APRIL 15, 2014

#THINK*forward*

RECOMMENDATIONS FOR ORION

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FUNCTIONALITY IS MORE AND MORE ABOUT CONNECTIVITY

ORION's 2014 THINK Conference (April 15, 2014, in Toronto) was attended by over 100 delegates from Ontario's research, education and innovation (RE&I) community. Alongside chief information officers, network administrators and IT managers, THINK 2014 was attended by researchers, librarians, and educators who are actively using ORION and its Nebula services to empower their work.

The conference theme was "THINK*forward*." Within this context for ORION's RE&I ecosystem, emerging technology is transforming Ontario's communities and institutions faster than ever, changing the way we compete and collaborate with regional and international partners. These developing trends present challenges and opportunities that we can meet—if we THINK forward and plan ahead now.

The purpose of the conference was to have our delegates engage with each other, ORION and our partners on the research and education practices that could be improved with ORION connectivity. THINK 2014 progressed into a dialogue on how connectivity-based technologies should enhance research capacities and learning outcomes. At the core of this dialogue was the central role ORION plays in enabling connectivity.

Thus, in this document, which summarizes the event, we examine essential topics addressed within the keynote session and afternoon breakout sessions. We explore how the sessions addressed issues around content, connectivity and technology and how these issues underpin future opportunities for ORION.

This report is a summary of the collective voice of our delegates. Delegates took notes during group discussions, as did ORION staff. In addition, ORION engaged external facilitators (ICA Associates) to help throughout the conference and workshops. Many of the highlights and ideas they collected during the course of the day are also contained in this document.

The discussions from the conference are a key first step in ORION's year-long strategy planning exercise, the ORION Nexus Project. Being user-focused is critical to developing a successful long-term strategic plan. ORION recognizes this: interacting with our users to understand, discuss and analyze their needs is an important part of the Nexus Project. Only through developing a consultative and collaborative process can we engage with users and obtain their trust in working together to solve their future needs. ORION's 2014 THINK Conference is the starting point of engaging our users in strategic discussion.

Darin PW Graham, PhD

President & CEO, ORION

KEYNOTE SPEECH – "THE FUTURE OF TECHNOLOGY" BY JAIGRIS HODSON

Keynote speaker Jaigris Hodson engaged the audience on the intersections of technological advancements and connectivity. As she presented a number of use cases, the audience was repeatedly invited to reflect on the implications of those examples for research and education. Internet service is key to many technological developments and in the absence of reliable connectivity, most are rendered moot. Hodson suggested that connectivity is one of the greatest enablers for diversification of and growth in personal technology, telehealth and distance education. She further argued that innovation is the key measure of Ontario's capacity to compete. Hodson's presentation highlighted some of the important challenges for ORION and the RE&I ecosystem to tackle:

1	**Under-adoption of technology is a fiscal waste of connectivity, software and hardware.**
2	**Connectivity is no longer a luxury but a necessity. According to Statistics Canada, two million Canadian households have no computer or connectivity.**
3	**Data sovereignty directly impacts the kind of research we do in Ontario as well as the expertise we attract into the province.**
4	**Innovations in video, wearable technology and 3-D printing are impacting research, health and education. Various incubators in Ontario are dedicated to commercializing such innovations.**

5	**With the proliferation of video technologies such as Skype and Google Hangouts, Ontario is seeing a growth in virtual classrooms and interdisciplinary collaboration.**
6	**Today's children need to be taught to think critically about their online activity to ensure responsible digital citizenship.**
7	**As technology becomes more accessible, researchers, educators and students who avidly use technology are increasingly taking on the role of informal IT support teams.**
8	**With growing use of connectivity-driven technologies, user data are increasing our body of analytics.**

BREAKOUT SESSIONS

To introduce the audience to the four afternoon breakout topics, a key speaker from each session highlighted the important aspects of each concern.

