2019 – 2020

ANNUAL REPORT

of Achievements & Financial Statements

Compute · Calcul Ontario

Strategic Priorities

Five strategic priorities guided Compute Ontario's work in 2019 – 2020

Advance research computing and its value nationally, in collaboration with partners across the country.

Coordinate efforts to develop, retain and increase access to highly qualified personnel, and broader access to data for high impact research in a way that is consistent with our values.

Coordinate the advanced computing needs of Ontario's academic research community and other key stakeholders, in partnership with sites across the province that deliver and manage these services.

Serve as a credible voice regarding policy; coordinating and advocating key strategies that enhance advanced research computing and its use.

Build trust and serve as a focal point for connecting communities and constituents throughout Ontario's advanced research computing ecosystem.

Contents

Message from Board Chair and President & CEO

Mark Daley
Board Chair

Nizar Ladak
President & CEO

> " ...Compute Ontario acts as a focal point in the sector to achieve shared goals, maximize funding allocations, and ensure Ontario leverages advanced research computing's full value for innovative and societal benefits."

Ontario is swiftly becoming more data-driven. Advanced Research Computing is enabling this transition. Advanced research computing usage is growing in Ontario and Canada, offering new opportunities for innovation, economic development, and generating insights to solve society's most significant problems (climate change, infectious and chronic diseases, inequality and income distribution, large scale conflicts, etc.). As a trusted advisor and relationship builder, Compute Ontario acts as a focal point in the sector to achieve shared goals, maximize funding allocations, and ensure Ontario leverages advanced research computing's full value for innovative and societal benefits.

This rapid change towards a data-driven economy requires a coordinated effort from Ontario's advanced research computing stakeholders to ensure that infrastructure funding, access to technology and skilled workforce development can keep up with the pace of change. Compute Ontario supplies this coordination through consistent and active engagement, knowledge and information sharing, and opportunities for the community to develop collaborative solutions.

Our 2019 – 2020 Annual Report highlights activities and initiatives conducted by Compute Ontario over the past year designed to fulfill our strategic pillars described earlier. Through knowledge translation, developing evidence-based insights, and facilitating partnerships, Compute Ontario continues to play a critical role in Ontario's transition to becoming more data-driven, technical, and innovative.

Mark Daley
Board Chair

Nizar Ladak
President & CEO
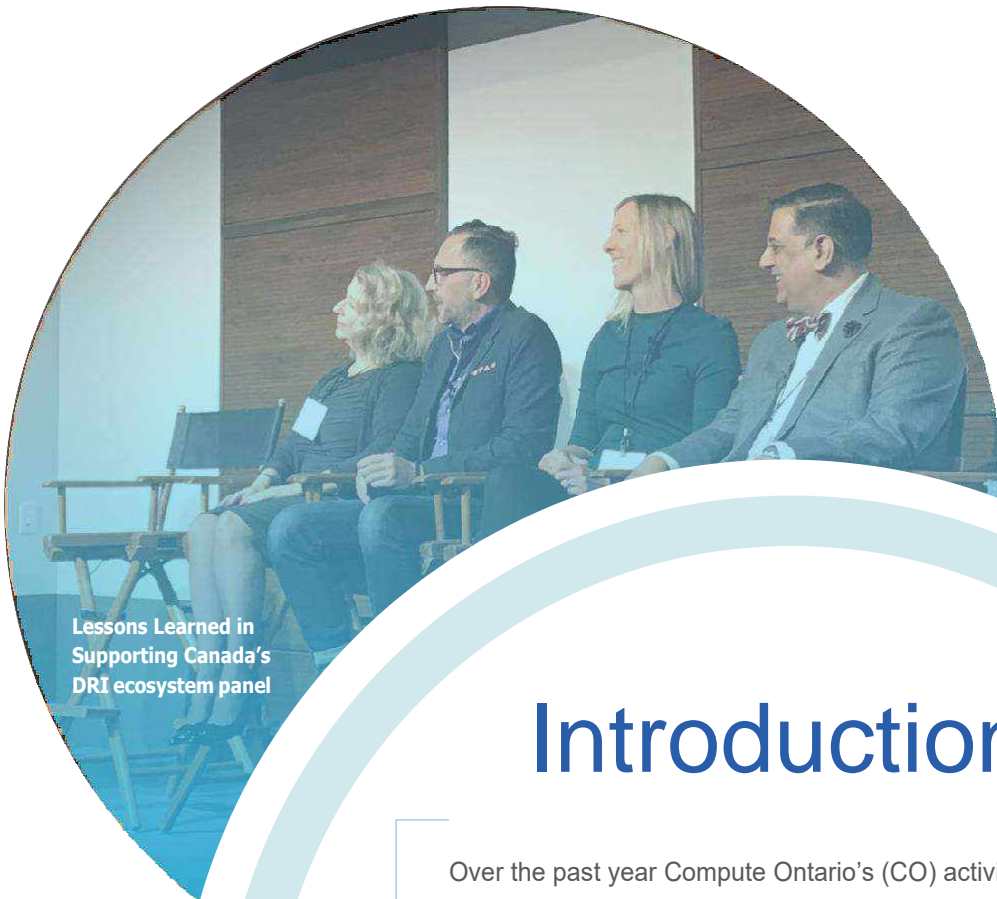
Lessons Learned in Supporting Canada's DRI ecosystem panel

