

Beaming gigabits over Canada-U.S. border

Ontario's and Michigan's advance research networks will soon start transmitting gigabits of data over radio waves across the Canada-U.S. border, using wireless links instead of fibre optic cable. The new connection will support a massive 1Gbps back-up link between ORION and the Merit Network in Sault Ste. Marie, a distance of over six kilometres above the two cities.

The new line-of-sight link using millimetre wave technology is being turned up next week and will link ORION's Point-of-Presence (PoP) at Sault College and Merit's PoP at Lake Superior State University in Sault Ste. Marie, Michigan.

The wireless link uses Bridgewave Communications' new 80GHz Radio Frequency transmission technology. This project represents the first large-scale deployment of the new gear at this frequency.

The purpose of the new link is to provide path redundancy to users in Sault Ste. Marie in case of primary fibre or equipment failure. ORION member traffic out of the region will be routed on the Merit network down to the Detroit-Windsor tunnel fibre connection, to be delivered to the rest of the ORION network.

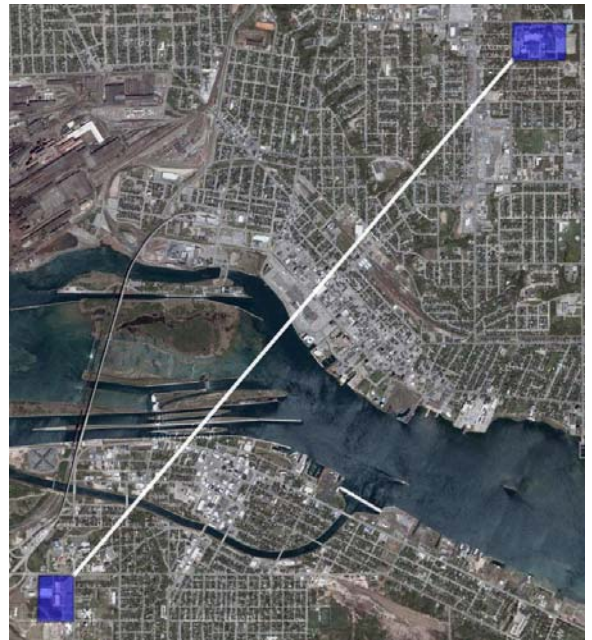
This link is also great news for Merit, the State of Michigan's research and education network, which needs a secondary path to the state's Upper Peninsula. Merit will use the new link to get secondary access through ORION to the Windsor-Detroit tunnel connection.

The decision to proceed with the wireless link came after several fibre and power outages on the Sault Ste. Marie - Sudbury route, says Sam Mokbel, ORION's Senior Director of Engineering and Network Operations. "ORANO, in consultation with its members, decided to invest into shielding the Sault PoP from the frequent storms and accidents affecting the electrical and fibre cables and causing total PoP isolation."

Longer-lasting UPS at the intermediate repeater sites between the Sault and Sudbury have already been installed to protect against power outages. In addition, existing and new ORION members can use the new link as a secondary path in case of outages on the primary path to the Sudbury PoP.

According to Mokbel, this technology is much easier to provision and maintain than a traditional fibre link. While this solution would not be effective for multiple GigE connections, it is significantly more economical than a comparable fibre-based solution, he says. The link will provide 1 Gbps under normal operating conditions, with fall-back to 100 Mbps under severe weather conditions or heavy interference.

The total solution cost, shared equally between ORANO and Merit, is \$60,000. ORION Engineering is the project lead with support from Merit Engineering, and IT staff at both Sault College and Lake Superior State University.



Aerial shot from Google Maps indicating the 6km wireless link between Sault College in Ontario and LSSU in Michigan.

What's inside...