- Intelligent Communities - Lou Zacharilla, co-founder of the Intelligent Community Forum, who is often credited with initiating the global intelligent community movement.

- Online Learning and Educational Technology - Joseph Wilson, senior strategist for education at MaRS Discovery District

- Mobility and Connectivity - Dr. Sara Diamond, president of OCAD University and key author of *Taking Ontario Mobile*, a research report on how better services can be provided for less money.

- Cloud Services and Shared Resources - Brian Fry, co-founder of RackForce Networks, one of the leading cloud-based service providers in schools across the U.S. and Canada.

BREAKOUT SESSION SUMMARIES

In the afternoon, participants chose a breakout session. The aim of these sessions was to encourage dialogue on how ORION can enhance its connectivity through a comprehensive understanding of Ontario's service needs and content curation.

The following sections highlight the scope of each of the four breakout sessions. Within each section is a collection of bullet points that capture the fundamental issues discussed and brought forward by the participants. These comments should be taken in context of the specific topic and reflect the diverse thoughts of those engaged in the interactive discussions.

Intelligent Communities

Intelligent communities make use of advanced communications tools to share expertise and spur innovation. This breakout session examined how Ontario's research, education and innovation institutions can contribute to local efforts participating in today's broadband economies and opportunities. While Lou Zacharilla's presentation in the morning highlighted the importance and impact of this global movement, the discussion continued in this breakout session with Jim Gragtmans, chair of the Newmarket Economic Development Agency. A case study of Stratford, Ontario, was presented by Paul West, who was instrumental in Stratford's broadband implementation. Stratford has been named one of the top intelligent communities in the world by Zacharilla's global think tank, the Intelligent Community Forum.

Intelligent communities:

- level the playing field for small communities with respect to equal access to information
- eliminate silos within communities and create a collaborative continuum and interdisciplinary conversations
- require infrastructure as the key to linking communities within the province and the nation
- look to communities of good practice
- are implemented by new partnership models (such as Public-Private Partnerships)
- provide an opportunity for ORION to lead provincial facilitation and collaboration
- have significant, future and long-term impact
- improve community health and education
- allow engagement in the new knowledge economy
- promote growth of jobs, economy and social betterment
- are challenged by funding and sustainability
- need political will and vision from all stakeholder levels
- require changing local policies and regulations to promote implementation
- create a need to reframe risk assessment and how to manage implementation
- enable citizen participation and
- create shared infrastructure for the betterment of all

Online Learning and Educational Technology

Online learning and massively open online courses (MOOCs) may be the hot-button issues in education, but there's even more advanced technology on the way that will revolutionize the way we learn. This breakout session examined some of the coming changes to education with Joseph Wilson, senior strategist for education at MaRS Discovery District. Wilson was joined by Chris Hawks, research lead at the Ohio-based Gaming Matter, who helped develop a game-based graduate course and works with the latest in learning management systems (LMS). Paulla Bennett of the York Region District School Board presented her case study about how her district uses cloud-based education software and supports Bring Your Own Device (BYOD).

Online learning and educational technology:

- include gaming as an educational tool
- can present difficulties with student-led approaches because students are used to a "teacher in charge" approach
- lead teachers to comment, "When students are on their technology, they are not listening to me"
- are critical to the goal of moving toward blended learning in the K–8 environment
- should be treated as enablers of pedagogy, not the other way around
- require students to use their own tools in the absence of well-designed, school-provided tools
- need IT to ensure technology is robust and resilient; educators need to see and trust that it will work
- necessitate investment in professional development for teachers, providing a diversity of skills
- call for the evolution of LMS to be bottom-up and more social and collaborative
- need to examine the complexity of transitioning from paper to online
- bring up the question of who owns the plan going forward and who will lead it
- could involve technology that would change too quickly to be applied in the classroom
- assume that the smartest person in the room is the room (that is, what the technology enables)
- bring up the question of what the ultimate goals of technology in the classroom and online learning are
- could present problems to the 10% to 15% of students who can't read
- create "à la carte" learning, combining learning from different sources
- have the potential for crowd-sourced learning, increasing engagement and empowerment
- can become a global experience, an opportunity to transform education beyond the four walls to the world
- allow for equal access to technology and bandwidth, both to rural and underprivileged students and
- make use of big data and metrics to design learning systems.

