

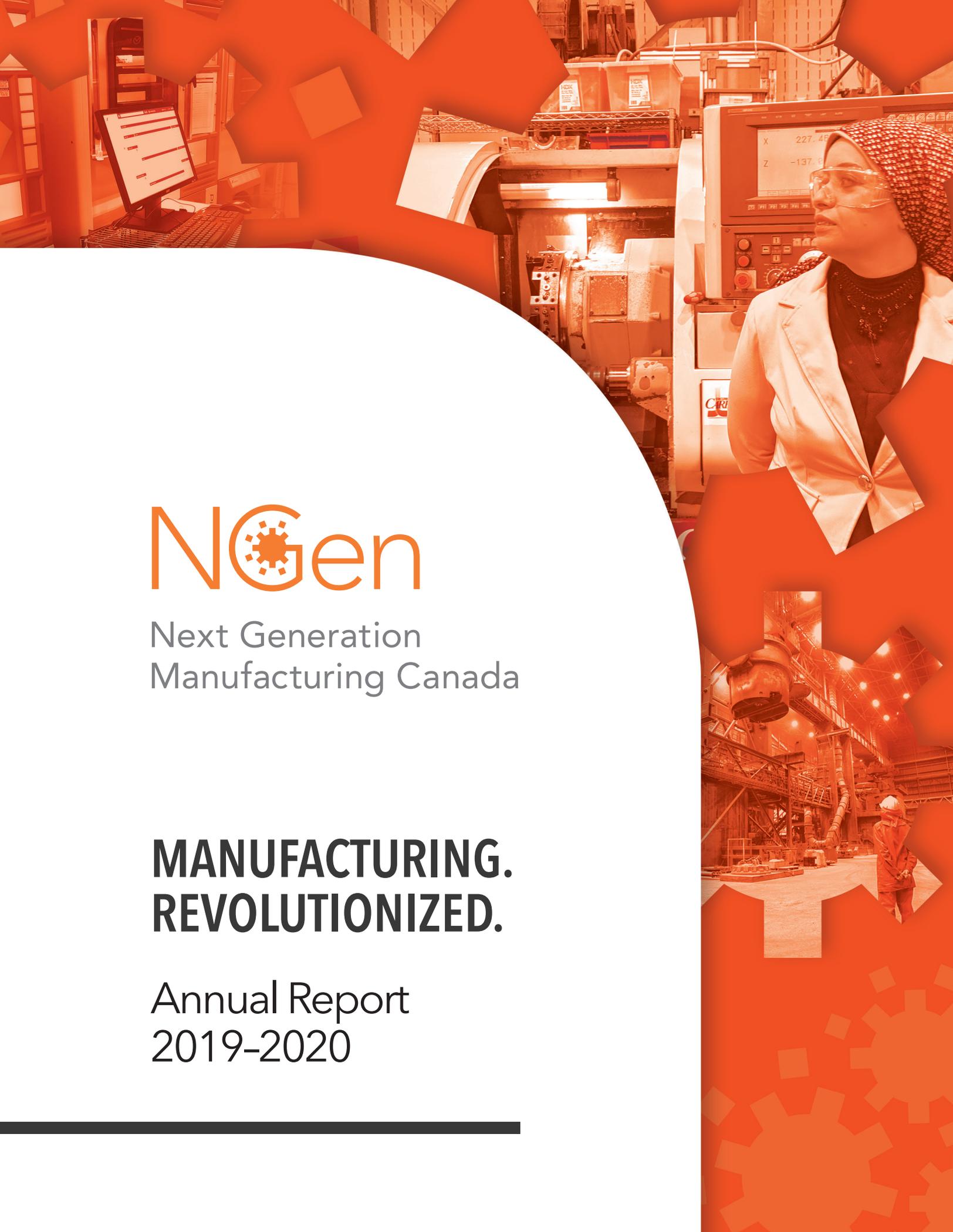


Next Generation  
Manufacturing Canada

**MANUFACTURING.  
REVOLUTIONIZED.**

Annual Report  
2019-2020

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## Our Mission

Spark the development, deployment, and scale-up of innovative solutions in Canadian manufacturing, and their commercialization in global markets, by:

- *Promoting* Canada's advanced manufacturing capabilities – within Canada and around the world.
- *Identifying partnership opportunities* – building connections and strengthening collaboration across Canada's advanced manufacturing ecosystem.
- *Building capacity* – enhancing advanced manufacturing workforce capabilities and de-risking technology deployment and scale-up on the part of smaller firms.
- *Co-investing* – in collaborative, industry-led projects that have the potential to create unique competitive advantages for Canada's advanced manufacturing sector.

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## Introducing NGen

**N**ext Generation Manufacturing Canada (NGen) is the industry-led, not-for-profit organization leading Canada's Advanced Manufacturing Supercluster.

NGen is dedicated to building world-leading advanced manufacturing capabilities in Canada, for the benefit of Canadians.

We aim to strengthen the Canadian economy and create high value jobs for Canadians while contributing solutions that address some of the world's most pressing challenges in areas like health care, energy and resource management, and environmental sustainability.

NGen works to achieve these objectives by leveraging the technology and industrial strengths of Canada's advanced manufacturing ecosystem. We create new opportunities by combining the capabilities of our country's manufacturers, engineering and technology companies, business services, researchers, academic institutions, innovation centres, business networks, and our high-quality workforce, that will enhance the competitiveness and growth potential of Canada's advanced manufacturing sector.

Catch up with what's happening in Canada's Advanced Manufacturing Supercluster at [www.ngen.ca](http://www.ngen.ca).

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**The Honourable Navdeep Bains**  
Minister of Innovation, Science  
and Industry

## Message from Minister Bains

Canada is in an innovation race. We are committed to growing the economy and taking a new and uniquely Canadian approach to innovation investment. Our five Superclusters were selected in early 2018 to accelerate innovation and foster stronger connections between all players in areas of competitive advantage - from large anchor firms to small and medium-sized enterprises (SMEs). The creation of superclusters and our investment of nearly a billion dollars marked a big change for both industry and government.

I am pleased to see this investment paying off as the superclusters continue to grow their membership and announce new, ground-breaking projects. This strong membership base has helped them pursue an ambitious and collaborative approach, developing networks that bring together businesses, academics, governments and not-for-profits. They are creating new business opportunities, economic growth and jobs of the future.

This past year, we have seen unprecedented momentum from the superclusters in terms of projects reviewed and launched, including a concerted effort to meet Canada's critical need for healthcare supplies, equipment and technology during the COVID-19 pandemic. I'm particularly happy to note that roughly half of all project collaborators are SMEs, giving smaller businesses access to cutting-edge research, highly skilled talent and helping them scale up.

I want to congratulate the Next Generation Manufacturing Supercluster for a great year and in particular for their response to COVID-19.

To cite just one example, the Next Generation Manufacturing Supercluster is supporting a project that will to deploy additive manufacturing technology within Canada's oil sands industry. These advanced manufacturing applications in mining and mineral processing will position Canada as a leader in environmentally improved oil and gas extraction, and unleash the potential to expand our energy industry in a more sustainable manner. That's the tremendous value that these hotbeds of innovation are bringing to our everyday lives.





**Linda Hasenfratz**  
President, Chairman and CEO,  
Linamar

## From the Chair

One of the lessons we have learned from the pandemic is just how important manufacturing is for all Canadians. The sector is a crucial anchor of value creation and a source of well paying jobs in the Canadian economy. What has become even more apparent, though, is how much we depend on manufacturing to supply the products that are so critical in fighting diseases like COVID-19. It's only one example of the role that manufacturing plays today in helping solve many of the world's greatest challenges.

