



MiQro Innovation
Collaborative Centre

HIGHLIGHTS REPORT 2022 | 2023

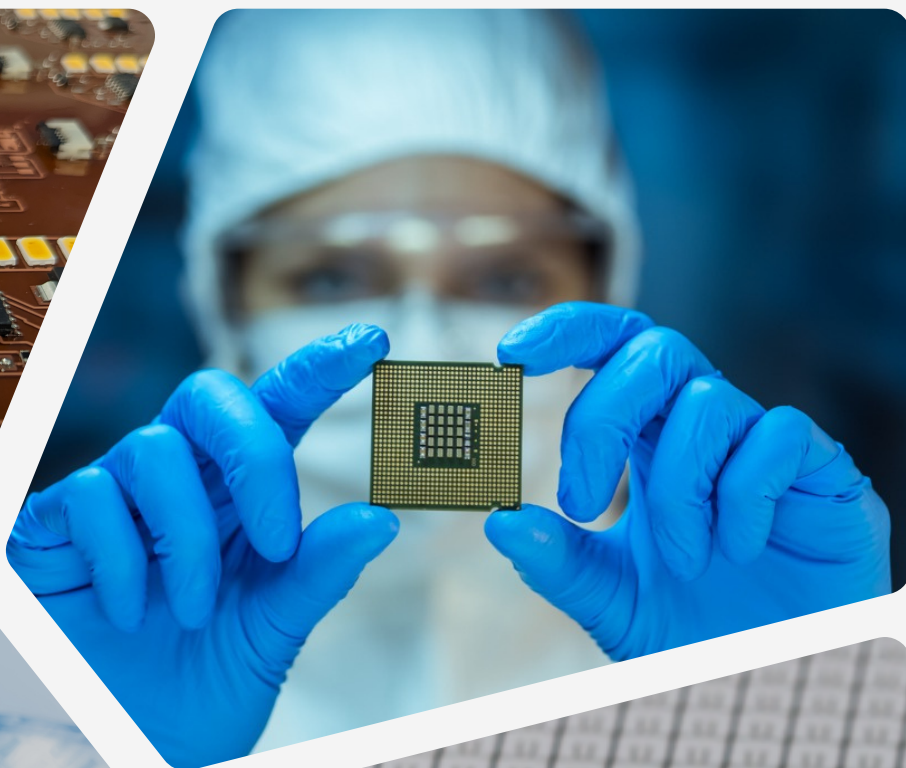
