

Time to meet face-to-face and device-to-device

Oskar Juhlin
Interactive Institute
Stockholm
+46 70 379 39 64
oskarj@tii.se

Mattias Östergren
Interactive Institute
Stockholm
+46 70 207 77 53
mattias.ostergren@tii.se

ABSTRACT

We examine mobile face-to-face meeting support systems applied to public places and analyse how the temporality of meetings influences the interaction between anonymous participants. Here we uncover a duration paradox. Prolonged meetings between unacquainted people may seem suitable for support systems, since they allow for significant human-computer interaction. At the same time, prolonged meetings can lead to embarrassing consequences, and participants may lose their anonymity. Brief meetings give little opportunity for interacting with systems. But the participants are more prone to provide personal information since the risk of losing their anonymity is less acute.

Categories and Subject Descriptors

H.5.m [Information Interfaces and Presentation (e.g., HCI)]: Miscellaneous

General Terms

Design, Human Factors, Theory.

Keywords

Face-to-face meeting support systems, Public interaction, Duration of meetings paradox

1. INTRODUCTION

Mobile face-to-face meeting support systems are devised to encourage and reinforce spontaneous meetings between people. The aim is to increase social interaction by adding a new digital resource through which people can interact for various purposes such as sharing personal information, enabling multi-player gaming or jointly listening to music. Lately, the scope has come to embrace meetings between unacquainted persons in public.

Many meeting support systems are argued to be supportive of public interaction. Jabberwocky is designed to support interaction amongst “familiar strangers” defined as “... a border zone between people we know and the completely unknown strangers we encounter once and never see again [8].” Similarly, Far Cry is designed for spontaneous meetings between people, including such familiar strangers [11]. Folkmusic, goes further yet and addresses smart mobs i.e. “... people who are able to act in concert even if they don’t know each other ... [12].” Similarly, the Proem platform is intended to support interaction between people “...whom we never met before... for striking up a conversation

and for exchanging information [6].” Hocman encourages interaction between “unacquainted” motorbikers on public roads [4]. Sound Pryer draws on “... the enjoyment that we believe drivers sometimes derive from looking around and forming impressions of nearby road users and their vehicles [7].” Finally, TunaA is designed to generate ‘neighborhood feeling’ since: “[c]ities are becoming in fact more and more alienating places [1].”

Thus, the scope of mobile face-to-face meeting support systems is extended to public places to include people who are anonymous to each other. Furthermore we note that the systems add something to an existing social practice, i.e. interaction is mediated through technology, while also around it, as people are within seeing and hearing distance from each other. Hence, the use of these technologies is strongly linked to how such interaction currently takes place without their support. Consequently, our concern is how well they are embedded within the ongoing interaction in public face-to-face meetings.

The research is influenced by the popular wireless networking technologies such as, IrDA, IEEE 802.11b (WiFi), and Bluetooth and the widespread adoption of mobile devices. The many successful Internet applications that support virtual meetings between acquainted as well as non-acquainted people have also inspired this field. But it is far from obvious that such applications would be successful in mobile face-to-face meetings.

The purpose of this paper is to highlight the aspect of the meeting’s *duration* and its consequences for face-to-face meeting design. We consider what it means to meet others via the interface of a device in a public setting, and answer the key question: how does the expected duration of a meeting influence engagement in public social interaction supported by mobile technology?

To uncover the consequences we first examine such systems in two broad aspects. First, we consider the systems’ demand of attention to the user interface. Second, we determine how much personal information is revealed when using these systems. We present a taxonomy and genres of mobile face-to-face meeting support systems that we find in the current research literature. Finally we discuss how the genres fit with short or long meetings.

2. INTERACTION IN PUBLIC

In order to appreciate what happens when people encounter in public we will turn to sociologist Erving Goffman’s discussion of relations in public [5]. He distinguishes between *unfocused interaction* and *focused interaction*. Unfocused interaction refers to “the kind of communication that occurs when one gleans information about another person present by glancing at him [5, p. 24].” People orient themselves for such glances by e.g. arranging their clothes, putting on make-up, and preparing hair-dos. Focused interaction occurs when people gather “...close together and openly cooperate to sustain a single focus of attention, typically by taking turns at talking [5, p. 24].” As a general rule, interaction in face-to-face meetings seldom goes beyond unfocused interaction. According to Goffman people suspect that extended focused interaction could lead to unwanted

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consequences e.g. creating opportunities for the reception of pleadings, commands, threats, insults, false information or create unwanted bonds with mutual obligations. Still, extended focused interaction does occur in public places e.g. when people are obviously out of role.