Canadian manufacturers have responded rapidly to the pandemic. They are developing new products and re-purposing or expanding production lines to fight the infection. Their initiative demonstrates how agile Canada's manufacturers are, how capable they are in producing new solutions for customers, and how instrumental advanced technologies are in enabling manufacturing innovation.

### **We have clearly entered a new era in manufacturing.**

Advanced digital, materials, and production technologies are revolutionizing the way that companies make things, design and improve upon their products and processes, communicate and do business with one another. We are fortunate that Canada is home to some of the best technological capabilities in the world.

Manufacturing is the ultimate integrator of technology. That is what allows manufacturers to respond quickly to changing business conditions and more highly specialized customer demands, develop new and improved products and services for customers, and sustain the high quality,

low cost production systems and supply chains necessary to compete and grow in today's intensely competitive environment.

Manufacturing is turning into a technology business. It's how well manufacturers commercialize and scale up the new technologies they develop, and how well they manage the technologies they deploy, that distinguish their chances for business success. But, advanced manufacturing is not just about technology. It's also about the people, the processes, the skills, and the partnerships that manufacturers develop - all of which are essential in building a globally competitive manufacturing enterprise.

### **NGen was established by industry leaders because we are convinced that the future of the Canadian economy depends more than ever on advanced manufacturing.**

NGen's mandate is to build world-leading advanced manufacturing capabilities in this country. To that end, NGen's Board of Directors set four strategic objectives that we believe should guide the development of Canada's Advanced Manufacturing Supercluster:

1. **Be transformative.** It isn't business as usual. Support innovative solutions that truly build next generation manufacturing capabilities in Canada.

2. **Focus on solutions** that have significant commercial potential because they can be applied to address real challenges and business opportunities in Canadian manufacturing.
3. **Strengthen collaboration.** Leverage Canada's manufacturing, technology, and research strengths, and the skilled workers we have across our country, to develop advanced manufacturing capabilities and business opportunities that no one company is likely to achieve on its own.
4. **Make an enduring impact** by contributing to the skills development, piloting and testing capacity, and the knowledge sharing that are foundational for building advanced manufacturing capabilities in Canada.

The Board is also committed to improving the effectiveness and efficiency of NGen governance. Plans are underway to streamline the Board and establish solid governance procedures that will ensure that it is renewing on a regular basis, remains engaged, and keeps working at its optimal level.

Canada's Innovation Supercluster Initiative provides industry an important opportunity to shape the future of Canada's advanced manufacturing sector. NGen has taken a leading role in showcasing advanced manufacturing and building industry

partnerships across Canada. It has generated new business opportunities for smaller companies and supported their efforts to scale-up and apply technologies in manufacturing. NGen has invested in projects that promise to create unique capabilities for Canadian industry. And, NGen's rapid response to the COVID-19 crisis is helping manufacturers deliver critical health care products to front-line workers across the country.

I am proud to say that NGen is already delivering benefits to Canadians. The new business opportunities it is creating are attracting industry investments in innovation, productivity improvements, and enhanced production capacity. The future economic potential of NGen's initiatives is much greater still. But, economic impacts are only one part of the story. NGen shows that building advanced manufacturing capabilities in Canada also helps to protect the environment, enhance supply chain security, and above all save lives.



**Jayson Myers**  
CEO, Next Generation  
Manufacturing Canada

## From NGen's CEO

The twelve months ending March 31, 2020 was NGen's second year of business and the first full year of operations for Canada's Advanced Manufacturing Supercluster. It was a year that ended with unexpected and exceptional challenges in the midst of the COVID-19 pandemic. Nevertheless, it was a year of significant achievements for Next Generation Manufacturing Canada.

When the COVID-19 crisis hit Canada in March, NGen responded rapidly by launching a special funding initiative to support the development and manufacturing of critical Made-in-Canada products to fight the pandemic. We were able to respond so quickly because we were already building a robust portfolio of advanced manufacturing projects. We had processes in place to assess and manage the development of high-quality Supercluster projects and an extensive network of manufacturers, technology providers, researchers, and strategic partners across the country that we were able to mobilize.

The NGen team is especially proud of the fact that the COVID-19 projects we have funded are already delivering benefits to Canadians - in the case of our investments in ventilators, test kits, masks and face shields, they are already delivering life-saving devices to patients and front-line workers.

NGen stepped up to support Canada's fight against COVID-19 while continuing to invest in the development of world-leading advanced manufacturing capabilities. Our advanced manufacturing projects are also delivering tangible benefits to Canadians. They are building unique solutions for Canadian manufacturers and new



business opportunities for our technology companies. They are improving health care, protecting the environment, and securing the competitiveness of some of Canada's most important manufacturing sectors. They are creating jobs, new enterprises, unique products and processes, future business opportunities - and helping to sustain economic recovery in what has become a highly uncertain business environment.

**NGen ended the year having approved 23 industry-led collaborative innovation projects valued at \$76.8 million. NGen's projects will engage 61 industry partners, including 53 SMEs, along with 15 colleges, universities, and innovation centres across the country.**

NGen made other important contributions in addition to building our project portfolio. By reaching out across the country, we were able to facilitate connections and strengthen collaboration across Canada's advanced manufacturing ecosystem, while at the same time identifying opportunities to enhance its capabilities even further. We helped promote Canada's strengths in advanced manufacturing at home and around the world. We also established solid working relationships with partners at all levels of government based on a common commitment to support industry-led innovation initiatives, and especially the efforts of SMEs in deploying and scaling

up technology applications in Canadian manufacturing. The strategic relationships we developed proved to be invaluable when it came to coordinating NGen's role with other government agencies in the fight against COVID-19.

Our accomplishments are due to the strategic vision and commitment of the business leaders who volunteer their time as members of our Board of Directors and to the extraordinarily talented team of professionals that I have the privilege of leading in NGen Canada. The enthusiastic support that NGen has received from Innovation, Science, and Industry Canada, our strategic partners, and innovation and business leaders across the country has been remarkable. Over the course of the year, NGen has grown from a start-up to a fully scaled-up organization capable of realizing the objectives expected of us by our Board as well as by the Canadian Government's Innovation Supercluster Initiative. My thanks to all who have contributed directly to our success.

It's not easy to build world-leading advanced manufacturing capabilities. Nor is it easy for companies, large or small, to manage technology implementation or business scale-up in a way that sustains a globally competitive enterprise. It takes vision and leadership, new strategic thinking, a keen focus on solving problems and creating value for customers, and a great deal of

experimentation to determine the right mix of technologies and techniques that will deliver optimal and manageable solutions for manufacturing. It also takes highly integrated teams, streamlined systems and operating processes, expert project management, and the right problem-solving skills to get the job done. NGen is assisting by providing expert project guidance. Our capacity building programs are enhancing management and technical skills. We are also providing opportunities for organizations to share best practices and learn from international experiences.

**Collaboration is key to building globally competitive advanced manufacturing capabilities.** No one company on its own can afford to take all the risks involved in high-speed innovation. No company today has everything that it takes in terms of skills, expertise, or technological know-how. Meanwhile, manufacturing supply chains are transforming into collaborative, rapidly reconfigurable, knowledge-based, value networks.

NGen's role in facilitating innovation partnerships helps Canadian manufacturers find the right technology partners to develop the solutions they need to build competitive advantage. The same partnerships offer smaller companies the potential to grow their businesses by integrating their technologies, products, and services into larger-scale

solutions that can be commercialized in manufacturing applications in Canada and around the world.

