Zoogy-ME: an approach to user-centered design for proximity-based social technologies

Arianna Bassoli
Media and Communications
The London School of Economics
a.bassoli@lse.ac.uk

Abstract

In a World where the main role of Information and Communication Technologies still seems to be the one of connecting people over distance, a process of remediation is slowly showing how new ICTs also have the opportunity to improve the connection between individuals and their immediate surroundings. This paper presents an attempt to understand how this emerging set of technologies, later addressed as 'proximity-based technologies', could be researched by translating the characteristics of the context where they will be used into design solutions for new applications. This project Zoogy-ME, a real time communication tool aimed to support the creation of face-to-face interactions among students on campus, is the result of a short-term ethnographic project conducted at the London School of Economics.

Keywords Mediated face-to-face interactions, proximity-based technologies, user-centered design

Introduction

Over the past few years, the introduction of short-range wireless technologies, such as Bluetooth and WiFi, has stirred a new trend in research and development that focuses on what we can call 'proximity-based technologies'. This set of Information and Communication Technologies includes applications that promote a mediated interaction between humans and their surroundings, in the sense of other humans or the physical environment they inhabit at a particular time. The proximity factor is usually dictated either by the characteristics of the technology used to connect digital devices, or by the distance of users interacting through them. It represents, in general, a concept that is in opposition to the common assumption that ICTs have the main purpose of connecting people over distance.

Most of the location-based [1;2] and peer-to-peer mobile applications [3;4] belong to this category of ICTs, which still remains mainly at a research stage and has only in a few cases already hit the market place. Considering, for instance, a mediated interaction between humans in proximity of each other, from a commercial point of view the gaming industry is pioneering, by having recently introduced portable consoles that encourage user to play and chat with their co-present friends [5], while stakeholders of the mobile phone industry are

slowly trying out a way to connect strangers over Bluetooth, through mechanisms of personal profiling [6].

If we keep focusing on the socializing aspect of proximity-based technologies, it could be argued that there is a component of redundancy in supporting through ICTs a level of communication (i.e. face-to-face) that is already available and codified. In other words: why would people in physical proximity want to communicate with each other in a virtual way? In general terms, finding people around us that share our interests could be a way to raise the perception of familiarity and sense of belonging within a certain environment. Sharing an experience (such as listening to the same song) could create a subtle bonding between strangers that might eventually lead to a decrease in anti-social behaviour. Communicating more with people nearby could finally overcome a lack of information about the surroundings (i.e. acquiring tips about places to visit and items to buy), and ultimately lead to cooperative instead of competitive behaviours. In summary, a possible outcome of using proximity-based ICTs could be the enhancement of face-to-face interactions, and a general increase in interpersonal exchanges among people who would not normally interact with each other.

Nevertheless, these represent only speculations at this stage. While the commercialisation of a wider number of proximity-based technologies will probably be inevitable, further research on the motivations that can lead people to interact with each other and the benefits of these interactions seem to be needed. Studies on urban computing are already applying social science methodologies to the analysis of HCI requirements [7], with the aim of understanding how the study of current social dynamics could be translated into the design of new ICTs [8]. In the case of proximity-based technologies, the variety of situations where they could be used suggests that an analysis of every specific context of interaction is crucial for assessing both the social desirability and the system requirements of new applications.

Figure 1. Proximity-based social technologies could encourage the creation of new virtual connections among co-located users. This process of communication and data exchange could eventually lead to an increase of face-to-face interactions

Following this trend of user-centered design, we have developed at the London School of Economics a short-term project, focused on understanding how the introduction of proximity-based technologies could improve the social dynamics of the campus life. In order to establish whether there was a genuine need for technology-enhanced interaction at the

LSE campus, a qualitative social study has been conducted within the community over a period of two months. The results of this study show that students at LSE feel the difficulty to socialize with other students and the pressure of the competitive environment. Zoogy-ME, a proximity-based Instant Messager that performs profile matching, represented the technical solution that we envisioned for addressing this social problem.

Social investigation at LSE

The methodology used to motivate and inform the design of a new proximity-based application consisted of a short ethnographical study where participant observation and interviews were conducted. The observation took place over a period of two months in total at the LSE Library, within the space dedicated to computer usage. Patterns of other students' computer usage were also analyzed. Moreover, social interactions among students in the computer area were observed, e.g., if people were talking to each other and on which occasions.

