

Perpetual and Pervasive Contact in Social Groups

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ABSTRACT

In this paper, I discuss how social groups maintain shared awareness with a tool enabling perpetual and pervasive contact between group members. The mediated sensation of presence between two people has often been discussed in relation to mobile telephony and text messaging. Here, I outline a prototype which supports a similar kind of basic interaction, but for individual social groups, and illustrate how it was used in practice. In reflecting on shared awareness, I highlight the importance of low-effort communication, flexible representations and how perpetual contact can lead to disruption.

INTRODUCTION

Text messaging can be used for maintaining peripheral awareness of others' activities through the exchange of short updates on a person's activity or observations. It is largely text messaging's "lightweight" nature which supports these kind of micro-updates, which are easy, quick and cheap to send, and for the receiver, easy to glance at, ignore or reply. Through the ongoing exchange of these background messages, there is a sensation of continual contact, or that the person is there with you, sharing the same space as you in turn share theirs. Ito observes: "[t]here is an important sense in which text messages ... inscribes a flexible but very concrete place-like awareness, a sense in which a small peer group inhabits the same ever-present communicative space" [3].

It is a discussion of this "communicative space" (ibid.) or "perpetual contact" [4] in a group context which is the subject of this paper. Technology such as mobile phones can facilitate a sense of presence of a remote person. For example, from their bedrooms, teenagers can continue socialising and keeping in contact with their friends after school, escaping parental and spatial restrictions [3]. In this case, presence is usually exchanged between pairs with some sense of group presence established by cognitively combining these exchanges (Figure 1, left). In this paper, I discuss a similar phenomenon of technology-facilitated presence drawn from a large-scale, longitudinal study of mobile social software, however with an emphasis on *group presence* (Figure 1, right) rather than presence maintained between dyads. I suggest that this sense of group presence is afforded by localised, perpetual and pervasive contact and pre-existing social ties.

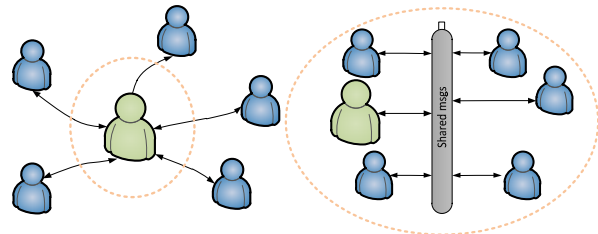


Figure 1. Left: One-to-one communication. Presence awareness by each party established as an aggregate of communication. Right: One-to-many communication. Presence awareness shared by all parties through shared communication channel.

CASE STUDY: RHUB

Rhub is a system designed to support informal group communication, coordination and sharing. Further details of the system are provided in [1] and [2]. Rhub was deployed for over 1.5 years with over 170 users, mostly university students of various disciplines.

Although at its core a website, one of the novel aspects of the system is that it is designed to be used across a range of devices using a simple text-based command syntax called the *console*. Rhub's various features can be used from the web, instant messaging (MSN Messenger and XMPP/GTalk), text messaging, MMS and email. With the console, the system is usable from everyday mobile telephones without requiring installation or maintenance of software or mobile data fees. Variances between devices and systems are smoothed over with no manual effort required on the part of users. A text-messaging interface was particularly important when the system was first deployed in 2005, as our users' most common type of handset was a basic mobile phone without internet access.

The console supports major Rhub features, for example constructing and manipulating groups, inviting people to the system, sending messages and setting location and status. Text commands can be sent using one of the available input channels, which was internally processed by the system's webserver, action taken, and a response forwarded back to the same input channel. For example, to send a message to the "tennis" group, a user can issue the command `>tennis: Who wants to play this afternoon?`, which would then be distributed to all members of the "tennis" group. Rhub uses several characters to indicate meaning, for example `>` is used consistently for sending messages, `&` for denoting a group,

and @ for location. These can be combined, for example `>@courts: What are conditions like?`, would send a message to everyone who has set their location to “courts”, or `@courts?` would return a list of friends who have set their location to “courts”. Various shortcuts are also implemented, such as if a user did not use identifiable syntax, the command is treated as a reply to the last entity they received a message from (typically a group).

