Interfacing Between Social Media, Business Processes and Users. A Design Case Study

5 AUTHORS, INCLUDING:

Koen Van Turnhout
Hogeschool Arnhem and Nijmegen
30 PUBLICATIONS **96** CITATIONS

SEE PROFILE

Robert Holwerda
Hogeschool Arnhem and Nijmegen
19 PUBLICATIONS **22** CITATIONS

SEE PROFILE

Peter Schuszler
Hogeschool Arnhem and Nijmegen
3 PUBLICATIONS **6** CITATIONS

SEE PROFILE

René Ronald Bakker
Hogeschool Arnhem and Nijmegen
61 PUBLICATIONS **230** CITATIONS

SEE PROFILE

Interfacing Between Social Media, Business Processes and Users.
A Design Case Study

Koen van Turnhout, Robert Holwerda, Peter Schuszler, Lars Tijsma, René Bakker
Informatica & Communicatie Academie
Hogeschool Arnhem Nijmegen
Ruitenberglaan 26

6826 CC Arnhem, The Netherlands
koen.vanturnhout@han.nl, robert.holwerda@han.nl, peter.schuszler@han.nl, l.tijsma@han.nl, rene.bakker@han.nl

ABSTRACT

In this paper, we will argue that developments in social media in the past few years open up an opportunity space for developing "integration software". Such software supports company specific use cases, while the software expands on existing social media infrastructure through web API's. We have explored this opportunity space for social media integration in companies with a conceptual design project. Seven groups of students designed and built "integration software" for two different companies. In this paper we present the three most interesting student concepts and identify challenges and opportunities for building "integration software".

Keywords

Social Media, Internet Operating System, Integration Software, Mash-up.

INTRODUCTION

In the past few years social media, and social network sites in particular [2], have gained a large and stable user base. Millions of users create and share content online, making up a significant amount of modern web use. Many businesses (and non-profit organizations) would like to "integrate" social media in their business processes. A recent survey by Andriole [1], for example, identified "integration with existing technologies" and "integration with business processes" as key concerns of adaptation of web 2.0 technologies in companies. While 'integrating' social media is often thought of as changing company policy to adapt to the changing media landscape, we set out to explore the other side of the coin. Can we adapt social media to fit into the company's business processes instead?

Nowadays most social web services offer a web API, allowing third parties to build software that cooperates with the service. Tim O'Reilly has gone as far as claiming an "internet operating system" is emerging [4][5]. With this term, O'Reilly draws a parallel between the web and a stand-alone computer. The idea is that search, identity, location and the social graph may be developing into

background services on top of which applications can be build, rather than existing as 'stand-alone' web applications. This is much like the way an operating system provides a set of services to applications through units such as the file system, the windowing system and the process scheduler. The metaphor has its limits, but it makes an interesting point. Modern social media services are an architecture on which we can build applications at least as much as they are a collection of applications in its own right.

The remarkable proliferation of plug-ins, mash-ups, third-party clients, and social games in the past few years, shows there is a lot innovation potential in the possibility to build applications on top of existing social media [3][8]. However, it is mainly 'pure' web based companies – often start-ups – who create these innovative services, while other sectors lag behind [1]. In a sense the ecosystem of third-party software is focused on social media use in itself, rather than using social media to improve non-web based business processes.

We will call software which is built on social media web API's to improve an existing business process: 'integration software'. In this paper we focus on information exchange between the employees or costumers of a company which is valuable for both the users and the company in particular. It could be that users have a reason to share their existing on-line profile with a company, and the company can improve its service to these users. It could also be that the company invites users to share new information about themselves which they would also like to share across their own network. In both cases mutual benefit is an important requirement.

To explore the opportunity space for integration software we set up a conceptual design project. Seven groups of students tackled real world integration challenges for one of two Dutch companies. They also built working prototypes to support their ideas. In this paper we present the most interesting concepts and we identify challenges and opportunities for integration software. The paper is organized as follows. First we give some background information about the student designers, after which we discuss some of the more interesting ideas for the two cases. Next, we offer general conclusions.

