calls can be either voice or SMS.

However, some mobile phone services have pricing plans that are not flexible in providing for Deaf customers' needs. SMS call costs recently rose from 22 cents to 25 cents. This has a big impact on Deaf people who are primarily SMS users.

Australia's SMS prices (22-25c) are higher than many other countries such as Germany (15c), Singapore (5c) and Denmark (10c). Actual cost of sending an SMS is very low (1-5c) but the overheads raise the costs to its current level.

As discussed earlier in this paper, many mobile phones have varying features. There are very few mobile phones that include all of the essential features required by Deaf people. For example, many mobile phones either have the vibrating alert feature but not predictive text or vice versa. If you want both, then you may have to pay more.

Quite a few people have problems with controlling costs of using mobile phones and many have gone into debt. This is because they don't fully understand how much mobile phone calls cost until too late. Financial counselling services are busy trying to assist people with understanding phone costs and how the better manage them.

## QUESTIONS

- 4.1 *Should SMS call costs be discounted for Deaf users – a cheaper rate? Why?*
- 4.2 *Should all mobile phone packages include SMS as part of their free 'included calls' package? Why?*
- 4.3 *Should any special offers / discounts include SMS calls? Why?*
- 4.4 *Do you think accessible mobile phones should be at a lower price for Deaf people? Why?*
- 4.5 *Should mobile networks offer special pricing packages for Deaf customers? Why?*
- 4.6 *Are mobile phone dealers aggressive in their marketing / accurate in their information? Please give examples if you can.*
- 4.7 *Are Deaf people able to access financial counselling / debt support services?*

### **HOT NEWS!!**

Check out ACA website: [www.toolkit.aca.gov.au](http://www.toolkit.aca.gov.au)

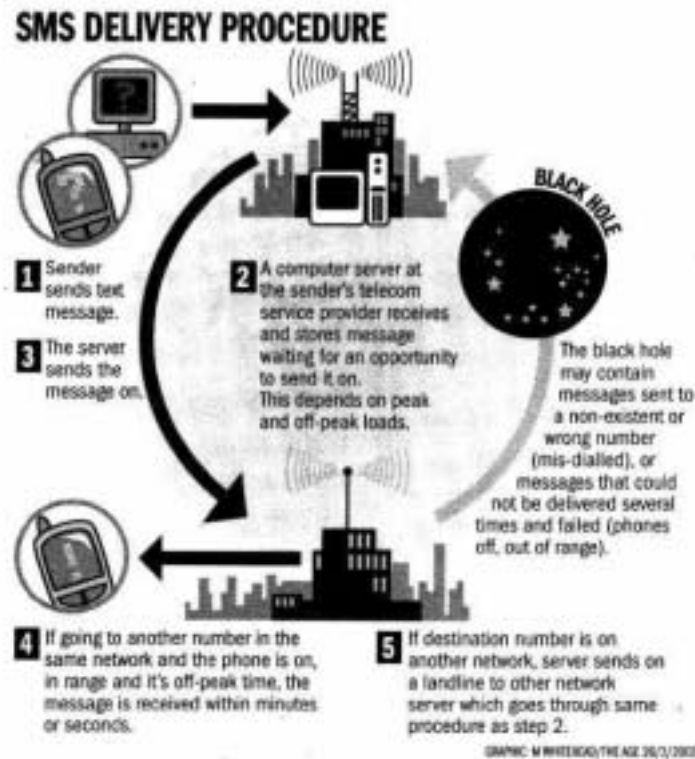
This is a useful site to help get information on mobile phones including :-

- Type of mobile phones available to assist with identifying the right phone
- Compare costs of mobile phone plans and select one that is right for you
- Things to look out for when purchasing a mobile
- Other special links to websites for more information on mobile phones

## 5. Access and connectivity issues

The following is a very simple explanation of how an SMS call delivery is completed:

1. A sender sends an SMS;
2. A computer server (carrier) receives and stores the SMS waiting to send on (speed depends on peak and off-peak periods);
3. Server sends SMS;
4. SMS if sent to someone in the same network is received and stored within seconds / minutes;
5. If SMS is sent outside the network, the SMS is sent to a computer server (same as 2) then sent and stored.



