

What’s Your Social Doing In My Mobile? Design Patterns for Mobile Social Software

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Abstract

Making “mobile software” into Mobile Social Software suggests that social beings assume an explicit role in the untethered, software-based experience. If we borrow from the idiom of Social Software, we can say that Mobile Social Software are techniques for articulating social practices that create, maintain and manage networks of relationships amongst people and encourage the circulation of culture in untethered, networked-based usage contexts. The design challenge for such techniques is to avoid prioritizing instrumental aspects of mobile terminal devices over the actual social practice that software attempts to facilitate. I suggest herein that this challenge can be addressed by moving to the foreground specific practice idioms as frameworks for design prototypes, avenues for research and development, and contexts for study and theory objects. This design approach is described as a point of view on Mobile Social Software, along with an explication of this perspective through a taxonomy of Mobile Social Software design idioms — *Spatial Annotation*, *Proximity Interaction*, and *Presence Awareness*.

Keywords

mobile social software, mobile, interaction design, spatial annotation, proximity, presence awareness, location based services

ACM Classification Keywords

H.5.2. User Interfaces: *Theory and methods, user-centered design*. H.5.3. Group and Organization Interfaces: *Theory and models*. J.7. Computers in Other Systems: *Consumer products*.

Introduction

Mobile Social Software describes the creation and maintenance of social formations and the circulation of culture as sustained through the use of mobile communication networks, devices and terminals. The term Mobile Social Software packs together a design tension between the desires of people to be social and the means by which they achieve their sociability. Mobile Social Software is both the means of achieving

sociability *and* the action of energizing one’s social networks. It is both the artifact and the activity. It is a device, such as a cell phone, iPod, laptop, *keitei*, NintendoDS, Tamogotchi, and the practice engaged, such as playing Nintendog while networked with a friend who is also playing nearby. It is important to underscore the depth of this cohesion between the instrument and the activity. For instance, when we speak of SMS as a kind of Mobile Social Software, we mean both the instrumental *short messaging service* and the *action* of SMS’ing, with all of the implications associated with the social interaction of communicating amongst one’s network of friends, colleagues, parents, children and so forth. This is another way of saying that mobile devices are also social devices in the degree to which they mediate social relationships, social networks and manage the circulation of culture that sustains such networks.

Why is it important to emphasize the two-sidedness of Mobile Social Software? Because networks of social beings can be shaped by mobile communications devices at the same time that mobile communications devices are shaped by their use and design as instruments to mediate social networks. Appreciating this dialectic makes devices amenable to DIY-style “refactoring” when they are in the hands of users, turning the “end-user” into an important member of the design team.

Software becomes social in its action — the practices and uses for which it was designed or for which it becomes employed by those who make use of software. The interplay between technological resources — software, devices, networks — and the articulation of social actions — communicating amongst one’s social network — are what make software “social” and, alternatively, social networks “mobile.”

There are valences to the “MoSoSo” meme. It is new and exciting. Also, it is age-old and exciting. Any term such as this whose mnemonic fits so nicely into the argot of the era of the Internet anticipates an ahistorical wave of near-future speculation and “innovation” activity. Mobile Social Software *wants* to be new. It wants to be different so that its future remains full of promise and not something that has already been done.

What makes it new and exciting? The answer lies in the way Mobile Social Software coheres social practices that arise in mobile, untethered contexts into a category of technical designs that support the creation and maintenance of one’s social networks. The speculation in play is that what worked for the world of tethered, sit-at-a-desk social networks — Social Software — may work when you add the “mobile” prefix. This may not always be the case, of course. Mobile usage contexts and scenarios are quite different from those of the tethered usage context, a point sometimes lost in the design of mobile applications.

But Mobile Social Software is *also* age-old in Internet years, and this point is crucial to consider. As new as we want it to be, and as excited as speculators in this new terrain are, it is crucial to think about Mobile Social Software in its precise context. Mobility and the techniques for articulating social practices in untethered usage contexts — this is really what we mean by Mobile Social Software when we are also not just angling for some nibbles from the venture capital community. The mobile phone itself, before it became a computing platform, was the Mobile Social Software artifact *par excellence*. Voice — and only later — text-based SMS, allows for the kind of social communication that latter day Mobile Social Software strives to accomplish. Voice and text by themselves are often enough to be mobile, sociable and in one’s social loop because such registers of communication are simple in the way they facilitate mobile, untethered linkages amongst people.

