H. Oberquelle, R. Oppermann, J. Krause (Hrsg.): Mensch & Computer 2001: 1. Fachübergreifende Konferenz. Stuttgart: B.G. Teubner; 2001, S. 433-434

TOWER
Theatre of Work Enabling Relationships

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Motivation

In a co-located team, members typically learn from a wide range of cues about the activities of the other members, about the progress in the common task and about subtle changes in group structures and the organization of the shared task environment. Most of this group awareness is achieved without specific effort. A distributed team – even if its cooperation is based on a state-of-the-art groupware system – today is far from a similar level of awareness and opportunity for spontaneous, informal communication. This reduces the effectiveness of the joint effort, and makes cooperation a less satisfying experience for the team members. The TOWER system[1] aims to bring the wealth of clues and information that create awareness and cohesion in co-located teams to the world of virtual teams and to present them in a Theatre of Work.

This information is valid for the mutual orientation in cooperative work processes but also for the social interaction. Organisations are more and more restructured around virtual teams. They loose opportunities for innovation through the causal sharing of knowledge induced by traditional chance encounters such as the copier or the coffee machine.

Fig. 1: View of the TOWER world showing a populated document landscape derived from BSCW workspaces

TOWER aims to support group awareness and chance encounters through a 3D environment that is at the heart of the Theatre of Work. Avatars performing symbolic actions represent users and their current actions on shared objects. Avatars of users who work in a similar context appear spatially close in the 3D environment. The Avatars perform symbolic actions that illustrate events in an information space, episodes of interaction or non-verbal behaviour.

System Overview

The TOWER system is composed by a number of interworking components. Figure 2 illustrates the overall TOWER architecture. It consists of:

1 The TOWER system is being developed in the IST-10846 project TOWER, partly funded by the EC. Partners are GMD-FIT (coordinator), blaxxun interactive AG, BT, UCL-Bartlett School of Architecture. More information on TOWER as well as a demonstrator can be found at: http://tower.gmd.de

- A number of different activity sensors that capture and recognise user activities in a real and virtual work environment and that submit appropriate events.
- An Internet-based event & notification infrastructure that receives events and forwards these events to interested and authorised users.
- A space module that dynamically creates 3D spaces from virtual information environments, e.g. shared information workspaces such as Lotus Notes and that adopts existing spaces to the actual usage and work behaviour of the users that populate these spaces.
- A symbolic acting module that transforms event notifications about user actions into symbolic actions, i.e. animated gestures of the avatars that represent users and their activities in the environment.
- A 3D multi-user environment that interoperates with the symbolic acting and space module for visualisation and interaction.
- The 3D visualisation is complemented by ambient interfaces integrated into the physical workplace providing activity visualisation methods beyond the standard desktop.
- A DocuDrama component that transforms sequences of event notifications and history information into a narrative of the past cooperative activities.

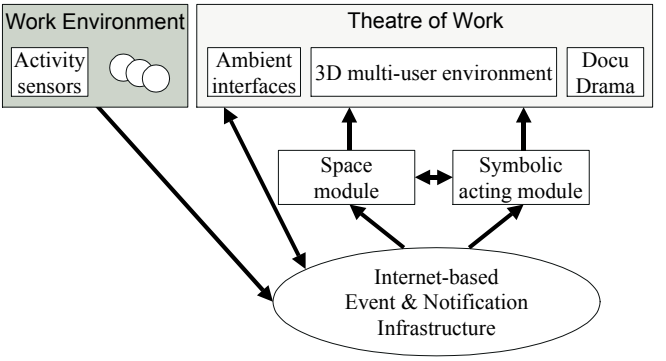

Fig. 2: Illustration of the TOWER architecture

Status

A first prototype of the TOWER system is available and demonstrated at the conference. This prototype allows the mapping of documents that are contained in shared folders of the BSCW[2] system into a 3D landscape. The layout is based on document attributes such as type, author, keywords, or containment relationships. Activities of users in the BSCW system are captured by sensors and forwarded to the event and notification infrastructure. The symbolic acting module interprets these events and directs the symbolic actions of the user avatars in the 3D environment. Users who visit the 3D environment can thus see ongoing activities of their colleagues in a shared document environment. In another usage scenario the system is used to visualise visitor activities on a web site.

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2 http://bscw.gmd.de