



Cybera is a not-for-profit organization that works to spur and support innovation, for the economic benefit of Alberta, through the use of cyberinfrastructure.

Cybera's access to computing infrastructure, in-house cloud expertise, and a high-speed, high-bandwidth advanced network enables academic, industry and government groups to innovate in priority areas, including health, energy, the environment, and emerging technologies

CONNECT. ENABLE. GROW. HARVEST.

TABLE OF CONTENTS

04	Message from the President
80	Message from the Chair
10	CONNECT. Alberta's Advanced Network
15	ENABLE. Seeding the Cloud
16	Projects Get the Edge if You DAIR For Scientists, Big Data is a Big Deal Today's Space Weather Forecast: One Impressive Cloud
25	GROW. HARVEST. Driving the Innovation Economy
27	Board of Directors
31	International Strategic Advisory Committee
33	Members and Partners
36	Staff
38	Financials



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MESSAGE FROM THE PRESIDENT

A Message from **Robin Winsor |** CYBERA PRESIDENT AND CEO

FROM AMBITION TO IMPLEMENTATION

The theme of my message in last year's annual report was 'transition'. I shared Cybera's reformulated vision and newfound ambition to pursue not only technological excellence, but technological relevance and, in the process, to help Albertans recognize and realize the vast economic potential of cyberinfrastructure.

This year, my message revolves more around progress – the strides we have made and the distance still to be travelled in our pursuit of Cybera's mission: "to spur and support innovation, for the economic benefit of Alberta, through the use of cyberinfrastructure."

For me, this mission is far more than just words on a business plan or a boardroom wall. It's a useful guidepost that impels us to monitor how we are helping Albertans innovate and move those innovations forward, and it's a meaningful measuring stick for gauging our progress. One of the goals I expressed last year was to raise Cybera's profile. There's no question that Cybera is gaining traction on Alberta's economic development landscape and getting noticed like it never has before.

Another goal was to solidify the Cybera team. Again, mission accomplished. We've expanded our Calgary and Edmonton offices and have strengthened our cloud knowledge base by growing our in-house expertise and forging collaborative relationships with international cloud projects and development communities.

Most important, I felt we needed to find and leverage ways to make Cybera even more relevant to Alberta and Albertans. While the Cybera of old was indisputably useful to academics and researchers, its efforts were akin to a tree falling in the forest: we were doing clever stuff, but not enough people noticed, and that limited our impact.

In our quest to broaden Cybera's relevance, I am truly delighted with the pace of change. 'Real country-building is less about constitutions and politicians and more about infrastructure.'

TOWARD THE NEXT SPIKE

If our aim is to build a stronger, more cohesive, more competitive Alberta, infrastructure is key. A province or a country really can't exist without it. Take Canada, for example. Although we became a country in principle with the passing of the British North America Act and the election of John A. Macdonald to the post of Prime Minister in 1867, the creation of our country in practical terms took far longer. In fact, it continues today. Real countrybuilding is less about constitutions and politicians and more about infrastructure.

The building of the Canadian Pacific Railway, for example, was fundamental to the creation of Canada. Just think about how central "the last spike" is to our collective national identity...and how crucial a trans-national transportation artery was to our early nation's 'modern' economy.

Other infrastructure that linked the geographically disparate cities and towns across Canada helped solidify our sense of 'country'. The Trans-Canada Highway. A national radio station. A national airline.

Until we established essential infrastructure, we really didn't have a country. And in Cybera's view, cyberinfrastructure is the next essential building block. The Internet is a powerful tool of democratization, and Internet access is now (almost) universally regarded as both a fundamental right and an economic necessity. But 'compute' is just as much a basic tool of life. Without it, as a population, we're effectively disabled.

'Compute' is also Alberta's answer to a sustainable economy and globally competitive future. Without the requisite cyberinfrastructure and the computing capabilities it supports, we'll be left behind.

PUTTING OIL IN ITS PLACE

As an oil-rich province in an oil-dependent world, Alberta has a hard time seeing past oil as the be-all and end-all of its economic prosperity. It pays to remember, though, that the Stone Age didn't end because the world ran out of stone.

There's no question that oil is a valuable resource; but in a sustainable future, its value as petrochemical feedstock for manufacturing and technological innovation will far outweigh its worth as a source of combustible fuel.

Science is changing everything, and people's paradigms need to follow suit. If, for example, laboratories are now turning porcine stem cells into pork cutlets, can we really keep thinking that



'Cloud technology is enabling organizations of all sizes, from individuals to nations, to gain huge economies of scale in computing and service delivery. Alberta has the resources to leverage this new technology and become the destination of choice for forward-thinking companies.'

> **Robin Winsor** CYBERA PRESIDENT AND CEO

today's farming practices will continue unchanged? Economies are changing fundamentally, and the only way for Alberta to protect the best interests of Albertans is to be first out of the gates in the race to become a true 'innovation economy'.

We often hear that "people want jobs," but what people really want is quality of life. Stable, wellpaying jobs are simply the means to that end.

For the most part, labour-based jobs have long since disappeared from Canada. Our cost of labour is comparatively high; and in a global economy, we simply can't compete with labour-based superpowers like China and India.

Just as labour-based jobs tend to go where the cost of labour is low, knowledge-based jobs will go where the cost of computing is low. Showing that we have a lower cost of computing will give Alberta a basis for pursuing leadership in the innovation-based economy our government talks so much about.

But time is of the essence. We can't lay claim to an innovation economy because we think we're smarter or more technologically evolved than China or India. We're not. We can only do it by seizing the 'first mover advantage'...and Cybera is the company to help make that happen.

CULTIVATING THE 'ALBERTA ADVANTAGE'

In large part, Alberta's advantage is already in place. It's called the SuperNet – a network of fibre cables and towers built to connect public institutions like schools, hospitals, colleges, universities, libraries and municipal offices across the province. It effectively covers Alberta's 661,000 square kilometres and connects more than 400 communities.

Such connectivity takes time and resources to build – around five years and \$300 million, in this case – and having fibre already in the ground is a decisive advantage for Alberta. But we need to put it to better use – to exploit it as the platform on which to build our global advantage.

Alberta will also have the green energy required to fuel a computing advantage – some 2.2 gigawatts worth of wind, hydro and other green energies within the next five years.

The opportunity is right there... ours for the taking.

It's easy to say "We need to embrace our advantage or we're going to lose it." At Cybera, we go further. We ask "What can we do about it?" And then we put the answer into action.

Such action takes shape in a variety of projects and initiatives, a number of which are profiled in this annual report. While our activities vary widely in 'Cybera seeks to 'seed the clouds' through a comprehensive approach to the use of open access infrastructure that drives growth and economic diversification.' their focus and their scope, they all align perfectly with Cybera's four-part strategy: (1) To *connect* people and to connect computers; (2) To *enable* educators, entrepreneurs and everyday users; (3) To *grow* the user base and economy of scale; and (4) To *harvest* unused capacity and attract research and business.

