



Advanced Videoconferencing for TRANSIMS Research and Development Conference

Conference Context	
Subject	<ul style="list-style-type: none"> Traffic modeling with TRANSIMS
Participants	<ul style="list-style-type: none"> Argonne National Laboratory - TRACC (Illinois) Northern Illinois University (Illinois) AECOM (District of Columbia) Rutgers University (New Jersey) Volpe Center (New York) Resource Systems Group (Vermont) Louisiana State University (Louisiana) Chicago Metropolitan Agency for Planning (Illinois) Federal Highway Administration (District of Columbia)
Conference Method	<ul style="list-style-type: none"> General overview presentation by sponsor (USDOT) and presentations by each research team with Q&A.
Length of Conference	<ul style="list-style-type: none"> One day
Technical Context	
Conference Type	<ul style="list-style-type: none"> Multipoint
Technology Used	<ul style="list-style-type: none"> Access Grid®
Additional Equipment	<ul style="list-style-type: none"> Polycom HDX 8004 HD codecs LifeSize HD Room System
Contact	
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Background

Argonne National Laboratory, in cooperation with the U. S. Department of Transportation (USDOT) Research and Innovative Technology Administration (RITA) has established the Transportation Research and Analysis Computing Center (TRACC), a state-of-the-art modeling, simulation and high-performance computing center located at the DuPage National Technology Park in West Chicago, Illinois. A key component of the TRACC program is the application of the USDOT-developed TRANSIMS (Traffic Analysis and Simulation System) to the Chicago metropolitan region and the development of additional modeling capabilities for TRANSIMS. TRANSIMS is a set of travel modeling procedures designed to meet the needs of state departments of transportation and metropolitan planning organizations for more accurate and more sensitive travel forecasts for transportation planning. TRACC uses the TRANSIMS software for a number of projects, including a study of emergency evacuation scenarios for the Chicago Business District. TRACC’s main goal for TRANSIMS is to provide access to the rather complicated application as an integrated package, including the following:

- A high-performance computing platform that can run TRANSIMS models much more efficiently than a desktop computer and minimizes the load on local desktop machines.
- Stable versions of TRANSIMS on TRACC’s high-performance cluster platform, built with special high-performance compilers (PathScale, Intel) and tested thoroughly before deployment.

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- Data storage for both intermediate files and final results, including the reliability of TRACC's advanced hardware such as the 180-Terabyte high-speed RAID arrays, multiple dedicated file servers, and backup capabilities of the 160-Terabyte tape robot.
- High-speed remote access network infrastructure with universities and research centers around the globe.

Collaboration among USDOT colleagues is an important component of TRACC's mission. This case study describes the use of advanced videoconferencing to assemble the geographically dispersed TRANSIMS research and development teams for the purpose of meeting each other, discussing current code development activities and reviewing current applications.

Why Access Grid Was Chosen

The TRANSIMS researchers had previously communicated only by phone and e-mail. A videoconference provided the ideal opportunity for the geographically dispersed teams to meet and share research, development, and application projects using high-quality video, audio, and data. The conference setting needed to provide real-time interaction between the site participants. The Access Grid® (AG) is an advanced videoconferencing application that uses audio and video tools, including large-format displays, multimedia presentation and interactive environments with interfaces to Grid middleware and visualization environments. Access Grid allows multiple groups in different locations worldwide to meet in a virtual meeting room. Participants can see and speak to each other in real time, use online chat, and share applications simultaneously. As an application, Access Grid is ideal for a meeting of any size due to its scalability. At its most basic, AG can run on a webcam-equipped laptop using its display and a simple headset for a one-to-one meeting or it can be used in a conference room or larger venue with one or more servers, several cameras and displays to create a group-to-group meeting with multiple sites from around the globe.

Available audio/video resources are used at each site to optimize group-to-group interaction across the Grid. AG provides these required capabilities and was chosen to host the first TRANSIMS conference.

The Execution

The TRANSIMS conference was held in June 2007. Four sites were identified to provide locations requiring minimal travel by the research teams. Each site was required to have a functioning Access Grid® node within a meeting venue conducive to hosting the conference participants, such as a conference room or classroom. The sites selected were: Argonne National Laboratory –TRACC (Illinois), Louisiana State University (Louisiana), University of New York at Buffalo (New York), and ACCESS-DC (Virginia).

Large displays at each site showed views of the remote meeting spaces and the technical material presented from each site. Access Grid is capable of streaming four or more video streams per site so coordinators have the ability to select the video streams to display at their respective sites. The video and audio from each site is sent across the high-bandwidth broadband network.

Prior to the conference, each site tested connectivity with Argonne–TRACC and subsequently with all sites. During the testing, audio and video were tuned for each site to ensure effective transmission. The day of the event, the virtual venue was opened two hours prior to the event to provide for any last minute set-up required.

Participants at all sites were able to see and hear the presentations. Additionally, participants were able to ask questions during the presentation and have discussions afterward. Feedback on the conference was positive and participants agreed to continue to collaborate and share results of projects highlighted during the conference.

Evaluation Comments

The TRANSIMS traffic simulation and modeling system developed by USDOT has active programs in both the application of TRANSIMS to metropolitan regions and the development of new modeling capabilities to address emerging analysis needs. This conference/workshop allowed TRANSIMS developers and traffic analysts to share experiences, both positive and negative, in the use of TRANSIMS and help define critical needs for future TRANSIMS development. The use of Access Grid technology allowed the sharing of formal and informal presentations, data, results, and animations from several organizations in a highly interactive environment with multiple participants.

The Barriers

Although there were no barriers among the conference participants, one potential barrier to be noted is that Access Grid® is used primarily by universities and government research laboratories, which are not always accessible to the general public.

The Enablers

Each of the videoconferencing sites had good connectivity to various research and education networks, with Internet2 providing the interconnecting backbone. Each site provided the participants with high-quality audio, video and data sharing through Access Grid®. It should also be mentioned that an important aspect to a good videoconference is testing the facilities well before the scheduled event. All sites were ready and eager to participate in pre-event qualification tests.

Advice for New Users

Access Grid® is an ensemble of resources that includes multimedia large-format displays, presentation and interactive environments, and interfaces to Grid middleware and visualization environments. These resources are used to support group-to-group interactions across the Grid. There is a global community supporting this research project, which was initially developed by Argonne National Laboratory. For more information about Access Grid®, visit www.accessgrid.org.

Videoconferencing encourages collaboration and sharing of information among participants. This tool is also useful for technology transfer through classes and training. Good technical support is essential for a successful event, by providing the appropriate resources for the intended participants and content and by establishing reliable performance at all sites.

It is best when speakers are briefed in advance regarding the nature of videoconferencing, the use of specific microphones and camera presence, as well as what to expect. Discussions need to be clearly heard by all participants to be effective and the information presented should be shared with all remote sites.

For further information, contact

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