Mobility and Connectivity

The need to stay connected is more important than ever before—but how can we best take advantage of technology to keep up with users' mobility expectations and the need to scale beyond the classroom? This breakout session examined the strategic and financial issues underlying the challenges and opportunities for Ontario schools, hospitals and government. Speakers included Dr. Sara Diamond, one of the key authors behind the research report *Taking Ontario Mobile*, and Ali Hirji, ORION's community development manager, who helps many clients set up and use our collaboration software, 03.

Mobility and connectivity:

- collapse geographic boundaries
- create security and privacy concerns, such as sacrificing security for convenience, and wearable technology becoming imbedded
- make for a cross-relationship between ubiquity and security (one goes up, the other goes down)
- raise ongoing questions of health concerns
- bleed into all aspects of life, such as social mobilization
- have a globalizing effect for students
- enable being always on and ubiquitous devices
- create questions about how the device is used—for input or output?
- can impact (via infrastructure, finance or support) on supporting connections to any device that users might bring—BYOD policies are needed
- transform day-to-day tasks and the expectation of 24/7 connectivity
- can influence the impact of new capabilities on real-world problems (for example, assisted living)
- foster the explosion of interaction with the Internet of Things
- make it necessary to design mobility up front and as part of sustainability
- cause a need for managing narcissistic behaviours (for example, selfies)
- affect the new currency: people's valuable time
- create a real-time impulse economy

- promote a bias toward action, getting stuff done, automating processes
- can influence the integration of M-learning into other activities
- pose the question of what to implement—mandating versus optional capabilities
- raise issues about who owns the data, intellectual property and analytics
- require 100% coverage, low cost and high bandwidth
- bring up the topic of how ORION can connect to students at home and
- stimulates ideas about the expansion of Eduroam model (university federation between institutions) to all education users.

Cloud Services and Shared Resources

With research and educational institutions struggling to do more with less, cloud services and shared resources could be a solution that helps expand capabilities while keeping costs down. This breakout session looked at how Ontario institutions can take advantage of these opportunities by discussing governance issues, risk mitigation strategies and other best practices. Speakers included Brian Fry, co-founder of RackForce Networks, which provides cloud services to clients in over 100 countries and is one of the most popular service providers in U.S. schools today. Shiva Amiri, manager of informatics and analytics at the Ontario Brain Institute, talked about her work with the groundbreaking Brain-CODE project.

Cloud services and shared resources:

- suffer from the key concerns of security and loss of control
- bring up the need for clarification about the privacy regulations and impact, both provincial and national
- allow for scalability and dynamic implementation
- require administrators to provide institutional implementations that meet policies (for example, an approved Dropbox)
- may involve disparity between the cost of getting there versus the cost of savings once implemented

- offer the opportunity for hybrid (outsourced and in-house) solutions
- need careful transition plans as existing in-house data centres age
- should involve designing with sustainability from the start
- can interconnect everything
- enable cross-discipline collaboration and open source
- provide an opportunity for federated authentication
- should be developed with "privacy by design" principles
- need customized solutions to properly serve different institutions and situations
- create the opportunity for collaboration in implementation via cooperatives and collectives, but this requires coordination (an opportunity for ORION)
- enable Anywhere, Anytime Computing
- require higher capacity and reliable connectivity (ORION's job)
- create a demand for a community to discuss and address cloud issues for RE&I
- deal with huge data deluges
- require improved data analytics and
- respond to a trend toward owning the innovation (application, use, results), not the infrastructure (equipment, connectivity, data).

