

# The Use of Terminals by Visually Disabled Persons: A Summary

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A workshop entitled "Public Terminals for Visually Impaired Persons" was held in Gandia, Spain on 11th-13th April 1989.

The initial lectures and discussions outlined the problems caused to visually impaired people by public terminals - most notably ticket machines and ATMs (Automatic Teller Machines - more commonly referred to as cash dispensers). Most public terminals are designed for able bodied people with some degree of computer literacy. The access problems and difficulties with information transfer were highlighted. The 'REACT' project to investigate possible methods of finding terminals was described and possible applications discussed.

Technological solutions to alleviate access problems were discussed - these were the use of speech, and visual and tactile displays. The importance of speech as both input and output media was emphasised as well as the possible uses of speech as a second medium in conjunction with visual and tactile displays. The shortcomings of public visual displays were mentioned and simple methods of overcoming these noted; for example, magnification and contrasting colours. Tactile displays pose more problems in public places - the user market is relatively small and the displays are costly. They also have to be put in accessible places and are hence more prone to vandalism.

An emphasis on the need to look ahead was made - it is far easier to incorporate ideas at the design stage. Two major developments which will affect most people's lives are ISDN (Integrated Services Digital Network - the new telephone system) and Smart House. The technical developments were described and likely problems and possibilities discussed. Both these facilities will be controlled from terminals in the home and will be intended for use by all groups of society. It is important that visually impaired people are not denied access to these facilities especially those provided by ISDN.

Multi-modal displays were raised as an item of interest. The need to investigate the interaction between modes was emphasised as was the need to assess the human reaction to different modes and combination of modes. This type of display has applications for public terminals as it provides access methods for a wide range of people. The difficulties of graphics was raised as were the problems caused by WIMPs and touch screens. The discussion on WIMPs was fairly short as this conference was to be held soon after: however, the topic is important and will be raised here.

WIMPs and touch screens are being used to provide a user friendly interface for sighted people. This implies that a likely trend will be to use them in public places. In particular, touch sensitive screens will find



applications - they are easy to use, virtually vandal proof and can be used by motor disabled elderly people. Unfortunately, they are virtually impossible for a blind person to use.

Icons also vastly simplify the use of computers for sighted people. It is no longer necessary to type commands and hence the need to know commands and syntax is removed. Although menus perform the same function many people find graphics less intimidating than text.

There are many applications of WIMPs and Touch screens in public places for example:

- ATMs (touch screens and icons have applications here).
- Information displays (e.g. transport information could use touch screens to display information on various services).
- Ticket machines (membrane buttons).
- Viewdata such as Prestel (graphics based data).
- Food/drinks machines (membrane switches).

In America touch screens are being used for ATMs and this trend is likely to spread to Europe. Information displays could use a combination of touch screens and icons to provide information on train times, etc. Many public machines such as ticket machines have membrane switches with no embossed outline and no non-visual information concerning destination. These machines often pose problems to visually impaired people; the situation will get worse with the use of WIMPs.

Terminals to access timetables or telephone directory information are likely developments in public places. These will rely to some extent on the input of textual information and may therefore be accessible if speech output is provided.

Public information services such as Prestel use graphics-based information and cannot be accessed easily via a speech output. Teletext again uses some graphical information and needs a certain amount of dedication on the part of the user before the information can be obtained.

ISDN is the first ever major upgrade to the telephone network. In its final form it will enable a customer to hold a telephone conversation and simultaneously, access an information database, or send data to a remote terminal or transmit slow-scan television pictures. Full ISDN is still some time away; however, many European PTTs are providing a limited version of ISDN in the interim. In the UK this is marketed as Integrated Digital Access (IDA).

ISDN will provide many facilities for business; for example, increased data transmission rates of very high quality, very fast fax transmission and generally improved communication facilities. It will be possible, using Group IV fax machines, to transmit an A4 page in approximately 5 seconds (although the cost of group 4 fax machines, about £15,000, is as yet prohibitive for most organizations). One of the consequences of ISDN is the developments in user access points. Digital phones with their complicated keypad will be necessary to make an ordinary phone call. These phones will allow simultaneous voice and data calls but could be difficult for visually impaired people to use. ISDN allows the transmission of high resolution graphics and many applications will make full use of this facility.



ISDN has great potential for deaf people. The possibility of a 'scratch pad' phone system which allows text to be written on the scratch pad and transmitted almost instantaneously to the remote person will revolutionise the use of the telephone network for deaf people. It is important to ensure that ISDN does not remove some of the necessary communication facilities for blind people.

The Smarthouse, or Intelligent House, is another important development for handicapped people. In the Smarthouse a central computer controls many domestic tasks. The features of major importance for handicapped people are remote control facilities, early warning systems for temperature, etc., and security features such as video cameras. Remote control can be used to check the status of domestic equipment such as cookers; this would be more than just a comfort feature for many blind people. Video cameras would mainly be used for security purposes by sighted people; however a blind person could use a video camera to send pictures of, for example, a damaged item. The sighted friend could advise on the severity of the damage.

This development would mean that many handicapped people could lead independent lives when previously the difficulty of some tasks made them rely on other people.

The smarthouse terminals will be used by many people and are likely to be designed to provide the simplest form of user interface. WIMPs and touch screens provide a very simple interface for many groups of sighted people. It would be disastrous if the IH was not available to blind people due to the properties of the user interface.

Developments such as these, which will be beneficial to a number of visually impaired people, should be considered in any discussions on computer access.

WIMPs and touch screens are very useful to various groups of people - touch screens are being used very successfully in the Birmingham Research Centre for the Visually Handicapped to encourage the use of residual vision in small children. WIMPs simplify computer usage for many people and as such are important developments. It is therefore necessary to find alternatives for use by visually impaired people. Multi-modal displays may be the answer in many cases for public terminals to provide alternative media depending on the particular user. The machine's behaviour could be altered by information contained on the magnetic strip of a cash card or the machine could alter its mode of operation in response to a REACT tag.