The uncertainties arising from rapidly changing market conditions and the accelerated pace of technological change mean that innovation investment decisions are often very difficult to make. The pandemic has further aggravated the challenges facing Canada's advanced manufacturing sector. At the same time, it has accentuated the need to do business in new ways. NGen's investments, networks, and supporting services are helping to defray some of the risks that companies face. We will continue to play a leading role in supporting the investments in industrial innovation that are so necessary to drive Canada's economic recovery.

The future may be full of risk. But, it is also full of opportunity. Superclusters have an important and unique role to play in economic development. They are now being adopted in national and regional innovation strategies in the United States, Europe, and Asia. Canada has been an exemplary leader in Supercluster development. NGen is committed to maintaining our leadership role by leveraging Canada's advanced manufacturing strengths to create new economic opportunities and benefits for Canadians across the country.

## What our Members Say



Big thank you to the NGen team for doing what you are doing. You guys rock!

**David Yeaman,  
President, MPC**

I would like to thank you and your entire team for all the hard work you all are putting in to qualify and support viable projects to help Canada combat this crisis. Your work will truly help Canadians to build a reliable supply chain on a foundation of innovation so we have sustainable solutions for PPE available for future generations.

**Steve Mai,  
President & CEO, Eclipse Automation**

NGen plays a critical role in supporting the advanced manufacturing ecosystem in Canada. The alignment of NGen with the manufacturing community is evident from the incredibly successful and rapid covid-19 response that rallied Canadian manufacturers to a significant health challenge. The response has helped reinforce the importance and collaborative spirit of manufacturing to the Canadian economy. In addition to connecting multiple players to drive crucial collaborations in the sector, NGen's focus on capacity building has been a key to ensuring Canada's future global competitiveness in manufacturing. NGen is paying significant dividends on the Canadian government's prudent investment in the advanced manufacturing supercluster.

**Dr. Darren Lawless,  
Assistant Vice-President Research Innovation  
Partnerships, McMaster University**

If it was possible to start a round of applause for people who are working with companies and individuals to address supply chain and supply issues in this difficult environment, and to have these efforts result in stronger companies and lessons learned on how to collaborate across the country – I would lead it. Thank you.

**Anne Waddell,  
Director of Government Affairs, Aspire Food Group**

SaskTel is pleased to partner with NGen to actively encourage local Saskatchewan entities to become members and apply for funding. In sharing our vision and approach with IoT and Digital Transformation, NGen has identified SaskTel as a local partner to identify, and participate in, potential Supercluster projects. I believe NGen's mandate and approach are terrific, and I look forward to working with them on some exciting transformation projects in the future!

**Mike Stefaniuk,  
Director, Business Development  
(IoT and Digital Transformation), SaskTel**

I value the collaborative relationship forged with NGen and appreciate the dedicated outreach and engagement efforts that have been made with the Province to connect BC's 11,000 business manufacturing community to this pan-Canadian opportunity. I am pleased that as a result of our collective efforts, provincial awareness of the supercluster has improved, BC company membership in the supercluster has dramatically increased, and BC manufacturing sector participation in NGen's advanced manufacturing activities has been strong. We look forward to further collaboration with NGen and joint efforts to promote advanced manufacturing growth in BC.

**Jeff Rafuse, Director,  
Economic Policy and Strategic Initiatives Branch,  
Small Business, Jobs, and Workforce Division,  
Ministry of Jobs, Economic Development and  
Competitiveness, Government of British Columbia**

The funding does a great job at supporting the key costs in labour, materials, and equipment that we need as a consortium to bring this to market.

**Mitch Debora,  
Co-Founder & CEO, Mosaic Mfg**

I would like to say what great support and responsiveness we have experienced in working with the NGen team, both pre and post contract. Everyone has been extremely professional and helpful in guiding us.

**Peter Adams,  
President & CEO, Burloak Technologies Inc..**

It is imperative that we come together, engage in proactivity, and support the expanse of our Canadian manufacturing network by establishing momentum for advanced manufacturing and technology adoption. NGen provides a platform and resources for encouraging dialogues and collaborations amongst manufacturing stakeholders. We also salute NGen for their timely, industry specific efforts in deploying special COVID-19 recovery programs for Canadian manufacturers.

**JP Giroux,  
President, Excellence in Manufacturing Consortium  
(EMC)**

NGen's programs are perfectly suited to our stage of growth. We are transitioning from an R&D organization to a manufacturing led – sales & marketing organization. There are very few programs that offer the right kind of support to companies in this phase.

**David Roach,  
President, DMF Medical Incorporated**

If it were not for the guidance and support of NGen and its staff, we would not have embarked on this collaborative, transformational project with our partner to advance Canadian manufacturing and keep essential workers safe.

NGen was fast out of the gate, active in its partnering activities and responsive during the application process. That is what we look for in the best government innovation programs; speed, opportunity and execution that match the speed of our business. NGen is an instrument of innovation that drives new product and process development through collaboration with Canadian SMEs. The result is a stronger innovation capacity directed squarely at advanced manufacturing.

**Alain Francq, Director,  
Government Affairs, Clearpath Inc.**

## Measuring Success

NGen measures success by the benefits it delivers to Canadians.

In line with the objectives of Canada's Innovation Supercluster Initiative, NGen aims to:

- Develop world-leading technological capabilities in advanced manufacturing
- Increase industry investment in innovation
- Enhance value creation and economic growth
- Connect and actively engage members of Canada's advanced manufacturing ecosystem
- Contribute to the development of a skilled advanced manufacturing workforce; and
- Improve the social well-being of Canadians
  - Expected Outcomes;
    - New domestic and international sales
    - Jobs created
    - Companies created
    - New products, processes, and services
    - Intellectual property created

NGen's goal is to add at least \$13.5 billion and 13,500 new jobs to Canada's economy by 2030.

