

Access Grid Performance and Presentation Space

Jeff Carpenter, NCSA; Jennifer Teig von Hoffman, Boston University;
James Miller, inSORS Integrated Communications; James Oliverio, Digital Worlds Institute;
Andy Quay, Digital Worlds Institute; Cindy Sievers, Los Alamos National Laboratory;
Jonathan Tyman, Internet2 Commons; Joella Walz, Digital Worlds Institute

1. Overview

What if travel were free and instantaneous? How would this affect our lives and work? These questions have been posed by Rick Stevens of Argonne National Laboratory, and have been explored by Access Grid¹ users since the inception of the Access Grid in the spring of 1999, as they negotiate the boundaries of space and place.

At SIGGRAPH 2005, the Access Grid supports a global collaborative performance piece, international art panels, and multi-site community interaction. This emerging, scalable teleconferencing technology enables interaction between individual desktops, 3,000-person theaters, and everything in between. The grid's 1,500 users throughout the world interact through thousands of nodes, designed spaces that contain the high-end audio and visual technology needed to provide a high-quality, compelling user experience. The nodes are also used as a research environment for development of distributed data and visualization corridors, and to study issues related to collaborative work in distributed environments. The SIGGRAPH 2005 node includes three large screens in a dedicated Access Grid space, where attendees can participate in worldwide events.



“Navigating Gravity” joins dancer Tara Burns at the UF Digital Worlds Institute artists in Australia & England (2002)

The Access Grid Performance and Presentation Space at SIGGRAPH 2005 creates a virtual and physical venue for the exploration of geographically distributed art and presentation. It is informed by previous experiences with Access Grid spaces, such as the SC Global venue at IEEE/ACM's Supercomputing

¹ The Access Grid is a trademark of University of Chicago.
<http://www.accessgrid.org/>

Conference² and performances by University of Florida's Digital Worlds Institute³.

2. Technologies

The primary technology used in this space is the Access Grid, an open-source software suite developed by the Futures Laboratory at Argonne National Laboratory. inSORS Grid software is an extended and enhanced version of Access Grid; this proprietary software will be in use both at the Los Angeles Convention Center and at several of the multi-continent locations participating in this venue. Internet2 Commons will provide alternate media streams for passive viewing of the performances and presentations.

In addition, specific performances and presentations may use additional applications during the course of their session. For example, Digital Worlds Institute will use their custom software to transmit a composite of their Access Grid video streams, and AG Juggler will be used to transmit virtual reality streams during the performance of Loose Minds in a Box.

3. Motivations for Technology Choices

Access Grid and inSORS Grid software have been selected for this performance and presentation space for both their current feature set, and their potential and plans for future expansions. Both are intended for integration of grid computing services.

Grid computing (or the use of a *computational grid*) is applying the resources of many computers in a network to a single problem at the same time – usually to a scientific or technical problem that requires a great number of computer processing cycles or access to large amounts of data⁴.

The Access Grid is open source, and provides an Application Programming Interface; developers around the world are creating applications as varied as shared MIDI services and shared closed caption services (both in development at Ryerson University). In addition, Access Grid client software permits the use of varied media tools; tools currently under development include positional audio (Boston University) and high-definition and digital video (Gwanju Institute of Science and Technology).

High-performance systems such as Access Grid and inSORS Grid are of necessity very demanding of the network infrastructure on which they rely. To provide sites around the world to passively view all sessions taking place in this performance and presentation space, Internet2 Commons will provide media streaming in more commonly-available formats.

² <http://www.sc-conference.org/>

³ <http://www.digitalworlds.ufl.edu/>

⁴ <http://www.whatis.com/>