

GUARDING OUR DIGITAL INFRASTRUCTURE

CYBERSECURITY CHALLENGES

As we hear almost daily in the news, cybersecurity threats are real, persistent, and ever evolving. To prevent ransomware attacks on critical infrastructure, massive breaches of personal data, and digitally driven attempts to destabilize the political process, we need a digital immune system – a 24/7 cybersecurity safeguard that constantly adapts to new threats and is pervasive through each and every possible entry point. Indeed, our healthy digital economy and prosperous society depend on it.

The University of New Brunswick (UNB) has a long tradition of computer science excellence; its researchers recognized many years ago that cybersecurity is one of the discipline's next important frontiers. They understood immediately that in order to stay abreast of this rapidly advancing field, they'd need to collaborate extensively with industry, government, and university partners around the world. They also realized that for their research to make a difference, they'd need to quickly adapt it for real-world use.

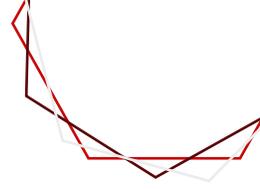
CENTRE OF EXCELLENCE

As a result, UNB founded the Canadian Institute for Cybersecurity (CIC) in 2017 to perform cutting-edge cybersecurity research with an eye towards immediately practical applications. Their research, which is done in close collaboration with corporate partners, covers a broad spectrum of cybersecurity activities such as mining network traffic to detect malware activity, using machine learning to predict anomalous behaviour, validating solutions against replayed cyberattacks, detecting fake news stories circulating on social media, and identifying high cybersecurity-risk individuals.

To enable this important work, CIC uses the New Brunswick Research and Education (R&E) Network, ECN-NB. This network gives institutions of higher learning throughout New Brunswick access to Internet and secure networking services. As a provincial partner in Canada's National Research and Education Network (NREN), ECN-NB also provides a bridge to national and worldwide academic institutions. CIC can share critical

WHAT IS THE NREN?

The National Research and Education Network (NREN) is an essential collective of infrastructure, tools and people that bolsters Canadian leadership in research, education, and innovation. CANARIE and its twelve provincial and territorial partners form Canada's NREN. We connect Canada's researchers, educators, and innovators to each other and to data, technology, and colleagues around the world.



benchmarking data, exchange sensitive intellectual property, and work cooperatively on building defensible software and hardware with their numerous collaborators thanks to the network's highly secure communications.

COOPERATIVE PARTNERS

CyberSpark is one example of CIC's global research partners. An innovation centre located at Ben-Gurion University in Israel, CyberSpark is a similarly results-oriented organization that blends the best from academia, government, and industry. Researchers at CIC and CyberSpark work together extensively on a wide suite of cybersecurity-related challenges thanks to their shared philosophy towards applied research and supporting networks like the ECN-NB.

Another example is the Global Ecosystem of Ecosystems Partnership in Innovation and Cybersecurity (Global EPIC). Recently launched, Global EPIC is an initiative among leading cybersecurity institutions to coordinate and share knowledge in order to improve the world's cyber defenses. CIC has become well known globally as a trusted resource for cybersecurity benchmarking data, which researchers use to test new methods of detecting and defeating malware. This data contains a great deal of highly sensitive and dangerous information, and must

be tightly controlled. CIC depends on the ECN-NB network to securely deliver this data to many Global EPIC participants, such as Carleton University in Ottawa and Queen's University Belfast in Northern Ireland.

LOCAL BENEFITS, GLOBAL REACH

CIC and UNB have significantly helped the New Brunswick economy by creating an actively growing high-tech environment that is continually creating new startups and spinoffs, luring top talent from around the world, and attracting companies interested in close collaboration to set up local operations – including numerous Fortune 500 companies such as IBM, Siemens, and Bell.

Perhaps most importantly, the work that CIC does has helped and continues to help Canadians and people throughout the world by thwarting email phishing attacks, defending computers against viruses, stopping child exploitation, keeping the electrical grid safe, and protecting our online identities. It's no small task but one that ECN-NB and the NREN make possible.

For more information, visit:

NBPEI-ECN.CA