Introduction

Over the past year Compute Ontario's (CO) activities focused on informing policy directions, leading events and workshops, and exploring novel advanced research computing (ARC) concepts. This allowed CO to positively impact our community of world-class researchers, which we will continue to do going forward. Hosting and participating in over thirty events and panels and publishing ten reports further solidified CO as an expert in vital ARC topics such as data governance, smart cities, partnerships, highly-skilled workforce development, cloud computing and infrastructure investment. Consistent engagement and coordination have allowed CO to continue to lead as an authoritative voice on digital transformation in the province.

Canadian Science Policy Conference 2019

Mission and Values

Our mission and values describe who we are and how we work as an organization.

Mission

In collaboration with our partners, Compute Ontario will drive advanced computing to accelerate research and enhance competitiveness in the global marketplace resulting in a more prosperous Ontario.

Values

TRUSTED

The organization will strive to be trusted by researchers, industry and institutions. It will strive to preserve integrity in research. It will be regarded as vendor-neutral. It will provide credible advice and information that is accurate, timely and relevant. It will protect privacy. It will create a secure and predictable environment to foster research in Ontario and to support Ontario's business.

ACCOUNTABLE

Compute Ontario will seek to provide value for money to Ontario residents. Its decisions will be transparent and clear, and the organization will take responsibility for its actions.

EXCELLENT

The organization will promote excellence in research in Ontario and excellence in commercialization of products in Ontario's companies through the use of advanced computing. The organization strives for excellence in its own activities and will promote Ontario as a global leader in advanced computing.

COLLABORATIVE

Compute Ontario will work to bring partners and stakeholders together to achieve common goals, enhancing the role of advanced computing for all partners. The organization exists to serve a number of stakeholder groups. It will strive to provide a place for research and industry to interact and serve as a resource to both. The organization will work to form partnerships and alliances within the advanced computing community. The organization can only succeed with its partners.

INNOVATIVE

The organization will be able to respond to the rapidly changing nature of advanced computing. It will be agile, and able to adapt as needed to provide quality outputs in a streamlined fashion.

Strategic Pillar 1:
Progress ARC and its Value Nationally

Improving access to compute infrastructure, ensuring ARC policies and procedures are appropriately enabling innovation and competitiveness, and sharing best practices to support Canada's technology-driven economy are critical goals of CO. In the past year CO supported ARC nationally through acting as a trusted advisor, leveraging connections by:

Providing Leadership and Coordination Nationally to Advance ARC

CO has consistently engaged with our regional (ACENET, WestGrid, Calcul Québec), and national partners (Compute Canada and the New Digital Research Infrastructure Organization (NDRIO)). Working with the executive teams of these organizations, we support critical activities such as the stable transition of ARC services to NDRIO, growing cybersecurity capabilities, priority allocations for COVID-19 research, and communicating the advancements of digital research and skills training nationally.

> **The report expanded on the relationship between the local, regional, and national layers of Canada's ARC system."**

Through coordination with Ontario's ARC community, CO formally responded to consultations during the formation of NDRIO. This emerging national coordinating body for ARC in Canada will provide digital tools, services and infrastructure to researchers across the country. CO collaborated with stakeholders from Ontario's ARC ecosystem to offer advice and best practices to support NDRIO's transition to Canada's national digital research infrastructure (DRI) organization.

CO initiated a report with contributions from its regional counterparts to better describe their roles. The report expanded on the relationship between the local, regional, and national layers of Canada's ARC system. Areas of focus for the regions included collaboration and coordination, operational and strategic oversight, and skills training. This paper highlighted the valuable roles of each region, and how they can continue to support national ARC strategies and help enable new and expanded services for researchers across the country.

Strategic Pillar 2:
Develop, Retain and Increase Access to HQP

Ontario's most valuable asset in a data-driven economy is skilled workers. CO, through partnerships, events, and studies, helped develop a sharper image of highly qualified personnel (HQP) in Ontario. This helped CO address barriers to developing HQP in the region, such as providing policy direction on the skills gap and slow talent growth in underserved geographical areas. To assist the advancement of Ontario's skilled workforce, CO supported and launched the following initiatives:

Data trust workshop underway

Summer Schools and Training

CO's consortia partners, the Centre for Advanced Computing (CAC) at Queen's University, HPC4Health, SciNet, and SHARCNET delivered summer school training programs and courses throughout the year that focus on data science and other ARC and big data skills and techniques.