Users of the system can create various artefacts, such as uploading and organizing web links, photos, and geo-referenced locations. These can serve to support or document social activity, for example uploading photos from a party, or starting a discussion around an interesting web link. Activity on the system is largely group-centric rather than person-centric. Groups in Rhub are lightweight: easy to create and people are automatically added to a group when invited. This in turn encourages people to create and be a member of several groups according to their interests, and users created groups on the basis of existing social ties, such as a group of friends who liked to meet and play cards.

Messaging is the most popular use of the system, and Rhub supported mailing-list style threaded discussions and instant messages, oriented around groups or locations. Direct, one-to-one messaging is also possible, although seldom used. When a group instant message is sent, the system distributes it to all members of the group (filters and personal settings permitting). A single group conversation can take place seamlessly over multiple communication channels as Rhub attempts to deliver messages using the best medium for each recipient. For example, if someone is browsing the Rhub website, a group message is received as a popup, if they are logged into their instant messaging service, they’ll receive it that way, or if they have their phone number registered they’ll receive it as a text message. Replies can be sent back using any media of choice, which are then distributed to all group members.

EMERGENT GROUP PRESENCE IN RHUB

Over time, as users acclimatised to Rhub and integrated it into their everyday socialising, a sense of group presence arose for some users. For these groups – which this discussion focuses on - Rhub is a persistent channel of communication, a stream of light chatter, always with them wherever they are. Friends are able to maintain awareness of social activity as well as organise gatherings and events. Once together and co-located, the need for Rhub subsided, however Rhub is a useful tool for those not with the group to connect to those that are. The level of social cohesion of a group seemed to bound usage of the system. One group of academics who rarely socialised as a group seldom used the system, while various groups of friends who socialised often together use the system to a much higher degree.

Like text messaging, Rhub’s messages are considered lightweight and informal. People regarded Rhub as direct and pervasive in that it can dependably deliver messages

instantly, regardless of where the message was sent from, or who was receiving it. By comparison, our study participants view email as slowed and unreliable for coordination as some people check email infrequently. Instant messaging is considered useful, however only if people are logged on. Although mobile phone applications for systems such as Facebook are now becoming ubiquitous, it is still difficult for groups to organise in an ad-hoc manner. For many, calling or text messaging is still the lowest-common denominator for assured contact, and both of these mediums can be labour intensive as replies must be manually forwarded around the group.

Because Rhub delivers messages instantly it can be used for commenting on events taking place at the same moment. During the study period, several large sporting matches took place which captured most participants’ attention. Some people were together watching the games, others from home. Rhub activity spiked at these times, as groups of friends cheered, booed and commented as the games progressed. At times like these, usage seemed to transcend messaging, becoming a metapresence where people in a variety of locations and contexts were communicating as though they were in the same room. Below is an example of a short exchange during a total lunar eclipse:

Table 1. Sharing the moment of a total lunar eclipse. *t* is the interval between messages.

Name	Message	<i>t</i>
Greg	That's no moon!	
Sally	It's pretty.	0:11
John	Stu[p]id clouds, whens the main event?	0:02
Mari	Awesome	0:04
Dan	The world is ending.	0:01
John	Where are the zombies i was promised?	0:02
Dan	Look at it now	0:25

In the following exchange, presence and status information is exchanged in a very informal, yet nuanced way. Alice and Arne indicate that they are interested in doing something, while Erik and Ian indicate they are already out, also sharing their location. While it was only these four users who participated in the exchange, it was observed by around 15 others, some of whom may have taken action, for example by joining Erik and Alice.

