

ORION 2014 SNAPSHOT

SHARE  
WHAT  
YOU DO

CONNECTIVITY

COMMUNITY

CONTENT

COMPUTING

CLOUD



## THE 5 C'S

Our strategy is summarized by the 5 c's,  
which you will see highlighted in this book:

**CONNECTIVITY**  
**COMMUNITY**  
**CONTENT**  
**COMPUTING**  
**CLOUD**

} **Providing a fast, reliable,  
effective network**

} **Bringing together the research,  
education and innovation community  
to strengthen the entire ecosystem**

} **Enabling the transmission and sharing  
of huge volumes of content**

} **Linking advanced computing centres  
and capability**

} **Bringing world-class cloud-based  
software partners to our users**

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# FROM THE CHAIR

ORION's main priority is always the people we serve: the researchers, educators, students and innovators who use our network and cloud services to keep Ontario competitive and collaborative.

Your achievements inspire us to push our capabilities and match your ingenuity with our own. We have an outstanding team working hard on your behalf, and as a board, we remain committed to championing your needs and providing the sustainable, reliable and efficient services that will help you meet the challenges and opportunities of the 21st century.

## ANNE SADO

Chair, Board of Directors, ORION  
President, George Brown College



# FROM THE PRESIDENT

From the researcher developing new cancer treatments to the teacher learning to use an app for the first time, you are ORION's raison d'être. Every year, we see your broadband use rise by nearly half, making it clear that connectivity is more essential than ever for Ontario's continued success.

We are committed to providing you with the best digital infrastructure available. Combined with the cutting-edge cloud services offered under our Nebula program, you get even greater capabilities through applications and services that let you do more for less.

We will keep working toward our vision of fast, reliable connectivity throughout Ontario. Thank you for your continued support, and I look forward to working closely with you in 2015 to keep Ontario on the leading edge of innovation.

## DARIN P.W. GRAHAM, PhD

President and CEO, ORION



# OUR BOARD OF DIRECTORS LEADERSHIP

## CHAIR



ANNE SADO  
PRESIDENT,  
GEORGE BROWN COLLEGE

## DIRECTORS



ADRIENNE DOWN COULSON  
– NEW MEMBER –  
GENERAL MANAGER OF CANADA AND RUSSIA,  
EBATES INC.



DARIN P.W. GRAHAM, PhD  
PRESIDENT AND CEO,  
ORION



DR. SARA DIAMOND  
PRESIDENT,  
OCAD UNIVERSITY



DR. KHALED EL EMAM  
CANADA RESEARCH CHAIR,  
ELECTRONIC HEALTH INFORMATION;  
ASSOCIATE PROFESSOR,  
FACULTY OF MEDICINE,  
UNIVERSITY OF OTTAWA



MICHAEL RIDLEY  
FORMER CIO AND CHIEF LIBRARIAN,  
UNIVERSITY OF GUELPH



ALEX GIOSA  
PRESIDENT AND CEO,  
ALCATEL-LUCENT CANADA



JIM GARNER  
CORPORATE DIRECTOR



DAVID DRURY  
GENERAL MANAGER,  
GLOBAL TECHNOLOGY SERVICES,  
IBM CANADA LIMITED



KAREN GROSE  
VICE PRESIDENT OF DIGITAL EDUCATION,  
TVO

## OUR NETWORK



# ORION IS ONTARIO'S BACKBONE OF INNOVATION

## WHAT WE STAND FOR

- ORION is dedicated to **CONNECTING** and supporting every research, education and innovation organization in Ontario.
- We are recognized for providing the **LEADERSHIP** and critical infrastructure that allows our users to collaboratively engage in making Ontario a global leader in innovation.
- With one of the world's **FASTEST** research and education networks, we enable our users to be connected to a world of possibilities.
- By **LINKING** users through our network to the outside world, we deliver value-added capabilities that enhance and support the pursuit of knowledge, social impact and economic outcomes every day.

“As a former academic, scientist and businessman, I understand firsthand the important role innovation and collaboration play in strengthening the quality of education, expanding research enterprise and creating jobs. ORION's digital infrastructure facilitates the strong and collaborative partnerships that ensure Ontario's research and innovation ecosystem remains on the cutting edge of the 21st-century economy.”

### The Honourable Reza Moridi

Minister of Research and Innovation & Minister of Training, Colleges and Universities

# CONNECTED INSTITUTIONS

## ONTARIO UNIVERSITIES

Algonia University *Sault Ste. Marie*  
 Brock University *St. Catharines*  
 Carleton University *Ottawa*  
 Lakehead University *Thunder Bay*  
 Laurentian University *Sudbury*  
 McMaster University *Hamilton*  
 Nipissing University *North Bay*  
 OCAD University *Toronto*  
 Queen's University *Kingston*  
 Royal Military College of Canada *Kingston*  
 Ryerson University *Toronto*  
 Trent University *Peterborough*  
 University of Guelph *Guelph*  
 University of Ontario Institute  
 of Technology *Oshawa*  
 University of Ottawa *Ottawa*  
 University of Toronto *Toronto*  
 University of Waterloo *Waterloo*  
 University of Windsor *Windsor*  
 Western University *London*  
 Wilfrid Laurier University *Waterloo*  
 York University *Toronto*

