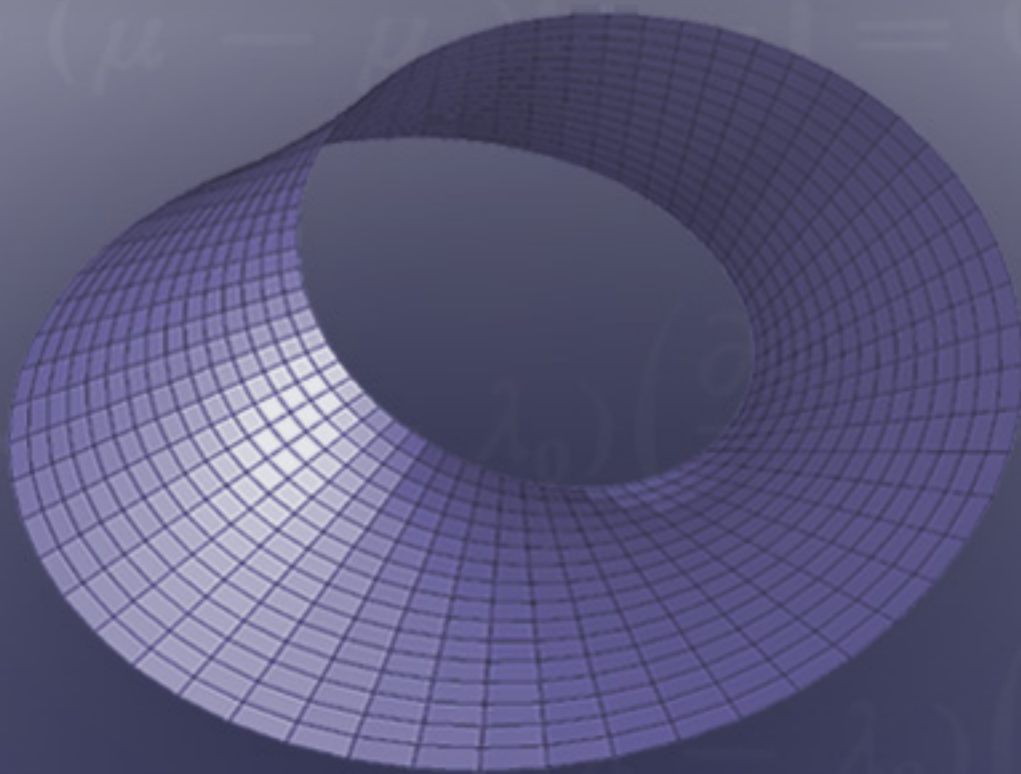




Towards investigating intergroup mediated communication within the urban environment via the use of locative media



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Abstract

This paper documents a part of a research project titled LOCUNET (LOcation-based Communication Urban NETwork). This project aims at investigating the emergence of new forms of communication environments, supported by the integration of new mobile and locative media technologies and the impact that the implementation of these systems may have on mediated communication within urban space. The paper focuses on investigating these new forms by specifically studying intergroup communication developed in a group context by virtue of locative media use. In the prime section of the paper we examine the main parameters that condition mediated intergroup communication located in public space by implementing an analysis approach which is based on the presentation of a series of hypotheses and inquiring methods. In the second section, we describe the system's architecture and the application scenario of LOCUNET, with a particular emphasis on its applied techniques towards fostering intergroup communication.

Keywords

Locative media, location-based systems, intergroup communication, computer mediated communication.

1. Introduction

This paper documents a part of a research project titled LOCUNET¹ (LOcation-based Communication Urban NETwork), which focuses on the social implications of using location-based systems in the context of everyday urban life and ultimately aims to inform about the design and implementation of such systems. LOCUNET further investigates the use of such communication systems, accessed via interfaces that have a predominantly spatial character and provides the context in which users engage in computer-mediated communication.

The main research objective of this project is to study the way that users interact with other users (human-computer-human interaction aspect) and with the location-based system itself (human-computer interaction aspect), while focusing on the physical and social context in which this interaction takes place. The project's main outcome will be a theoretical model which will function as a context for designing and developing location based systems. This model will be evaluated by designing and developing a location based system and a particular application, the scenario of which refers to a location-based game activity that will take place in the city centre of Athens in Greece. This activity will provide a means to study the use of mobile locative media for supporting communication amongst groups of citizens in a contemporary setting.

