Creating a context-aware mobile application to enlarge social cohesion: skating together

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ABSTRACT
This research is aimed at creating an application that adapts to its environment and brings people together. The question is whether this feasible for an audience that is not directly associated with social media products. A concept and a prototype have been developed as proof of concept that social applications can and should be build by focusing on the factors which determine social cohesion of the target audience. Context-awareness may increase the value of an app to its users thereby increasing the social cohesion in the community. Context-awareness also provides the data which enables designers to continue improving the usability of the design.

Keywords
Mobile apps, location-based services, context-awareness, social media, usability, design methods.

INTRODUCTION
Social media are here to stay; they form part of reality of everyday life. Facebook, MySpace and Hyves, to name but a few are used daily by millions of people. One step further, location-based software and services are looming, which, at least in principle, are able to provide a bird's eye view of ones social entourage. Smartphones, GPS and 24/24 hours per day online provides many new opportunities to utilize knowing where people are located.

By bringing together the worlds of social media and location-based software they can enrich each other. "Facebook places" may be taken as an example of such a service. What is missing however, at least in our opinion, in such social location-based services is a focus on the specific target audiences and the features or characteristics of such audiences which may stimulate people to use these services. Facebook places and 4Square enable social connections between participants; provided that the participants already found each other and found the something to participate about.

We propose a slightly different approach: instead of throwing the means into the group, we propose to analyze a target group to establish what might bind them together and use that to design the social location-based services in such a way that users may become a socially coherent group (Marseille and Mulder, 2009; de Haan et al., 2010).

SOCIAL LOCATION-BASED APP DESIGN
Designing for specific user groups consists of analyzing the main characteristics of the user group, for example, by analyzing what moves the participants in the user group to become a community, and additionally, it consists of utilizing the user group characteristics in combination with context-awareness to increase the utility of the app for the target audience even further, including the utility of context-awareness data to the designers.

Focusing on a target audience
Having established to focus the design of a social location-based application on a specific user group, we decided to choose skaters as our target audience. Skaters are a group or a subculture with well defined boundaries, characterized by a dress-code, musical taste, a "lingo" and magazines, all centered around their sports: inline skating and skateboarding. However, according to our investigations, skaters are rather different from the average Facebook user and they do not have any other social means to get in touch with each other except for physically bumping into one another.

The main design challenge is as follows: skaters all have their own specific locations to exercise their sports but they lack the means or an application to share the skating locations with each other. What seems required is a social application to facilitate skaters, getting in touch with each other and exchange information about skating locations.

We investigate our target audience with open interviews and questionnaires to establish specific wishes and needs to serve as design requirements. The main conclusions is that, apart from YouTube, skaters do not have a particular place to share pictures and video's. Also, even though skating is not a team sport, skating is not something that you do on your own: it is definitely a social activity. As such, skaters are always looking for other people to exercise their sport together. What is necessary is a mobile app which allows skaters to share information about skating locations or "sectors" (in
lingo) and to contribute pictures and videos as a means to share the experience of different locations. Sharing experiences and contributing is exactly what constitutes the engagement that Rogers (2006) proposes as an additional requirement for ubiquitous computer apps. In the skating app it makes the difference between a wayfinder and a community app.

Utility of context-awareness
Context-awareness indicates how an application can react to its environment. Since skaters are interested in finding locations and co-skaters it is natural to utilize context-awareness in the app, and more specifically, in the form of a location-based service using GPS. Our app will help skaters to find particular skating locations based on a number of characteristics, routes to these locations, and it will dynamically show how much "fun" the sector is by the number of visitors.

Note that, in addition to simply enabling users to utilize GPS to find things, the data about how users actually use GPS and locations is a main source to investigate the development of user requirements and thus to improve the app. Context awareness is also a useful feature in that it helps users to focus on realizing their goals without being distracted by things that are not relevant, such as marking the location of a picture. Context awareness in the form of allowing designers to learn about what users are doing with the app, where and when, is also important to further improve that very same context awareness of applications (Dotsisx, 2009). In this manner we could analyze, for instance, how increased experience in skaters translates into changes of favorite sectors, or how to support skaters that are new "in town".

INTERFACE DESIGN
Since starting the project much attention has been spend on design for use within the actual context of use; it is not hard to find willing candidates for interviewing and testing at skate spots. We failed to find any useful design guidelines to direct the design of the app. Fortunately, the iPhone, a most popular smartphone in the community, offers a useful set of objects that did not require too many changes. Similarly, the graphic design could be adopted without redesign. With the starting point, we added a wireframe design and worked things out, first on paper for prototyping and next, for the finalization of design into Adobe Illustrator.

Having some design aspects as starting points, the next main hurdle was to translate the required design features onto a small screen. This is particularly important since the application is not meant for use at home on the sofa but rather "on the go". To realize this, we chose to use only two tabs and one follow-up view. Because the app keeps track of which view the user wants to see, there is no need for much navigation within the app. One exception to this principle is: adding a new location. We assume that navigation is not a problem here since adding a location is an explicit choice and the user can chose a comfortable seat to do this.

Evaluation
First, we evaluated the application as a paper prototype and then we developed a new method for evaluation using a clickable wireframe. To start with, a clickable prototype of the wireframe was developed in Adobe Flash. The wireframe was subsequently run on the iPhone. This allowed us to create a highly realistic prototype in a very fast and easy way without requiring us to produce a full-blown executable, first. The prototype evaluations were very effective yet not without problems. For example, users found it rather difficult to mark sectors as their favorites, and also, icons turned out to be too small and sometimes misunderstood. After a number of small scale redesign cycles, the results became satisfactory.

CONCLUSION
The application has taken slightly less then three months to be developed by a three person team of advanced media-technology students. In our view, the result is worthwhile, even though some additional effort is required to get the app into the App Store.

At least on paper, all visionary research, specifications and design have already been accomplished. We may conclude that we have shown that a mobile, social and context-sensitive application does indeed present an added value to the specific audience at stake.

REFERENCES