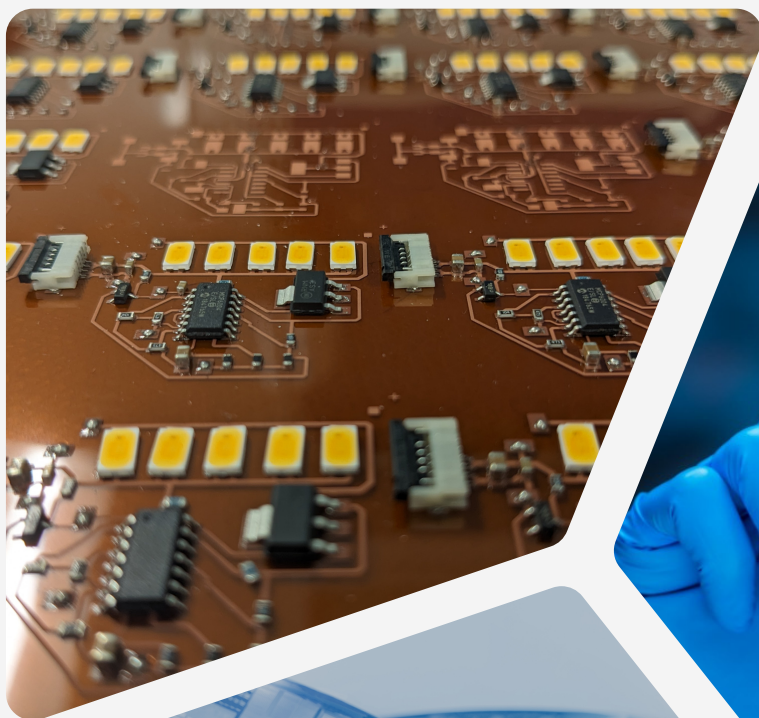
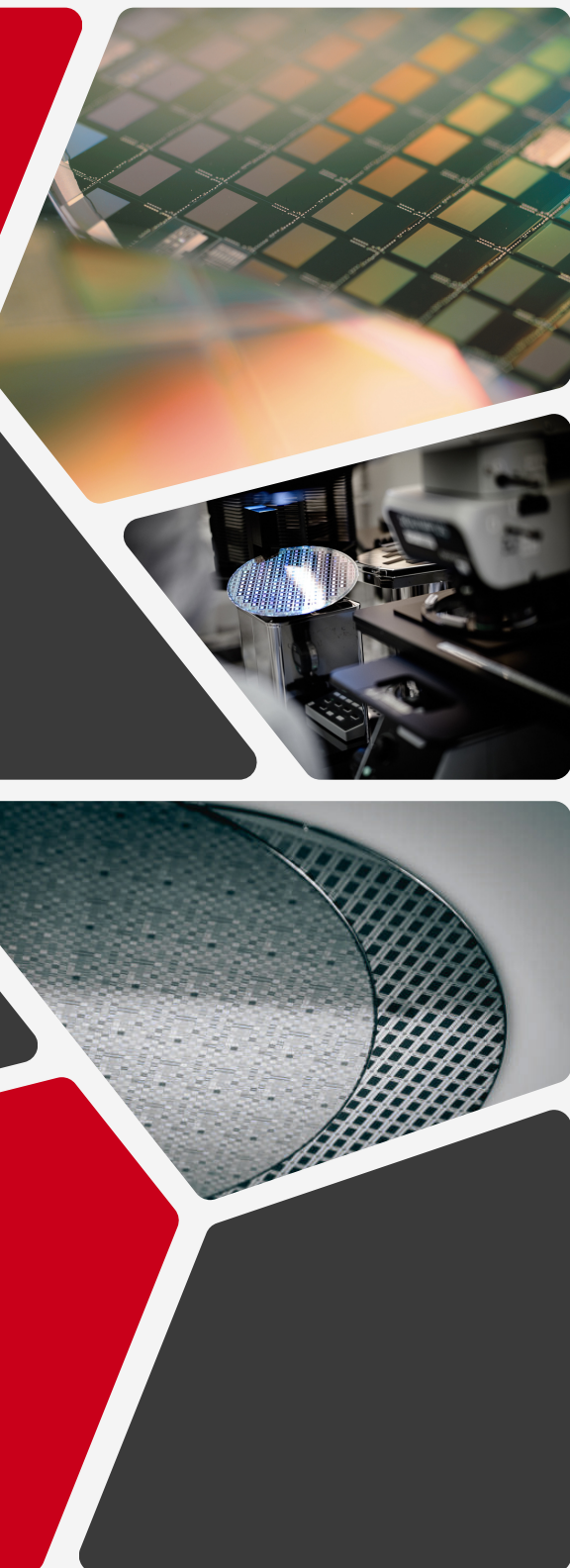


