Refreshable Braille Technology Report for  
ICEB Seventh General Assembly  
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By James Bowden

Chair, Refreshable Braille Technology Committee

The Refreshable Braille Technology Committee of ICEB has representatives from all ICEB countries and several observers.

Over the past four years, we have expanded the list of tasks and terms of reference for the committee to include:

* Keeping abreast of developments in braille technology
* Braille table development, (specifically UEB)
* Investigating and developing file formats

Within each of these are various tasks, such as braille support on Android devices, braille to text transcription and looking at automated transcription web servers. I wish to thank the ICEB executive and in particular Jen Goulden for all their help framing these tasks.

Working with Duxbury Systems, we have seen improvements to the Duxbury Braille Translator, including various additions and fixes, especially in the area of translation. This has included braille to print translation of arrows and fractional powers, and corrections to print to braille translation of how some rare words are contracted. We have also seen the addition of codes for the transcriber-defined typeform indicators. Our thanks to Duxbury Systems for their enthusiasm and promptness in fixing issues when mentioned.

By far the most major focus, particularly over recent years of the Refreshable Technology committee has been improving the braille output from the Liblouis open source braille translation system, used in several screen readers, braille translators and even within braille displays.

We added support for the Unicode fraction characters and, more significantly, the December 2019 release of Liblouis included fixes for contracting over 2,000 words, ranging from abandonee, through to zonesthesia. My thanks, in particular, to those who helped at various times with peer reviewing the work to ensure what was proposed was in fact correct. My thanks also to the Code Maintenance Committee for very helpful advice when it was not always clear which rules might apply. More is to come.

Efforts have been made approaching some of the large technology companies for financial contributions towards development of Liblouis (which they use at no cost to themselves), but all such efforts have so far not borne fruit.

At the 6th General Assembly, the following resolution was passed:

Resolution 5: Unified English Braille support by screen readers on refreshable braille devices

Whereas, significant improvements have been made with regard to support of Unified English Braille in screen readers, refreshable braille displays and notetakers;

This Sixth General Assembly of ICEB resolves to:

1. Strongly urge manufacturers to correct existing issues with UEB input and output on refreshable braille displays and notetakers, and implement updates as they occur; and

2. Distribute this resolution to appropriate technology manufacturers.

With respect to this Resolution, we have made some significant work in point 1 above, but decided not to pursue point 2 until such time as the work to improve Liblouis UEB support is "sufficiently complete".

We note that NVDA does have a schedule which does include regularly updating their copy of Liblouis.

We have also continued to monitor the development of, and in some cases, test new refreshable braille devices, in particular the new range of lower cost displays, including the Orbit Reader, BrailleMe and Canute 360. Such developments are very welcome and it is exciting to see the progress of a new range of more affordable devices now on the market and their take-up by many more braille readers.

With the arrival of these devices and the consequent hope that many more people will start using refreshable braille technology, comes the question of the best way to prepare a braille file for use on these devices, particularly as most still only have a single line. We have started discussions on this topic, though at present no conclusions have been reached.

Approaches were made to organisations who might be able to design and establish a new standard for braille files, especially to improve navigation through the text, for example, marking headings. Again, I am sad to report that, as at the time of writing, there appears to be little appetite for developing an improved standard. Such a standard would need to be adopted by hardware manufacturers, software developers and braille production houses, for it to be useful.

I wish to finish by again thanking everyone for all their help and support, thank you.