Private and Public Spaces - the use of Video Mediated Communication in a Future Home Environment

Stefan Junestrand & Konrad Tollmar

The Interactive Institute

P.O. Box 24081

104 50 Stockholm, Sweden

stefan.junestrand / konrad.tollmar

@interactiveinstitute.se

Sören Lenman & Björn Thuresson

Centre for User Oriented IT-design, NADA

Royal Institute of Technology

100 44 Stockholm, Sweden

lenman / thure@nada.kth.se

ABSTRACT

This video demonstration is based on scenarios of a family's everyday activities supported by video mediated communication (VMC). It was recorded in comHOME, a concept dwelling of the future. The principal issue explored in the comHOME project, and in the video, concerns various aspects of private and public spaces using VMC. The design concept is based on the integration of different *comZONES* (communication zones), where the resident can be seen and/or heard. The architectural space, then, in combination with information and communication technology (ICT) solutions forms an interface to the digital world. A main observation from the making of the video is that it is a very good *complementary* method in a complex design-process because of the focus on the user perspective.

Keywords

communication, comZONE, dwelling, home, ICT, private, public, space, video mediated communication, VMC.

INTRODUCTION

Several trends indicate that VMC will become an important part of communication in our homes [1]. VMC can support and complement a wide range of activities in that context, e.g., studies, care of the elderly, professional work and leisure activities. It primarily addresses social and emotional aspects of communication, which is a requirement for communication in a domestic environment. However, dwellings are ill suited for VMC due to, e.g., unsatisfactory lighting conditions, floor-plan layout and spatial design. Also, current VMC solutions for collaborative work are not well adapted for the home.

comZONES

The comHOME dwelling, which was used for recording the video, is a laboratory and a showroom for a dwelling of the future [2]. The comHOME project covers several aspects of

future dwellings, such as making the apartment smart, but the primary goal has been to develop and integrate VMC solutions into a home. The design of the dwelling is based on the idea of creating different *comZONES* to support the demands for both private and public digital spaces within the home environment [3]. The comZONEs have the following characteristics: In an inner, *public zone*, one can be both seen and heard. In a middle, *semi-public zone*, one can be seen but not heard. In an outer, *private zone*, one can neither be seen nor heard. These spatial characteristics may also vary over time, depending on the scenario of use.

The principal architectural issue was the establishment of the mental and physical boundaries between the public and the private in the comZONES, i.e., to uphold the demand of neither being seen nor heard – when so desired. The comZONES are expressed by technical solutions such as screens and cameras, but also through the use of architecture – spatial forms, colors, light and materials. Thus, the architectural space in combination with ICT solutions forms an interface to the digital world.

The creation of the different comZONES in the rooms of comHOME is a major technical undertaking. The ongoing development aims at the control of focus depth and field of view for video space. The control of the audio space is more complex, however. The fairly precise video space can not be matched with equally well-defined boundaries in audio space. New technology that might solve part of this problem is array-microphones, spatially directed loudspeakers, and real-time image and audio manipulation that can filter background actions and sounds.

An additional means of protecting privacy while maintaining continual contact is to, in some situations, replace VMC with a shared, 3D digital environment (DE). Here, rendered user representations provide an abstraction of information that can act as a filter for what is kept private or made public [4].

THE SCENARIOS IN THE VIDEO

The video shows four scenarios, each one demonstrating the idea and some functions of each *comZONE*.

Figure 1. Upper left: workPLACE, upper right: videoTORSO, lower left: comTABLE, lower right: mediaSPACE.

workPLACE

The workPLACE is a place for professional communication, located in the combined home office and bedroom. A table with two sideboards and a lowered ceiling with integrated lighting spatially defines the *inner public zone*, where the resident can be seen and heard. In the video Christine moves in and out of this public zone illustrating the function of not being heard and seen when in the *private zone*. The use of a DE for communication is also illustrated at the workPLACE. Problems of privacy intrusion *while a participant is in the public zone* are dealt with by abstraction of information, while still providing pertinent information. The DE also serves as a vehicle for initiating richer forms of communication, such as VMC.

videoTORSO

The videoTORSO, a flat screen that can be twisted between vertical and horizontal position by voice command, is a set-up for informal everyday communication in the kitchen. The *public zone* is normally located in a defined area around the videoTORSO and the user must step up to it in order to be heard. But the public space could also be tracking a user who moves around in the room. The scenario in the movie shows Tony giving a voice command to the videoTORSO to establish a call and then moving up to the public zone. The presence of Christine and the daughter illustrates the *semi-public* zone along the kitchen fittings.

comTABLE

The comTABLE in the kitchen contains a computer as well as a touch screen, a camera, a microphone and loudspeakers in a mobile frame at the rear end of the table. The use for this table is two-fold. In an upright position, it enables a virtual guest to participate in a dinner through VMC. Secondly it could be used for, e.g., reading a digital morning paper, or doing on-line ordering of groceries. By placing the camera in the frame the syntax for adjusting the comZONE becomes clear – fold up the display for a camera view around the table – fold down the display, and the camera will be turned off, although the image appears, as shown in the scenario.

mediaSPACE

The mediaSPACE in the living-room extends the physical room by connecting to a distant space, presented on two 80" screens, mounted side by side and seamlessly integrated into one wall. Thus, this comZONE creates a larger social space. The mediaSPACE is primarily a *public zone* and is limited by a curtain on its back wall. The fact that this room is a public space when VMC is active creates a different set of problems. It becomes a challenge to both keep an overview and to provide close-ups within the scene. The video illustrates how Christine and Tony participate in a public event and then simply shut the system off for returning to their *private* sphere.

CONCLUSIONS

The most interesting experience from making the video is that it has been a very good *complementary* method in the design of the comZONES because of the extreme focus on the user perspective. Also, writing the script helped us realize alternative, often better, ways to use the systems than the ones we had imagined during design. E.g., that the arrangement of the multiple screens in the workPLACE is a very complex issue that has to be studied further, and that more flexiblity is needed, e.g., to choose portrait or landscape formats when using the videoTORSO, the comTABLE or the workPLACE.

ACKNOWLEDGEMENTS

REFERENCES

1. Kraut and Fish, Prospects for Videotelephony. In Finn, E.K., Sellen, A.J. and Wilbur, B.W. (Eds.) *Video-Mediated Communications*, New Jersey: LEA, 1997.

2. Junestrand, S. and Tollmar, K. Video Mediated Communication for Domestic Environments - Architectural and Technological Design. In Streitz, N. et al. (Eds.) *CoBuild'99. Proceedings LNCS 1670*, Springer, Heidelberg, Germany, 1999.

3. Hall, E. T., *The Hidden Dimension, Man's use of Space in Public and Private*, The Bodley Head Ltd, London, 1966.

4. Lenman, S. 3D Digital Environments for Social Contact in Distance Work. *Accepted for publication at the Webnet99 conference*, 1999.