



ANNUAL REPORT TO THE MINISTER

Industry Canada

Submitted on

July 31, 2015

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1.0 Executive Overview

Context for CANARIE

CANARIE's role in Canada's innovation ecosystem was set out in its 1993 Articles of Incorporation: *to contribute to Canadian competitiveness in all sectors of the economy, to wealth and job creation and to the quality of life of Canadians.*

Throughout its history CANARIE has evolved to support Canadian competitiveness through the development and deployment of digital tools for Canada's research, education and innovation communities. Over the course of its 22-year history, CANARIE has helped shape Canada's digital landscape by leading the following initiatives, among many others:

- laying the groundwork, with provincial partner networks, for the first commercial Internet in Canada;
- incubating the Internet Registration Authority in Canada, now known as CIRA;
- supporting hundreds of Canadian businesses, educational and health organizations in their transition to digital models and processes via the Technology Development, Technology Diffusion program, Technology Applications Development program, and E-business, E-learning and E-health programs;
- identifying the gap in research software in the ecosystem and championing the development of powerful research software tools to accelerate discovery;
- working with global peers to align international research and education infrastructures to support globally collaborative research; and
- developing the grid certificate authority in Canada that provides secure access to data generated from the Large Hadron Collider and other advanced digital technologies.

CANARIE's activities serve to continually advance Canada's digital research infrastructure ecosystem so that Canadians are strongly positioned to compete and win in the global knowledge economy. More detailed information on current activities may be found below.

Executive Summary

CANARIE's Contribution Agreement with Industry Canada requires the organization to "provide to the Minister by July 31st of each year, commencing in 2013, ending in 2015, an Annual Report approved by its Board, in both official languages, of its operations during the preceding fiscal year in respect of funding under this Agreement." This report addresses those requirements.

Over the past year, CANARIE has worked towards achieving all of the objectives outlined in its 2014-15 Business Plan. These objectives align with CANARIE's core purpose: **the advancement of Canada's knowledge and innovation infrastructure**, and its mission: **to design and deliver digital infrastructure, and drive its adoption for research, education and innovation**. At a high level, through its programs, CANARIE works towards achieving these objectives by:

- overseeing the ongoing evolution of the national backbone component of Canada's National Research and Education Network (NREN);
- championing the development of research software and collaboration tools; and
- providing users in the private sector with access to advanced technologies to accelerate their time to market.

Together, these activities align to deliver more integrated and accessible digital research infrastructure, tools and services. Beyond these activities, CANARIE has taken a leadership role in the community to champion the ongoing evolution of Canada's digital infrastructure ecosystem as a critical lever driving social and economic gains that benefit all Canadians.

Network Evolution

As the primary role of the CANARIE network is to provide inter-provincial and international connectivity, CANARIE works closely with provincial and territorial network partners that build and operate regional networks in their province or territory. Through a governance structure where the top level is the NREN Governance Committee, this successful federal/provincial partnership manages the evolution of the NREN as a whole to ensure that Canadians can access nationally and globally distributed data, tools and colleagues.

CANARIE understands the impact of increasing amounts of digital data on research, education and innovation, and has evolved the national backbone network to ensure Canadians can continue to access and leverage these data to support world-class research. Over the past year, CANARIE completed the evolution of its trans-Canada backbone network to support 100Gbps (100 billion bits per second) capacity, from 10G capacity. Traffic on the CANARIE network has increased 2.5 times over the course of the 2012-15 mandate, from 46 to 117 Petabytes annually, and the 100G network upgrade ensures the network can continue to meet dramatic traffic growth. Building out the CANARIE network can and does support Canada's ICT sector in general. For example, in the Maritimes, the Government of New Brunswick invested an additional \$4M to leverage the CANARIE network investment to support New Brunswick's ICT sector, demonstrating that CANARIE has a spillover effect in fostering Canada's digital economy.

Internationally, CANARIE partnered with three global research and education networks to provide a redundant 100G link between North America and Europe to support global research collaborations that are increasingly reliant on massive shared datasets. CANARIE is a member of the Global NREN CEO Forum and works with peers internationally to evolve the global infrastructure and services that support data-intensive research and innovation worldwide.

CANARIE also supports mission-critical research at a range of government laboratories. As well, CANARIE sits on Shared Services Canada's IT Infrastructure Roundtable to provide unbiased information and expertise to assist SSC in network and network-based services planning and execution.

Research Software

Recognizing that digital infrastructure involves more than advanced networks, CANARIE has invested in research software tools since 2007. CANARIE's long-term vision is to develop a robust toolkit of reusable software services that are widely adopted by Canada's research community. Through its Network-Enabled Platforms-Research Platform Interfaces (NEP-RPI) Program (recently renamed the Research Software Program for clarity), CANARIE oversaw the development of 12 research platforms and 55 reusable software services. In order to maximize the efficiency of these investments, these software services are available to any researchers to use in developing project- or domain-specific research platforms. Members of CANARIE's Research Advisory Committee and Software Technology Advisory Committees, which have representation that includes the private sector, ensure CANARIE's investments in software are directed towards the most useful software tools, and that those tools meet rigorous technical standards.

Collaboration Tools

CANARIE supports secure access to remote resources through Federated Single Sign-On, and enables seamless access to campus WiFi networks through *eduroam*, two services offered under the Canadian Access Federation (CAF) umbrella. CANARIE upgraded key *eduroam* server infrastructure to increase service reliability and launched quarterly usage reports that illustrate how users are benefitting from *eduroam*. Users of *eduroam* grew from 29,000 in 2012 to 92,000 in March 2015, with monthly logins to this service averaging 7 million. One notable achievement was the use of the Federated Single Sign-On service by a group of seven partner institutions, who deployed it to share access to cloud-based collaboration tools. In addition to regular user feedback, CANARIE's CIO Advisory Committee has played a key role in guiding the evolution of these services.

