

Ideas on the Edge

Rock Revelations

VIRTUAL REALITY TECHNOLOGY DEVELOPED AT LAURENTIAN UNIVERSITY COLOURFULLY REVEALS A COMPLEX UNDERGROUND LANDSCAPE.

Mining is a complex business. Tunnels and shafts dug in the earth's crust are subjected to ever-changing stresses that can cause "rock bursts," disrupting production and creating risks to workers.

Mining engineering seeks to minimize the possibility of such events by careful arrangement of a mine's tun-

nels—a design process that involves combining data from a number of sources, including core samples and seismic monitoring systems. The number of variables involved can make the engineering difficult.

Now, however, researchers at Laurentian University in Sudbury have developed virtual reality tools that

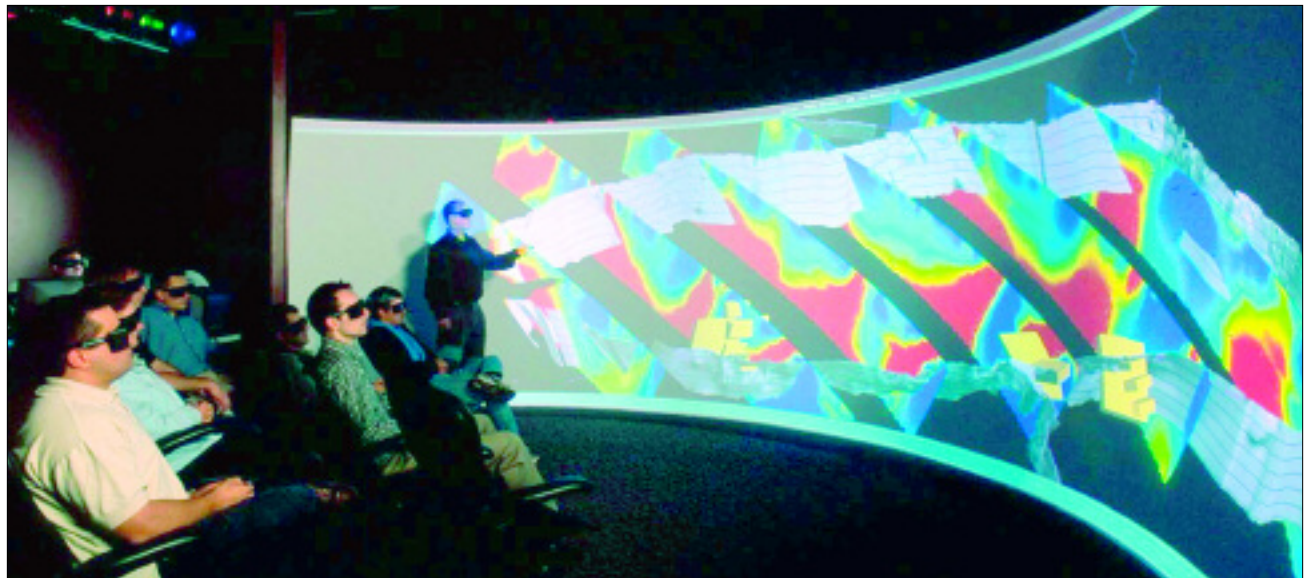
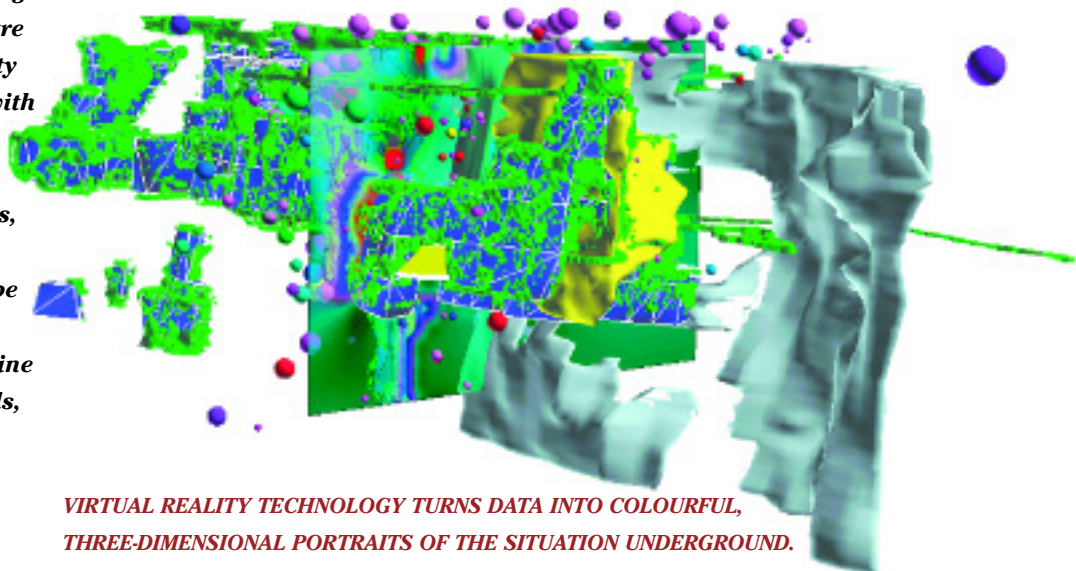


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The 3-D underground renderings are projected on a 3- by 7-metre screen at the MIRARCO facility in Sudbury and are viewed with special glasses. Differing colours show areas of stress and the location of ore bodies, based on seismic and other data. Mine designs can also be integrated into the models, allowing engineers to determine optimum placement of tunnels, and to check sight-lines and other safety issues.