## TEACHING HOSPITALS / MEDICAL RESEARCH

Baycrest Centre for Geriatric Care *Toronto*  
 Centre for Addiction and Mental Health *Toronto*  
 Hospital for Sick Children *Toronto*  
 Institute for Clinical Evaluative Sciences *Toronto*  
 London Health Sciences Centre *London*  
 Michener Institute for Applied Health Sciences *Toronto*  
 Northern Ontario School of Medicine *Sudbury-Thunder Bay*  
 Ontario Agency for Health Protection and Promotion *Toronto*  
 Ontario Institute for Cancer Research *Toronto*  
 Ontario Telemedicine Network *Toronto*  
 St. Joseph's Health Care *London*  
 Sunnybrook Health Sciences Centre *Toronto*  
 University Health Network *Toronto*

## ONTARIO COLLEGES

Algonquin College *Ottawa*  
 Cambrian College *Sudbury*  
 Centennial College *Toronto*  
 College Boréal *Sudbury*  
 Conestoga College *Kitchener-Waterloo*  
 Confederation College *Thunder Bay*  
 Durham College *Oshawa*  
 Fanshawe College *London*  
 Fleming College *Peterborough*  
 George Brown College *Toronto*  
 Georgian College *Barrie*  
 Humber College *Toronto*  
 Lambton College *Sarnia*  
 Loyalist College *Belleville*  
 Mohawk College *Hamilton*  
 Niagara College *Welland*  
 Northern College *Timmins*  
 Sault College *Sault Ste. Marie*  
 Seneca College *Toronto*  
 Sheridan College *Oakville*  
 St. Clair College *Windsor*  
 St. Lawrence College *Kingston*

## ONTARIO SCHOOL BOARDS

Algonia District School Board *Sault Ste. Marie*  
 Algonquin Lakeshore CSB *Napanee*  
 Brant Haldimand Norfolk Catholic District School Board *Brantford*  
 Conseil Scolaire Catholique Providence *Windsor*  
 Conseil Scolaire Public du Grand Nord de l'Ontario (CSPGNO) *Sudbury*  
 District School Board of Niagara *St. Catharines*  
 Durham District School Board *Durham Region*  
 Greater Essex County District School Board *Windsor*  
 Hastings and Prince Edward District School Board *Belleville*  
 Kawartha Pine Ridge District School Board *Peterborough*  
 Keewatin-Patricia District School Board *Dryden*  
 Lakefield College School *Lakefield*  
 Lakehead District School Board *Thunder Bay*  
 Lambton Kent District School Board *Chatham*  
 Limestone District School Board *Kingston*  
 London District Catholic School Board *London*  
 Near North District School Board *North Bay*  
 Northwest Catholic District School Board *Fort Frances*  
 Ottawa-Carleton District School Board *Ottawa*  
 Peel District School Board *Mississauga*  
 Peterborough, Victoria, Northumberland & Clarington Catholic District  
 School Board *Peterborough*  
 Provincial Schools Branch *Ministry of Education*  
 Rainbow District School Board *Sudbury*  
 Rainy River District School Board *Fort Frances*  
 Simcoe County District School Board *Midhurst*  
 Simcoe Muskoka Catholic School Board *Barrie*  
 St. Clair Catholic District School Board *Wallaceburg*  
 Thames Valley District School Board *London*  
 Thunder Bay Catholic District School Board *Thunder Bay*  
 Toronto District School Board *Toronto*  
 Trillium Lakelands District School Board *Bracebridge*  
 Waterloo Region District School Board *Waterloo*  
 Windsor-Essex Catholic District School Board *Windsor*  
 York Region District School Board *Aurora*

## RESEARCH, CULTURAL & EDUCATIONAL FACILITIES

Centre for Biologics Research (Health Canada) *Ottawa*  
 Compass for Success *York Region*  
 Contact North | Contact Nord *Sudbury-Thunder Bay*  
 Hamilton Public Library *Hamilton*  
 Innovation Park at Queen's University *Kingston*  
 Laboratory for Foodborne Zoonoses (Public Health  
 Agency of Canada) *Guelph*  
 MaRS Discovery District *Toronto*  
 National Research Council *London*  
 Natural Resources Canada *Ottawa*  
 Northern Centre for Advanced Technology  
 (NORCAT) *Sudbury*  
 Research Data Centres Program *Statistics Canada*  
 Robarts Research Institute *London*  
 Royal Ontario Museum *Toronto*  
 SNOLAB *Sudbury*  
 TFO (Télé-Française d'Ontario) *Toronto*  
 TVO *Toronto*  
 Waterloo Summit Centre For The Environment  
*Huntsville*


## HIGH PERFORMANCE COMPUTING PROJECTS & FACILITIES IN ONTARIO

HPCVL (High Performance Computing  
 Virtual Laboratory) at 8 member  
 institutions  
 SciNet at the University of Toronto  
 and 5 affiliated research hospitals  
 and institutions  
 SHARCNET (Shared Hierarchical  
 Academic Research Computing  
 Network) at 17 participating  
 institutions