Private Sector Innovation

CANARIE enables users in the private sector to leverage its digital infrastructure to accelerate the commercialization process. The DAIR (Digital Accelerator for Innovation and Research) program has supported 370 small and medium-sized enterprises (SMEs) in their adoption and use of cloud technologies to speed product development, reduce development costs, and realize the broad business benefits of the cloud. Through partnerships with the NRC's Industrial Research Assistance Program, Startup Canada, the Association of University Research Parks, the Funding Roadshow, colleges' applied research programs and business incubators, CANARIE continues to promote the use of DAIR and the transformative power of cloud technologies.

To advance Canada's leadership in networking technology, CANARIE is a founding partner in the Centre of Excellence in Next-Generation Networks (CENGN). CENGN is a consortium of industry, academic and research leaders who are pooling their expertise and equipment to lower the barrier to market entry for SMEs and researchers. CENGN accelerates commercialization by providing companies and researchers access to a world-class physical and virtual multi-vendor commercialization, test, certification and validation platform. CANARIE provides the critical network infrastructure and connections to stakeholders in the private and public sectors that underpin the CENGN model.

Partnerships

CANARIE continues to engage with a broad range of stakeholders to ensure its activities align with changing community needs. CANARIE is a formal member of the Leadership Council for Digital Infrastructure and is in regular contact with digital infrastructure partners and stakeholders, including the CFI and Compute Canada, the Council of Ontario Universities, Universities Canada, the U15, CUCCIO, Colleges and Institutes Canada, Genome Canada, and the granting councils. CANARIE's role in the digital infrastructure ecosystem continues to solidify through premier events such as the CANARIE National Summit, and through a refreshed corporate website and collateral.

One outcome of these relationships is CANARIE's support for Research Data Canada (RDC). Over the course of several community consultations, a national strategy for data management emerged as a priority issue. Research Data Canada had been informally incubated at the National Research Council, but it became clear that it would wither in the absence of continued funding. CANARIE took a leadership position to support RDC through the last year of the 2012-15 mandate to ensure RDC could continue to build on the progress made in improving the management of research data in Canada.

CANARIE also completes its current mandate having over-achieved the cost recovery targets outlined in its Cost Recovery Business Plan. Through a combination of cost recovery, cost avoidance, in-kind and matching funds programs, CANARIE achieved cost recovery of \$12M during this mandate against a target of \$11.7M.

On behalf of the Board of Directors, CANARIE would like to thank the Minister of Industry, his staff and officials at Industry Canada, for their continued support and confidence in CANARIE. CANARIE looks forward to providing Canada's research, education and innovation communities in the public and private sectors with world-class digital infrastructure and tools so that Canada can grow its innovation capacity and compete and win in the global digital economy.

2.0 Statement of Objectives for 2014-15 and report on the extent to which CANARIE met these objectives

CANARIE's 2014-15 Business Plan objectives were as stated below. A report on the extent to which each objective was achieved is contained in the paragraphs following each objective.

2014-15 Objectives:

A. Evolve/extend Canada's world-leading collaboration network

To evolve and expand the CANARIE network in a flexible and cost-effective manner over the long-term, CANARIE's vision is to deploy fibre from coast-to-coast across Canada. In high-use, high-growth network corridors, CANARIE has purchased fibre and therefore has the flexibility to add capacity and deploy transformative technologies at a considerably lower incremental cost. The alternative to this model is leased services from suppliers. In a leased services model, the cost/traffic curve is linearly much higher, and would become prohibitively expensive as network traffic continues to grow.

To realize its coast-to-coast fibre vision in 2014-15 CANARIE completed the central 100Gbps (100 billion bits per second) network build from Calgary to Winnipeg with a service breakout in

Regina. In addition, CANARIE started extending the fibre network east of Montreal into Atlantic Canada to Halifax. The Atlantic fibre network will be completed in the year 2015-16. These two fibre networks will provide greater flexibility and capacity for pan-Canadian and international collaborations.

CANARIE also issued an RFP for 100Gbps (100 billion bits per second) wavelength services for the northern corridor for Vancouver-Edmonton-Saskatoon-Winnipeg-Toronto, as well as for services to international research and education exchanges, including PacificWave in Seattle, Starlight in Chicago and MANLAN in New York. Two 100Gbps wavelengths were delivered by March 31, 2015, and others will be delivered in the first quarter of 2015-16.

CANARIE continued to work with its provincial and territorial network partners to evolve the National Research and Education Network (NREN) through the Network Alliance Infrastructure (NAI) program. Throughout the mandate, CANARIE provided \$6.67M in network investments. As a result of CANARIE's cost-sharing initiative, this program's funding attracted complementary provincial funding of \$4.78M to bring the total to \$11.45M. This supported upgrades to equipment, increases in network capacity and reliability, and extensions in reach of the NREN.

Internationally, CANARIE, in partnership with three of the world's leading research and education networks, funded and built the first redundant 100Gbps ring between four open exchange points spanning the North Atlantic. Named ANA-200G, this infrastructure opens up a new era for today's most advanced research, enabling scientists to take advantage of the ongoing wave of data being constantly created by sensor networks, research instruments, and people.

CANARIE continued to represent Canada at the Global Lambda Integrated Facility (GLIF). This is an international consortium that promotes the networking paradigm of carrying multiple data channels (referred to as lambdas) in a single fibre. GLIF provides lambdas internationally as an integrated facility to support data-intensive scientific research, and supports middleware development for lambda networking. GLIF also brings together some of the world's premier networking engineers who are working together to develop an international infrastructure by identifying equipment, connection requirements, and necessary engineering functions and services.

CANARIE also led Canada's involvement in the Global Ring Network for Advanced Applications Development (GLORIAD). GLORIAD is a network of networks that implements a fibre-optic ring around the northern hemisphere, providing scientists, educators and students with advanced networking tools that improve communications and data exchange, enabling active, daily collaboration on common problems. GLORIAD's aim is to provide a stable, persistent, non-threatening means of facilitating dialogue and increasing cooperation between nations. CANARIE has been providing important connection services linking research networks across Asia, North America and Europe, allowing scientific communities in three continents to move large volumes of scientific data effortlessly.

