Automated Journeys – Automated Connections?

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I've rarely felt more urbane than last time I arrived in Tokyo. I had the foresight to bring my SUICA (Super Urban Intelligent Card), an RFID-based smartcard already loaded with Yen left over from my last trip. Card in hand I swept out through the gates of the JR line at Shinjuku station to the nearest automatic noodle restaurant, where I proceeded to select my meal from pictures on a vending machine at the entrance. I touched my card to the machine and received a ticket that I handed to the staff at the desk, where the hot noodles were already waiting for me. Meal eaten, I proceeded to check out what was the #1 bottled water at ranKing ranQueen, and again paid using a simple gesture with my card. The only thing that could have made the experience more complete was if the RFID chip had been integrated in my keitai (mobile phone). Although the SUICA is now at least 7 years old, and many similar systems are in use in Hong Kong, Seoul and elsewhere, it still is a remarkable example of how ubiquitous technologies such as sensing, networking and data access can be used in everyday applications.

It is interesting to note how most of this technology is currently used to increase convenience – and *reduce* human contact. SUICA eliminates the fumbling with coins at shops and subway gates, which could lead to embarrassing lines. But it also cuts down on interaction with other people, especially when combined with various vending machine services. In UbiComp, on the other hand, we have seen RFID tags and other near-field communication technologies such as Bluetooth more often being used with a view to *increase* human contact. Projects such as *Meme Tags* (Borovoy et al 1998), *Ticket-to-talk* (McCarthy 2004) and *tunA* (Bassoli et al 2006) promote a vision that technology can and should encourage communication, especially among strangers.

In fact, it seems researchers more often than not want to imagine a utopia, where everybody loves everybody and wants to hang out with everybody else. "Wouldn't it be great", we say, "if a device on my body could broadcast my interests to everyone around, so that I could strike up exciting conversations during my commute!" Never mind that the person whose taste in music most matches my own might not be the cute girl sitting in the opposite aisle, but the slightly scary middle-aged divorced guy who can't quite keep upright because he already had a few before breakfast. Fortunately, no mobile social networking app has reached enough users to let us find out… yet.

This is not for lack of trying. There have already been several attempts at social networking software for standard mobile phones, such as Germany's *aka-aki* (www.aka-aki.com) and US-based *Loopt* (www.loopt.com). But they all struggle with the same two basic problems: battery life and critical mass.

The first may seem trivial and more than one start-up seems to simply shake it off – isn't everything in electronics getting better all the time anyway, according to Moore's law?

No, this is actually a real killer. A device that pings its surroundings wirelessly with regular intervals, using Bluetooth or Wi-Fi, will drain any sensibly sized battery in a few hours at most. Continuously pulling up and reporting a GPS location can be even worse. It is highly unlikely that users will stand for carrying half a dozen replacement batteries, and barring an unprecedented breakthrough in battery technology the only solution on the horizon is some kind of push solution based on network cell location. Unfortunately, to be useful this requires a degree of cooperation between network service providers that is still a long way off.

The second issue comes less from a lack of user interest and has more to do with the extremely fragmented mobile device market. Whereas signing up for a Facebook account can be done in a matter of minutes, downloading and installing a mobile application has been lots of hard work and beyond the reach of most normal users. This might change very fast, however: with the iPhone 3G and the Appstore, there is now for the first time an attractive platform and sales channel for mobile software. It is likely that as a response the rest of the market will finally consolidate around a small number of standard operating systems (Android, Symbian, and Windows Mobile). This means that quite soon, we will see people downloading and using social software on their phones – and those that hook into existing networks will have a head start. Already, numbers speak for themselves – after the first day of operation, Facebook and AIM are in the Appstore's top-five downloads, with others such as Twitteriffic and MySpace also gaining headway.

This is an exciting time, because suddenly all those research prototypes we have dreamed up over the past decade will have a chance to become real products. All previous deployments of mobile social applications have been limited by access to hardware – research labs like mine typically only have a few dozen terminals to give out at most, and this makes gaining critical mass impossible. Soon, it will be possible to distribute mobile software freely just like for desktop computers. Then we will finally see if people really want to strike up conversations about music on the subway, or perhaps even start swapping household tasks with each other (Kortuem 1999). So what can researchers add to the big corporations and start-ups in the imminent mobile social software feeding frenzy? A sense of perspective, perhaps.

In my own projects, I have tried to approach the problem in an open-ended and explorative, rather than dogmatic, way. By building working prototypes and putting them to real-world use it is possible to go beyond the idealized cases and get some real knowledge on mobile social software, even with a fairly small set of users. With the *Hummingbird* (Holmquist et al 1998), we built the first device for mobile awareness that required no infrastructure, in a time when mobile phones were still not widely used. To get around the critical mass issue we found that we could use it to enhance the interactions in a group of friends, rather than act as an icebreaker for strangers. It turned out to be particularly interesting to use it in situations that spanned work and social life, pointing towards current use of mobile phones. However, we also found that battery life (as always!) and the burden of carrying an extra device meant that the incentive was not enough for people to take it up for extended use. A start-up company that was formed to commercialize the concept crashed and burned, quite predictably.

When hand-held computers with Wi-Fi became available, my group constructed a number of games in collaboration with students to explore new forms of wireless play (Sanneblad and Holmquist, 2004). All the games were constructed so that to win, that players had to communicate with each other *directly,* rather than through the technology. For instance, in a racing game, each player had a unique view on their device. One player was the driver who controlled the car, and the other was the map-reader, who continuously had to feed information on up-coming turns – to succeed, they

had to share information through speech rather than the device interface. Here we learned that the physical context is a very powerful resource for mobile applications, and one that is still not used in any products I know of, even though technically Nintendo DS and other gaming platforms could easily handle it.

Media sharing is another interesting topic for mobile software. With *Push!Music,* we tried to create an application where music would spread among users almost virally, both through automatic and manual recommendations (Håkansson et al 2007). Similar products, e.g. Microsoft's *Zune* (www.zune.com) paint a picture of how music sharing would open up new avenues for social contact. However, we found that even through an extended period of use, where hundred of songs were shared, not a single real-world contact was initiated by people who did not already know each other! It turned out that even though the study participants were very curious about who they were sharing music with, they never crossed over from the technologically mediated communication to actually start talking with each other. This showed that the barriers between electronic and real connections are harder to cross than many seem to think, and this could spell trouble for the more naïve social applications that will flood the Appstore in the coming months.

What this teaches us is that while *journeys* may be automated almost completely, *connections* will be a much tougher nut to crack. I hope to be able to explore this with other workshop participants in Seoul.

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