CO supported these efforts through financial support, communication and coordination. Ontario maintained its position as Canada's leader in ARC skills development by providing 65% of total training efforts in Canada. In 2019 – 2020, our consortia partners delivered over 30,000 hours of training to over 10,000 participants. CO's consortium partner SciNet continues to be the only Canadian participant at the acclaimed Petascale Computing Institute, which comprises international supercomputing centres that come together to provide training. In addition, SciNet, along with international partners XSEDE, PRACE and RIKEN, sponsored the annual International HPC Summer School, which was hosted this year by RIKEN in Kobe, Japan. The training efforts of CO's consortia partners for 2019 – 2020 are listed below:

Partner	N° of training events	N° of attendees at events	N° of training hours delivered*	Online training video views*	Online training video hours
SciNet	166	5,998	9,346	Not measured	Not measured
SHARCNET	42	1,908	5,207	117,002	6,936
HPC4Health	23	1,393	7,384	N/A	N/A
CAC	23	833	8,177	N/A	N/A
Total	>254	>10,132	>30,114	117,002	6,936

Who are Ontario's HQP?

CO commissioned a study with the Brookfield Institute for Innovation + Entrepreneurship titled Who Are Ontario's Highly Qualified Personnel? building off CO's 2018 Highly Qualified Personnel Study. It provides a sharper picture of Ontario's workforce, offering a profile of the demographics of HQP, including gender and geographic location, income and education levels. Key findings from the study include HQP's geographic distribution, learning that only 8% of Ontario's total HQP live in non-major urban areas. Men represent 83% of HQP and earn $16,700 more in an HQP role than women do. These learnings helped support CO's future work including our interactive HQP workshops to address these type of policy gaps. This report was shared with CO's network of stakeholders to advance CO's commitment to building awareness, informing policy, and creating actionable programs through collaboration to promote and develop a highly-skilled workforce in Ontario.

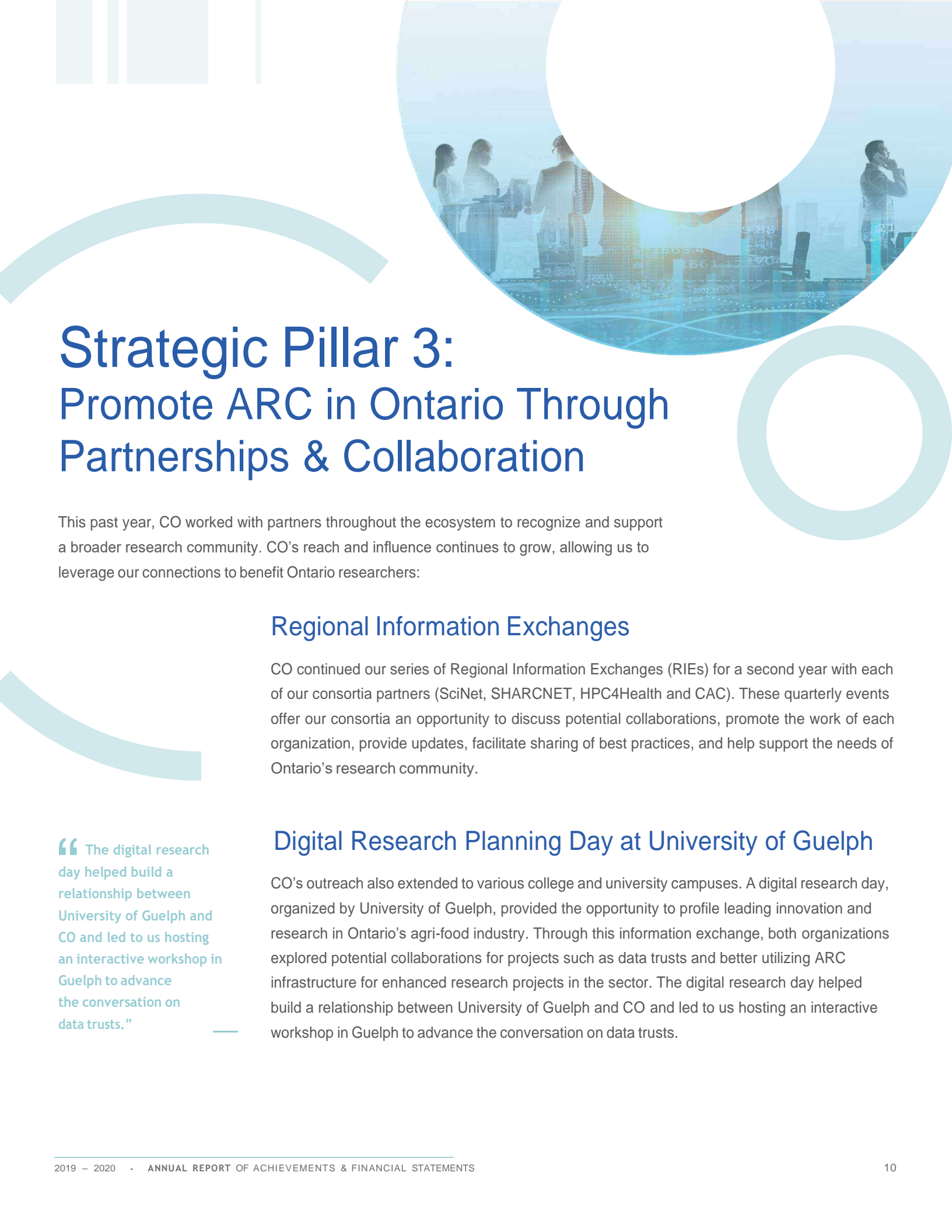# Workshops on Developing and Promoting Ontario's Highly Skilled Talent

