May 2010

SurfNet

NSERC CRSNG

SurfNet—Technology of the Future—Today!

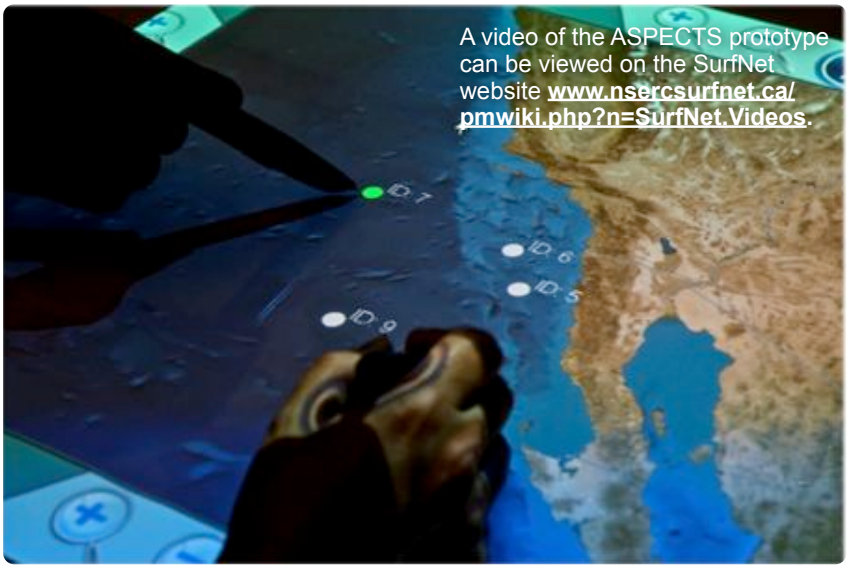
Vol 1, Issue 1

The ASPECTS Application Prototype Enables Collaborative Planning and Decision Making Around Dynamic Geospatial Data

Collaborative Naval Planning on a Tabletop Computer

University of Waterloo researchers **Dr. Stacey Scott** and **Antoine Allevena** (visiting student from TELECOM Bretagne in France) have recently wrapped up the first phase of a collaborative project with SurfNet partners Defence Research and Development Canada – Atlantic (Halifax, NS) and Gallium Visual Systems (Ottawa, ON) that focused on the development of a software prototype that demonstrates the potential for digital tabletop computers to support collaborative planning and decision-making in a naval setting.

The application prototype, called ASPECTS (ASsets Planning Employing Collaborative Tabletop Systems), is the first step in the ongoing development of an experimental platform for investigating the use of tabletop interfaces to support planning and decision-making over dynamic, geospatial data in complex task domains, such as defence and security.



A video of the ASPECTS prototype can be viewed on the SurfNet website www.nsercsurfnet.ca/pmwiki.php?n=SurfNet.Videos.

ASPECTS users can view, manipulate, and share dynamically updated map-based information in a windowing environment optimized for tabletop systems. The system provides the ability to easily rotate, move, and resize windows, as well as access system menus from anywhere around the table. ASPECTS is designed to run on an Anoto digital pen tabletop hardware platform, that provides unique user tracking, enabling interface tailoring for role-based interactions or security-level enforcement.

The current ASPECTS prototype will be demonstrated at the DRDC Future Technology Watch Showcase taking place at the Canadian Association of Defence and Security Industries annual conference (CANSEC) in Ottawa, ON from June 2 to 3, 2010.

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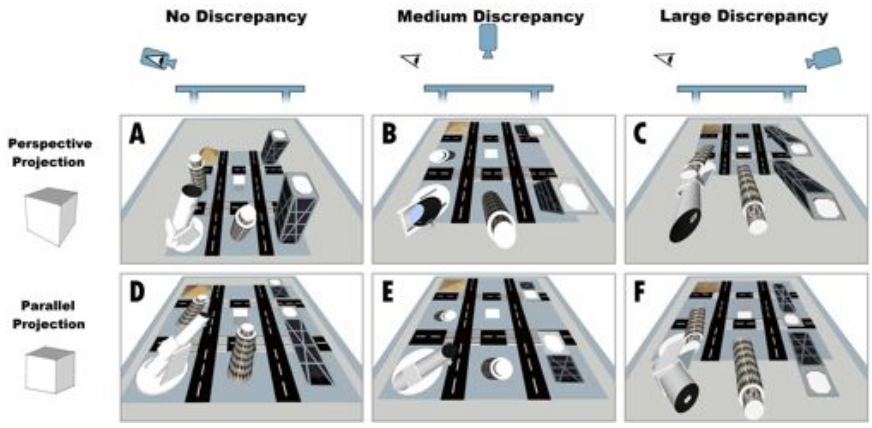
The Effects of Changing Projection Geometry on the Interpretation of 3D Orientation on Tabletops

By Mark Hancock and Sheelagh Carpendale, University of Calgary; Miguel Nacenta and Carl Gutwin, University of Saskatchewan.

Applications with 3D models are becoming more common on all types of displays and interactive surfaces, including surfaces set up for collaborative work. Consider, for example, surgeons discussing the entry path for an operation, architects discussing the aesthetic impact of a new skyscraper, or a multi-disciplinary medical team discussing a series of diagnostic images. However, we still need to better understand how what people perceive is affected by the surface upon which it is displayed.

For example, displaying 3D objects on tables presents problems in the way that the 3D virtual scene is presented on the 2D surface; different choices in the way the projection is designed can lead to distorted images and difficulty interpreting angles and orientations.

The figure above shows the appearance of 3D models rendered on a table with different levels of discrepancy between a person's point of view and the center of projection used to render the image. Studying people's ability to judge object orientations under different projection conditions showed that errors increased significantly as the center of projection diverged from the observer's viewpoint. This indicates that it is important for designers to take this divergence into consideration, particularly for multi-user tables.



http://innovis.cpsc.ucalgary.ca/innovis/uploads/Publications/Publications/3Dprojection.pdf

The lessons learned from this research have important implications for the use and design of systems that take into account how people will perceive and interact with surface-based technological environments.

Research in Review

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  By Ali Hosseini-Khayat. Master's thesis, University of Calgary, Department of Computer Science, 2010.
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  By Carl Gutwin, T.C. Nicholas Graham, Chris Wolfe, Nelson Wong and Brian de Alwis. In Proceedings of the 2010 ACM Conference on Computer Supported Cooperative Work, ACM, pages 179-188, 2010.

Seeing is Believing - Exciting Videos

- ***eGrid: A Multi-User, Digital Table-Top Environment for Managing Control Room GIS Maps***
  By Ealaf Selim and Frank Maurer, University of Calgary. In collaboration with TRLabs and Dextrus Prosoft.
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  By Rob Diaz-Marino and Saul Greenberg, University of Calgary. DVD Proceedings of the ACM Conference on Human Factors in Computing Systems - ACM CHI'10.

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