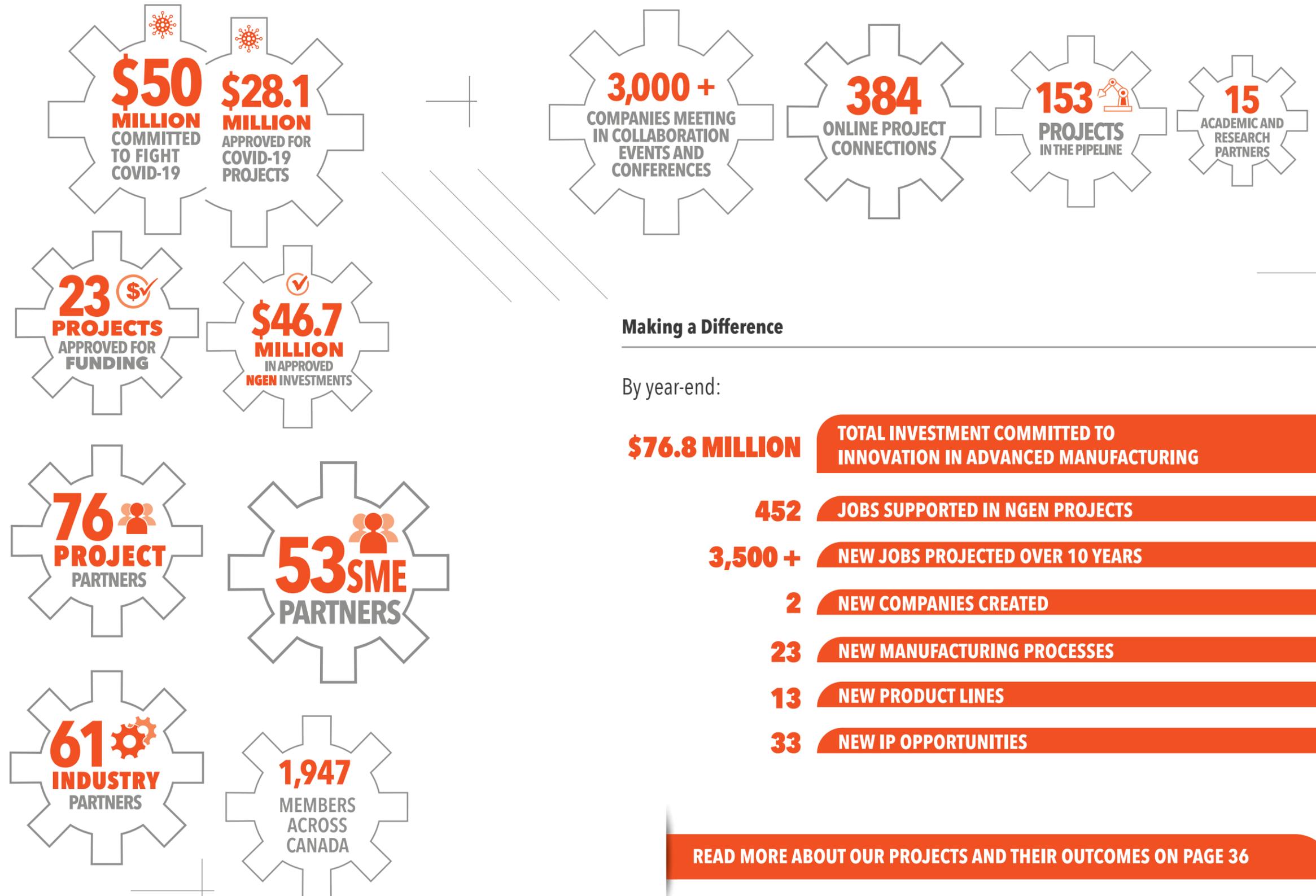
## 2019/2020 Operating Objectives

During its second full year of business, NGen aimed to:

- Put in place the operating processes and the resources necessary for it to carry out its mission as Canada's Advanced Manufacturing Supercluster
- Grow membership in NGen and engage members across Canada
- Develop strategic partnerships with other public and private sector organizations in support of its mission
- Approve and invest in its first collaborative industry-led projects
- Consult with innovation leaders across Canada to identify priorities for strengthening Canada's advanced manufacturing ecosystem: and
- Launch its capacity-building programming to enhance the advanced manufacturing management capabilities of smaller and medium-sized companies.

## 2019-2020: The Year in Review

Building Canada's  
Advanced Manufacturing  
Supercluster



### Making a Difference

By year-end:

- \$76.8 MILLION** TOTAL INVESTMENT COMMITTED TO INNOVATION IN ADVANCED MANUFACTURING
- 452** JOBS SUPPORTED IN NGEN PROJECTS
- 3,500 +** NEW JOBS PROJECTED OVER 10 YEARS
- 2** NEW COMPANIES CREATED
- 23** NEW MANUFACTURING PROCESSES
- 13** NEW PRODUCT LINES
- 33** NEW IP OPPORTUNITIES

READ MORE ABOUT OUR PROJECTS AND THEIR OUTCOMES ON PAGE 36

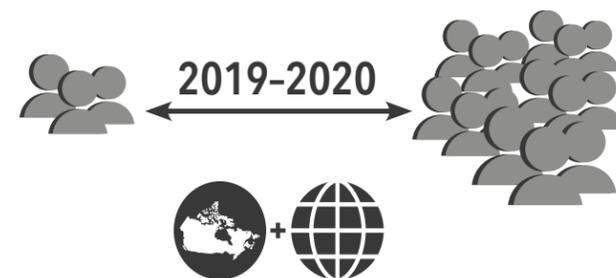
## Growing Membership



Membership in NGen is open to any organization or individual capable of making a contribution to advanced manufacturing in Canada. Members describe their capabilities upon registration. That information is shared with other members on NGen's Advanced Manufacturing Capabilities Database on NGen's members' homepage at <https://members.ngen.ca>. NGen members receive regular updates about Supercluster activities. All members are eligible to participate in NGen activities and to apply as potential project leaders or partners in Supercluster projects. There is no cost to register as a NGen member.

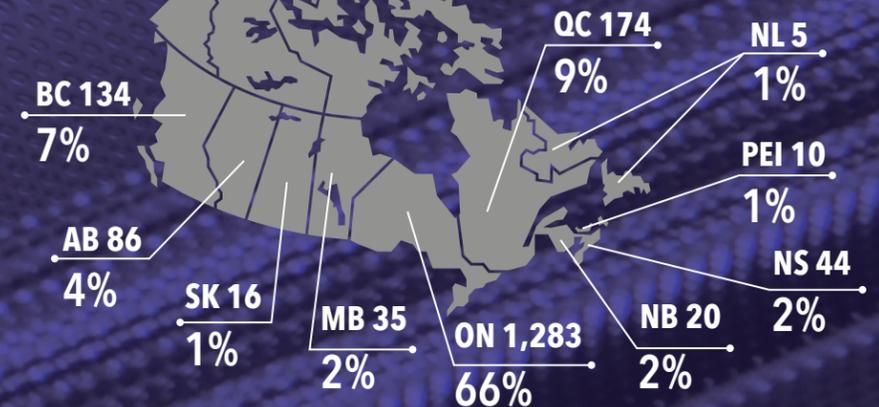
NGen gained **1,526** members between April 1<sup>st</sup>, 2019 and March 31<sup>st</sup>, 2020 as total membership rose to **1,947** organizations and individuals from across Canada and around the world.

### NGen gained 1,526 members



# 1,947

- While a majority of NGen members are based in Ontario, NGen's membership extends across every province in Canada
- 7% of NGen members are based in the United States, Europe, and other locations outside Canada



**88%** OF NGen MEMBERS ARE SMALL AND MEDIUM-SIZED ENTERPRISES (SMEs)

Organization Size/ Employees	Members	%
1-4	278	21%
5-19	409	31%
20-49	205	15%
50-99	123	9%
100-299	117	9%
300-499	43	3%
500+	155	12%

Organizations	%
Manufacturers	45%
Technology Companies	33%
Innovation Clusters	6%
Universities & Colleges	5%
Consulting Companies	4%
Business Services	3%
Other Research Centres	3%
Government Agencies	2%

Individual Members	%
Industry Experts	30%
Applied Researchers	24%
Professionals	46%

- 25% of NGen members have been in business for less than five years

- Technology specializations include sensors, digital technologies and data analytics, artificial intelligence, cybersecurity, advanced materials, additive manufacturing, robotics and automation, biologics, and nanotechnology

- Leading manufacturing sectors include automotive products, aerospace, metal fabricating, plastics, machinery and equipment, medical devices, and electronics

## Reaching Out ... across Canada



**D**uring its first full year of business, NGen made it a priority to leverage its connections with advanced manufacturing clusters and business networks to introduce and promote the opportunities of the Supercluster to stakeholders across Canada.

Throughout the year, NGen presentations were highlighted in six webinars and at 45 conferences hosted by advanced manufacturing innovation clusters, colleges and universities, industry and business associations, and regional economic development organizations across the country.



