

# Stepping Stones for people with cognitive disabilities and low digital literacy

Speaker: Steve Lee\*

Other authors: none

OpenDirective Ltd., Exeter, UK

*T4I communication type: Non-research*

## 1. Overview

The software components presented have been designed to allow people with cognitive disabilities and low digital literacy to easily perform common on-line activities. The components are managed as an open source project to encourage wide contribution and engender innovation.

OpenDirective Ltd is dedicated to facilitating open innovation in accessibility and assistive technology.

## 2. Background

There is a lack of examples and advanced standards addressing the needs and preferences of people with cognitive disabilities [5]. The design of user interfaces (UI's) also usually assumes a lot of tacit knowledge making them difficult for people with low digital literacy to use. This excluded these groups from many everyday activities that require confidence with digital UIs. The Global Public Inclusive Infrastructure (GPII) project [4] has an EU project Prosperity4All [3]. The latter has provided an opportunity to establish a set of re-usable open source components to act as an exploratory framework and collaboration point to improve support of these groups. The components are designed to provide simple access to popular activities including photo viewing, email and video calls. In addition, the components provide several levels of complexity so they may act as stepping stones to more advanced digital literacy.

## 3. Methods

The software components UI design has been influenced by previous project work for people with dementia in an assisted care environment and also a software prototype design for elders [1,2]. Experience of UI design and open software development have also been critical in the design. In particular care has been taken in selecting technologies that enable wide application with as few dependencies as possible. Open development encourages contribution and rapid agile development of new features as experience with users is gained. In today's technical climate that boils down to web components using hosted cloud services. The components are being incubated and tested in the

Prosperity4All project context and also a commercial product being developed for people with dementia. This allows testing in realistic contexts.

## 3.1 Ethical statement

Ethical approval was unnecessary because the reported activity was desk research and software development.

## 4. Results

It has proven possible to create components that are relatively reusable, i.e. on different projects. These also provide exemplars of how simple uncluttered UI can be designed for people in the target groups. It is early days to comment on feedback as only a few components have been released. Initial examples of the initial components include a photo viewer. This has UI complexity "levels" of a single photo slideshow, albums of photos, the ability to edit text and adding photos. Email and video calls with similar levels are planned.

## 5. Discussion

The next step is to encourage engagement from other developers and users. Expression of interest can be directed to the author or discussed on the SteppingStones opensource project [4] (registering with Github may be necessary).

## 6. Conclusion

A starting set of components have been created and made available. These use web technologies that make reuse easy in a variety of scenarios. By the time more components have been released, and the related product(s) becomes available, further feedback will also have occurred leading to a clearer understanding of the features users require for W3C WAI [6] and what changes and improvements can be made for both users and developers.

## 7. References

1. Judge, Simon, Lee, Steve and Cudd, Peter. *Maavis@School*, <http://eprints.whiterose.ac.uk/10329/>. Accessed Oct. 2017
2. Nikki Murfitt. Isolated? Not now that I've got MAAVIS: Actress Sylvia Syms logs on to a new service that helps the elderly to

stay in touch,  
<http://www.dailymail.co.uk/health/article-1387127/MAAVIS-Actress-Sylvia-Syms-logs-new-service-helps-elderly-stay-touch.html>. Published 14 May 2011. Accessed Oct 2017

3. Prosperity4All. Prosperity4All project website, <http://www.prosperity4all.eu/>. Accessed Oct 2017
4. Raising the Floor, GPII project, GPII - <http://gpii.net/>. Accessed Oct 2017
5. Github, OpenDirective, Stepping Stones, <https://github.com/OpenDirective/steppi>

ngStones Published 2016. As accessed Nov. 2016.

6. W3C WAI, Cognitive and Learning Disabilities Accessibility Task Force, <https://www.w3.org/WAI/PF/cognitive-a11y-tf/>. Accessed Oct 2016

**Keywords:**

Cognitive disability, Dementia, Learning difficulties, Autism, Low digital literacy, accessibility, assistive, technology

\* [steve@opendirective.com](mailto:steve@opendirective.com)