# Integrating Visualization Peripherals into Power-Walls and Similar Tiled Display Environments

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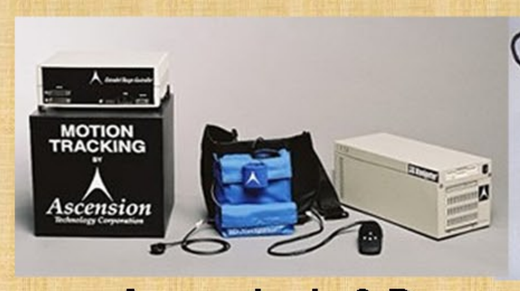
http://www.csm.ornl.gov/Internships/rams_05/abstracts/j_dacunha.pdf

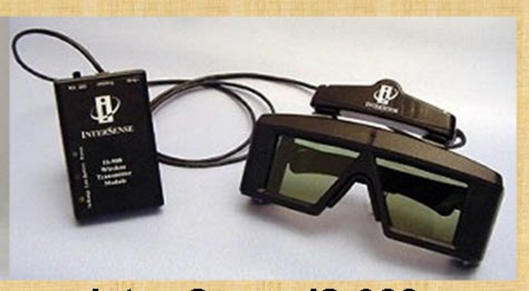
Tiled displays like the EVEREST facility at ORNL are excellent for visualizing data on a large scale. However, visualization peripherals would aid scientific discovery by enhancing the immersive and collaborative aspects of visualization environments. Tracking is a peripheral that has previously been used in other types of visualization facilities at ORNL. Tracking technology has evolved since this work was performed and it needed to be reevaluated. A number of current computational science applications at ORNL also involve researchers at institutions across the country. To address this, cameras would be a good thing to use during visualization sessions to add external researchers to the scientific discovery process. The EVEREST facility and other tiled-display environments at ORNL were evaluated in terms of how people use them as well as what hardware and software drives them. A number of promising solutions were discovered. Hardware and software for visualization peripherals were then tested on similar computing platforms as those used in the tiled display environments. As a result, the Visualization Task Group can use this research to make purchasing decisions to enhance their facilities.

## Research Objectives

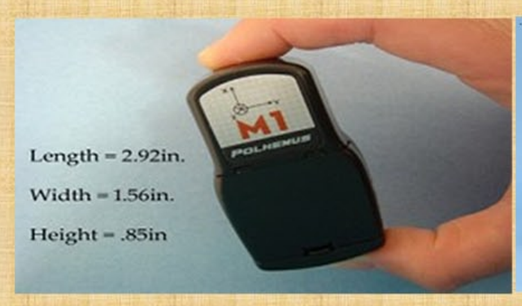
- Analyze EVEREST facility
- Research available tracking technology
- Determine which systems can be implemented into EVEREST facility
- Establish requirements for tracking in distributed (cluster-driven) visualization environments
- Investigate incorporation of video collaboration into EVEREST facility



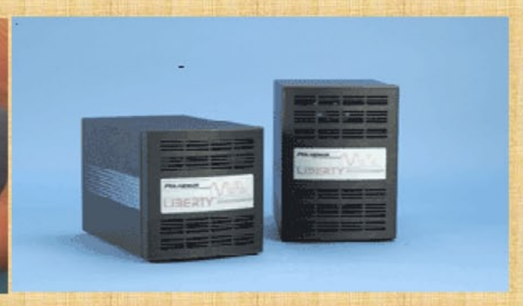
Ascension's 3-D Navigator

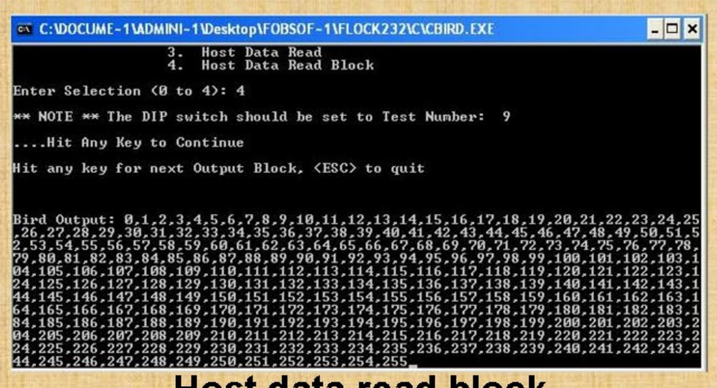


Inter-Sense IS-900



Polhemus Liberty Latus Marker


Polhemus Liberty Latus



Host data read block

## Test of Ascension's Flock of Birds (FOB)

- 3-D navigator has a part from the Flock of Birds
- FOB currently not used in the visualization lab
- Parts can be interchanged Interfaces had to be adapted
- All tests retuned positive


Researchers using hand-held tracked peripherals

## Methods

- Analyzed EVEREST
- Researched tracking devices
- Researched three vendors products
- Contacted vendors
- Ordered demo units
- Tested units inside the facility and on similar cluster-driven visualization environments
- Conducted tests on older tracking unit
- Researched cameras
- Determined most suitable for EVEREST

## Expected Results

- Interact with simulation results
- Set up video collaboration in high contrast facilities

## Future Applications

- Chemists can swim with fluids inside nanotubes
- Climate scientists can go inside a cloud
- Material scientists can alter atoms and observe atomic charges

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