TWO CASE STUDIES

In this section we provide a brief outline of the setup of the project and the training our students received. The student designers were 2nd and 3rd year professional bachelor's students majoring in 'Communication and Multimedia Design (CMD) '. Within our institute this study has two variants. A part of the students is following a software engineering programme, focusing on web development and interaction design. The other part is following a communication design programme focusing on web and multimedia design for interactive media. All teams had a balanced mix of students with a software engineering and communication design background and both 2nd and 3rd year students. They had classes topics specific for social media development. For communication students these involved internet and law, on-line social dynamics and business cultures. For web engineering students this involved server sided web programming in Ruby on Rails and working with web API's. Both groups of students had classes about setting up participatory creativity trajectories, community management and community centered development (CCD) following Preece [7].

The project lasted for 8 weeks and consisted of 3 concept iterations. The first iteration (pressure cooker) lasted 1 week, the second iteration two weeks and the third 5. In each iteration students had to address all CCD stages, come up with a new concept, deepen insights in users and the company and deliver a prototype of increasing fidelity. The final prototype needed to include working prototype including front- and back-end implementation and a proof of principle for the connectivity issues. The CCD method is a user centered method, and all groups did have contact with end-users during the project, be it often in an informal way. All groups performed formative user tests in the last iteration, but didn't do summative tests.

CASE 1: LA RED NETWORKING SPECIALIST

Problem Definition

La Red is a small Dutch company specializing in social networking and social capital. La Red uses the term social network for real-life social networks, not for social network sites. The company offers services like qualitative and quantitative social network analysis and advice and masterclasses about strategic social networking behavior and social capital. Also, La Red maintains its own high-quality network by organizing monthly network meetings (for their members). The company plays an active role at these meetings acting as a matchmaker. La Red would like their network to be more self-supportive in two ways. First, for most La Red members, networking takes place at the monthly meetings and La Red would like their members to connect and share idea's outside these meetings too. Second, it would be helpful if members are supported to make their 'own' matches in a better way, rather than relying on La Red's matchmaking during the meeting.

Student Concepts

La Red MeetUp

The first concept which we discuss here was called *"La Red MeetUp"*. It focuses on the participants list of a network meeting. Not long before the meeting La Red sends a list with the names and companies of all the participants to all participants. The idea is that members can prepare for the meeting. Those who do so, typically copy the names into a search engine to find out more information, so they can decide who they want to talk to during the meeting. Although most members are aware that preparation might improve the effectiveness of the meeting for them, many find this approach too cumbersome.

Students proposed integration software to improve this situation. The software gives users a preview into the LinkedIn profile but also encourages members to make a wish-list of the people they would like to meet during the next meeting. Once a member gets an invitation to the meeting he needs to sign in using his LinkedIn account. Next he has to submit a textual elevator pitch: a tagline containing something he would like to learn or talk about during the meeting. After writing the tagline, the user has access to the main interface, depicted in figure 1.

The main interface is a dynamic participants list: it is built around an interface metaphor of stacks of business cards. Each card contains 'headline' information from that participants profile and the participants tagline for this meeting. If a user finds someone interesting between the other business cards he can add him to his wish-list by clicking the + sign on the card. The system then adds the card to the stack, and updates the number of connections (in the top left corner of each card) for both participants. There is also an hyperlink to the full (public) LinkedIn profile of the participant. La Red has its own interface to this system, allowing La Red employees to suggest connections for members. In the interface for members such suggestions are marked with a red ribbon on the business card. While recommending a connection in this way is still a manual process for the La Red employees, it does not have to happen at the meeting, which is easier for La Red. Also, the interface encourages participants to make their own connections.
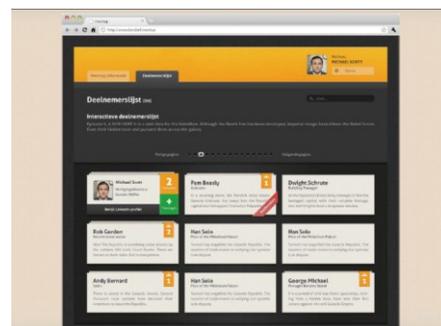

Figure 1: Screenshot of the La Red MeetUp prototype

La Red MeetUp was implemented with a combination of HTML CSS3 and Javascript for the front-end and Ruby on

Rails for the back-end. Students have tried to use the back-end for the LinkedIn integration, but the limited number of API requests that LinkedIn allows made it difficult to reach an acceptable performance this way. Therefore they ended up using the Javascript API for LinkedIn, wining in speed, but limiting themselves to public profile information.