The findings from CO's HQP reports resulted in two workshops on developing and promoting Ontario's highly skilled workforce in the technology sector. The interactive workshops were held in Toronto and London and had representation from academia, industry, public and private sector as well as participants from the talent pool itself. Over 75 attendees had the opportunity to engage in informal discussions, raise issues and concerns based on personal experience in their field, and participate in group activities. Consequently, CO published a report, Developing and Promoting Ontario's Highly Qualified Talent in the Technology Sector, that recorded these insights and key questions, such

as what is the ideal definition of highly qualified talent, what barriers Ontario's skilled talent pool is facing, and which skills are missing from the classroom that are necessary in HQP professions.

The report offers holistic and pragmatic strategies for developing a more labour-market ready workforce in Ontario for high-demand and well-paying jobs. Recommendations included upskilling and training the workforce, curriculum changes, increased academia-industry partnerships, and the need for strategies to address equity for underrepresented demographic groups and geographic areas.

Student Placements

CO generated partnerships with a provincial ministry, a large consulting firm, and an international university to educate students on how to tackle policy research topics, digital transformation, and business strategies in technology-focused organizations. This effort facilitated, designed and supported three student placements by CO in 2019 – 2020. A Master of Public Policy candidate worked with the Ministry of Infrastructure on a broadband research project supported by CO's policy team. An Accenture employee and Master of Health Administration candidate conducted a jurisdictional scan of global health resources in comparison to the Health Artificial Intelligence Data Platform (a big data health platform co-led by CO). The National University of Singapore partnered with CO for an engineering student to join our organization to help improve our business practices, KPI reporting and more. Through CO tailored placements, students were prepared with the skills required to lead in a technology-based workforce.

Strategic Pillar 3:
Promote ARC in Ontario Through Partnerships & Collaboration

This past year, CO worked with partners throughout the ecosystem to recognize and support a broader research community. CO's reach and influence continues to grow, allowing us to leverage our connections to benefit Ontario researchers:

Regional Information Exchanges

CO continued our series of Regional Information Exchanges (RIEs) for a second year with each of our consortia partners (SciNet, SHARCNET, HPC4Health and CAC). These quarterly events offer our consortia an opportunity to discuss potential collaborations, promote the work of each organization, provide updates, facilitate sharing of best practices, and help support the needs of Ontario's research community.

> " The digital research day helped build a relationship between University of Guelph and CO and led to us hosting an interactive workshop in Guelph to advance the conversation on data trusts."

Digital Research Planning Day at University of Guelph

CO's outreach also extended to various college and university campuses. A digital research day, organized by University of Guelph, provided the opportunity to profile leading innovation and research in Ontario's agri-food industry. Through this information exchange, both organizations explored potential collaborations for projects such as data trusts and better utilizing ARC infrastructure for enhanced research projects in the sector. The digital research day helped build a relationship between University of Guelph and CO and led to us hosting an interactive workshop in Guelph to advance the conversation on data trusts.

Computational Infrastructure for Astroparticle Physics

CO participated in a panel on compute infrastructure at the McDonald Institute's annual meeting of the Canadian astroparticle physics community in Toronto. The retreat aimed to address topics including how resource architecture, configuration and support are secured for general-purpose facilities and user-specific systems, as well as developing strategies for data archiving. CO participated in a panel focused on computational considerations in response to the creation of NDRIO. We continue to interact with the physics community and track their needs as a significant research group with extensive computational infrastructure needs managed separately from general Compute Canada researchers.

HPC Commercial Cloud Pilot

We explored commercial cloud platforms to support and boost existing ARC infrastructure for researchers as they can provide agile, highly-reliable and scalable infrastructure that features the newest hardware available. In collaboration with SciNet and HPC4Health, we launched a commercial cloud computing pilot with Amazon Web Services (AWS) to assess the feasibility, time-evolution and performance of commercial cloud platforms for ARC applications and HPC systems. The project also explored commercial cloud computing's potential to boost the skill sets of Ontario's researchers through increased access to data centres and hardware. The process involved generating a set of benchmarks, at varying scales, 3-4 times throughout the year to determine runtime and costs for best performance and timely solutions to arrive at the most cost-effective solution. By understanding the cost of undertaking research in the cloud, we can help shape future hardware investment strategies to maximize efficiency and cost-effective use of limited public resources. As a result of the pilot's first phase, CO published a report, Towards a Cloud Strategy for Ontario: Part I.

> By understanding the cost of undertaking research in the cloud, we can help shape future hardware investment strategies to maximize efficiency and cost-effective use of limited public resources.