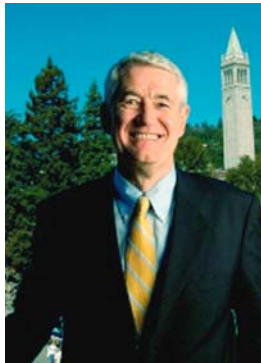
| | |
|---|---------------|
| Summit keynote speakers announced | Page 2 |
| ORION and ABEL host speaking event by celebrated Canadian author | Page 3 |
| CANARIE announces Network-Enabled Platform projects..... | Page 3 |
| Ontario schools explore IPTV education network over ORION..... | Page 4 |
| Buzz..... | Page 5 |

Summit keynote speakers announced

A homegrown world-renowned physicist and a former Frank Zappa band member and innovation guru are among the feature attractions at ORION and CANARIE's *Powering Innovation: A National Summit*, at the Metro Toronto Convention Centre, Nov. 3 and 4.

ORION, Ontario's advanced research and education network, and CANARIE, Canada's Advanced Network, are joining forces to co-host a national Summit that will focus on issues of research and innovation enabled by new and advanced technologies.

Internationally distinguished physicist and Toronto native **Robert J. Birgeneau**, Chancellor and Professor of Physics at the University of California, Berkeley and former president of the University of Toronto, gives the Summit opening address and explores the theme of cross-border collaborations in research.



Robert J. Birgeneau

Dr. John Kao, innovation strategist and author of the best-selling book, *Innovation Nation* also addresses the Summit. Dubbed "Mr. Creativity" and "a serial innovator" by *The Economist*, he is considered a leading authority on the subjects of innovation, organizational transformation, and digital media. Teaching at Harvard Business School from 1982 – 1996, he specialized in innovation and entrepreneurship. With faculty appointments at the MIT Media Lab, Yale College, and the U.S. Naval Postgraduate School, Kao is also known for playing keyboard in Frank Zappa's Mothers of Invention in the late 1960s.



Dr. John Kao

Also presenting is forensic entomologist **Dr. Gail Anderson**, Associate Director of Simon Fraser University's Criminology program, who makes use of innovative and advanced network technologies as part of her work. She is a forensic consultant to the RCMP and police across Canada, and has testified as an expert witness in court numerous times. With the collaboration of colleagues and graduate students, she is presently developing a database of forensic insects across Canada, so that forensic entomology can be used with confidence across the country.

CBC Radio "Spark" host **Nora Young** will also share her insights on the impact of technology in our lives.

Break out sessions and panel discussions on topics ranging from introducing new web 2.0 capabilities in research and learning, to the introduction of Google Apps for Education in institutions of higher learning.

"We're very excited about this Summit," says Summit Program Co-Chair Andre Quenneville, ORION's Director of Public Affairs. "We see this as an opportunity to showcase some of Canada's and Ontario's most exciting and innovative research before a national audience."

For many delegates, the Summit will also give them their first look at critical scientific research facilities that few Canadians are aware of, yet help position Canada among the world's leaders in many fields, including physics, cancer research and nanotechnology.

The Summit will look at how to fully engage Canada's researchers in adapting and taking full advantage of the new and emerging enabling "cybertechnologies" that are helping to drive innovation and scientific discovery around the world.

Cybera, Alberta's advanced network organization, is also playing a critical role to planning the Summit, and will bring insights on the province's efforts to deploy Canada's first "cybertechnology" strategy.

Sara Diamond, President, Ontario College of Art & Design, partners with SHARCNET to host "Advanced Visualization – A boom with a view," which will hear from experts and innovators who are leading the use of advanced visualization technologies in science and design, which are transforming collaboration and research in such diverse fields as bioinformatics, human-computer interaction, geography, and environmental sciences.

The green-friendly Summit also presents well-known green IT guru **Bill St. Arnaud**, CANARIE's chief research officer, and **Charles Despins**, president and CEO of Prompt, who will talk about the environmentally-friendly future of broadband.

The conference is expected to bring up to 300 delegates from universities, colleges, research facilities, centres of excellence and other organizations - including government and industry – from across Canada. Summit organizers are also inviting researchers, institutions and the private sector to exhibit at the event and to showcase their innovative research and enabling, advanced technologies.

