

Location based applications

I am a student at the University of Applied Science in Düsseldorf where I study Interaction Design. The course emphasises broadly based design studies including theoretical basics such as art history as well as project based work. Our university is one of the biggest 'interaction design' departments in the country and one of its unique qualities is the variety of classes offered, including everything from Game Design to Interface Design through to Interactive Storytelling. The University also actively co-operates with commercial partners and our course was involved in a collaborative project with Markus Lüdemann who heads User Experience at LG Mobile.

Working with other students, we looked at a wide range of mobile devices and research. This was not limited to 'pure' HCI issues and we covered everything from market research to materials and emerging technologies. We were looking for design opportunities where we could scope a student project that would both give LG novel design concepts and a topic that we could investigate in depth and deliver something that would impress future employees, and naturally our peers and Course Director Tom Hirt.

Industry trends

After kicking off the project, we all got stuck into research and even though each student was investigating a different area there were some clear and general trends emerging.

Firstly, mobile devices are getting smaller, more powerful and arguably more usable. We all noticed how the iPhone was a paradigm shift in the industry and in particular sold itself on the quality of its user experience. The iPhone presaged another change in the industry toward embracing the internet rather than offering just communication services.

Mobile devices that are optimised for the web are a different kind of proposition than just a portable phone. And in the context of exponential growth in internet services, User Generated Content and contextual technologies such as GPRS, we are suddenly in a very different world from the one Graham Bell envisaged. The coming together of these technological and social trends had one other important aspect that shifted development away from traditional software companies and towards a much more open hacker oriented workforce.

Third party applications

Since the iPhone arrived on stage, and definitely since its second incarnation, interest in developing third party applications for it has rocketed and Apple's Software Developer Kit has only accelerated this pace. These are not simple web applications. These are full applications which make use of preinstalled hardware like the camera or GPS system. And they integrate themselves into the phone's architecture, for instance connecting your address book to a mobile application. And these applications are increasingly being developed

not by phone manufacturers on proprietary software but instead on open operating systems by emerging developer communities.

Opening OS to external developers is not new of course. But now it is more than a fringe activity and most phone manufacturers and internet service providers are getting in on the act. The iPhone is just the beginning and now we have Google Android, and even Nokia's N-Series supports many third party applications and there is much more coming.

Location based services

Having looked at industry trends, and noting the emergence of open platforms and the growth of mobile Internet applications, I became especially interested in location based technologies and software including GPS based games and social networks. And while there is clearly interest in this growing field a couple of fundamental questions emerged.

Firstly, how can companies use these 'locating' technologies to create commercial applications and how can they be really useful to customers? How can companies compete effectively in the market of mobile applications? How does branding work in this open situation and how do you retain customers and develop allegiance?

These questions may seem far away from the typical research questions in an HCI project, but without an answer it would be difficult to sustain any concept beyond the drawing board and so I saw the commercial constraints of this project as a critical input and success factor in evaluation.

Business models

Having narrowed down the area for design opportunities I looked further into service business models and discovered that there are two main approaches. The first type includes utilities that are usually used for one specific and episodic task such as photo editing. These applications help you complete tasks without trying to sell an additional service or even necessarily linking to related ones. The other category of applications are service driven. These provide an additional service to the user and additional income for the application provider. Of course many applications fall between these extremes including many Google services such as online calendars, mail and the creation of documents on the web. These services are free, but presumably Google is using the data in some way or another to generate income now or in the future.

Design concept

The idea I came up with is simple but different from the normal UI, product or application. It's more about creating an environment that supports other developers and service providers. The backbone is based on a cross-device-platform

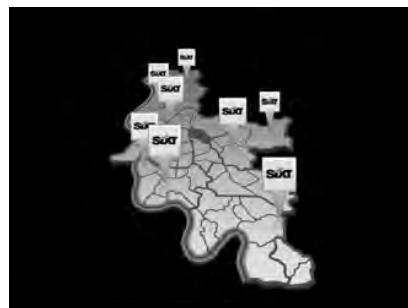
Sebastian Meier and Thomas Hirt



More and more mobile Applications will merge onto our phones.



Easy Application delivery throughout wifi-networks.



Easy delivery throughout the country



The Mobile Applications Installer is implemented directly into the phone



Three different views to browse the Applications around you, a spiral based grid view...



