Mobile Communities –
Requirements and Features for Success

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ABSTRACT

Advancements in mobile technologies and decreasing charges are starting to leverage the mobile usage of the internet and its applications. This paper investigates mobile communities and explores requirements and features that make them attractive in the context of constrained mobile devices and existing Web communities. It comprises a comparison between virtual and mobile communities, a survey to identify necessary features for the latter and a low fidelity HTML prototype. The results of this preliminary evaluation of requirements and features lead to guidelines for the design and implementation of a mobile community as an extension of a Web community.

Keywords

Mobile Community, virtual Community, requirements, Wireless Application Protocol (WAP)

INTRODUCTION

After the WAP (Wireless Application Protocol) failure a few years ago the mobile internet was believed to be dead. Today a revival seems possible because of technically advanced mobile phones and networks (e.g. 3G, Wi-Fi), mobile internet flat rates and the demand to use web services at anytime and anywhere. The always-on-generation [9] wants to keep in touch with its buddies all the time, e.g. through mobile communities. Especially for young people mobile phones are practical devices that offer various advantages; they are ubiquitous, always on, easily accessible, cheap, facile, and their diffusion rate is high.

Applications developed for mobile devices have to cope with their constraints regarding technology and usability (e.g. short battery life, small screens and keyboards). Thus different requirements apply for the development of mobile communities, compared to traditional virtual communities. According to Fremuth and Tasch [4] virtual communities are defined as groups of people who communicate or interact by electronic media. Mobile communities are virtual communities restricted to mobile devices.

The goal of this paper is to explore requirements and features for the success of mobile communities and to improve their user experience on constrained mobile devices. In the context of existing virtual communities, the main objective is to develop a mobile community as an extension of a regular virtual community and adapt it to the special con-

straints of mobile platforms. Complementary, another aim is to integrate mobile communities in existing web services and create additional value for customers. The purpose of this community is to win over new customers and to complement an existing shop for mobile content. The research aim is to allocate guidelines for the development of mobile communities which add significant value to the existing range of WAP and Web products.

The first step to reach these aims is to research requirements and features for mobile communities that make them attractive for their users. Existing communities were compared to identify their main features and to highlight the differences between regular and mobile communities. Subsequently a survey was conducted to evaluate the demand for specific features in mobile communities. Based on these results a low fidelity HTML prototype was created and tested during a user study. As a result, this paper presents an example prototype which emphasises special requirements and features for mobile communities.

COMPARISON: VIRTUAL VS. MOBILE COMMUNITY

This section provides an overview and comparison of different types of virtual and mobile communities:

- **Web-only Community:** This traditional form of virtual communities is primarily designed for being used on regular desktop computers, not on mobile devices. StudiVZ [10] is a famous example in Germany that targets students. It focuses on the features profile, messages and displays the members' university lectures. A photo album is provided and buddies are arranged according to their university. The members can join groups about all kinds of topics.

- **Web&WAP Community:** A virtual community which provides a version for Web and WAP access is called a Web&WAP Community. Facebook [1] is one of the few communities which offer either service. Facebook is popular all over the world and exists in four languages. According to its own statistics, Facebook has more than 67 million active users and is the 5th most-trafficked website in the world [2]. In contrast to StudiVZ, Facebook does not aim at one specific target group. It offers two communication channels; a Web and a WAP service. Members can access the profile on their computer and on their mobile phone. Facebook focuses on messaging, profiles, and extra applications, which can be added by the members. Therefore Face-

book is more personalized than StudiVZ. The mobile version displays an excerpt from the web version.

- **WAP-only Community:** In contrast to Web-only Communities, WAP-only Communities are exclusively accessed on mobile devices. Due to the lack of popular, independent WAP-only Communities in Germany the British portal Prodigits was chosen for the comparison. Prodigits is a UK based mobile community with more than 1 million registered users [8].This community focuses on the interaction between its members. The profile is a minor point and is on the same level as forums, chats and polls. Further examples for WAP-only communities are qeep.de and itsmy.com.

The comparison between the four communities, StudiVZ, Facebook, Facebook mobile, and Prodigits, will weigh the communities' main features against each other. There was mainly overlapping content observed, but also differences. All communities offer basically the same kind of topic related information. Different features are assessed on a different scale.

All communities have the following features in common: Login, Logout, Photos, Status, Search, Messages and a Buddy List. Logout is always required and essential to give a feeling of security to the members. The four communities provide photo albums. The user can upload a certain number of pictures next to the standard profile picture. For example Prodigits encourages its users to upload their mobile phone pictures to their profile by MMS. Status information can be found on the main page of all communities. Members can broadcast their current activities or feelings on their profiles. This information is always placed in a central location. The search feature is implemented in every community. The users can search for new friends, groups or events. Usually there are two different types of search; regular search and advanced search. A messaging service is a community's backbone. Members can send messages to friends and strangers. The friends are listed in an area called Buddy List. This list displays the user's social contacts and reflects his/her popularity.