The concept addresses the La Red challenge in a good way and it shows it is possible to create an information sharing situation which is mutually beneficial for La Red and its members. Also, users give new information to La Red which they might want to share across their own network, although this possibility is not present in the design and implementation. For La Red it is interesting that once all members use this system they gain connectivity (social graph) information of their members which they could use to improve their recommendations. At the same time, collecting and storing this information requires a back-end implementation. Also, the standard LinkedIn policy does not allow the use of profile data in this way. This would need to be negotiated with LinkedIn. If it can be arranged there is still a challenge in making clear to users how, and what parts of, the information on their profile will be used by La Red.

A different, but related, problem that came up is that the interface relates to two 'systems'. How does a user know, which system is affected once he creates a 'connection'? Does it affect the MeetUp system only or does it also create a LinkedIn connection between the users? In this case the LinkedIn data is unaffected, but it is a general challenge of integration software to communicate to the user 'which system' he is handling with an action.

La-Red-Connect

The second concept was called *"La-Red-Connect"*. The underlying idea is that social networking is all about sharing knowledge. You might only want to join a social network if there is an interesting pool of knowledge in it. If so, La Red and its members could benefit from a visualization of this knowledge.

Figure 2: screenshot of the La-Red-Connect prototype.

Figure 2 shows a screenshot of the La-Red-Connect prototype. Once a member is invited to a network meeting, he can set up a profile in the system after which he can submit tags describing his knowledge. This leads to a personal knowledge tag-cloud which can be shared on Facebook, Twitter or LinkedIn. The tags are also submitted to a larger tag-cloud for the meeting or the network as whole which La Red could show on its website. The prototype runs on Ruby on Rails at back-end and with HTML/CSS as front-end. It is a stand-alone community website, social media integration was not implemented.

The concept illustrates our point that a symbiotic relationship between the company and the user may exist, where the company encourages users to share new data – also to the users own benefit. It is easy to imagine how LinkedIn users would like to give their connections insight into the knowledge they have to offer. However, the 'static' tag cloud could easily be improved. A key to social networking is the *link* between knowledge and people, which could be exploited by building interactivity in the tag cloud. Also social media integration is too limited: there are many opportunities for building a dedicated LinkedIn plug-in or plug-ins for other social media which students did not explore.

CASE 2: THE DUTCH FABLAB FOUNDATION
Problem Definition

Fablab's around the world offer flexible computer controlled manufacturing machines such as laser cutters and 3D printers to local communities with the motto "share global, build local". Worldwide there are about 50 FabLabs, which form a global network that shares knowledge and designs which can then be made locally. While this is intended to be a global sharing network all Fablabs are deeply rooted in their local community. For this project Fablab the Netherlands provided six interrelated challenges: (1) strengthening the local community, (2) strengthening the connection between Fablabs in the Benelux, (3) strengthening the connection between the global Fablabs, (4) dreaming up new revenue sources, (5) strengthening documentation processes, and (6) preserving a Fablab community once Fablab machines hit a broader market. In all six challenges e-community design could play a vital role.

Student Concepts

The Fablab project which is most interesting for this paper, focused on documentation. Documentation is considered one of the target points of Fablab (that is share global) but it is not embedded in the current e-community of most Fablabs and considered hard to enforce on Fablab users. Integration software may help to make documentation easier for users, and users may benefit (in sharing their work with peers) as much as the Fablab community as a whole. Also it is clear existing social media use plays a role in merging both goals. Fablab users are often intensive users of social media tools like Flickr, Twitter and Instructables.

