



Strategic Roadmap  
2019-2022



***Cybera is Alberta's not-for-profit organization responsible for driving economic growth through the use of digital technology. Our core role is to oversee the development and operations of Alberta's cyberinfrastructure – the advanced system of networks and computers that keep government, educators, not-for-profits, and entrepreneurs at the forefront of technological change. We work with our members to ensure a connected future for all Albertans.***

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Cybera's new three-year strategy comes at a time of remarkable change for the organization. In 2019 alone, our staff has grown by 30%, we have taken on new leadership, and our organization is rebranding. These changes are just a sign of the times we live in! Digital technologies continue to disrupt the way Albertans work, learn, and play — at a speed of evolution that can be difficult to map.

***"In order to survive — let alone thrive — in this digital age, organizations must be adaptable and ready to learn new skills."***

In order to survive — let alone thrive — in this digital age, organizations must be adaptable and ready to learn new skills. Cybera has become something of an expert at this. In previous years, we identified technologies and systems that we felt would

become important to Alberta's economic growth, and we incorporated them into our operations and service offerings. Today, hundreds of thousands of Albertans are benefiting from the networking, cloud, data science, and shared procurement resources that we have made available. Our staff growth is a good indication of how important these services have become to our members who include education, start-ups, and government organizations.

But despite these outward signs of dramatic change, at our core, our mission remains the same: to support Alberta's economic growth through the use of digital technologies. And to us, that means continuing to offer infrastructure and services that fill the gaps, until others come along who can do it better than us. We see ourselves as laying the foundations on which others can build a strong, thriving ecosystem.

As you read through this strategy, bear in mind that these plans are more of a guideline, rather than something set in stone. As we note every three years: we cannot predict the future, and can only

guess what technological developments will be important. All we can do is remain nimble and be aspirational, keeping Alberta at the forefront of any new changes. This is no easy task, but Cybera is up to it. After all, who doesn't love a good challenge?

A handwritten signature in black ink, reading "Barb Carra". The signature is fluid and cursive, with a long horizontal line extending from the end.

Barb Carra  
President and CEO, Cybera



## OUR PURPOSE

***To continually improve the lives of Albertans through the advancement of technology, digital literacy and best practices, for education, enterprise, research and government.***

**MISSION** ***To position Alberta at the forefront of technological innovation by connecting people, ideas and resources, for the benefit of all Albertans.***

**VISION** ***To see Alberta leading the world in technology innovation, implementation and disruption.***

## THE ROADMAP FOR 2019-2022

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In Cybera's 2016-19 strategic roadmap, we guessed that the following technological trends would be on our radars in 2019 and beyond:

- Machine learning / artificial intelligence (AI)
- Privacy and security technologies / regulations
- Evolving networking technologies

As anticipated, these trends have grown in importance, and will continue to be a major focus of our activities over the next three years.

The rise of cyber security threats everywhere — and technologies to deal with them — has compelled us to create a fifth pillar to add to our areas of focus: Secure. This is in line with the organizational priorities identified by our community in early 2019 (the top being security, with reducing costs as the second priority).

When prioritizing Cybera's activities, our community sent us a strong message of support to continue operating our infrastructure and existing services. This we will commit to do, particularly those services that offer the most benefits to members in terms of reducing costs, increasing

efficiencies, and growing Albertans' computational skills.

The ways in which we will support new and existing programs through our five areas of focus are outlined in the following pages.

# Connect

As well as operating and growing the province's Research and Education Network, Cybera is supporting its members to achieve faster, safer, and more efficient bandwidth. This will help them meet the growing communication, learning, and everyday working needs of Albertans.

## THE CHALLENGE

Staff, students, and rural / First Nations communities in Alberta are demanding faster and more reliable internet from their public and education facilities. But with growing cyber security and privacy concerns, and new connection technologies rising to the fore, how can administrators keep up?

## WHAT WE WILL DO

- Connect more incubators, libraries, municipalities, and research centres to the Research and Education Network.
- Research and pilot new networking technologies.
- Engage collaboratively with First Nations schools and communities to facilitate improved connectivity.
- Review opportunities to decrease the price of bandwidth in the Internet Buying Group twice a year, and expand Peering Service opportunities.

## SPECIFIC ACHIEVABLES

### BY MARCH 31, 2020

Form a network special interest group with K-12 and post-secondary education.

Pilot 1 public space (ex. airport or municipality) eduroam project.

