

ORION and CA*net 4 host Advanced Networking Days



Most Ontario colleges and universities are now connecting to the ORION network – a leading gigabit R&E optical networks dedicated exclusively to research and education.

For many researchers and educators, ORION is bringing a new capacity for high-speed collaboration over a gigabit network to their institution for the very first time.

As a result, ORION and CANARIE - Canada's national research and innovation network have joined forces to stage ORION-CA*net 4 Advanced Networking Days - a series of workshops and seminars designed to illustrate how this new infrastructure can support collaborative research and education activities.

Presentations from researchers and educa-

tors who are already taking advantage of advanced networking and collaboration technologies will be featured, including speakers from ORION and CANARIE.

Participants will include researchers and educators from Ontario universities, colleges, teaching hospitals, public sector research labs and other users that are now connecting to the ORION network, and from institutions that are contemplating joining Ontario's advanced networking community.

One of the topics to be presented is the CANARIE's new CA*net 4 Advanced Applications Program, announced last week, which provides \$4 million in funding for collaborative research projects.

"We aim to raise awareness of this program opportunity among Ontario institutions that are connecting to ORION," says Phil Baker, President and CEO.

"We want to make sure that Ontario institutions or organizations submit innovative project proposals that will take advantage of ORION and CA*net 4 connectivity."

Several events have been scheduled throughout Ontario in November and December 2003. The sessions will kick off in Sudbury at Laurentian University on Nov. 13, during Laurentian's annual Research Awareness Week.

(Continued on page 2)

Funding for Advanced Applications Program announced



Ontario research and education institutions connected to the ORION network eligible to access a new \$4 million Advanced Applications Program (AAP) CANARIE, Canada's Research and Innovation Network.

Announced at last week's national Advanced Networking Workshop in Montreal, the new program is designed to support collaborative research projects. Researchers from across Canada are being invited to submit project proposals for the development of advanced applications in a number of areas including network research, advanced network and applications security, video conferencing and collaborative technologies, university portals, and grids and distributed computing.

One of the program's criteria is that the project utilize at least one Optical Regional Advanced Network (ORAN), in Ontario's case, the ORION network. We're ready to work with organizations hoping to access this funding, says ORION President and CEO Phil Baker.

The new funding program reflects the reality that leading edge R&E relies increasingly on collaborative efforts that exploit high-speed networks such as ORION. Collaborative video conferencing technologies, for example, are a key area of development that is slated to receive funding under the AAP.

At a recent national workshop co-hosted by ORION, York University, and CANARIE, there was a general acknowledgement that collaborative video-conferencing technologies had only achieved a small fraction of their potential, especially given the growing capacity of high-speed networks. Whereas today's level of video-conferencing

Discover in this issue:

- 1 ORION and CA*net 4 host Advanced Networking Days
- 2 Funding for Advanced Applications Program Announced
- 3 MaRS Landing extends biotech reach - "goal is to accelerate commercialization"
- 4 Ontario bio and life sciences strategies and clusters in development
- 5 University of Waterloo leads research on web learning
- 6 ORION News Briefs
 - Researcher solves riddle of "singing sand"
 - ORION seeks cross-border alliance
 - Network Update
 - ORION poster and 3D desktop wallpaper

The ORION Research and Discovery News is a monthly electronic publication providing news and information of interest to users of the Ontario Research and Innovation Optical Network and to the worldwide research and education community.

(Continued on page 2)



MaRS Landing extends Ontario's biotech reach - "Goal is to accelerate the commercialization of scientific discovery"



MaRS Landing, one of ORION's earliest project partners, is looking forward to extending the benefits of its expertise in agri-food and life sciences to other regions of Ontario, over ORION's gigabit optical network.

MaRS Landing - Medical and Related Sciences Linkages to Agriculture Network Development and Innovation with Guelph, is a project partnered by the University of Guelph, the City of Guelph, Ontario Agri-Food Technologies (OAFT) and the MaRS Discovery District

A key MaRS Landing objective is to bring together best-in-class scientific and business activities to facilitate commercialization. Its goal is to accelerate the commercialization of scientific discovery, fuelling the creation of new wealth and opportunities for Canadians. The project, located in Guelph, nearly 100 kilometres from Toronto, is looking to ORION to provide the connectivity it needs to give Toronto-based and other scientists and researchers direct access to life science and agri-food clusters in the Guelph region.