In addition to its role within Canada's NREN, CANARIE is the national operator of the Canadian Access Federation (CAF), which enables Canadian students, staff and faculty to access protected online content using their existing institutional credentials (i.e. home username and password) through its Federated Single Sign-On service (FSSO). Participating institutions in CAF also benefit from the *eduroam* wireless service, which provides students, staff and faculty

with secure access to the campus WiFi network they are visiting by using their home institution's credentials.

In 2014-2015, participation in the Canadian Access Federation increased from 108 to 118 organizations. CANARIE also enabled the deployment of *eduroam* as the default campus wireless network, demonstrating the effectiveness and efficiency of this approach with its initial project at the University of the Fraser Valley.

In 2014-15, CANARIE demonstrated international leadership and assumed the Chairmanship of the global *eduroam* governance committee. The committee is responsible for developing global standards and policies governing the use of *eduroam*, and CANARIE's leadership of this committee is a tangible demonstration of confidence in CANARIE's technical and strategic capabilities.

The Federated Single Sign-On Service (FSSO) offered under CAF was the enabling service underpinning a unique collaboration among seven institutions in eastern Canada. These institutions used FSSO to enable users at all seven institutions to access cloud-based collaboration tools using their home institution's username and password credentials. The success of this initiative lays the foundation for other shared services initiatives that can realize meaningful cost and process efficiencies while addressing security and confidentiality issues.

B. Deploy Research Platform Infrastructure

In 2014-15, CANARIE continued to champion the development of powerful research software tools that accelerate discovery and enable research funds to be focussed on research activity, rather than software development. Research software enables users to seamlessly access digital infrastructure and resources without having expert knowledge of these infrastructures, thereby expanding use of these resources across many research domains.

Through its Network-Enabled Platforms – Research Platform Interfaces (NEP-RPI) Program, CANARIE oversaw the development of 12 research platforms (a suite of software tools that contain all elements of the research workflow), and 55 reusable software services (components that perform a specific function and can be redeployed in any research platform).

These tools are made available via CANARIE's online research software portal <http://www.canarie.ca/software/>. The online portal is the first of its kind in Canada, where users find reusable software services and examine each service's availability and usage statistics. The purpose of the online portal is to create a nationally recognized clearinghouse for research software that provides seamless access to these tools to spur broad adoption by the research community.

Of the 67 software platforms and components developed or in development, 44 were posted in the portal at the end of 2014-15. The remaining platforms and services will be posted in the near future. The online portal received approximately 7,185 unique visitors and 27,500 visits in 2014-15. Notably, the Carbon Commons carbon management platform was added to the portal this year and is the first contribution of a research software tool not funded by CANARIE, recognizing the value of having a single repository for research software.

The portal is managed by CANARIE's Research Software Development team, who bring technical competence in the development of science platforms through direct participation in platform infrastructure development and governance.

CANARIE also established a relationship with the UK's Software Sustainability Institute (SSI) to share best practices around research software. SSI shares CANARIE's goal of driving the adoption of software for research and forming a community of research software developers to encourage collaboration at the software development level.

CANARIE issued a "sustaining call" for NEP-RPI Program participants in late 2014. This call was targeted at participants who developed research platforms under previous calls. The purpose of this call was to allow platform developers to continue to evolve their platforms until the anticipated start of development under CANARIE's first call of the 2015-20 mandate. This approach allows platform groups to attract users and make improvements based on user feedback. It also serves to minimize administrative overheads between calls when successful participants have to disband and then re-form their software development teams.

In response to consistent community feedback that identified the need to coordinate activities around the evolving field of research data management, CANARIE took action and provided funding to support Research Data Canada (RDC). RDC is an organization originally incubated at the National Research Council, and its overarching goal is to improve the management of research data in Canada so that it is broadly available to support knowledge creation and innovation. By funding Research Data Canada, CANARIE ensured the ongoing progression of a number of key initiatives and maintained the community of experts that has coalesced around RDC. Strategically, CANARIE's support for RDC further exposed opportunities to leverage CANARIE's research software expertise to address end-user needs for software tools that enable compliance to data management policies, as these are expected to be launched by the granting councils within the next 2 – 3 years.

C. Stimulate ICT Innovation and Commercialization

CANARIE participated in two major initiatives to support ICT sector innovation and commercialization in 2014-15.

The first is CANARIE's DAIR program, which offers powerful cloud computing resources to small and medium-sized enterprises (SMEs) to accelerate their product development timelines and enable faster time to market. Launched in early 2013, DAIR users increased from 172 to 370 over the past year, an increase of 198 SMEs. Feedback from DAIR users, whose products span the health care, gaming, environment, education and security sectors, indicates that DAIR accelerated their time to market and reduce product development costs. Further, the DAIR program exposes users to the power of cloud technologies to transform traditional business models and provides these businesses with an opportunity to adopt these technologies as part of their long-term growth strategy.

CANARIE developed strong partnerships with a range of organizations to increase the visibility of the DAIR offering among Canadian SMEs. These include the Funding Roadshow, Startup Canada, the IRAP Concierge program, the Association of University Research Parks, colleges, and a range of incubators across the country.

To support Canadian leadership in networking technologies, CANARIE is a founding partner in the Centre of Excellence in Next-Generation Networks. CENGN is a consortium of industry (including, Juniper, Cisco, Alcatel-Lucent, BTI, EXFO, Telus) academic (Algonquin College, McGill University, Université Laval, University of Alberta, among others) and research leaders who are pooling their expertise and equipment to lower the barrier to market entry for SMEs and researchers.

CENGN was awarded funding by NSERC's Centres of Excellence program in 2014 and created the governance structure and technical and staff infrastructure to take on projects beginning in mid-2015. CANARIE plays a key role in this initiative as it is the CANARIE network that connects all partners and provides the network test bed infrastructure for new product validation and testing.

3.0 Statement of Objectives for 2015-16 and for the foreseeable future

In 2015-16, CANARIE expects to focus on three strategic objectives.

The three primary objectives are:

A. Evolve/extend Canada's world-leading collaboration network

In order to address the evolving needs of users in the research, education and innovation communities, CANARIE will enable a pan-Canadian collaboration capability through a world-leading high performance network and network-based services.

