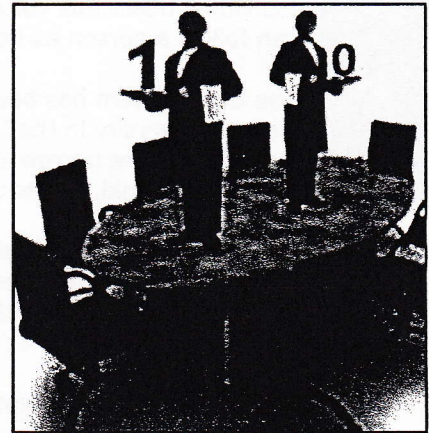# Electronic Jeeves to smooth your social interactions

Communication tools often force the user to adapt human communication methods to the needs of the technology. The partners in the CHIL project are attempting to turn the tables, and to put human needs first in the development of new communication technologies.

"One of the reasons why we hate computers today is because they are essentially a black box on the desk, and we have to engage with them in a rigid way," says Alexander Waibel of the University of Karlsruhe. As project coordinator for the IST project CHIL, he is explaining why the project participants decided to put human needs first when researching new technologies that could assist human communication.

"Human beings interact differently," he continues. "A good butler for example lives in the background and moves in to help when asked, or even anticipates your needs. That's what we're doing with CHIL – developing the services and technologies that serve human interaction – rather than vice versa."

CHIL is, at time of writing, still in progress. However the project partners have already developed some fascinating communication tools to assist human beings in their day-to-day interactions with others. The context for these interactions is the meeting room, lecture or classroom.

Context-aware communications

'Connector', for example, is a communication-control environment that is context-aware. The environment makes use of microphones and cameras in a specially equipped room to determine whether participants wish to receive calls on their mobile phone or not. "Calls can be blocked unless they are from a family member, for example," Waibel says.

Connector is more than a passive room monitor however; it understands social context and learns the preferences of individual users, adapting its decisions accordingly (a video of the tool in action can be viewed at the project website). It can tell the difference between a lecture and a coffee break, and route or hold calls accordingly. It will handle the interaction with callers sensitively. A participant's wife will be told that her husband is in a lecture – an external caller will be informed that he is unavailable.

The second tool is 'Memory Jog', which is designed to 'jog the memory' of individual participants in meetings. "Say you forget the name of the person across the table – Memory Jog will act as an effective personal assistant, whispering the name in your ear," says Waibel.

A further application, 'Attention Cockpit' (also called the 'Socially-Supportive Workspace'), provides a multimodal interface for entering and manipulating contributions from different meeting participants, e.g. for discussing the minutes. This tabletop device presents the shared workspace as a kind of virtual table, on which the documents under discussion can be pushed to and fro.

The tool acts as a kind of meeting coach by monitoring the behaviour and involvement of participants, and supporting individuals who want more or less participation in the discussion. The idea is to build better group decision-making by ensuring that everyone who wishes to be involved in a discussion is heard.

Audio and video interfaces

The team have developed two human interfaces for the aforementioned technologies; the first being a visual one. The CHIL 'Translation Goggles' are spectacles equipped with a tiny heads-

The Memory Jog tool makes use of a novel technology called 'targeted audio', a narrow-band audio beam developed by project partner Daimler Chrysler, which is projected using a specially developed speaker. "We can project this audio beam from a building to the car park, and the individual hears this voice in his ear," says Waibel. "Within a meeting room, this targeted audio can follow a person as he or she moves around, and be inaudible to anyone else."

The CHIL system has been tested on campus at the University of Karlsruhe and at Carnegie Mellon University in the US, as well as being demonstrated at numerous conferences and exhibitions. The narrow-band audio technology is also going to be on display at the IST 2006 event in Helsinki, November 2006.

Investigating marketable technologies

Waibel concedes that the technology needs to be improved still. "We need to make these tools more social. At present they are simply switched on and off. We would like them to be able to appear and disappear as needed, much as a good butler would do."

CHIL continues until August 2007, however the partners are already investigating how to turn the project results into marketable technologies. "We organised a technology-transfer day in April 2006, when we invited companies to look at what we are doing," Waibel comments. "This has already lead to cooperation contracts with three companies in industry – one with a major German multinational."

"We also publish a catalogue of our 'low-hanging fruit' – what we call technology components that can be licensed and used separately from the whole system," he says. "This catalogue can be browsed online via the project web site."

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