## Getting the Word Out

 **Colleges & Universities** **7**

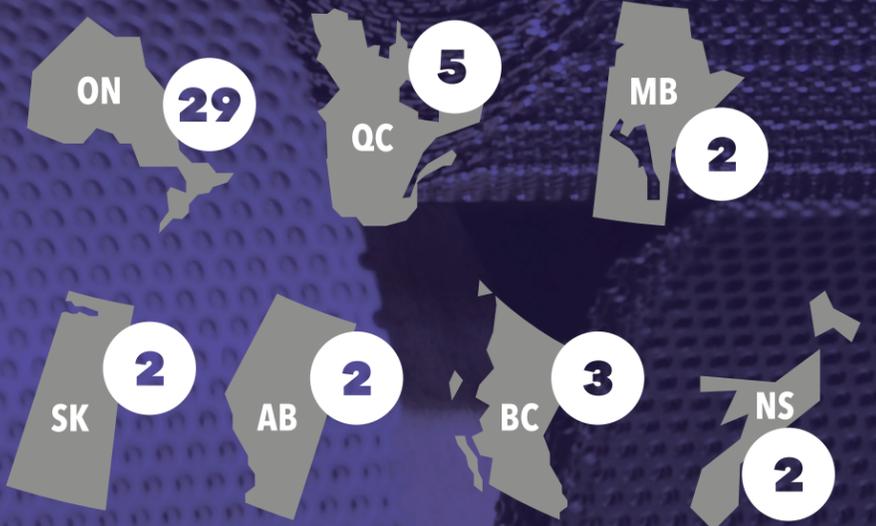
 **Chambers of Commerce** **9**

 **Innovation Clusters** **12**

 **Economic Development Agencies** **5**

 **Industry Associations** **12**

## Conference Locations:



## ... and around the World



Canada's Innovation Supercluster Initiative has spurred significant interest around the world on the part of governments and international innovation clusters alike.

International linkages provide opportunities to promote Canadian capabilities, build business-to-business partnerships in innovation projects, identify new export and investment opportunities, and learn from international best practices.

NGen is represented on the advisory board of the World Manufacturing Forum and took an active role in the formal proceedings of the Forum which met in Cernobbio, Italy in September 2019.

NGen has also taken the lead in building closer cluster-to-cluster linkages between Canada and the European Union. In April 2019, NGen led a delegation of Superclusters, advanced manufacturing clusters, and Canadian Government officials to the Hannover Messe, one of the world's largest industrial fairs and showcases for advanced manufacturing. Collaborative relationships were developed with 12 European clusters that were invited by the European Commission to meet with the Canadian delegation.

NGen hosted a larger delegation of 28 European-based innovation clusters as they visited companies, innovation centres, and universities in Ontario's Innovation Corridor in June. Over 200 Canadian companies and clusters took part in a Canada-Europe networking event that NGen organized at Humber College's new Barrett Centre for Technology Innovation. The conference was opened by Canada's Innovation, Science, and Economic Development Minister Navdeep Bains, and Elżbieta Bieńkowska, European Commissioner for Internal Market, Industry, Entrepreneurship and SMEs. The Ministers

formally witnessed the signing of a Canada-EU Administrative Arrangement on Cluster Cooperation at the conference.

NGen also participated in the Eureka Network's Global Innovation Summit in Manchester, England in May. NGen joined with the National Research Council at the event in highlighting Canada's innovation strengths and the role that both organizations play in building advanced manufacturing capabilities and connecting Canadian companies and researchers with international innovation opportunities.



Through its connections with European technology clusters, and especially with Agoria, Belgium's Advanced Manufacturing Network, NGen has been able to share in the development of programs aimed at supporting smaller manufacturers adopt and manage advanced technologies. The advanced manufacturing management standards developed by the European Advanced Manufacturing Support Centre are a key building block for NGen's capacity building programs in support of SMEs.

Throughout the year, NGen worked closely with Invest in Canada, Canada's Trade Commissioners in the United States, Europe, and Asia, as well as the trade development offices of Japan, Taiwan, South Korea, United Kingdom, France, and Ireland in promoting Canada as a prime location for innovation investment, highlighting Canada's advanced manufacturing capabilities, and identifying opportunities for international innovation partnerships.



## Building Collaboration



**NGen** works to connect and build collaborative partnerships across Canada's advanced manufacturing ecosystem.

### Collaboration Events

Collaboration Events offer NGen members an opportunity to showcase technologies and project proposals, and to identify potential project partners. Over **1,100** manufacturers and technology providers participated in NGen's seven Collaboration Events that were held between April 2019 and March 2020. **Eighty-two percent of attendees reported that they had made new connections as a result.**

NGen's Collaboration Events featured **90** project and technology presentations, all of which were posted on NGen's website for further reference and follow-up. NGen recorded **384** online connections among organizations interested in potential innovation partnerships.

LOCATION	DATE	PARTICIPANTS	PRESENTATIONS
Kitchener, ON	April 16, 2019	450	43
Toronto, ON	October 2, 2019	350	13
Vaughan, ON	October 9, 2019	60	7
Barrie, ON	November 7, 2019	80	4
Dartmouth, NS	November 21, 2019	65	5
Winnipeg, MB	December 4, 2019	80	10
Surrey, BC	January 29, 2020	80	8



## Strategic Partnerships

**NGen** also partnered with leading public and private sector organizations across Canada to promote Supercluster initiatives, support innovation in advanced manufacturing, identify leading edge projects and potential project partners, and where there is joint interest, co-invest in project activities.

### Strategic Partners

#### Ministry of Innovation, Science, and Industry



#### Health Canada



#### Global Affairs Canada



#### National Research Council



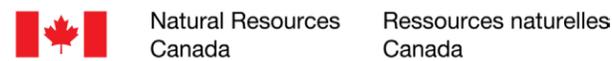
#### NRC-IRAP



#### NSERC



#### Natural Resources Canada



#### FedDev



#### Western Economic Diversification



#### ACOA



#### Ocean Supercluster



#### Government of BC



#### Investissement Québec CRIQ



#### Government of Manitoba



#### Innotech Alberta



#### Ontario Centres of Excellence



#### MITACS



#### Communitech



#### MaRS Discovery District



#### ventureLab



#### EDC



#### BDC



#### Digital Technology Supercluster



#### Protein Industries Canada



#### Scale AI



## 2019-2020 Project Portfolio

**NGen** launched its investment program in support of advanced manufacturing projects in June 2019.

In January 2020, a new capacity-building investment component was inaugurated, offering smaller amounts of funding to SMEs that enabled them to undertake pilot projects, feasibility studies, or support the development of advanced manufacturing clusters.