B. Deploy Research Platform Infrastructure

In order to address gaps in research infrastructure and leverage existing investments in research "middleware", CANARIE will create technologies to bring new collaboration capabilities not previously offered to the research community. CANARIE will leverage previous investments in the Network-Enabled Platforms programs and further evolve research platforms to enable increased access to data and tools and accelerate research outcomes.

C. Stimulate ICT Innovation and Commercialization

In order to leverage CANARIE resources to stimulate commercialization, CANARIE will deliver a cloud-based program, the Digital Accelerator for Innovation and Research (DAIR), that enables advanced ICT research and provides an opportunity for entrepreneurs to accelerate time-to-market.

Over the next year CANARIE will ensure that all initiatives that have been implemented to achieve these objectives will be successfully completed in line with the terms and conditions of CANARIE's new Contribution Agreement.

4.0 Statement of CANARIE's investment policies, standards, and procedures

CANARIE's investment *strategy* is specifically tailored to the duration and quality constraints in terms of investment options imposed by the Statement of Investment Policy and the Contribution Agreement with Industry Canada. These constraints, while deemed appropriate and necessary to meet the overall objectives of CANARIE, preclude a more active approach to investment management.

Rather than active investment management, the strategy adopted by CANARIE is “buy and hold”, based on the following framework.

- Investment maturities will, wherever possible, match the forecasted cash requirements of CANARIE.
- The quantitative limits on investment holdings provide ample structural liquidity to meet the needs of CANARIE. It is appropriate, therefore, to hold less liquid types of approved investments. Value added will be achieved by moving out the “liquidity curve” when possible.
- At all times, CANARIE will hold investments deemed eligible under the Statement of Investment Policy (see Appendix 1). For greater clarity, the determination of eligibility shall be made at the time of purchase. CANARIE will not be obliged to dispose of investments which become ineligible after the date of purchase, but will favour (subject to market conditions) disposing of such securities should assets need to be liquidated. (Refer to the Liquidity policy (s 7) in the Statement of Investment Policy.)

Within this context, CANARIE’s official Statement of Investment Policy as adopted by the Board of Directors, and reviewed and approved in the year by the Audit & Investment Committee of the Board, is contained in Appendix 1.

Appendix 1: Statement of Investment Policy

Statement of Investment Policy

Purpose

The purpose of this document is to establish an investment policy best suited to meet the needs and objectives of CANARIE's investment portfolio. This document is specifically intended to meet the requirements of ss 5.3, 5.4, 5.7, 5.8, 5.9, 5.10, and 5.11 of the Contribution Agreement between CANARIE Inc. and Her Majesty in Right of Canada dated September 4th, 2012.

All aspects of this Policy are governed by the Prudent Person Principle (refer to s 5.1 of the Contribution Agreement) and the principal objective of investment decisions shall be the preservation of capital to meet future disbursement requirements.

Investment Policy

(1) Long-term return objectives and expectations:

The long term objectives of the portfolio are twofold: (a) to provide funds on an "as needed" basis to meet the disbursement needs of CANARIE and (b) to maximize the investment income earned by CANARIE, subject to the Investment Strategy and Investment Policy adopted by CANARIE.

(2) Ratings of Securities:

The deemed rating (the "Rating") of any Eligible Security will be established, at the time of CANARIE's acquisition of the Eligible Security.

Reference to the "issuer" shall include the unconditional guarantor, if applicable.

The rating category for Investment Policy purposes shall be based on the ratings of at least two of the following four rating agencies: Dominion Bond Rating Service (DBRS), Standard and Poors (S&P) Rating Services, Moody's Investors Service and Fitch Rating Ltd.

In the case of Commercial Paper and other short-term investments:

To be included in the AAA category, the security must have at least two of the following, where two are available:

- (i) R-1 (high) from DBRS
- (ii) A-1+ from S&P and the issuer's bonds are rated "AAA" by S&P
- (iii) P-1 from Moody's and the issuer's bonds are rated Aaa by Moody's
- (iv) F-1+ from Fitch and the issuer's bonds are rated AAA by Fitch

To be included in the AA category, the security must have at least two of the following, where two are available:

- (i) R-1 (middle) from DBRS
- (ii) A-1+ from S&P
- (iii) F-1+ from Fitch

- (iv) P-1 from Moody's and the issuer's bonds are rated Aa by Moody's

In the case of bonds and other longer term investments:

To be included in the AAA category, the security must have at least two of the following:

- (i) AAA from DBRS
- (ii) AAA from S&P
- (iii) Aaa from Moody's
- (iv) AAA from Fitch

To be included in the AA category, the security must have at least two of the following:

- (i) AA from DBRS
- (ii) AA from S&P
- (iii) Aa from Moody's
- (iv) AA from Fitch

(3) Diversification policy of the investment portfolio, including quantitative limits on investments:

Throughout the life of CANARIE's portfolio, CANARIE's investments in the securities of **any one issuer (or two or more affiliated entities)** will be limited to an aggregate market value limit based on the Rating of the security:

Rating Security	<u>AA</u>	<u>AAA</u>
Government Securities	no limit	no limit
Provincial / Municipal Financing Authority	10% of portfolio	10% of portfolio
Municipal Securities	10% of portfolio	10% of portfolio
Other Eligible Securities	10% of portfolio	10% of portfolio

Throughout the life of CANARIE's portfolio, CANARIE's investment in the securities of **any one category** will be limited to an aggregate market value limit of the category, as set out below:

Rating Security	<u>AA</u>	<u>AAA</u>
Government Securities*	30% of portfolio (minimum Government Securities is 10% of the portfolio)	no limit
Provincial / Municipal Financing Authority	70% of portfolio **	same 70%
Municipal Securities	70% of portfolio**	same 70%
Other Eligible Securities	70% of portfolio**	80% of portfolio

* For greater certainty, the phrase "Government Securities" means all securities issued, guaranteed by, or that have the full faith and credit of the federal government or a provincial government.

