Success Story

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—James Avery,
[Former] Associate Dean for Academic Affairs,
Discovery Learning Center

SGI Professional Services Helps Crystallize a Visionary Facility at the University of Colorado

Videoconferencing, Visualization, and Synergy at the University's New Collaboratory

The Challenge
Create a flexible, multi-space, multimedia facility for videoconferencing and collaboration that can include participants located anywhere in the world

The SGI Solution
Design and implement a complete, highly flexible conferencing center, including audio systems, screens, movable walls, a high-bandwidth data network, and an SGI Reality Center visualization environment

The Result
The Bechtel Collaboratory, a superbly productive meeting space where students and faculty can adapt meeting rooms to their needs, explore immersive visualization, and collaborate audibly and visually with colleagues across the campus or the world

In the Bechtel Collaboratory at the University of Colorado (CU) at Boulder, three meetings are in session in separate rooms. In one, the leader uses a wireless remote touch panel to fly his team through archived images streamed to a 15-foot-wide screen in an SGI® Reality Center® facility. In the next room, a scientist conducts a videoconference between CU researchers and colleagues scattered across two continents. In the room beyond, collaborators use a touch-screen workboard to hammer out design details.

This remarkable collaboration facility, which accommodates up to 108 people, is part of the Discovery Learning Center (DLC), a new, 45,000-square-foot laboratory and conference facility at CU's College of Engineering and Applied Science. SGI Professional Services was given the challenge of translating the faculty's vision into a functioning reality. SGI played a key role in taking the project from concept development through project management to implementation. The result is a remarkable, highly functional facility that takes collaboration to new levels.

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The Bechtel Collaboratory: Heart of the DLC

"The idea behind the DLC was the creation of a place where cutting-edge research can flourish," says James Avery, the engineering college's former associate dean for academic affairs. At the DLC, research initiatives are considered tenants. To qualify for a lease, faculty researchers must involve undergraduate students as research team members and involve multidisciplinary elements in their research and collaboration with industrial companies. Approved faculty tenants can access the Bechtel Collaboratory, a space designed for videoconferencing, audioconferencing, presentations, and collaboration among people in the room, elsewhere on campus, or anywhere in the world.

The Collaboratory, the heart of the DLC, can be described by two words: connected and reconfigurable. It is a shoebox-shaped room roughly 88x25 feet that can be divided into two or three spaces by movable walls. Two Silicon Graphics® 230 visual workstations, configured as broadcast servers, stream data and images, including 3D visualization images, from disk storage or networked laboratories to the Collaboratory on demand. The servers can draw on archived storage of up to 72 hours of MPEG video stored on an SGI® TP9100 storage system with six Fibre Channel drives and accessed through an SGI® Origin® 200 server.

Participants can use a Radio Frequency wireless touch panel to select from media sources and options that include audioconferencing, videoconferencing, live or archived video streaming, a resident PC or laptop, a document camera, a VCR, or a DVD player. The system can also stream live video from the DLC's mission control and space experiments' clean assembly room, or immersive images developed on an SGI® Onyx® family system at the university's BP Center for Visualization. Visual media can be routed to a 14-foot immersive display, two large-display touchscreen workboards, or participants' computers.

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The Collaboratory's ability to change physical shape and technical setup on demand gives users incredible flexibility. "When we move the walls, the walls tell the system their new position," says Avery. "So whether we create one room, two rooms, or three rooms, and whatever their sizes, the technical setup is automatic. The acoustics will be right and the microphones and speakers will be optimally adjusted." When the movable walls are pushed to the back of the Collaboratory to permit a single large meeting, presentations can be routed to two workboards along the long side wall as well as to the main screen, so that all in attendance can follow easily. Seating is equally flexible—anything from theater format to boardroom configuration to a cluster of worktables.

Immersive Visualization and a Video Wall

One end of the Collaboratory is an immersive visualization room. The 15-foot rear-projection video screen of an SGI Reality Center system is mounted on the end wall. Behind the screen are a pair of Barco projectors and a Silicon Graphics® Onyx2® workstation image generator. The Mechdyne projection system delivers standard RGB projection of graphics or passive stereo images that can be viewed with 3D glasses. Participants can write or draw on the screen to make points.

Outside the room, at the end that houses the Reality Center system, is the Collaboratory's atrium lobby and an 8x11-foot video wall, also driven by the SGI® Origin® broadcast servers. Visitors can use a touch-screen control to see a rocket launch, research projects in CU labs, or view content from the DLC's vendors, patrons, and sponsors. SPL Integrated Solutions provided the video wall as well as the Collaboratory's videoconferencing system.

As part of the contract, SGI Professional Services also installed a Reality Center system in the DLC's Visualization Laboratory, a separate facility on another floor. An SGI Onyx family system drives a Fakespace Systems ImmersaDesk® display to enable research teams to visualize data three-dimensionally.

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SGI: Integrator/Project Manager of Choice

The $1.5 million SGI Professional Services contract covered virtually everything in the Collaboratory, including audio systems, screens, data connections, routers, switchers, and the Reality Center system. The university had two primary reasons for selecting SGI as its integrator/project manager. One was SGI's successful track record in complex, large-scale integration projects. The other was SGI Professional Services' ability to listen, understand, and respond.

"In the initial meetings, they didn't tell us what we wanted," says Avery. "They asked us what we were trying to do. That was important. We had looked at the SGI project at Northrop Grumman and we had heard what SGI was doing at the Pepsi Center, but that was a long way from knowing what we were going to do. One of the things that Mark Stephens and Kevin McNellis of SGI did very well was to say, 'If the direction isn't perfectly clear at this point, we'd better build in enough flexibility to let you make choices later on.'

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