

Annual Report

CMC Microsystems Manager of Canada's National Design Network[®] (CNDN)

2020-2021 Milestones

New initiatives in support of globally competitive hardware innovation.

Thank you to the Government of Québec, Ministry of Economy and Innovation for their support.

86 professors and their research teams use the CNDN for the first time.



320 designs submitted to fabrication. Delivered new capabilities through a strategic focus on 5 research platforms in advanced technologies.



Expanded technologies and services for research and innovation:





IoT & Edge AI



Quantum Computing

Coordinated a global response to overcome pandemic challenges and support stranded students access micro and nano technologies and continue research.

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Joint letter from the Chair of the Board & CEO

The 2020-2021 annual report describes the advancements of CMC Microsystems (CMC) and our ecosystem partners.

We are making the world's most advanced technologies accessible to Canadian researchers, industry leaders, and aspiring innovators via Canada's National Design Network (CNDN).

CMC thanks our primary funding partner, the Canada Foundation for Innovation (CFI). By recognizing CNDN as a Major Science Initiative (MSI), we have expanded our reach and are well positioned to support Canadian innovation into the future.

CNDN invested heavily in cloud-based platforms and virtualization prior to the COVID pandemic. As a result, its core design (CAD) and fabrication (FAB) services were delivered remotely, with little interruption. Our experience in delivering training, workshops, and events virtually proved invaluable and we will continue to deliver the knowledge and training Canada needs to excel in the global marketplace. Most importantly, the entire CMC team was able to work in complete safety, remotely. CMC also expanded its offerings to provide support for Quantum software and hardware, and IoT & Edge AI (Internet of Things & Edge Artificial Intelligence). These are areas that not only challenge researchers but have boundless commercial potential and industrial applications. These are strategic choices that will pay huge dividends for Canada. Industrial applications for quantum and IoT & Edge AI are being discovered every day, and CMC is making sure that Canada will have the highly qualified personnel, expertise, and experience necessary to lead in these emerging spaces.

CMC has expanded its services to leverage the existing infrastructure while efficiently operating the facility virtually through the cloud. We have been able to avoid costly expenditures in physical infrastructure while still supporting leading edge technologies. The way we deliver benefits to Canada is increasingly efficient, scalable, and sustainable.

Thanks for taking the time to learn more about CMC.

We are proud to play an important role in Canada's research and innovation ecosystem and are well on our way to take Canada's researchers to the next level.

> IAN ROANE Chair of the Board of Directors, CMC Microsystems

> > GORDON HARLING
> > President and CEO, CMC Microsystems

Technology and Strategic Direction

CMC's 2018-2022 technology roadmap identifies emerging opportunities and ways that we can support them. In the past year, we added strategic focus on Artificial Intelligence & Machine Learning, and Quantum Computing. These are rapidly growing and evolving technology spaces where Canada has an opportunity to be a global leader.

Our Guiding Principle Benefits to Canada

This is how we measure return on investment. Behind every decision we make, we consider how this will benefit Canada. We are committed to providing Canada with a competitive advantage in hypercompetitive, capitalintensive industries that will drive growth and prosperity for all Canadians.



Following extensive stakeholder consultations, we intensified our focus and efforts on 5 foundational technologies.

CMC is recognized for lowering barriers for developing prototypes used for research and in high technology products and services. This advances Canada's digital economy, in which chip technologies are critical: Industry 4.0, autonomous vehicles, big data, Internet of Things (IoT), cyber defence/security, 5G, quantum computing, artificial intelligence (AI), and more.



Microelectronics

The semiconductor industry is heading toward a collaborative and comprehensive "silicon to services" model. This shift will mean that the industry will cover a more integrated product and service offering that spans from data centers to the mobile edge applications.

This model builds on the ideas of Platform as a Service (PaaS), open-sourced hardware, and building silicon from disaggregated, pre-verified chiplets to slash costs and reduce time-to-market for heterogeneous designs.

This shift brings with it significant initial costs and structural barriers that can dissuade some innovators and firms. CMC lower barriers to microelectronics technologies access by reaching out internationally to customers to help make production runs more affordable and frequent for Canadian clients. Our channel partnership with GLOBALFOUNDRIES (GF) is an example of how we are allowing Canadian innovators to compete in this space.

Technology and Strategic Direction (Continued)

Photonics

Photonics technology is widely used in modern technology infrastructure, where it delivers many essential functions ranging from data transmission to sensing. The photonics industry is ripe for widespread integration between different systems and across applications. With increased integration comes the potential for explosive growth.

