Interactive Computer Support for Remote

Design Teams: A New Approach

by

David John Perreault

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Submitted to the Department of
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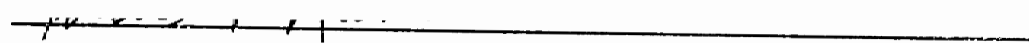
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Abstract

The desire to facilitate interaction among geographically distributed
workgroups has underscored the need for better computer-mediated
communications tools. Development of effective collaboration tools which permit
remote, synchronous interaction is a challenging task, especially in applications
where real-time graphics displays are necessary. In this work, a shell technique
is investigated which gives single-user applications a multi-user interface by
linking together multiple workstations. When the shell is in operation, the linked
workstations operate identically, thus providing a uniform computer interface for
a group of collaborators.

To investigate the technical requirements of a shell-based system, and to
characterize the resulting multi-user interface, a prototype system has been
developed. One basic design requirement is that the system allow users to
interact in the environment of existing application programs, while remaining
independent of any particular program. A second requirement is that the resulting
system be able to function over low bandwidth communications links, regardless
of the amount of graphics output or database changes produced by the system.

Thesis Supervisor: Dr. John G. Kassakian
Title: Professor of Electrical Engineering

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