

DATE: May 16, 2003

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SUBJECT: NAVCIITI Quarterly Report 24

RE: - Project 2.0 Visualization HCI and Collaboration
- Task 2.1: Command and Control Visualization

SOW 2.1a3: Complete DGL in TALOSS: Final Report, April 03

Background: Our objective is to provide a distributed collaborative network of graphical and device independent tools in a shared virtual environment, which can be used by Command and Control (C&C) personnel to gain a strategic advantage. Specifically we focus on the mission critical C&C interpretation of acoustic undersea data from towed arrays for the Naval Undersea Weapons Center (NUWC) using the CONRAY simulation models. These simulation models can be extended to "real-time" data acquisition systems. Under the direction of personnel from NUWC and the Naval Research Laboratory (NRL) we have identified a working prototype which we have successfully incorporated into our Device Independent Virtual Environment Re-configurable-Scalable-Extensible (DIVERSE) tool that works in stereo in the (C)AVE Automated Virtual Environment (CAVE), Immersive Work Bench (IWB), Immersive Desk (I-Desk), desktop workstation simulator, and Head Mounted Display (HMD) systems at the Virginia Tech Center for Virtual Environments and Visualization (CVEV). This effort has evolved and become part of the 3D Visualization Project called TALOSS, which was originally called SubVE.

Discoveries, Accomplishments, and Test Results as they relate to NAVCIITI SOW 2.1a

For the last quarter we concentrated our efforts in on making TALOSS fully capable of working in a CAVE™ Virtual Environment (VE) without losing functionality when run in a workstation computer. DIVERSE (DTK and DGL) is used as the underlying library to abstract input and output devices, and handle them in a unified way. TALOSS proved to be an excellent testbed for many of DIVERSE features, which in turn motivated some changes and additions in the DGL API that will benefit other projects.

On the technical side, having lost control of the Open Inventor camera (Open Inventor is the scene graph used in TALOSS, and now the camera must follow the head tracker, if any) forced many major changes in TALOSS rendering loop, along with some code rewriting in OpenGL to replace functionality provided by Open Inventor before. This rewriting was necessary to handle head-tracked glasses in VE, but had the effect of delaying the project. Currently we have TALOSS running in the CAVE, and we are fine-tuning the input handling and navigation in immersive VEs. We envision a version of TALOSS working both in VEs and workstations will be available by June 1, 2003.

What's next: Final Report for year 4.