



Queensland University of Technology
Brisbane Australia

This is the author's version of a work that was submitted/accepted for publication in the following source:

[Bilandzic, Mark](#) (2013) Checking-in at the library : designing an ambient media system for social learning and collaboration opportunities. In *ALIA Information Online 2013*, 12-15 February 2013, Brisbane, QLD.

This file was downloaded from: <http://eprints.qut.edu.au/57749/>

© Copyright 2013 Mark Bilandzic

Notice: *Changes introduced as a result of publishing processes such as copy-editing and formatting may not be reflected in this document. For a definitive version of this work, please refer to the published source:*

Checking-in at the Library: Designing an Ambient Media System for Social Learning and Collaboration Opportunities

Mark Bilandzic

Background

The knowledge economy of the 21st century requires skills such as creativity, critical thinking, problem solving, communication and collaboration (Partnership for 21st century skills, 2011) – skills that cannot easily be learnt from books, but rather through learning-by-doing and social interaction. Big ideas and disruptive innovation often result from collaboration between individuals from diverse backgrounds and areas of expertise. Public libraries, as facilitators of education and knowledge, have been actively seeking responses to such changing needs of the general public.

Much effort is put into the physical design of library spaces that invite social interaction, collaborative work, peer-to-peer learning, meetings and social hangouts (LaPointe, 2006; Ludwig & Starr, 2005; Shill & Tonner, 2003; Talve, 2011), e.g. by setting up lounge areas, meeting rooms, cafés and food bars, etc. However, in practice, there seems to remain a social barrier to interactions between unacquainted library users. Previous research on library user behaviour shows that the library is perceived as a typical place in the public realm where users usually regard each other as strangers. People mostly work within their “individual bubbles” (2012, p.143), many even weaving “an individual net around themselves that does not invite communication with others” (2012, p.143), for example, by marking their work space with coats, bags, notebooks, and other possessions (McKechnie et al., 2004, p.44). It appears that library users perform their individual activities *next* to each other, rather than *with* each other. Whilst there is nothing wrong with this behaviour – in fact, the library as a place for individual study and rejuvenation is highly appreciated by users and needs to be preserved as such – it also indicates that there is untapped potential: The library is one of the few remaining “truly” public

places (Leckie & Hopkins, 2002) that is frequented by people from a broad cross-section of society, i.e. from a high diversity of socio-cultural backgrounds and areas of expertise. As such it has a high potential for mutual inspiration and cross-pollination of skills, knowledge and experiences among library users. Recent studies underline the importance to further strengthen libraries in their role as community gathering and meeting places (Aabo & Audunson, 2012; Audunson, 2005).

Gelatine – A System Aimed at Enhancing Awareness of Opportunities for Social Learning and Collaboration

As part of my PhD research, I have been exploring opportunities and design strategies for digital technologies to enhance libraries as environments for social learning and collaboration. This section presents ‘Gelatine,’ a checkin-system that I developed in collaboration with the The Edge, the Digital Culture Centre and collaboration space at the State Library of Queensland, to overcome some of the challenges described above.

Gelatine is a real-time ambient media installation that makes invisible social aspects of a library space visible, for example, by displaying its users’ backgrounds, skills, and interests, on public screens in the library building. The design aspects of the system are based on the Commons 2.0 principle (Sinclair, 2007). It recognises and promotes the library user themselves as an asset and information resource to other, co-present users.

The system is developed as an ambient medium, i.e. it communicates digital information through visually pleasing and unobtrusive means in the physical environment, e.g. interactive public screens or projections of dynamic, artfully designed infographics. Figure 1 represents an example visualisation that is designed to be run on a public touchscreen. The screen displays a tag cloud with keywords that describe the skills and areas of expertise as well as questions and needs of all current checked-in library users. As such, it is designed to provide a central display about opportunities for engagement with currently co-present users.



Figure 1: ‘Gelatine’ checkin-system – a touchscreen displays a tag cloud with keywords that describe the skills and areas of expertise as well as questions and needs of all current library users in a space.