Design for Mobile Social Software

Mobile Social Software becomes social when it resonates with actions that are legible and consistent with existing social practices. Not all social practices are extant social behavior or forms of sociability. New frameworks for creating and maintaining social networks arise based on the desires of social beings and the possibilities latent within designed technosocial artifacts. Design for Mobile Social Software is about design for technosocial practices — designing instrumental resources that facilitate social actions, practices, behaviors and mediate social desires.

The “mash up” design approach, despite what the name might suggest, sometimes leads to thought provoking prototypes. What is really meant by “mash up” is the interweaved relationships amongst technology memes and social memes.

Hidenori Tomita’s insights on the “intimate stranger” is a useful explication of this design approach. In the essay “*Keitai* and the Intimate Stranger”, Tomita describes telephone communication practices in Japan that emerged from a desire for intimate, anonymous contact. [11] The intimate stranger is a different kind of social formation because networks that allow for a faceless kind of anonymity are a new vector for mediating social communication. Networks such as the telephone and the

Internet allow for a kind of shield that could not arise without the “..anonymity guaranteed by cyberspace.”

It is significant, though, that Tomita introduces the concept of the intimate stranger through a children’s picture book that relates a telling fable in which a goat and a wolf share a shelter in the dark, becoming friends without knowing that they are hunter and prey. The architecture for anonymous, intimate configurations of social beings resonates with an existing imaginary — having engaging contact with strangers and even foes anonymously. The intimate stranger can only count as “new” in that the technosocial resources that facilitate the configuration provides the shield of anonymity. From a mobile social software design perspective, the “intimate stranger” is a technosocial design composed of anonymity networks, the fluidity of social action at a distance that mobility allows and the desire for intimate contact.

It is safe to assume that individuals will not sustain an engagement in an activity that is culturally illegible, or does not resonate with their sensibilities around sociability. When Mobile Social Software designs do not resonate with users, it can only be for their lack of a cultural legibility. When there is no resonance with an existing social practice, Mobile Social Software becomes, simply, software.

Design Patterns for Mobile Social Software

I would like to provide a schematic taxonomy of some prevalent Mobile Social Software practices as a way to explicate the design of social practices as mobile social practices. A taxonomy will help think through the near-future possibilities for creating compelling Mobile Social Software usage scenarios. Rather than focusing foremost on technology topics, my approach is to start first with mobility in terms of bodies moving through space, something I refer to as “motility” — a term borrowed from biology that suggests purposeful, individualized motion.

The risk of this approach is the possibility that motility becomes a way of expressing some universal character about the movement of social beings without consideration as to the local, culturally particular practices and semantics associated with that kind of mobility.

The design patterns described in what follow serve one main purpose, which is *to emphasize the value to design when the characteristics of mobility, movement and untethered networking are considered as part of the interaction syntax*.

I hasten to emphasize that there is little use in assuming that any social practice has the same implications for design or semantic legibility across micro or macro scales of cultural specificity. That’s another way of saying that what works in Helsinki cannot be expected to

work, or even “make sense”, in Harajuku, Huntington Beach or Honduras. The mobile social practice idioms described herein are frameworks for consideration, that are put forth so as to highlight the action and activity of mobility.

Spatial Annotation

Spatial Annotation is the practice of authoring or creating remarks that are anchored to a specific geographic space. In many of the exemplar projects in this idiom, an index is created between a physical location and some variety of authored expression. Turning this indexical bridge between a geographic location and the experience or voice of social beings is the enticement of the Spatial Annotation practice. Spatial Annotation provides an additional coordinating parameters that creates a richer means to record, share and re-play the experience.[10] If we consider that the experiences of social beings may often have a locational component — events “happen” not solely in the abstract of thought, but often in space and time — anchoring those experiences with the addition of a bit of geographic meta data provides an additional register of information with which to catalog the experience.

We might call such marked, annotated locations *locales*, so as to distinguish them from the more instrumentalized parameters of space, such as latitude, zipcodes, street addresses etc. “Location” is the kind of data object more amenable to computers and GPS units which have trouble understanding the experience of social beings.

An example of an extended series of investigations into the social character of spatial annotation is a project called **PDPal**, a spatial annotation application for the Palm PDA.¹

The main interaction scenario for PDPal has the user input criteria that catalogs their social, tactile, weather, and speed environments, and the PDPal application delivers a pictographic “haiku.” The user is also able to add a short text annotation and share the annotated pictogram via infrared beaming to another user’s PDA.

PDPal was designed as a creative, aesthetically rich lens through which mobile experiences can be captured, shared and recollected. It was designed as a purposely anti-geographic, anti-cartesian spatial annotation device, a piece of Mobile Social Software that deliberately altered the typical usage scenario expectations of mobile software. By altering conventional usage scenarios, the project was an attempt at learning what alternative social practices might arise when resisting convention.

