



Ontario Research
and Innovation
Optical Network

Réseau optique de
Recherche et d'innovation
de l'Ontario

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MEDIA BACKGROUNDER

ORION - Ontario's Gateway to Research and Discovery - is a new high-speed, optical network that brings affordable world-class broadband access and connectivity to Ontario's research and advanced education (R&E) institutions.

The Ontario Research and Innovation Optical Network (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.

Connecting more than 100 Ontario institutions and organizations with other local and global networks, ORION enables transmittal of data at 10-gigabit speed, leading to the development of new applications and collaborative projects that would otherwise be impossible or impractical to undertake.

Private-Public Sector Partnership

The Optical Regional Advanced Network of Ontario (ORANO), a not-for-profit organization responsible for building and operating the ORION network, has signed a \$25 million contract with Bell Canada to deliver optical fibre and equipment for the network.

The agreement is the result of discussions between ORANO and Bell Canada and a group of allied companies, including Hydro One Telecom, Nortel Networks, Cisco Systems, and several regional telecom providers, which enable ORION to build and maintain its own broadband fibre network infrastructure.

The Ontario Ministry of Enterprise, Opportunity and Innovation and Ontario's SuperBuild Corporation are ORION's primary funding partner, with an investment of \$32.3 million. The federal government has invested \$3.4 million through CANARIE, Canada's Advanced Internet Development Organization, which operates CA*net4. Additional private and public sector investments over the next three years will bring the value of the ORION project to over \$78 million.

"The world relies increasingly on the processing of huge amounts of information, and that's where ORION comes in," said Phil Baker, President and CEO of ORION. "Advanced research networks, particularly those using optical technologies, have become part of the basic science and technology infrastructure in advanced economies and are vital to new research and product development."

Largest in the world

The network joins 21 communities spanning more than 3,700 kilometres throughout the province - one of the largest and most powerful research networks ever built. Laid end-to-end, ORION's total optical fibre would stretch to 8,200 kilometres, making it the largest privately owned and operated R&E network in the world. Most other large research and education networks, such as the GEANT network in Europe, are a collection of smaller networks that broker and provide access to 10-gigabit speed connectivity to member institutions through a mix of public and commercially available services. ORION, a wholly integrated network, owns and operates all of the dark fibre, switching gear and equipment that constitutes the physical infrastructure of the network.

10-gigabit network

The network currently offers optical wavelength capacities at 10 Gbps, scalable to 320 Gbps, using technology incorporating Dense Wave Division Multiplexing (DWDM) transmission capabilities and Layer 3 routing architecture. Data transmission at that speed means that the network can support real-time and high bandwidth applications such as multipoint videoconferencing and grid computing. ORION allows users to send and receive massive volumes of electronic data at gigabit speeds. For example, the entire content of a high-end personal computer with a 40-gigabyte hard drive could be downloaded from one location on the network to another in a few seconds.

New applications

ORION will connect users to Canada's CA*net4 , Internet2 in the US, and other R&E networks around the world through a TeraPop connection, capable of handling multiple terabits (1,000 gigabits) of data per second. Once fully deployed, ORION will allow:

- ✓ new methods of learning and research among universities, colleges, research institutes via virtual university and college classrooms or laboratories with students and facilities in different locations;
- ✓ multiple computers to work on a problem simultaneously or access to large scale computing resources not available locally;
- ✓ shared and ready access to large genomic and biotech data bases; and
- ✓ collaborative modeling for physics and advanced materials research.

ORION Locations

ORION user organizations include accredited universities and colleges; publicly funded research organizations; government research institutes or agencies and broader public sector bodies carrying out high bandwidth research and education applications and applications development; and private sector research partners of eligible organizations on a project basis. ORION is finalising discussions with the following institutions, which have agreed to serve as a Point of Presence (PoP) host * for the ORION network in their communities:

- Barrie, Georgian College / SCAN
- Belleville, Loyalist College
- Guelph, University of Guelph
- Hamilton, McMaster University
- Kingston, Queen's University
- London, University of Western Ontario / LARG*net
- North Bay, Nipissing University
- Oakville, Sheridan College
- Oshawa, Durham College
- Ottawa, Ottawa Centre for Research and Innovation / City of Ottawa
- Peterborough, Fleming College / Trent University
- Sarnia, Lambton College
- Sault Ste. Marie, Sault College
- St. Catharines, Brock University
- Sudbury, Laurentian University
- Thunder Bay, Lakehead University / 807 Northwest Network
- Timmins, Northern College / NEOnet
- Toronto, University of Toronto / GTAnet
- Toronto, York University / GTAnet
- Waterloo, University of Waterloo
- Welland, Niagara College of Applied Arts and Technology
- Windsor, University of Windsor / WEDnet

** For more information in individual PoP locations, contact ORION.*

The need for ORION

Before ORION, Ontario's research community had limited access to Canada's national advanced research network, CA*net4 - the world's first national all-optical research network. Ontario needs to be competitive with the US and other jurisdictions that have implemented advanced research networks. British Columbia, Alberta and Quebec have provincial research networks.

The Ontario Jobs and Investment Board (OJIB) report, "A Road Map to Prosperity: An Economic Plan for Jobs in the 21st Century," recognized the significance of an advanced research network infrastructure to Ontario's economic development and competitiveness.

The report said that a culture of innovation is key to attracting and retaining innovators, to creating internationally recognized research networks, and to improving Ontario's research and development capacity. It recommended that Ontario urgently upgrade its research infrastructure to fully optical, next generation Internet for use by universities, colleges, health research institutes and the private sector, to develop world-class infrastructure to conduct world-leading research and development activities. The Government of Ontario responded by investing in the creation of the ORION network through the SuperBuild Corporation, and calling for additional investment from the public and private sectors.

Who We Are

ORANO is the Optical Regional Advanced Network of Ontario. It is a not-for-profit organization responsible for building and operating the ORION network. It is led by a Board of Directors comprised of education, research and business leaders from throughout the province. The Chairman of the Board is Dr. Ross Paul, President of the University of Windsor. Other members include Brian Desbiens, President of Sir Sandford Fleming College, Shawn Ling, President and CEO of Venture4word Consulting and iFuel Networks Inc., Maxim Jean-Louis, President of Contact North/Contact Nord and Professor Jack Gorrie, Provost's Adviser on Information Technology, Office of the Vice-President and Provost, University of Toronto.

The ORION Team

Phil Baker, one of the architects of Ontario's broadband and networking strategies with the Government of Ontario, is the President and CEO of the company. ORION's engineering team is led by Sam Mokbel, Project Director. Team members include Senior Project Engineer Randy Neals, Senior IP Engineer Shahid Ajaz, Network Analyst Sajid Razzaq and Project Manager Ron Neil. Andre Quenneville is Manager of Marketing and Communications.

How to contact us

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