To **CONNECT**, Cybera strengthens networks and harnesses 'the power of the group'. The provincial Transit Exchange (TX) I described in last year's annual report – a network service that allows members to bypass commercial Internet traffic en route to the most-often visited web destinations – is up and running, giving universities and school districts the means to save tens of thousands of dollars apiece on Internet connectivity alone. A portion of these cost savings can be used to build up Alberta's cyberinfrastructure even further.

To **ENABLE**, Cybera has embraced such initiatives as CANARIE's Digital Accelerator for Innovation and Research (profiled later in this annual report) – a test-bed for high-tech Small and Medium-Sized Enterprises (SMEs) to design, validate, prototype and demonstrate innovative products and services; a pilot virtual computer lab (VCL) geared toward collapsing physical computer labs by providing remote access to the specialized software students need for their studies; and a pilot 'Community Cloud' that will give residents and businesses in a small prairie town and its surrounding community free access to all the computing power they can use.

The true value of cloud computing is its scalability. To help computing in Alberta **GROW**, Cybera seeks to 'seed the clouds' through a comprehensive approach to the use of open access infrastructure that drives growth and economic diversification. While the likes of Amazon have developed major commercial clouds, nobody has yet built a cloud at the state or provincial level. The opportunity for Alberta to be first on the scene with a provincial utility cloud to serve industry, education and the general public is right in front of us.

With a provincial utility cloud in place, we will be well positioned to **HARVEST** - to attract businesses to a centre of innovation where the cost of computing is low and the value of computing is high. This will set in motion a virtuous cycle where attracting businesses gives us the resources to continue to grow our cloud capabilities and our competitive advantage in that much talked about and much desired 'innovation economy'.

The opportunity is huge. The urgency, even more so.





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MESSAGE FROM THE CHAIR

A Message from Seamus O'Shea | CHAIR, BOARD OF DIRECTORS

AN ONGOING VOYAGE OF DISCOVERY

Over the past year, Cybera has tallied many significant successes in its aim to support research and innovation in Alberta, and we continue to expand our positive impact as a driver and facilitator of innovation through the use of cyberinfrastructure for the economic benefit of Alberta.

Alberta has a lot of the important infrastructure in place, and Cybera is doing an outstanding job of helping organizations of all sizes, both public and private, take advantage of that infrastructure and make it work for the betterment of our province, its economy and its reputation on the world stage.

With a focus on moving from vision to implementation, we embarked this year on some important collaborative pilot projects to demonstrate how networking, cloud computing and the consolidation of tools and information can create efficiencies, bolster capabilities and heighten competitive advantages for participating users and other stakeholders. The past year has been a voyage not only of tangible progress but of discovery. As we go, we are learning a great deal about where Cybera needs to be going. Even as we are implementing today's initiatives, we are uncovering exciting, oftentimes imperative possibilities for tomorrow's strategic initiatives.

In large part, Cybera has been initiating and facilitating a 'conversation' in which potential partners and participants negotiate de facto standards. These standards will be required for long-term, collaborative development that contributes to our overarching mission even as it allows users to satisfy their individual or organizational needs.

In the way Cybera operates, we are and will remain a federation of organizations open to new partners and new technologies, working hard to leverage and extend our existing capabilities while keeping our eyes wide open to future opportunities that fit within and help us fulfil our strategic mandate.

I would like to thank our stakeholders for their continued support and Cybera's Board and staff for their efforts on behalf of Alberta's innovators.





CONNECT. Alberta's advanced network



ALBERTA'S ADVANCED **NETWORK INFASTRUCTURE**

LEGEND

CyberaNet

CyberaNet also connects with the Alberta SuperNet to extend Cybera's reach to members and serve school divisions, university campuses and research and development labs across Alberta.

— SIX Peering

Providing Cybera members with a direct, more reliable connection to a number of major Internet sites, including Microsoft, Google, Amazon, Yahoo!, Akamai, and more than 100 others.

--- CANARIE

Stretching across Canada, the CANARIE network is a critical tool for researchers, educators and innovators in universities, colleges, hospitals, private and public sector research labs, and schools across the country. 'The benefits to the university have been to lessen the current and future strain on our commercial Internet connections and it has given us faster access to SIX's major traffic sites, such as Google.'

Trevor Woods

EXECUTIVE DIRECTOR OF ACADEMIC INFORMATION AND COMMUNICATION TECHNOLOGIES (AICT), UNIVERSITY OF ALBERTA

CONNECTING ALBERTA'S INNOVATORS

CyberaNet is a high-bandwidth, high-speed dedicated network that enables Cybera to support groups performing leading-edge research as well as product or application development. For example, CyberaNet can be used as a pre-competitive testbed environment for companies to develop and trial new products or services. Also, because CyberaNet is Alberta's gateway to the CANARIE network, Canada's Advanced Research and Innovation Network, CyberaNet can be used to collaborate with and share data with colleagues around the world.

CyberaNet peers with the Alberta SuperNet, providing connectivity to education institutes and community organizations across Alberta. CyberaNet also supports WestGrid / Compute Canada, Western Canada's high performance computing consortium, by providing network connections between WestGrid's distributed computing and data storage resources.

Real-time network traffic maps were launched on the Cybera website in March 2011, providing a live glimpse of CyberaNet traffic loads and network activity.

PEERING SERVICES REDUCING INTERNET COSTS FOR MEMBERS

In January 2011, Cybera established a peering connection with the Seattle Internet Exchange (SIX), which connects CyberaNet and its users to major Internet sites, such as Google, Microsoft, and YouTube. As a result, Cybera members have a more direct connection to those sites, enabling them to avoid queuing for access during peak use periods on a commercial Internet connection. The University of Alberta was the first Cybera member to take advantage of this service, connecting its campus in January, and The Banff Centre followed in February*. These institutions have seen a cost savings result from the new connection, as upwards of 40 percent of their Internet traffic is diverted from travelling on a regular commercial internet connection. Looking ahead, Cybera will collaborate with CANARIE to establish additional peering connections with the Toronto Internet Exchange and the New York Internet Exchange. To take advantage of these peering services, a connection to CyberaNet or the Alberta SuperNet is required.

*Update: The University of Lethbridge and Athabasca University also connected to the SIX using CyberaNet in May and August 2011 respectively.





'This was an important step for gaining acceptance of IPv6, and aligning the world's IT with the latest protocols.'

Jean-Francois Amiot

CYBERA TECHNICAL OPERATIONS MANAGER

LEADING THE IPV6 CHARGE

Internet Protocol version 4 (IPv4) addresses, which connect computers and other devices to the Internet, are widely expected to run out by 2012. In some regions, this has already happened and is becoming a growing concern in part due to the proliferation of connected devices – such as cell phones, cars, appliances, watches, even refrigerators – that require an IP address. Internet Protocol version 6 (IPv6) provides greater IP address capacity – more than four billion times more addresses than IPv4 – and it has enhanced security features.

With World IPv6 Day scheduled for June 8, 2011, CANARIE asked all provincial and territorial networks to be ready to make the switch to IPv6 by March 31, 2011. Cybera's network team met the challenge head-on, being the first provincial network to update its server infrastructure and desktop systems to support both IPv4 and IPv6 well in advance of the March 31 deadline.