SUMMARY OUTCOMES AND RECOMMENDATIONS

Some general themes emerged as outcomes from ORION's 2014 THINK Conference discussions. The participant discussions reveal that:

- Keeping pace with the rapid and exponential change in technology advances poses a challenge.

- Equal access for all users across Ontario is a key consideration of any implementation.

- Security and privacy concerns are embedded within all topics.

- Collaboration and facilitation are required among all of the stakeholders in the RE&I ecosystem.

Based on challenges faced by users and institutions, some specific recommendations emerged for ORION to consider in developing its future strategies.

1   **ORION could aid in the effective use of investments in connectivity, software and hardware by furthering its involvement in technology integration, developing models for professional development and moderating digital communities of practice and community-sourced learning environments that are specific to and secure for researchers and educators.**

2   **Participants expressed an urgent need to be part of a global perspective and to learn from global best practices. ORION could set an example by breaking out of its provincial mould and looking to the global community for best practices in education and research connectivity, funding models and infrastructure deployment.**

3   **Commercial technological innovations have implications for research, health and education. ORION could facilitate the high-speed connectivity for the Ontario incubators creating these innovations so that the benefits are efficiently available to the institutions connected to these centres.**

4   **The Internet of Things is heavily discussed in the mainstream. ORION can help create connected, model communities to practically demonstrate how well-connected technologies can enhance standards of living, provide assisted living to all, regardless of age and skill and promote responsible, healthy digital citizenship.**

5   **Mobile technology is undeniably the most utilized endpoint for information and knowledge. ORION can assist with ensuring that community focal points, like libraries, are supporting free wireless access and that federated, shared models like Eduroam are encouraged.**

6   **Education in Ontario is struggling to keep pace with new modes of integrating technology and human capital. ORION could help Ontario's classrooms better adopt video by offering users a reliable and secure on-demand video collaboration platform.**

7   **Teachers and educators have a plethora of LMSs to utilize in their classrooms. ORION, through its Nebula services, can help its users to make educated decisions on their choice of learning software which should encourage student-led instruction and collaborative learning that empowers students to overcome shyness, share ideas and take initiative.**

8   **Ontario is a hub for research and expertise that depends upon data. ORION could help develop the ideal data repository by examining local cloud solutions to store and share data and deliver student records.**

9   **Character education now includes digital life. ORION could gather data and inform institutions about how they can better moderate children's use of online technology through human, face-to-face interactions.**

10 **With the growth of MOOCs and blended learning models, Ontario educators need to market their expertise more efficiently. ORION has most of the province's key educators and researchers on its network and could help find a solution to showcase their work and connect it with global requirements.**

11 **It is no longer the realm of specialists in a removed department. ORION is an interdisciplinary network and could further engage individual users and involve them in identifying connectivity needs and growth.**

12 **ORION's Nebula services could empower individual researchers and educators to support their own day-to-day research and educational technology needs, rather than simply depending on institutions for this support ("Do It Yourself").**

13 **Analytics are transforming with increased data production. ORION could supply meaningful analytics to help institutions manage their bandwidth, protect their students and efficiently run high-bandwidth applications.**

14 **Ontario's institutions often act on their own community's local needs. As a facilitator, ORION could create collectives and forums for institutions to engage with one another and determine mechanisms to either share their services or collectively acquire state-of-the-art services and solutions. ORION can continue to host facilitative conversations, participative planning and collaborative dialogues to leverage the ORION community in the development and implementation of new opportunities, as well as strengthen ORION as an innovative community-led institution.**

CONCLUSION

The THINK*forward* conference identified needs and opportunities for the research, education and innovation ecosystem in Ontario. As ORION continues in its year-long strategy planning through the Nexus Project, it will incorporate the concepts brought forward into more detailed discussions on possible solutions. In this way, the community will have helped direct us in how we may best support the future of innovation in Ontario.

To further participate in the Nexus Project or comment on this report, please email us at THINKforward@orion.on.ca.

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