The study started without a specific hypothesis or research question in mind. The assumption was that the human-human and human-computer interactions observed over time could provide insights about what problems within that context could be addressed by proximity-based ICTs. The hypothesis gained in terms of subjective participation to the activity was that the social life of the campus could be improved in various ways. The observed usage of computers led to a decision in terms of a technology that could partly alleviate this problem. Nevertheless, the problem of socialization within LSE had to be further enquired, this time by investigating the social life of the campus outside the Library and directly involving members of the LSE community.

Figure 2. The Library at the London School of Economics. Results from our social study show how students often use the computers provided to chat with friends and loved ones at a distance. At the same time, interviewees said to feel disconnected from other students of the University.

The interviewing process consisted of nine semi-structured interviews with LSE students. Because the problem that was hypothesized during the participant observation needed confirmation, the interviews were planned in order to better understand how students perceived their social life cycle at LSE, and if there were problems related to it. The sample

of interviewees included four students in their first and two in the third year of their Bachelor's, two Master's students and a PhD student in his third year. We believed that students in different years of study would have different experiences and perspectives on LSE social life. The questions asked addressed the issues of how the students feel about their social life at LSE, if they are satisfied by it, how they managed to make friends and how these relationships developed with time, if they would like to find at the campus more people with similarities, and finally if they would like to use a system able to help them discover people with similar interests nearby.

It was interesting to notice that, even if students at the computers spend significant time presumably working on their school assignments (that is using Word), they also make consistent use of emailing and Instant Messaging. This last behaviour was probably the most unexpected; almost three students out of five have in the background MSN Messanger open, often with more than one window of conversation at the same time. Because Internet access at the campus is provided for free, it seems likely that the students take advantage of this for communicating with friends and loved ones, mostly over distance. Network websites (such as Orkut or the Face Book) are also popular in that context.

Concerning social interactions within this context, sometime people talk to each other, but most of the time they come to work at the computers and then leave without interacting with anyone. If the space was used only for work purposes this would be totally appropriate, but because students use computers at least half of the time for socializing and communicating purposes, this looks rather contradictory. It could be explained by a phenomenon described by Gergen as 'absent presence', happening when 'one is physically present but is absorbed by a technologically mediated world of elsewhere' [9].

The personal experience of the researchers lead to the conclusion that there could be dysfunctions in terms of socialization on the campus; the opinion was that some of the time spent communicating with people elsewhere could be dedicated instead to face-to-face interactions. This could be supported by some recent studies about Internet usage, which have highlighted that the more time people spend surfing the Net, the higher their level of loneliness and depression [10], mainly because of a decrease in face-to-face interactions. An Instant Messaging application that would give the students access to everyone else that is physically present on the LSE campus and logged into a computer, and would provide some information about them, was the technological solution that we envisioned to encourage the creation of face-to-face social interactions.

Interviews later showed how processes of socialization on the campus depended much on personal character and inclination; outgoing students were honest about saying that they do not usually have social problems because of their constant effort in making new friends. Nevertheless common beliefs and socializing trends also emerged from the interviews. All students but one agreed that the beginning of the first term of the first year is usually the most active in term of socialization; afterwards, mutual engagements dramatically decrease, with the extreme of students being at their last year of study who rarely perform any social activity at the campus with others. Study in fact seems to become with time the main purpose of students for being at the campus. Six interviewees complained about the little inclination that students have to interact with others because of their workload, and about the high competitiveness of LSE students in general. Four interviewees out of nine pointed out that

improving the cooperative behaviour of students at LSE and supporting more interactions could improve both the social life of the campus and the academic results of the students.

All the students expressed an interest in meeting new students with similar interests; one girl in her first year noticed that it would be also helpful to meet people of different nationalities and races, as usually bonding happens between people of the same country of origin. When explained about the system that we had in mind to implement, five out of nine said they would be curious about using it, the others expressed concerns but provided useful insights about design options. Especially students in their last year or Master's and PhD students said that they would use the system only in very specific occasions and for specific purposes. These would include opportunities for academic cooperation or the possibility to find people that fit specific prerequisites (for example those who hold certain information or knowledge, or who have matching niche interests).

Related work

An interesting and related user-centered project on context-aware computing developed within a University environment, UC San Diego, is ActiveCampus [11]. ActiveCampus, a large-scale umbrella project involving various mobile technologies, is nevertheless more oriented toward the ubiquitous and location-based aspect of new ICTs; moreover, it focuses on supporting existing social links among students, and on improving the teaching/learning dynamics of the University.