> " ... explored how smart cities can enable strong decision-making while ensuring the outcomes remain citizen-centric and focused on secure data collection and governance."

Strategic Pillar 4:
Serve as a Credible Policy Voice and Advocate

As a leading voice for ARC in Ontario, we continue to produce reports and lead strategic projects to shape policy going forward. Supporting our partners in emerging innovation-driven spaces such as data trusts, smart cities, cloud computing, and expanded broadband access has led to new opportunities and insights for Ontario's ecosystem, including:

Building Ontario's Next-Generation Smart Cities Series

Smart technologies have provided us with the opportunity to collect and analyze vast volumes of data to create solutions to societal challenges. CO and ORION explored how smart cities can enable strong decision-making while ensuring the outcomes remain citizen-centric and focused on secure data collection and governance. As the final step of the initiative, we published a series of four reports entitled, Building Ontario's Next-Generation Smart Cities through Data Governance. The four reports are available on our website on the following topics: Health Data Safe Haven, Civic Data Trust, Open Architecture, and Fulfilling the Potential of Smart Cities in Ontario's Context. These reports generated discussion around Ontario's readiness for expanded digital governance. CO's collaboration with MaRS in this space helped them earn an honorable mention in FastCompany's World Changing Ideas Awards 2020 in the *Politics and Policy* category.

This series of reports generated clear takeaways that are invaluable when designing and implementing smart cities in Ontario going forward. For example, we concluded that there is no one-size-fits-all approach to governance as a result of our work. Instead, a spectrum of approaches is available based on the unique needs of stakeholders. However, as opposed to suggesting customized solutions in each scenario, we developed a maturity model of options that can be adopted based on the specific parameters of the data collaboration. Participants of our initiatives concluded that Ontario's smart cities sector benefited from CO's collaborative efforts with our stakeholders and information sharing helped create a shared vision for smart cities in Ontario engaging public, private and academic sectors.

Data Trust Workshop Series

Building on findings and recommendations from the CO-ORION led smart cities initiative, CO collaborated with Institute of Clinical and Evaluative Sciences (ICES) and MaRS to host three workshops to explore data trusts and their implications in advancing smart cities. Held in Toronto, Guelph and Ottawa, the workshops convened over 100 participants across Ontario from government, agriculture, policy, law, technology and academia. The Guelph and Ottawa events aimed to consult previously underrepresented groups and geographical locations by expanding to a broader group of stakeholders outside of the Greater Toronto Area. The Guelph event further solidified CO as an expert on data trusts and served as the basis for ongoing discussions on the value of data trusts to facilitate improved data sharing and analytics

Data trust workshop underway

in agri-food. The workshops featured an interactive game designed by MaRS that explores various concepts around data sharing and management in smart cities. Participants experienced the challenges and opportunities of creating a local data trust by role-playing as public, private, academic and government stakeholders. After game-play, participants had the opportunity to hear from national experts in an interactive panel on collective opportunities to proliferate the use of data trusts for data exchange. The insights gathered from these events were compiled into a report, Data Trust Workshop Series: Exploring Data Trusts Through an Interactive Experience, which was shared amongst each organization's network and our partners in the Ontario government.

Broadband Research Project

In July 2019, the Government of Ontario announced Up to Speed: Ontario's Broadband and Cellular Action Plan, committing to finding innovative solutions to ensure people and businesses have access to high-speed internet and cellular services. CO supported a graduate student placement within the Ministry of Infrastructure, to conduct a research project aimed at modelling the impact of internet access, including economic and social factors. A jurisdictional scan of how these factors can potentially be evaluated was conducted. The recommendation was to develop a use case such as digital education, that could provide a cost-benefit analysis of existing investments and leverage existing data within the Ministry, the public sector, and internet service providers. This work identified several barriers that exist in sharing and accessing data between different Ontario Ministries, as well as opportunities for pooling expertise through partnerships. The final report highlighted the economic and educational benefits of enabling broadband programs and infrastructure in rural regions and brought attention to the increasing digital divide in Ontario and ways it can be addressed.

Towards a Cloud Strategy for Ontario

Based on our HPC Commercial Cloud Pilot, CO published Towards a Cloud Strategy for Ontario: Part 1. The report captures findings from the first phase of the pilot and identifies various challenges and opportunities associated with Ontario adopting the use of commercial cloud platforms. EnterpriseTechSuccess named CO as one of Canada's Top 20 Tech Companies in 2020 for our work in cloud computing and featured an op-ed on the project. Additionally, this nationally leading work will be instrumental for NDRIO as they tackle the challenge of increasing access to ARC infrastructure for researchers. As well, the results helped inform CANARIE with its own national infrastructure plans.

