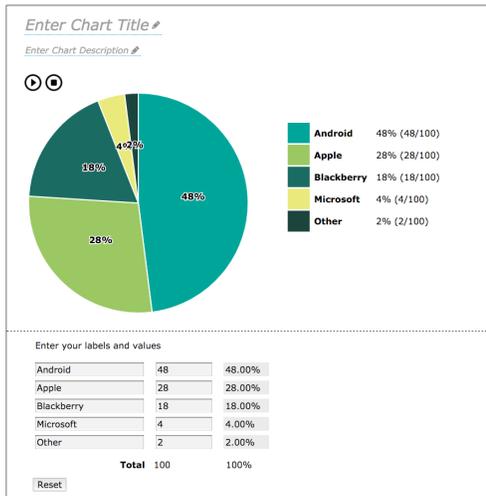# Chart Authoring Introduction

The FLOE Chart Authoring Tool - An Introduction

What Is It?

The FLOE Chart Authoring Tool is an OER authoring tool that supports the creation of highly accessible charts, including experimental conversion of chart data into representation by sound ("sonification") as well as by visual display. Currently at the stage of a functional prototype, it is still in active development and will continue to evolve and add new features.

The latest version demo supports creating pie charts and sonifications from simple datasets.

Why Was the Work Done?

The tool is created as part of the larger FLOE project supported by the William and Flora Hewlett Foundation to apply the principles of inclusive design to open education. FLOE supports learners, educators and curriculum producers in achieving one-size-fits-one learning design for the full diversity of learners, leveraging the variants made possible by Open Education Resources (OER).

Who Makes It, and Where?

The tool is designed and developed by staff at the Inclusive Design Research Centre at OCAD University, with participation of the larger community interested in accessibility and inclusion in OER.

When Was the Work Done?

Initial research and design work on sonification began in late 2014. An experiment involving sonification of cat blood pressure charts (including meowing) was produced at the February 2015 OER Accessibility Sprint and received with both enthusiasm and curiosity.

Design and development work to produce the functional prototype took place throughout 2015 and early 2016, including informal testing in Vancouver in November 2015 during the 12th Annual Open Education Conference.

How Was the Work Done?

The IDRC strives not only to produce inclusive work, but to work in an inclusive way. Designers and developers work closely together, with an emphasis on open tools and high visibility of process to collaborators from the larger community, along with invitation to participate. The process is an iterative spiral of research, design and development, where discoveries from any phase can (sometimes unexpectedly) feed back into another, and reflection on and evolution of practice is emphasized.

Artifacts of the process can be found through the organizing wiki page and the Github code repository. General discussion of inclusive design approaches can be found at the Inclusive Learning Design Handbook and the GPII Inclusive Design Guide.

At the code level, the tool makes use of of open source libraries including the Fluid Project's Infusion, the Infusion-based Flocking audio synthesis library, and the D3 data visualization library. By using only open-source libraries and inherent advanced functionality of modern browsers such as speech and audio synthesis, the tool's architecture models the same principles of openness embodied by OERs. The code is transparent, modular, modifiable and extensible by anyone who should desire.

What Happens Next?

The IDRC and its collaborators expect to continue to evolve the tool in 2016. We anticipate adding more types of charts, more strategies for sonification of data, and adding functionality to import, export and embed charts, sonifications and data.