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ORION

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Digital research infrastructure for Canada

Prepared for the New Digital Research Infrastructure Organization

INTRODUCTION

ABOUT ORION

ORION is Ontario's only research and education network and a self-sustaining not-for-profit. Covering 6,000 kilometres, our dedicated advanced network connects regions and over one hundred institutions all over the province, including universities, colleges, hospitals and research institutions, as well as many of Ontario's school boards. Most of ORION's 6,000 km network supports connectivity speeds of 100Gbps—that is 1000 times faster than the broadband Internet available in most Ontario homes. More than two million people in the research and education industry rely on ORION to share and communicate with each other and to connect to a global grid of similar networks across Canada and around the world. ORION provides shared access to advanced technology products and services to lower institutional purchasing costs and reduce duplication in services.

ORION strives for excellence in our support to our community, and to continue to be a trusted partner within Ontario's innovation community and the National Research and Education Network (NREN). DRI is a team sport and we strive to collaborate with organizations in Ontario's digital research infrastructure ecosystem and understand the importance of national alignment and collaboration.

Everyone has first-hand experience with the pace at which our digital world changes. Technology that was state of the art a decade ago cannot keep up with today's demands. At the same time, communities need a greater number of faster and more secure connections to undertake increasingly complex, data-intensive work and to efficiently share and protect digital resources.

ORION is proud to be a part of the National Digital Research Infrastructure landscape. We support the advancement of research in Canada, sharing the New Digital Research Infrastructure Organization's (NDRIO) goal of building and sustaining a strong and vibrant Digital Infrastructure (DRI) ecosystem. We look forward to working with the NDRIO on the successful implementation of its goals and building on Canada's world-class research community together.

RECOMMENDATIONS

Strengthening and expanding the digital network for research and education

Canada's research and education network is purpose-built to enable researchers to share data, access digital tools and collaborate across Canada and the world. Broadband underpins our national digital infrastructure ecosystem. Equitable access to reliable high-speed connectivity is essential for collaboration. It is the purpose for which ORION and the national research and education network (NREN) was born: to connect research and educational institutions across Ontario and Canada.

The role of the NREN continues to expand with increased investments in providing researchers and institutions with more network-enabled shared services. The importance of connectivity and ongoing investments in optical networks grows in concert with the growth of the volume and importance of data, collaboration and research tools. In Ontario, institutions need to connect to a point of presence (PoP) in one of 30 locations. This last mile connection can be expensive for smaller and more rural or remote institutions to access. Funding for research institutions that are not yet connected to the NREN is necessary to support Canada's research equitably into the future.

Continued connectivity to access advanced research computing

Advanced research computing includes access to High Performance Computing (supercomputers), cloud, data storage and management, networking, and visualization to help solve complex problems. More and more research depends on these systems/facilities and leveraging these systems requires robust connectivity.

As Ontario's only provincial research and education network, ORION brings increased bandwidth with direct connections to the province's four key Advanced Research Computing sites. Leveraging our existing infrastructure would enable users from the institutions on our network to access data, advanced platforms and tools, facilitate data movement and integration. Ongoing operational funding is needed to ensure continued connectivity to all ARC sites across Ontario, and for all institutions to have equitable access to such research tools.

Secure Canada's research data by harnessing shared cybersecurity services

Researchers need both the digital infrastructure and the training to use these tools effectively – including cybersecurity expertise. ORION has had much success with our unique shared cybersecurity initiatives. The Ontario Cybersecurity Higher Education Consortium (ON-CHEC) initiative provides higher education member institutions with cost-effective cybersecurity guidance, programs, and services such as shared benchmarking, training, methodologies and threat information. Through this participative model, ON-CHEC members strengthen the

sector's collective cybersecurity posture and expertise, enabling collaboration. ORION offers a number of shared cybersecurity services including cost-effective cybersecurity professional development through ORION Community Training; ORION's secondary DNS through CIRA D-Zone Anycast DNS; ORION DDoS Threat Protection for all connected institutions; and community-focused cybersecurity training with CIRA via ORION Cybersecurity Awareness Training.

These shared products and services provide value that far exceeds the dollars paid by participants. Bringing this shared-cybersecurity model to institutions province- and country-wide would help bolster the cybersecurity posture of the entire sector. Cybersecurity training, tools and resources are particularly critical for research institutions in regions where resources and skills are in shortest supply. Data from the ON-CHEC cybersecurity preparedness self-assessments show that the greatest gaps are experienced by those outside urban regions, particularly in the North.

CONCLUSION

ORION supports NDRIO's mandate we are proudly working to expand broadband access across the province. Ontario's research relies on robust infrastructure. And Canada needs to improve and extend access to this digital infrastructure to enable more progress. With the increasing importance of connectivity, digital skills and cybersecurity, we hope that you take our recommendations in to consideration when crafting the upcoming NDRIO strategy.

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