Online registration will be opening soon on the Summit web site. Registrants from ORION or CANARIE member institutions receive a discount after the early-bird deadline of September 30. For more details on speakers, the latest program updates and to pre-

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ORION Research and Education News

The ORION Research and Education News provides news and information of interest to users of the Ontario Research and Innovation Optical Network and to the worldwide research and education community.

ORION is an advanced high-speed fibre optic network that connects research and education institutions to each other and to colleagues around the world. ORION is owned and operated by the Optical Regional Advanced Network of Ontario (ORANO).

Visit our web site www.orion.on.ca or write the Editor at info@orion.on.ca. Subscribe at www.orion.on.ca/subscribe-news.html.

Lawrence Hill speaks to high school students in person, by videoconference

ORION and ABEL host speaking event by celebrated Canadian author

Ontario high school students will have the chance to interact directly with one of Canada's most celebrated authors and learn more about slavery and an important chapter in Canadian social history, over the ORION network.

ORION and York University's Advanced Broadband Enabled Learning (ABEL) program are teaming up to co-host a live, interactive event featuring 2008 Commonwealth Writers' Prize winner Lawrence Hill, who will engage with students, both in person and online, on his latest award-winning novel, *The Book of Negroes*, scheduled for October 2, 2008.

The live reading and interactive session will be linked by videoconference over the ORION network to three Ontario schools, allowing students at those locations to interact and participate in the discussion in real time. Students in schools across Canada will also be able to tune in.

The event will take place at a school in York Region District School Board, linked by advanced videoconference to a school in the Algoma District School Board in Sault Ste. Marie and a third school in the Toronto District School Board. A live stream, hosted by York's ABEL team, will be accessible to other schools wanting to view the event.

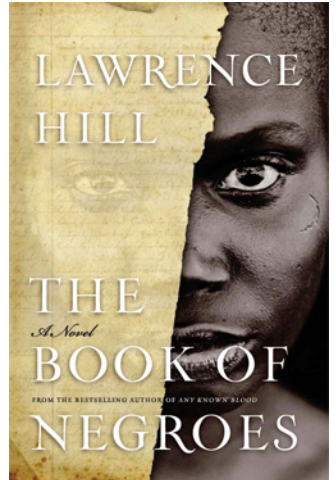
Pre- and post-event activities – including a web blog where Hill will answer students' questions after the event – will be tied into the curriculum, providing a more enriched experience for the students. Signed copies of *The Book of Negroes* will be donated to each participating school's library.

"We're really pleased to be able to use the ORION technology to help facilitate this wonderful and innovative education experience," says ORION President and CEO, Phil Baker. "ORION is in place to help transform the way we teach and learn and this kind of project illustrates what can be done to support engaging and meaningful learning experiences," he says.

Lawrence Hill's latest novel, *The Book of Negroes*, became a number one national bestseller in Canada and won the overall Commonwealth Writers' Prize and the Rogers Writers' Trust Fiction Prize. While in London, England recently to accept the Commonwealth Writers' Prize, Hill had the chance to meet with Queen Elizabeth II for 15 minutes to chat about the novel.

"Most of the conversation had to do with the historical questions the book explores, and she was really quite struck (by the story)," said Hill.

The Book of Negroes tells the story of an 11-year-old girl who is abducted from her village in West Africa to be a slave in North Carolina. She is able to escape to Nova Scotia after the Revolutionary War, only to still find slavery, segregation and abuse in Canada. The novel is inspired by the real Book of Negroes, an 18th-century document that recorded the names of black people who fled the United States for Nova Scotia. For more information on Lawrence Hill and *The Book of Negroes*, visit www.lawrencehill.com.



CANARIE announces Network-Enabled Platform projects

New research enabled by advanced networks and next-generation technologies are helping Ontario stay at the forefront of innovation and discovery thanks to support from CANARIE, Canada's advanced network organization.

Four Ontario institutions and their partners are among ten projects recently announced under CANARIE's \$15 million Network-Enabled Platforms (NEP) program. The projects will develop tools that support sharing complex data sets, facilitate the use of remote equipment, and enhance the capabilities of collaborative research teams.