Table 2. Establishing presence information

Name	Message	<i>t</i>
Alice	Anyone in the valley? Or anywhere.	
Erik	<i>Pub1</i>	0:04
Ian	<i>Pub2</i> .	0:17
Arne	Just finished work.. Drinks with the crew now.. Where is everyone?	0:04
Alice	Heading to <i>Pub1</i> .	0:03
Erik	good choice alice	0:04

People largely used Rhub to coordinate events, with plans rapidly unfolding in an ad-hoc manner, usually shortly prior to the event itself. This is similar to Ling’s observation of micro-coordination in one-to-one text messaging, where coordination is an iterative process, filling in detail over time with several messages [5]:

Table 3. Micro-coordination. Tim initiated the conversation with a text message, but later switched to instant messaging. All others were participating via SMS except for Helge.

Name	Message	t
Tim	Courts are avail today. What time would ppl like to play. For a booking?	
Al	1.30 would be good for mel and i...	0:17
Ola	Five ish for me	0:02
Ann	Anytime works for us	0:01
Helge	any other takers for 1:30?	0:10
Ola	Do that up cause i am golfing now and i was guessing when would be done	0:02
Ola	One thirty works for me!	0:13
Al	so what's the dealio? 1.30 or when?	0:55
Tim	im in	0:11
Justin	need to book first	0:03
Tim	i made a booking this morning 2-4 just in case	0:03

Users who sent too many “useless” messages were publicly reprimanded by others, and as a result participants shaped their own acceptable norms. The informal group nature of messaging gave rise to a style of “half-invites”, whereby group members would often invite each other to events in a nonchalant manner. If others attend they are welcome, but there is no obligation to reply. Frequently however, people would respond to the half-invite with their own status and location in order to explain their absence. In the example below, we see two people stating where they are going to be, half-inviting others, and later sending on-location updates of what the scenes are like. We also see Rhub being used to bridge locations and providing first-hand, contextualised accounts of remote locations.

Table 4. Ad-hoc coordination.

Name	Message	t
Thom	<i>Pub1</i> from 7.30ish.	
Phil	wouldn't try <i>Pub1</i> guys, lines are massive and it's way way too busy. <i>Pub2</i> !	01:14
Ed	Stop. Please god, stop!	01:12
Jonny	hey aren't you in europe? how's <i>Pub1</i> ?	00:03
Ed	Yes i'm in europe! Stop wasting my money! Make the messages stop, somebody, anybody!!	00:02
Thom	Totally packed (<i>Pub1</i>) don't do it. Let u know if we move	00:01
Thom	Remove yourself from the list then	00:03
Phil	everyone's hitting <i>Pub2</i> . I'm there now. It's getting very busy. Definitely recommended.	00:01

Usage of Rhub often continues during and after an event, for example, messages sent by those not present to find out how the event is going, or perhaps people at the event sending messages enticing others to attend (such as in Table 4). In addition to fulfilling rendezvousing utility, coordination messages are also useful for diffusing presence information. From the stream of messages, spatially disparate group members can get a sense of others’ activity and location. This stream could also be seen as a transcript of social events, for example, one user reported checking his phone in the morning to peruse his friends’ activity from the night before. In this sense, Rhub’s short term buffering of group communication can help fill gaps due to memory or absence of presence.

Unlike Facebook and Twitter, Rhub’s group messages are broadcast to relatively stable subset of people who regularly meet face-to-face. Thus, messages can be sent with the shared social context in mind, for example using deictic references for events and places. In addition, messages have ephemeral quality, in that only a few of the latest messages are available for viewing on the web, are not searchable or indexed by sender, and extensive archives are not available. Because of the confined distribution of messages, their character tended to be similar to how the group communicates face-to-face, such as the style of teasing, joking and profanity.

REFLECTIONS

Group presence does not emerge as a matter of course from communication technologies, even those that offer perpetual contact. In a wider comparison of use by different groups, it is clear that social ties and frequent social activity between group members led to the frequent use of Rhub and a sense of group awareness [1]. As designers we are only able to create a system conducive to the kinds of social interaction we wish to support. The experience of Rhub suggests that sharing presence should be low-effort and offer control over how presence is expressed and to what extent it is visible or “pushed” to others. Some satisficing is required: a system which offers fine-grained control over presence sharing will probably not be low-effort.