2.1 Duration as interactional concern

Let us now turn to the temporal structure of meetings as a factor in public meetings. In a short meeting there is little time to engage in other tasks, e.g. handling a mobile device, whereas opportunities increase as meetings extend in time.

There is also a less obvious consequence of duration i.e. how people balance what they keep private and public. First, we learn from sociologist David Sudnow [10] that making out temporality in meetings is not only about interpreting the participant’s physical movements in and out of a particular meeting. It is also about interpreting the “internal time structure of the activities” in a broader sense. For example, making out what the other person is doing and his or her intentions: is he or she going to stop or turn back etc. Thus, on the one hand, the temporalities of meetings are governed by the length of time the participants are visible to each other. On the other, people also orient themselves as to how they predict the duration of the interaction that the meeting gives rise to. That is to say, duration is something that the participants interpret not after the meeting is concluded, but during the meeting, as it unfolds. Second, we argue that the temporality of the meeting is an important aspect when participants decide what to keep to themselves and what to reveal. This stance is supported by Goffman who touches upon temporality and privacy. He relates these issues to the particular case of being seatmates in train compartments:

“Seatmates, while likely to be strangers... are also fixed for a long period of time, so that conversation, once begun, may be difficult thereafter either to close or to sustain. In such cases, a strategy is to “thin out” the encounter by keeping it impersonal and by declining to exchange identifying names, thus guaranteeing that some kind of non-recognition will be possible in the future [5, p. 139].”

Furthermore, duration has consequences in case the participants by convention are requested to remedy interaction with so called *remedial interchanges* [5, p. 137]. Goffman exemplifies this when a clumsy pedestrian has offended someone, for instance by bumping into him or her. A short meeting is better for this offender because he or she has to endure less embarrassment and “hate stares”, than in a longer meeting. In a brief meeting the offender can quickly get out of the gaze of the offended. He compares the clumsy pedestrian offender with an inept car driver. In comparison the driver who has crashed into another car has to endure more embarrassment, because his car is stuck and thus the meeting is likely to last longer.

3. GENRES OF SUPPORT SYSTEMS

Turning our attention to mobile face-to-face meeting support systems we note that the design of such systems balances privacy with public presentation in various ways. Several face-to-face meeting support systems oblige the user to reveal personal information to unacquainted people. For instance, such personal information is represented in nicknames, symbols, and addresses used to initiate communication through the meeting support. But personal information also appears as content of richer nature such as curriculum vitae, musical preferences and general interests.

Furthermore, we also note that the design of the user interface is of consequence for how successful meeting support systems are in blending in with the ongoing meeting. We are concerned by the demand of attention to the handling of the user interface i.e. the attention to the input the user must feed into the system, and the output to which he or she must react to complete some task. For example, the user may need to specify which file to download in order to share music, or to learn about the presence of others the user may need to pick up and examine the interface of a device. We recognize face-to-face meetings enhanced with such mobile technology occur in a context where other parallel activities are likely [3]. Attention to a user interface must be divided between several other tasks.

We combine the two matters of demand on handling and revealing identity into a design space. In this space we arrange the principle mobile face-to-face meeting support systems of the current research literature. We do this according to our appraisal of how demanding the user interface is within meetings, and the amount of identity revealed. Naturally, we consider both personal information revealed through the system and what is conveyed outside of it as consequences of using the system. In this space we have aggregated four genres of face-to-face meeting support systems: exposed, insisted, hinted, and cloaked (see Fig. 1).¹

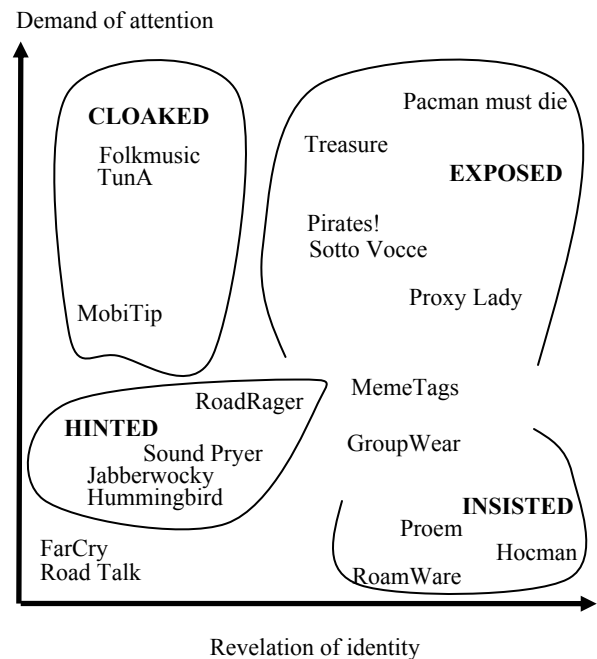


Figure 1. The genres of exposed, insisted, hinted and cloaked face-to-face meeting support systems.