Prodigits is the only community which offers special features like forums, chat rooms, blogs and polls. The WAP-only community provides more interactive features than the WEB-only or the Web&WAP communities. The most remarkable difference was the effort users can invest in their profile. Prodigits does not support self-portrayal in as much detail as the other communities do.

SURVEY "MOBILE COMMUNITIES"

The survey "Mobile Communities" was conducted to find out more about the users' needs. 45 participants from Germany, England and Ireland took part in the survey and filled out the online-questionnaire (female: 22, male: 23; 48.9% between 20 and 25 years old). Its first part dealt with consumer habits. The second part was occupied with questions about the user's experience with communities in general. The third part addressed their opinion about certain community features. To reach the target group the survey was advertised on public walls, pin boards and guest books

of various virtual communities. The results of the survey are:

- 71.1% of the participants do not use their mobile phones for data services (internet, email). Their average monthly phone bill is 29.78€ and they are willing to spend 2.27€ a month for premium data services.

- 86.7% of the participants are members of a virtual community. The top mentioned communities were StudiVZ.net, Lokalisten.de, Facebook.com and XING.com. 71.1% of the participants know their friends from the virtual community in real life. 88.9% do not know a mobile community.

- Only six community features were rated as *important* on a scale from 1 (I don't like that) to 4 (very important): *Security, Messages to Friends, Block certain people, Buddy List, Search for Friends,* and *Profile with Photo.* These are the main community features.

- Security was named at various occasions; it got the highest rating and was mentioned in the additional text areas for comments. Another question was about privacy levels. The participants could vote from *1 = private* to *3 = public*. There is a strong demand to administer the privacy settings for everything except the online status. The online status's visibility was rated 2.15. That was the closest result to *3 = public*. Asked about the feature of utmost importance the participants mentioned control over their data, cancel their membership, and games.

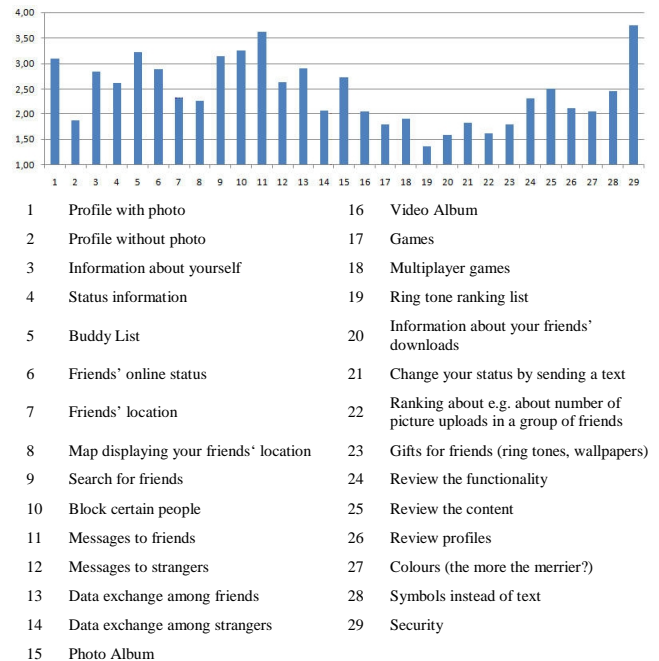| 1 | Profile with photo | 16 | Video Album |
2	Profile without photo	17	Games
3	Information about yourself	18	Multiplayer games
4	Status information	19	Ring tone ranking list
5	Buddy List	20	Information about your friends' downloads
6	Friends' online status	21	Change your status by sending a text
7	Friends' location	22	Ranking about e.g. about number of picture uploads in a group of friends
8	Map displaying your friends' location	23	Gifts for friends (ring tones, wallpapers)
9	Search for friends	24	Review the functionality
10	Block certain people	25	Review the content
11	Messages to friends	26	Review profiles
12	Messages to strangers	27	Colours (the more the merrier?)
13	Data exchange among friends	28	Symbols instead of text
14	Data exchange among strangers	29	Security
15	Photo Album		

Figure 1. Community Features – Feature Approach after Leimeister and Krcmar [7] (y-Axis: Feature's importance (1 = I don't like that, 2 = not important, 3 = important, 4 = very important), x-Axis: Feature Ids)

The 45 participants had to rate different community features (see Figure 1); in general rankings were rated low. The participants had a positive attitude towards mobile commu-

nities and did fill in the additional text areas. The well-rated features, *Data Exchange among Friends, Friend's Online Status, Information about yourself,* and *Photo Album*, were a surprise. People seem to be as interested in self-portraying as in communication with their friends. In contrast to the general understanding services related to the friends' location were rated with *2 (not important)*. Games were mentioned as a feature of utmost importance, too, but only rated poorly in the feature-question (*1.80*).

The main outcome of the questionnaire was that people expect a high level of security and their goal is to communicate with their friends.

REQUIREMENTS AND FEATURES FOR SUCCESS

The comparison and the survey's result imply many non-functional requirements for mobile communities. Two instruments were used to research the requirements for mobile communities: Internet analysis and surveys. The four poplar communities StudiVZ, Facebook, Facebook mobile, and Prodigits were in the focus of the Internet analysis.