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Message from the Chairman of the Board



My role as Chairman of the Board allows me a privileged overview of the many achievements and ambitious projects underway at C2MI. Be they technological or organizational, I have witnessed the extent to which the Centre has rapidly gained a solid reputation in an extremely targeted sector of the economy.

The high standards of all the activities taking place within the ecosystem of Bromont's digital technology innovation zone are astonishing! Whether it's the research and development that takes place at C2MI; the microsystems manufacturing and semiconductor assembly that takes place within the industrial ecosystem; or the close links with educational institutions to develop programs tailored to the very specific needs of our industry, everything is perfectly in

place to empower innovations to truly make a difference in our daily lives.

This year, as we celebrated the 10th anniversary of the C2MI's inauguration, I was able to witness first-hand how the C2MI has become a gathering hub where research, scientific knowledge, industrial know-how, entrepreneurial audacity, and world-class technological capabilities all converge to create a place where the boundaries of innovation are constantly being challenged.

The C2MI model is unmatched in many ways, and I'm delighted to be able to count on an experienced, rigorous, and ambitious Board of Directors to support the many projects and to diligently work alongside the C2MI management team. Finally, I'd like to thank the entire C2MI team for their commitment, hard work, and boldness, which ensure the ongoing success of our outstanding organization.

And my profound gratitude to our customers and partners, who always inspire us to excel!

Claude Jean



Message from the Chief Executive Officer



My first year at the helm of C2MI has fulfilled all my expectations! Thrilling and stimulating challenges that fuelled my eagerness to work alongside a team of outstanding and audacious people.

This first year was also one of celebrations! C2MI was celebrating its 10th year of contribution to the fascinating world of digital technology innovations. For a number of our employees who joined the organization more recently, this milestone was a great occasion to acquaint themselves with C2MI's amazing history.

As part of the celebrations surrounding the Centre's 10th anniversary, we hosted an open house enabling our employees and their entourage to explore the many aspects of the centre's activities. We also dedicated an evening to this milestone where we recognized the outstanding achievements of our founders and contributors.

This past year has been a rich one in terms of projects! The announcement of a \$17 million expansion of our state-of-the-art cleanrooms (Phase I), the launch of our first C2MI Research Chair, the elaboration of a decarbonization strategy, and a new program to support Eco responsible projects, the launch of an Attestation d'Études Collégiales (AEC) designed in partnership with the Cégep de Granby and industrial leaders to provide a skilled and trained workforce in line with the specific needs of our industry. We have also fostered synergy both upstream and downstream of our activities by contributing to numerous events promoting the importance of science; the value of women in science; the key role of research and collaboration through a multitude of presentations and events to promote our unique model. To wrap up our 10th anniversary, we were awarded the Gold Award in the Excellence, Innovation and Wellness category by Excellence Canada. This honour acknowledges the significance of all the achievements of the past ten years, in terms of governance, leadership, strategies, employee mobility and well-being, which we proudly shared with the entire team.

I particularly like Charles Darwin's quote: « In the long history of mankind those who have learned to collaborate and improvise most effectively have prevailed. » I like to think that this quote reflects the clear advantage of C2MI's successful business model and explains how we've come so far in just 10 years!

I'd like to take this opportunity to express my thanks to all those who have been contributing to C2MI's ongoing success: our employees, our partners, our customers, and suppliers, as well as the directors who serve on our Board. The combined talents of each and every one of you adds up to our success!

Marie-Josée Turgeon

C2MI celebrates 10 years of innovation

C2MI proudly celebrates 10 years of collaboration, innovation, and excellence.

July 31, 2022 marked the 10th anniversary of the centre's inauguration. Numerous activities have been organized over the last months to celebrate our 10 years of success!

These events gave us the opportunity to recognize those who, in one way or another, have contributed and continue to contribute to making our center a unique organization whose reputation and impact continue to grow.



Open House Day

A unique opportunity to explore and discover our innovative environment!

Our employees, their families and friends had the privilege of exploring the different facets of our research center dedicated to the world of the infinitely small. They were able to wander through the various research areas, where kiosks and workshops awaited them. The exercise enabled them to familiarize themselves with the work of our scientists and employees, who contribute daily to the success of the organization and to the world of innovation. Fun and discoveries to satisfy every type of curiosity!



A colorful evening of recognition

Know where you come from, so you know where you're going!

We took the opportunity of our 10th anniversary to highlight the exceptional contribution which C2MI has benefited during a cocktail reception. These privileged moments enabled us to recognize the immeasurable contribution of the founders and contributors who have participated in the Centre's implementation. The evening was also an opportunity to thank our employees, who give our values their full meaning.



Roots and wings

Throughout this commemorative year, a number of activities were organized to mark C2MI's 10th anniversary, starting with the traditional birthday cake shared with all of our employees and partners. We began the first stage of the implementation of the “Cercle des Collaborateurs”, with a tree planting activity with our employees, where 200 trees were added and will be growing along this future path.

As part of the 10-year recognition evening, we also marked the retirement of C2MI's first CEO, Normand Bourbonnais. C2MI's founders and contributors were able to honour him with a tribute have measured up to his commitment.