# INCREASINGLY NETWORKED

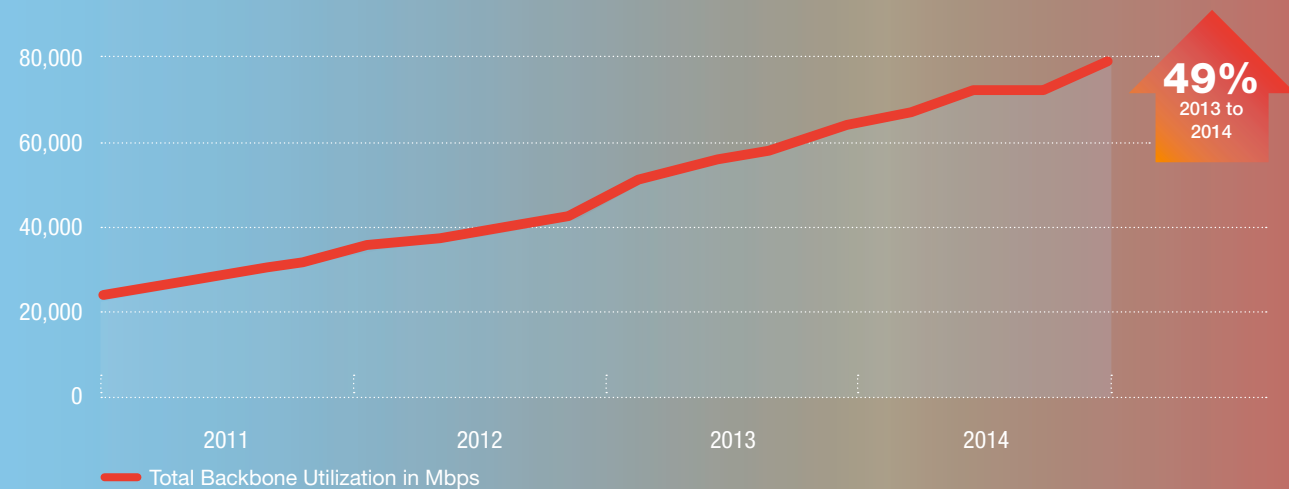
**NEARLY 2M STUDENTS ARE ON THE ORION NETWORK—REPRESENTING OVER 70% OF LEARNERS**

ORION connects a growing number of Ontario's education institutions to one another and to a global network, enabling collaborative learning.

-  K-12 Students (x10,000)
-  Post-Secondary Students (x10,000)

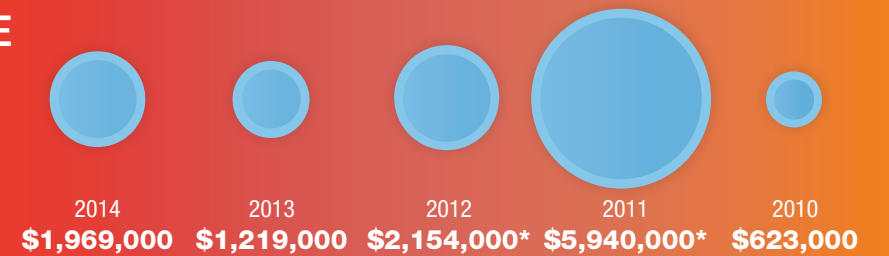


**49% INCREASE IN TOTAL BACKBONE UTILIZATION ACROSS ALL CONNECTED INSTITUTIONS**








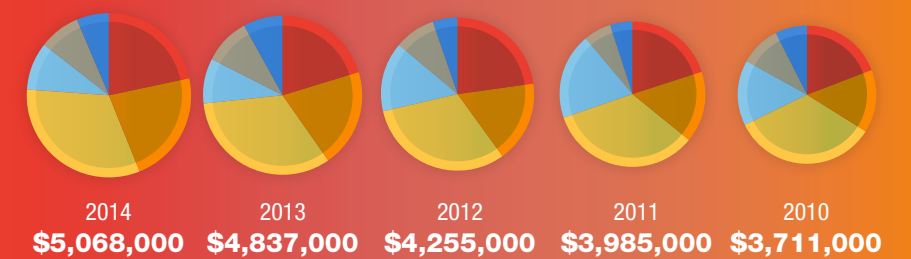
# NETWORK INVESTMENTS

**INFRASTRUCTURE IMPROVEMENTS**



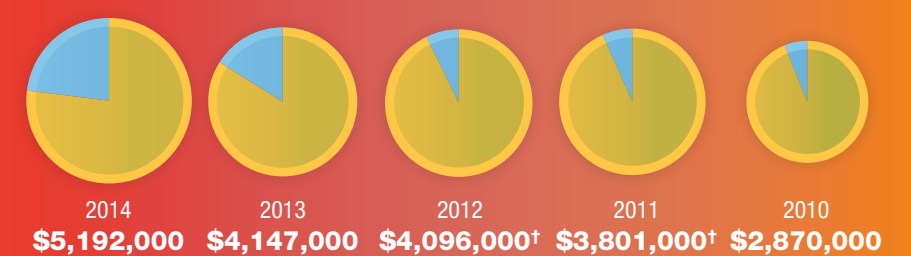
**OPERATING REVENUE**

-  Colleges
-  School Boards
-  Universities
-  Research/Cultural
-  Teaching Hospitals
-  Other Income



**EXPENSES**

-  Operating Expenditures
-  Capital Expenditures



\* Part of the 100Gig upgrade, including CANARIE support  
 † Not including 100Gig upgrade

**THIS PAGE**  
Eddie Villarta,  
Network Services Manager,  
Carleton University

# THE POWER OF TEN

Carleton University increases its ORION connection

CONNECTIVITY

## 400 G

To support the growing needs of institutions like Carleton University, we're always looking to do more. This year, ORION successfully completed the first North American field test of 400 Gbps on our live research, education and innovation network. The test demonstrated that ORION's network is capable of a bandwidth speed of 400 Gbps, which could open up new opportunities for Ontario's students, educators, researchers and innovators as they collaborate on local, national and international projects.