- In the surveys and in the interviews costs and connections fees were mentioned as the main reason why people do not use mobile internet in general. Customers do not want to pay for unwanted content [5]. A mobile community has to offer what people want. Therefore the first requirement is personalization.

- According to the survey there is a strong demand for sending messages to friends. The community must provide a messaging service, which is more appealing than e.g. free texts by the provider.

- People also appreciate different types of search. They want to use alterable filters to browse the members. To use only one filter at the time does not satisfy the users' needs.

- The participants in the survey claimed that they want to be able to determine all the settings from community news to the colour which advocates personalization.

- One requirement is to minimise keyboard use. If the members have to login each time they visit the community, this might cause dissatisfaction. To avoid keyboard use it should not be necessary to login after the first use of the community.

- Page reloads should also be minimised, because every reload creates a delay for the user in reaching his goal. In contrast to Web services the WAP communities do not display the whole navigation area on every page.

- Display space is very valuable on mobile phones. Due to this fact only the main issues should be displayed. As for navigation, breadcrumbs present a space-saving method to guide the user.

- The navigation level should be wide instead of deep. Hub and Spoke [11] offers the right pattern to separate the functions, even if it was not realised completely in the following prototype. The user can navigate to every part of the community by using the main page. Back-

wards (s)he can use the same way provided by breadcrumbs. This saves time and space.

- Security was rated high, because mobile phones contain sensitive data like contact details, photos and messages. Users are so close to their phones that it could almost be called a "marriage" [3]. That's why the members have to feel confident while they are using the community. The key measure of success is member satisfaction [6].

- The content is more important than in web services. The traditional internet provides easier ways to get the desired information and the connection fees are lower.

In order to have people use a mobile application it has to meet their needs and to compete against e.g. free calls and texts. Therefore the messaging feature is the most important part of any mobile community.

THE HTML PROTOTYPE

A low-fidelity HTML prototype was designed according to the requirements that were collected. The user interface was designed in red and black to allegorise the intended Web based sister community. The main page displays an overview of the community's features: Profile, Friends, Messages, Search, Photos and News. This overview was designed according to the survey's result. From the overview the users are able to navigate to the subsections. Cross references exist between some of the subsections, e.g. Profile and Messages, Profile and Photos.

Figure 2a shows the prototype's pin board. Below the logo the bread crumb navigation can be seen. The navigation menu is repeated at the bottom of the page. The first opportunity for interaction is the text area. Users who visit the pin board can write messages without having to scroll down or reload another page.

Figure 2b shows the prototype's Profile-feature. The user can change his or her profile without reloading the page. At the bottom of the page the user can save his or her changes and navigate back to the overview. Again page reloads are minimised. The user cannot make changes by mistake since (s)he has to confirm and save the changes first. Omnipresent features are help, a link to the connected shop, logout and a link back to the overview at the top and at the bottom of the page. This helps to keep the navigation ways short.

The resulting HTML prototype was reviewed by a focus group. Eleven participants (female: 3, male: 8; average age of 23.18 years) had to fulfil the following tasks: read and write messages, view a friend's profile, block a friend, view a friend's photos, and logout. Their reaction was recorded on video and at the end of the test session they were asked to express their opinion. The participants had to answer questions about the navigation, the usability and the provided features. They were also allowed to express their own opinion at the end of the user test. The users could rate the statements about the community from 1 (n/a), to 2 (does not apply) to 5 (applies).

The satisfaction about the mobile community was rated with an average of 4.36. In the interviews all eleven partici-

pants indicated that the all features they would expect from a mobile community were realised. The users voted 4.82 for the statement "*I knew at any time how I can go back to the main page*". Another important statement by the participants was that they would only use a community if their friends use it, too. Therefore the number of members is a barrier to entry the market. The ease of use of the prototype was reviewed with 4.64. The opportunity to send texts to other community member was appreciated by the participants (4.45). One of them emphasised that this would be a great chance to communicate with friends abroad, since free texts from the network provider are not valid abroad. Surprisingly, displaying friends in a list instead of a photo-grid was voted 3.09; a more negative result was expected. But overall the survey's result was confirmed by the participants in the user test. In contrast there was a demand for more pictures.

a)   *b)*

Figure 2. Prototype pin board (a) and profile (b)

SUMMARY AND FUTURE WORK

To summarise all findings about mobile communities; the challenge is to find the right balance between the community members' interests and the device's limitations. Therefore knowing the target group and their needs is more essential for the development of mobile services than for Web services. The comparison of the communities and the survey imply that the users expect a high level of personalisation and security. Their main goal is to communicate with

their friends. It's important to motivate lots of users in the beginning to raise the communities' value for every single user. These are the critical factors for designing a mobile community.

The next step is to apply these preliminary results and implement a mobile community as a complement for a Web community. For that purpose, more advanced prototypes will be designed and user studies will be conducted. After launching a beta version of the mobile community the shop's attendance will indicate if a mobile community wins over new costumers for existing services.

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