



BRISTOL BRAILLE TECHNOLOGY

## **How to make a Braille e-reader:**

**Bristol Braille Technology CIC with the Brailleists**

**31st Annual International Technology and Persons  
with Disabilities Conference, San Diego, California**

**23 March 2016**

### ***Introduction***

In this presentation we will:

- \* explain How we are making Canute, a 256 cell Braille eReader.
- \* Describe how a cooperative approach between Bristol Braille Technology CIC and the Brailleists contrasts and complements other Braille technologies.
- \* Share a roadmap for Canute's development.
- \* Invite you to have a voice in Braille's future.

## ***Who are We?***

Ed Rogers is the founding director of Bristol Braille Technology CIC. Ed helped establish the Brailleists, and is now an active member of Brailleists.

Dave Williams, blind dad, assistive technology trainer/tester/promoter and Brailleist.

## ***1. The Canute Mark 8 Prototype***

Canute Mark 8 is a 256 cell Braille e-reader. The Braille is arranged across 8 lines of 32 cells. Multiple Braille lines are well-suited to showing layout and tabulated content such as: calendars, mathematical working and music.

The underlying technology makes Canute scalable to a full Braille page without substantially increasing cost. Traditional digital Braille technology costs around \$50 per cell. Canute is expected to be produced for around \$3 per cell. This new lower price point is intended to enable blind people to purchase their own Braille hardware without requiring government subsidies.

Bristol Braille Technology is a not for profit organisation. Canute's software is published under a General Public Licence. The hardware design will be published under at CERN Open Source Hardware licence. By making Canute's design public, blind people around the world have the opportunity to become directly involved in Canute's development and customisation.

## ***3. Designing Canute.***

The Bristol Braille Technology team is made up of: engineers, craftsmen, artists and programmers. Canute was born in the Bristol Hackspace, a community workshop linked to the international maker movement.

Canute is build using off-the-shelf components and tools such as stepper motors and laser cutters to keep production costs low. Canute is designed to refresh entire lines rather than individual pins reducing the number of components required. Canute can be assembled and repaired locally like a bicycle. The user experience is more akin to reading from paper Braille rather than competing with traditional single line products.

## ***3. Cooperation.***

Many blind people feel Braille's direction has been controlled without their voice. Canute is an opportunity for blind people to become involved in the development of Braille technology.

The Braillists was originally established as a testing group for Bristol Braille Technology CIC, but quickly became a much broader organisation meeting to explore a wide range of Braille topics: Unified English Braille,, transcription etc.

In summer 2015 the Braillists conducted testing of the Canute Mark 6. Around 100 people took part, with 20 Braillists trialling Canute in their own homes. The outcomes included

- Focus on Canute's application in education.
- Optimising the way Canute refreshes the display by line, rather than entire page.
- User interface changes including menu structure and physical buttons

Testers also appreciated reading digital Braille without being interrupted by notifications and other digital distractions.

#### ***4. Road Map.***

Technically the top priorities now for Canute are reliability and accuracy. The next Canute prototype will be presented at the International Council on English Braille conference in Baltimore in late May.

Bristol Braille Technology CIC is working with New College Worcester to pilot Canute with blind students during the second quarter of 2016.

An initial Canute distribution to the Braillists is planned for late 2016.

#### ***5. You.***

Have a voice in Braille's future by joining the Braillists.

[www.Braillelists.org](http://www.Braillelists.org)

Canute needs developers, sponsors, libraries, schools. If you think multiline and affordable digital Braille is important for understanding the written word, contact Bristol Braille Technology CIC about how you or your organisation could put more Braille lines in the hands of blind students.

[www.BristolBraille.co.uk](http://www.BristolBraille.co.uk)

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