** The 70% constraint applies to the aggregate of AA securities

(4) Asset allocation strategy:

The portfolio will, at all times, be invested in Eligible Securities (refer to (5) below).

(5) Permitted investment instruments and trading activities:

CANARIE shall invest in Eligible Securities. Eligible Securities are defined as: bank certificates of deposit; banker's acceptances; treasury bills, commercial paper and other short-term securities, bonds and notes issued by the federal government, provincial governments, municipal governments and corporations; cash deposits in banks identified in Schedule I of the *Bank Act*; guaranteed investment certificates; and other fixed-income securities that carry the full faith and credit of the Government of Canada. For greater certainty, CANARIE shall not invest in derivatives, swaps, options or futures.

Any securities acquired shall have a Rating of at least AA.

All securities will be denominated in Canadian dollars.

Robert Nesbitt, FCSI, CIM, and John Bull, FSCI, Investment Advisors/Managers, will have authorized power to recommend and execute all trades on behalf of CANARIE Inc. through RBC Dominion Securities. RBCDS will notify CANARIE Inc. and include all details of all confirmations of trades.

The Board's Audit and Investment Committee will be advised of the transaction details by email or facsimile the same week that the transactions are authorized, or as soon as practical thereafter.

(6) Prohibited investment instruments and trading activities:

Prohibited investments consist of all investments not defined as permitted investment instruments.

(7) Liquidity policy:

- (a) The maturities and terms of investments shall match the profile of CANARIE's forecasted disbursements. In cases where the timing of disbursements is unknown, investments shall be held in securities with term to maturity of one year or less.
- (b) Should an unexpected disbursement or series of disbursements made by CANARIE reduce the total market value of the portfolio, CANARIE shall immediately take the steps necessary to comply with the requirements set by the diversification policy (refer to (3) above) within a period of 60 days from the date as of which CANARIE first failed to meet those requirements. Under no circumstances shall CANARIE materially fail to comply with the diversification requirements of section 3 for a period of more than 90 consecutive days.

(8) Risk management policies:

The purpose of CANARIE's investment portfolio is to earn investment income until such funds are needed to finance CANARIE objectives. The principal risks therefore are liquidity and capital preservation. Both risks, and steps taken to manage such risks, are specifically addressed in CANARIE's Statement of Investment Policy and Statement of Investment Strategy. In addition to the constraints contained in these documents, certain processes are in place to further manage these risks:

- On a monthly basis the Investment Advisor/Manager receives reports from CANARIE management regarding upcoming short term cash requirements. This is compared to the upcoming maturity schedule with corrective action, if any, being initiated.
- On an annual basis the Investment Advisor/Manager receives a long term projection of CANARIE liquidity requirements. This is compared to the long term maturity schedule. Based on the comparison of the two, corrective action, if any, is taken. Note that corrective action in this instance may be taken over an extended time period.
- On a quarterly basis the Investment Advisor/Manager reviews the credit ratings of all holdings. This is intended to act as an early warning as to potential, upcoming capital impairment issues.
- On a quarterly basis (or more frequently if necessary) the Investment Advisor/Manager reports to the Investment Committee on portfolio matters. Such matters include diversification compliance and potential capital impairment situations and recommended corrective actions.

(9) Policy on the lending of cash or securities:

The lending of cash or securities is not permitted.

(10) Performance measurement and monitoring procedures:

Performance is measured first by the prime objective of safety of investment and, secondly, by the ability of the investment portfolio to have funds on hand to meet all expenditure requirements. After those considerations in importance comes performance measurement. This will be addressed in ongoing fashion in reporting on new investments and reinvestments in terms of their yield relative to the Canada Curve (the yield that would be achieved from a benchmark Government of Canada bond of similar duration). Less attention will be paid to annual comparisons with other bond managers, unless they operate under similar constraints.

(11) Review:

This Statement of Investment Policy shall be reviewed at least once a year.

Appendix 2: Program Revenues Financial Summary - March 31, 2015

The following table presents CANARIE's cost recovery projections by initiative for the mandate compared to the Cost Recovery Business Plan.

	Projections	Cost Recovery Business Plan	Variance
		<i>(in 000s)</i>	
PROGRAM REVENUES			
Legacy - IEP	314	1,107	(793)
CAF Participation Fees	503	440	63
DAIR User Fees	13	195	(182)
Interest	470	383	87
TOTAL PROGRAM REVENUES	1,300	2,124	(824)
MATCHING FUNDS			
DAIR	175	232	(57)
NAI	4,775	4,846	(71)
NEP-RPI	189		189
TOTAL MATCHING FUNDS	5,139	5,078	61
IN-KIND CONTRIBUTIONS			
DAIR		300	(300)
NEP-RPI	1,528	769	759
TOTAL IN-KIND CONTRIBUTIONS	1,528	1,069	459
COST AVOIDANCE			
IEP	4,033	3,450	583
TOTAL COST AVOIDANCE	4,033	3,450	583
TOTAL	12,001	11,721	280

Appendix 3: CANARIE Inc. Financial Statements - March 31, 2015

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CANARIE Inc.
Financial Statements
For the year ended March 31, 2015

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Independent Auditor's Report

To the members of CANARIE Inc.

We have audited the accompanying financial statements of CANARIE Inc., which comprise the statement of financial position as at March 31, 2015, and the statements of operations, changes in net assets and cash flows for the year then ended, and 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 accounting standards for not-for-profit organizations, 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.