Science Studio (a collaboration between the University of Western Ontario, Canadian Light Source Inc. and Concordia University) will develop an experimental management system that exercises control of remote projects at the Canadian Light Source in Saskatchewan and the University of Western Ontario. The expected result is increased and more efficient use of these laboratories by researchers across the country and around the world.

The **Health Services Virtual Organizations (HSVO)** project (a collaboration between Lakehead University with Northern Ontario School of Medicine, McGill University, and iDEAL Consulting) aims to create a sustainable research platform for experimental development of shared ICT-based health services, including supporting patient treatment planning and team and individual preparedness in the operating room, emergency room, general practice clinics, and patients' bedsides.

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Ontario schools explore IPTV education network over ORION

Ontario colleges and universities are a step closer to sharing an IPTV platform over the ORION network, able to showcase Ontario student and education content on campus to a wider audience.

Nearly 100 people attended a workshop at Sheridan College Institute of Technology and Advanced Learning, confirming a strong desire among schools to take the concept forward to the next stage.

The purpose of the workshop was to explore interest and ascertain what kinds of content schools are producing today and to look at what would be involved in launching a channel with Video-on-Demand capability.

The discussions also touched on the potential for such a network or channel to support learning and training opportunities, and as a test bed for research and development in digital and IP broadcast technologies.

"Ideally, we'd like to launch a pilot or proof of concept within 12 to 18 months, involving a small number of Ontario colleges and universities," says ORION Director of Public Affairs, Andre Quenneville.

Among the issues to be addressed are format and structure, technology, governance and administrative issues, intellectual rights, as well as potential sources of funding.

The project follows growing interest among postsecondary institutions to explore the possibility of hosting an Ontario IP-based channel over ORION.

The channel would provide a platform for students, faculty and institutions to post live and on-demand content, including documentaries, animation, films, research, digital media, performance art, as well as lectures, student news or journalism programming, taking advantage of ORION's capabilities as an advanced, next-generation network for enhanced transmission of digital content, as well as video-on-demand and other related services, such as multicasting.

Ontario's film, TV/video, broadcast journalism, new media and animation programs enjoy an international reputation for quality and innovation. However, much of the content produced by students and faculty remains within institutional walls and is not actively shared with broader, external audiences. "That's a missed opportunity to showcase and raise awareness of the pool of talent and expertise developed and nurtured within Ontario in film, broadcast and digital media," says Quenneville.

ORION and Sheridan College Institute of Technology and Advanced Learning agreed to join forces to co-host a full-day workshop recently to explore the possibility of launching an educational IPTV channel for Ontario colleges and universities.

The day's program included presentations from Sheridan, Ryerson University and the University of Waterloo, sharing their experiences of launching campus-wide TV channels or working with companies on IPTV initiatives. **Amy Philipson**, executive director of the Research Channel, joined the workshop via videoconference from Seattle, giving an overview of the channel and its plans for the future. Guests included **Shane Walker**, an IPTV consultant from the U.S.

who explained what is involved in setting up an educational IPTV channel.

Workshop participants included deans, chairs and professors of the various media, communications, and arts programs of colleges, universities, and research institutions, as well as information technology and network staff.



A number of exhibits were also on display, including Gold Sponsor INUK Networks and Bronze Sponsor 18 to 24 Inc., as well as institutional initiatives including Brock TV, Cambrian College's eDome, ePresence, TV Loyalist, Med-SchoolTV (University of Toronto), Ontario College of Art & Design, Sheridan TV, Virtual Researcher On Call (VROC), and Wilfrid Laurier University.

Workshop participants were asked to contribute feedback on key areas, including content and programming, technology, platform and infrastructure issues, and operations, management and funding.

The result of that consultation, along with the findings of a pre-workshop Discussion Paper and Survey, will assist a newly established steering committee to take the project to the next stage, including the establishment of key working groups.

Read the workshop summary report at www.orion.on.ca/iptvworkshop.