Another project notable for its low-tech/high-tech hybridity is **Yellow Arrow**, a Spatial Annotation project that combines physical markers that identify a story that

¹ Projects mentioned in this paper are referenced to their project web site at the end of this paper.

has something to do with the location at which the marker was placed. The markers — yellow arrow-shaped stickers — each have a unique serial number that is used to retrieve the annotation, either through the web or from one’s mobile phone.

Proximity Interactions

Proximity Interactions refers to using the relative physical distance between people, objects, devices, and geographic locations as a component of the interaction syntax. One of the canonical examples of Proximity Interaction in a mobile social software context are social software that determine whether one’s friends are close by.²

Other uses of proximity include a series of purposely range-constrained scenarios that use as a design advantage the inherent technical limitation that 802.11 networks are only effective, without modification, over a distance of tens of meters. One such example is **WiFi.ArtCache** a kind of digital art gallery that only works when visitors and their mobile devices are within range of the digital gallery’s WiFi node.

Closeness should be an important component of the interaction syntax for Mobile Social Software. A motivation for this derives clearly from the nature of mobility — people move, and our devices move with us and, thus, we vary in our relative distance to ever other thing in the world, including other things that have the capacity for networking and communicating. Compelling possibilities for proximity-based interactions arises when such things in the world are able to determine their relative proximity to each other and, further, establish network-based communication. Proximity Interactions force one to consider the dynamics of how space is occupied by social beings. What are the various space-occupying social practices? How can physical distance become a parameter for communication, sharing, playing? How mobile devices become mobile social devices based on our relative closeness (or “far-ness”) from other people and the routes they take? What interaction scenarios can fruitfully consider the social

² Examples of this include Nokia Sensor, Mobiluck, 6th Sense, BuddyPing, Meetro, Mobido, Streethive, WhoAt, Netomat, Lovegetty and Dodgeball, and projects of this sort continue to proliferate. These projects are “social” in the sense that they mediate face-to-face encounters with friends, friends of a friend or even strangers if the parties are within physical proximity of one another, either through self-identified location, AGPS location derived from location-aware handsets, Bluetooth “sniffing” or other means. The variety of applications that establish intimate contact between strangers for the purposes of dating relationships are especially prominent, not unexpectedly.

character of buildings and places heavy with meaning such as home, school, work, shopping, or memorials?

This is a particularly exciting area for consideration in the Mobile Social Software arena, especially because *proximity* is uniquely suited to mobile usage scenarios. In “tethered” network scenarios, much work is done to obliterate the contingencies of physical distance. Everything from faster broadband connections to sophisticated “network edge” caching operations are designed with the main goal of making all services, content and data accessible with negligible temporal delay from anywhere in the world that one can connect to the canonical Internet. Distance and, by extension, *proximity*, are things to be eradicated, not leveraged as a potentially fruitful component of the interaction and networking mix.

There is an expected bias toward urban usage contexts for proximity interactions because urban settings have the kind of critical congestion that makes it possible to design for situations in which two or more people are sufficiently close to allow for some kind of engagement, anonymous or otherwise.

Jabberwocky is a project developed by Intel’s Urban Atmosphere’s project at its Berkeley Labs. This project works under Stanley Milgram’s “Familiar Strangers” hypothesis that states we pass by the same people without really knowing who they are, but nonetheless recognizing them as familiar. When our familiar strangers are not around, we somehow notice their absence. In the era of mobile devices, capturing the unique Bluetooth identities of those stranger’s phones and PDAs and creating an electronic visualization is a form of proximity interaction. Jabberwocky creates a visual representation of the phenomenon, depicting iconographic representations that indicate, with varying colors, how often one has passed by the same Bluetooth device and, by extrapolation, the same person.

Presence Awareness

Presence Awareness is a form of social communication that provides contextual cues indicating the location, availability for interaction, tasks and activities as well as other indicators as to the state of being of those in one’s social network. Instant Messaging provides a form of Presence Awareness merely visual and auditory cues indicating whether one’s buddies are available, active or away. More advanced cues indicate whether a buddy is using a mobile device (a Sidekick or Blackberry, for instance) as an IM terminal, suggesting that they may be on the go, rather than at a tethered workstation.