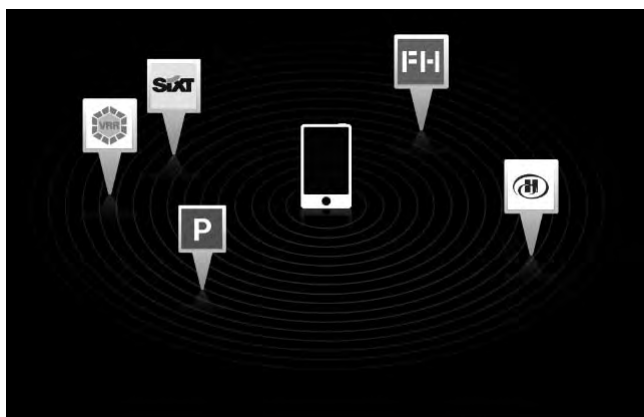
... and a Map view.



Installed Applications are displayed like normal applications



Applications get downloaded from the web and installed with a simple click.



The Mobile Phone recognizes ApplicationIDs in wifi networks.



Mobile Applications should work on all Mobile Platforms

upon which developers create Location Based Service applications, say for finding restaurants. The applications can either be generic (e.g. restaurant finder) or specific (e.g. find Bill's Burger Bars) and in each case sponsorship and licensing may play a role.

Applications like the restaurant finder are then stored in an online database for which a small fee is charged to the developers or providers. In addition, the hosting organisation in some way assures the quality of the applications and naturally allows users to access them. Ensuring a secure environment is really important in order to encourage people to discover and install applications on their own devices.

Not all services will work well with this centralised model and in many cases more localised and contextually relevant applications are needed. And this is where the open platform and database come into their own. Say, for example, you visit a new city. There are a lot of possible use-cases that could be supported by downloading locally relevant services, from public transport companies that can provide easy to use ticketing systems, maps, timetables and route-planners to the user, to complex guiding systems and informational networks that use the device as a navigator, aerial and informational.

Let me just give a short use-case to illustrate this. Let's say you are in an unknown city and you would like to meet a friend at the cinema. But you have no idea how to get there. The moment you step outside the main train station you take a look on your phone and you see that there are a couple of mobile applications around you. A category based list-view provides you with two transportation companies offering mobile applications. One of them is a taxi company, the other one a public transportation service. You choose the cheap solution, the public transportation. After installing the application, the app uses your GPS-Device to find the closest bus stop, and after looking up your destination a map shows you the way to the bus stop. Before getting on the bus you can use the same app to buy your ticket.

Arriving at the cinema and meeting your friend, you realise that the queue is really long. So you pick up your phone

and see in the map-view that the cinema has its own application. A simple click downloads it to your phone and now you can easily browse through the movies and purchase a ticket. And we could even think a step further. What if users could create their own locations and connect these with applications. So you would have a different set of applications depending on your location. You have your business tools when you are at the office and you have your set of entertainment tools when you are at home.

Conclusion

By making applications location aware we might see new patterns of behaviour emerge. The distribution of applications might become more intuitive, by delivering solutions based on the possibilities that your current location provides for you. All of this offers the potential for new commercial offerings and for the UI Designer this might lead to new tasks and possibilities. What makes an application location aware? Is there more to this technology than just the usual geo-tagging? How can applications communicate with each other on a location basis? At the same time we, the marketeers, designers and developers, need to take care that this possibility doesn't end up as a new way of distributing commercials, like the bluetooth business ended up, and of course this raises a number of ethical issues too.

After finishing this project, I got involved in even more mobile projects. While working on the 'Location Based Applications' project I still thought that the whole idea of mobile applications is very 'techy', but working with different people I have found that the mobile world is becoming more public and these new technologies more accessible. When WAP technology was introduced in the late 1990s, it was rejected because it was not usable enough. Now the iPhone has shown us that a good UI can sell a technology, even if it is expensive. Now it is up to the UI Designers to spread good applications across all mobile platforms and establish this new part of the business.

Volunteers needed – Interaction website

- Have you visited the Interaction website?
- Have you thought you might like to get involved more in *Interfaces* and the Group?
- Are you interested in developing our community?

Well, if you have answered yes to any of these questions then perhaps you would be a willing volunteer to take care of the Interaction website with the other members of the Interaction Communication Hub.

If you are interested give me a call or email:

John Knight
Vodafone Global Marketing – User Experience
UE Design Definition

Mobile: +44 (0) 750 012 9270
Email: John.Knight@Vodafone.com

www.bcs-hci.org.uk