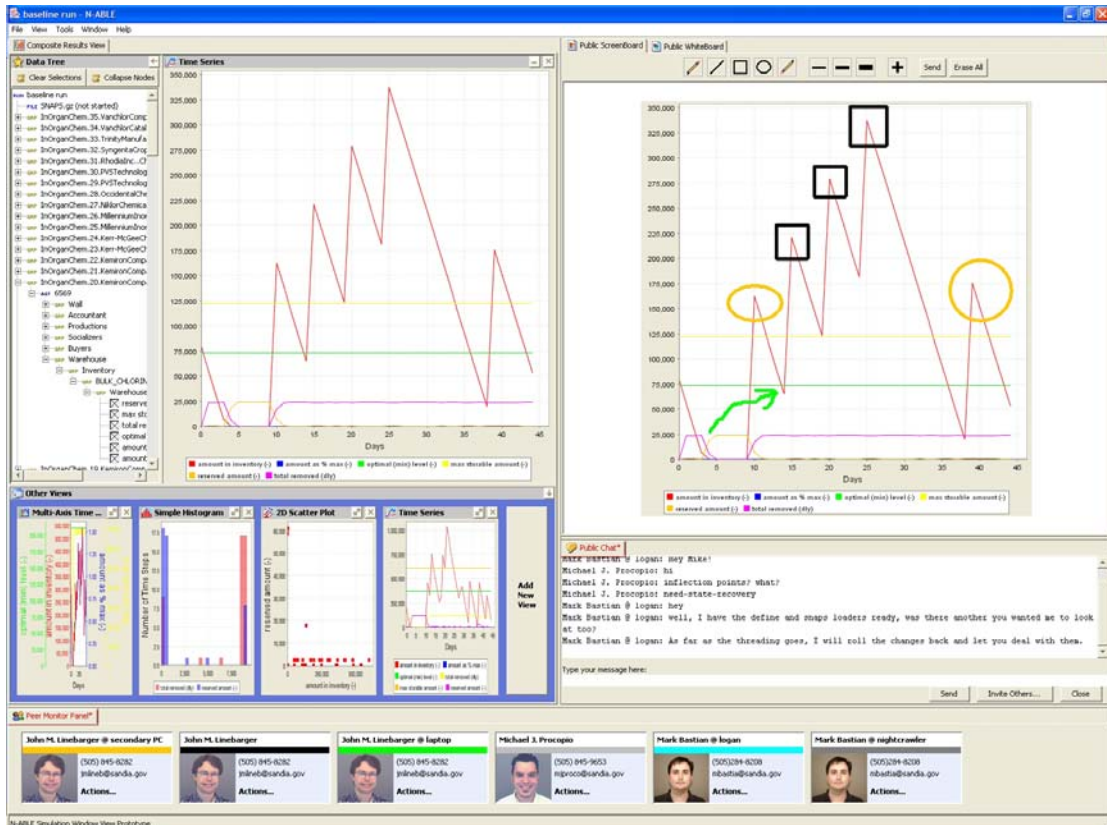# *Secure Synchronous Collaboration Framework*

The National Infrastructure Simulation and Analysis Center (NISAC), a program under the Department of Homeland Security's (DHS) Preparedness Directorate, provides advanced modeling and simulation capabilities for the analysis of critical infrastructures, their interdependencies, vulnerabilities, and complexities. These capabilities help improve the robustness of our nation's critical infrastructures by aiding decision makers in the areas of preparedness, consequence and risk analysis, policy analysis, investment and mitigation planning, education and training, and near real-time assistance to crisis response organizations.

Sandia National Laboratories (SNL) and Los Alamos National Laboratory (LANL) are the prime contractors for NISAC, integrating the two laboratories' expertise in infrastructure disruption/vulnerability modeling and simulation under the direction of DHS's Infrastructure Protection/Risk Management Division.