Although there are many applications that attempt to promote the human activity of 'interaction', (Messenger applications such as MSN, Yahoo) we were able to find few 'off-the-shelf' solutions that restrict context of use to location whilst providing support for mobile connectivity. Zoogy-ME being a combination of different technological platforms, represents a concept that already exists. It provides similar features to Instant Messenger applications (i.e. MSN, Yahoo!), 'Friend of a Friend' sites (i.e. Orkut) and personal advertisement websites (i.e. Craiglist). Popular Instant Messaging applications such as Yahoo! and MSN provide a platform to connect to other users (friends and loved ones) around the world. While they are designed to promote interaction, they are different as they do not restrict usage to a particular local area. The fact that these applications can be run from any internet point of presence represents both a strength, 'ubiquity', and a weakness, the promotion of only active virtual interaction. Finally, as the system also requires that prior relationships exist between users (i.e. you add friends to your list, not strangers) it also focuses on only reinforcing relationships.

Zoogy-ME

Results from the social investigation conducted at LSE led to the main design choices for the Zoogy-ME application. We tried to understand what technological solution could lead people to better connect with each other while at the campus.

Zoogy-ME mainly consists in an Instant Messaging application where LSE students can visualize who else is currently connected in the LSE network, depending on the preferences they have chosen. The Zoogy-ME website is only accessible to LSE students but not specifically within the campus; on the website students can specify their interests and define a personal profile that others can access. When on Campus, students can see who better matches their profile, and who is up for going out and chatting. Users can in fact select their mood (happy, normal, sad) and state (up 4 sumthin', want 2 chat, have 2 study, discrete). The decision was provided for users with many preferences, in such cases, a view of user statuses combined with a % similarity rating might better enhance interaction. Another feature that the Instant Message application provides is the ability to send zOOgies, asynchronous messages with a configurable lifetime that can be sent to a user or group of users. Although the zOOgy was designed to provide non-intrusive communication between users, we feel that this one feature is the least deterministic of all. The maximum lifetime of a zOOgy is seven days, and primarily provides an opportunity for users to view what was sent to them. It also enhances group interaction, and acts as a channel for the virtually timid.

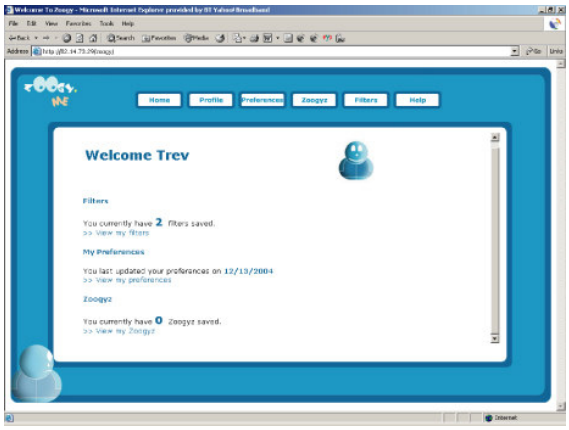

Figure 3. Home page of the Zoogy-ME website. From Users can then change the standard Zoogy-ME view this page students can view and modify their profile, their zOOgies and their preferences that will act as filters on the Client side.

The zChat is a mini-chat session designed to support multiple-user discussions. It is designed so that users can be invited by a simple drag and drop function. It is designed to avoid the hassle of multiple IM sessions, which can be difficult to coordinate and manage, the hope is that this feature will also enhance group interaction.

Because of the high penetration of networked computers within the campus, we envision the application to be used by students mainly in a static manner, within the Library or dedicated computer rooms. According to our investigation in fact this would generate a rather smooth integration between current dynamics in terms of technological usage and potential new ones enhanced by Zoogy-ME. Nevertheless the application could be used in a mobile way,

through the Wifi access provided by LSE within most of the campus spaces. Moreover, a version of Zoogy-ME has also been designed for mobile phone usage. However the time constraints of the project did not allow us to implement a working prototype for it.

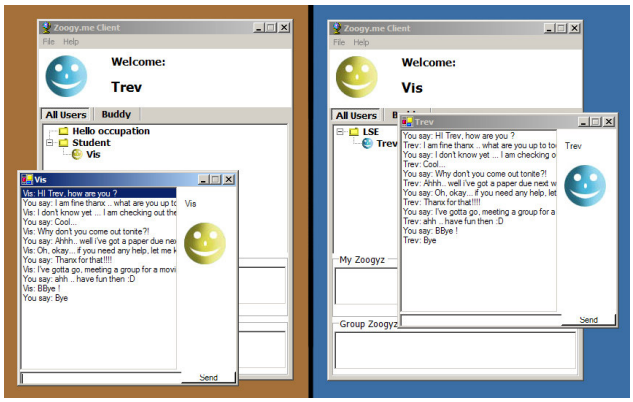

Figure 4. Two users within the Campus communicating via Zoogy-ME. Decision about starting a conversation with a stranger can be encouraged by the desire of finding people with similar interests or of performing social activities. Other motivations include the possibility to establish collaborations with other students or to obtain information about school.