At CMC, we view photonics as a systems-enabling technology, and are working towards a future where photonic functionality is built into all chips and integrated with technologies such as microelectronics. This shift naturally leads to more complex designs and higher deployment costs. As the photonics sector is set for exponential growth, CMC will continue to break down access barriers so that Canadian researchers are well placed to design leading edge, fully integrated photonics technologies.

Micro-Electro-Mechanical Systems (MEMS)

MEMS growth is fueled by established sectors of the economy such as automotive and consumer goods, and is poised to become critical in advanced manufacturing of medical technologies and diagnostics, machine health, smart buildings, and edge computing.

The highly diversified MEMS market typically requires a unique manufacturing process for each product, resulting in high costs and technology access barriers. The Canadian ecosystem houses two MEMS foundries, and centres for pilot fabrication, packaging, and system development, leveraging our relationships within this rich ecosystem.





New Strategic Technologies

We expanded our research program to focus on emerging technologies where Canada can gain an international competitive advantage.

IoT & Edge AI

We enable critical research in the IoT & Edge AI ecosystem which includes applications like artificial intelligence, machine learning, heterogeneous computing, and 5G networking.

CMC made the strategic decision to invest in IoT & Edge AI to strengthen and develop this sector which is vital for future growth in Canada. These technologies are expanding incredibly quickly, with new applications emerging regularly.

Specifically, in artificial intelligence & machine learning, CMC signed a strategic partnership with Canadian AI software company Deeplite, for research and development on next-generation AI-powered solutions. We also provide access to the world's best available tools such as Cadence, Mentor, Synopsys, and others.



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Technology and Strategic Direction (Continued)

New Strategic Technologies

Quantum

Today's technology applications require intensive computing operations. Combined with massive amounts of data they produce, these applications test the limits of classical computers. Quantum computers, however, can solve problems with a complexity that exceeds the computing capacity of conventional supercomputers, opening new possibilities for applications across different fields including Al and ML, biochemistry, finance, and cybersecurity. Quantum technologies are generally considered one of the greatest disruptive innovation opportunities in the world today.

In Quantum, CMC joined the IBM Quantum Hub, making IBM's most powerful quantum computer available in Canada for the first time.

With Canadian firm Xanadu Quantum Technologies, we launched the Quantum Sandbox, using the power of Quantum to solve complex problems.

"The IBM Quantum Hub at IQ is a tool for both fundamental research and the development of practical applications. We want to build a quantum community of users where academia, private companies and start-ups meet and connect."

- ALEXANDRE BLAIS, L'INSTITUT QUANTIQUE (IQ) SCIENTIFIC DIRECTOR

"Our vision for Canada to become a global leader in quantum computing is shared by our partners at CMC and we're looking forward to working together to support this initiative"

- CHRISTIAN WEEDBROOK, XANADU FOUNDER AND CEO

R&D Project Examples

Microelectronics

- 🗹 Tower-Semi 180 nm image sensor
- ✓ XFAB 180nm high voltage
- Cadence AMS training for Global Foundries 12 nm FINFET
- 🧭 UMS GaN high speed RF

Photonics

- ✓ IBM polymer connector
- 𝒮 GF 45CLO development
- ✓ AMF toolkit design
- ✓ Heterogeneous integration of InP+SiN
- Or Post MEMS processing for photonics
- Photonics tool kit platform & photonics packaging process (in collaboration with Tyndall National Institute)

IoT and Edge AI

- Second Se
- ✓ CORE-V-MCU SOC Platform (OHW)
- ✓ RISC-V Vector Processor
- ✓ RISC-V DNA Sequencing Accelerator
- 🧭 IoT Mote Demonstrator
- ✓ CORE-V-MCU FPGA Platform (OHW)

MEMS

- ✓ Interposer MPW offering
- Graphene integration (Biosensing JFET platform)
- Microfluidics integration (ANFF)
- COVID detection application
- Sampling existing interposers
- ✓ 3D printed microfluidics
- ProtoPak
- 🧭 Silterra pMUT MPW

AI-ML

- Neutrino, AI-driven optimizer
 (in collaboration with Deeplite AI)
- Atlas 800 9000 Al Server deployment
 & Training Server
- 🔗 Atlas 200 AI Developer Kit
- SARVINN: A Barrel RISC-V Neural Network Accelerator

Quantum Computing

- Quantum coding projects:
 4 completed, 11 on-going
- 🧭 Quantum Training of Neural Networks
- Xanadu Quantum Sandbox (3 projects completed)
- Superconducting hardware MPW

Our Board of Directors

Mr. Ian Roane, Chair

Former President and CEO, Micralyne Inc.

