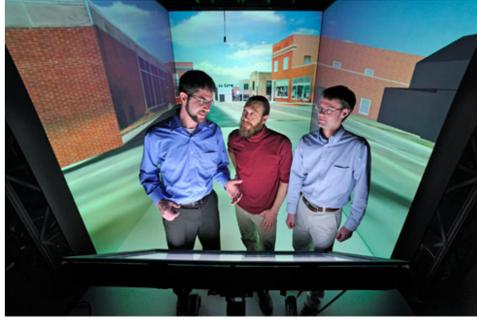


SPOTLIGHT ON INNOVATION ARCHIVE
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3D BLACKSBURG COLLABORATIVE IS INVENTING A VIRTUAL CITY MODEL FOR THE FUTURE

What if city officials could plan new infrastructure for a community in a computer-generated three-dimensional environment? What if entrepreneurs could conduct research in a virtual marketplace? What if researchers, students, experts, and government officials could collaborate on a project within a unified virtual environment?

Through ongoing research and development of a virtual city model at Virginia Tech, these dreams are becoming a reality.



3D Blacksburg colleagues, from left, Peter Sforza, Nicholas Polys, and Thomas Dickerson, explore a modeled version downtown Blacksburg, Va., from inside the Virginia Tech Visual Computing Group's Visionarium Lab VisCube. The VisCube consists of three back-projected 10-by-10-foot walls and a floor where images are rendered.

Virginia Tech's **Center for Geospatial Information Technology** is leading an innovative mapping project to create a comprehensive three-dimensional model of the town of Blacksburg, Va. The virtual model, known simply as "3D Blacksburg," will include topography, aerial photography, and buildings in a 3-D environment that can be used to visualize related spatial information such as building interiors, utilities, and networks.

Peter Sforza, the center's director and the project coordinator, said 3D Blacksburg is being designed with three groups in mind: town operations administrators, the general public, and research institutions.

DIFFERENT BENEFITS FOR DIFFERENT USERS

Many local governments already use geospatial technologies to help manage zoning issues, infrastructure maintenance, and tax assessment. With a 3-D visualization based on reliable geospatial information, Sforza said he hopes to explore new ways the technology can be used in a community.

Employing a 3D Blacksburg model for emergency management may help improve safety and security. The model can help visualize and assess disaster-management plans, and a situational awareness feature with real-time information may improve decision-making during an event. Emergency management teams can also use 3D Blacksburg as a training tool to simulate responses to events.



A bird's eye view of 3D Blacksburg shows the intersection of Main and Roanoke streets, east of campus.

Urban planners and environmental engineers intend to use the model to explore potential consequences of different forms of development. "Being able to visualize a proposed land use in context, in a 3-D environment, will provide a clearer understanding of what the future may look like," Sforza said.

Researchers and students in the fields of computer science and technology studies plan to use 3D Blacksburg to study virtual reality environments, as well as the social, ethical, and privacy concerns that arise from more detailed models of reality.

3D Blacksburg serves as an educational tool for Virginia Tech students and researchers in diverse academic disciplines. Sforza teaches a Web-mapping class that often involves 3D Blacksburg-related learning activities, allowing students to brainstorm ideas for the expansion of the project. In the spring 2011 class, these activities include solar modeling activities, Wi-Fi mapping activities, a routing activity, and a soundscape project.



Peter Sforza often leads students through 3D Blacksburg learning activities during his Web-mapping classes.

EXPERTS FROM VARIOUS DISCIPLINES WEIGH IN

Thomas Dickerson, a project associate with the Center for Geospatial Information Technology and a contributor to 3D Blacksburg, said the project is "different from certain other virtual cities, as it will be licensed for a variety of uses, encouraging others to reuse and build upon the initial effort."

An important element of the project is that it brings together academic experts, community members and leaders, researchers, and business owners to achieve maximum accessibility and ease of use for a variety of potential users.

"By providing a common 3-D framework, we allow multiple disciplinary researchers to come together and exchange information, in order to enhance our understanding of other disciplinary interests in a 3-D city model. This kind of synergy brings about advances in our thinking and in our ability to innovate in this virtual city environment," Sforza said.

- For more information on this topic, contact **Patrick Fay** at (540) 231-5624.

First published on: Mar 28, 2011

VIDEO: 3D BLACKSBURG



Watch a video about 3D Blacksburg.

THE CENTER FOR GEOSPATIAL INFORMATION TECHNOLOGY

The **Center for Geospatial Information Technology** is part of **Virginia Tech Geospatial Information Sciences** (GIS). Combined with **Enterprise GIS**, the Virginia Tech Geospatial information Sciences group offers a one-stop-shop solution for GIS data applications, access, storage, and hosting. The initiative is committed to applied geospatial information research in areas such as safety and security, health information technology, and community resilience.

OTHER CUTTING-EDGE TOOLS

Nicholas Polys, director of **visualization** for the Research and Cluster Computing Group at Virginia Tech, is one of the founders of the 3D Blacksburg collaborative. The Research and Cluster Computing Group focuses on adoption of supercomputing and visual analysis tools to advance science, engineering, and education.

Through the group's educational and support services, it aims to boost access to and adoption of cutting-edge tools that integrate with researchers' data, questions, and workflows.

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