### QUICK FACTS:

- **A single 400 G signal could support 6.25 million voice calls or 20,000 CDs.**
- **ORION was the first in Canada to deploy a 100 G network and remains one of the largest and fastest networks in the world.**

Demand for bandwidth among educational and research institutions is always increasing—in fact, use of ORION’s network has grown by more than 50% annually over the past three years. As the amount of data that researchers collect, analyze and archive increases, access to a fast, reliable way of transferring data is crucial. ORION plays a pivotal role in ensuring that researchers at Ontario’s institutions have the bandwidth they need for projects in all sorts of disciplines.

Carleton University is one of many institutions facing increasing demand for bandwidth. This summer, ORION helped the university upgrade its connection to ORION from 1 gigabit per second (Gbps) to 10 Gbps. The tenfold increase in network capacity means researchers at the Ottawa-based university will be better able to connect with colleagues and contribute to projects across Canada and internationally.

“We wanted to position ourselves ahead of the anticipated growing demand from our user community,” says Eddie Villarta, network services manager at Carleton.

Upgrading to a 10 Gbps connection to ORION means the school has more resources available to devote to participation in projects such as the Ontario Library Research Cloud (OLRC). That means that Ontario’s wider academic community also benefits.

“The OLRC addresses the growing need for low-cost, reliable storage for universities’ digital collections,” says Alan Darnell, director of Scholars Portal, the organization that oversees the OLRC. Storing these collections in Canadian cloud-storage facilities is more affordable and more reliable than each school creating and maintaining its own on-site digital archive, but it requires the involvement of a number of post-secondary institutions across Ontario.

Carleton’s network connection upgrade means the school will have higher bandwidth available, making the transfer of OLRC-related data to and from Carleton more efficient, and making it possible for the university to participate in the OLRC in a greater capacity in the future.

Carleton’s ORION connection also supports a variety of other research projects at the university, including nuclear research and particle, neutrino and dark matter physics. And there are even more projects being proposed that will require multi-Gbps connections with other universities in Ontario.

Whether it’s digital archives or dark matter, “having the 10 Gbps connection in place gives our users the readiness and flexibility they need to be able to participate in those projects,” says Villarta.

But it’s not just the fibre optic connection—working with ORION has other benefits, too. “From sales to engineering, they are very responsive,” says Villarta. “It gives us a sense of security knowing that ORION is dependable in every aspect.”

That dependability extends even to emergency response, says Mike Milne, a campus network architect, noting that ORION staff have helped the university even if it’s “in the middle of the night, on a weekend.”

Milne says this dedication by ORION is “miles ahead of the response from commercial ISP providers.” No matter what it takes, or when, ORION is committed to helping Carleton University stay connected.



Amaz Taufique, Assistant Director of the Scholars Portal, is helping to create the Ontario Library Research Cloud (OLRC), a collaboration between 10 university libraries that will make petabytes of digital content available to researchers across Ontario. Carleton’s upgraded connection to the ORION network will help support the OLRC.



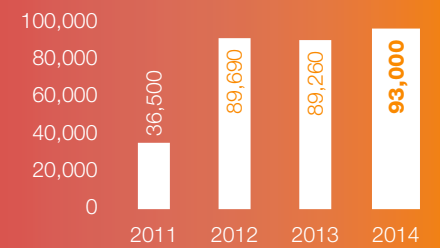
THIS PAGE  
Kirill Kozlov with his  
Kolingo App team

# HACKING FOR GOOD

EdAppHack brings together students, teachers and programmers—and everyone learns

COMMUNITY

## New School Board Users Added Every Year



## NEW KIDS ON THE BLOCK

As technology becomes more ubiquitous and critical to education, connectivity becomes more important. Our goal of providing all students across Ontario with superior network access got another step closer as we welcomed new school board users to the ORION network.

On the path to solving the world's greatest problems, there are challenges that are too big for any one organization to tackle. Only together can a community advance. One such complex concern is the transformation of education. This year, ORION came together with the community to address the issue in a new way at #EdAppHack. The two-day hackathon connected high school students, teachers and community mentors to test drive the classroom of the future.

In the MaRS auditorium in downtown Toronto, more than 200 high school students, teachers and volunteers are working feverishly at tables laden with laptops. They have just two days to create an app, and the deadline for the pitch competition is getting closer by the minute.

