DAISY
An international effort to migrate to the next generation talking books

Summary:
There several difficulties to overcome when libraries for the blind switch over to digitally producing and distributing the next generation of talking books. However, fading support from the main stream industries for analogue recording, makes such a switch inevitable. Moreover, the digital technologies, when applied correctly, allow for a much better accessibility of the recorded information. An international group of leading libraries for the blind, called the Daisy Consortium, has developed a standard that is a strong candidate for the next generation of talking book. Especially the convergence between the daisy standard and the open e-book standard is an important step forward. A professional tool for Daisy productions and the coming Daisy playback software (as freeware) are further important steps forward. Producers should now start recording and the distributing within the daisy standard, thus establishing a digital talking book library that is truly international.

1) **Need for a new technology (end of analogue recording)**
   Talking book technology is based on the tape/cassette industry. Rapid decline of the availability of this technique because of the switch of the music industry to digital production and distribution (CD). Difficult to maintain the necessary analogue equipment for production and archiving (increasing costs). Playback devices such as the cassette-recorders are harder to get. The last big introduction was the cassette Walkman, now rapidly being replaced by the Discman and to a lesser degree the MP3 player (both digital) Last but not least; analogue archives are to some degree decaying, making costly repairs necessary.
   So why have talking book producers not yet switched to full scale digital productions?
   -The huge success of the audiocassette. (cheap, open standard, easy to replace, worldwide acceptance, cheap playback system)
   -Uncertainty of what digital system/standard will be best to use (where to best put our investments in) cannot afford to invest in dead end technologies.
   -Sociographic characteristic of main user group (above 70 years of age): resistance to new technology
   -Unsuitability of the music CD standard (72 minutes, 99 tracks, no subdirectories)
   -Copyrights problems can increase with the introduction of digital distribution

2) **The International effort of the Daisy Consortium**
   In the second half of the previous decade (the nineties) a group of leading libraries for the blind formed a consortium to address these issues and to work together. In 1996 the Daisy Consortium was formed. Their mission is to create an open standard for digital taking books:
   That is worldwide used and accepted.
   That converges with main stream technology (especially the internet)
   That is be open for everybody to make use of (no trade-marking on the standard)
   That is be production-platform independent (not necessarily MS based)
   That is playback system independent (not necessarily CD).
   That is designed and tailored to the needs of access to information of all blind users (customized)
   They also agreed among each others to fund the development of accessible production software for the production of this new generation talking books. The Daisy Consortium

stays independent from industrial producers, but maintains good relation with them to inform and stimulate them to make use of this standard. (Plextor, Visuaide, Labyrinten Data, MicroSoft)

The Daisy Consortium currently consists of 10 Full Members, 29(?) associated members, and a growing number of Friends from relevant industries. Many members lend their manpower to the workteams that presently work on the relevant issues (e.g. archiving, playback systems, accessible production software, copyrights issue (DRM)

3) **Structured access to audio-information (HTML/XML)**

Information on audiocassette can be compared with printing a book on a paper scroll (or toiletpaper roll). Retrieval of information is very hard and time-consuming. An automated search on audio-information is difficult and the techniques are only just beginning to emerge (speech-recognition). Within a digital text, retrieval of words or numbers (strings) is of course very fast and is widely used on many computerized systems. When searching and accessing textual information, string-searches are not enough. To find what we are looking for means in many instances that we need to go from the general to the specific. Searches in encyclopedias, cookingbooks or texbooks are fine examples of this. We travel a tree-like structure to reach the specific branch or leave we are looking for. (e.g. mammals, domesticated, pets, dogs, shepards, german shepard.)

The success of the search depends for a good deal on the validity of the way the text is structured. Structuring a text is of course the prime responsibility of the writer, editor and publisher of the text.

HTML is among others things, a convenient way to digitally index the structure of a text. The Daisy standard makes use of this internationally accepted standard. In this way HTML provides the tools for indexing the audio at the specific points in such a way that the structure of the text becomes accessible. So we use HTML to mark the beginning of chapters, section, paragraphs, sidebars etc. Importantly: HTML allows for possibility to structure the information in levels. (cf. directories, subdirectories, up to 6 levels). When producing a book we therefore have to begin by describing in HTML the structure of the text we want to record. This can be semi-automated, as will be illustrated later.