Thinking Forward Through the Past: A Brief History of Supercomputing in Canada and its Emerging Future

CO consulted with its network of ARC stakeholders to publish a first of its kind report for Canada that chronicles the history of ARC globally and nationally: Thinking Forward Through the Past: A Brief History of Supercomputing in Canada and its Emerging Future. This report aims to better inform ARC's future based on historic challenges, opportunities, best practices and lessons learned, offering policymakers a tool to make strides in Canada's ARC ecosystem, while avoiding pitfalls. By providing a comprehensive picture of ARC and its components, the report discusses the critical aspects that lead to ARC's advancement. The report's development featured consultation from key stakeholders from Ontario, Canada, and internationally, and is one of our most widely read reports to date.

EnterpriseTechSuccess named CO as one of Canada's **Top 20 Tech Companies** in 2020 for our work in cloud computing and featured an op-ed on the project.

Strategic Pillar 5:
Serve as a Trusted Broker & Catalyst

CO has continued to act as a trusted advisor and relationship builder to advance Ontario's ARC ecosystem. Building trust and serving as a focal point has directly impacted the ARC ecosystem by moving the conversation on novel technologies relevant to the future of ARC. The following events and initiatives were conducted by or with CO to bring together Ontario's research community over the past year:

Ontario ARC Strategy

We interviewed 17 key stakeholders from Ontario's ARC ecosystem to discuss the region's challenges and opportunities in ARC infrastructure and funding, workforce development, data governance and the political environment. The findings were used to formulate the framework for CO's 2021 – 2026 Strategic Renewal to enable a thriving ARC ecosystem with better access to infrastructure, research capabilities, and a globally competitive highly-skilled workforce. The findings were validated at our annual Strategic Retreat when results were shared and discussed with our broader network of stakeholders. These consultations strengthened our focus as a collaborative organization and identified key challenges and opportunities in the ecosystem.

Advance Ontario

In collaboration with SOSCIP and ORION, CO hosted *Advance Ontario*. This two-day conference brought together ARC representatives from throughout Ontario. Over 200 innovators, academics, researchers and policymakers gathered to discuss how we can more effectively connect, compute, and innovate to help shape a better future for Ontario. The keynote presentations by senior thought leaders in the ecosystem and moderated panel discussions explored topics such as collaboration and innovation within the DRI ecosystem. Other topics included next-generation skills, cybersecurity, diversity and digital inclusion in data, smart cities, quantum computing, and other topics critical to the advancement of the DRI ecosystem.

Select Events, Presentations and Panels

CO participated in over thirty events and panel discussions in 2019 – 2020. Active participation has helped further knowledge transfer and translation within CO's network of stakeholders and partners. Here are some of the key events, presentations and panels that CO participated in over the past year:

CANADIAN SECURITY INTELLIGENCE SERVICE CYBERSECURITY INFORMATION SESSION

In partnership with the Canadian Security Intelligence Service (CSIS), CO hosted a cybersecurity education session. The event focused on contemporary cybersecurity issues such as social engineering attacks, and what measures employees can take to protect their sensitive data better. CO staff and consortia members were informed of attacker techniques and preventive measures. This session provided stakeholders with cybersecurity information they would be otherwise unable to access on their own.

CANADIAN SCIENCE POLICY CONFERENCE 2019

The Canadian Science Policy Conference (CSPC) is a yearly conference held in Ottawa. It brings together scientists, entrepreneurs, policymakers, politicians, journalists, students and others from across the country to discuss ideas and mobilize knowledge regarding the present and future of Canadian science, technology, and innovation policy. CO led and participated in a panel on the role of data trusts in smart cities.

INSTITUTE ON GOVERNANCE FUTURE FORUM 2019

The Institute on Governance's (IOG) 2019 Future Forum hosted decision-makers, academics, and industry leaders to address policy issues stemming from new technologies. The conference seeks to affect a paradigm shift among participants and create an environment where solutions can begin to emerge. CO was part of a panel on the digital divide in Canada discussing inclusive innovation and economic development through improved connectivity.

ICCS - CITIZEN FIRST: JOINT COUNCILS (PSSDC & PSCIOC) LEARNING EVENT

The Joint Councils, the Public Sector Chief Information Officer Council (PSCIOC) and the Public Sector Service Delivery Council (PSSDC), held a Learning Event focused on enhancing the efficiency of public service to the Canadian public. CO participated in a distinguished panel that discussed data governance related to smart cities and included representatives from the Office of the Privacy Commissioner of Canada, Standards Council of Canada, and other privacy experts. CO presented learnings from its data trust workshops and series of reports on data governance.

Financial Report

For the period April 1, 2019 to March 31, 2020, which represented the fifth operating year for CO, the Ministry of Colleges and Universities (the "Ministry") provided funding in the amount of $1.58M. There were eligible carry forward funds from the previous year for a total operating budget of $1.72M. All funding was received from the Ministry on schedule. All CO staff positions were in place during 2019 – 2020, and a Senior Manager, Projects and Training was seconded from the ICES to lead workshop initiatives during the year.

A report on CO finances is included in Table 1. CO completed the year with operating expenditures totaling $1,560,104. The amount of $452 will be returned to the Ministry as unspent funds, and $158,000 will be carried forward to next fiscal year.

