InterSim: Supporting Face-to-Face Collaborative Design

Ernesto Arias[1,3]
Hal Eden[1,2]

[1]Center for LifeLong Learning & Design (L[3]D)
[2]Department of Computer Science
[3]College of Architecture and Planning
University of Colorado at Boulder

At the Center for LifeLong Learning & Design at the University of Colorado at Boulder, we are exploring models of learning and collaboration that require an emphasis on shared interaction as well as the social structures and the cultural environment in which the interaction takes place. We are now pursuing the development of a computational INTERactive SIMulation (InterSim) station to significantly extend in very unique ways the interactions that are possible.

This effort involves the creation of a prototype to integrate systems supporting new paradigms of interaction with simulations—with an emphasis upon support for shared interaction to mediate social aspects of learning, design, and planning. These paradigms would integrate the use of physical objects—to support and encourage face-to-face interaction among the participants—with virtual objects—to provide computational support for the model underlying the simulation. By creating this alternative bridge between the physical and the virtual, the system would allow the interaction both with simulations and among individuals to take place at a distance using two systems linked across a network. The stations will have a horizontal interactive computer screen that can act as *both physical and computational* gameboard. Physical simulation objects, outfitted with a tracking sensor can be placed on top of this interaction surface. The projected, computer-based parts and the real, computer-recognizable parts together form a model that blurs the boundaries between the physical and virtual worlds.

The InterSim will allow us to investigate various areas central to learning:
Developing new interaction paradigms. Much of our work indicated that new ways of allowing individuals and groups to interact with computational environments are needed. The need to support groups to learn and design together will require interactions that go beyond the one user/one computer situation that is broadly supported now. Providing support to augment and mediate social interactions is also crucial.

Studying cooperative problem solving and social aspects of design. Our approaches stress both (a) the importance of balancing the role of the human and the computer in knowledge-based systems, and (b) the need to support group and individual roles in the design and learning processes. The proposed system will allow us to extend support for collective processes, including aspects such as consensus building, shared understanding, and surfacing hidden or implicit conflicts.

Supporting Extended Interaction. At the same time, we recognize the need to support new modes of interaction among individuals within groups, including cases where the individuals are not co-located. We have investigated support for video interaction, and one of the elements that we have found to be missing is the ability to create shared interactions.

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