Its primary focus is to link biomedical research from the MaRS Discovery District (located in Toronto) to more rural programs and to build on the fact that with new discoveries in genomics, computational sciences and chemistry, there is more synergy than ever among traditional agriculture, medical sciences and manufacturing.

John Kelly, the Project's Executive Director, comes to MaRS Landing with a wealth of experience in the private and public sectors. He has held various positions with multinational companies, including Land O' Lakes Feeds, Ralston Purina, Rhone-Poulenc Canada Inc. and Aventis CropSciences Inc., as well as the Ontario Ministry of Agriculture and Food.

"The MaRS Landing project is the first step in bringing together outstanding research capabilities from many different sources and ultimately benefiting the public," said Kelly. "Linking established research programs to rural Ontario capabilities is key to the success of MaRS Landing and represents a great opportunity for its partners." MaRS Landing is looking to extend its connectivity to other regions of Ontario, having been in discussions with groups from Windsor, to Ottawa, to Sudbury. "We will be providing those linkages right across the province," he said.

(continued on page 4)

Funding for Advanced Applications Program Announced ...

continued from previous page

reduces participants to talking heads, experts agree that future generations of video-conferencing must include more intuitive and interactive features.

Real-time collaboration is a major global trend in research and education. With ORION, Ontario researchers have the ideal infrastructure for developing the next generation of collaborative technologies, including advanced video-conferencing.

The challenge is to develop more reliable, well-integrated systems to support complex collaboration at a distance.

This may involve enhanced use of touch, 3-D, sound and sight, layered sources of information and security at all points of collaboration - all in the context of real-world limits in technology: time lag, limited accessibility, inconsistent capability, costs, firewalls, competition with older established affordable technology.

CANARIE will support up to 50% of eligible costs up to \$250,000, but under certain circumstances, contributions above that ceiling will be allowed.

Among the mandatory criteria for applicants in this competitive process is the expectation that successful projects must bring together complementary participants to achieve results that individual organizations could not achieve independently.

Projects must also be innovative in concept, design, and application, and have an impact on the state of the art and evolution of advanced networking capabilities, particularly (but not exclusively) through

the use of end-to-end lightpaths.

Projects must use at least one Optical Regional Advanced Network (ORAN), and the use of CA*net 4 is highly desirable.

The deadline for proposals is February 2, 2004. Successful applicants will be invited to submit a more detailed Statement of Work (SOW) no later than March 31, 2004.

Visit the CA*net 4 web site for more information, visit the CANARIE web site at <http://www.canarie.ca/funding/applications/guidelines.html>.



ORION, CA*net 4 host Advanced Networking Days ...

(continued from previous page)

Other events are scheduled for York University, MacMaster University, the University of Western Ontario, the University of Toronto, and Queens University.

More sessions are planned for other cities in January and February 2004.

For more information, visit the ORION-CA*net 4 Advanced Network Days web site at: <http://www.orion.on.ca/orioncanet4days.html>.





ORION News Briefs

Laurentian researchers solve riddle of "singing sand"

Scientists from Sudbury have solved the mystery of the "singing" or "booming" sand phenomena.

Recorded in history as early as 1,500 years ago, "singing sand" occurs along beaches, while another type of musical sand is the 'booming sands' found in desert dunes.

A recent paper by Tom A.J. Patitsas, of Laurentian University's Department of Physics and Astronomy appeared in a recent issue of the *Journal of Fluids and Structures*.

It is primarily theoretical research and motivated by the experimental research of his Laurentian colleagues, Gottfried Rubin, Marcel Leach and Douglas Goldsack.

The sounds, which have been compared to the roar of thunder, or, as reported by Marco Polo, the sound of marching armies, have been a source of mystery to scientists, who first started searching for answers 150 years ago. Major sites are located all over the world.

There is an example of "singing sand" in Ontario along the Bruce Peninsula.

The new research shows that the two phenomena are based on a single mechanism, which involves the interaction of the elastic modes of vibration in a layer of energized sand grains below the sand surface, called the slip layer, and the vibrations in a boundary layer of sand grains on the surface of the sand.