The commentary on individual line item variances are noted in the Table, with the most significant variances highlighted below:

◉ Salary and benefits expenses reflect the addition of a seconded employee to lead the Data Trust and HQP workshops, as well as a short-term contract to assist with the development of Ontario's ARC strategy. This resulted in the salary and expenses budget being overspent by approximately $105K. This is offset by the savings from the Board and Corporate Secretary function which is managed by permanent CO staff, as well as aggregated savings from other line items.

◉ The budget for conferences, meetings and events was overspent by $93K due to CO's expanded workshop offerings during the year. This is offset by savings from the special studies line item.

◉ The premises category was underspent by $29K as it reflects the costs outlined in the MaRS lease agreement.

◉ The special studies category was underspent by $157K as CO focused on training initiatives during the year.

◉ Professional services expenses were overspent by $51K to support strategic planning efforts and renewal. This is also offset by savings from special studies.

Table 1 – Compute Ontario Financial Variance Report

Table 1 – Compute Ontario Financial Variance Report

Expense Category	Budget 2019 -2020	Actuals 31-Mar-2020	Variance 31-Mar-2020	Comments
Salaries, Wages & Benefits	$1,020,430	$1,125,320	($104,890)	All staff positions in place, Sr. Mgr Projects & Training to lead workshops, contracted employee to assist with Ontario ARC Strategy.
Staff Training	$19,500	$8,737	$10,763	Training expenses as required.
Board & Corporate Secretary	$30,000	$0	$30,000	Function managed by existing CO staff.
Conferences, Meetings & Events	$80,000	$173,211	($93,211)	Conferences, workshops offered, staff attendance at conferences.
Premises	$110,783	$82,261	$28,522	Rent based on MaRS contract.
Special Studies	$202,775	$45,340	$157,435	For additional studies, strategic initiatives, and consortia-funded proposals.
Professional Services	$10,000	$60,675	($50,675)	Meeting facilitation, renewal activities, additional administrative and communications support.
Legal, HR, Procurement	$15,000	$7,333	$7,667	Legal advice for CO as required, recruitment.
Accounting Financial	$0	$0	$0	Western donating backend services as in-kind.
Insurance	$15,000	$4,873	$10,127	CGL, D&O, property insurance.
Audit	$7,500	$12,499	($4,999)	Using Western University's auditor.
IT	$29,612	$29,311	$301	Small hardware, software, phones, mobiles, IT support, cloud services, annual certificates.
Media & Materials	$25,000	$6,099	$18,901	Creative services, media monitoring & advertising, web design & updates.
Office Administration	$14,400	$4,445	$9,955	Supplies, printing, courier, postage.
TOTAL EXPENSES	**$1,580,000**	**$1,560,104**	**$19,896**	
Carry forward	$138,556	$0	$138,556	Eligible c/f from 2018 – 2019.
TOTAL BUDGET	**$1,718,556**	**$1,560,104**	**$158,452**	Eligible c/f from 2019 – 2020 is $158K.

Schedule of Expenditures of

COMPUTE ONTARIO / CALCUL ONTARIO

MINISTRY OF COLLEGES AND UNIVERSITIES FUNDING

And Independent Auditors' Report thereon

Year ended March 31, 2020

INDEPENDENT AUDITORS' REPORT

To the Management of Compute Ontario / Calcul Ontario and the Minister of Colleges and Universities (the "Ministry")

Report on Audit of the Schedule

Opinion

We have audited the accompanying schedule of expenditures of Compute Ontario / Calcul Ontario for the Ministry of Colleges and Universities (formerly the Ministry of Research and Innovation) (the "Ministry") funding for the year ended March 31, 2020 and notes to the schedule, including a summary of significant accounting policies (hereinafter referred to as the "schedule").

In our opinion, the accompanying schedule is prepared, in all material respects, in accordance with the financial reporting provisions in Article 7 of the agreement dated April 1, 2015 and amended February 1, 2019 between Compute Ontario / Calcul Ontario (the "Organization") and the Ministry.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the *"Auditors' Responsibilities for the Audit of the Schedule"* section of our auditors' report.

We are independent of the Organization in accordance with the ethical requirements that are relevant to our audit of the schedule in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

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

Emphasis of Matter – Financial Reporting Framework

We draw attention to Note 2 to the schedule, which describes the applicable financial reporting framework.

The schedule is prepared to assist the Organization to meet the requirements of the funding agreement between Compute Ontario / Calcul Ontario and the Ministry as described in Note 1 to the schedule.

As a result, the schedule may not be suitable for another purpose.

Our opinion is not modified in respect of this matter.

Other Matter – Restriction on Use

Our report is intended solely for the Ministry and the Organization and should not be used by other parties.

Responsibilities of Management and Those Charged with Governance for the Schedule

Management is responsible for the preparation of the schedule in accordance with the financial reporting provisions in the Agreement between the Organization and the Ministry dated April 1, 2015 and amended February 1, 2019, and for such internal control as management determines is necessary to enable the preparation of the schedule that is free from material misstatement, whether due to fraud or error.

