

On-site Participation – Mobile Information Systems in Planning Processes

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1 ABSTRACT

More and more people own high-end mobile phones that can be used for much more than just calling. Technologies like radio transmission, two-dimensional codes or GPS (Global Positioning System) make it possible to transfer data on mobile phones. Infotainment applications like audio guides, videos or „augmented reality“ take advantage of these possibilities and can be used for on-site information about sights or events in tourism marketing. In addition, mobile information systems find domains in the wide field of urban development. Large-scale projects like „Stuttgart 21“ and their contentious participation processes resound throughout Germany. The call for early information and regular questioning and voting as well as „strengthening of direct democracy“ [GEISLER 2010] gets increasingly louder. „Politics and administrations have to find new ways to get in consultation with the citizens in potentially controversial projects at the right point in time.“ [MATTHIAS 2010] Mobile information systems as instruments for „spatial marketing“ [cf. LANDWEHR 2010] can support the different steps of planning processes with information videos, planning visualisations and votes – always located at the point of interest.

2 INTRODUCTION

In times of “ubiquitous computing” [cf. WEISER 1993], there is a need to find useful and practical fields of application for mobile users besides calling and texting. On the one hand it is possible to get information about nearly everything anywhere and at any time via mobile Internet, which leads to a problem of oversupply when each information demands the full attention [cf. SCHIRRMACHER 2009]. On the other hand people like to play, which offers opportunities for new insights into the citizen's thoughts, behaviours and motivations in the context of scientific research [cf. STREICH 2005, p.190] and also as a potential for spatial development in practice. Especially topics of public relevance and interest might be better communicated if there is correct and precise information on-site at the point of measure. Therefore the combination of mobile applications with several transferring technologies and also the use of multimedia content is suitable to achieve an optimal level of usability.

3 MOBILE INFORMATION SYSTEMS

3.1 Parameters and technologies

As background for a mobile information system it is useful to look for an appliance, which is already widely spread in the population and that gets continuously renewed by recent and more powerful appliances – the mobile phone. Mobile phones developed into permanent companions and an indispensable part of the everyday life. They are not only used for calling or writing short messages but also to connect the mobile user to the Internet for example in order to receipt eMails, to watch videos or to contact friends and acquaintances via social network.

With regard to the fact that the medial age of the appliances in Germany is less than two years and that smart phones become more and more popular, it is expectable that the demand for the use of the mobile Internet will be rising. In 2007 surveys predicted that smart phones would reach a market share of 22 per cent amongst mobile phones by the end of 2012 [FREYNICK/ SCHULZE 2007]. This prognosticated number has already been exceeded two years earlier. The market share of smart phones in Germany went up to 23 per cent already in 2010 and an increasing market share is to assume. Solely in 2010 the number of smart phone owners grew by 5,1 million – equivalent to a growth of 65 per cent. At the same time, more than 65 per cent of all smart phone users surf on the mobile Internet [SCHOLZ 2011]. Over the same period, while smart phone users became more numerous, the costs for using mobile phones and especially for the utilisation of the mobile Internet decreased. Between 2005 and 2010 the costs for mobile phone and mobile Internet use decreased by 17,2 per cent. These decreasing charges are referable to diverse flat rate offers by the German mobile operators [MARTIN 2011]. On top of that, more powerful mobile frequencies will be enabled in the

next years, which allow much more data transfer up to ten times faster than UMTS (Universal Mobile Telecommunications System). This so-called LTE (Long Term Evolution) network is able to transfer data at 100 Mbit/s – comparable to the performance of a DSL (Digital Subscriber Line) wire. The LTE frequencies will become prevalent in Germany in the coming years.

Even though smart phones and mobile Internet appliances are widely spread and in demand, there are some general conditions and hindrances that restrict the comfort and possibilities of the mobile devices in practice. People who use mobile phones for surfing on the Internet are in fact usually on the move and not static at a certain place for a long time. That means people use the mobile Internet during other activities. As a result, the time fence to search and find the requested or required information is generally not available. Therefore, it is necessary that the user finds targeted information as quickly as possible and does not have to search for it too long by using search engines. Besides the lack of time, mobile phones restrict the comfortable input of search keywords or Internet addresses because of their compact (handy) design – especially in the case of older phones and the necessity of using their number pads for typing letters. On top of that, the layout of the information on the static Internet is not optimally presentable on mobile phone displays – both sophisticated representation and long textual information. Mobile information has to be readable, short and useful. The mobile Internet offers almost unlimited opportunities to supply information on mobile appliances, which suit vastly better than the pure transfer of Internet pages. The potentials of modern mobile phones can be exploited by using the Internet as platform for the provision of audio guides, videos, animations, etc. The capabilities of Internet applications like YouTube and Flickr can be applied for the mobile implementation, nevertheless the searching user unavoidably gets several undesired and maybe wrong information.