Daisy further uses .WAVE file standard to record the narration. And a SMIL file will log the exact synchronization between the HTML heading and the WAV-file. So when we navigate through the HTML, the system can always access the corresponding audio, and we can begin to listen to the point we have navigated to.

HTML has evolved from the Internet. Most WebPages are created in HTML. In the near furture XML will replace HTML.

4) **Range of possible Daisy Books (audio only to multimedia)**

Now with these 3 standards a range of Daisy production is possible. It ranges from audio-only books to full blown multi-media productions with text, audio and picture, and allows also for text-only books (no audio at all). The most simple audio only books needs only a "title" , "body" , and "end-of body" marker to be valid HTML. The full audio content is recorded in .WAVE file format , and we can listen to the book from begin to end. We can navigate back to the title or forward to the end. But that is all we can do. Now, for most leisure reading books this can be quite satisfactory.

With the HTML we can of course do more; e.g index the chapters, subchapters and page-numbers. Now we can skip from heading to heading, open the desired heading and go into the subchapters, go from subchapter to subchapter and hopefully find what we are looking for. Direct search on page-number is also possible, also page-up and page-down.

Introducing the full text (and pictures) of a book creates more possibilities. The text can

be viewed on a screen while you listen to the audio. Synchronization between text and audio can increase to phrase- or even word-level. Of course production cost will increase accordingly!

On the opposite end of the audio-only book, there is the text-only book. This can still be a valid Daisy book too!. No audio is recorded; visual impaired readers need to resort to synthetic speech, large print or refreshable Braille to access to the book

5) **Converging Daisy standard and open e-book standard.**
Within the larger printing and publishers community there are developments for paperless publishing and paperless reading. Many leading publisher combine forces to set an open standard for electronic books (or e-books). They have formed an open e-book consortium (OEB). Microsoft wants to be a leading manufacturer of e-book readers, and is an important member of OEB. Compared to the Talking Book producers these publisher are of course much bigger and can push the market in a certain direction, and towards a certain standard. The interesting thing however is that mainly through the workings of the Daisy Consortium, the talking book producers seem to have a headstart in thinking about and developing a standard that can be of use also to the larger e-book community. A strong tie and good working relations exist between the Daisy Consortium and the OEB. The e-book players (handheld, or software based) that Microsoft is developing will be compatible with the daisy standard, so that daisy book will be playable on these platforms. This link between Daisy Books and open e-book is probably the most outstanding result that the Daisy Consortium has accomplished.

6) **Producing a Daisy book**
The Daisy Consortium has raised funds to develop professional and accessible production software that allows producers to create valid Daisy Books. The contracted software developers (Labyrinten Data from Sweden and Productivity Works from Princeton New Jersey) are collaborating to achieve this. A software suite called LpStudioPro is now available, and further developments are still implemented. All full and many associated members of the Daisy Consortium are currently testing and implementing this software in their recording studios. Some countries (Sweden and Japan) have switched to full-scale digital production working with the Daisy software. Many libraries are planning projects to convert their analogue talking book archives to digital formats.
To create a daisy book, several steps need to be taken:
1) **pre-production**: creating with the help of an HTML editor the NCC (Navigation Control Centre). (Screen shot of the structure editor) (Screen shot of an example of a NCC)
2) **production**: Setting the recording parameters (sample frequency, input level, mono etc.) Activating the right headings/page-numbers during recording (screen shot of the recording screen)
3) **post-production**: editing when needed, correcting, adding or deleting. Then building the book through a clean-up process and compressing the WAVE file audio to less than 650 Megabyte (Screen shot of the build-book screen)

7) **Using or playing a Daisy book.**
The Daisy talking book is based on open standards. This means that anyone interested is welcome to develop playback devices for these books. There are currently two hardware devices that play Daisy Books. From Plextor Co. in Japan : the PlexTalk. From Visuaide in Canada: The Victor. Both Plextor and Visuaide are working on smaller units that have also recording functionality. When the PC is available, there are some more options. The

LpPlayer is a good example of a software-browser that reads Daisy Books. Free playback software will become available through the Daisy Consortium for visual impaired readers.

8) **Demonstration of examples of daisy books**
   1) with the playback software LpPlayer
   2) with the stand-alone devices such as the PlexTalk and/or the Victor