The above process raises two issues:

- SMS calls cannot be considered safe as an emergency call tool because of the possibility of delay in receiving a message. The Australian Communications Authority (ACA) has recently publicly warned people not to consider using SMS for emergency calls.
- Mobile phones only let the user know that the SMS has been sent. It does not tell you when the message was received. This can confuse people and lead them to think incorrectly that if an SMS has been successfully sent then it is automatically received.
- Some mobile phones such as Nokia 3310, has a feature of notifying the users when the messages are:-
  - pending to be delivered; and

- delivered at other end.

[Note: this is something you need to check when purchasing a mobile phone].

Recently in NSW, the State Emergency Service (SES) announced it was considering offering a new SMS service to be able to warn people of impending bad weather coming their way and allow them to take action before it causes any possible damage. This suggested service would supplement the existing weather warning services communicated through the radio, TV and newspapers.

### **Service access issues**

Most mobile phone service providers do not satisfactorily cater for Deaf people's needs. Experience has shown that many dealers / staff do not adequately understand all the functions and features that the range of mobile phones have. Therefore they are not in a position to provide accurate information to meet Deaf people's requirements. There are many examples of where Deaf people have been misinformed and misled into purchasing a mobile phone and / or phone plan that does not cater for their needs.

A recent approach by AAD to one mobile phone service provider has led to them taking action to improve staff awareness, knowledge and ability to properly assist Deaf customers. This needs to be an industry-wide initiative.

Mobile phone contracts are difficult for anyone to understand. For Deaf people who use Auslan they can be even more difficult to understand. When sign language interpreters or plain English versions of contracts are not available, then Deaf people are severely limited in knowing their rights and responsibilities in relation to purchasing a mobile phone, 'cooling-off' period and pricing plans, etc.

### **TTY connection issues**

As addressed earlier in this paper, when analogue transmission ceased, Deaf people could no longer use their TTYs with mobile phones.

No alternative option is currently available in Australia. In Europe the Nokia 9000 range includes a V.18 standard modem chip, which allows 'handshakes' with various network protocols such as ASCII, DTMF and baudot (TTY). This means that the Nokia 9000 mobile phones are able to 'talk' with TTYs. Deaf people in Europe have quickly and increasingly adopted the Nokia 9000 range as a model for portable mobile phone communication. The Nokia 9000 range also has functions that include Internet access, fax, SMS, WAP (Wireless Access Protocol), word processor and other features.



Check Nokia's website for more information – [www.nokia.com.au](http://www.nokia.com.au)

The Nokia 9000 (now 9210) mobile phones are available in Australia but they do not include the ability to communicate with TTYs.

## **QUESTIONS**

- 5.1 *Do we need carrier networks to improve their SMS technology to ensure that SMS are received quickly without delay?*
- 5.2 *Do emergency services require SMS access numbers?*
- 5.3 *Do you think emergency road services should have SMS access numbers?*
- 5.4 *Should government, community and business services have SMS numbers available for alternative contact?*
- 5.5 *Do we need better access to information about mobile phone services and contracts?*
- 5.6 *Should Nokia 9000 - 9210 mobile phones have TTY access capacity?*
- 5.7 *Do you think that when mobile phones have TTY connectivity, they should be included in the Disability Equipment Program?*

## **6. Emerging mobile phone technology**

The European based WISDOM (Wireless Information Service to Deaf people On the Move) project, a collaboration of many partners and funded by the European Commission, is an attempt to find an effective portable communication tool that will allow Deaf people to use their mobile phone anywhere and anytime. Its key feature is the ability to provide video communication, as well as SMS, voice, email, Internet, etc ([www.mobilewisdom.org](http://www.mobilewisdom.org)).

As mentioned earlier, third generation mobile phones are beginning to include extra features such as EMS (Enhanced Messaging Service) or MMS (Multi-Media Service), which includes the ability to download photos, video and audio clips, etc. Such services cost more to access and are available with some 2nd generation mobile phones.

In Japan, the DoComo Company has manufactured a mobile phone that includes a camera (FOMA P2101V) allowing 'face to face' video contact with users.



