User-Centered Design of CHIL Services: Introduction

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Services, that is, organized sets of functionalities targeting users, are at the core of the CHIL enterprise. It is at this level, in fact, that the general vision – putting the computer in the loop of human interaction – is made concrete and enjoyable to the user; it is services that users see, interact with, and exploit to better achieve their objectives. In the conception of this book, services are neither simple collections of technologies, nor showcases aimed to concept-proof technological advances, nor integration add-ons. Rather, they are the visible outcome of an organized effort towards:

- Understanding what the metaphor of ‘the computer in the loop of human communication’ really amounts to. Because of the novelty of the field, the only way to give concreteness to the metaphor is to deal with the task of specifying, designing, implementing and evaluating actual service, this way providing insights that can be brought to bear on future efforts.

- Going in depth into the human (social and cognitive) factors that must be considered to bring about the vision’s added-value, avoiding the ‘yet another clumsy technology’ effect. As stated again and again in this book, the overall vision of CHIL starts from the consideration of human communication needs and the idea that the computer must support them. This is tantamount to requiring that the services be aware of the social environment in which they operate, be capable of adapting to varying cognitive and interaction needs, and, first and foremost, that their designers have a clear understanding of these issues and know how to deal with them.

- Articulating the multidisciplinary nature of this domain, understanding the contributions of, and mutual influence among, fields such as multimodal scene analysis, human-computer interaction, social and cognitive psychology. It is a straightforward consequence of its goals and objectives that CHIL’s endeavor is a multidisciplinary one. The crucial consequence is that the pursuance of those goals require a level of integration and contaminations across the contributing disciplines and research field that is unprecedented: The solution to the ‘human in the loop’ problem cannot be attained through the straightforward integration of separate components contributed by them.
In the end, the term services as used here indicates both the system prototypes providing a set of functionalities that give substance to the ‘CHIL’ vision, and the very effort, including all the user-centered issues, behind their design and development.

The services we are going to discuss in this book all address social situations at large, and group interaction and dynamics in particular. Within this vast domain, a number of issues have been isolated along with functionalities meant to provide an answer to them. These areas span three different aspects of group interaction: (a) Managing tasks, in particular the group access to, and creation and manipulation of, information; (b) Managing connections between the people in a meeting and the outside world; (c) Managing the social dynamics in groups. Before turning to give some details about these different aspects and the services addressing them, let us emphasize once again that the primary purpose of developing CHIL services was to contribute to the understanding of the metaphor of the ‘computer in the loop of human communication’. Thus, we were not so much interested in optimizing concrete applications, but rather in investigating the interplay between design choices, design process, and users’ relevant psychological and social dimensions for this new class of services. In order to investigate these aspects we needed to develop concrete concept proposals that people could experience with, for us to be able to measure their reactions, and use the insights so gained into a better understanding of the ‘computer in the human loop’ metaphor.

- Face-to-face interaction and collaboration in meetings can often be difficult, little productive, and frustrating. Working groups often have a hard time in setting up and respecting agendas, allocating time to the topics to discuss, collecting the material produced, and working out agreed upon minutes. A solution that will be explored below is to provide working groups with Shared Workspaces (SWs) that support them in their need to keep focalization on the crucial issues, keep track of, and manage, time, etc. SWs are infrastructures for encouraging cooperation among participants, whereby the system provides a multimodal interface for entering and manipulating contributions from different participants, such as the use of the agenda and the discussion of outcomes notes, and allowing people to share information and ideas and accomplish common tasks. By merging multimodal and computer supported collaborative work (CSCW) technologies [17], a SW offers groups a table-top shared environment in which the members can edit documents and draw diagrams; pass their products over to other members; manage the agenda and keep track of the passing of time; access an automatically produced meeting report collecting all the material produced. The system, in turn, helps users to manage and organize space, also based on its awareness of people’s position around the table.

- Another problematic area in social context, and in particular meetings, is the timely availability of information that the single members of the group, or the group as whole, need in order to better pursue their goals. The Memory Jog service is a non-obtrusive assistant for meetings, lectures and presentations settings, aiming at providing pertinent information and memory aids. It acts both proac-