

NOVEL INTERACTION TECHNIQUES FOR COLLABORATING ON WALL-SIZED DISPLAYS

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Performing and collaborating on information-intensive tasks - like reviewing and analyzing multiple charts - is an essential, but currently difficult, activity in desktop environments. The problem is the low resolution of the display that forces users to visualize only few pieces of information concurrently, and to switch focus very frequently. To facilitate productivity and collaborative decision-making, teams of users are increasingly adopting wall-sized interactive displays. Yet, to harness the full potential of these devices, it is critical to understand how to best support inter-member cognition and navigation in such large information spaces. To navigate information, the wall-display's overwhelming size (often 18 X 6 feet) make existing desktop-driven interaction and organization techniques (like "point-and-click" and "taskbar") extremely inefficient. Also, with time, users get exhausted walking to reach different elements spread over the wall-display. Moreover, being aware of the collaborative events happening around the display, while working on it, often exceeds users' cognitive capacity. To address these limitations, we are investigating four novel interaction techniques for wall-display user experiences. "Timeline" allows browsing large collections of elements over time, while or after collaborative work; "Cabinet" supports temporary storage and effortless retrieval of displayed elements; "Magnet" enables users to virtually reach remote objects on the wall display; "In-focus" allows facilitated and non-intrusive awareness of members' interaction. We are planning to prototype and evaluate these techniques using off-the-shelf input modalities such as multi-touch gesture and mid-air gesture, as well as software and wall-sized displays made available by the University Information Technology Services (UITs) at IUPUI. In our evaluation with users, we hypothesize that, with respect to desktop interaction techniques, the proposed techniques will increase efficiency in navigation and information organization tasks, reduce perceived cognitive load, while at the same time engender better collaboration and decision-making.