



cybera

ROADMAP FOR CYBERA 2016 - 2019


*CYBERA'S STRATEGIC PLAN
DIRECTS AN ANNUAL ACTION
PLAN. EACH ACTION PLAN
TRANSLATES THE VISION AND
STRATEGY OF CYBERA INTO
A RESULTS-BASED PROGRAM
THAT SETS OUT OBJECTIVES,
TARGETS, AND METRICS FOR
MEASURING RESULTS. THAT
WAY WE STAY AGILE AS THE
LANDSCAPE EVOLVES.*

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ROBIN WINSOR
PRESIDENT & CEO

PRESIDENT'S MESSAGE

The pace of technology moves at lightning-speed, as we well know. For a company that works in the pioneering end of technology, creating a multi-year strategy that maps out what digital tools to focus on can feel a bit like staring into a rather murky crystal ball (even for such a seemingly short amount of time as three years). As NASA planners once wisely noted: there are known knowns, known unknowns, and unknown unknowns.

In 2013, Cybera knew that cloud computing was a transformative technology that needed to be explored and adopted by many levels of Alberta's public sector, and we have since led projects that made this happen. In 2016, we know that cloud is still important, and that we should continue to foster our world-class development team to work on cloud and virtualization tools. But we also know there are other rising technologies – including data science – that could greatly benefit the public sector in Alberta.

A major “known unknown” for us has been whether Alberta educators and government agencies want Cybera to pursue data science tools on their behalf. We needed to learn about the concerns and

priorities of our stakeholder community. With this in mind, in early 2016 Cybera enlisted Insights West to canvas our stakeholders. We wanted a more insightful idea of what the future has in store for Albertans, and how Cybera can help them prepare for it. The feedback we received has guided the development of this 2016-2019 strategy.

We also wanted this plan to be in line with the National Research and Education Network's strategic plan, unveiled in 2016, and the Government of Alberta's new ICT plan – as it is only through collaborative efforts that Alberta can achieve the digital infrastructure it needs.

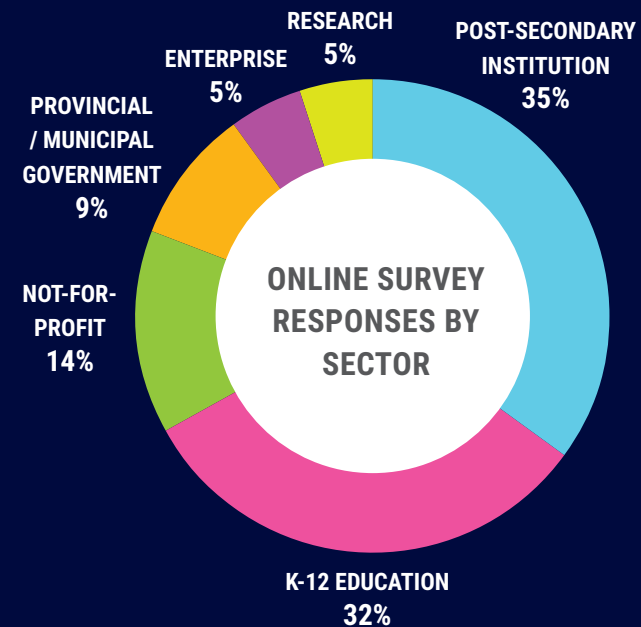
Of course, there are always “unknown unknowns” in technology, which are impossible to reflect in any forward-looking plan. But experience has shown that Cyberans are nimble, and able to adapt to new systems as they develop. I'm excited to see what the next challenge will be, and how we will rise to it.


ROBIN WINSOR
PRESIDENT & CEO

ENVIRONMENTAL SCAN & RESULTS

In early 2016, Cybera contracted a market research consultancy firm, Insights West, to conduct a series of focus groups and an online survey with Cybera's members and key stakeholders. Two focus groups were held with 19 key stakeholders: 8 in Calgary and 11 in Edmonton. Attendees included a mix of representatives from provincial / municipal government, post-secondary and K-12 education, research, and business incubators.

Following the focus groups, an online survey was sent to 312 stakeholders, of which 82 responded. Of the responses, 35% were from PSI, 32% from K-12, 14% from not-for-profits, 9% from provincial / municipal government, 5% from enterprise, and 5% from research.



RESULTS

The average rating of Cybera was high (8.5 out of 10), with stakeholders reporting strong approval of the organization. Almost every respondent ranked us as "valuable and useful".

