

UNITE *a virtual workplace for distributed teams*

The challenge

‘Virtual organisations’ consisting of teams of people from several different companies are an increasingly common feature of modern business life. These teams are generally set up to tackle specific projects for individual customers and the members of the team may seldom, if ever meet physically. Projects often involve rapidly delivering a personalised solution to the customer, so good communications between the members of the team are an important success factor.

Modern Information and Communications Technology makes it possible to bring together the resources and skills needed for a particular project very quickly. A wide range of tools, such as audioconferencing, e-mail, file transfer and project websites, is available to support the work of the project and overcome the problems of a geographically distributed team. However putting together and managing a suitable package of tools can be a time consuming task.

Ideally project teams need an ‘off-the-shelf’ electronic workplace that seamlessly integrates the various tools needed for distributed, collaborative teamwork and allows team members to work together as easily as if they were all in the same place. Elements of this integrated electronic workplace would include common filing systems, address books, mailing lists and diaries, along with facilities for scheduling and supporting both formal and informal meetings between members of the project team.

The technical solution

The IST project [UNITE](#)¹ set out to provide an advanced and affordable integrated software platform for Internet-based collaborative work to support project teams consisting of people from either a single company or a group of companies. It has developed and tested a prototype of an ‘open, teamwork-oriented platform for building, configuring and using co-operative workplaces’ This links team members and supports seamless and fluid interaction among them, allowing them to collaborate ‘as if co-located’. The project’s approach to developing this platform involved taking established tools for collaborative working and integrating them into a unified system.

The developers aimed to create an environment that provides team members with access to all the resources and information needed for their project but does not distract them with irrelevant information about other projects and contexts. In addition, the user interface is designed around the metaphor of a room so that people can behave as if they were in an off-line physical workplace (e.g., checking who is the office for the day or going to a meeting room for a project meeting). From the user’s point of view, the system consists of several main components.

The User Portal is a web-based graphical user interface with three main windows:

- Private Accessories: this provides access to tools (e.g. calendar, address book, personal document repository) for supporting activities that are not project specific;
- Private Area: this lists the projects in which the user is involved, and provides access to the respective project portals;
- Main Area: this occupies most of the display and is where the user can work with the various tools.

Project Portals are further web-based interfaces, providing individual users with access to the integrated set of accessories and communication/collaboration facilities that they need for a specific project. Like the User Portal, they have three main windows:

- Project Accessories: this provides access to tools for supporting individual activities and teamwork within the context of a specific project;
- Activity View: this shows the active team members and provides access to the communication and collaboration features;
- Main Area: this again occupies most of the display and is where the user can work with the various project-specific tools

¹ UNITE is led by IBM France and includes partners from France, Germany, Israel, the Netherlands, Portugal and The UK. The project started at the beginning of 2001 and was scheduled to last two years.

The accessories windows of the user and project portals provide access to software tools that support personal and teamwork activities respectively. The basic tools are:

- a Message Centre for managing messages,
- a Document Repository for managing documents,
- a Bookmark Repository for managing bookmarks,
- a Calendar for managing appointments, deadlines etc.
- an Address Book for managing contact information.

The activity view of the project portal presents two important components of the 'virtual' project office - a 'Personal Desk' and a 'Collaboration Area'.

The personal desk shows thumbnail images of all team members and highlights which of them are currently logged on to the virtual office. Team members can be contacted by clicking on the appropriate image. Depending on what they are actually doing, team members can define whether they would prefer to receive a phone call, a text message, a whiteboard image or a combination of these.

The collaboration area shows all current collaboration sessions and allows the user to join them or set up new ones. These collaboration sessions are virtual meetings and the virtual rooms, where they take place, offer services such as:

- audio communications over the PSTN or the Internet
- text-based services (chat rooms)
- data-based services (shared whiteboards or other applications)
- combinations of audio, text and data based services

The full range of collaboration services can be used for one-to-one discussions, meetings of groups of people to address a specific issue, or plenary sessions involving the full project team.

The results²

UNITE carried out a detailed usability analysis of a mock-up of the prototype system at the end of 2001 and the beginning of 2002. This used established techniques for investigating learnability, efficiency, memorability, and user satisfaction. In May 2002, a further usability trial was carried out on the actual prototype with a selected set of potential users. In the summer of 2002 an enhanced version of the prototype was tested by one of the partners, Pentascope, in a two-day trial with a geographically distributed team charged with a task - developing a project implementation plan - that would usually involve a physical meeting.

All three trials confirmed that the user-interface metaphors of desktops and meeting rooms were highly effective, and that the UNITE platform could provide almost all of the features needed to support a geographically distributed project team. However the trials also identified questions about system stability, response times and the availability of on-line help, which need to be addressed in order to develop robust commercial products based on the prototypes.

Conclusions

Some work remains to be done before the UNITE 'shared virtual workplace' is sufficiently stable to be turned into a commercial product. However the trials clearly demonstrated that it seamlessly integrates the virtual and physical resources needed to support a virtual team distributed across several physical locations. In the future a group of small businesses working as a distributed team should be able to rent a 'virtual' project office in the same way as they might today rent a serviced office to bring a team together physically for the duration of a project.

² A detailed description of the work undertaken to evaluate the usability of the UNITE platform and test it under operational conditions can be found in the results section of the project website <http://www.unite-project.org/public/index.html>