Those charged with governance are responsible for overseeing the Organization's financial reporting process.

Auditors' Responsibilities for the Audit of the Schedule

Our objectives are to obtain reasonable assurance about whether the schedule as a whole is free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the schedule.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the schedule, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

  The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit 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 Organization's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

KPMG LLP

Chartered Professional Accountants, Licensed Public Accountants

London, Canada

September 25, 2020

COMPUTE ONTARIO / CALCUL ONTARIO
MINISTRY OF COLLEGES AND UNIVERSITIES FUNDING

Schedule of Expenditures

Year ended March 31, 2020, with comparative information for 2019

	Total 2020	Total 2019
Expenditures:		
Salaries, wages and benefits	$ 1,125,320	$ 1,030,898
Conference, meetings and events	173,211	155,946
Premises	82,261	78,994
Professional services	60,675	11,996
Special studies	45,340	194,339
Information technology	29,311	25,400
Audit	12,499	14,127
Staff training	8,737	19,593
Legal, HR and procurement	7,333	18,403
Media and materials	6,099	31,641
Insurance	4,873	4,873
Office administration	4,445	5,923
Total expenditures	$ 1,560,104	$ 1,592,133

See accompanying notes to the schedule.

Approved on behalf of the Board of Directors:

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Chair, Board of Directors

COMPUTE ONTARIO / CALCUL ONTARIO

MINISTRY OF COLLEGES AND UNIVERSITIES FUNDING

Notes to Schedule of Expenditures

Year ended March 31, 2020

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1. **Project Description:**

   Compute Ontario / Calcul Ontario (the "Organization") signed an agreement dated April 1, 2015 and amended February 1, 2019 with the Ministry of Colleges and Universities (formerly the Ministry of Research and Innovation) to fund the operating costs of the Organization (the "Project").

   Under the agreement, The Ministry of Colleges and Universities (formerly the Ministry of Research and Innovation) (the "Ministry") will provide a maximum of $8,500,000 cash contribution to the Project for the project period, which ends on March 31, 2021. The objective of the Project is to explore the merits of developing a high performance computing and big data strategy for the province.

   The schedule of expenditures of Compute Ontario / Calcul Ontario for the Ministry of Colleges and Universities funding presents the Organization's portion of eligible expenditures incurred for the Project during the reporting period.

2. **Significant accounting policies:**

   (a) Basis of accounting:

   The schedule is prepared in accordance with the basis of accounting prescribed in Schedule F of the Agreement dated April 1, 2015 and amended February 1, 2019 between Compute Ontario / Calcul Ontario and the Ministry.

   The schedule has not been prepared in accordance with the presentation principles or the presentation of all the financial statements and related note disclosures required by Canadian accounting standards for not-for-profit organizations.

   (b) Expenditures:

   Expenditures are eligible under the Project if they were incurred in the period of the Project and are directly related to the completion of the Project.

Governance

CO operates under the oversight of a Board of Directors. Board membership and offices for the 2019 - 2020 fiscal year are listed below:

Sylvain Charbonneau
Secretary

Mark Daley
Chair

Charmaine Dean
Director

Vivek Goel
Director

Warren Keith Helland
Chair Governance & Nominations Committee

Shannon MacDonald
Chair Audit & Resources Committee

Carolyn McGregor AM
Chair Industry Engagement Committee

Dr. Atefeh (Atty) Mashatan
Director

Ranil Sonnadara
Vice Chair

Salim Teja
Director

Susan Ursel
Director

Dereck Whitmell
Director

Advisory Committees

CO would like to acknowledge the expertise, effort and dedication of our advisory committees in helping to shape the work of our organization. A list of advisory members for the 2019 – 2020 fiscal year is listed below:

Scientific & Executive Directors Advisory Committee

W. Richard Peltier
University Professor of Physics, University of Toronto;
Director, Centre for Global Change Science;

Judith Chadwick
Assistant Vice-President, Research Services, University of Toronto

Michael Brundo
Chief Data Scientist, University Health Network;
Professor, Department of Computer Science – University of Toronto

Michael Bauer
Professor, Department of Computer Science – Western University;
Scientific Director, SHARCNET, Western University

Andrew Barker
Director, Institutional Research, University of Waterloo

Kent Novakowski
Associate Vice-Principal (Research) & Professor, Department of Civil Engineering, Queen's University

Carl Virtanen
Senior Director Research, UHN Digital, University Health Network

Technical Advisory Committee

Carl Virtanen
Senior Director Research, UHN Digital,
University Health Network

Daniel Gruner
Chief Technology Officer, SciNet HPC Consortium,
University of Toronto

Jonathan Dursi
Staff Scientist II; Technical Lead, CanDIG Project, University Health Network

John Morton
Director of Technology, SHARCNET, University of Guelph

Chris Macphee
Assistant Director, Centre for Advanced Computing,
Queen's University

Baolai Ge
Lead HPC Consultant, SHARCNET, Western University