PRIORITY AREAS FOR CYBERA'S STAKEHOLDERS

1. Cost efficiency (particularly for K-12)
2. Cyber security
3. Shared IT services
4. Network expansion
5. Secure cloud computing

HOW PEOPLE SEE CYBERA

- Agnostic
- Trusted advisor & advocate
- Enabling innovation
- Supporting collaboration / community
- Reducing costs
- Market disruptor
- Reliable infrastructure
- Expertise and knowledge (data / structure)
- Responsive
- Constant willingness to help and improve

WHAT IS CYBERA MOST VALUED FOR

- Providing reliable infrastructure
- Reducing costs
- Enabling innovation
- Supporting collaboration

THE ROADMAP FOR CYBERA 2016-19

Cybera's stakeholders sent us two clear messages: First, they want Cybera to keep doing what we have always done to support Alberta's public sector. This includes: growing and advancing the Research and Education Network, finding new opportunities to create efficiencies through shared services, and exploring the next wave of industry-changing digital tools.

Secondly, stakeholders want more Albertans to know about Cybera, and benefit from our services. This means reaching out to new groups — such as First Nations communities, municipal districts and entrepreneurs — and extending the range of services that we offer.

With this in mind, Cybera's 2016-19 strategy will continue to focus on advancing the network and shared IT technologies that have become a foundational part of Alberta's digital economy.

It will also explore next-generation technologies that are likely to transform how the province's educators and institutions work and innovate. And it includes plans to reach out and offer support to a range of (currently unconnected) groups within Alberta.

This strategy falls into four key areas:

- Connect
- Enable
- Share
- Advocate

CONNECT

Expand CyberaNet to new communities and public groups, and work with partners to explore new network technologies and pathways that bring high-speed networking to as many Albertans as possible.

ENABLE

Increase the capacity and research support capabilities of the Alberta Rapid Access Cloud, and explore next-generation technologies (including data science and machine learning) that will improve service delivery to the public sector.

SHARE

Continue to ensure members have access to affordable broadband through shared purchasing, better use of public infrastructure, and supporting public interest projects. This includes piloting shared IT procurement and an identity federation, so members can effectively leverage the power of the crowd.

ADVOCATE

Grow the number of Albertans that Cybera represents, and champion the digital needs of Canadians to government and industry.

CONNECT

Connecting Albertans to high-speed, high-capacity bandwidth remains Cybera's number one priority. For over 20 years, Cybera has expanded the scope and reach of CyberaNet, Alberta's Research and Education Network, to connect researchers, innovators and educators to the digital resources they need.

Moving forward, Cybera will broaden efforts to directly or indirectly connect all Albertans to the best internet resources possible. This will require collaborating with governments, Internet Service Providers, utilities, businesses, Internet Exchanges, and others on an as-needed basis. We cannot achieve this goal on our own, or with a single network. It will require a mix of contributors and technologies to ensure that every corner of the province is connected.

THE CHALLENGE

Educators, researchers, innovators, and businesses need access to high-speed bandwidth to take part in the modern digital economy. We estimate that Canada's internet traffic will grow by 22% each year between 2015-2020. Having the infrastructure in place to meet this need is vital. For municipalities, better networking tools are needed to increase collaborations on services and best practices, such as disaster response and analytics. The immediate goal is for Canadians from all walks of life to be able to participate in the digital economy without any disadvantages. The long-term goal is for them to have the best connectivity in the world.

CYBERA'S SOLUTION

1. Expand CyberaNet's backbone to meet anticipated capacity needs.
2. Work with municipalities to improve networking through new fibre builds.
3. Support the build of readily available public-interest fibre between Edmonton and Calgary.
4. Connect more educators and business incubators to CyberaNet, and broaden the network to connect First Nations communities.
5. Research new technologies that advance rural broadband and sensor networks (for example, high-altitude drones, 5G, low orbit satellites, and electrical transmission fibre).
6. Collaborate with governments, utilities and Internet Service Providers to grow "last mile" connectivity to homes and businesses.

RESULTS

- By 2019, 85% of K-12 school districts and over 90% of post-secondary institutions should be connected to affordable, high-bandwidth networks for internet and other educational uses.
- One new long-distance fibre project will be piloted, to demonstrate the internet-delivery capabilities of this technology.
- Alberta should be at – or very close to – transit cost parity with the USA.