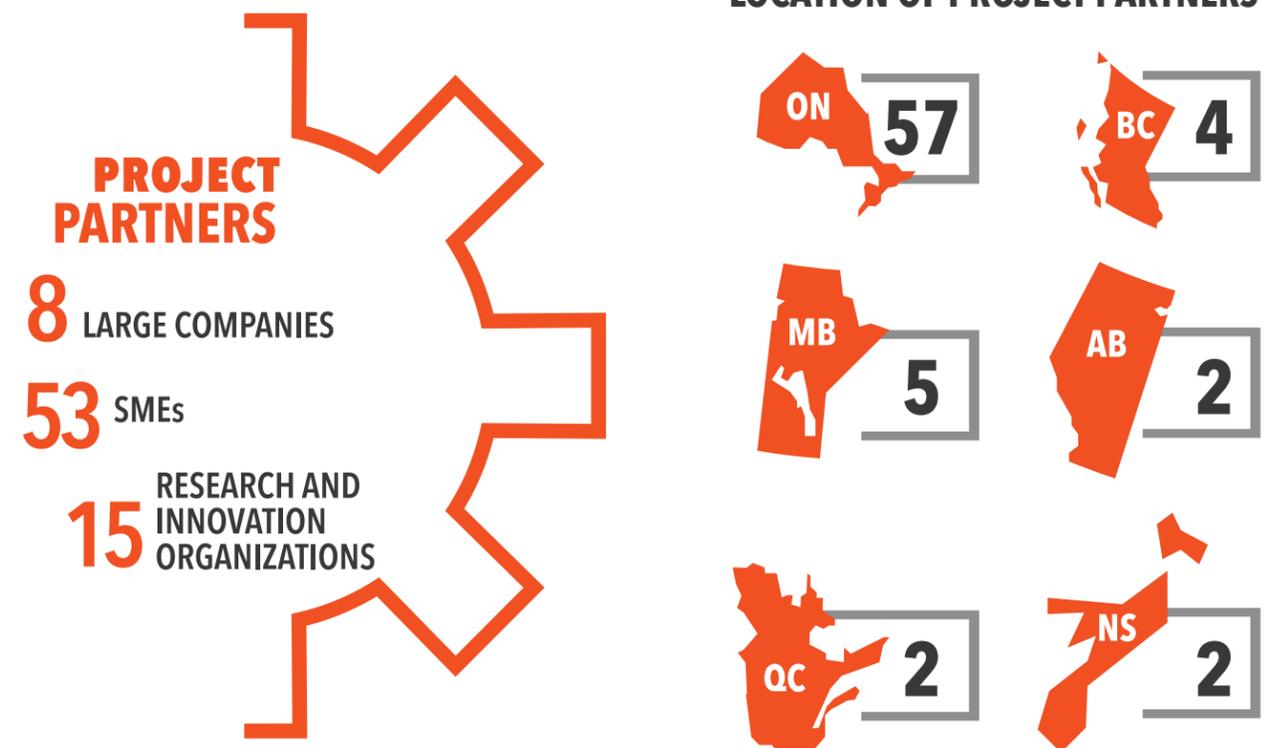
In March 2020, NGen announced it that would invest in advanced manufacturing projects leading to the production of critical products in the fight against the COVID-19 pandemic.

- By March 31<sup>st</sup>, 2020, NGen had approved **23** advanced manufacturing and COVID-19 projects with a total project value of **\$76.8 million**. NGen's investment in these projects will amount to **\$46.7 million**.
- Projects approved for NGen funding by the end of March 2020 involve partnerships among **76** organizations across Canada. They will be undertaken by **61** industry partners, among which **53** are SMEs. **15** colleges, universities, research organizations, and innovation centres will also be involved as project partners.

NGEN PROJECT PROFILES CAN BE VIEWED AT [NGEN.CA/NGEN-PROJECT-PORTFOLIO](https://ngen.ca/ngen-project-portfolio)

PROJECTS	APPROVED PROJECTS (# PROJECTS)	APPROVED PROJECTS (TOTAL VALUE)	APPROVED PROJECTS (NGen INVESTMENT)
Advanced Manufacturing Mainstream	6	\$45.9 million	\$18.5 million
Advanced Manufacturing SME Capacity Building	8	\$2.8 million	\$1.4 million
COVID-19	9	\$28.1 million	\$26.8 million

### LOCATION OF PROJECT PARTNERS



## Advanced Manufacturing Projects



**NGen** supports the development of world-leading advanced manufacturing capabilities in Canada through co-investments with industry in innovation projects aimed at developing new manufacturing processes, transforming industrial processes in key sectors of Canadian manufacturing, commercializing the application of Canadian technologies in manufacturing, and enhancing the infrastructure that supports Canada's advanced manufacturing ecosystem.

All NGen-funded projects are industry-led, collaborative initiatives. They are expected to meet the strategic objectives established by NGen's Board of Directors - they must be transformative, involve industry partnerships (including at least one SME), show significant commercial potential, and make a contribution to Canada's advanced manufacturing ecosystem. All projects must meet the funding requirements of the Canadian Government's Innovation Supercluster Initiative. They must also ensure that they have the project management capabilities, risk mitigation strategies, financial capacity, and a collaboration agreement among project partners in place in order to get the job done.

NGen projects are assessed and approved by panels of independent industry and technology experts. Before NGen invests in projects, a contractual Master Project Agreement must be concluded between NGen and the project partners. Project performance is then monitored on a quarterly basis by NGen to ensure investments are going to eligible project expenses and project milestones are being met.

The objectives, terms, and conditions for the approval and funding of NGen's advanced manufacturing projects are published on the web at [www.ngen.ca/supercluster-projects](http://www.ngen.ca/supercluster-projects).

## ADVANCED MANUFACTURING PROJECT PORTFOLIO



By March 31<sup>st</sup>, 2020, NGen had approved 14 advanced manufacturing projects with a total project value of \$48.7 million. NGen's investment in these projects will amount to \$19.9 million.



The projects will integrate a variety of technologies to develop solutions that can be commercialized through applications in at least 15 different sectors of manufacturing.



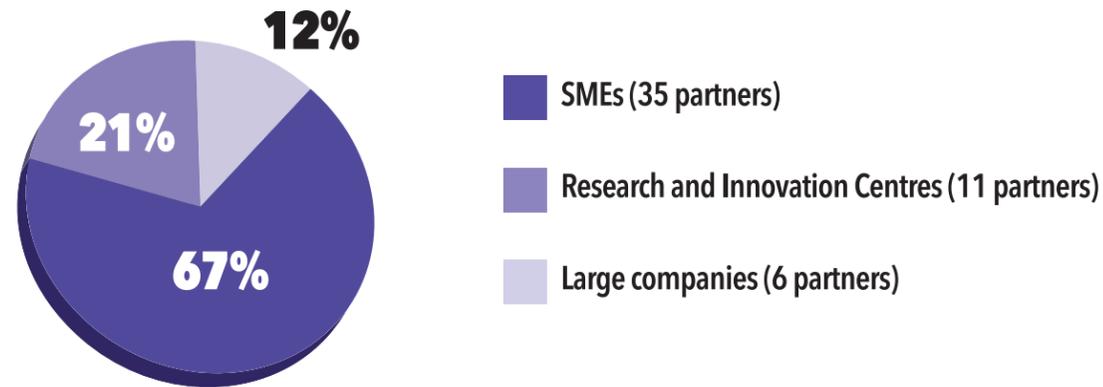
The projects will involve partnerships among 52 organizations across Canada. They will be undertaken by 41 industry partners, 35 of which are SMEs. Eleven colleges, universities, research organizations, and innovation centres will also participate as project partners.



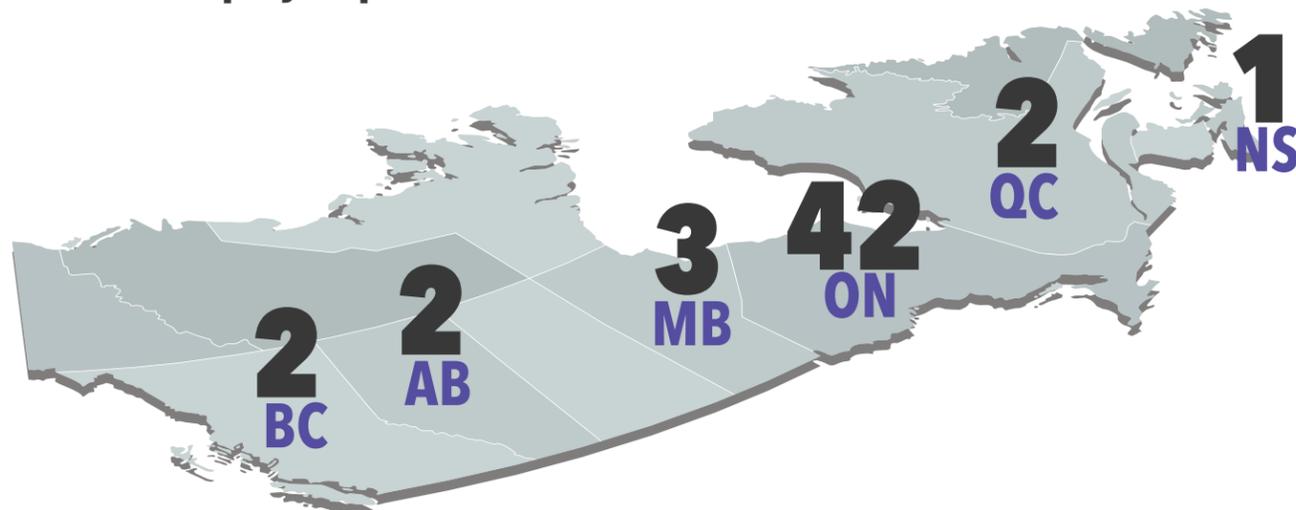
At the end of March, NGen had an additional 153 funding applications for advanced manufacturing initiatives in its project pipeline, valued at more than \$594 million.