Pilot a Dynamic Bandwidth service.

Support the Edmonton Internet Exchange in building its user base.

### BY MARCH 31, 2021

Pilot 1 community-based network project for a rural / First Nations region.

Formalize knowledge sharing about network automation.

Begin connecting K-12 school districts over IPv6.

Launch a production-level Dynamic Bandwidth service for members.

Pilot a next-generation network technology (such as 5G or WiFi 6).

### BY MARCH 31, 2022

Collaborate on 1 sensor network / network-based research project and/or 1 Internet of Things provincial project.

Collaborate with a municipality on a smart city initiative.

Connect 90% of K-12 students in Alberta.

Connect 100% of Alberta post-secondary students to the Research and Education Network.

# Enable

Through our cloud and high-speed network infrastructure, Cybera is enabling breakthrough discoveries, valuable AI technology developments, and next-generation learning capabilities. While we will continue to support invention and discovery in the research and start-up sectors, and investigate new technologies that create efficiencies within Alberta’s public sector, building technical skills in the province will be a big focus for us over the next three years.

## THE CHALLENGE

Albertans of all ages — those still in school and those in the workforce — are facing a growing digital literacy gap. New digital start-ups also continue to face prohibitive resource costs when moving from campus to commerce.

## WHAT WE WILL DO

- Work with educators to increase computational thinking skills in Canadian K-12 classrooms.
- Foster technical skills (AI / data science / machine learning) and grow the number of highly qualified personnel in Alberta industry through:
  - Consultations and internships
  - Building collaborations between experts and business
  - Cultivating an Alberta data science ecosystem.
- Support the use of open-source technologies in Alberta industry / academia.
- Evolve the Rapid Access Cloud to increase data processing and computing capabilities, and reduce barriers to entry for classrooms and non-computing experts.

## SPECIFIC ACHIEVABLES

### BY MARCH 31, 2020

- Pilot 1 in-depth machine learning project.
- Pilot 1 open-source framework for reproducible data science projects.
- Pilot 1 data science industry fellowship program.
- Train 3 new interns in advanced next-generation technologies.

### BY MARCH 31, 2021

- Pilot 1 data science project with K-12 to improve student outcomes.
- Launch 1 production-level, open-source, data-sharing and visualization platform.
- Collaborate with researchers to explore innovative uses of the Rapid Access Cloud (e.g. using AI).
- Host 1 cross-Alberta data science industry fellowship program.
- Train 4 new interns in advanced next-generation technologies.

### BY MARCH 31, 2022

- Collaborate with a global Research and Education Network partner to offer open-source tools for educators, researchers and start-ups.
- Collaborate with researchers to explore quantum computing resources for Albertans.
- Host 2 cross-Alberta data science industry fellowship programs.
- Train 5 new interns in advanced next-generation technologies.

# Share

Cybera’s shared services are not only saving members time and money, but also facilitating collaborations and knowledge sharing. While we continue to grow our existing shared services – many of which have become necessary for Alberta's education sectors to operate – we will also roll out new services based on the needs and requests of our members.

## THE CHALLENGE

Public and education sectors are facing tough economic demands in a time of extreme technological disruptions.

## WHAT WE WILL DO

- Continue to grow the catalogue of offerings in ShareIT, Cybera's shared procurement and collaboration service.
- Incorporate new sectors into Cybera's existing shared services.
- Assume the facilitation of the Alberta Association in Higher Education for Information Technology (AAHEIT), and continue to grow collaboration opportunities with our post-secondary members.
- Investigate and launch a new shared IT platform or service that could benefit our members.

## SPECIFIC ACHIEVABLES

BY MARCH 31, 2020	BY MARCH 31, 2021	BY MARCH 31, 2022
Public sector savings from ShareIT: \$10 million (cumulatively, from 2017).	Public sector savings from ShareIT: \$15 million (from 2017).	Public sector savings from ShareIT: \$20 million (from 2017).
Add 3 new offerings to the ShareIT catalogue.	Add 4 new offerings to the ShareIT catalogue.	Add 4 new offerings to the ShareIT catalogue.
Pilot 1 IT training access service.	Launch production-level IT training access service.	Formalize governance model for K-12 in ShareIT.
Standardize federated identity on 3 Cybera services.	Standardize federated identity on all Cybera services.	Pilot 1 shared procurement service for non-education members.
	Complete transition of AAHEIT services / functions to Cybera.	