ENABLE

With the right connectivity in place, new digital tools can help Albertans work, learn and innovate at a faster and more scalable pace than ever before. In our role as an innovation enabler, Cybera explores next-generation tools and platforms to increase efficiencies and economic opportunities for the province. In 2009, cloud computing was the next big transformational technology. In 2016, we believe it will be data science, enabled in large part by the growth of data sets using cheap and readily available cloud storage.

Cybera plans to continue exploring new cloud tools, while also investigating data analytics and other technology disrupters. We see these as complementary initiatives. Our goal is to be agile and responsive to the evolving needs of our stakeholders.

THE CHALLENGE

Data analytics raise new possibilities for improving service quality and efficiencies across all sectors. Meanwhile, cyber threats are creating a greater need for institutions to improve the sophistication of their security systems. And the privacy and security settings of cloud computing technologies are evolving to allow for more sensitive data to be shared and stored. But for many Albertans, there is a lack of knowledge and understanding of where to begin with these new technologies, and how to address growing security threats.

CYBERA'S SOLUTION

1. Work with education partners to develop pilot projects that demonstrate emerging technologies, including: machine learning, quantum cryptography, research data management, sensor networks and the Internet of Things, and software defined networking.
2. Increase awareness of the Rapid Access Cloud, and pilot new uses for this platform (e.g. for healthcare research).
3. Pilot an open source, cyber security network monitoring framework with industry / education partners.
4. Collaborate with academic partners to develop data science skills, and help increase the availability of highly qualified individuals within the province.
5. Start one public sector open data project (with government).

RESULTS

- By 2019, there will be 1,200+ people accessing the Rapid Access Cloud.
- Cybera will have piloted at least three projects that demonstrate data science and machine learning technologies.
- Cybera will have investigated three separate new technologies related to networking and cyber security.

SHARE

Just as factories in the early 20th century realized it was more effective to share utilities (rather build their own electricity plants), organizations in the 21st century are realizing the benefits of sharing IT tools. From cloud-based software and cybersecurity, to internet and hardware procurement, there is more flexibility, efficiencies and knowledge to be gained by harnessing the crowd. Cybera has already piloted several shared projects for Alberta's post-secondary institutions – including the Learning Management Cloud and Virtual Computing Lab. In the next three years, we will expand our shared services and offerings to include more tools and more sectors (including K-12 and government).

THE CHALLENGE

Schools, governments and post-secondary institutions are facing increased pressure to improve IT offerings and capabilities, on significantly reduced budgets. Alberta's educators are also exploring the idea of creating a cooperative group to bulk buy IT hardware and software (as exists in other provinces). The question is: where to start?

CYBERA'S SOLUTION

1. Increase membership in the Internet Buying Group, and implement price reviews semi-annually with the goal of reducing the overall cost for members.
2. Pilot a Shared IT procurement service for Alberta educators.
3. Pilot a K-12 Identity Federation that connects at least five school authorities to two proof-of-concept services and one major service provider.
4. Pilot a Firewall-as-a-Service (FaaS) project.
5. Continue to promote the adoption and expansion of eduroam and the Canadian Access Federation to Alberta educators.

RESULTS

- By 2019, Alberta will have a production-level Shared IT procurement service available to all education authorities.
- A K-12 Identity Federation will be in operation, giving students in participating schools the ability to login to a central system to access a range of tools and services.
- The Internet Buying Group will have helped Alberta achieve significantly reduced internet costs across the province.

ADVOCATE

As an innovation enabler (that connects and supports over 650,000 students, teachers, researchers, innovators and government decision-makers), Cybera realizes the importance of advising policymakers on the digital needs of Canadians. We also work to raise awareness of the technologies and policies that support business and education. Teaming up with government, education, and private sectors, we are creating a community that champions vital networking and computing services — and utilities — for everyone, everywhere.

THE CHALLENGE

Canadians once held the global lead in high-quality, high-speed, and affordable digital services. That is no longer the case, as demonstrated by surveys of internet access around the world. In Alberta, one of the biggest issues is not with a lack of digital infrastructure, but rather, with access to this digital infrastructure. Fibre optic cable is spread widely throughout the province, but many institutions and communities have difficulty accessing it because of the legal/policy hoops they must first jump through. While many Albertans (including Cybera) are working to find solutions to bring better internet to everyone, limited bandwidth means they are working in silos, rather than as a stronger collective.

