

DATE: November 5, 2003

FROM: Ronald D. Kriz

TO: A. Habayeb

CC: Andrew Ray

SUBJECT: NAVCIITI Quarterly Report 26

RE: - Project 2.0 Common Tactical Environment (CTE), and Visualization  
- Task 2.1: Command and Control Visualization: Implementation of DGL version of DIVERSE API for development of TALOSS

*SOW 2.1.3: Implement DGL into TALOSS: convert software to operate on Linux & SGI, September 03*

*SOW 2.1.4: Software Demonstration: multi-sensor data fusion in stereo on Wall/CAVE, October 03*

*SOW 2.1.5: Enhance DTK to create netted/distributed 3D Visualization compatible with TALOSS, October 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.

### **Accomplishments:**

*TALOSS:* Due to personal reasons the researcher working on TALOSS had to resign. This has severely impacted the forward progress on Task 2.1 in a negative way. We do not anticipate being able to provide great advances in the TALOSS software product because of the training time and adaptation to the work environment. This is an unfortunate occurrence, but it does completely cause work to stop on TALOSS.

Before this event happened the TALOSS codebase was ported to the new beta version of the DIVERSE API. This is a large step forward in the portability and possible future enhancements for TALOSS. Testing of TALOSS is ongoing at NUWC and is going well. There is a possibility of TALOSS being used for training related to submarines. We are working on assisting NUWC with their use of TALOSS and estimating what would be necessary to do in the future to improve TALOSS for training purposes. Our current focus is to evaluate the current cross platform nature of the codebase and to evaluate what is necessary to allow TALOSS to take advantage of the cross platform nature of DIVERSE. Future work will involve investigating other graphics packages to use other than Inventor, and more work into information visualization.

*DIVERSE API*: Work on the DIVERSE API has been ongoing and has been very productive. We have finished polishing the website for DIVERSE and have started a thorough review process of the new beta version developed this summer. The result of this review process will produce a much better version of DIVERSE in the future. We are querying users for their reactions to all different parts of the DIVERSE API.

The TALOSS project (Task 2.1a) has been an invaluable aid to the DIVERSE project because of testing and steering of development. Many features have been added and many bugs have been found and resolved thanks to the TALOSS project. This has happened because TALOSS is the largest project to use the DIVERSE API at this point in time. Using DIVERSE has allowed for the TALOSS codebase to shrink considerably because of the attention to detail we paid in designing DIVERSE for the end user as opposed to previous attempts.

The new beta version of DIVERSE has also been used for multiple class projects and professional presentations. People as far as away as Britain have been experimenting with the software and sending in useful information to help with continued development of DIVERSE.

We currently are planning on continuing the review process of DIVERSE 3.0 and working on the analysis of TALOSS through next June.

**Importance of the task to the Navy:**

What this means for navy researchers using DIVERSE is that DIVERSE is much more accessible and allows the Navy more choices when developing their applications. It also reduces the workload for developers. One example is that a program used by another NAVCITTI researcher written with the new version of DIVERSE reduced the total size of the program by one third of its original size. This is a clear reduction of time and effort to implement the same program.

This has been a productive quarter for DIVERSE and many new opportunities are on the horizon. With support for Windows and Mac OS X many more systems can take advantage of DIVERSE. The new graphics packages that DIVERSE supports will allow many new development options and will reduce the cost to the navy dramatically. The new website allows for quick access to information about DIVERSE.

**Activities during the quarter: publications, conferences, demonstrations, visitors:**

N/A

**Planes for next quarter:**

*2.1.6: Demonstrate netted/distributed 3D Visualization on Wall/CAVE, November 03*

**Issues if any:**

Max Moldenhauer left Virginia Tech and terminated pursuing his Masters Degree suddenly due to a private personal family issues. This caught everyone by surprise. At this point it is not possible to replace Max this semester. The issues on how this effects our SOWS for next quarter were discussed in the accomplishments section.