Secure Synchronous Collaboration Framework

NISAC and related programs are frequently called upon for rapid turn-around analysis. The primary metrics for this high-pressure, time-constrained collaboration (which can be characterized as "collaboration in a crisis") are time to solution and quality of solution. A primary time consumer is the time spent establishing a common analysis picture.

The overall goal of the Secure Synchronous Collaboration Framework is to facilitate collaborative interaction through a secure software framework that allows geographically-distributed decision-makers to integrate multiple perspectives and quickly converge on a shared view of the problem.

This goal can be broken down into three subgoals:

1. Provide secure synchronous collaboration tools to facilitate the formation of a common analysis picture
   - Chat
   - Shared Whiteboard
   - Shared Screen Images and Annotation capability
   - File transfer
   - Subgrouping and regrouping
   - Collaborative content creation

2. Package them for two different usage models
   - Across multiple applications (packaged as standalone, cross-platform tools)
   - Through a particular application (packaged as a library with a public Application Programming Interface)

3. Architect them for two different deployment environments
   - Within a single security domain (using Java RMI over CORBA IIOP)
   - Between security domains (using Globus Grid Services)

Two components have been delivered so far. The first is a standalone collaboration tool called ScreenBoard, which operates in a peer-to-peer fashion over the Internet and allows participants to share and annotate the contents of their computer screens in real-time. ScreenBoard allows collaboration across multiple applications.

The second is a programmable collaboration library with an application programming interface (API). The library enables collaboration through a particular application. The NISAC Agent-Based Laboratory for Economics (N-ABLE) 2.0 tool, an agent-based economic modeling and simulation package, is the first NISAC project to use it.
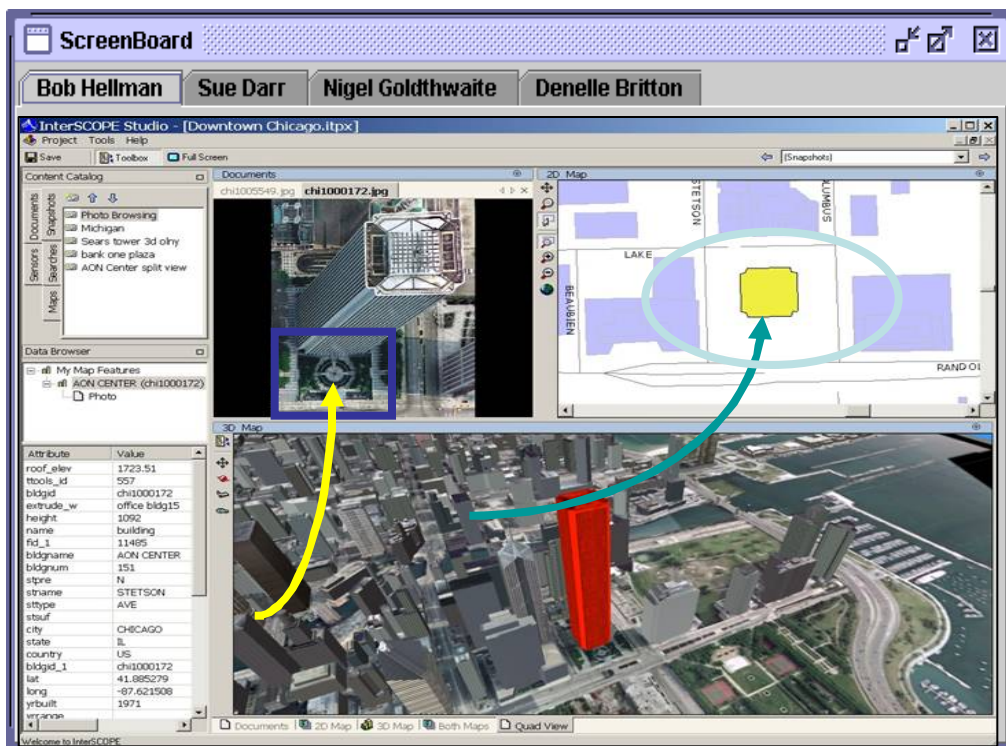
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