Feature Article

"Radio for the Deaf" – the role of the Web in widening access

As part of her undergraduate studies at Fachhochschule Ulm, Germany, Heidi Brandner elected to spend her final year in the School of Computing at Napier University, Edinburgh. There she was required to complete the equivalent of an Honours dissertation. Under the local supervision of Dr Hazel Hall, and with support of her remote tutor Professor Reinhold von Schwerin, she investigated how the Web might be used to mediate radio broadcasts for deaf and hard-of-hearing people. This article presents the main findings of the full study, as summarised by Heidi Brandner and Reinhold von Schwerin. The authors would like to acknowledge and thank Hazel Hall for her input to the work.

Introduction
This paper presents a new area of study which was investigated for the degree of Bachelor of Science with Honours in Computing. After the investigation of disabled people within broadcast media, the exclusion of deaf and hard-of-hearing people from radio broadcasts soon became obvious.
Radio stations and hearing impaired participants were posed questions about this topic. Of specific interest were attempts to engage deaf users in broadcast media: web pages for radio programmes offer the potential for deaf users to "listen" to the radio and for radio stations to enlarge their audience through text based information.

The study investigates how the Web could make it possible for hearing impaired people to participate in radio broadcasts and how to improve opportunities for social inclusion of deaf and hard-of-hearing people through the use of the Web. It examines initiatives that broadcasters have taken to provide social inclusion through web technologies.

The results showed that there is a demand on transcripts of radio broadcasts among hearing impaired people. Radio stations are not aware of these requests and offer therefore only a few summaries or transcripts of their broadcasts on the Web. They rarely use standards and guidelines to provide disabled people easy access to their web sites.

Speech recognition software was examined as a solution for social inclusion of deaf and hard-of-hearing people into radio broadcasts through the use of the Web.

The scope of this research was limited due to the restrictions of time and resources of the area under investigation. Due to the lack of previous work in this area, the research results have an important influence on a whole new audience – deaf and hard-of-hearing people.

Characteristics of the samples
The data were gathered from three different radio stations within the UK. These were the state sponsored service provider the BBC (London) and the commercial radio stations Real Radio (Glasgow) and Radio Forth (Edinburgh). Deaf and hard-of-hearing people were posed questions via online questionnaire. 35 hearing impaired participants took place. 6 of them were deaf and 29 were hard-of-hearing.

Results

The WWW
The investigation with the deaf and hard-of-hearing people revealed that all hearing impaired people who filled in the questionnaire used the Internet. All of them had online access from their homes. This result is not surprising. All participants had filled in a questionnaire which was online: everybody had to have access to complete the survey. Otherwise they could not have taken part. Fourteen participants had access at work, three used public libraries and educational establishments and one used Internet cafés to be online. People with a hearing loss very often spent time online on working days (80%) and at the weekend (71.4%). The rest of the respondents said that they used the Internet occasionally: 20% on working days and 28.6% at the

weekends.

The analysis of how deaf and hard-of-hearing people use the Internet shows that the Internet is a part of the daily lives of the hearing impaired. They have access from their homes despite the fact that 42.9% are unemployed. The Web gives them the feeling of being socially included in society (80%). Advantages of the Internet for deaf and hard-of-hearing people were mentioned as follows:

- The Internet is not based on hearing and speaking. So, being deaf does not matter when accessing web sites. The news and information is available on a text basis that the hearing impaired would miss otherwise. Nobody has to "listen" to it.
- Hearing impaired people can communicate with hearing people on a equal and easy level. Nobody knows that they have a hearing disability.
- The Internet is a silent world for everyone, except the occasionally animated greeting cards where a deaf person can only imagine what it says.
- It has advantages over phone calls in which hearing impaired people are constantly asking someone to repeat themselves.
- People are not alone with their disability. Internet users can exchange their problems with people all over the world.

The majority of the deaf and hard-of-hearing participants felt that they have easy access to the Web. This could be because hearing impaired people are able to access web based information as long as they can read the output. However, they wish to have more web sites for deaf and hard-of-hearing people and web sites which have alternatives to animation to absorb audio output.

A response to this lack of subtitled features could be achieved by more text based information. The radio stations must pay attention to the Web Accessibility Initiative (WAI) guidelines and standards of the World Wide Web Consortium (W3C), which could have improved the access of their web pages for disabled people. There is a lack of radio stations which provide social inclusion of disabled people through web technologies. Radio stations should always give alternatives to audio output on their web pages to guarantee access of deaf and hard-of-hearing people to radio web sites.

Copyright
All three radio representatives explained that radio stations own copyright of their web pages and broadcasts, such as radio plays. They have to pay, for example, for copyright that belongs to artists and the music industry. Everything that radio stations transmit is owned by the radio station. So nobody else can rebroadcast anything that they have broadcast. From the data collected for this study it was found that copyright can be a big problem when people ask for transcripts and summaries of radio broadcasts. This will be discussed within the next sections.

Social inclusion in radio broadcasts
The investigation showed that most of the deaf and hard-of-hearing people (60%) within this research thought that they are socially excluded from radio broadcasts. This could be because they cannot absorb the same information as hearing persons when they listen to radio broadcasts.

Radio programmes and web sites
Cost is the main reason for the low number of transcripts or summaries of radio programmes which are made available on radio web sites. These costs arise due to copyright. Copyright restricts the degree to which summaries and transcripts are offered online. The commercial radio stations are owned centrally and therefore they have to obtain permission from their executives to provide their broadcasts on the Web in more detail. In general the BBC does not summarize broadcasts on the Web. However, it does provide some summaries of radio programmes after broadcasting. Such programmes are, for example, the news, "In Touch" (radio programme which is specifically for people who are blind or partially-sighted), "You and Yours" (a programme which covers news, views and information of interest to disabled people), and "The Archers" (a radio soap opera).