Mr. Gord Harling

President and CEO, CMC Microsystems

Dr. Vincent Aimez

Vice-President Partnerships and Knowledge Transfer, Université de Sherbrooke

Dr. Alain Chandonnet

President and Chief Executive Officer, INO

Dr. Charles Despins

Vice-president, Research and Partnerships Professor, Electrical Engineering Department, École de technologie supérieure

Dr. Ruth Rayman

Director General, Advanced Electronics and Photonics, National Research Council Canada

Mr. Stéphane Tremblay

Site Business Development Manager, IBM Canada

Dr. Douglas Colton

Director Emeritus

CMC was glad to welcome the following new members to the Board who bring a wealth of experience from Canadian industry, academia and research. Along with our returning directors, the Board members play an important role in a revitalized CMC that is uniquely positioned to keep Canada at the forefront of innovation.

Dr. Douglas Barlage

Professor, Electrical and Computer Engineering, University of Alberta

Mr. Steve Bonham

Vice-Chair of the Board of Directors Plant Manager, Teledyne Micralyne, Inc.

Ms. Wanda Nyirfa

Vice-President, Communications, Growth Services and Risk, Saskatchewan Research Council (SRC)

Dr. Michel Pioro-Ladrière

Professor – Deputy Director of the Quantum Institute Physics Department, Université de Sherbrooke

Mr. Xerxes Wania

Wania Startup Advisors

Ms. Chunfang Xie Associate Director, Process

Engineering, Microchip

Board Observer

Mr. Marco Blouin

Économie et Innovation Québec

Officers of the Corporation

Ms. Marie Thiele Treasurer Mr. Peter A. Stokes Secretary

Thanks to Our Funders!





Canada Foundation for Innovation (CFI) Major Science Initiatives (MSI) program

Major Research Facility: Canada's National Design Network

CFI Innovation Fund Infrastructure Projects

ADEPT - Advanced Design Leading to Manufacturing in Micro-Nano Technologies

Provincial funding partners:

Government of Alberta

Government of British Columbia

Government of Manitoba

Government of New Brunswick

Government of Newfoundland and Labrador

Government of Nova Scotia

Government of Ontario

Gouvernement du Québec

Government of Canada



Canada's National Design Network

A Canada-wide collaboration between more than 65 universities/ colleges to connect 10,000 academic participants with 1,000 companies to design, make and test micro-nanosystem prototypes.





By the Numbers

Industrially Relevant Research

A strong national network delivering globally competitive, industrially relevant research and innovation.



By the Numbers

Creating & Sharing Knowledge

Consistent growth in training aspiring research leaders and connecting industry with research.



CAD | FAB | LAB

Capability to Keep Tesearchers at the Leading Edge

CAD

High-performance Computer Aided Design tools and environments for successful design from over 20 vendors

- 🔗 **85 CAD tool suites** available via desktop or through CMC Cloud
- 🕢 7,400 users
- 480 user guides, design flows, and training materials
- \bigcirc 30 training courses and events
- 🗹 15 webinars

FAB

Multi-project wafer services, value-added packaging and assembly services and in-house expertise for first time-right prototypes

- **50 technology runs** through **8 foundries worldwide**
- **⊘** 320 designs fabricated
 - 270 fabricated through CMC's global network of industry-scale fabrication foundries
 - 50 developed through Canada's MNT network of 40 university-based labs

LAB

Device validation to system demonstration

- ✓ 680 programmable development systems
- ✓ 80 pieces of test equipment for rent
- 🗹 Online support system with over **2,000 cases closed annually**

Delivering Value to Our Community

Creating and Sharing Knowledge with Our Pan-Canadian Network of Researchers and Entrepreneurs

As our clients largely shifted to working from home, our technical support team responded to unprecedented numbers of queries and requests for help.

- 98% satisfaction with the overall quality of the support
- 97% satisfied with the knowledge of the facility staff
- 96% with the effectiveness of the final resolution



"CMC has a proven record of delivering intricate platforms seamlessly through their cloud infrastructure and developing training programs to support innovation. We're looking forward to working with CMC and their network of researchers and entrepreneurs."

- DAVIS SAWYER, CO-FOUNDER AND CPO, DEEPLITE

New Developments for an Unprecedented Time

COVID-19

No discussion of 2020-2021 is complete without discussing the COVID-19 global pandemic. As the pandemic struck, we remained committed to supporting research and technology development to the best of our ability.