Much early investigations into presence awareness were focused on its use in collaborative work environments through the use of messaging and video “telepresence” style video displays.[3, 5, 6, 12, 13] This research is largely focused on creating workplace efficiencies by allowing colleagues to know each others availability or present tasks, useful when working on

collaborative projects, particularly when team members are working remotely. While these systems are useful, they raise consequential privacy and surveillance issues. Another potentially fruitful area for Presence Awareness is more casual social contexts. Recent work has begun to explore the interpersonal uses of Presence Awareness in a way that aims at creating a mobile, digital networked form of reaching out and touching someone.[8, 12]

Ito and Okabe, in their insight rich explication of the technosocial situatedness of mobile messaging amongst Japanese teens, describe “ambient virtual co-presence”, a kind of “ongoing background awareness of others, and of keeping multiple channels of communication open.”[7]

A characteristic of Presence Awareness in the context of their study is a “sense of ambient accessibility, a shared virtual space that is generally available between a few friends or with a loved one” that “do not require a deliberate opening of a channel of communication but are based on the expectation that someone is in ‘earshot.’”

As distinct from the goal of creating workplace efficiencies Presence Awareness in the interpersonal social situation has a far subtler agenda — communicating affection, state-of-mind, present activities and emotional moods. This register of communication has less to do with finding out whether a colleague is available for a conference call, and more to do with projecting “...a sign or smile or glance that calls attention to the communicator, a way of entering somebody’s virtual peripheral vision.”[7]

Paulos describes this kind of Presence Awareness as a kind of mediated communications tool that create “nondisruptive interaction when not co-located” that people can send “quickly, efficiently, and often without being distracted from their current task.”

“Communal interfaces should allow for easily establishing and maintaining emotional, ambient connections. Our studies of co-located human interactions led us to the following design criteria for communal interfaces: (1) non-disruptive I/O (i.e., ambient), (2) always on, (3) personal association to the communication artifact, (4) support for nonverbal communication, and (5) attempt to provide some level of exchange of human emotions (i.e., emotional interface). gestures.”[9]

Several Presence Awareness projects that fall within this design idiom straddle the boundary between emerging and art technology practice, and are worth mentioning. These are forms of Presence Awareness that are specifically designed for scenarios in which individuals are in different physical locations, yet still wish to share some sense of “presence” with others, typically with a minimal degree of interaction. What is unique about these projects is the apparent contradiction

in creating *rich, meaningful conveyances of presence through a minimal interaction syntax*.

Lovelet, is a affection conveyance device, proposed as a “wearable communication tool for intimate people to naturally and timely convey affection ” by allowing your to turn on a small, embedded warming device in the wrist-worn device when your *Lovelet* indicates that your partner is cold.[4]

Virtual Intimate Objects allows a user to send their partner a simple message that controls the color of a very small indicator on their computer’s taskbar. The interaction syntax is such that the color changes depending on when the last time the other partner had clicked on their corresponding indicator.[8] While not strictly a form of Mobile Social Software, the VIO study serves as a useful research vector on the topic of Presence Awareness, and is being investigated in a mobile context through the development of portable VIO prototypes.

With the proliferation of free, open and accessible mapping service on the web, adding geospatial location into the Presence Awareness mix introduces new possibilities, particularly in the context of a familiar mobile coordination activity — rendezvousing.[1, 2] Mobile device applications such as Mologogo allow one to see on a map where one’s friends are nearly in real time.

Conclusions

Empowering mobile computing is crucial to realizing the vision of a human-centric, pervasively networked social world. That empowerment comes from comprehending that human-centric means that the instrument — the device — must knit together with social practice in order to empower people. Empowering mobile computing and empowering people can become coexistent goals when we best understand those mobile social practices that are legible to human beings in specific cultural contexts. Such understanding can arise through user study, ethnography, design research, even creative and artistic uses of advances in technologies. Staring with a rich exploration of what existing mobile social practices are is crucial, even before specifying, designing or building technical instrumentalities that have a deficit of human-centric design.

Bio

Julian Bleecker is a Research Fellow at the Annenberg Center for Communication and an Assistant Professor in the Interactive Media Division at the University of Southern California. He is also Director of the Mobile and Pervasive Lab, a near-future research and development lab focused on prototyping and scenario design. His research vectors include creating Mobile Social Software and Mobile Social Devices, focusing specifically on social practices that fall within the idioms of *spatial annotation, proximity interaction and presence*

awareness. He received his Ph.D. from the University of California, Santa Cruz, where he wrote his dissertation on technology, culture and entertainment. He has a Masters in Engineering from the University of Washington, Seattle, and a BSEE from Cornell University.

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Project URLs

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<http://del.icio.us/jbleecker/PresenceAwareness>

<http://del.icio.us/jbleecker/SpatialAnnotation>

<http://del.icio.us/jbleecker/ProximityInteractions>

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