Fact is that there is a kind of an oversupply of information in the Internet. Search engines help to find a selection of results, but they don't select based on quality features – the results are overrun by user-based content. The goal is to enable the mobile user to experience and see only wanted content as required. There is a need of filtering, but not a filtering the user makes in front of a bunch of information. To supply factual and proper information of high quality, it is necessary to deploy **intermediate technologies** that allow precise information and avoid manual input. The installation of intermediate technologies gets realised on-site at the particular place or object of interest. The main function of the technology is to provide the Internet address that links to the information or content. The intermediate technology decodes the Internet address, so the user doesn't have to type the address into the mobile phone. At the same time, the mobile phone connects to the Internet and automatically presents the aimed information or content. Following, there are examples for intermediate technologies using various procedures:

a) Bluetooth is a wireless technology for exchanging data over short distances using radio transmission. The content exists on-site, not on the Internet.

pros: Available on most mobile phones, direct transfer of data, no mobile Internet needed

cons: Permanent transmission (danger of “air spam”), on-site need of expensive stations, low performance ability, information is offline, no Internet content usable



Fig. 1: Functional principle of the Bluetooth system (sending – receiving – playing) – source: Own figure

b) The Quick Response Code (QR Code) is a specific two-dimensional code, readable by QR Code readers. The QR Code links to Internet content.

pros: Available on every mobile phone with photo camera and Internet access, very common system (especially in Japan), easy and cheap to install on posters, stickers or signs

cons: Not entirely established in Germany



Fig. 2: Functional principle of QR Codes (photographing – decoding – playing) – source: Own figure

c) Near Field Communication (NFC) uses a short-range high frequency wireless communication technology which enables the exchange of data over a distance of about 10 cm. The so-called NFC Tag (chip) links to Internet content.

pros: Simple contact of the NFC interface with NFC Tag starts the interaction, low installation costs (small sticker with NFC Tag inside)

cons: Very limited choice of mobile phones with NFC interface available, BUT: More and more NFC phones will be offered in future! [cf. CLARK 2011]



Fig. 3: Functional principle of the NFC system (contacting – decoding – playing) – source: Own figure

d) Augmented Reality (AR) means the combination of real-world environment and virtual elements in real time, enabled by computer-generated sensory input.

pros: Very impressive opportunities

cons: Mobile phones require photo camera, GPS receiver and electronic compass, no direct input but bunch of information, quality of information is not guaranteed



Fig. 4: Functional principle of Augmented Reality (detecting – selecting – playing) – source: Own figure

3.2 Mobile information systems as marketing tools for cities and regions

While the private sector already offensively uses the mobile Internet as a sales and marketing channel, mobile applications in the field of city, regional and tourism marketing are quite uncommon. Admittedly,

there is almost no local community in Germany that is not present in the Internet, but in consideration of the developments in mobile devices and applications there is a need to get over the static bonding of Internet information.

The mobile availability of the Internet offers many opportunities for cities and regions to provide information directly available on-site and thus to secure the unique position in the competition among cities and regions. The mobile Internet enables cities and regions to manage the mobile provision of the existing information systems and also to create new multimedia forms of information. Generally, the information should afford an additional value. That means, it does not make sense to present various views of a building facade if this view can also be seen in reality. Instead, the presented content should involve things that are not or hardly accessible in public (for example special events within the building, etc.). The mobile information system in tourism can be deployed both in urban areas and in rural or natural environment and can be used complementary with the analogue guide in form of maps, flyers or books.



Fig. 5: Example of the tourist guide “Walk&Surf – Citybummel Aalen” (left: Sign with information text, map and QR Codes which link to videos; right: Video on mobile phone with an animation of the historical character “spy of Aalen” who tells things to know about several sights) – source: Own picture, own photomontage

The mobile information system can easily be assigned to different topics in different areas. It is not only intended to inform tourists about sights in urban or rural environment – a particular avail of the mobile information system can be generated as a local community information system in the context of the appreciation of building projects and other major projects directly on the spot. All these spatially relevant marketing topics – summarised in the term of “spatial marketing” – can profit from mobile information systems.

4 ON-SITE PARTICIPATION WITH MOBILE INFORMATION SYSTEMS

4.1 The need of early information

In the context of participation processes, planning marketing is of great importance. Even at an early planning phase, citizens shall be won to apply themselves to the participation process. The later a plan is presented in public, the less scope can be given to the involved parties. As a consequence, the acceptance of the procedure and thus also the plans might suffer. In the following process of project forums, round tables and other forms of participation usually only the most directly affected or very dedicated citizens take part. Nevertheless, urban building projects touch (at least indirectly) large parts of the population that don't participate for reasons of time, lack of interest in the early conceptual planning phase or merely owing to the lack of information about the planning process. Planned measures often get initially noticed when it becomes concrete. Once restrictions like dust and noise, traffic jam and perceived changes of the direct living environment are experienced as disturbance or problem, the public interest in the planning process rises. It can happen that oppositional groups arise, which now criticise the entire process in its lack of transparency or even the legitimacy.





Fig. 6: Example for the controversial participation process “Stuttgart 21” (left: Planning visualisation of the new central station; right: Demonstration against pulling down a side wing of the old central station) – source: Schuster 2009; Doepfner 2010

4.2 Operational areas and steps

In the course of planning, it is necessary to implement measures for information and participation at the different planning steps – from preparation to realisation. These measures as part of the entire planning marketing are good publicity and contribute to a better transparency, conviction, participation and acceptance. The mobile information system is optimally suitable to the planning marketing. In different operational areas and planning steps there is a range of opportunities to supply the mobile information system as a tool of on-site participation.