They're at #EdAppHack—the first event of its kind in Canada to be driven by high school student-led solutions—organized by Toronto District School Board (TDSB) teachers Joseph Romano and Brandon Zoras. They're supported by a unique community of partners, each contributing according to their expertise: MaRS Discovery District's space and startup roots, Humber College's computer science mentors, and ORION connecting them to the cloud resources and content they need. The goal: to promote a new paradigm of self-directed, engaged learning and foster technological skills in students.

Romano and Zoras created #EdAppHack as a way of giving students both a chance to identify problems in the education system and the skills they need to solve them.

"We want the students to develop a technical skill set and explore a new way of thinking about learning," says Romano. Providing the students an opportunity to practise inquiry-based learning in a non-classroom setting was key.

"We've learned a lot about computer science and programming in school, but coming to an event like this actually allows us to put those skills to work," says

Kirill Kozlov, one of a group of Grade 12 students from William Lyon Mackenzie Collegiate Institute in Toronto. He and his group developed an app to foster communication between teachers and students.

Kozlov says the event was about more than just having a successful pitch and a working prototype at the end of the weekend.

"We're very fortunate to be able to take part in an event like this, because it will prepare us for the future," he says. "Technology is fundamental to everything we do now, and the skills we're learning here are applicable across disciplines."

Those transferable skills are a fundamental takeaway, says Joseph Wilson, senior education strategist at MaRS Discovery District. "Employers are looking for people with strong teamwork and communication skills and the confidence to take risks. The structure of a hackathon allows kids to practise those things in a safe environment."

"The things that allow students to flourish in an event like this and then back at their schools are connections to other people and access to information," says Wilson. "That's where ORION has really helped—by showing the value of connectivity, and connecting these kids at TDSB and school boards around Ontario to the wealth of information that's available."

ORION connects our communities both through a physical network and by working with them on important issues. Sponsoring events like #EdAppHack helps foster the collaboration that is crucial to advancing new ideas and ensuring Ontario stays at the forefront of innovation.

#### BELOW

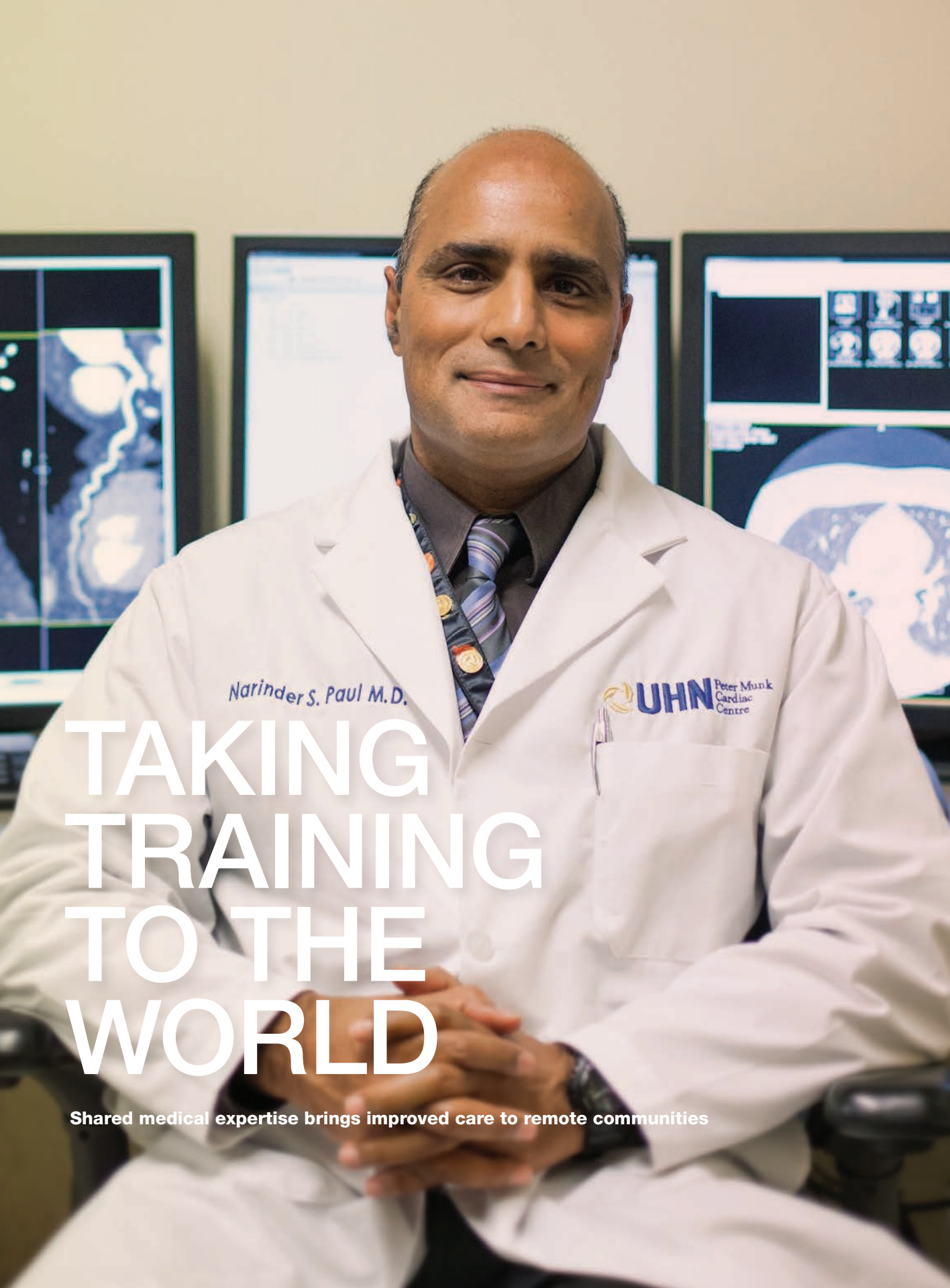
#EdAppHack organizers Joseph Romano (TDSB), Brandon Zoras (TDSB) and Joseph Wilson (MaRS).