- All CAD tools were available as usual with technical support from CMC personnel.
- We proactively acquired extra software licenses to lower wait times for researchers working from home.
- The CMC Cloud Design Environment worked seamlessly to keep research projects on track.
- Despite some factory closures, our fabrication runs generally proceeded as planned. Our global network of suppliers ensured that shipments of fabricated chips were largely uninterrupted.
- CMC's LAB equipment rental program operated as soon as public health guidelines allowed.

With our partners in the Global MicroNanoTechnologies (Global MNT) group, we piloted a solution for students stranded in their home countries to access the tools and expert advice to continue their research. This global response ensured up-and-coming industry leaders were able to continue their work uninterrupted and in complete safety.

Geared for Entrepreneurs and Start-Ups

To serve our growing community of entrepreneurs and start-ups and accelerate their innovation, CMC launched the **VIE Program** – **the Virtual Incubator Environment**. Start-up companies in Canada now have access to a bundle of design tools and technologies.

The VIE program provides access to state-of-the-art tools for design and simulation at extremely competitive rates — perfectly aligned with CMC's mission of lowering barriers to technology adoption. VIE has proven crucial for entrepreneurs and startups access to the most powerful tools on the market to drive innovation.

With thanks to our valued suppliers for partnering on this initiative.

"CMC is an extremely valuable collaborator to Optiwave. We have built an excellent relationship with CMC to make our tools available to researchers and academics and are excited to support emerging entrepreneurs and start-ups in the photonics industry."

Global Partners

The global industrial supply chain made accessible by CNDN.



"CMC is an extremely valuable collaborator to Coventor. We enthusiastically support CMC's efforts to foster innovation in semiconductor process development and MEMS design automation in Canada by providing Coventor's marketleading products to participating organizations in Canada's National Design Network. Through our collaboration, Coventor will deliver first-class process modeling and MEMS design automation tools to Canada's most advanced technology development organizations."

CMC's strategies focus on a supply chain ecosystem that:

- enables world-class
 industry/academic
 collaboration;
- expands support for industrial
 R&D leading to commercialization of research;
- enables world-class
 industry/academic
 collaboration;
- enhances Canadian
 leadership in
 manufacturing
 in photonics
 and quantum
 technologies; and
- Secures new products and creates jobs in Canada.

International Relationships

Facilitating R&D collaboration through membership in strategically aligned organizations.

- 🕢 AloT
- ✓ AnySilicon
- C2MI
- ✓ CANARIE
- ✓ CATAlliance
- Ø D&R − Design & Reuse
- Service Edited Servic
- ✓ GSA
- Ø ISEQ
- 🗹 Life Sciences Ontario
- 🧭 NanoCanada
- ✓ NanoOntario
- ✓ OpenHardware Group
- ✓ Optonique
- ✓ OPTICA (formerly OSA)
- Ø Photons Canada
- Ø PRIMA Québec
- Ø RISC-V
- SEMI
- SPIE
- **V** TECHNATION

Working with international peers to advance the global potential of micro-nanotechnology.

ANFF Australian National Fabrication Facility
AUSTRALIA

CMP Circuits Multi-Projets **FRANCE**

EUROPRACTICE

BELGIUM, GERMANY, UNITED KINGDOM

IDEC Integrated Circuit Design Education Centre **SOUTH KOREA**

imec Interuniversity Microelectronics Centre **BELGIUM**

STFC Science & Technology Facilities Council **UNITED KINGDOM**

The MOSIS Service UNITED STATES

TSRI Taiwan Semiconductor Research Institute (formally CIC)

TAIWAN

Tyndall National Institute IRELAND

VDEC VLSI Design and Education Center JAPAN

Success Stories

Changing How We Test for COVID-19

Professor Ebrahim Ghafar-Zadeh of York University has always combined biology and engineering in his research on biosensors. He was looking for ways to identify cardiovascular diseases, but as the pandemic struck, his focus shifted to the SARS-CoV-2 virus.

Combining digital imaging with machine learning and artificial intelligence technologies, Ghafar-Zadeh and his team developed a way to identify COVID-19 characteristics in saliva. This simple saliva test costs about \$1 with results in less than two minutes with the help of machine learning and advanced biosensor technology.

CMC helped Prof. Ghafar-Zadeh by providing access to both machine learning and its Electronic Sensor Platform (ESP) to facilitate his research. In addition, CMC has provided Prof. Ghafar-Zadeh with highly qualified researchers through our partnership with Mitacs and the Accelerate research internship program.



