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Some of the largest consumers of advanced networking on campuses are not in the physics, engineering or computer science departments. Using high-capacity infrastructure to create global stages, enable remote instruction, allow participatory discovery, and open access to rich collections of media–Internet2's Arts & Humanities communities are redefining how they create, teach, perform, and collaborate.
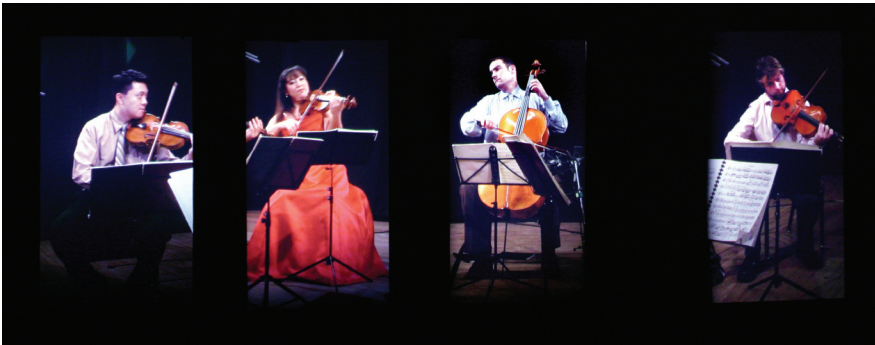
PERFORMANCE

Photo courtesy of the University of Texas at Austin

The Miró Quartet: Live & Virtual

http://arts.internet2.edu/fall2004-perfevent.html

During the Fall 2004 Internet2 Member Meeting, an evening performance event, *The Miró Quartet: Live &Virtual,* showcased the use of cutting-edge networking and streaming technologies, and featured the world-renowned Miró Quartet, a group comprised of University of Texas at Austin faculty. The event took place in two auditoriums with the audience switching venues during intermission. In the first auditorium, the audience saw and heard the string quartet in person. In the second, the audience saw the performance via real-time streaming High Definition Television (HDTV) and 10.2 channel immersive sound technology, developed by the Integrated Media Systems Center at the University of Southern California (USC). The 10.2-channel audio, projected over 26 speakers, allowed engineers to simulate how sound from an in-person performance reflects off acoustic surfaces in three dimensions. The HD stream featured four parallel channels, which captured each of the performers on stage individually. The performance served as a prototype for performing for an audience in two smaller auditoriums.

Telematic Choreography

http://dance.fsu.edu/telematics/events/ wsu3304.html

Photo courtesy of Maggie Allesee Department of Dance, WSU

The Florida State University (FSU) Department of Dance used Internet2's Abilene Network to provide long-distance coaching for dance students at the Wayne State University (WSU) Maggie Allesee Department of Dance. This interactive rehearsal session enabled internationally renowned choreographer and FSU Professor Jawole Zollar to observe and coach WSU dancers using interactive video and audio as they rehearsed excerpts from her work *Hair-Stories*. This telematic dance coaching session was the inaugural event of the Black Box Studio, a technology-enhanced FSU facility for video documentation, telematic research, and multimedia theater design. "Telematics"—a term created to describe the blending of computers and telecommunications technologies—provides a set of applications often used in the delivery of distance education. According to FSU Assistant Professor Tim Glenn, faculty researcher in dance telematics, "Advanced network technology opens the door to a whole new approach for how we create, teach, and perform dance works. As a result, the art of dance is redefined by incorporating the tools of new technologies into the dancers' experience. "

Photo courtesy of Arctic Region Supercomputing Center

Art on the Grid

http://www.uaf.edu/news/featured/05/artgrid/

Instead of a physical location that is "somewhere," the Access Grid provides a virtual location that is "everywhere." Using the Access Grid, an ensemble of multimedia large-format displays and interactive visualization environment, the University of Alaska Fairbanks presented musical artist Valerie Naranjo to 26 locations around the world. Valerie is the percussionist for the Saturday Night Live Band and Drum Principal and Arranger for the Broadway production of *The Lion King*. During her session, she performed on the gyil (pronounced "Jee-lee", an African xylophone), the marimba, sang Native American songs and lectured about her music. She also directed remote participants in call and response singing, and ended the clinic with a Q&A session. Students and faculty from five university percussion programs participated: University of Alaska Fairbanks, University of New Mexico, University of South Dakota, University of Maine, and Jackson State University. Other participants included public school students, teachers, and music enthusiasts in the Access Grid community. This project was coordinated through "Art on the Grid", a collective of visual, media, and musical artists/educators who are developing productions on the Access Grid in order to explore its strengths, weaknesses and inherent potential. For more information about Art on the Grid, visit http://arts.internet2.edu/files/Percussion-and-Internet.pdf

Return to the Titanic

http://www.clevelandart.org/educef/titanic/html/

Photo courtesy of NOAA

The Cleveland Museum of Art provided a live portal to a unique interdisciplinary experience, *Return to The Titanic*. A series of satellite broadcasts featured live video from the depths of the Atlantic Ocean chronicling Dr. Robert Ballard's return expedition to the Titanic. Serving as the Ohio location, the Cleveland Museum of Art created a bridge for its community to the historical, archaeological, and scientific significance of the Titanic site.

A satellite system on the expedition's research vessel sent a real-time stream to VBrick Systems networked video appliances, located at Mystic Aquarium and Institute for Exploration in Connecticut, and then streamed live in MPEG-2 and MPEG-4 video formats over the Abilene Network to the Cleveland Museum of Art where the program was supplemented by an special overview of works of art reminiscent of the period.

Transatlantic Master Class

http://www.nws.edu

Photos by Fabio Bisi

The 2005 GARR conference in Pisa, Italy—hosted by GARR, the Italian Academic and Research Network—invited members of the Internet2 Arts and Humanities community to help stretch the boundaries of technology-enabled, simultaneous, remote learning and teaching. Technical teams from GARR and the New World Symphony created virtual studio space for viola maestro, Hillary Herndon, at the New World Symphony, and viola student, Anna Simeone, from the Conservatory of Music in Pisa. Bridging languages through translators and distance through technolgy, student and teacher interacted during this live musical exchange. The broadcast, the first of its kind between Europe and the US, used two laptop computers: one receiving the 30 Mbps NTSC signal from Miami and converting it to PAL, the other sending the outgoing PAL signal to Miami at 30 Mbps where it was decoded using DVTS software, resulting in an aggregate bandwidth of 60 Mbps. In addition to the conference attendees on site, 170 viewers attended by netcast.

The EVIA Digital Archive

http://www.indiana.edu/~eviada/

Photo courtesy of R. Thomas Bray, Digital Media Commons, University of Michigan

While most research happens in libraries and archives, ethnomusicologists depend on the products of "fieldwork" for their study. World music events rarely involve only the sound of music, but many additional facets of creative communication. Video recordings, because of their ability to capture not only sound but the multiple facets of creative communication that surround it, are regarded as the recording tool of choice.

Preserving these video recordings and making them easily accessible for teaching and research is the aim of the Ethnomusicological Video for Instruction and Analysis (EVIA) Project. A joint effort of Indiana University and the University of Michigan, and supported in its initial phase by the Andrew T. Mellon Foundation, the EVIA project is coordinated by a team of experts in ethnomusicology, archiving, video, intellectual property, and digital technology. Ultimately, project plans include providing guidelines for future archives and establishing a functioning digital repository and delivery system for the current collection, which contains approximately 150 hours of digital video. Using the advanced network capabilities of Internet2, EVIA will provide high quality video streams to scholars for new research endeavors and to teachers for creating rich learning experiences.

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