Auditor's 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 the auditor's 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, the auditor considers 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 CANARIE Inc. as at March 31, 2015, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

BDO Canada LLP

Chartered Professional Accountants, Licensed Public Accountants

Ottawa, Ontario

June 25, 2015

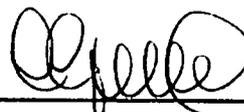
CANARIE Inc.
Statement of Financial Position

March 31	2015	2014
Assets		
Current		
Cash	\$ 228,900	\$ 4,803,236
Short-term investments (Note 2)	12,679,390	5,872,520
Accounts receivable	478,637	57,694
Prepaid expenses and deposits (Note 3)	2,786,723	4,001,255
	16,173,650	14,734,705
Prepaid expenses and deposits (Note 3)	2,028,200	2,551,338
Tangible capital assets, assets under capital leases and intangible asset (Note 4)	11,911,365	8,434,217
	\$ 30,113,215	\$ 25,720,260
Liabilities and Net Assets		
Current		
Accounts payable and accrued liabilities	\$ 2,641,571	\$ 4,161,848
Deferred membership revenue	-	7,500
Deferred funding (Note 5)	5,525,686	4,693,798
Current portion of obligation under capital lease (Note 7)	180,672	-
	8,347,929	8,863,146
Deferred funding (Note 5)	1,991,700	2,514,839
Deferred capital funding (Note 6)	11,839,926	8,385,820
Obligation under capital lease (Note 7)	1,944,198	-
	24,123,753	19,763,805
Commitments (Note 8)		
Net Assets		
Unrestricted	474,413	471,258
Internally restricted royalty fund	2,281,534	2,251,682
Internally restricted for windup of operations	3,233,515	3,233,515
	5,989,462	5,956,455
	\$ 30,113,215	\$ 25,720,260

On behalf of the board:



Director



Director

The notes are an integral part of these financial statements.

CANARIE Inc.
Statement of Changes in Net Assets

For the year ended March 31	Unrestricted	Internally Restricted Royalty Fund (Note 9)	Internally Restricted for Windup of Operations (Note 9)	2015	2014
Balance, beginning of the year	\$ 471,258	\$2,251,682	\$3,233,515	\$5,956,455	\$5,794,275
Membership	208,178	-	-	208,178	207,144
Royalties	-	1,521	-	1,521	-
Investment income	46,927	28,331	-	75,258	72,434
Expenses	(251,950)	-	-	(251,950)	(117,398)
Excess of revenues over expenses	3,155	29,852	-	33,007	162,180
Balance, end of the year	\$ 474,413	\$2,281,534	\$3,233,515	\$5,989,462	\$5,956,455

CANARIE Inc.
Statement of Operations

For the year ended March 31	2015	2014
Revenues		
Industry Canada funding	\$ 23,946,974	\$18,032,863
Membership	208,178	207,144
Investment income	75,258	72,434
Royalties	1,521	-
	<hr/>	<hr/>
	24,231,931	18,312,441
Expenses (Schedule)		
Program	20,572,230	14,770,069
Operating	3,374,744	3,262,794
Corporate	251,950	117,398
	<hr/>	<hr/>
	24,198,924	18,150,261
Excess of revenues over expenses	\$ 33,007	\$ 162,180

CANARIE Inc.
Schedule of Expenses

For the year ended March 31	Program	Operating	Corporate	2015 Total
Direct program	\$16,084,117	\$ -	-	\$16,084,117
Employee and consultants	2,562,387	2,115,296	183,950	4,861,633
Marketing and promotion	114,032	281,697	49,866	445,595
Travel	242,224	187,289	-	429,513
Rent	-	347,890	-	347,890
General office and supplies	15,383	147,814	-	163,197
Meetings and conferences	34,010	89,262	-	123,272
Equipment, software and maintenance	45,580	56,787	-	102,367
Professional fees	2,630	36,317	561	39,508
Interest on obligation under capital lease	27,040	-	-	27,040
	19,127,403	3,262,352	234,377	22,624,132
Plus: amortization	1,444,827	112,392	17,573	1,574,792
	\$20,572,230	\$ 3,374,744	\$ 251,950	\$24,198,924

For the year ended March 31	Program	Operating	Corporate	2014 Total
Direct program	\$11,494,282	\$ -	-	\$11,494,282
Employee and consultants	2,092,572	2,021,386	74,706	4,188,664
Marketing and promotion	43,691	310,376	1,749	355,816
Travel	90,052	122,199	348	212,599
Rent	-	391,048	-	391,048
General office and supplies	327	150,898	-	151,225
Meetings and conferences	57,860	82,134	-	139,994
Equipment, software and maintenance	34,755	27,209	-	61,964
Professional fees	2,824	67,240	8,489	78,553
	13,816,363	3,172,490	85,292	17,074,145
Plus: amortization	953,706	90,304	32,106	1,076,116
	\$14,770,069	\$ 3,262,794	\$ 117,398	\$18,150,261

CANARIE Inc.
Statement of Cash Flows

For the year ended March 31	2015	2014
Cash flows from operating activities		
Industry Canada funding	\$ 26,400,000	\$ 23,000,000
Membership	200,678	211,520
Program - interest	252,842	190,154
Program - user fees	189,517	188,538
Investment income - Corporate	46,927	72,434
Investment income - Royalty Fund	28,331	27,802
Program expenses	(18,362,113)	(12,409,191)
Operating expenses	(3,284,620)	(3,278,232)
Corporate expenses	(201,556)	(72,705)
Royalties	1,521	-
	<u>5,271,527</u>	<u>7,930,320</u>
Cash flows from investing activities		
Acquisition of tangible capital assets and intangible asset	(2,984,603)	(4,129,406)
Proceeds on disposal of tangible capital assets	24,800	-
(Increase) decrease in short-term investments	(6,806,870)	662,518
	<u>(9,766,673)</u>	<u>(3,466,888)</u>
Cash flows from financing activities		
Repayment of obligation under capital lease	(79,190)	-
Net (decrease) increase in cash	(4,574,336)	4,463,432
Cash, beginning of the year	4,803,236	339,804
Cash, end of the year	\$ 228,900	\$ 4,803,236

CANARIE Inc.
Notes to Financial Statements

March 31, 2015

1. Significant Accounting Policies

Purpose of Organization

CANARIE Inc. was incorporated on March 5, 1993 as a non-profit organization without share capital under Part II of the Canadian Corporations Act. CANARIE Inc. was continued under section 211 of the Canada Not-for-profit Corporations Act on November 19, 2013. The objective of CANARIE Inc. is to support the development of the communications infrastructure for a knowledge-based Canada.