More information may be found on several web sites that deal with the phenomena. Details of the Laurentian research are available online at the Laurentian University Gazette, at <http://laurentian.ca/?file=gazette/oct03/sands.htm>.

ORION seeks cross-border alliance - meets with NYSERNet and U. of Buffalo

In what is expected to lead to a closer working relationship, ORION senior staff travelled to the University of Buffalo recently to meet with university officials and members of NYSERNet – New York State's research and education network, to compare notes and review the status of each other's expanding network infrastructures.

"This was a great opportunity to share best-practices and lay the groundwork for closer collaboration in the future," said President and CEO Phil Baker. One of the issues discussed is the future possibility of direct optical gigabit connectivity between the two networks, which would greatly enhance the collaborative

capability of researchers on both sides of the border. Bob Gagne, York University's Chief Information Officer, joined the ORION team on the visit, which included a tour of the University of Buffalo's supercomputing facilities, one of the top HPC sites in North America.

Network Update

ORION's North Bay PoP should be up and running with two weeks, says ORION Project Director Sam Mokbel. "The equipment has been installed and we're in the testing stage now," he said. The PoP, located at Nipissing University, will also offer connectivity to Canadore College and any other eligible institution. ORION is providing over \$44,000 in local connectivity funding to enable the institutions to connect to the network. The network's PoP sites at Timmins and Sault Ste. Marie are next on the list. They're expected to be up and running in December.

ORION Poster & 3D wallpaper

Visitors to the ORION web site can now receive their own free 3x4 wall poster. They can also download and install their very own ORION Windows wallpaper. The artwork features 3-D renderings of the popular ORION logo. Visit the ORION Publications page at www.orion.on.ca/about/publications.html for details.

Ontario bio and life sciences strategies and clusters in development



ORION is "a natural partner" in the development of bio-medical and life science cluster development in Ontario, says Phil Baker, President and CEO of the Optical Regional Advanced Network of Ontario (ORANO), which owns and operates the new high-speed ORION network.

In remarks to a recent Networking Summit on the new Biotechnology Cluster Innovation Program (BCIP), Baker emphasized that Ontario currently has a competitive lead over other jurisdictions in the area of gigabit connectivity among other research and education institutions.

Ontario's Biotechnology Secretariat recently launched the program in order to accelerate the development of Ontario's biotechnology and related industry clusters. The Secretariat is currently working with 11 regional consortia in all regions of Ontario.

The program will support projects that enhance the commercialization of new research discoveries and the start of new companies to

create the receptor capacity that enables the diffusion of biotechnologies into other knowledge-based industries and traditional industry sectors such as chemicals, plastics, fuels, and forestry.

Baker, invited to address the Networking Summit in Toronto earlier this month, outlined the availability and the benefits of ORION as a collaborative infrastructure.

"ORION offers an ideal opportunity to establish virtual clusters of bio-medical and life science research, in partnership with ORION user institutions," said Baker.

"ORION gives Ontario a clear competitive advantage over other jurisdictions by deploying a telecommunications infrastructure of ORION's scope and capacity for R&E and R&D," said Baker. Other jurisdictions are as far as 18 months behind Ontario in deploying this sort of infrastructure, he said.

"We need to take advantage of this competitive lead," he said. R&D project

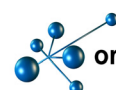
methodologies are evolving rapidly to address new large-scale data and computational requirements. Access to large-scale data and computational resources in "real time" reduces researchers' wait time for data and results.

Today, cross-disciplinary teams and new knowledge are required to advance most discoveries. Incorporating collaborative technologies and tools to allow such teams to work together, often from remote locations, is critical to advanced research.

"Digitized medical and biological data involves the transmittal, storage and rapid access to terabytes of information, equivalent to thousands of filing cabinets.

Access to large data storage resources and massive computational power with high-speed transmission connectivity is a necessity for the next generation of bio-medical and life sciences research," said Baker.

(continued on page 4)



U of Waterloo leads research on web learning



A University of Waterloo research team has received \$1.14 million in Natural Sciences and Engineering Research Council (NSERC) funding over the next five years to develop tools for treating effective training courses and programs on the Internet.