Zoogy-ME works on the idea of promoting social relations through the combination of synchronous and asynchronous communication within a specific region, no restrictions are placed on users as the idea is to allow them manage the technology, not to let the technology manage them. This can influence the way social interactions happen and develop, and hopefully better support the creation of new face-to-face relationships. The fact that virtual connections are situated in the same spatio-temporal context encourages users to communicate, share information and arrange activities based on instantaneous temporary needs and desires. These can vary from looking for academic information to deciding to go out for dinner. The filter mechanism helps users finding others with similar interests or with characteristics that are valuable to them at a specific time. An implementation of a Zoogy-ME prototype, running on PCs, was the result of this design process. The mobile aspect of future applications or of further versions of Zoogy-ME has been broadly discussed, together with the possibility of generalizing the application to other contexts of interactions or other Campuses. We hope to be able to implement Zoogy-ME at the LSE campus in the near future, in order to evaluate the efficacy of the design and of the concept, and to gain valuable data for iterations of the application and for the design of new ones. We are in fact not sure that Zoogy-ME will succeed in improving the socializing experience provided by the London School of Economics, and in diminishing the level of competitiveness of the school. Further work on the design side will have to focus on the collaborative side of academic activities that can be orchestrated by the application.

Conclusions

The Zoogy-ME project represents an attempt to apply a user-centered approach to research in the field of 'proximity-based technologies', which can be considered as a set of technologies that mediate interactions occurring either among people who share the same physical space for a certain period of time or between people and their surrounding environment. While these ICTs will probably be commercially available soon, further research on their social desirability and potential benefits arising from their use could help to meet the actual needs of their future users.

We chose a campus environment as the focus of our investigation, with the intent of understanding how existing social problems could be addressed by proximity-based ICTs. The perceived and observed dysfunction of traditional mechanisms of socialization and cooperation at the London School of Economics led us to design a real time communication system aimed to encourage new face-to-face interactions among students, and eventually corrode their highly competitive behavior. The design of the Zoogy-ME has been inspired by a short-term sociological study conducted on campus. Despite this effort, the actual usage of the application and its effects are hard to predict at this stage; it is therefore also impossible at this stage to back up the potential benefits we envisioned for its usage and the drawbacks of it, as well as to assess in general barriers to the adoption of the technology. Because of this, we believe this project requires a further step in terms of an evaluation of Zoogy-ME in real world conditions, which means that there will be an attempt to install the application in the LSE network so that students can make actual use of it for a certain period of time. This process will probably lead to changes in terms of design and to a further sociological investigation in terms of actual usage. In the case that the results of this research show a general improvement of the perceived social life of the LSE campus, we would be able to assess the social desirability of an application similar to Zoogy-ME. In the case of negative results, a different technical solution could be attempted and the process reiterated, up to the case where proximity-based applications demonstrate to not be appropriate to address social problems existing at the LSE campus.

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Acknowledgements I would like to acknowledge all the hard work of the participants of this projects, Eze Iheukumere, Mohammed Sater, Benny Fong, and Trevelee Deutschmann. I would like to thank Dr. C. Sorenson, Dr. E. Klecun from the Information System Department at LSE, and the Student Union of LSE for their support. We would like to thank LSE students for their collaboration.

Bio

Arianna Bassoli is currently doing a PhD in Media and Communications at the London School of Economics. Her main interest is to design technologies that can support social connections among people who share the same physical environment. Before starting her PhD, Arianna worked for three years as a research fellow at Media Lab Europe, the European research partner of the MIT Media lab. She has a first class honour degree in Communication Sciences from the University of Siena, Italy.

Coming from a mass media background, she is now very fascinated by the potential that peer-to-peer applications have to decentralise the production and distribution of multimedia content, and to support grassroots phenomena. At Media Lab Europes she has worked on a project called WAND (Wireless Ad Hoc Network for Dublin), with the aim to create a testbed network for new ad-hoc applications and services that could integrate with the interests and needs of the local communities. Arianna's last project at Media Lab Europe was tunA, a mobile wireless application for music sharing.

Arianna has presented at various ubicomp and music technology conferences all over the world, including Ubicomp 2003/2004, 5th Wireless World Conference, ISEA 2004 and the Mobile Music Workshop 2004. She also participated in the panel on 'The future of peer to peer on mobile networks', Austin Mobility Roundtable 2004, and the panel on 'Ubiquitous Music' at Siggraph 2005.