## **SMS Relay**

The Australian Communication Exchange (ACE), provider of the National Relay Service (NRS), is considering adding an SMS relay service. This is because many Deaf people wish to have contact with those who do not have a mobile phone and ACE can possibly provide that relay option.

A trial is planned and it will look at issues that include reliability of SMS server operations, message capacity, emergency situations, use / misuse of the SMS Relay and costs. For more information, check the ACE website: [www.aceinfo.net.au](http://www.aceinfo.net.au)

## **QUESTIONS**

- 6.1 *Will mobile phones replace TTYs?*
- 6.2 *Do you want video communication on your mobile phone?*
- 6.3 *Should mobile phone manufacturers consider universal design features to ensure Deaf people are able to access all mobile phones satisfactorily?*
- 6.4 *Do we need an SMS relay service?*
- 6.5 *What does AAD need to consider for mobile phone technology?*

## **7. Comments and Feedback**

AAD looks forward to your comments on this paper. As you can see it addresses many issues. We may have missed some, so please tell us your ideas, concerns and thoughts.

### **The deadline for feedback is Friday 28 June 2002**

If you wish to provide feedback or ask questions, you can do one or all of the following:-

1. Contact the DTAN Officers via email:-  
Catherine Clark [cathy.clark@aad.org.au](mailto:cathy.clark@aad.org.au)  
Phil Harper [phil.harper@aad.org.au](mailto:phil.harper@aad.org.au)
2. Visit AAD's website, check into DTAN discussion site and type your comments.  
[www.aad.org.au](http://www.aad.org.au)

We look forward to receiving your comments and feedback.

After receiving feedback from the community, we will publish a position paper, which will be made available to the government, telecommunication industry, mobile phone providers, community services and the Deaf community.

Phil Harper  
Cathy Clark  
DTAN project

## **REFERENCES**

Australian Communication Exchange. **SMS Relay Trial**. March 2002.

Consumer Telecommunications Network: **Revise Your Mobile phone Needs**. Pamphlet.  
[www.ctn.org.au](http://www.ctn.org.au)

Consumer Telecommunications Network: **SMS Update**. CTN newsletter. [www.ctn.org.au](http://www.ctn.org.au)

Daily Telegraph. **Disaster warning via mobile phone**. Newspaper. 28/2/02

Deaf Telecommunication Access and Networking project. **Mobile Phone handset features**.

Australian Association of the Deaf. 2002 [www.aad.org.au](http://www.aad.org.au)

Fitzsimmons, C. **SMS pitched for business**. Australian IT. Newspaper. 28/4/02.

Harper, P. **Mobile Phones and usage by Deaf Australians**. Australian Association of the Deaf. December 2000.

Human Rights and Equal Opportunity Commission: **Report of Inquiry: Mobile Phones and Hearing aids**. July 2000. [www.hreoc.gov.au/disability\\_rights](http://www.hreoc.gov.au/disability_rights).

National Children's and Youth Law Centre. **Young people and mobiles; Listen up!** Information kit. 2001.

New South Wales Commission on Children and Young People. **Young People and Mobile Phones - the good, the bad and the ugly**. 15/2/02. [www.kids.nsw.gov.au/news/issues/mobile.htm](http://www.kids.nsw.gov.au/news/issues/mobile.htm)  
Sunday Herald Sun. **Hi-tech's next cycle**. (P.2) 24/3/02

Sydney Morning Herald. **SMS: All pervasive, insecure**. (P. 3) Newspaper. 26/2/02

Telstra. **Telstra brokers Deals for SMS on CDMA Mobiles**. Media release. 20/9/01

USA-L News. **Deaf go mobile phone crazy**. USA-L\_News-subscribe@yahoogroups.com. March 2002.

ZDNet Australia. **Australian industry body refutes call for SMS standards**. 28/2/02.  
[www.zdnet.com.au](http://www.zdnet.com.au)

*The Australian Association of the Deaf Inc Deaf Telecommunication Access and Networking Project is supported by the Commonwealth through the Grants to Fund Telecommunications Consumer Representation program of the Department of Communications, Information Technology and the Arts.*