In contrast to many other social media, Gelatine aims to allow users to connect – if they like – based on skills, needs and interests, rather than friendship or acquaintanceship. The main goal is to nurture and grow a knowledge community, i.e. facilitate each individual library user to acquire new and complementary knowledge and skills as a result of face-to-face encounters and interaction with other library users, and vice versa, i.e. enable each user to display their skills, and hence become a potential learning facilitator for others in the space.

The screen answers three basic questions for people working from a library space:

- How can other users help me?
- How can I help other users?
- What areas of interests / conversational topics can I engage in with other users?

Users can edit their skills / needs and interests through an online personal profile page, and confirm their presence when they arrive in the space by swiping their mobile phones or membership on a ‘Checkin-Point’ – i.e. a network controlled RFID / NFC reader box (Figure 3). The tag cloud on the screen is updated in real-time according to the profiles of those users who check in. The visualisation is time sensitive, i.e. skills, needs, and interests of users who have checked in most recently are displayed in bigger font-size in the top left corner and decrease in size and position towards the bottom-right corner for check-ins further in the past. If a user is interested in a particular skill, they can tap on the respective keyword and a pop-up

window reveals the current location of the person who has volunteered to share that particular skill (Figure 2). These data are polled from the checkin-system database in real-time.

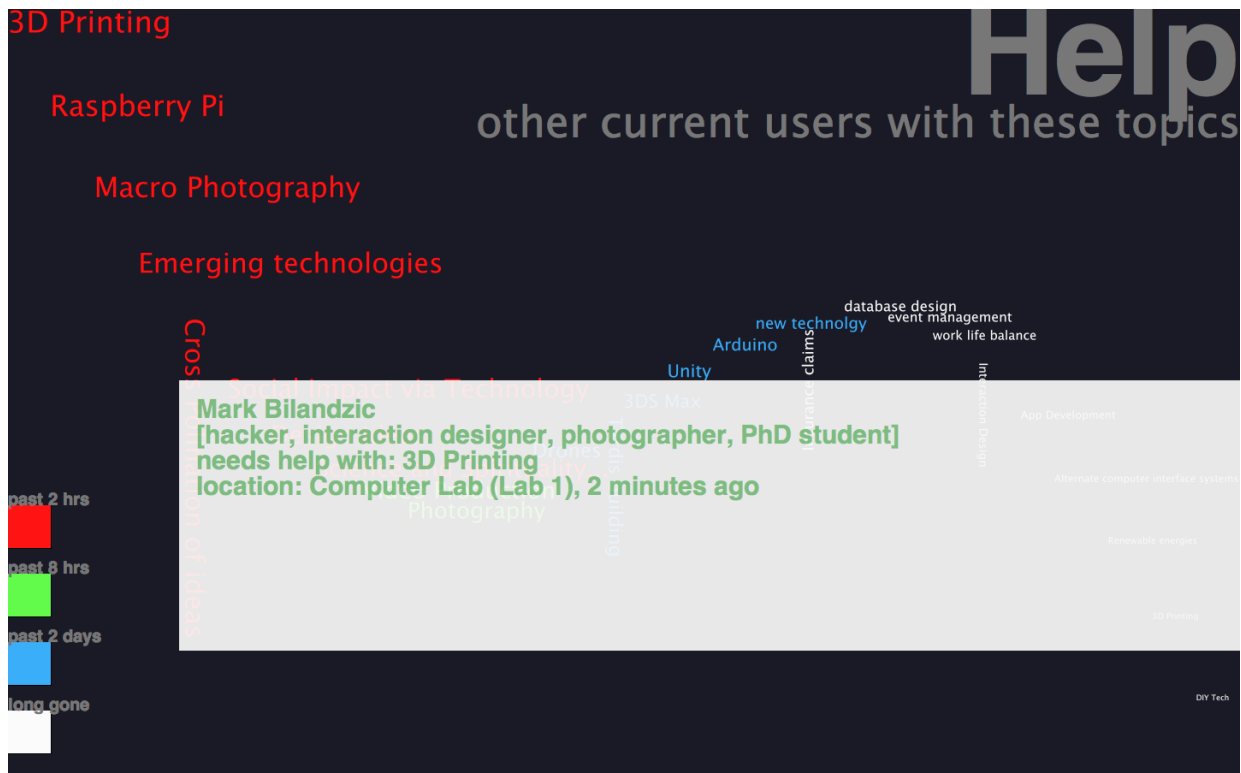


Figure 2: Tapping on a keyword pops-up a window with the current location of the person who has volunteered to share skills from, or who needs assistance with a particular knowledge domain.

