Orbit - supporting social worlds

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ABSTRACT Orbit is a prototype collaboration-support system intended to demonstrate a vision of a distributed, computer-mediated work environment. The prototype is an attempt to articulate and test the ideas contained in the *Locales Framework* - a proposed set of patterns for successful collaborative systems based on the work of Anselm Strauss.

KEYWORDS computer-supported cooperative work, CSCW, collaboration systems

1. Orbit

Orbit is a prototype collaboration-support system intended to implement a vision of a distributed, computer-mediated work environment.

Rather than offering support for individual collaborative tasks such as collaborative web browsing, cooperative editing or real-time discussion around a whiteboard, Orbit is intended to become each user's everyday working environment.

The prototype serves as a framework for collaboration in which other collaborative tools can be embedded, a test-bed for useful collaborative components and a ubiquitous collaborative environment for members of several work-groups.

2. Locomes Framework

Orbit is based on a set of ideas about collaboration we have dubbed the *Locales Framework*. The framework is based in part on the work of sociologist Anselm Strauss, in part on existing work in CSCW and in part on our own intuitions (from designing previous systems such as wOrlds (Kaplan et al 1997)). It is intended to provide both a way to understand the collaborative needs of a given workplace as well as a guide for designers of collaborative systems.

The framework hinges on the simple, but powerful idea of *social worlds* for which we owe a debt to Anselm Strauss (1993).

Social worlds have a shared purpose, some means of communication which allow them to do their work and

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some sense of membership so it is usually possible to say who is a member and who isn't. Social worlds often use some kind of *locale* - a physical or virtual "place" which allows the group to communicate, collect its history, objects and information and carry out its work, whether that is simply a conversation or the organization of a country. A locale provides a "context for interaction" (Giddens 1984) for the members of a social world.

Social worlds may last for hours or centuries, they may have two members or hundreds, they may use completely physical locales or completely virtual ones.

They are bound, not by walls but by "the limits of effective communication" (Strauss, 1993). The purpose of our project and of the Orbit prototype is to build a software system to support social worlds by allowing their members to construct virtual locales of various kinds to support their work and extend the limits of effective communication.

The first version of the framework is described in detail by Fitzpatrick et al (1996), but in essence the framework describes five aspects of an adequate collaboration system:

1. **Locale Foundations** - a system must provide support for locales with adequate mechanisms for sharing objects and documents, supporting a group's notions of membership and controlling access and allowing privacy.
2. **Mutuality** - locales must provide a sense of shared place for users. Users should be mutually aware of each other's presence in a locale, of the objects in the locale and of actions and of activities which are going on.
3. **Individual Views** - individual users must be able to construct personalized, idiosyncratic views of the multiple locales of which they are members based on their current level of participation in the corresponding social worlds.
4. **Interaction Trajectories** - interaction happens over time so every social world has a past and projects one or more futures. An adequate collaboration system must allow the members of a social world to maintain their shared history (for example in the form of shared knowledge or stored records) and plan their collective future (workflow tools provide a highly prescriptive way to define the future of a group's interaction).

5. **Civic Structures** - locales (and their social worlds) are constantly forming and dissolving. An adequate collaboration system must provide support for these lifecycle processes and for some way of structuring the world of locales, defining the relationship of locales to each other in terms of their mutual visibility and access.

3. Orbit Technical Overview

Orbit is an implementation of some of the aspects of the Locales Framework. We believe it provides an interesting demonstration of techniques for the support of Foundations, Mutuality and Individual Views and some early ideas in support of Interaction Trajectories and Civic Structures.

The prototype is built in a combination of Java, Distributed Smalltalk and a variety of other languages. The user interface is accessible using standard web browsers such as Netscape, although the interface does not execute entirely within the browser.

Orbit allows users to access multiple locales simultaneously and swiftly adjust their intensity of participation in each locale. Participation can range from a vague awareness of the level of activity in a given locale to a high-intensity, real-time video-conference with shared documents.

The system provides a notification service and a variety of user notification agents which afford continuous awareness of the user's objects of interest and whichever locales are in view. This notification service is the backbone of Orbit's awareness mechanisms.

The Organizational Information Locator - OIL (Resource Discovery Unit 1997) - uses Orbit to provide context for searches launched from within locales. Orbit in turn uses OIL as a way of continuously updating locales with new, more relevant information.

4. Relevance

Orbit is unique among CSCW prototyping efforts because it unites

- a principled approach to design, exemplified in the Locales Framework,
- an attempt to exploit the strengths of computer-mediated communication rather than simply trying to simulate the physical,

- a realistic approach to supporting distributed collaboration using cutting-edge distributed technology and
- an approach that emphasizes both the primacy of groups in collaboration and the seamless way in which collaborative work is interleaved with individual work.

We intend that the Locales Framework should provide a logical approach to the design of collaborative systems. Part of the function of Orbit is to test the validity of the concepts in the framework.

5. Commercial Status

Orbit is a non-commercial research prototype produced by the CRC for Distributed Systems Technology under funding from various sources (see Acknowledgements below). We hope to arouse interest in our work so that Orbit or related prototypes could be licensed to a commercial partner.

Orbit is not subject to any patents.

6. Equipment Needed

We can supply all equipment needed to demonstrate Orbit, however a projector or projection panel would be useful to allow the workspace of one of the demonstrators to be enlarged for easier viewing.

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