4.2.1 Preparing of planning processes

Even before the start of a planning or the looking for investors, mobile information systems can be used to inform about the initial situation and the difficulties for future measures. What's more, if historical circumstances play a role they can be provided for a surface impression of the local situation by video. The information about the initial situation will enable interested citizens at this early phase to deal with the subject and develop their own ideas. At the location of future proceedings, it is possible to collect ideas by a mobile questionnaire. Therefore interested people can send their ideas using a note feature – maybe attached to an informing video. An additional web forum can be used as a platform for discussion and exchange about possibilities and potential alternatives. All these planning measures can be brought in for the formulation of a general planning aim and contribute to the consideration of citizen's needs and wishes from the very beginning. Due to the early information about the process and the associated participation measures, the citizens can be won to the entire project – hereby the mobile information system is also conducive to a kind of “participation acquisition”.

4.2.2 During the participation process

Usually, at the beginning of a planning process competitions take place. The contributions of these competitions can be presented on-site of the future proceedings via mobile information system in the form of plans, videos and animations. Also on mobile phone a questionnaire about general mood can be conducted or the organisation of a “voting” about planning alternatives both on-site via mobile information system and online. The result of such an evaluation of alternatives is again considerable for the further planning process. After the decision for a particular planning sometimes groups of different interests form up. Their arguments for and against various planning aspects can be captured in a documentary film and shown both on-site and on the Internet for the purpose of a preferably “fair fight at eye level”. In this way, doubts and concerns will become public in an early phase and can get convincingly refuted or integrated into the further process. In the following participation process documentaries can report the progress and outcome of meetings and assemblies in a way that is as transparent and neutral as possible. The progress itself with its different specified procedural stages and decisions that are partly required by law can be explained and consequently become more comprehensible. All changes of the planning as well as the results of the official planning approvals or statutes can be presented as plans, videos or animations on-site based on the mobile information

system. At the same way it is possible to look back on the completed participation process and to outline the planned steps of the realisation.

4.2.3 While and after realisation

Large parts of the population notice planned projects usually for the first time when the implementation begins. In addition to the usual measures of construction site information, further services in the form of mobile available videos, animations etc. can be generated. The groundbreaking ceremony as well as other special construction measures (such as the pulling down of buildings, the planting of trees etc.) more and more become events, especially in the context of large-scale projects that are observed by the population on-site with curiosity and excitement. This curiosity can be satisfied by the explanation of the building progress by mobile videos, furthermore the “building events” themselves can be content for a short documentary. The biggest event of course is the complementation of the project, which enables a cinematic review on the entire project progression. This review can be shown on-site on mobile information system, online on the Internet and maybe on DVD, which offers the possibility of a specific media effect. Finally the mobile information system can be used for a questionnaire about citizen's satisfaction with the completed project and its progression (planning, participation and realisation). Out of the questionnaire's results it is even possible to get inferences for improvable measures.

The goal is to win as many citizens as possible for participation in a very early planning phase. In addition those who can't or don't want to participate shall be informed about the particular steps of the process. Such a transparency of the participation process aims at a maximal acceptance of the planning. Controversial measures can be convincingly justified by presenting planning alternatives that are revealed and weighted within the participation process. Finally, it is the challenge to inform about the various restrictions and their duration during the realisation phase and about the planned particular steps of realisation, to the end that there is a maximal acceptance of the building operations.



Fig. 7: QR Code based information at a building site in Koblenz – source: Own photomontage

5 CONCLUSION

A frequently mentioned point of criticism on the mobile Internet is the lack of useful applications for the user. The mobile information system takes up exactly this point of criticism. Mobile information systems can offer contents that have an actual additional value – audio guides, videos, animations, interactive tools, etc. They can play an essential role in “spatial marketing”, which means city, regional and tourism marketing as well as planning communication in the context of building projects. A matter of special importance is that modern and innovative applications attract younger generations that have nothing or just few to do with topics of city, regional or tourism marketing – respectively planning processes even less.

Combined with the classical tools of “spatial marketing” mobile information systems are able to sensitise the population for cities and regions and their spatial development. Especially QR Codes and in the future NFC Tags are suited for information and also entertainment in the form of audio guides, videos and animations

that are available via mobile Internet. Augmented Reality offers the possibility to project historical or planned buildings onto the display of mobile appliances on-site and in realtime. Additional tools like questionnaires and votes allow an interaction of citizens with the decisive committees in a modern – mobile – way. Mobile polls cannot replace the legally bound participation process, but the interaction tools can prevent that the population feels completely ignored. Tendencies to the general direction of development can be received out of the results of mobile voting, and maybe these insights can be weighed within the administrative decisions – presuming political will!

In summary, it can be said that the mobile information system and its multimedia and interactive contents (like audio guides, videos, animations, questionnaires, votes, etc.) is a locally available additional feature to improve the transparency, the conviction, the participation and the acceptance of planning processes.

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