2. Locative media supporting new forms of social interaction: background and objectives of the LOCUNET project

People living in the urban context, in contrast to the inhabitants of provincial environments, rely on media technologies for much of the information they acquire about other groups residing there. The convergence of new mobile telecommunication networks along with geographical positioning systems and interactive graphical interfaces on mobile devices, are beginning to extend the potential of media technologies for supporting communication among mobile individuals. The aforementioned technologies allow groups of people to interact with each other, while being aware of each other's location at all times. By introducing context awareness and by supporting multi-user communication, these ICT systems alter the patterns of information flow as well as the situation

¹ The research project titled "LOCUNET" is supported by the Greek General Secretariat of Research and Technology under the framework of the Operational Program PEP Attikis, Measure 1.2. The Program is co-financed (70%) by the European Fund of Regional Development (EFRD), which aims to facilitate the reduction of the inequalities within the European Union regions.

within which communication takes place, thus bringing to light new structures of social interaction.

The main characteristics of the type of locative media discussed in this paper are mobility, locativeness² (Charitos et al. 2005) and multi-user support. The characteristic of “locativeness” refers to both users and content within a locative media group. While users are navigating within the city, the system displays a graphical representation of themselves and other participating players on their screens, whether they are using desktop computers or mobile devices. The system also allows users to communicate with each other in real time and to “attach” information to specific locations (geotagging) or alter the information they find attached on a location for the purposes of the activity.

The characteristics discussed above may influence interpersonal as well as intergroup relationships in the context of these new social constructions. It is therefore considered as useful to examine the ways in which social messages are distributed among participants in a locative media group during the phase of designing and developing the LOCUNET technological system. More precisely, in the LOCUNET project, we investigate whether locative media contribute towards the emergence of new social forms. These new formulations may involve what is denominated as “interpersonal and intergroup mediated communication” and may ultimately lead to the formation of new types of social networks within the public space of the city.

Locative media are currently at an embryonic stage in their development as communication media. Therefore, literature documenting the systematic study of social interaction supported by locative media is rather scarce. This absence of a theoretical basis has led us to an adoption of relevant, contiguous literature regarding unmediated social interaction and grouping processes within physical spaces.

The fundamental issue discussed here relates to the potential of development of “novel” relations which may occur within a locative media group context. It is argued that the users of a locative media system, as members of a group, form a collective unity, an active and dynamic social group, within which it is possible to observe the main parameters as well as the intrinsic characteristics that such forms of groupings may share. For this purpose, we attempt to examine the social experience of participants who are members of such mediated groups by studying intergroup communication within a locative media group. By doing so, we attempt to identify whether mobile locative media technologies contribute in the construction of what we call a “social world”, that is a hybrid and synthetic

² The ability to detect a user’s location and movement and to relate different types of digital content to particular locations in physical space.

formation constituted by “non-homogeneous correlations of human and not-human entities”.

The LOCUNET project focuses on testing to what extent a location based activity can modify group interaction and communication, as well as on the way members of such groups perform a joint task relying, at the same time, on spatial information to coordinate themselves. From this angle, locative media systems are considered as “mixed-dialectic experiences” since they facilitate a dramatic amalgamation of seemingly opposite concepts:

- the physical environment of the real world and
- the “virtual” environmental context of the digital information and communication layer, which is mapped onto physical space and is supported by the locative media system.

Although the physical structures that the real world consists of are relatively immutable and hard to alter, the digital information layer is alterable. Consequently, the use of locative media applications throughout the city may lead to a new perception of a hybrid environmental experience enhancing our traditional experience of the “physical” inhabited world.

The project adopts an interdisciplinary approach in studying new forms of intergroup communication, which has directed us towards formulating the following research questions:

What kind of social meanings are generated through the experience of members within a locative media communication system? How profound is the social aspect of such novel experiences?

Does a location-based communication system act as an environment - beyond its use for information transmission - where it is possible to observe communication and interaction practices between individuals?

To what extent are members of a locative media group aware of belonging to a collective unity?

Is it possible to observe collective behaviours or coordinative strategies that surmount selfhood, among members of groups, mediated via locative media use?

To address these questions we focus our observation on the investigation of locative media use by *a small group of users* who are at the same moment citizens of the metropolis and social actors of the current conjuncture.

3. Towards investigating intergroup communication within the context of locative media

The concept of a “group” is specifically defined by sociologists as a “collection consisting of a number of interactive partners and interdependent individuals, conditioned from a (formal or informal) structure, individuals that should complete a task and that feel to some degree interdependent” (Maisonneuve,

2001). With regards to studying groups, we distinguish four major areas of research:

1. Group's organisation.
2. The aims posed by group members and the interactions occurred within the group.
3. The system of places and roles, obvious or latent, which are developed within the group context.
4. Conscience acquisition and sense of belongingness among members.

The basic unit of observation revolves around the study of intergroup communication patterns within a locative media system through what Lewin (1948) names as "group dynamics". Group dynamics were the result of Lewin's work in field theory. He coined this term to describe the way groups and individuals act and react to changing circumstances. Group dynamics are the collective interactions that take place within a group. (Reber & Reber 2003). According to Lewin's writings (1972), a group should be conceived as a form of a "social field".