Among the best in Canada

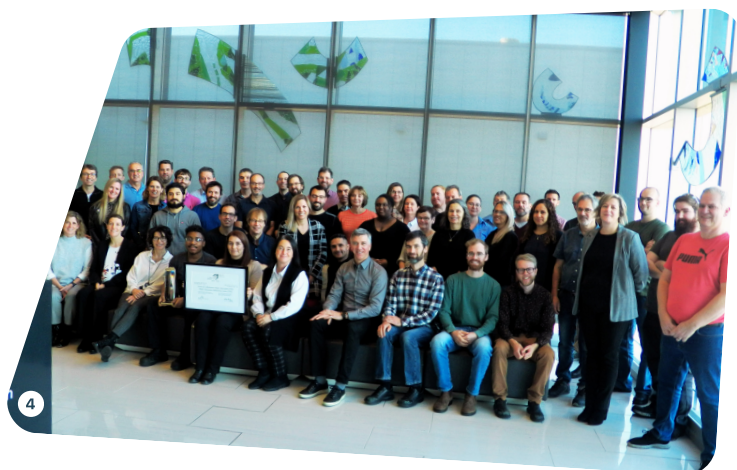
Canada Awards for Excellence

C2MI is among Canada's organizations of excellence

In November 2022, we proudly accepted the GOLD award in the Excellence, Innovation, and Wellness category of the prestigious Excellence Canada Awards.

This award highlighted the results of all the actions we have put in place in terms of governance, leadership, and strategy.

This recognition is of genuine significance and confirms the success that lies behind all of the efforts deployed.



1. Marie-Josée Turgeon, President-CEO and Maryse Demers, Director, Corporate Affairs and Communications (C2MI) 2. The moderator Madame Erin Davis.
3. M. Allan Ebedes, President and CEO of Excellence Canada, Maryse Demers, Marie-Josée Turgeon (C2MI) and Mrs Maysa Habelrih, CEO Mouvement québécois de la qualité. 4. C2MI team.

C2MI is on the rise



On June 22, 2022, the Quebec government announced \$17 million in financial assistance to the Université de Sherbrooke to support the first phase of a C2MI expansion project.

The expansion project, covering more than 3000 m² will enhance collaborative research capabilities and promote the design of components required for the manufacture of quantum computers and power electronics. It will also enable us to target new markets in the microelectromechanical systems (MEMS) sector.

C2MI's infrastructure and equipment enable to carry out large-scale projects ranging from the development of original microfabrication processes to device characterization and technology transfer to industry, bridging the gap between research activities and product commercialization. C2MI's scientific expertise supports and accompanies entrepreneurs creating new technologies, bringing research projects to fruition for the benefit of society as a whole. This investment ensures that C2MI will continue to be the driving force behind a multitude of promising innovations, reinforcing the position of Quebec and Canada as leaders in the development of digital technologies.

In addition, the expansion will provide students with an experimental learning environment in close collaboration with the private industrial sector. Indeed, every year, over 100 students collaborate on industrial research projects, developing into a highly qualified workforce to meet the recruitment needs for cutting-edge talent for the industries in the highly specialized microelectronics manufacturing sector.



Normand Bourbonnais, CEO Technum Québec, Marie-Josée Turgeon, CEO C2MI, Louis Villeneuve, Mayor of Bromont, Marie-Chantal Chassé, Parliamentary Assistant to the Minister of the Economy and Innovation, and Pierre Fitzgibbon, Minister of the Economy and Innovation.

Innovation in many ways

A training program developed in partnership with Cégep de Granby

C2MI, in partnership with Teledyne DALSA, IBM Canada, and East-West Québec, has collaborated with Cégep de Granby (college) to set up a program of study leading to an Attestation d'Études Collégiales (AEC) in maintenance, automation and control (MAC).

This program aims to develop the skills of future technicians who will contribute to the success of high-tech manufacturing companies, thanks to their unique skills in the maintenance of scientific equipment.

These future graduates will be able to improve their skills by taking part in practical on-the-job training, either at C2MI or other companies within our ecosystem.



C2MI Research Chair

The first C2MI Research Chair in Microfabrication and Integration was launched in October.