# Advocate

Alberta — and Canada as a whole — continues to experience large disparities between the “haves” and the “have-nots” when it comes to connectivity. Cybera will continue to advocate to government on the need for reliable, high-speed, affordable, and secure internet connections. We will also advise on ways to plan for Albertans' digital infrastructure needs going forward.

## THE CHALLENGE

Albertans — particularly in rural and First Nations communities — are falling behind in the digital economy. And all organizations in the province face new challenges in combating digital illiteracy, and addressing questions about the ethical use of new technologies.

## WHAT WE WILL DO

- Investigate global implementations of low earth orbit satellites for internet access, particularly their impact on the public/education sectors.
- Expand advocacy initiatives to include privacy concerns.
- Facilitate knowledge and best-practice sharing among members on security, ethics, and privacy.
- Use connectivity data to advocate for targeted digital infrastructure investments in Canada.
- Continue participating in CRTC and other federal telecommunications hearings / panels.

## SPECIFIC ACHIEVABLES

### BY MARCH 31, 2020

Hold 5 cross-Alberta roadshows to build collaborations and increase dialogues.

Refresh the *Alberta Digital Infrastructure* report.

Share 10 stories of Albertans utilizing advanced digital infrastructure.

Expand ConnectIn (an internet speed data collection project) to Alberta's First Nations communities.

### BY MARCH 31, 2021

Hold 5 cross-Alberta roadshows to build collaborations and increase dialogues.

Build an Alberta Broadband Strategy framework and work with government to implement.

Share 15 stories of Albertans utilizing advanced digital infrastructure.

Leverage ConnectIn to collect connectivity data in rural and remote areas of Alberta.

### BY MARCH 31, 2022

Hold 5 cross-Alberta roadshows to build collaborations and increase dialogues.

Investigate open data mining platforms that assess the impact of public submissions on government regulations.

Share 20 stories of Albertans utilizing advanced digital infrastructure.



# Secure

Cybera has always been quietly working to ensure that its cloud and networking services are as secure as possible. But with cyber security threats growing in scale and complexity, we are amplifying our efforts with the establishment of an in-house security officer who is dedicated to the needs of our members. We are also increasing collaborations with members and National Research and Education Network partners on security initiatives.

## THE CHALLENGE

All network-connected institutions, big and small, are facing a variety of cyber security threats from malicious agents seeking money, private data, or simply to cause havoc. In Alberta, many of these institutions lack the staff or resources to adequately defend against these threats.

## WHAT WE WILL DO

- Explore open-source cyber security solutions for Cybera’s network and services.
- Work with government and post-secondaries in Alberta to build shared cyber security frameworks and initiatives.
- Increase the maturity of Alberta educators’ security posture, creating a minimum defense layer across the province.
- Continue to develop in-house security expertise.

## SPECIFIC ACHIEVABLES

### BY MARCH 31, 2020

Pilot 1 internal Security Information and Event Management (SIEM) project.

Launch a shared Chief Information Security Officer (CISO) program for Alberta post-secondaries.

Pilot 1 open-source Virtual Firewall Service offering.

### BY MARCH 31, 2021

Pilot 1 internal open-source SIEM solution.

Launch 1 small-scale, production-level SIEM service.

Develop a platform for sharing data on threat intelligence.

Launch 1 production-level, open-source Virtual Firewall Service offering.

### BY MARCH 31, 2022

Launch a full-scale SIEM service to all interested members.

Collaborate with international partner(s) to research a next-generation security initiative.

Collaborate with the Canadian Shared Security Operations Centre on the shared SIEM deployment project.

Explore 1 machine learning security project.

## BEYOND 2022


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Building Alberta's technical understanding and capabilities is a long-term task. Between 2019-2022, Cybera will start developing tools to identify the tech skills gaps in the province, and how to address them. Beyond 2022, we expect this data to be put to use through province-wide job and learning initiatives, and we plan to play a role in both activities.

As always, Cybera continues to keep an eye on international developments in technology, and we see artificial intelligence, machine learning, and automation continuing to impact more sectors and organizations, from large manufacturers, to remote school districts. Quantum computing will be a game changer as well, and with it will come new rules around sending, receiving, processing, securing, and understanding information.

We will continue to report back to our community on what they need to know, and build new tools and services that let our members benefit (or protect themselves) from the next digital revolution.





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