CANARIE announces Network-Enabled Platform projects

...continued from page 3

The **Canadian Brain Imaging Research Network (CBRAIN)** (a collaboration between McGill University, Rotman Research Institute, University of Western Ontario, and Université de Montréal) aims to develop a platform for distributed processing and exchange of 3D/4D brain imaging data. It will provide a standard methodology for Canadian brain imaging researchers to collaborate productively and fully use available computing and networking resources.

The **ONE-ITS** project (a collaboration between the University of Regina and the University of Toronto) will create a pan-Canadian, internationally connected, multidisciplinary research cluster in Intelligent Transportation Systems (ITS). It is the most cost-effective approach to creating a national critical mass of ITS researchers while leveraging scarce resources.

ORION provides the critical advanced connectivity and support to Ontario institutions and thus enabling the research activities. "We're very pleased to see how our advanced network infrastructure can make a real difference and have a meaningful impact on research," says ORION President/CEO Phil Baker.

The projects are expected to take two to three years to complete. Learn more at www.canarie.ca.

Last chance to submit for ORION Awards

September 30 is the deadline for submissions for the 2008 ORION Awards. Researchers, scientists and educators are urged to send in their nominations for individuals and projects leveraging advanced networks and collaborative technologies. Nominations can be made under the Discovery, Learning and Leadership categories. Awards will be presented at the Powering Innovation: A National Summit in Toronto on November 3, 2008. For more information and to submit, visit www.orion.on.ca/2008awards.

\$9.2M for Ontario early research

Dr. Hagit Shatkay, a Queen's University researcher working on tools to help scientists understand and use the flood of data that has been pouring in since the sequencing of the human genome, is among the several Early Researcher Awards recipients announced recently by the Ministry of Research and Innovation. In total, 66 projects across the province worth \$9.24 million will receive funding from the program, created to improve Ontario's ability to attract and retain the best and brightest research talent from around the world. To date, 26 researchers have received funding for projects worth over \$6.1 million at universities throughout Ontario. Learn more about the projects, including profiles of the recipients and their projects, at www.mri.gov.on.ca.

Registration open for Cybera summit

Cybera – Alberta's advanced network organization, is hosting its second annual Cyberinfrastructure Summit on September 29 and 30, 2008, at the Banff Centre in Banff, Alberta. The event brings together cyberinfrastructure users, collaborators and innovators to focus on building, strengthening and expanding the cyberinfrastructure foundation in Alberta's private sector and research community. Keynote speakers include Bill Appelbe, CEO, Victorian Partnership for Advanced Computing; Paul Strong, Distinguished Research Scientist, eBay; and Nora Young, Producer and Host of CBC Radio's Spark. View the schedule and register at www.cybera.ca/summit.

U of T to host Canada's top supercomputer

The University of Toronto's SciNet Consortium and IBM recently announced an agreement to build Canada's most powerful and energy-efficient supercomputer. The system will process up to 360 trillion calculations per second and be housed in an ultra energy-efficient data centre. As a premier academic research system, the machine is expected to be among the top 20 fastest supercomputers in the world; 30 times faster than the peak performance of Canada's current largest research system. It also represents the second largest system ever built on a university campus, and the largest supercomputer outside the United States. The consortium, which includes the University of Toronto and associated research hospitals, will enhance SciNet's competitive position in globally important research projects. These include groundbreaking research in aerospace, astrophysics, bioinformatics, chemical physics, climate change prediction, medical imaging and the global ATLAS project. Funding has been provided by the Canadian Foundation for Innovation's National Platforms Fund, in partnership with the Province of Ontario and the University of Toronto. Both of the main computing systems are expected to be fully operational by summer 2009. Read more at www.reuters.com.

U Waterloo breaks ground on quantum-nano centre

The University of Waterloo recently broke ground on a \$160-million investment: the Mike and Ophelia Lazaridis Quantum-Nano Centre, which will be home to two forefront areas of science and engineering -- quantum information technology and nanotechnology. The potential synergies produced by nano and quantum researchers working side by side will be unique. No other quantum group in the world has a direct in-house bridge to a major nanotech institute and no nanotech centre has the opportunity to partner in developments at the leading edge of quantum information technologies. The Government of Ontario is providing \$50 million; another \$22 million is coming from the Lazaridis family. It is scheduled to open late in 2010 or early 2011. Read more at <http://newsrelease.uwaterloo.ca/news>.