C2MI is Canada's largest industrial research and development centre for components essential to digital technologies and contributes on an annual basis to the realization of hundreds of innovative projects that are shaping the world. It helps improving the quality of many facets of people's lives by integrating new tools, instruments, and applications. The Chair will consolidate this mission.

In terms of technology, it will enable the development of technologies upstream of industrial needs, accelerate the commercialization of innovations, and thus strengthen our role as a multiplier of innovation in digital technologies. In terms of training, it will offer unique opportunities to train the next generation of engineers in order to meet industry's needs by ensuring a highly qualified and specialized scientific and professional talent pool.



Seizing opportunities

Leading player in the North American semiconductor supply chain

During the North American Leaders Summit on January 10, 2023, the leaders of Canada, the U.S., and Mexico spoke of the importance of strengthening the North American semiconductor supply chain and gave each other specific mandates to ensure complementarity in the investments made in each country. In March 2023, during U.S. President Joe Biden's visit to Parliament Hill in Ottawa, Canada and the U.S. agreed to encourage investments aimed at ensuring the security and resilience of semiconductor supply chains, emphasizing the complementarity of activities currently carried out in both countries, while creating jobs on both sides of the border. They announced that the two countries will promote the creation of a cross-border corridor to foster trade and technology exchanges between the two countries, starting with Canada, which will make significant investments under a Memorandum of Understanding with IBM to acquire new packaging capacity and upgrade existing capacity at its Bromont facility. As the sole advanced packaging plant in North America, IBM Bromont will invest in, and support the North American semiconductor supply chain.

The follow-up to this historic meeting of the leaders of Canada, United States and Mexico took place in Washington in the Spring 2023, where delegations from the business and research communities of each country met to agree on the broad outlines of each country's responsibilities in the North American semiconductor supply chain. It is clear that each country has an important role to play in making the supply chain resilient. The United States is concentrating on projects requiring large amounts of capital, and the CHIPS and Science Act has been put forward to this end. Mexico will concentrate on commercial activities that are more labor-intensive, and Canada will play a major role in research and development activities, as well as in the manufacturing and packaging of components complementary to U.S. semiconductors production, i.e., advanced packaging, the manufacturing of compound semiconductor products such as lasers, and the fabrication of MEMS sensors, already being Canadian strengths.

It goes without saying that C2MI, is placed at the heart of these major priority activities for Canada, i.e., advanced packaging and the manufacturing of sensors and other MEMS, will be able to play an important role in this historic alignment between the three countries.



From left to right : Pierre Cossette, Wendy Therrien, Claude Jean, Marie-Josée Turgeon, Jim Witham, Jamie Thomas, Stéphane Tremblay, Kathleen Kingscott.

At the heart of an innovative ecosystem

Presenting the best of Quebec's artificial intelligence innovation ecosystem, the Innovation Quebec book which brings together over 200 Quebec companies and organizations contributing to positioning Quebec as a world-renowned innovative ecosystem, has made way to C2MI for a second consecutive year.

The perfect opportunity to introduce C2MI to all those working in the field of innovation.



INNOVATION QUÉBEC

C2MI

CENTRE DE COLLABORATION MIQRO INNOVATION (C2MI) LE PLUS GRAND CENTRE DE RECHERCHE ET DÉVELOPPEMENT EN SYSTÈMES ÉLECTRONIQUES AU CANADA / MIQRO INNOVATION COLLABORATIVE CENTRE (C2MI) THE LARGEST ELECTRONIC SYSTEMS RESEARCH AND DEVELOPMENT CENTRE IN CANADA



ON FABRIQUE LE VISAGE NUMÉRIQUE DU QUÉBEC DEPUIS 10 ANS!
Né d'une collaboration entre l'Université de Sherbrooke, Teledyne DALSA et IBM Canada, inauguré en juillet 2012, le Centre de Collaboration MiQro Innovation est le plus important centre de recherche de classe mondiale dans le domaine de la microélectronique au Canada.

WE'VE BEEN MAKING THE DIGITAL SIDE OF QUEBEC FOR 10 YEARS!
Born from a collaboration between the Université de Sherbrooke, Teledyne DALSA, and IBM Canada, inaugurated in July 2012, the MiQro Innovation Collaborative Centre is the largest world-class microelectronics research centre in Canada.