All components of the Gelatine system are based on open-source software (e.g. wordpress.org, processing.org, apache.org) as well as open-source hardware and Do-It-Yourself electronic components (Arduino.cc). The design of the Gelatine check-in points is based on digital fabrication methods such as CAD and laser-cutting, and can be easily and cost-effectively reproduced by any library that wants to run a local instance of the checkin-system.



Figure 3: The design for the for the checkin-points is based on digital fabrication methods such as CAD and laser-cutting, and can be easily and cheaply reproduced by any library using local facilities.

Future Work

Gelatine was developed using a user-centred design methodology, applying methods from systems development, design research as well as social sciences such as ethnography and action research (Bilandzic & Venable, 2011). Future work will focus on evaluating the system in ‘the wild’ as encountered by library users during their usual activities in the library. We also work on creating new visualisation methods that include elements of the digital as well as physical world to enhance libraries as hybrid learning environments [reference blinded for peer review].

Speaker's Biography

Mark Bilandzic is a final year PhD candidate with the Urban Informatics Research Lab at Queensland University of Technology. He has studied computer science and media technology at Ludwig-Maximilians-Universität in Munich and at UC Berkeley in California. His interests are in urban informatics, human-computer interaction, ambient media and ubiquitous computing. In his research he explores the opportunities for such technologies to improve collaborative environments such as public libraries and co-working spaces.

Twitter: @kavasmlikon

References

- Aabo, S., & Audunson, R. (2012). Use of library space and the library as place. *Library & Information Science Research*, 34, 138-149.
- Audunson, R. (2005). The public library as a meeting-place in a multicultural and digital context: The necessity of low-intensive meeting-places. *Journal of Documentation*, 61(3), 429-441.
- Bilandzic, M., & Venable, J. (2011). Towards Participatory Action Design Research: Adapting Action Research and Design Science Research Methods for Urban Informatics. *Journal of Community Informatics. Special Issue: Research in Action: Linking Communities and Universities*, 7(3).
- Caldwell, G., Bilandzic, M., & Foth, M. (2012). *Towards visualising people's ecology of hybrid personal learning environments*. Paper presented at the Media Architecture Biennale 2012, .
- LaPointe, L. M. (2006). Coffee anyone? *College & research libraries news*, 67(2), 97.
- Leckie, G. J., & Hopkins, J. (2002). The public place of central libraries: Findings from Toronto and Vancouver. *The Library Quarterly*, 326-372.
- Ludwig, L., & Starr, S. (2005). Library as place: results of a delphi study. *Journal of the Medical Library Association*, 93(3), 315.
- McKechnie, L. E. F., French, P., Goodall, G. R., Kipp, M., Paquette, D. L., & Pecoskie, J. L. (2004). Covered beverages now allowed: Public libraries and book superstores. *Canadian journal of information and library science*, 28(3), 39-51.
- Partnership for 21st century skills. (2011). Framework for 21st Century Learning. Retrieved 1 December, 2012, from <http://www.p21.org/overview/skills-framework>
- Shill, H. B., & Tonner, S. (2003). Creating a better place: Physical improvements in academic libraries, 1995 - 2002. *College & Research Libraries*, 64(6), 431.
- Sinclair, B. (2007). Commons 2.0: Library Spaces Designed for Collaborative Learning. *EDUCAUSE Quarterly Magazine*, 30(4).
- Talve, A. (2011). Libraries as places of invention. *Library Management*, 32(8/9), 493-504.