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#### Joseph Wilson

Senior Education Strategist, MaRS Discovery District



# TAKING TRAINING TO THE WORLD

Shared medical expertise brings improved care to remote communities

## Leadership Awards

Each year, students, educators, researchers and innovators across Ontario achieve great things for both our community and the world using ORION's services. We honour this innovation and dedication annually with the ORION Leadership Awards. Dr. Paul was one such award recipient in 2014. Meet the visionaries of 2014:



### INNOVATION

WINNER:  
**Dr. Narinder Paul,**  
University Health  
Network

LEFT TO RIGHT: Dr. Narinder Paul and Bill Mantel (Ontario Ministry of Research and Innovation).



### K-12

WINNER:  
**Laurie Clement,**  
St. Rose Catholic  
Elementary School,  
Windsor

LEFT TO RIGHT: Laurie Clement and Krista Jones (MaRS).



### HIGHER EDUCATION

WINNER:  
**Virginia Roy,**  
Ontario Colleges  
Library Service

LEFT TO RIGHT: Linda Franklin (Colleges Ontario) and Virginia Roy

Since 2009, Dr. Narinder Paul and his colleagues at the Advanced Imaging and Education Centre have trained more than 650 radiologists, cardiologists and technologists from across Canada and around the world, enabling them to get the most from the medical imaging technology in their hospitals. Now, with ORION's help, Dr. Paul is developing a virtual classroom that will make the program accessible to even more people. ORION's ability to quickly and securely deliver large quantities of rich content in high fidelity is essential to helping Dr. Paul share Ontario-based expertise with health-care professionals, improving patient care worldwide.

The training is working—and Dr. Paul wants to make it available more widely. But there are challenges. It can be a strain on already limited resources—both financially and for staffing reasons—to send trainees to the Centre, especially for students from outside North America. The solution: to create a virtual classroom, and use the ORION network and its connection to CANARIE, Canada's national network, to make that classroom accessible to radiologists and other clinicians across the country and around the world.

Of course, virtual classrooms—especially ones that rely on examining high-resolution images—require superior connectivity. Add in rich content like video and real-time collaborations and you're at the mercy of the speed and reliability of your network.

“Having partners on the IT side is really important for us to get the message beyond our geographical boundaries and out to a larger audience,” says Dr. Paul. “That's where ORION is going to be extremely helpful in broadening the scope of what we do.”

Using ORION's private high-speed network means Dr. Paul will be able to transmit large volumes of data from the AIEC to students in the virtual classroom quickly and easily, without worrying about compromising the quality or manipulability of the images, or the security of the data. ORION is working closely with Dr. Paul to set up network connections and optimize the system to best serve the needs of the program. Dr. Paul is also in talks with ORION about expanding the virtual classroom by using ORION's O3 social collaboration tool and Nebula cloud partners.

Working with ORION “has been fabulous,” says Dr. Paul. “They get it.”

#### BELOW

Dr. Narinder Paul, a medical imaging expert at the University Health Network, shares his innovative techniques with remote communities around the world.



“**T**he University Health Network is very privileged,” says Dr. Paul, a medical imaging expert, associate professor at the University of Toronto and founder of the Advanced Imaging and Education Centre (AIEC). “We have the best equipment, the best pathologists, and we work with expert physicians and surgeons.” It was awareness of this privilege—and the knowledge that people working in smaller hospitals sometimes struggle to find the resources they need to learn to make the best use of their equipment—that inspired him to found the AIEC five years ago. “We wanted to share our experience so that we could benefit more patients.”

Dr. Paul and his colleagues at the AIEC have trained students from across Canada, and from countries as far away as Colombia, Pakistan and Australia. The hands-on training enables hospitals in smaller communities to institute better screening programs and procedures, making it faster and easier for patients who no longer have to travel long distances to larger hospitals for even a diagnostic imaging test.

“Having partners on the IT side is really important for us to get the message beyond our geographical boundaries and out to a larger audience. That's where ORION is going to be extremely helpful in broadening the scope of what we do.”

#### Dr. Narinder Paul

Medical Imaging Expert, University Health Network

# SEARCHING FOR DARK MATTER WITH THE DEAP EXPERIMENT

ORION helps scientists look for a tiny particle that could make a big impact

Picture courtesy of SNOLAB

## COMPUTING

### TAKING ACTION

ORION's Advanced Computing Transforming Innovation in Ontario (ACTION) project surveyed research and computing leaders from across Ontario, including SNOLAB, to assess the needs and strategic opportunities for the future of advanced computing in the province.