Exposed face-to-face meeting support requires a great deal of attention to the user interface, as well as disclosing of abundant personal information. It strives to encourage extensive engagement at close proximity. But to accomplish this it benefits

¹ For references on all systems see O Juhlin and M Östergren “Time to meet” in Östergren, M (Ph D thesis) Traffic Encounters, Dep. of App. IT, IT-Univ. of Göteborg, 2006.

from a clear connection between users' virtual representations and their actual physical gestalts. At the extreme end, we find the PDA based game called "Pacman must die" [9]. The participants have to look at each other's displays to complete the game. This requires knowing which real person corresponds to which virtual character and game device, but also making sure to be very close to the other participants and seeing the characters as they appear on other devices. Hence, plenty of knowledge about personal information outside the game is required.

Insisted face-to-face meeting support requires little attention within the meeting, but compensates by distributing virtual content rich in personal information among the participants. This information is provided to re-establish some form of contact possibly long after the meeting has ended. The Proem application is a typical example, which is designed for pedestrians. It is an application that provides awareness, as well as exchanging profiles when users meet [6]. A profile consists of information on personal preferences, interests, and general background.

Hinted face-to-face meeting support gives ambiguous information about the participants of a meeting. It typically provides subtle indications as to the identities of other users. A part of the experience of its use is to figure out who or where the users are. Sound pryer, the collaborative car stereo, is a good example [7]. A user can, apart from hearing his or her own music, also tap into the music being played on other Sound Pryers near-by. It also displays a stylized icon and the color of the car from which the music originates. A user must invest some effort in looking out and scanning the environment to find the car.

Cloaked meeting support makes it possible to keep one's identity secret. Yet it requires quite a lot of handling. The systems examined here are oriented towards sharing some content. For instance, the Folkmusic prototype relies solely on nicknames to distinguish users, and proximity is only required in a rough sense. Users need to only be within range of each other's wireless transmitters to download music, but that does not necessarily mean they are face-to-face or within viewing range [12].

4. MAPPING GENRES TO DURATIONS

We now match the genres of face-to-face meeting support systems to ideal typical meetings of various lengths i.e. *prolonged meetings* and *brief meetings*. Prolonged meetings are perceived by the participants as lasting from a few minutes to hours. Examples could be people sitting close to each other, such as at pubs, cafes or in train compartment. Such meetings are typically so long that the participants are normally seated. Brief meetings are perceived as lasting a few seconds. This category includes people who meet in traffic encounters where the participants are moving in vehicles and rather quickly relative to each other. Such hasty movement makes the category more predictable. There is less opportunity to prolong the meeting and change the duration by turning around and catching up. The categories of brief and prolonged should not be understood as complete generalizations of meetings in these contexts. There are obviously meetings in cafes that are shorter than meetings in traffic. But this formalization of generalized meetings will work as a resource when thinking about the importance of duration and temporality for public meeting support.

4.1 Support for prolonged meetings

In prolonged meetings occur, there is plenty of opportunity to divide one's attention between face-to-face meetings and interaction with mobile devices. More interestingly, the approaches dif-

fer in the way they fit with how people could be expected to balance their informational stance between private and public.

Exposed face-to-face meeting support systems seem ill-suited since they reveal extensive private information to unacquainted people in the proximity. Hence, there are plenty of opportunities for participants to make focused interaction possible and even compromise future non-recognition. Since it is obviously possible to address anyone, participants may come to challenge each other as in remedial interchanges, e.g. in a gaming application a participant may be heckled for showing poor performance. Hence this design approach does not seem to fit that well with social interaction between unacquainted people in public. Still, exposed interaction applies when meeting acquainted people. Friends sharing a coffee table might as well expose themselves electronically while they are dissecting their social relations in conversation.