Low-effort and pervasive

As demonstrated in transcripts of Rhub usage, awareness of others’ location and activity often forms part of the broader task of ad-hoc coordination. After all, it is difficult for coordination to proceed without establishing the current state of potential participants. Message recipients who may not have any interest in current stream of coordination are able to use these messages to keep abreast of friends’ activities.

Ad-hoc coordination is enabled by being low-effort to use and pervasive. Low-effort reduces the “cost” of coordination and lessens formality. As a result, people sent “half-invites” to activities which they otherwise wouldn’t have made an effort to invite extra people to, and people attended more social activities as they were better aware of

what others were doing. The pervasive nature of Rhub's message delivery also lowered the effort to contact multiple people as it smoothed over the gaps in people's varied technology usage, and importantly, allowed for ongoing coordination while mobile. This allows coordination to take into account the localised context, for example notifying others of a large queue and suggesting an alternative location. Remote parties, or parties enroute to the original location can take advantage of another person's first-hand observations in order to better inform their own activity; in a weak sense, carrying out *tele-situated action*.

Representation

It is also worth considering forms of representation in social systems. Shared awareness of location and activity for Rhub users did not necessitate precise geo-located coordinates or mapping services. Users were able to accomplish shared awareness in a fluid manner, leveraging in-group slang with free-form text messages, such as referring to locations by localised, colloquial terms. For example, within one group, "the pub" was commonly understood to be a particular favourite location, while for people outside of this group, the reference would mean nothing, or perhaps a different location altogether.

After observing how users were referencing location and status in group messages, I devised means for users to set their location and presence, and for this to be broadcast to friends, however it was seldom used. For example, instead of sending a Rhub message `>&tennis: Out at Pub1, good live band`, users could send `@Pub1: good live band`. Rhub would resolve the reference of "Pub1" to an actual location and associate the user with it as well as distribute the update to friends via instant messaging and select friends via text messaging. In this design response, some level of flexibility of intention is lost. Users might want to set their location so it is visible on the website, but not necessarily spam their friends with what could be very mundane updates. At the same time, there was originally little benefit¹ in setting location unless others could see it and take action. Free-form messaging, although semantically opaque for the system, was ultimately the most successful way for Rhub users to balance wanting to share their location with friends and invite others, yet only do so when appropriate. In addition to intentionally indicating presence, the message was sent to a particular group, a subset of all acquaintances and friends, and thus presence could be intentionally focused to particular people and not others. Later, it was possible to add a character to the location setting command to prevent it being forwarded others, however this was too complex for users – a graphical interface might prove more successful.

¹ I later added a public transport schedule service which required users to set their location

Disruption

Technology-mediated communication has the ability to collapse space traditionally present between different social contexts, for example the home and workplace. At the workplace, it is possible to make and receive calls from a partner, or more subtly, via text-based mediums such as email, instant or text messaging. It is this perpetual contact which supports the sensation of presence, for example, that your partner is there with you in the same space. Rhub however is oriented towards group communication. Instead of a soothing sensation of being in your partner's presence, Rhub occasionally felt like a group of raucous friends are partying in the same room as you, regardless of the context of the space, or your current activity.

The quantity of messages, and thus disruptions, were participants' most significant concern of Rhub, but most acknowledged that the benefit of group messaging could not be realised without having to accept unwanted messages as well. Opting out of messages entirely was not considered viable, as that would mean missing out on the bulk of the group's social activities and updates. Various design interventions were devised to empower recipients to restrict message flow and to encourage senders to critically think how their message should be forwarded. Ultimately however, we found that users preferred to disable audible alerts on their phone to ignore Rhub activity and delete messages, rather than proactively limit messaging either from the graphical web interface or by sending a command.

CONCLUSIONS

This paper illustrated how a social group used group-oriented mobile social software to establish shared awareness. Low-effort, pervasive and localised messaging facilitated ad-hoc micro-coordination and "half-invites". Coordination was effective even without sophisticated representations such as geographic coordinates, highlighting the value of free-form and nuanced natural language.

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