CYBERA'S SOLUTION

1. Work with stakeholders to build a framework for an Alberta broadband strategy.
2. Provide information and guidance on the SuperNet renewal process.
3. Advise the provincial government on its long-term ICT infrastructure plans in order to best support all stakeholders (government, education, research and industry).
4. Continue participating in CRTC and other national regulatory proceedings.
5. Increase the visibility of Cybera (and raise the percentage of Albertans that we represent to 25%) by:
 - Organizing a roadshow to major Alberta communities, and meeting with a wide range of stakeholder groups.
 - Increasing the number of targeted and purposeful presentations and webinars we hold.
 - Increasing our participation in the global internet administration community and policy development process.

RESULTS

- By 2019, Alberta will have a forward-looking ICT infrastructure strategy that should include an ambitious broadband plan.
- Collaborations between government and industry will enable faster bandwidth to be delivered to all Albertans, using a variety of broadband technologies and fibre access points.
- The number of people in the province who are part of Cybera's member organizations, and making use of Cybera's technology services, is expected to increase to 25% of the total population.

2016-19 MAJOR MILESTONES

FOCUS AREA	BY MARCH 31, 2017	BY MARCH 31, 2018
CONNECT	<ul style="list-style-type: none">• Connect 1 new municipality / REDA• Connect 75% of K-12 school districts to affordable broadband• Connect 85% of post-secondaries to CyberaNet• Develop a business plan for a Calgary - Edmonton fibre build• Complete 1 fully redundant network core• Initiate discussions with Alberta First Nations communities• Connect 1 new business incubator	<ul style="list-style-type: none">• Connect 1 new municipality / REDA• Connect 80% of K-12 school districts to affordable broadband• Connect 90% of post-secondaries to CyberaNet• Research new broadband technologies• Connect 1 new business incubator
ENABLE	<ul style="list-style-type: none">• Start 1 machine learning demo project• 800 people using Rapid Access Cloud• Start 1 advanced research and analytics platform with post-secondaries	<ul style="list-style-type: none">• Collaborate on 1 sensor network and Internet of Things provincial project• 1,000 people using Rapid Access Cloud• Pilot 1 cybersecurity intrusion detection system with network / education partners• Develop recommendations for training highly skilled data science personnel in Alberta• Pilot 1 healthcare project using Rapid Access Cloud• Start 1 public sector open data project
SHARE	<ul style="list-style-type: none">• Conduct 2 reviews of Internet Buying Group pricing• Connect 5 school authorities and 2 proof-of-concept services to pilot K-12 Identity Federation• Pilot 2 Shared IT procurement projects• Pilot a Firewall-as-a-Service (FaaS) project• Expand the use of eduroam and the Canadian Access Federation	<ul style="list-style-type: none">• Conduct 2 reviews of Internet Buying Group pricing• Connect 1 major service provider to pilot K-12 Identity Federation• Launch a Shared IT service• Launch production-level Firewall-as-a-Service
ADVOCATE	<ul style="list-style-type: none">• Advise on SuperNet renewal process• Continue advising provincial government on long-term ICT infrastructure plans• Increase Cybera's visibility through 10 conference / webinar / in-person learning presentations	<ul style="list-style-type: none">• Build the framework for an Alberta broadband strategy• Participate in CRTC and other regulatory proceedings• Increase Cybera's visibility through 10 conference / webinar / in-person learning presentations

2019 & BEYOND

BY MARCH 31, 2019
<ul style="list-style-type: none">• Connect 1 new municipality / REDA• Connect 85% of K-12 school districts to affordable broadband• Connect >90% of post secondaries to CyberaNet• Connect and pilot 1 long-distance fibre project• Alberta is at (or near) transit cost parity with the USA• Connect 1 new business incubator
<ul style="list-style-type: none">• Enable 1 quantum cryptography demo project• 1,200+ people using Rapid Access Cloud• Start a software defined networking pilot
<ul style="list-style-type: none">• Conduct 2 reviews of Internet Buying Group pricing• Launch production-level Identity Federation• Add 2 new services to Shared IT
<ul style="list-style-type: none">• 25% of Albertans using Cybera's services• Increase Cybera's visibility through 10 conference / webinar / in-person learning presentations

The 2016 stakeholder research conducted by Insights West revealed the top priority areas for our community in the next five years:

- Cost efficiency
 - Cyber security
 - Secure cloud computing
- Network expansion
 - Shared IT services

Of these priority areas, cost efficiency was undeniably the most pressing, both now and in the future. With this in mind, Cybera will continue to prioritize technologies, tools and services that increase efficiencies and collaboration opportunities among Alberta's public sector.

In our role as a technology "explorer and enabler," we will also be tracking transformational tools involving:

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

We will report back in 2019 on how these investigations and future technology predictions have panned out!

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