VIRTUAL REALITY TECHNOLOGY TURNS DATA INTO COLOURFUL, THREE-DIMENSIONAL PORTRAITS OF THE SITUATION UNDERGROUND.

Paid for in a single day.

The new NAVNet technology is being developed by the Mining Innovation, Rehabilitation and Applied Research Corporation (MIRARCO), a partnership involving Laurentian University, government agencies and private companies. One of the private partners, Goldcorp, has already seen a return

on their investment. Setting up and using the technology in the remote community of Red Lake, the company was able to streamline its planning process significantly. "The Goldcorp people were very happy," says Dr. Peter Kaiser, Director of MIRARCO. "They told us the facility paid for itself in one day."



speed the design process and enable more collaboration between geo-scientists and engineers. The new technology, adapted from systems developed for the oil and gas industry, turns scientific data into colourful, three-dimensional renderings of the situation underground, including the location of ore bodies and changing stress fields. This advanced

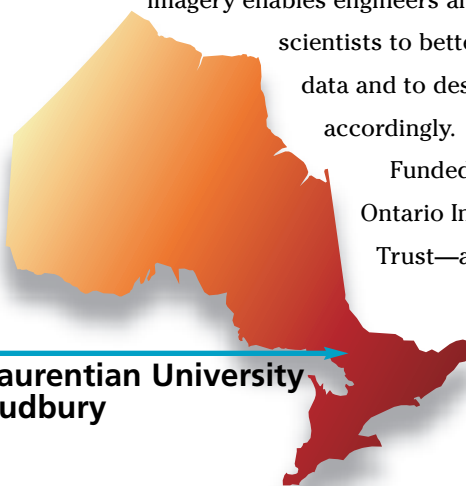
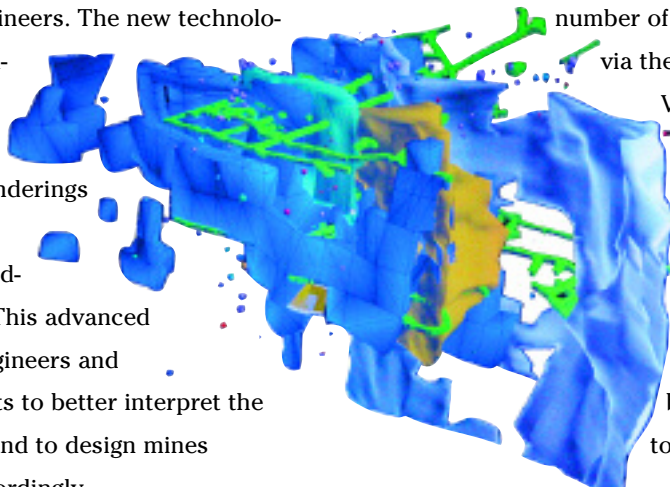
imagery enables engineers and scientists to better interpret the data and to design mines accordingly.

Funded in part by the Ontario Innovation Trust—and proven at

Laurentian—the technology is now being deployed to a number of Ontario mining camps via the Northern Ontario

Visualization Network (NAVNet). A project of the provincial government's Northern Ontario Heritage Fund, the network is helping bridge distances and bring mining experts together.

The new tools are also attracting interest from across Canada and abroad. Plans are in the works to open similar virtual reality facilities in Switzerland, Japan and China.



**Laurentian University
Sudbury**

Project: Centre for Integrated Monitoring Technology
Institution: Laurentian University
Research Discipline: Engineering/Mining and Mineral Processing
Principal Investigator: Peter Kaiser
Trust Investment: \$1,920,000
CFI Investment: \$1,920,000
Total research investment from all sources: \$5,110,000



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Infrastructure for Innovation About the Ontario Innovation Trust

The Ontario Innovation Trust was created in 1999 by the Government of Ontario to invest in research equipment and facilities at Ontario's universities, colleges, hospitals and other non-profit research institutions. The Trust is governed by a volunteer Board of Directors, according to the terms of a Trust agreement established by the Ontario government. A small permanent staff looks after day-to-day operations.

Since its inception, the Trust has committed almost \$843 million to strengthen Ontario's position in the global marketplace of ideas. This represents more than a third of the \$2.44 billion in total funding that has been invested in Trust-supported projects.