The ACTION report uncovered some startling realities:

- Nearly half of all Canadian research is done in Ontario **50%**
- About half a million researchers use the ORION network **500,000**
- 80% of researchers say available computing resources are insufficient for their needs **80%**
- Researchers lose approximately one day of productivity per week due to the lack of advanced computing resources **100,000 person years**

Having reliable access to advanced computing resources is crucial for the more than half a million researchers who use ORION's network to facilitate their work in Ontario's research institutions, hospitals and universities. By connecting researchers with high-powered computing resources, ORION facilitates world-class research, keeping Ontario at the forefront of some of the modern era's most important scientific discoveries.

**T**wo kilometres underground, in a lab built in the Vale Creighton Mine near Sudbury, some of Ontario's foremost astroparticle physicists are working to discover the tiniest building blocks of the universe through experiments related to neutrino and dark matter physics.

One such experiment is known as DEAP (the Dark Matter Experiment using Argon Pulse-shape discrimination). The goal: to directly observe and identify dark matter—which is thought to make up about 25% of the universe, but has never been detected. Detecting and studying dark matter could help scientists better understand the size, shape and even the future of the universe. To do this, the DEAP experiment uses a tank of liquid argon equipped with highly sensitive photo detectors, which could help detect dark matter particles by recording the flash of light created when a dark matter particle interacts with an argon nucleus.

“We have very sensitive photo detectors and very sophisticated electronics,” says Dr. Chris Jillings, who works on the DEAP project at SNOLAB. “When we get an event—a flash of light—the data are recorded electronically in computer files. What we try to do is image that flash of light and understand where it came from, what sort of radioactivity would create a flash of light with that pattern. It's really important that we record lots of data and understand it all.”

The speed and reliability offered by ORION were key to helping calibrate DEAP's prototype equipment properly in order to record the massive amounts of data required, says Jillings. “We needed to immediately analyze the data so we would know in almost real time if the data we were taking made sense or if we had some fault to fix.”

Since SNOLAB uses off-site computing centres for its highly intensive computing, it needed a great network between them. “And that's what ORION provides for us,” says Jillings.

Now that the project has moved past the prototyping phase, access to the advanced computing resources like the High Performance Computing Virtual Laboratory (HPCVL) at Queen's University is even more important. Approximately 100 TB (equivalent to almost 22,000 DVDs) of data from the DEAP detector were transferred to SNOLAB's analysis cluster at HPCVL.

“The tremendous amount of data gathered by our detectors underground at SNOLAB needs to be analyzed using very substantial computational power,” says Marcin Kuzniak, a research associate working on the DEAP project at Queen's. The ORION connection between SNOLAB and HPCVL, he says, “is absolutely essential to the work we do.”

Not only does the network enable the researchers to communicate effectively between institutions in Ontario, it also allows them to work with collaborators nationally and internationally. There are five Canadian institutions and three in the U.K. working together on the DEAP experiment. “Collaboration on that scale is not trivial,” says Kuzniak. “Making sure everyone can access the data and do useful work on it is crucial.”

It's a lot of research into a tiny particle that could make huge waves in the global scientific community—and ORION will be helping every terabyte of the way.

#### BELOW

Members of the DEAP research project at SNOLAB adjust equipment in their search for dark matter.

Picture courtesy of DEAP collaboration



“The tremendous amount of data gathered by our detectors underground at SNOLAB needs to be analyzed using very substantial computational power. The ORION connection between SNOLAB and HPCVL is absolutely essential to the work we do.”

#### Marcin Kuzniak

Research Associate, DEAP project, Queen's University

#### THIS PAGE

Greater Essex County District School Board uses Compass for Success and the cloud to customize teaching

# HARNESSING THE CLOUD TO DRIVE STUDENT SUCCESS

Educational policy is most effective when decisions are based on data

# CLOUD

#### GET ON THE CLOUD

Like Compass for Success, you can take advantage of our cloud-based services too.

ORION's connected institutions get reduced rates, customized services and private access to the cloud through our network, with no added connection fees.

- ✓ Hosting and video services
- ✓ Backup, recovery and archiving
- ✓ IT security and BYOD
- ✓ High-speed Internet
- ✓ Content management
- ✓ Video and web conferencing
- ✓ O3 collaboration software

Organizations around the world are turning to the cloud for secure, convenient ways to store and share information. ORION's Nebula program responds to this need, providing vetted cloud-based solutions for affordable prices. That's just what happened when it connected educational organization Compass for Success to cloud services provider Stage2Data.

Compass for Success has a simple goal: "We want to increase graduation rates and engagement for all students in Ontario," says Diane Findlay, manager of Compass for Success.

But achieving that goal requires some complicated work behind the scenes, including gathering reams of student data—everything from attendance records to test results—and creating a business intelligence system to analyze and present the data in a way that is meaningful to educators.

Compass for Success began as a partnership between nine school boards across Ontario. "We wanted to ensure every department within the organization, from the classroom to the boardroom, is making decisions based on evidence," says Findlay. Today the organization is helping almost 40 school boards across the province analyze data and improve student outcomes. As interest grew, it became obvious "some school boards did not have the infrastructure, staffing or resources to support the required enterprise data warehouse system," says Findlay.