As a corporation constituted exclusively for the purpose of carrying on or promoting scientific research and experimental development, CANARIE Inc. is exempt from the payment of income taxes under Section 149(1)(J) of the Income Tax Act (Canada).

Basis of Accounting

The financial statements have been prepared in accordance with Canadian accounting standards for not-for-profit organizations.

Use of Estimates

The preparation of financial statements in accordance with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from management's best estimates as additional information becomes available in the future. Areas of significant estimates include useful lives of tangible capital assets, assets under capital leases and intangible asset.

Deferred Funding

Deferred funding relates to (1) funding received, including interest earned on funding, user fees collected and other recovered eligible costs, in advance of the funding period; (2) funding received for future service; and (3) funding received with respect to the purchase of tangible capital assets, assets under capital leases and intangible asset.

When tangible capital assets, assets under capital leases and intangible asset are disposed, the proceeds increase the deferred funding balance and the net book value decreases the deferred funding balance related to tangible capital assets, assets under capital leases and intangible asset.

CANARIE Inc.
Notes to Financial Statements

March 31, 2015

1. Significant Accounting Policies (continued)

Revenue Recognition The organization follows the deferral method of accounting for contributions. Restricted contributions are recognized as revenue in the year in which the related expenses are incurred. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

Funding related to tangible capital assets, assets under capital leases and intangible asset is deferred and recognized as revenue in the same year as the amortization expense of the related tangible capital assets, assets under capital leases and intangible asset.

Membership fees are recognized over the period of membership.

Financial Instruments Measurement
The organization initially measures its financial assets and liabilities at fair value. The organization subsequently measures all its financial assets and liabilities at amortized cost, except for short-term investments which it chose to measure at fair value. Changes in fair value are recognized in the statement of operations.

Financial instruments measured at amortized cost are cash, accounts receivable, and accounts payable and accrued liabilities.

Impairment
Financial assets measured at amortized cost are tested for impairment when there are indicators of impairment.

Transaction costs
The organization recognizes its transaction costs in the statement of operations in the year incurred for financial instruments measured at fair value. Financial instruments that are subsequently measured at amortized cost are adjusted by the transaction costs in the initial measurement of the asset or liability.

CANARIE Inc.
Notes to Financial Statements

March 31, 2015

1. Significant Accounting Policies (continued)

Tangible Capital Assets and Intangible Asset	<p>Tangible capital assets and intangible asset are stated at cost less accumulated amortization. Amortization is provided on the basis of their useful lives using the following methods and annual rates:</p> <table><tr><td>Computer equipment</td><td>3 years straight-line basis</td></tr><tr><td>Equipment</td><td>3 years straight-line basis</td></tr><tr><td>Leasehold improvements</td><td>over the term of the lease</td></tr><tr><td>Furniture</td><td>5 years straight-line basis</td></tr><tr><td>Network equipment</td><td>5 years straight-line basis</td></tr><tr><td>Computer software</td><td>2 years straight-line basis</td></tr></table>	Computer equipment	3 years straight-line basis	Equipment	3 years straight-line basis	Leasehold improvements	over the term of the lease	Furniture	5 years straight-line basis	Network equipment	5 years straight-line basis	Computer software	2 years straight-line basis
Computer equipment	3 years straight-line basis												
Equipment	3 years straight-line basis												
Leasehold improvements	over the term of the lease												
Furniture	5 years straight-line basis												
Network equipment	5 years straight-line basis												
Computer software	2 years straight-line basis												
Impairment of Tangible Capital Assets and Intangible Asset	<p>When a tangible capital asset or intangible asset no longer has any long-term service potential to the organization, the excess of its net carrying amount over any residual value is recognized as an expense in the statement of operations.</p>												
Leases	<p>Leases are classified as capital or operating leases. A lease that transfers substantially all of the benefits and risks incidental to the ownership of property is classified as a capital lease. All other leases are accounted for as operating leases wherein rental payments are expensed as incurred.</p> <p>Assets under capital leases are stated at cost less accumulated amortization. They are amortized on a straight-line basis over the expected useful life of the asset to the organization, not to exceed twenty years, which currently corresponds to the term of the leases.</p>												
Contributed Services	<p>During the year, voluntary services (including donated time and travel of board and committee members) were provided. Because of the difficulty of determining their fair value, contributed services are not recognized in the financial statements.</p>												
Presentation of Expenses	<p>Program development, design and implementation activities are classified as program expenses. Activities which are sustaining to the whole organization or are administrative in nature are classified as operating expenses. Activities not eligible for funding under the current contribution agreement are classified as either corporate or royalty fund expenses.</p>												

CANARIE Inc.
Notes to Financial Statements

March 31, 2015

2. Short-Term Investments

Short-term investments consist of Canadian government treasury bills with annual yields ranging from 0.41% to 0.53% and maturities ranging from May 2015 to December 2016, guaranteed investment certificates with annual yields ranging from 1.05% to 1.3% and maturities ranging from January 2016 to February 2016, and cash held in investment savings accounts with annual yields ranging from 0.85% to 1%.

3. Prepaid Expenses and Deposits

	<u>2015</u>	<u>2014</u>
Program prepayments and deposits	\$ 4,722,680	\$ 6,435,106
Operating prepayments	55,743	80,987
Rental deposit	<u>36,500</u>	<u>36,500</u>
Balance, end of the year	4,814,923	6,552,593
Current portion	<u>2,786,723</u>	<u>4,001,255</u>
Long-term portion	<u>\$ 2,028,200</u>	<u>\$ 2,551,338</u>

CANARIE Inc.
Notes to Financial Statements

March 31, 2015

4. Tangible Capital Assets, Assets under Capital Leases and Intangible Asset

	2015		2014	
	Cost	Accumulated Amortization	Cost	Accumulated Amortization
Computer equipment	\$ 321,277	\$ 196,325	\$ 245,568	\$ 137,472
Equipment	117,441	46,395	80,427	18,288
Leasehold improvements	464,519	370,777	464,519	349,578
Furniture	205,354	133,916	173,751	125,355
Network equipment	9,576,671	4,469,744	7,576,072	4,070,007
Fibre under capital leases	5,086,039	1,162,605	2,909,019	840,383
Fibre under capital leases under construction	2,455,738	-	2,458,030	-
Computer software	84,445	20,357	67,914	-
	\$18,311,484	\$ 6,400,119	\$13,975,300	\$ 5,541,083
Net book value		\$11,911,365		\$ 8,434,217

During the year, computer equipment with a cost of \$2,298 (2014 - \$1,472) and accumulated amortization of \$2,298 (2014 - \$1,472) was disposed and removed from the total cost and total accumulated amortization.

