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SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (D3)
Space Technology and System Management Practices and Tools (4)

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CLOSER

Abstract

One of the most critical aspects of a project is its management. This is always true, especially in the space sector where complex systems interact with distributed teams and massive budgets. The intrinsic difficulties associated with managing these resources often lead to cost and time overruns that have an evident negative impact not only on the current project, but on the sustainability of future space policy. To address the challenges faced, companies have turned to online tools and meetings between colleagues, encouraging participants to meet together often in teams, to build strong personal relationships and promote a mission focused social network. A growing number of space companies are enhancing the human-computer interaction by implementing Concurrent Design Facilities (CDFs) to manage the parallel work of design teams while minimizing cost and schedule in the initial phases of the projects.

The next step in merging these complex human interfaces is CLOSER. This architecture, recognizing the demand for a functional virtual work space, is capable of providing contributors with all the tools they need to communicate, to work and to share experiences. CLOSER is a virtual environment supporting effective management of resources while overcoming barriers in work force interaction, regardless the actual proximity of the people. Utilizing a technology transfer from cutting-edge gaming environments to enhance telepresence amongst collaborators, CLOSER will not only facilitate meetings, but support actual work within the virtual space. The CLOSER engine incorporates multiple software platforms, where distributed interactions are facilitated and communication is enhanced through incorporation of physical and emotional expressions.

CLOSER is not just a new advanced system to share documents and edit them via multiple platforms; it is a comprehensive management tool, which enables the collaborative use of software in a virtual setting. In fact, CLOSER will allow its users to design, discuss, and edit a CAD model without even possessing the local software.

A case study illustrating the benefit to the International Space Station when using CLOSER to integrate terrestrial and orbital mission elements is performed; it exemplifies the design, preparation and execution of an onboard experiment when real-time collaboration between astronauts and experts on the ground is permitted. Without requiring a costly and inefficient physical CDF we bring Space “CLOSER” through the miracle of virtual reality and telepresence.