PROJECTS BY PROGRAM STREAM	# PROJECTS	PROJECT VALUE
Technology Development	7	\$31.1 million
Technology Adoption	1	\$12.1 million
Technology Diffusion	5	\$2.3 million
Ecosystem Development	1	\$4.3 million

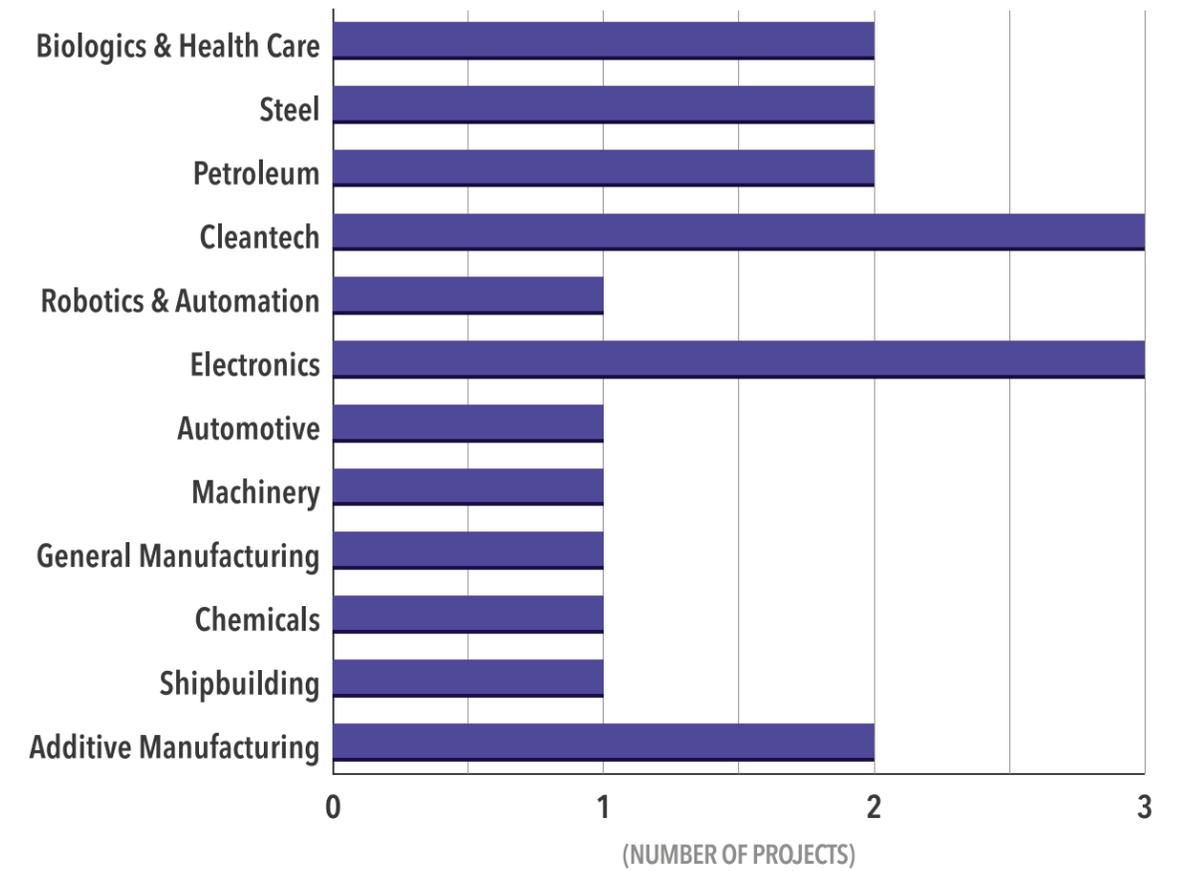
### Project partners



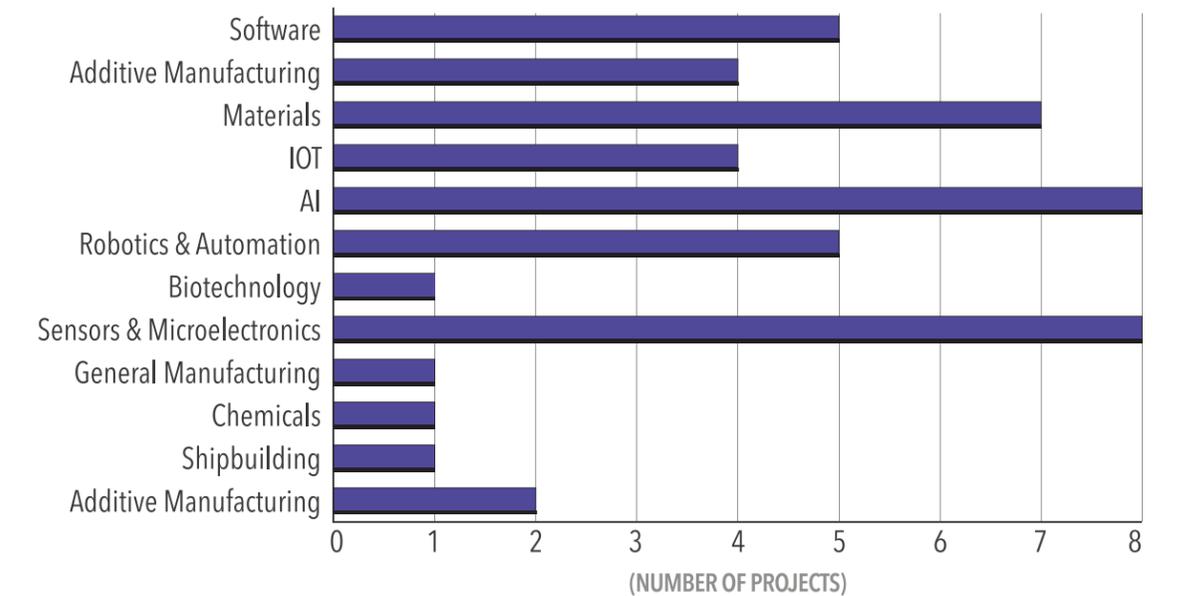
### Location of project partners



### Manufacturing applications



### Integrating technologies



## Advanced Manufacturing Project Profiles



Photos by: The Centre for Commercialization of Regenerative Medicine (CCRM), the Centre for Advanced Therapeutic Cell Technologies (CATCT) and the Centre for Cell and Vector Production (CCVP).