PART OF CANADA'S ADVANCED NETWORK ALLIANCE

CyberaNet is part of Canada's advanced network alliance, a community of advanced networks offering high-speed, fibre optic connectivity linking researchers, educators and innovators to each other and to data and tools across the country. These networks also connect to 80 international advanced networks around the world, providing Canadian researchers, innovators, educators and learners with the digital infrastructure they need to explore everything from more timely and accurate medical diagnosis, to tracking and analyzing our impacts on the environment, to creating new and sustainable energy sources. Digital Innovators (digitalinnovators.wordpress. com), the official blog of Canada's advanced network alliance, was launched in January 2011 to provide an online space where advanced network users, developers, visionaries and champions can share information and discuss issues impacting the digital infrastructure community. Cybera regularly contributes to this blog, along with Canada's other provincial, territorial, and national network organizations.





ENABLE. SEEDING THE CLOUD



SEEDING THE CLOUD

Technology has always been intertwined with innovation. An alliance of sorts, they constantly support, drive and challenge each other. With today's mobile and interconnected environments, we are realizing more than ever before the value and essential role of technologies such as network connectivity, virtual collaboration, powerful computer processing, and efficient data management.

As was described on pages 10 – 13, we've already begun to **CONNECT** Albertans to these technologies and to each other – which is step one in Cybera's four-part strategy. The next step is to **ENABLE** entrepreneurs, educators and everyday users to capitalize on these resources.

BUILDING THE TOOLBOX

Over the past three years Cybera has run more than 25 projects, ranging in budget from \$25,000 to almost \$2 million and in scope from environmental data management to mobile app development. The lessons learned and skills acquired from these projects have helped Cybera build core expertise in areas of cloud development, data management, and Infrastructure as a Service models – an essential toolbox for what's to come. The Geospatial Cyberinfrastructure for Environmental Sensing (GeoCENS) and Cloud-Enabled Space Weather Modelling and Assimilation Platform (CESWP) projects – featured on pages 19 – 23 – are examples of this knowledge transfer at work

INDUSTRY, EDUCATION, COMMUNITY

The third project featured in this report – CANARIE's Digital Accelerator for Innovation and Research (DAIR) on page 16 – reflects a transition from gathering and testing tools, to building and delivering tools. DAIR will stimulate the high-tech sector by removing technology access barriers for small and medium sized tech companies. Cybera's collaboration with Compute Canada to build and manage the cloud infrastructure for DAIR still adds to our toolbox, but it also kickstarts the **ENABLE** component of our action plan. And as a complement to DAIR, Cybera is investigating other cloud opportunities in Alberta's education and community sectors.

Within education, new Classroom as a Service pilots are exploring flexible computing environments to provide on-demand computing resources, available from anywhere on campus. This frees students and faculty from being tied to physical computer labs, reducing long-term infrastructure costs.



In the community sector, an open-access community cloud launched in a small prairie town will mean faster, better, and cheaper access to the Internet, computing power, and other tools rural residents need to participate in the broader digital economy.

Each of these sectors – industry, education and community – are intertwined, much like technology and innovation. Balancing the three, and enabling each to leverage the opportunities a provincial utility cloud could bring, leads into the next steps of Cybera's action plan: **GROW** and **HARVEST.**





DAIR supports made-in Canada technology development and commercialization.

GET THE EDGE IF YOU DAIR

To technology-driven small and medium enterprises (SMEs) all across Canada, CANARIE issued a DAIR: accelerate your product development, abbreviate your time-to-market... and sharpen your competitive edge.

CANADIAN ICT COMPANIES ROSE TO THE CHALLENGE

DAIR stands for Digital Accelerator for Innovation and Research – a test-bed for SMEs whose businesses stand to benefit from online product design, testing and demonstrating. Cybera partnered with Compute Canada to help bring the CANARIE-funded initiative to reality, establishing a 'digital sandbox' for high-tech innovators to design, validate, prototype and demonstrate their new technology apps, products and services.

Together, CANARIE, Compute Canada and Cybera comprise the high-tech equivalent of Hollywood's 'triple threat'. CANARIE provides the highspeed network; Compute Canada, the powerful computing hardware; and Cybera, the 'middleware' cloud technologies that make the computing resources available on demand to businesses. "The great thing about DAIR is that it fits so nicely with Cybera's mandate to help companies utilize cyberinfrastructure for pre-commercial activities," says Jill Kowalchuk, Vice-President of Project and Partnership Development, Cybera. "At the same time, it has allowed us to further solidify our relationship with Compute Canada and leverage its infrastructure – a national platform that integrates high-performance computing resources across the country."

AN OPPORTUNITY FAR GREATER THAN THE SUM OF ITS PARTS

With DAIR, one plus one plus one adds up to untold possibilities. "It's a marvellous example of synergy and the exponential benefits of shared infrastructure," says Mark Roman, President and CEO of CANARIE. "Coupling CANARIE's high-speed network with compute and storage capacities, DAIR delivers a robust R&D environment that adds incredible efficiencies to research projects and new product development initiatives by SMEs."

'The Digital Accelerator for Innovation and Research is helping small and medium ICT companies create large-scale products, demonstrate them to customers and investors, and accelerate time-to-market without having to build costly R&D infrastructure themselves. Everything they need in an R&D environment – on-demand access to a high-capacity fibre-optic network and cloudbased computing, wireless and VPN access, and instant scalability – is available to them through DAIR.'

Jill Kowalchuk

CYBERA VICE PRESIDENT, PROJECT AND PARTNERSHIP DEVELOPMENT CANARIE invited ICT entrepreneurs and innovators working on such things as transactional and telecom software, multi-player online games and web-based apps like social networking to apply for free access to DAIR during the program's pilot phase from May 2011 through to March 2012.

"The response has been enthusiastic to say the least," says Mark Wolff, Senior Director of Technology Innovation, CANARIE. "We've received entries from companies across the country – not just in the major metropolitan centres, and not just from the 'typical' ICT companies. In terms of usage, the common denominator seems to be testing of scale. DAIR's capacities enable companies to evaluate just how big and how far their technologies can go."

One of the Canadian companies to seize the opportunity is Edmonton-based Kiribatu Labs, which helps insurance providers make more informed, accurate and timely decisions based on analytical and predictive modelling of their data. According to Pawel Brzeminski, President and CEO of Kiribatu Labs, "Our algorithms analyze vast amounts of data accumulated by insurance companies over many years; and by determining the likelihood of future claims, they help our customers improve their risk assessment strategies and fine-tune their policy pricing for savings of up to several million dollars annually. Development of these predictive analytics models requires us to constantly run algorithms and simulations that demand a lot of computing power. DAIR allows us to run so many more simulations than we could on our own servers. It's a fantastic program that's going to get us to market faster and save us a lot of money along the way."