"This platform is highly portable and able to reach vulnerable populations across Canada and around the world"

- PROF. EBRAHIM GHAFAR-ZADEH, YORK UNIVERSITY

Pandemic Sparks Game-Changing Approach to Hardware Training

Long before the COVID-19 pandemic hit, University of Notre Dame's Prof. Matthew Morrison was developing a high-level synthesis course.

Morrison faced a significant challenge. The Cadence software tools he needed are expensive, and difficult to run at the best of times. As an added complexity, with the COVID-19 pandemic, students would now have to access those resources off-campus.

Cadence connected Morrison with CMC to find a solution.

With faculty scrambling to adapt their courses to remote learning, Morrison had expert technical guidance. "For us, the course transitioned quite smoothly. We were able to get started with everything immediately."

Working remotely, students were able to complete their final project, developing an artificial intelligence network for pattern and image recognition — an ambitious project only made possible because of the novel cloud solution developed by CMC, Cadence, and Morrison.

Morrison also had ambitions to provide a summer school design program for students globally as part of the Design Automation Conference. CMC was able to provision over 200 students from 15 countries with the state-of-the-art design tools from Cadence Design Automation to complete their 3 week course using globally distributed compute services from Amazon Web Services. "It wouldn't have been possible without CMC. They set up the infrastructure and provided tech support throughout the process."

– PROF. MATTHEW MORRISON, UNIVERSITY OF NOTRE DAME



A Platinum-Powered Boost for Fuel Cells

Hydrogen fuel cells hold promise for commercially viable, zero-emission electric vehicles. Proton exchange membrane fuel cells (PEMFCs) are the technology of choice to reach this goal, but complexity and cost are important barriers to widespread adoption.

Much of the high cost is that of the material – platinum – itself, and much of it is wasted using conventional manufacturing processes. Dr. Byron Gates and Dr. Michael Paul of Simon Fraser University (SFU) turned to electroplating, a long-established industrial process, to deposit platinum right where it needs to be while doubling efficiency.

Their ground-breaking research was performed with industry in mind and led to much interest from commercial partners.

"CMC's support through their micro-nanotechnology (MNT) program and MNT Award gave us access to training and a wide range of tools such as a cleanroom, characterization facilities, and testing facilities throughout the study. The entire workflow of fabrication, characterization, and testing was made possible under one roof at 4D LABS at SFU. We would not have been able to access these state-of-the-art facilities without CMC support."



Photo: Courtesy of Dr. Michael Paul (pictured)

Breaking the Ice with Microwave Sensors

Sophisticated sensors have become embedded in virtually every aspect of our daily environment. Yet today, airplane pilots and wind turbine technicians still largely rely on visual inspection to assess ice buildup, a potentially catastrophic condition.

Prof. Mohammad Zarifi, Assistant Professor in Electrical Engineering at the University of British Columbia's (UBC) School of Engineering had already worked with microwave sensors for the oil and gas industry and wondered whether these inexpensive sensing technologies could offer solutions to this cold-weather problem and enhance safety for all.

This work has generated highly cited publications and at least three patents and attracted the interest of many industrial partners, including the Department of National Defense. Commercial partners are already testing his sensors on wind turbines and drones. "CMC facilitates my students' learning and makes them competitive in the engineering world. CMC makes a huge difference. They fuel my research."

– PROF. MOHAMMAD ZARIFI, UNIVERSITY OF BRITISH COLUMBIA



Photo: Courtesy of Prof. Mohammad Zarifi



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Photo: Courtesy of Dr. Lukas Chrostowski

"I'm extremely grateful for CMC and professors across Canada who help deliver the program. It's been wonderful to work together on something that has such a large impact."

– PROF. LUKAS CHROSTOWSKI, UBC

How Student Training Drove Canada's Success in Silicon Photonics

Silicon photonics innovation in Canada has its roots in a hands-on learning opportunity pioneered more than a decade ago by CMC Microsystems and a young professor at the University of British Columbia.

In 2008, silicon photonics was in its infancy and Canadian researchers were struggling to find training materials and technology for students. Dr. Lukas Chrostowski took a chance, adding a photonics fabrication component to his laser course.

Within weeks the world's first national, graduate-level course for designing, prototyping and testing nanophotonic integrated circuits was created. Later that year, with the help of CMC and IMEC, Europe's largest independent research centre in nanoelectronics and nanotechnology, nearly a dozen students saw their designs transformed into real chips.