Large Hadron Collider rap

Gearing up to the Large Hadron Collider (LHC) being turned up at CERN next month, the U.S. arm of LHC scientists has put together a fun rap video explaining in layman's terms the function and purpose behind this huge, international science experiment. See it at <http://uslhcblogs>.

Ontario invests \$25M in northern bio-economy

The provincial government recently announced an investment of \$25 million in the new Centre for Research and Innovation in the Bio-Economy (CRIBE) in Thunder Bay. The centre will attract world-class researchers and industry leaders to develop and commercialize the next generation of renewable forestry bio-products. Forest bio-products contribute an estimated \$1 billion to Canada's economy and could one day be as important as the conventional forest economy. Ontario's bio-economy is already taking root with innovative companies producing parts for the auto industry and developing new ways to generate clean energy. Read more at www.mri.gov.on.ca.

Exploring new services over ORION

Invited by stakeholders and connected institutions to take the lead in launching new services over the network, ORION is creating working groups to consider deploying IP video conferencing, web-based collaboration tools, and on-line backup data storage, as potential shared applications made centrally available. The aim is to offer ORION institutions and users value-added services that are relevant to their needs. The committees will help determine requirements, assess opportunities and develop go-forward business plans, says ORION's Senior Director of Partnerships and Strategic Alliances, David Koa. ORION would also spearhead funding proposals with the support of involved stakeholders. ORION is inviting CIOs and staff, as well as representatives of the "user" community, including researchers and educators, to serve on the working groups. Individuals interested in learning more are invited to write info@orion.on.ca.

TVO makes programming available online

TVO is the first Canadian broadcaster to make its programs available through the newly released Adobe Media Player, a customizable, cross-platform media player, helping to expand the reach of TVO's educational programs and web resources to an ever-growing global audience. Full-show editions of The Agenda with Steve Paikin and Allan Gregg in Conversation are currently available directly through Adobe Media Player. In addition, TVO will offer some of its award-winning documentaries free and on-demand to launch a dedicated web-based TV channel on Joost.com. These are the latest developments in TVO's digital strategy to engage a wider audience across multiple platforms. Learn more at www.tvo.org.

U of T Discovery Commons launches MedSchoolTV

The Discovery Commons in the Faculty of Medicine at the University of Toronto has launched MedSchoolTV, to facilitate experimentation with video-on-demand content in Health Sciences. The project involves digitizing a large historical collection of films and videos. It will serve as a host for instructors and students who want to experiment with producing their own videos for public broadcast. It will also provide viewers with a master listing of health sciences video-on-demand services. The project will also test and analyze how different kinds of viewers and learners interact with different formats of production. Read more at <http://video.med.utoronto.ca/medtv>.

People News

ORION welcomes its newest staff member to the team: **Tim Kim** joins ORION as Business Development Consultant. As part of the Partnerships and Strategic Alliances unit, he will be instrumental in increasing value for institutions connected to the network. **Debbie Barrett** retired June 30 from her position as Chief Information Officer at McMaster University. CANARIE welcomes **Eric Bernier** as its new Chief Technology Officer. **John MacDonald** is the new Scientific Director for Robarts Research Institute at The University of Western Ontario. **Gale Moore** recently ended her term as Director of the Knowledge Media Design Institute (KMDI) at the U of T. **Seamus Ross**, professor of humanities informatics and digital curation at the University of Glasgow, has been appointed the new dean of the Faculty of Information Studies at the University of Toronto, effective January 1, 2009. Congratulations to **John W. Senders**, Professor Emeritus of Mechanical and Industrial Engineering at U of T, who was recently awarded the first KMDI Pioneer Award for his contribution to the field of electronic publishing.