The funding is from \$7.5 million allocated to the new Lornet -- Learning Object Repositories Network, which involves researchers from six campuses, including the University of Ottawa, Université du Québec's Tele-Université, Simon Fraser University, the University of Saskatchewan, Ecole Polytechnique de Montreal and the University of Waterloo.

More than 30 partners from the public and private sectors will contribute close to \$1 million to the project. They will also provide expertise and resources to ensure that the research results are disseminated widely. The network plans to train some 40 graduate students and six postdoctoral fellows each year.

At UW, Prof. Mohamed Kamel, of the University of Waterloo systems design engineering department, also Canada Research Chair in Cooperative Intelligent Systems, will lead a team to conduct work on knowledge extraction and learning object mining.

The Pattern Analysis and Machine Intelligence group, which includes Otman Basir, Fakhri Karray and Hamid Tizhoosh, will carry out the research. "The main goal of Lornet is to build new knowledge in computer and cognitive science to help design and develop the

architectures, the tools and the methods in a network of learning objects repositories to maximize its usefulness and efficiency for education and training on the Web," Kamel said. For more information, visit <http://pami.uwaterloo.ca/kamel.html>.



Ontario bio and life sciences strategies ...

(Continued from page 3)

He noted that collaboration within and across regions is key to geography-based and virtual cluster development. "ORION's gigabit infrastructure enables the seamless transmittal of data at this scale and magnitude and the degree of interactivity necessary for effective collaboration across distances. He emphasized that ORION is now operational and provides a core infrastructure for bio and life science cluster development, pointing out that the network already extends to all cluster regions across Ontario and is accessible through our post secondary education institutions and research facilities, ready to partner with companies on their R&D programs. ORION allows private sector researchers access to the network, if in partnership with an eligible ORION user institution, such as a college, university or public sector research lab, on a short-term, project basis.



MaRS Landing extends biotech reach

(Continued from page 2)

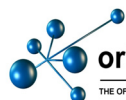
"The MaRS Landing project is a wonderful example of the MaRS vision, to actively network research communities throughout Ontario and beyond, and to share resources to ensure the creation of new wealth and opportunities for the people of Ontario and Canada.

We're pleased to be part of this innovative project with our partners in Guelph," said John Cook, president of the MaRS Discovery District.

One benefit of partnering with a not-for-profit network like ORION is that resources often invested in duplicating telecommunication infrastructure can instead be channeled directly into research programs and applications. ORION can help MaRS and MaRS Landing work with remote, less-connected institutions that now have greater opportunities to develop niche and specialty areas of research in biotechnology and life sciences, with new partners in Canada and around the world.

"This new network will lead to better pooling of resources, facilities, services, knowledge and experience," says Kelly, who notes that it will also create a critical mass of science and commerce across the province in order to advance the commercialization and discovery agenda throughout Ontario. "ORION, like MaRS, wants to contribute to global competitiveness and try to raise awareness of Ontario as an advantageous jurisdiction when it comes to research," says Phil Baker, President and CEO of ORION. "Our projects complement each other. ORION will support MaRS in meeting its objective of stimulating and supporting biotech-pharma clusters in Ontario."

For more information, visit the MaRS Landing web site at <http://www.marslanding.ca> or the MaRS Discovery District web site at <http://www.marsdd.com>.



orion research and discovery news

THE OFFICIAL NEWSLETTER OF THE ONTARIO RESEARCH AND INNOVATION OPTICAL NETWORK

About ORION

ORION is an advanced high-speed fibre optic network that connects research and education institutions to each other and to colleagues around the world. Spanning 3,700-kilometre to 21 cities throughout the Province of Ontario, ORION was created to bring leading-edge network capability to Ontario's publicly funded R&E community and to become a catalyst for creative and innovative next generation Internet applications.

For more information

ORION is owned and operated by the Optical Regional Advanced Network of Ontario (ORANO). For more information, visit our web site at <http://www.orion.on.ca>. Communicate directly with the Editor of the ORION Newsletter at info@orano.on.ca.

To subscribe to the electronic version of this newsletter, visit this web site. <http://www.orano.on.ca/newsletter/subscribe.html>