A year later, the course attracted its first industrial client, TeraXion, and as a result of that learning, the Québec-based company was able to complete crucial R&D on a new product within a year, at considerable timeand cost-savings.

Advancing Nanopore Research into the Mainstream

What happens if a research field is relatively new, and effective tools and methods haven't yet been developed?

One such promising field is nanopore sensing, which uses tiny holes in thin membranes to capture single biomolecules — such as in a strand of DNA — and translate information about those molecules into electrical signals. It gives researchers unprecedented insights into the identity and behavior of the tiny molecules that make up life. However, high costs and exotic materials have been major barriers for this technology.

Enter Dr. Kyle Briggs of the University of Ottawa, who has been exploring the challenges of nanopore fabrication since his undergraduate days. His work has yielded a novel controlled breakdown method for making solid-state nanopores, and a small tool for producing them quickly, simply, and inexpensively with off-the-shelf materials.

This technique is rapidly becoming the gold standard for solid-state nanopore fabrication. In addition, Briggs has formed a start-up company, Northern Nanopore Instruments.



Photo: Courtesy of Dr. Kyle Briggs

Dr. Briggs was Awarded the Douglas R. Colton Medal for Research Excellence for this Initiative

Established in 1994 in honour of the founding president of CMC Microsystems, this award recognizes substantive microsystems or nanotechnology contributions. "From day zero, CMC helped me make connections that could be very valuable as we grow. They're going to play a crucial part in commercially enabling this technology."

– DR. KYLE BRIGGS



Celebrating Innovation

TEXPO 2020

Graduate student competition recognizing novel research with industrial relevance.

Congratulations to our award winners!

Brian L. Barge Microsystems Integration Award

Laurent Chiasson-Poirier Mathieu Bergeron Guillaume Dion

Université de Sherbrooke Supervisor: Dr. Julien Sylvestre Integrating processing and sensing in MEMS

for biomechanical analysis
Sponsored by: CMC Microsystems

Industrial Collaboration Award

Mahdi Behdani

University of Alberta Supervisor: Dr. Rashid Mirzavand A Miniaturized Portable Over-the-Air Measurement System for Characterization of 5G Integrated Communication Systems Sponsored by: COMSOL

Excellence in Nanofabrication Award

Mahyar Ghavami Mohammad Maadi

University of Alberta Supervisor: Dr. Roger Zemp Fabrication of Novel Realistic Capacitive Micromachined Ultrasonic Transducer (CMUT) Arrays for Medical Imaging and Therapeutic Applications Sponsored by: Raith America, Inc.

Micro-Nanosystems Design Award

Rahul Gulve

University of Toronto Supervisor: Dr. Roman Genov Energy-efficient Coded-Exposure-Pixel (CEP) Cameras for Accurate Computational Imaging without Motion Artifacts Sponsored by: GLOBALFOUNDRIES

Virtual Campus Tour _____

As the global pandemic hampered travel, CMC undertook an extensive series of virtual roundtable meetings with **35 universities and colleges**.

Despite the pandemic, it was essential for CMC to continue exchanges with universities and colleges. We heard all about research developments across the country and found ways for us to accelerate innovation even as lab and campus activity slowed dramatically.

Financial Summary

CMC delivers on its mission through the support of several financial stakeholders. In 2020-21, total revenues of \$12.9 million came from a variety of sources including federal and provincial government grants, user fees, industrial sponsorship, contract management services, and R&D consulting. The most significant source continues to be CFI's Major Sciences Initiatives (MSI) program. New funding from the Province of Québec and increased fabrication fees resulted in significant revenue growth compared to the prior year.

Total expenditures of \$13.2 million are significantly higher than the previous period as CMC expanded fabrication services and R&D activity. With government funding secured and a growing base of other revenues activity increased across the CAD, FAB, and LAB business units.

Statement of Financial Position as at March 31, 2021

Assets	2021	2020
Current Assets	8,718,970	7,328,253
Long-term Assets	321,677	597,217
	\$9,040,647	\$7,925,470
Liabilities & Net Assets	2021	2020
Liabilities & Net Assets Current Liabilities	2021 4,266,903	2020 2,838,163
Liabilities & Net Assets Current Liabilities Net Assets	2021 4,266,903 4,773,744	2020 2,838,163 5,087307

Statement of Revenue and Expenditure for Year Ended March 31, 2021

Operations	2021	2020
Revenues	12,910,019	10,234,432
Expenditures	13,223,582	10,932,439
	(\$313,563)	(\$698,007)