During the year, furniture with a cost of \$9,012 (2014 - \$Nil) and accumulated amortization of \$7,049 (2014 - \$Nil) was disposed and removed from the total cost and total accumulated amortization.

During the year, network equipment with a cost of \$704,448 (2014 - \$Nil) and accumulated amortization of \$704,448 (2014 - \$Nil) was disposed and removed from the total cost and total accumulated amortization.

Accounts payable and accrued liabilities include purchased tangible capital assets with a cost of \$270,468 (2014 - \$1,254,504).

During the year, the organization acquired fibre under capital leases with a cost of \$2,177,020 which was financed through the obligation under capital lease.

CANARIE Inc.
Notes to Financial Statements

March 31, 2015

5. Deferred Funding

Pursuant to Funding Agreements signed on September 4, 2012, March 28, 2007, and March 28, 2002, the organization received funding of \$62,000,000, \$120,000,000 and \$110,000,000 respectively from Industry Canada for the design, development, deployment, improvement and operations of the CANARIE network and programs.

The organization was granted permission from Industry Canada to retain \$817,821 from an HST recovery to strengthen the overall National Research and Education Network security.

The balance of the funds has been reflected as follows:

	<u>2015</u>	<u>2014</u>
Balance, beginning of year	\$ 7,208,637	\$ 6,149,050
Industry Canada funding	26,400,000	23,000,000
Program - user fees	239,166	188,538
Program - interest	252,842	190,154
Direct program and operating expenses	(22,389,755)	(16,988,853)
Transfer to operating for the acquisition of tangible capital assets, assets under capital leases and intangible asset	(5,011,325)	(5,330,252)
HST recovery	817,821	-
	<hr/>	<hr/>
Balance, end of year	7,517,386	7,208,637
Current portion	5,525,686	4,693,798
	<hr/>	<hr/>
Long-term portion	<u>\$ 1,991,700</u>	<u>\$ 2,514,839</u>

CANARIE Inc.
Notes to Financial Statements

March 31, 2015

6. Deferred Capital Funding

Deferred capital contributions represent amounts funded by Industry Canada for the purchase of tangible capital assets, assets under capital leases and intangible asset. Deferred funding related to tangible capital assets, assets under capital leases and intangible asset is summarized below:

	2015	2014
Balance, beginning of year	\$ 8,385,820	\$ 4,099,578
Funding received related to the acquisition of tangible capital assets, assets under capital leases and intangible asset	5,011,325	5,330,252
Amortization of program and operating assets	(1,557,219)	(1,044,010)
Balance, end of year	\$11,839,926	\$ 8,385,820

7. Obligation Under Capital Lease

	2015	2014
Capital lease for infeasible rights of use of fibre, 4.35%, due December 2024, payable by monthly instalments of \$23,317, principal and interest.	\$ 2,124,870	\$ -
Less: current portion	180,672	-
	\$ 1,944,198	\$ -

Minimum lease payments required in the next years under the capital lease are as follows:

2016	\$ 267,805
2017	267,805
2018	267,805
2019	267,805
2020	267,805
Subsequently	1,272,078
	2,611,103
Less: interest included in minimum payments	486,233
	\$ 2,124,870

CANARIE Inc.
Notes to Financial Statements

March 31, 2015

8. Commitments

The organization is currently committed to a lease for its premise which expires on August 31, 2019. Future minimum annual lease payments under this operating lease (which includes base rent and the current charge for additional rent) for the premise are due as follows:

2016	\$ 348,755
2017	348,755
2018	348,755
2019	348,755
2020	145,315
	<hr/>
	\$ 1,540,335
	<hr/>

As at March 31, 2015, the organization had commitments of \$10,519,266 and \$30,941 with respect to programs and to operations, respectively.

CANARIE Inc.
Notes to Financial Statements

March 31, 2015

9. Internally Restricted Net Assets

Royalty Fund

During the 2007/2008 fiscal year, Industry Canada granted CANARIE Inc. the authority to retain royalties collected after March 31, 2007 and to use these funds in a manner to be determined by CANARIE Inc. and its legal counsel. Annual allocations to the fund include royalties received of \$1,521 (2014 - \$Nil) and investment income of \$28,331 (2014 - \$27,802). Disbursements from the fund represent payments to approved funded projects. The fund cannot be reallocated without the approval of the Board of Directors.

Windup of Operations

During the 1998 fiscal year, CANARIE Inc. established a fund for the eventual wind up of its operations or for the transition to a new mode of business. In either event, the fund will be used to pay operating expenses. The objective was to allocate to the fund an amount between 50% and 75% of the organization's annual operating budget. Management performs an annual review of the sufficiency of this fund and confirms that its objective is met. The fund cannot be reallocated without the approval of the Board of Directors.

10. Economic Dependence

On September 4, 2012, Industry Canada entered into a contribution agreement with CANARIE Inc. to contribute funding totaling \$62,000,000, plus future revenues, royalties, interest income, user fees and other recovered eligible costs. Of the total contribution, \$12,600,000 was received on October 9, 2012, \$23,000,000 was received on April 23, 2013 and \$26,400,000 was received on April 4, 2014. The current contribution agreement ended on March 31, 2015.

On April 21, 2015 the Federal Government announced a contribution of \$105,000,000 to CANARIE Inc. over the next 5 years.

11. Financial Instruments

Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. Fixed rate instruments subject the organization to a fair value risk while variable rate instruments subject it to a cash flow risk. The organization is exposed to this risk for its short-term investments. The risk associated with investments is reduced to a minimum since these assets are invested in short-term maturities.