So Compass for Success enlisted the help of ORION, which linked them with Stage2Data, a partner in ORION's Nebula program for cloud services. Stage2Data specializes in providing cloud-based data hosting, backup and disaster-recovery solutions. Now, more than half of the school boards working with Compass for Success do so via the cloud; many of them using ORION's network to make it fast and simple.

Teachers and administrators can use Compass for Success to produce detailed, interactive reports that illustrate the achievements—and challenges—of a student, school or school board.

"Over the last seven years, we have used Compass for Success to provide teachers with a comprehensive class profile before each school year begins," says Shelley Hudson, information and innovation services supervisor for Greater Essex County District School Board. "The profiles help teachers identify their students' strengths and weaknesses right away, which means they can focus their pedagogical efforts appropriately." For example, a teacher whose class struggles with reading comprehension might choose to incorporate more word problems into their math classes.

Access to clear, consistent student data helps teachers be more effective in the classroom. The cloud provides flexible, affordable access at any time and on any device, and Stage2Data's backups, archiving and disaster recovery mean the data will never be lost or unavailable.

And the results? Hudson points to increased high school graduation rates—304 "bonus" graduates over the last four years—achieved through their ability to track and appropriately support students.

Of course, academic data is highly sensitive. "We need to ensure that the data is protected and secure and that we comply with privacy considerations," says Findlay. In response to those needs, Stage2Data "worked closely with Compass for Success to develop a comprehensive data security and disaster-recovery strategy," says Jeffrey Fretz, senior account manager at Stage2Data.

And as Compass for Success continues to grow, they know that this cloud solution will scale. "ORION has the capacity to support our current and growing needs," says Findlay.

By collaborating with school boards via ORION's high-speed network and Stage2Data's cloud services, Compass for Success is achieving its goal of fostering student achievement.

#### BELOW

Shelley Hudson is an Information and Innovation Services Supervisor at the Greater Essex County District School Board.



In a recent survey of cloud users, about two-thirds of respondents reported that using the cloud reduced IT costs, freed up IT staff for more strategic tasks, and improved disaster recovery and business agility. Access to reliable cloud services is essential.



2014

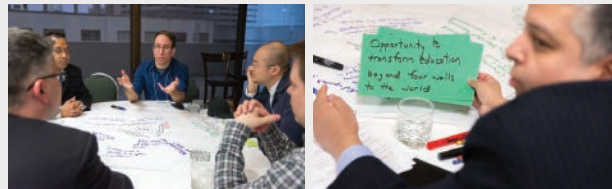
# EVENTS

Our community is important to us. Our events feature interactive sessions that connect your opinions, needs and challenges with the latest technology trends.



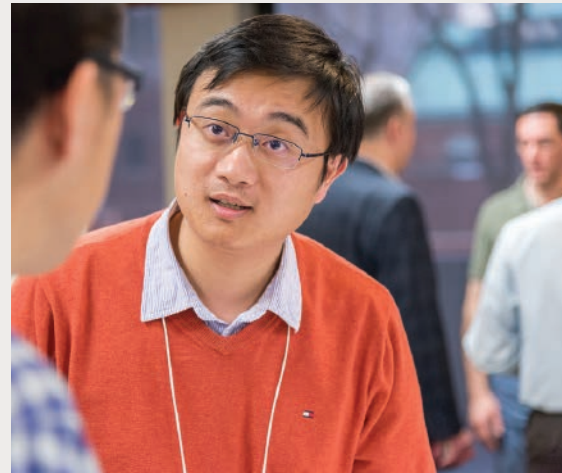
## ACTION WORKSHOP FEBRUARY 13, 2014

Ontario's researchers can solve the world's problems—but first, we need to solve theirs. The Advanced Computing workshop brought together research and computing leaders to brainstorm solutions for Ontario's researchers.



## THINK CONFERENCE APRIL 15, 2014

*THINKforward* featured thought leaders who helped us peer into future trends before inviting attendees to participate in breakout sessions, where we developed strategies to move Ontario forward. We also honoured some of Ontario's most innovative researchers and educators with the annual Leadership Awards.



## TECH WORKSHOP APRIL 16, 2014

IT and network specialists from our connected institutions came together to discuss network upgrades and future projects and provide feedback on ORION services.



## K-12 WORKSHOP JUNE 12, 2014

This workshop featured Google's advocate for gamification and brought together educators from across Ontario to discuss best practices and strategies that deliver results.

## ORION SPONSORED EVENTS

### HIGHER EDUCATION

- OUC 2014
- Advanced Learning Conference
- ACCC 2014
- Colleges Ontario Higher Education Summit
- CANHEIT Conference
- OCCIO Conference

### K TO 12

- OC SOA AGM
- CAIS National IT Leadership Conference
- OASBO Conference
- CONNECT 2014
- ECNO Conference 2014
- OPSOA 2014
- OASBO-ICT: Bring IT Together
- EdAppHack

### RESEARCH AND INNOVATION

- 2014 AMCTO Conference
- 2014 MISA Ontario Conference
- Backbone Magazine Resource Guide
- CANARIE National Summit 2014
- HackerNest
- HPCS 2014
- HPCVL 2014 OCE Discovery

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360 Bay Street, 7th Floor

Toronto, ON M5H 2V6

T: 416.507.9860 F: 416.507.9862

**orion.on.ca**