A MUCH-NEEDED EDGE FOR CANADIAN ICT

CANARIE unveiled its plans for DAIR in December 2010 - a response to data showing that Canada's ICT sector has underperformed in comparison to its global peers. Motivated by the same desire to stimulate the ICT sector and spur improvements to Canada's digital economy, Cybera and Compute Canada submitted the C5 proposal (an easy acronym for 'Cybera Compute/Calcul Canada Cloud') in partnership with Hydro-Québec. Along with the cloud computing software required for DAIR, C5 supplied and now manages two large-scale compute and storage nodes - one at the University of Alberta's WestGrid High-Performance Computing (HPC) facility, the other at the University of Sherbrooke's Réseau québécois de calcul de haute performance (RQCHP) HPC facility.



'The pre-commercial folks are very important targets for Cybera, and the DAIR program is perfectly aligned with our four-part strategy: (1) To connect people and to connect computers; (2) To enable educators, entrepreneurs and everyday users; (3) To grow the user base and economy of scale; and (4) To harvest unused capacity and attract research and business."

Robin Winsor

CYBERA PRESIDENT AND CEO

Within Industry Canada's mandate - 'To help make Canadian industry more productive and competitive in the global economy, thus improving the economic and social well-being of Canadians' - DAIR is a perfect fit. "It removes a very real barrier to entry for ICT organizations," says Roman. "By promoting made-in-Canada product development and allowing SMEs to move much more quickly along the continuum of development to implementation and commercialization, DAIR is contributing to long-term productivity growth. It's also the ideal environment to uncover Canada's next technological 'success story'."

"One of DAIR's greatest benefits is in showing SMEs what high performance computing can do for their businesses," adds Susan Baldwin, Executive Director of Compute/Calcul Canada. "It helps reveal a technology company's true economic potential. And it puts into action the ideals expressed in Compute Canada's awardwinning submission to the Ministry of Industry's Digital Economy Consultation, 'To Compete You Must Compute'."

THE POWER OF PARTNERSHIP

The nearly \$1.1 million required for DAIR was provided by CANARIE, with additional contributions from the project's principal collaborators: Hydro-Québec, the Université de Sherbrooke and the University of Alberta. Cybera and Compute Canada provided the research computing and data storage services necessary for the project's success.



The GeoCENS portal will enable researchers to easily access and analyze data sourced from sensors located around the world.

FOR SCIENTISTS, BIG DATA IS A BIG DEAL

Few things say "Big Data" like the ever-expanding wealth of information collected by the ever-expanding array of geo-sensors spanning the planet Earth. In less than a decade, by 2020, an estimated 50-60 billion sensors will be producing far more Big Data than all the world's social networks combined. But as any scientist knows very well, the value of robust data is entirely a factor of how effectively it can be put to use.

That's where the Geospatial Cyberinfrastructure for Environmental Sensing (GeoCENS) project comes into play. An interactive web-based portal, GeoCENS was designed to allow remote access and control of geographically dispersed sensors and datasets. It will enable the biogeoscience research community to easily access, exchange, visualize, analyze and download biological and geoscientific data sourced from international sensors and satellite imagery.

Scientists from this community rely on data from ground-based sensors to monitor many dimensions of our environment. With new tools to analyze historical and real-time data and new ways to amalgamate and share their data with international colleagues, scientists will gain new insights into our climate, water systems and biological species and – most important – better understand how our biosphere is changing over time.

"With respect to data, biogeoscientists currently contend with numerous obstacles," explains Steve Liang, Assistant Professor in the University of Calgary's Department of Geomatics and Developer of the GeoCENS platform. "Although sensor data is abundant, it is broadly scattered, difficult to find and, for the most part, even more difficult to access. The quality of the data can also be difficult to determine. While there are some data portals out there, they typically manage only metadata: they provide good descriptions of the data sources...but the data itself isn't there."

According to Liang, GeoCENS tackles all these obstacles head-on. "Beyond integrating data from a vast variety of ground-based sensors, we've developed rigorous standards for publishing the data to GeoCENS, and we've created mechanisms for users to rate data quality – the so-called 'folksonomy' system of collaborative indexing.



'GeoCENS is one of a number of Cybera projects that focus on the effective organization, management and use of Big Data. Although it leverages expertise acquired through our work on the Water and Environmental Hub*, the GeoCENS portal is geared much more toward the scientific community. While it has attracted interest and participation from a long list of researchers and research organizations, we cannot ignore its commercial potential.'

Jill Kowalchuk

CYBERA VICE PRESIDENT, PROJECT AND PARTNERSHIP DEVELOPMENT "In many respects," says Liang, "we are building a type of social network for biogeoscience researchers so they can share information and collaborate with one another effortlessly. It's like Facebook, but for a targeted group of scientists – a simple portal that allows users to store, share and easily access sensor array data from anywhere on the planet."

EXTRACTING VALUE FROM A WORLD OF DATA

The value of a data portal like GeoCENS to the scientific community is both undeniable and immeasurable. As Edward Johnson, one of the project's Principal Investigators, explains, "The value of GeoCENS is multidimensional. First and foremost, it's about integrating data pertaining to a broad range of biogeoscientific interests – wildlife, insects, weather, vegetation, geomorphology and so on – and making it available for the advancement of science. But it's also about protecting data. The worldwide collection of sensor data accelerates by the day, and a great deal of quality data is no doubt getting lost. The preservation and effective use of data depends on having a central repository like GeoCENS."

Beyond its direct contributions to the scientific process, the GeoCENS project aims to strengthen

Canada's contributions to the global research community, ensuring our country remains on the competitive edge of new earth science discoveries. Further, the breakthrough findings facilitated by this portal will shed light on how our social and economic activities impact the earth's ecosystems.

GATHERING DATA FROM **BEYOND THE SENSOR**

Although the GeoCENS portal is being designed to meet the needs of the biogeoscience research community, there are plans to make it available to the public further down the road. And according to Johnson, doing so makes sense. "Biological and geoscience researchers aren't the only people capable of collecting high-quality data. Ranchers who keep tabs on the groundwater levels in their wells, birding enthusiasts who keep meticulous records of golden eagle migrations...'nonscientific' activities like these generate data that could be very useful, perhaps even invaluable, to professional scientists."

*For more information on the Water and Environmental Hub, see the project profile in Cybera's 2009—10 Annual Report.

Though the data behind it may be complex, the GeoCENS interface is surprisingly simple. Using a three-dimensional virtual globe system that looks and works a lot like Google Earth, users can search and browse environmental sensor datasets and observations from various sensor web servers. It's simple, intuitive and indescribably powerful.

THE POWER OF PARTNERSHIP

Jointly funded by Cybera and CANARIE, this nearly \$1.1 million project has evolved through the partnership of Cybera, CANARIE, the University of Calgary and the University of Saskatchewan.

Key collaborators in the project include the California Biodiversity Centre at the University of California, Berkeley; the University of Cincinnati's Department of Biological Sciences; the National Ecological Observatory Network (NEON) in Boulder, Colorado; and the Open Geospatial Consortium.