Group dynamics will be examined through the following levels of analysis:

- a) The different ways of communicating between members: the group generates its own "endogenous" communication system.
- b) The intensity of attendance, factors which are considered as important variables since they determine, to a large extent, the group's ability to realise its aims.
- c) The psychological structure of team: development of accepted sanctions- praise and punishment- accepted division of labor, roles, common motives and goals, flows of behavior, group's bond, mutual appreciation among members etc.
- d) The relations of a group with other groups or with the wider social total.

To that end, a series of experiments will be carried out by using the LOCUNET platform, for the purpose of studying group dynamics in group settings mediated via locative media use, as well as the impact of location awareness on group collaboration. The methodological approach followed in the LOCUNET project, adopts both quantitative and in-depth qualitative research. Quantitative methods include questionnaires and system logs, whilst qualitative approaches include observation, interviews and focus groups, all aimed to the users of the activity (Hare & Bales, 1963).

Finally, in the LOCUNET project the "uncontrollable" nature of a locative media activity is taken into account. Location based activities are usually applied to real places triggering real social interactions; they take place "in the street". This fact differentiates them from more controllable socio-technical systems being implemented in more controlled environments, the design and development of which is usually determined by pre-defined requirements.

These issues have been taken into consideration, during the process of formulating the LOCUNET system's architecture and its application scenario.

Accordingly, in this locative media activity, intergroup communication has been “treated” as an unforeseen event. The System Architecture and application scenario of LOCUNET are briefly presented in the following section of this paper.

4. The LOCUNET system

4.1 System Architecture

As mentioned in the previous section, our research focuses on group formation and dynamics; this has a consequent effect on the architecture of the system and the application scenario that will be implemented in order to evaluate the role of locative media at the group level. In accordance with the theoretical framework discussed in the previous section, there are a number of requirements and prerequisites that have to be met assuring that multiple user interactions will occur, providing the necessary research data. These are: a) distinct groups b) goals/aims that have to be accomplished c) unrestricted/free group organization and hierarchy d) communication channels between group members and e) off-line (real world) interaction.

LOCUNET requirements	
Characteristics	Description
Multi-user support	Support for simultaneous interaction between many users
Synchronous Communication	Support for synchronous communication between users
Upgrade support	System support for future upgrades and expansions
Open architecture	The platform should be interoperable in order to support multiple applications
Creation and exchange of multimedia content	Mobile and desktop interfaces (via microphone, camera, keyboard, stylus etc) should afford the creation and exchange of multimedia content by users
Location awareness	Location detection with 1-3 m. precision in real time, linkage of information with place (geotagging)

Table 1: System’s requirements

Taking also into account the requirements derived from the fields of social and psychological sciences that have formulated our overall approach (Diamantaki, Charitos, Tsianos & Lekkas, 2007), table 1 shows the main characteristics that

have to be implemented into the system's architecture. These parameters determine, to a large extent, an application scenario that serves the necessary prerequisites (Berne, 1967).

4.2 Application scenario

By means of conclusion, the scenario that determines the activity that will take place in the context of LOCUNET project research process is briefly described in this subsection. Users are separated in two distinct groups (Team A and Team B) that are consisted both of mobile users that move physically in the urban environment and desktop users that remotely “navigate” through the city. Each team member is visible only to her team mates, unless their status changes. The representation of the urban environment and of participating players displayed to users is achieved in the context of a two dimensional map, whilst desktop users may have the choice of navigating through a 2,5D version of the map.

Both teams have been informed that the purpose of the activity (quest) for each group is the acquisition of five items in the duration of one hour. Each team has to transport these items to a different location, and in parallel to impede opponent group members from doing the same. The quest items are visible on both mobile and desktop interfaces only when users are within 10m proximity from each item.

Users can pick up items by walking through them, and hold them in their inventory for a short period of time (e.g. 2 min). When users hold items, their representation on the map is accompanied by an indication that makes the item (and its carrier) visible to all participants. Users can give the item to their team mates, but if they do not do so, and they fail to reach the destination location in time, they have to drop the item. Thereafter, only another user (team mate or opponent) can pick the item up again. However, when the item is dropped it becomes again invisible in a greater than 10m. radius.

It is of high importance to enhance interactions by not allowing users to complete tasks on their own, but to direct them towards collaborating with team mates for the purpose of fulfilling the task. This is reason for imposing time restrictions in the duration of “possessing” an item. Furthermore, users can create multimedia content, along with the pre-existing, and can map this content onto a specific location in the physical world in an effort to mislead opponent players or to co-ordinate with their team mates.

One of the most essential elements of the system is the communication between users, which is both synchronous (messaging) and asynchronous (multimedia content). In any case, the team that has reached its goal first or possesses more items when the 1 hour duration of the game expires wins the game.

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