LE RÔLE CLÉ DE LA RECHERCHE ET DE LA FORMATION DE LA MAIN D'ŒUVRE AXÉES SUR LES BESOINS DU MARCHÉ
La recherche et le développement simulés sur des équipements industriels permettent de déjouer la vallée de la mort, élément critique assurant un plus grand succès aux technologies numériques dans un monde qui évolue à une vitesse phénoménale! Combiné avec des projets collaboratifs entre universités et industriels, cette synergie présente une recette gagnante pour amener rapidement des innovations sur le marché tout en formant la main d'œuvre de demain. Voilà l'environnement unique qu'offre le C2MI : la possibilité de fusionner le savoir académique, les connaissances techniques et le savoir-faire industriel pour accélérer la commercialisation des produits d'ici tout en fournissant une base exceptionnelle de connaissances industrielles et technologiques à ceux qui y participent. Que ce soit en fabrication de microsystèmes électromécaniques (MEMS), en assemblage électrique et optique des semi-conducteurs ou en électronique imprimable et assemblage à la carte, le C2MI constitue un arrêt incontournable pour toute compagnie désirant développer un produit ou un procédé en microélectronique.

THE KEY ROLE OF MARKET-DRIVEN RESEARCH AND HIGH QUALITY TRAINING
Simulated research and development on industrial equipment helps to avoid the valley of death, a critical element ensuring greater success for digital technologies in a world that is evolving at a phenomenal speed! Combined with collaborative projects between universities and industry, this synergy is a winning recipe for bringing innovations to market quickly while training the workforce of tomorrow. This is the unique environment offered by the C2MI: the possibility of merging academic knowledge, technical knowledge, and industrial know-how to accelerate the commercialization of our products while providing an exceptional base of industrial and technological knowledge to those who participate. Whether it is in microelectromechanical systems (MEMS) manufacturing, electrical and optical semiconductor assembly, or printable electronics and custom assembly, the C2MI is an indispensable stop for any company wishing to develop a microelectronics product or process.



C2MI in numbers¹

2022 | 2023



Investments

26,1M\$

In capital investments
by the members

94,4M\$

Invested in R&D



Patents

57

Patents and industrial
secrets obtained

31

Pending patents



Projects

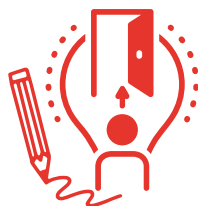
33

Industry - university
collaboration projects worth
36,4M\$

121

Industrial projects

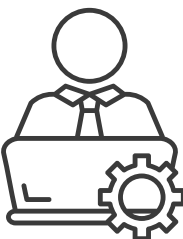
New business opportunities



310

New products
addressed

Related jobs



2232

Jobs related to
new products
development

38

Professors associated with
industry - university projects

119

HQP² industry trained



¹ Data April 1st 2022, to March 31, 2023

² Highly qualified personnel

Economic benefits



1879

new products associated
with more than

16 831 jobs
person-year



363

intellectual
property agreements



492

patents and industrial
secrets obtained



285M\$

in capital investments
by the members



630M\$

invested in R&D



More than **1100** HQP²
industry trained



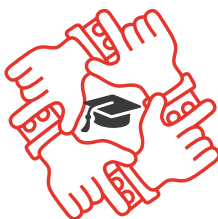
838

innovative
industrial projects



1850

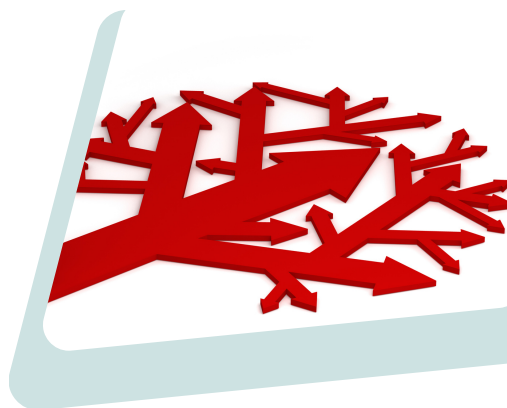
new business
opportunities for our
members