'The CESWP project has provided us with an incredible foundation for moving forward with other projects that promote the use of cloud computing and virtualization. The potential is huge. This is the way of the future, and we've been able to lead the charge.'

Barton Satchwill

CYBERA SENIOR DEVELOPER

TODAY'S SPACE WEATHER FORECAST:

Occurring in the environment between the Earth and our Sun, space weather presents extreme hazards to astronauts, satellites and groundbased communications, power and pipeline distribution systems. Energy flares on the sun's surface, for example, can create solar winds that slow down satellite communications or even bring them to a halt.

To circumvent interruptions to these vital systems, scientists are studying ways to more accurately forecast such phenomena. And to help, Cybera signed up as a partner in the CANARIE-funded Cloud-Enabled Space Weather Modelling and Data Assimilation Platform. CESWP for short.

Designed to improve research productivity and efficiency (which, it is hoped, will lead to more accurate forecasting of space weather), CESWP simplifies access to space weather simulation tools and uses cloud technologies to dramatically improve the sustainability, flexibility and performance of these tools. Along with productivity gains, the system reduces operational complexity and costs. In essence, CESWP brings together a vast variety of computing resources in disparate locations, integrates them into a common platform using open-source cloud computing software (OpenStack), and makes them available through a single, remotely accessible portal. Space scientists then access computer models and data available through a 'virtual machine' that could be any one of the resources in the network of computers connected through the cloud.

For Cybera, CESWP was a follow-up to a previous project: the Canadian Space Science Data Portal. "We felt CESWP would be an ideal project to start working with cloud computing and virtualization – areas in which, at the time, we had little experience," explains Barton Satchwill, one of Cybera's Senior Developers. "It's no understatement when I say the project has been groundbreaking for us. Through CESWP, Cybera gained a wealth of experience in cloud computing – not just in the technology itself, but in seeing how it fits together with high-performance computing. There's so much we can do with cloud computing to make HPC more accessible and cost-effective."

EFFICIENCY AND SYNERGY.

Beyond the ease of access to tools and data, CESWP is easier to manage and far more costeffective than a traditional physical infrastructure. If you add more or different computers, you don't have to configure them one by one; and you don't need to buy nearly as many licenses as you would if you were installing software on individual computers in individual research settings.

Of course, the most important benefits reside in the outcomes. "By providing a computing infrastructure that brings together space scientists from anywhere on the planet, CESWP is unparalleled in its capacity to facilitate collaborative research," says Robert Rankin, Professor of Physics at the University of Alberta and Principal Investigator for CESWP. "While the space science projects undertaken by individual researchers may seem very specific and distinctive, they tend to be inextricably interwoven. Collaboration is key to understanding how everything meshes together. CESWP isn't just about efficiency, it's about synergy."

Geared primarily toward use within academic research settings, CESWP is already playing a role in some major 'real life' applications. For the Canadian Space Agency's (CSA) Small Satellite Bus Development Program, CESWP was used to develop a mission-planning tool for the microsatellite CASSIOPE, scheduled to launch in late 2011. The potential for additional contracts from the CSA or other organizations involved in space science is significant.

'WHAT WE LEARN' MATTERS AS MUCH AS WHAT WE ACHIEVE

CESWP bears some remarkable similarities to Cybera's DAIR project (see pages 16-18) in that it circumvents the need for scientists to establish dedicated – and very costly – research environments that support a limited number of projects.

"In fact," says Rankin, "after an unsuccessful start with a brand of cloud software that simply didn't perform as promised, Cybera's CESWP team took a brief hiatus to work on DAIR. While sharing and applying the cloud computing insights they gleaned from their work on CESWP, they learned the ins and outs of implementing OpenStack software, and then they brought that expertise back to the CESWP application. The foundation of both projects is really the same."

As for the setback caused by CESWP's initial struggles with inadequate cloud software, Rankin

takes it in stride. "We got into cloud computing very early in the game – at least a year ahead of the curve. Really, we were among the pioneers; and the risk was naturally higher for us. Technical challenges go hand-in-hand with early entry. The original software may not have delivered what it promised, but the learnings we took away from the experience were invaluable."

THE POWER OF PARTNERSHIP

CESWP was funded through a \$900,000 investment by CANARIE. In addition to Cybera, partners in the project included the Universities of Alberta, Calgary, New Brunswick and Windsor.

Key collaborators in the project were Peking University; the University of California, Los Angeles; and SHARCNET.





GROW. HARVEST.

DRIVING THE INNOVATION ECONOMY



Cybera is ready to make Alberta a true destination of choice for forward-thinking innovators.

SCALING THE CLOUD

The third step of Cybera's four-part strategy is **GROW**. The beauty of cloud computing is scalability. This technology allows smooth and efficient resizing of resources from small-scale pilot to provincial-scale utility without making any fundamental changes. Of course, as these services scale up to utility level, there will be opportunities for a wide range of participants. Cloud computing means that a utility can draw on many different suppliers operating from many different locations, allowing for the best use of resources and the greenest possible footprint. Step four is **HARVEST**. Examples abound, both in education and commerce, of excess capacity on large-scale clouds being harvested during off peak times to facilitate new opportunities. In Alberta, we see the excess capacity in a utility scale cloud being a tremendous draw for researchers and businesses in computationally intensive fields to relocate to Alberta. In so doing, they will spur more innovation, create jobs and drive our economy.

It's time to put the Alberta Advantage – that is, our connected networks, entrepreneurial culture and dynamic R&D sector – to work like never before.



The potential exists for a provincial utility cloud to not only support innovation in communities, schools and business, but to also spur new application development in diversified sectors, and new discoveries in Big Data science.







CYBERA'S BOARD OF DIRECTORS

represents our diverse community of member organizations. Cybera works closely with these board members to expand our focus, extend our reach, and make Alberta a destination of choice for business, research and innovation.





Andrew Bjerring

Andrew Bjerring was a founding member of CANARIE's Board of Directors and was the President and CEO for

15 years. Bjerring has participated in numerous organizations dealing with networking and related applications. He is currently on the boards of the National Research Council's Institute for Information Technology and Ocean Networks Canada. He is also a member of the advisory panel for the Alberta Science and Research Investments Program. Bjerring spent 18 years as a faculty member, then, a Senior Administrator in Academic Planning and Information Technology Services at the University of Western Ontario. He obtained his BSc and MASc from the University of British Columbia and the University of Toronto, and his PhD from the University of Western Ontario.



Trevor Davis MOUNT ROYAL UNIVERSITY

Trevor Davis is the Associate Vice-President of Research at Mount Royal University (MRU). His research area is in the

Geographic Information Science field, specifically on managing uncertainty in large spatial databases. At MRU, Davis focuses on advancing the cause of MRU-based research, ensuring the research role is central to all decision making processes. His background is in research admin, as a faculty member, and previously, in film and television production.