Transcripts or summaries would only be profitable for the radio stations if people wanted them. The findings showed that there is a demand for transcripts of radio broadcasts by hearing impaired people. However, the interviewed radio station representatives were not aware of any requests from deaf or hard-of-hearing people

for transcripts of radio programmes. It is recommended that radio stations find out whether people are interested in transcripts or summaries and, if this is required, they could invest in more detailed summaries. This could include more hearing impaired people into radio broadcasts.

A minority of hearing impaired people within this study had visited web sites of radio stations to "listen" to music or plays. However, there are also persons who do not know of radio programmes on the Web. This could be significant for radio stations, because if radio stations could make hearing impaired people aware of radio on the Web, then they could have more potential users on their web sites. If there was radio on the Web which could give deaf and hard-of-hearing people details about what is broadcast, then more hearing impaired people would perhaps use these web pages to interact with radio stations. This could also change the lack of awareness of deaf and hard-of-hearing people and whether radio stations consider hearing impaired people when designing radio web sites. Deaf and hard-of-hearing people within this study would expect some features from radio web sites:

- · Simultaneous transcripts of radio broadcasts
- · Transcribed music titles
- · Emergency radio warnings
- · Summarised radio programmes after the broadcast
- · Opportunities for deaf people to win money on the radio like hearing people can do
- · Live subtitles

If the radio stations fulfilled these demands this could make hearing impaired people participate in radio stations more often.

Participation of hearing impaired people
There are two ways in which people interact with radio. The participant can either be the person who is interviewed, or they can participate as listeners. Some radio stations have had deaf people as interviewees. They provided sign language interpreters or powerful headphones which enabled the hearing impaired people to get a sense of the speech. However, most of the hearing impaired interviewees could read lips as well, so that the radio stations had to ensure that they could see the radio presenter. On the other hand they can take part on live broadcasts by some means of communication, for example, E-Mail, live chat rooms, text telephones, messageboards, fax, post, mobile phone text messages.

Most of the deaf and hard-of-hearing participants (86%) did not know about interviews with deaf or hard-of-hearing people. This shows that they do not pay close attention to radio broadcasts, or that radio stations do not enough for the social inclusion of hearing impaired people. Radio stations should give them the opportunity to receive information about programmes which are broadcast especially for them. This could happen, for example, through newspapers, TV and web sites which are accessible for those persons.

Deaf listenership and their opinion of radio
The response indicates there is an interest in radio among deaf and hard-of-hearing people. Most of these people who participated in this research listen to the radio even if they cannot understand anything. Deaf participants do not listen to the radio, but listened before they had lost their hearing. It can be assumed that people who lost their hearing later, would still be interested in radio broadcasts if they would absorb this information. Hearing impaired persons who have never had the opportunity to listen to the radio may not be interested in it because they do not know what they are missing. The results demonstrated that radio is useful and relevant for some of them. Therefore radio stations should give hearing impaired people the chance to interact with radio through the use of the Web. Providing them with text based i.e. web accessible radio programmes could be a possible replacement for listening to the radio.

Deaf and hard-of-hearing people and technology
Technology is rarely used by the hearing impaired participants. The Internet is one of the most important means of communication or provider of information. TV is less important than the Internet, but still very popular among hearing impaired people. Radio achieved more importance than text telephones but not as much as TV and the Internet. The majority of the hearing impaired participants did not use any of the assistive technologies such as text telephones through the telephone network, text telephones through the use of the modem connection, light signaller alert devices and speech recognition software.

The investigation showed that speech recognition software is not perfect. However, this technology could be a possible solution for social inclusion of deaf and hard-of-hearing people in interacting online with radio stations.

The idea would be that radio stations install this software and train all radio broadcasters to use it. The radio station would have to create a speech recognition file for each person. The software would be connected to the Web, so that deaf and hard-of-hearing people could read the live radio broadcasts.

So if one broadcaster was on air for three hours the voice recognition file would not need to be changed. However, this software is not able to recognise all spoken words and makes spelling and grammar mistakes. To improve the whole situation, further research on voice recognition software should be fostered and perfected so that it can be used for social inclusion of deaf and hard-of-hearing people in radio broadcasts in the future. As long as it is not perfected, radio stations should offer more transcripts and summaries on their web pages, so that people with hearing impairments can participate in their programmes anyway.

Conclusion
The aim of this research was not to produce findings that could be generalised, but it is hoped that this research will be useful for further research in this new area. Hearing impaired people like using the Web and do not need a lot of assistive technologies in order to interact online. Radio web sites do not offer enough for deaf and hard-of-hearing people because of copyright. Copyright works against sharing of good practice with regard to transcripts of radio broadcasts. Radio stations consider costs and how many people actually listen to the radio.

Hearing impaired people are interested in radio and transcripts of broadcasts. This should motivate radio stations to offer more text based information for the hearing impaired population. The future will show if radio stations will take the opportunity to enlarge their listenership by a whole new audience – deaf and hard-of-hearing people.

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Current Awareness

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ELECTRONIC PUBLISHING

Alves, Rosental Calmon**. "Many Newspaper Sites Still Cling to Once-a-Day Publish Cycle"** Online Journalism Review   (21 July 2004) (http://ojr.org/ojr/workplace/1090395903.php)
This article reports on research from the University of Texas at Austin which found that out of 30 news websites being monitored, "only 12 updated their home pages frequently, and the rest made few or no changes during the day." This, says the writer, demonstrates "the difficulty in breaking out of the print paradigm." No consensus exists in the news industry as to how often websites should be updated. The study also found that smaller papers were less likely to update their sites during the day than larger papers, and that