The students designed and built a dedicated mobile telephone app to connect to the Fablab community and possibly one's personal communities (on Android OS). The application merely allowed taking a picture and adding a short comment; these pictures and comments could be linked to a Fablab project, but also be shared on

mainstream other social media such as the ones mentioned before. The main improvement over the current process is that documentation becomes much less labor intensive trough automatic coupling with existing media and project numbers.

The app is tailored toward an optimal documentation process but at the same time allows users to share information with their own peers as well as with the Fablab community elegantly. We expect that sharing information with their own peers encourages users to engage in documenting work processes more often; which will also lead to increased sharing with the global Fablab community. A screenshot is shown in figure 3.

Figure 3: a screenshot of the documentation app concept (as it would show on the Fablab Website)

DISCUSSION

We have discussed the opportunity space for 'integration software' and shown two real world cases calling for such software: 'the La Red case' and the 'Fablab' case. Our student-designers have shown it is possible to design such software for these clients and have highlighted opportunities to strengthen the value proposition these companies have to offer their clients.

La Red can improve the service to their members with integration software. "La Red MeetUp", builds on Linked-In profiles to support La Red members to prepare meetings better, allowing an active role for La Red. "La Red Connect" shows that La Red could encourage its members to share the knowledge they offer in keywords. This is worthwhile for La Red members as well as for La Red benefits (by showing off the knowledge of their network). Fablab can encourage users to document their process in a better way if they make it easy for their user and this is valuable for both Fablab and their users.

Two difficulties have also come up. First there are *sociability* issues involved in granting a third-party access to your data. La Red MeetUp shows some subtle privacy considerations for users. La Red members have a generic trust in La Red and in LinkedIn to handle their data in a proper way. But La Red MeetUp needs a bigger mandate than the standard LinkedIn policy allows, and –provided it can be negotiated - it will be difficult to explain the exact agreement to users. A similar layering problem arises for the *user experience design*. The user interface of integration software is an interface to two distinct systems.

For users it will be hard to know what systems are affected once they do something and designers need to put effort in communicating this clearly in the interface. Increasingly, as the Fablab challenge shows, this 'multiple systems' problem will arise across multiple devices too [6][9].

Apart from highlighting these new challenges, the study shows that making effective use of the 'emerging internet operating system' as O'Reilly put it, does not need to be the exclusive domain of web-based start-ups. Once a broader range of companies start to look beyond the user experience that social media are offering, and start to see the underlying data architecture, there are many possibilities to use social media to create unique and new value propositions for their costumers or employees.

REFERENCES

1. Andriole, S. J. (2010): Business impact of Web 2.0 Technologies Communications of theACM, Volume 53 Issue 12, December 2010

2. Boyd, d. m., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, *13*(1), article 1

3. Floyd, I.R., Jones, C., Rathi, D., Twidale, M.B. (2007). Web Mash-ups and Patchwork Prototyping: User-driven technological innovation with Web 2.0 and Open Source Software

4. O'Reilly T. *What is Web 2.0. Design patterns and business models for the next generation of software*. O'Reilly Media, 2005. Available at: www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html.

5. O'Reilly T. The State of the Internet Operating System. Available at http://radar.oreilly.com/2010/03/state-of-internet-operating-system.html

6. Pierce, J.S. and Nichols, J. (2008): An infrastructure for extending applications' user experience across multiple personal devices. In UIST '08, pp 101-110

7. Preece, J. (2000): *Online Communities: Designing Usability and Supporting Sociability* (1st ed.). John Wiley & Sons, Inc., New York, NY, USA.

8. Severance, C., Hardin, J., Whyte, A. (2008): The coming functionality mash-up in Personal Learning Environments. In Interactive Learning Environments Vol 16. No 1., April 2008. 47-62

9. Sohn, T., Mori, K., Setlur, V. (2010): Enabling Cross-Device Interaction With Web History. In proceedings of CHI 2010, April 10–15, 2010, Atlanta, Georgia, USA.