Lise Fenez | ALBERTA ADVANCED EDUCATION AND TECHNOLOGY (EX OFFICIO) Lise Fenez is Manager of Information and Communications Technology (ICT)

Industries with the Government of Alberta, Advanced Education and Technology. Located in Calgary as a key member of the Technology Industry Development Section, Fenez actively pursues Alberta's mandate on economic diversification. She develops private-public technology development partnerships and initiatives with Alberta's research institutions and multinational companies. By promoting Alberta's Innovation System and commercialization programs, she supports local industry and attracts new technology investment to develop Alberta's ICT sector. Prior to joining the public sector, Fenez has held various manufacturing, global operations and product life management roles for a Canadian multinational wireless network company. She has a BSc. in Industrial Engineering from the University of Manitoba and is a Professional Engineer in the province of Alberta.



Rainer Iraschko | TRLabs

Rainer Iraschko holds a PhD from the University of Alberta and a BSc in electrical engineering from the University of Toronto, In 1997, Iraschko

ioined MCI's Network Technology Development group where he investigated the efficiency of MCI's North American transport network. Later, Iraschko moved to Silicon Valley, CA to launch ONI Systems and work as the Senior System and Network Architect for optical transport equipment. He helped ONI grow into a public company with a market capitalization in the billions. In 2001, Iraschko opened an office in Calgary, AB for Network Photonics Inc. Two years later, he started AccessNetware Inc., a broadband access solutions company. In 2004, he joined TELUS as an Optical Networking Strategist for the evolution of TELUS' transport network. Presently, Iraschko is the Vice-President Research of TRLabs, a not-for-profit organization fostering industry growth through ICT innovation.



Brian Olafson

Brian Olafson has had an exceptional and broad ranging career in the ICT industry. After graduating from the University of

Alberta with a BSc. Brian embarked on a career with IBM, primarily in the areas of sales and marketing. Following, Brian joined ISM Alberta Ltd. as Vice-President of Marketing and Sales. During part of this time he was also President of Payment Systems Corporation, which was a payroll and financial services company formed by ISM Alberta and the Government of Alberta. In 1997, he joined TELUS as the Vice-President of Managed Services. In 1999, Brian joined Bell as Vice-President for western Canada. In 2002, he started as the Vice-President of the SuperNet project and the role of overseeing the successful construction of the Alberta SuperNet. In 2005, Olafson retired from Bell Canada and established Brian Olafson and Associates Management Consulting Ltd.



Seamus O'Shea

Seamus O'Shea is provost emeritus of the University of Lethbridge where he was a professor of Chemistry, specializing in theoretical

and computational chemistry. He was involved in the development of information technology strategies for the University and its partners in Alberta's public post-secondary system. He served on the Board of Directors of iCORE and as Chair of the Board. He was Co-Chair of the taskforce implementing ApplyAlberta, the province's on-line post-secondary application system, and serves as Co-chair of ApplyAlberta's Strategy and Operations Committee.





Jonathan Schaeffer

Jonathan Schaeffer is a professor in the Department of Computing Science at the University of Alberta, and is currently the Vice-Provost

and Associate Vice-President for Information Technology. His research in artificial intelligence is best known for his work on computer games. He is the creator of the checkers program Chinook, the first program to win against a human in the World Checkers Championship.



Peter Singendonk (Vice-Chair)

Peter Singendonk is the Alberta Director for Systems Engineering at Cisco Systems. With

over 29 years of industry experience, Singendonk has worked for multinational energy companies, systems integrators and service providers. Joining Cisco in 1997, he has been actively involved as a field advisor and a member to numerous projects and committees such as Web 2.0, and Specialist Virtualization and Corporate Citizenship.

Brian Unger

Brian Unger is the Executive Director of the Grid Research Centre at the University of Calgary and former Interim President of

Cybera. Unger is also a Special Advisor for the joint Cambodia-Canada project, Informatics for Rural Empowerment and Community Health, and was a founding Co-Principal Investigator for WestGrid. He has served as the founding President and CEO of iCORE, the founding President of Netera Alliance (now Cybera), the founding Chair of C3.ca Inc, and the founding President and CEO of Jade Simulations. Unger was named a Canada Pioneer of Computing at an IBM CASCON conference. His list of awards includes the IWAY Public Leadership Award for outstanding contributions to Canada's information society and the ASTech award for Innovation in Alberta Technology for his research in parallel simulation and distributed computation.

INTERNATIONAL STRATEGIC **ADVISORY** COMMITTEE Composed of industry and research experts from around the world, Cybera's International Strategic Advisory Committee (ISAC) provides advice and an international perspective to Cybera, its Board of Directors, and the Alberta Government.



Bill Appelbe VICTORIAN PARTNERSHIP FOR ADVANCED COMPUTING

Bill Appelbe is the founding CEO and Chief Scientist of Victorian Partnership for

Advanced Computing (VPAC) in Australia. He has been employed or funded by companies and organizations including IBM, HP, Sun Microsystems, Los Alamos, and Motorola. Appelbe's research interests include parallel programming tools, software engineering and software frameworks. He is an honorary faculty member of Monash University and RMIT University and a member of the Executive Committee of the National Science Foundation Center for Geodynamics at the California Institute of Technology (Caltech).



Richard Fujimoto GEORGIA INSTITUTE OF TECHNOLOGY

Richard Fujimoto is Regents' Professor and the founding

Chair of the School of Computational Science and Engineering at the Georgia Institute of Technology, and Interim Director of the Institute for Data and HPC, formed in 2010. He received his PhD and MS from the University of California, Berkeley, in Computer Science and Electrical Engineering, and two BS degrees from the University of Illinois, Urbana in Computer Science and Computer Engineering. His publications include three books and several award-winning articles on parallel and distributed simulation.



Kate Keahey

ARGONNE NATIONAL LABORATORY

Kate Keahey is a Scientist in the Distributed Systems Lab at Argonne National

Laboratory and a Fellow at the Computation Institute at the University of Chicago. Her research interests focus on virtualization, policy-driven resource management, as well as the design and development of cloud computing infrastructure and tools. She created and leads the open source Nimbus project, which provides an Infrastructureas-a-Service cloud computing platform as well as other virtualization tools supporting a sciencedriven cloud ecosystem.



Gregor Von Laszewski

CENTER FOR ADVANCING THE STUDY OF CYBERINFRASTRUCTURE, ROCHESTER INSTITUTE OF TECHNOLOGY

Gregor von Laszewski is conducting state-of-theart research in cloud computing and green IT at Indiana University. He received his masters from the University of Bonn in Germany, and his PhD in computer science from Syracuse University in New



York. His current research interests include green IT, grid and cloud computing, and GPGPUs. He is best known for his efforts in making grids usable and initiating the Java Commodity Grid Kit, which provides a basis for many grid-related projects including the Globus toolkit.



Alexander Reinefeld ZUSE INSTITUTE AND HUMBOLDT UNIVERSITY OF BERLIN

Alexander Reinefeld is the Head of the Computer Science

Department at Zuse Institute Berlin and a professor at the Humboldt University of Berlin. He received his degree and PhD from the University of Hamburg, was awarded a PhD scholarship by the German Academic Exchange Service, as well as a Sir Izaak Walton Killam Post Doctoral Fellowship from the University of Alberta. He co-founded the European Grid Forum, the Global Grid Forum and the German e-science initiative D-Grid. He has published numerous scientific papers and holds two patents on scalable distributed data management.