More than

253

industry - university
collaboration projects
worth **158M\$**



¹ Data from November 2010 to March 2023

² Highly qualified personnel

Projet stratégique mobilisateur

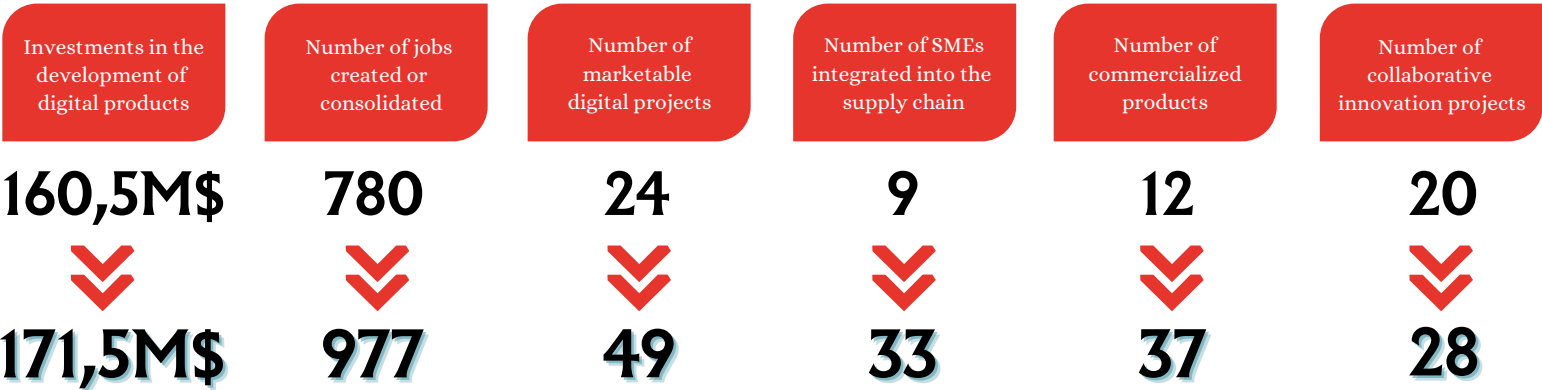
The **projet stratégique mobilisateur (PSM)** was launched in March 2019 through a grant from the Ministère de l'Économie et de l'Innovation in the amount of \$26.75 million to the C2MI in support of investment and innovation projects, with expected economic benefits estimated to reach \$160.5 million. The projects supported all shared a common goal: to accelerate the commercialization of Quebec-based products.

The program as originally defined had to be extended by one year to cope with the pandemic's impacts, which included company closures, remote work, and labour shortages. However, the partners are unanimous that this program has enabled them to complete their development projects much more quickly than if they had to finance them individually, using their own resources exclusively. The final results strongly endorse their views.



PROJECT OBJECTIVES VERSUS RESULTS

At the end of the program, the following economic objectives were established as significant measures of success for the **projet stratégique mobilisateur (PSM)**. We are proud of these outstanding results, which have far exceeded all expectations.



Moreover, the projects carried out under the PSM have not only ensured digital technological advances for Quebec manufacturers, they have contributed to the growth of our economic wealth, notably by generating the following added benefits:



21

Business opportunities generated within the existing supply chain



12

Research centers put to contribution



5%

of the \$ invested in Quebec SMEs



18

Companies participating in the program



11%

of the \$ invested in Quebec research centers

Events

2022

Hereunder are the events in which we took part on regional, national, and international levels. These events enable us to raise C2MI's renown, showcase our cutting-edge capabilities and expertise, and grow our ecosystem.



