

Designing accessible radios: World Blind Union user requirements

Radio equipment is becoming more complex and difficult to use. With the advent of technology such as internet radio and digital radio, the user is offered a much wider choice of stations than before, and some radios have added functionality such as rewind and pause. However all these additional stations and functions can make a radio more difficult to use. Blind and partially sighted people tell us that listening to the radio is one of their favourite pastimes. As one user puts it: "Radio has always been very important to me. It's something which I can enjoy even without sight. The changeover to new types of radios like digital and internet is very good and there's lots of new stations and wonderful new services, but actually we've lost the simplicity of the analogue radio models and now when you get your radio home it's very difficult to use indeed." In addition, radio can be a vital carrier of information in the event of emergency situations, and it is crucial that blind and partially sighted people have access to that information as much as other people. As a user states: "It is important to have radio equipment accessible in terms of keeping our quality of life, but more over, it is essential to do so in terms of preventing our lives from seriously being affected due to lack of information in emergency situations."

Companies who design digital or internet radios can make a deliberate choice to include features in mainstream sets that make their sets more accessible for blind and partially sighted people. When you design to be accessible, it is really important to consider how these users will use the equipment.

People who can not see the device or the screen on the device will rely heavily on audible clues and touch. The following elements of design will therefore benefit them:

- Anything that allows the users to easily find and recognise the right button by touch:
 - Any button should be a good size; minuscule buttons do not benefit anyone.
 - Sizes of buttons can be used to indicate related or different functions, with for example a bigger button for the volume, a

different size button for on/off, all preset buttons the same size.

- Differing shapes of buttons can be used to indicate related or different functions. Easily recognisable shapes can lend themselves well for specific functions, for example a triangular shape pointing up for volume up and a triangular shape pointing down for volume down.
 - Logical grouping of buttons will make it clear which buttons have a similar or different function, for example the preset buttons can be grouped together in a cluster of or in one row.
 - Dials that give tactile feedback, by applying forces, vibrations or motions to indicate to the user that an action has been accepted will be helpful.
- Anything that gives the users audible clues:
 - Buttons can give an audible click or make a beeping sound when you have pressed or rotated them
 - Voice feedback can be used to read out any menus that appear on the display screen.
 - Voice feedback can be used to read out any station names that appear on the display screen.

People with some sight will want to make the maximum use they can of the information on the radio device and the screen. The following design elements will help them:

- Anything that increases the colour contrast on the radio set:
 - Good colour contrast between buttons and the casing of the set will make the buttons easier to find.
 - Button labels and symbols that are clearly positioned and with a good font size and colour contract against the background will be easier to read.
- Anything that makes the display more legible:
 - Good colour contrast between the display and the text will make the display easier to read.
 - Bolder letters and a good font choice for the display will enhance readability.
 - The larger the size of the text on the display, the more legible it will be.

- Some displays offer the possibility to vary the text size, brightness and colours depending on personal preference. These personalised options are very beneficial.

Finally, having presets on a digital radio is really helpful for blind and partially sighted people. Generally a minimum of five, because that allows a person to store their favourite stations and to go straight to them when they switch their radio on.

Examples from across the world on radio accessibility

Persona 1: Katherine, partially sighted, employed (UK)

Katherine lives in London UK and works as a lecturer on an ad hoc basis at a London University. Katherine can be described as follows:

- Very confident with a range of technologies
- uses an iPhone, and laptop; enjoys listening to podcasts and listens to the radio for around 10 hours a week mainly to news programs and documentaries.
- decided to buy a digital radio to get access to the additional channels offered by UK DAB compared to FM.
- uses her radio independently on a day to day basis but required help to set it up:
- a friend helped her tune her DAB radio and set the presets when she first bought it, because both processes required use of the display which was not readable,
- partially sighted since the age of 13, Katherine's radio use differs from a sighted person:
- uses the preset buttons to change stations but is limited to the 4 stations that have been programmed in,
- can listen to programs on other channels only if a sighted friend is there to find the station for her,
- has no access to other menus and the alarm features of the radio because her sight level does not allow her to read the menus,
- has had to memorize the positions and functions of the buttons because the labeling is not readable for her,

Conclusion: For someone like Katherine, most of the visual information on DAB radios is so poor contrast that it may as well not be there. There was a speaking radio available a while ago in the UK which

spoke all the station names and menus and she would have bought that if it had still been available, but unfortunately it was discontinued.

Persona 2: Anitha, partially sighted, retired (Denmark)

Anitha lives alone in Ærøskøbing and is a retired nurse. Her sons visit as much as they can but both work during the day and Anitha enjoys listening to the radio when they are not there. Anitha can be described as follows:

- Not confident with new technologies although can rely on relatives to help her get used to them.
- Has reduced dexterity in her fingers so needs large buttons to operate devices
- Has a television in the house but mainly only watches it for the news. Listens to the radio for around 4 hours a day.
- Has an FM radio that she is familiar with. One of her sons has looked at DAB radios for her but could not find any that she would be able to use comfortably.

Conclusion: for someone like Anitha most of the digital radios on the market have controls that are too small to use and menu systems which are hard to learn. Denmark has the highest number of DAB users per capita in the world, with regular services having been available since 2002, but Anitha is missing out: whilst DAB listeners are getting quite a lot of extra channels on DAB, she is unable to enjoy the extra choice.

Persona 3: Lesio, blind since birth, employed (Poland)

Lesio lives in Szczecin Poland and works full time as a Teacher and Translator. Lesio can be described as follows:

- confident with technologies once he is used to them but is not an early adopter,
- is interested in new technologies as they are available and takes advice on whether they are accessible from friends both online and face to face,
- grew up listening to the radio and enjoyed the increase of listening options that came with the end of the communist rule in Poland,
- started to have trouble when Poland moved to digital radio and the radios were not accessible to a blind person,
- is no longer able to buy analogue radios in Poland.

- Lesio has been blind since birth and his use of the radio differs from a sighted person:
- he uses the seek functions on a digital radio but can not tell which station or frequency it is tuned to because these are shown on the display,
- the menus on the radios Lesio has used have either not been accessible or not been easy to use so he does not use features such as station presets which would help him,
- he feels he would be able to get more out of his digital radio if there was an accessible version of the manual available because then he would have the confidence to try some of the additional features.

Conclusion: For someone like Lesio use of the radio has become far more difficult with the move to digital radios. Even features that should improve the experience such as station presets do not help because without accessible instructions Lesio does not know how to access them.

Resources for further information

RNIB YouTube video (2012): Making digital radios more usable for people with sight loss. <http://goo.gl/0vE5C>

Freeman, J., Lessiter, J. & Ferrari, E. (2008) Research report: Are you really listening? The equipment needs of blind and partially sighted consumers for accessible and usable digital radio. See website http://www.rnib.org.uk/aboutus/research/reports/inclusive/pages/are_you_really_listening.aspx

Consumer Report on Digital Radio (updated 2011). See website http://www.ricability.org.uk/consumer_reports/at_home/digital_radio/
Best practice guidelines: text-to-speech (TTS) for Digital Radio (2011), see website

http://www.rnib.org.uk/professionals/solutionsforbusiness/tvradiofilm/Pages/radios_accessible_design.aspx