Debashis Saha eBay

Debashis Saha is the Director of Research and Development, Cloud Engineering at eBay.

He has held senior management roles at Oracle

Corporation's Server Technologies and has extensive experience in managing and developing software in areas of distributed computing, database systems, Internet and grid technologies. He has several patents and publications in areas of computer systems and very large-scale integration design. Debashis holds a MS in electrical engineering and computer science from the Massachusetts Institute of Technology, and a BTech in computer science and engineering from the Indian Institute of Technology in Kharagpur.



Rob Simmonds GRID RESEARCH CENTRE, UNIVERSITY OF CALGARY

Rob Simmonds is the Director of Research for the Grid Research Centre (GRC) at

the University of Calgary. The GRC performs research and development into solutions for grid, utility and cloud computing, as well as the use of social networking tools for scientific applications. Simmonds holds a PhD in mathematical sciences from the University of Bath in the United Kingdom and is an Adjunct Associate Professor in the Department of Computer Science at the University of Calgary.



Nancy Wilkins-Diehr SAN DIEGO SUPERCOMPUTING CENTER

Nancy holds a BA in mathematics and philosophy and an MS in aerospace engineering. She has held a

variety of positions related to user services with the San Diego Supercomputer Center, including Associate Director of Scientific Computing. Currently she is the Area Director for the TeraGrid Science Gateways program, which enables scientists to develop web and client server interfaces to HPC, data and visualization resources. She has held this position since the inception of the program in 2004.



Brian Unger (Chair) GRID RESEARCH CENTRE, UNIVERSITY OF CALGARY

Brian Unger is Executive Director of the Grid Research

Centre and Professor Emeritus at the University of Calgary. He Chairs Cybera's International Strategic Advisory Committee and is Special Advisor for the Cambodia-Canada project iREACH (Informatics for Rural Empowerment and Community Health). He has served as the founding President and CEO of iCORE and of Netera Alliance (now Cybera); as a founding Co-Principal Investigator of WestGrid; the founding Chair of the Board of C3.ca; and the founding President and CEO of Jade Simulations.



2010 | 2011 MEMBERS

Cybera's member community is made up of innovative-driven businesses, bleedingedge startups, academic institutions, and government agencies. Access to emergent and robust technologies is what keeps our members competitive, collaborative and innovative.

Through their membership, each of these organizations has been able to tap into Cybera's technology test-bed, collaborate with experts in cloud, grid and Web 2.0, and take advantage of members-only benefits, such as reduced Internet costs and direct access to Alberta's and Canada's high-bandwidth advanced networks.

As Cybera moves forward with its strategy to reach and support all Alberta innovators – no matter where they may be located – we recognize that a strong, collaborative partnership with our members is a key component of this initiative.

For more information, or to become a Cybera member, email **info@cybera.ca**.

2010 | 2011 MEMBERS



2010 | 2011 PARTNERS

Much of Cybera's success is due to its strong and collaborative partnerships. Cybera works closely with the following organizations to evolve, advance and accelerate the way research and business are conducted.







STAFF

Ackerman, David

Amiot, Jean-Francois TECHNICAL OPERATIONS MANAGER

Carra, Barb PROJECT MANAGER

Carter, Emily PROJECT ADMINISTRATOR

Debenham, Amanda COMMUNICATIONS OFFICER

Ferguson, Marie BOOKKEEPER

Hampel, Meagan COMMUNICATIONS OFFICER

Joseph, Alex EXECUTIVE DIRECTOR — WEHUB

Kapty, Natasha SYSTEMS ADMINISTRATOR Korchinski, Caroline

Kowalchuk, Jill VICE-PRESIDENT, PROJECT AND PARTNERSHIP DEVELOPMENT

Lee, May Lynn PROJECT MANAGER

Makar, Jana DIRECTOR OF COMMUNICATIONS

Mann, Cameron CLOUD DEVELOPMENT INTERN

Nisbet, Andrew INTERMEDIATE DEVELOPER

Pereira, Alvaro

Satchwill, Barton

Shillington, John VICE-PRESIDENT, TECHNOLOGY Sill, Lindsay PROJECT MANAGER

Teja, Karim CHIEF FINANCIAL OFFICER

Toews, Everett SENIOR DEVELOPER

Tymowski, Luke SENIOR SYSTEMS ADMINISTRATOR

Winsor, Robin PRESIDENT AND CEO

Young, Keeley EXECUTIVE ASSISTANT TO SENIOR MANAGEMENT



CYBERA FINANCIALS

Independent Auditors' Report

TO THE BOARD OF DIRECTORS OF CYBERA INC.

We have audited the accompanying financial statements of Cybera Inc., which comprise the statement of financial position as at March 31, 2011, the statements of operations, changes in net assets and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

MANAGEMENT'S RESPONSIBILITY FOR THE FINANCIAL STATEMENTS

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian generally accepted accounting principles, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

AUDITORS' RESPONSIBILITY

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

OPINION

In our opinion, the financial statements present fairly, in all material respects, the financial position of Cybera Inc. as at March 31, 2011, and its results of operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

KPML LLP

Chartered Accountants Calgary, Canada June 22, 2011

STATEMENT OF FINANCIAL POSITION

Year ended March 31, 2011, with comparative figures for 2010

Assets	2011	2010
Current assets:		
Cash	\$514,812	\$720,465
Accounts receivable (note 3)	2,056,451	1,235,282
Goods and services tax receivable	49,253	24,981
Prepaid expenses	21,441	17,540
	2,641,957	1,998,268
Describer of a science of (s. 1. 4)		
Property and equipment (note 4)	66,467	
Intellectual property including software	I	I
	\$2,708,425	\$1,998,269
Liabilities and Net Assets		
Current liabilities:		
Accounts payable and accrued liabilities (note 3)		
Deferred revenue	\$1,351,920	\$761,740
	500,000	621,000
	1,851,920	1,382,740
Net assets (note 5):	856,505	615,529
Economic dependence (note 6)		
	\$2.708.425	\$1.998.269



See accompanying notes to financial statements.





STATEMENT OF OPERATIONS

Year ended March 31, 2011, with comparative figures for 2010	2011	2010
Revenue	\$6,092,397	\$4,801,191
Expenses		
Infrastructure	761,687	936,332
Projects	3,877,432	2,563,276
Projects & partnership developement	321,583	299,322
Marketing and communications	284,816	459,119
General and administrative	594,540	528,430
Depreciation	11,363	10,504
	5,851,421	4,796,983
Excess of revenue over expenses	\$240,976	\$4,208

See accompanying notes to financial statements.

STATEMENT OF NET CHANGES IN ASSETS

Year ended March 31, 2011, with comparative figures for 2010	2011	2010
Net assets, beginning of year	\$615,529	\$611,321
Excess of revenue over expenses	240,976	4,208
Net assets, end of year	\$856,505	\$615,529

See accompanying notes to financial statements.