- 12 Lunchtime Job Discovery at Cégep de Granby
- 20 Presentation to Secondary 4 and 5 students at Collège Jean de la Mennais
- 21 Industrial visit to C2MI organized by ISEQ
- 26-27 MEMS and Sensors Technical Congress
- 26-29 Laser World of Photonics à Munich, Allemagne



- 17 CPES 2022 - Conference on printable, flexible and hybrid electronics
- 18 MEMS World Summit
- 24-26 Photonics North Conference
- 29 Hannover Fair, Germany
- 31 ECTC (Electronics Components and Technology Conference)



- JUNE
- 16 COPL Annual Day at Concordia University, Montreal
- 19-22 IEEE International Newcas Conference, Quebec City
- 28-29 Angel Tech Conference, Brussels, Belgium
- JULY
- 12-14 Flex Conference & Exhibition at Semicon West 2022



- AUGUST
- 16 Workshop at LAB2FAB
- SEPT
- 13 Eptech - Canada's national electronics trade show
- 25-27 Participation in the LAB2FAB event in British Columbia
- 27 Participation at Polytechnique Montréal Career Days



- 1st Women in Engineering Conference at Université de Sherbrooke
- 11 Meeting of Electrical Engineering Automation and Control Studies, Cégep de Victoriaville
- 11-12 IPC Advanced packaging Symposium Show
- 18 Lunchtime Job Discovery at Cégep de Granby



- 24 Salon MPA, Mouvement québécois de la qualité in Montréal

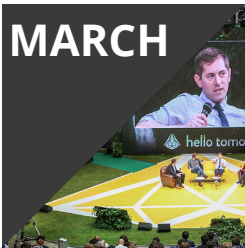
Events | 2023



5-8	CES - Consumer Electronics Show - Las Vegas
12	Engineering physics students gathering at Université de Laval, Quebec City
26	Meeting with engineering physics students from Polytechnique Montréal
28	SPIE Photonics West at San Francisco
31	Cégep de Granby electrical engineering students workshop



8	Career Day at Cégep de Victoriaville
16	Career Day at Collège Ahuntsic in Montreal
22	Tour and discussion with engineering students from Polytechnique Montreal



7-9	OFC 2023 Conference and exhibition
9-10	Participation in the Hello Tomorrow deeptech conference in Paris



Governance

Since its inception, C2MI has been able to rely on a cohort of dedicated directors who, through their experience and expertise, have played a critical role in the organization's success. The year 2022-2023 marked an interesting milestone, as after a parity representation management team, a first parity representation Board of Directors was elected. We are grateful to count on a high-level experience and expertise Board.

Board of Directors 2022-2023

Officers



Claude
Jean
President



Stéphane
Tremblay
Vice-President



Vincent
Aimez
Secretary



Yves
Lemoyne
Treasurer

Directors



François
Cordeau



Jennifer
Doyle



Nathalie
Fauchoux



Sébastien
Michel



Valérie
Oberson



Alizée
Savaria



Geneviève
Tanguay



Geneviève
Vigneault



Martial
Vincent



Joanne
Wong

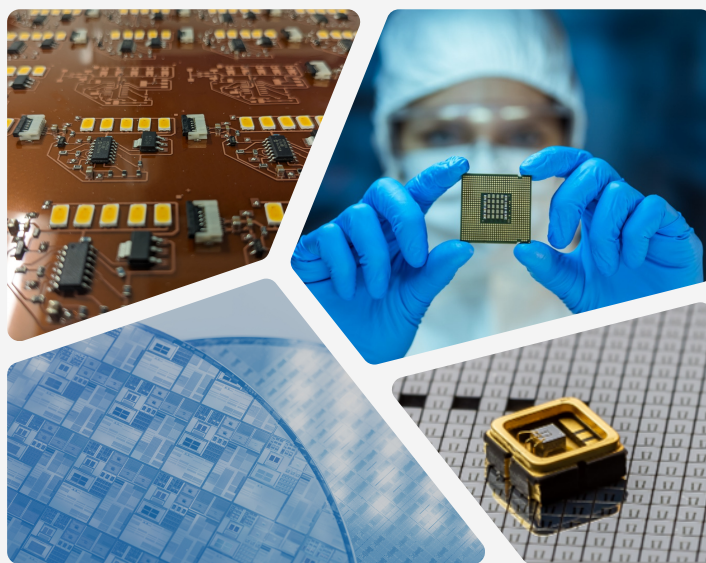
Observer



Marco
Blouin



Absent at the time of photography : Nathalie Fauchoux and Geneviève Tanguay



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