Insisted face-to-face meeting support systems demand less attention to the user interface, but suffer from the same type of identity disclosure as above. We note that insisted meeting support systems distribute virtual content containing personal information. This leaves a trace whereby the participant could be recognized in the future, which might lead to embarrassing remedial interchanges. Thus this genre fits equally poorly with the social situation of prolonged meetings in public. Nevertheless there is an opportunity for this genre to succeed in an appropriate context. Insisted meeting support systems are applicable in prolonged meetings of communities where people share a common interest and want to get to know more people within that particular community.

Hinted face-to-face meeting support systems are more meager in terms of revealing identity. Private information is not rich enough to compromise non-recognition in the future, although it reveals more than does a regular meeting. It is difficult to decide whether this genre would be appropriate in prolonged meetings. For instance, would a person reveal his or her music preferences while hinting at his or her identity? Might someone figure out that the situation encourages focused interaction and provides for remedial interchanges, e.g. accusations of bad taste?

However, we argue that cloaked meeting support systems could work in prolonged meetings between unacquainted persons. In cloaked meeting support systems the identity information is so scanty that it maintains anonymity both in the future and within the meeting. People can enjoy some of the information even if they cannot tell which person in the proximity is providing it. This genre is comparable to how anonymous people interact with each other over the Internet. Cloaked meeting support systems could therefore be seen as a relevant alternative when there is restricted access to Internet. But cloaked meeting support systems are less applicable if the intention is to draw on the available social situation in some sense. Interestingly, this genre would probably also work for acquainted participants, but in a different sense. They would most probably recognize each other outside of the electronic system if they were sitting near each other. And the information they convey, e.g. taste in music, would then be interpreted as revealing their identity.

4.2 Support for brief meetings

Demand on attention to the user interface is a critical issue in brief meetings. Here the time is limited and the users' focus of attention often has to favor coordination of the person's movement. This is obvious when driving, but is also significant when walking along a crowded street. Thus both the exposed

design approach and the cloaked genres are inappropriate since they depend on users focusing on their interaction with the computer. However, the genres of insisted and hinted face-to-face meeting support systems require little handling, which makes them appropriate even for brief meetings in traffic. The issue here is instead how the genres balance between public and private.

Hinted face-to-face meeting support systems are suitable for brief meetings. Support systems that draw on the meeting could very well be both appreciated and accepted. Some information about identity is revealed to the participants to make the system more interesting during the encounter. But too little is revealed to make the participant recognizable in future meetings. When people disappear from the meeting there will be no more interaction, and it is so brief that the participants will find it very difficult to prolong interaction, e.g. remedial interchanges. Finally, we suggest that insisted interaction would be less appropriate for brief meetings. Since in-depth information about the participants will be revealed, future non-recognition might be compromised.

5. CONCLUSION

Mobile face-to-face meeting support is an emerging research area that can enable various types of support in meetings. It envisions a form of urban life where meeting support technologies contribute when people encounter each other. Our analysis suggests that such a development is unlikely given how people relate to each other in public places, where attention is directed to staying away from each other. Thus, the meager social interaction in general is not a problem requiring a technical solution. But there are openings where people could possibly interact in new ways if their non-recognition were preserved. Situations of brief encounters in some sense allow for more open social interaction. But they are often awkward since the participants have to attend to other activities as well. Thus, mobile face-to-face meeting support systems could spur interaction between strangers. But then the interaction would be different from more prolonged and rich meetings between people. It will not look like social relationships between friends.

Supporting public meetings with mobile technology is thus an idea with many limitations. In short, we argue that there is something of a *duration paradox* when it comes to public interaction between unacquainted people. A longer meeting may seem better, since it affords more turns of interchange. But a longer meeting also exposes a participant either to being put to a prolonged and embarrassing “trial” or to being persuaded to reveal so much information that future anonymity is compromised. A short meeting provides for fewer turns of interchange and scant information. But there is less risk of being cross-examined on the information communicated, and less risk of being lured into revealing too much. If that challenge is addressed, there will be opportunities for designing support with which public interaction could find new and interesting forms.

It follows from this analysis that designers cannot easily design for both acquainted and non-acquainted participants if duration is to be accounted for. The genres of exposed and insisted face-to-face meeting support systems fit for people who know each other during prolonged interaction, whereas the hinted genre is suited for anonymous people meeting in public places. Cloaked meeting support systems could work for both types of social interaction, but in very different ways, as discussed above. Thus, this analysis supports making a careful decision on the combination of

demand of attention to the user interface and disclosure of personal information. Finally, we also envision new types of face-to-face meeting support systems that draw upon expected duration. Such systems could somehow interpret the duration of the meeting and map its demand on HCI and disclosure of personal information to that particular meeting.

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