STATEMENT OF CASH FLOWS

Year ended March 31, 2011, with comparative figures for 2010

	2011	2010
Cash provided by (used in):		
Operations:		
Excess of revenue over expenses	\$240,976	\$4,208
Add item not affecting cash:		
Depreciation	11,363	10,504
	252,339	14,712
Changes in non-cash working capital:		
Accounts receivable	(821,169)	(635,831)
Goods and services tax receivable	(24,272)	(15,530)
Prepaid expenses	(3,901)	(16,498)
Accounts payable and accrued liabilities	590,180	(3,641)
Deferred revenue	(121,000)	(139,000)
	(127,823)	(808,500)
Investments:		
Expenditures on property and equipment	(77,830)	
Increase (decrease) in cash	(205,653)	(793,788)
Cash, beginning of year	720,465	1,514,253
Cash, end of year	\$514,812	\$720,465
Supplemental cash flow information:		
Interest received	\$5,177	\$17,054

See accompanying notes to financial statements.





NOTES TO FINANCIAL STATEMENTS

Year ended March 31, 2011

GENERAL:

Cybera Inc. ("Cybera") was incorporated on January 12, 1994 under Part II of The Canada Corporations Act as a corporation without share capital as WurcNet Inc. In 1999 it changed its name to Netera Alliance Inc. and in 2007 it changed its name to Cybera Inc.

Cybera is an Alberta-based, not-for-profit alliance that manages large-scale inter-institutional ICT projects, including research networks, high performance computing resources, digital content projects and collaboration facilities.

The objectives of Cybera are to provide information and communications infrastructure, project management, advocacy and technical expertise to leverage the resources, skills and services of its members, without preference or partiality to any individual member.

As a not-for-profit organization, the income of Cybera is not subject to tax under paragraph 149(1)(I) of the Income Tax Act (Canada).

1. Significant Accounting Policies:

(a) Revenue:

Revenue from membership dues is recognized evenly over the term of the membership.

Project revenue, which is comprised of contributions towards project costs, is recognized on the basis of the deferral method. Under this method, restricted contributions are recognized as revenue when the related project costs are incurred. Restricted contributions received in a period before the related expenses are incurred are accumulated as deferred revenue. Unrestricted contributions are recognized as revenue when received or receivable.

Interest income is recognized when earned.

(b) Project expenses:

As part of the development of applications for the high speed network, Cybera provides funding for certain research and development projects. Cybera charges costs incurred on these projects to operations as incurred. Typically, Cybera does not retain ownership rights in the results of these projects, rather, these rights reside with project participants on a basis defined in the respective project agreements.

(c)Cash and cash equivalents:

Cybera considers deposits in banks, certificates of deposit and short-term investments with original maturities of three months or less as cash and cash equivalents.

(d) Property and equipment:

Property and equipment is recorded at cost. Depreciation of property and equipment is provided using the straightline method at a rate of 50% per year.

(d) Donations of services:

Cybera receives from its members and others, donations of professional time, services and office support. The value of these donations is not included in these financial statements as the related fair value cannot be reasonably determined.

(e) Foreign currency:

All foreign currency denominated assets are translated into Canadian dollars at the rate of exchange in effect on the date of the Statement of Financial Position. Transactions that occur in a foreign currency are translated into Canadian dollars at the rate of exchange in effect when realized.

(e) Use of estimates:

The preparation of the financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of revenues and expenses during the reporting periods. Significant estimates include the valuation of accounts receivable, property and equipment and accounts payable and accrued liabilities. Actual results could differ from those estimates.

(f) Financial instruments:

All financial instruments must be initially recognized at fair value on the balance sheet date. Cybera has classified each financial instrument into the following categories; held for trading financial assets and liabilities, loans or receivables, held to maturity investments, available for sale financial assets, and other financial liabilities. Subsequent measurement of the financial instruments is based on their classification. Unrealized gains and losses on held for trading financial instruments are recognized in earnings. Gains and losses on available for sale financial assets are recognized in changes in net assets and transferred to earnings when the asset is derecognized. The other categories of financial instruments are recognized at amortized cost using the effective interest rate method.

Upon adoption of the standards, Cybera has classified cash and cash equivalents as held for trading, accounts to

receivable as loans and receivables, and accounts payable and accrued liabilities as other liabilities.loans and receivables, and accounts payable and accrued liabilities as other liabilities.

2. Future accounting pronouncements:

The Accounting Standards Board ("AcSB") has recently issued an Exposure Draft for Not-for-Profit Organizations. The AcSB proposes that Not-for-Profit Organizations select one of the two following alternatives for financial reporting:

- Accounting Standards for Not-for-Profit Organization (Part III of the CICA Handbook), or
- International Financial Reporting Standards.

These available standards are applicable to fiscal years beginning on or after January 1, 2012. Current standards will continue to apply until the new standards are effective. Adoption of these new standards is being evaluated and the impact on future financial statements is not known or reasonably estimated at this time.

3. WestGrid and CANARIE projects:

The March 31, 2011 year-end balances include accounts receivable of \$2,039,069 (2010 - \$986,202) and accounts payable and accrued liabilities of \$798,532 (2010 - \$658,377) where claims were made on behalf of all participants with total revenue booked as a receivable and participant invoices booked as payables.

4. Property and equipment:

			2011	2010
	Cost	Accumulated depreciation	Net book value	Net book value
Computer equipment	\$94,301	\$27,834	\$66,467	\$-

5. Net assets:

In the event of dissolution or winding-up of Cybera, all of its remaining assets, after payment of its liabilities, would be distributed to other not-for-profit organizations.

6. Economic dependence:

Future operations are dependant on continued funding from the Alberta Government.

Cybera periodically applies for financial assistance under available government incentive programs. Government assistance relating to research and development expenditures is recorded as a reduction of current year expense when the related expenditures are incurred.

7. Related party transactions:

During the year, in the ordinary course of business, \$1,000 (2010 - \$3,335) of membership dues was received from a company in which the CFO has significant influence. These transactions are in the normal course of operations and are measured at the exchange amount of consideration established and agreed to by the related parties.

9. Financial instruments:

Fair value of financial assets and financial liabilities: Financial instruments include cash, accounts receivable and accounts payable and accrued liabilities and approximate their carrying value because of the short term nature of these instruments.

Credit risk:

Accounts receivable are subject to minimal credit risk as the majority of the receivables are from governmentsponsored institutions.

Foreign currency risk:

Foreign currency exposure arises from the holding of a U.S. bank account and transactions with foreign companies. Cash held in foreign currencies as at March 31, 2011 and 2010 is minimal.

Interest rate risk:

Interest rate risk arises from the holdings of fixed income securities. As interest rates fluctuate, the fair value of these securities will be impacted.

9. Capital management:

Cybera defines its capital as the amounts included in its Net Asset balances. Cybera's objective when managing its capital is to maintain a primary emphasis on preservation and security of capital and a secondary emphasis on inflation adjusted returns so that it can continue to provide services.





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