### Manufacturing Critical Reagents for Life-Changing Cell and Gene Therapies

It is difficult to understate the impact that recently approved cell and gene therapies (CGTs), have had on the field of medicine. Not only have they provided curative treatments for cancer, blindness and a fatal childhood genetic disorder, but they have spurred the clinical development of hundreds of new CGTs to treat previously thought "incurable disorders". Both events have led to an unprecedented leap in the global demand for viral vectors, gene delivery vehicles that are essential raw materials for these curative treatments.

iVexSol Canada iVexSol (intelligent Vector Solutions) Canada is a newly formed lentiviral vector (LVV) manufacturing company with a proprietary technology that can produce at least 10 times the quantity of potent, high-quality vectors in 20% of the current production time. iVexSol Canada, Inc. is working with partners CCRM Enterprises Inc., and Global Life Sciences Solutions Canada ULC (formerly GE Healthcare) to develop a robust manufacturing platform that can meet the global demand for these critical reagents. This collaborative project will also attract and retain highly educated talent in Canada, drive



#### Facts & Figures

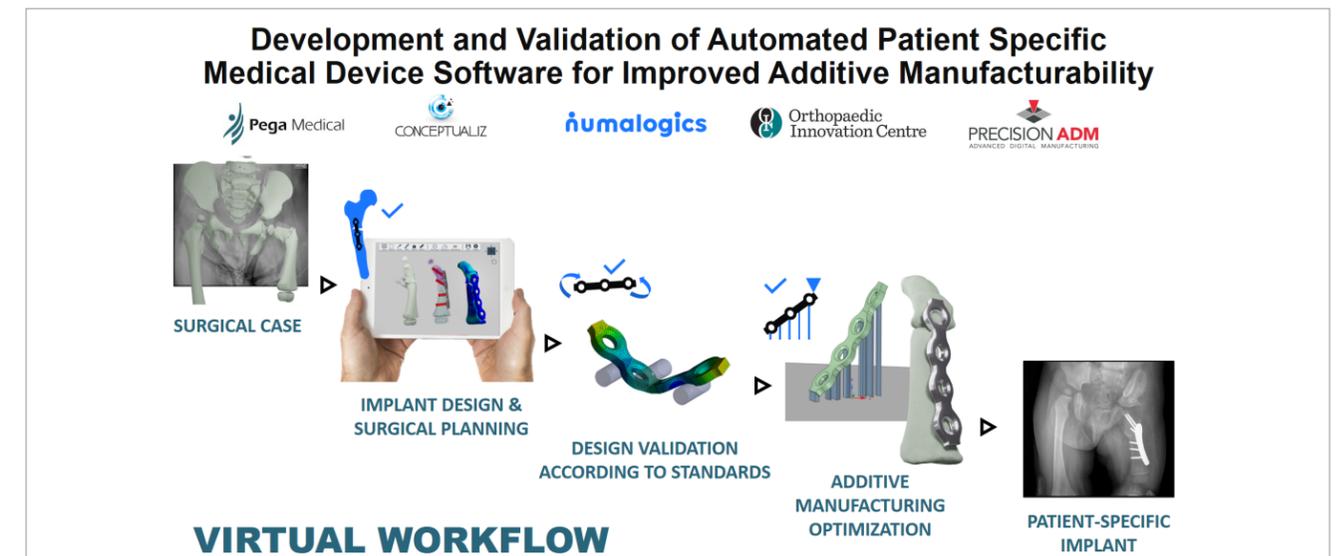
- Creating new products, processes and services
- Licensing opportunities for commercialization of new technologies
- This project supports 20 jobs and is expected to create 470 new jobs over 5 years
- 2 of 3 partners in the consortium are SMEs

growth in the Canadian CGT ecosystem, and attract other companies to establish in Canada, spurring innovation in the medical, engineering and environmental fields, and other supportive industries.

*"Establishing an advanced manufacturing platform from a clinically proven technology requires a diversity of skills and resources not found in a*

*single entity. With the generous support of NGen and our Partners, we can provide a robust supply of high-quality vectors to therapy providers that are delivering life-changing therapies to patients. This in turn will bring new advanced manufacturing capabilities to Canada and establish the country as a world leader in gene-delivery tools and technology."*

Dr. Rodney L Rietze, CEO, iVexSol Canada



### Improving the Quality of Orthopaedic Surgery

A consortium, led by Orthopaedic Innovation Centre (OIC) and including partners Pega Medical Inc., Numalogics a subsidiary of Spinologics, Conceptualiz, and Precision

ADM Inc, is developing a fully integrated platform that is expected to result in the provision of customized medical devices that can be manufactured "on-demand,"

simplifying surgeries, expediting the length of healing and return to function, and improving patients' quality of life. The project will revolutionize the manufacturing of orthopedic implants by integrating medical science, precise imaging, virtual design and testing, with industrial 3D printing. The new made-to-order implants will offer an alternative to off-the-shelf, standardized devices. In addition to ensuring a better fit, the personalized 3D printed medical implants are expected to be comparable in cost to factory-produced models.

*"This project bridges and integrates processes in the North American health care system and the advanced manufacturing sector, bringing together top medical device designers, manufacturers, distributors and physicians with software experts and qualified medical additive manufacturing suppliers in Canada to create a new standard of patient care."*

OIC

**Facts & Figures**

- This project aims to reduce healthcare costs for custom devices, reduce wait times for complex surgeries and provide better device fit, funding and longevity to patients
- Creating new products, processes and services
- The project currently supports 24 jobs and anticipates creating 30 jobs over 5 years and 100 jobs over 10 years
- Licensing opportunities for commercialization of new software
- 4 of 5 partners in the consortium are SMEs

**Transforming Auto Parts Manufacturing**

Molded Precision Components is partnering with Niigon Machines Ltd. to develop a new manufacturing process that will transform the way automotive components are made, allowing cycle times to be cut in half, increasing productivity and decreasing costs. The project will create long term sustainability in the industry and result in new high tech jobs.

*"NGen's support will allow MPC to double production rates in our facility, which will enable us to gain margins that will allow for the scaling up of our systems resulting in new world class manufacturing facilities, and new high paying technical jobs in Canada."*

Molded Precision Components

**Facts & Figures**

- The project led to the addition of production lines with new innovative technology and an additional \$10M investment for additional applications for COVID-19
- \$1.5 million in new sales directly linked to the project
- 27 jobs supported by the project and 100+ jobs expected over five years
- Georgian College supporting as an ecosystem partner
- The project is leading to energy efficiency, reduced cycle times and supply chain security by building this manufacturing capability in Canada



**Protecting the Environment**

Exergy Solutions leads a consortium that includes Suncor Energy and Precision ADM Inc. The consortium is developing additive manufacturing solutions to reduce the environmental impact of oil sands industrial users. The project will develop new oil sands and mineral processing technologies aimed at reducing energy intensity and enhancing reliability, as well as cleantech to drastically reduce water usage and potentially eliminate tailings ponds. The project lays the groundwork for industrial additive manufacturing technology across Canada,

potentially creating multiple spin-off business opportunities - both in terms of other sectors, as well as the manufacturing facilities to serve these sectors.

*"NGen funding allows for the involvement of local SME's, and offers expansion opportunities for both Exergy and Precision ADM into the mining industry via Suncor. The project aims to deploy advanced additive manufacturing as a way for Canada to become a global technology leader in the industry."*

Exergy Solutions

**Facts & Figures**

- The consortium is creating new products, processes and services that offer solutions to significant environmental challenges
- The project currently supports 24 jobs and anticipates creating 30 jobs over 5 years and 100 jobs over 10 years
- 2 of 3 partners in the project consortium are SMEs

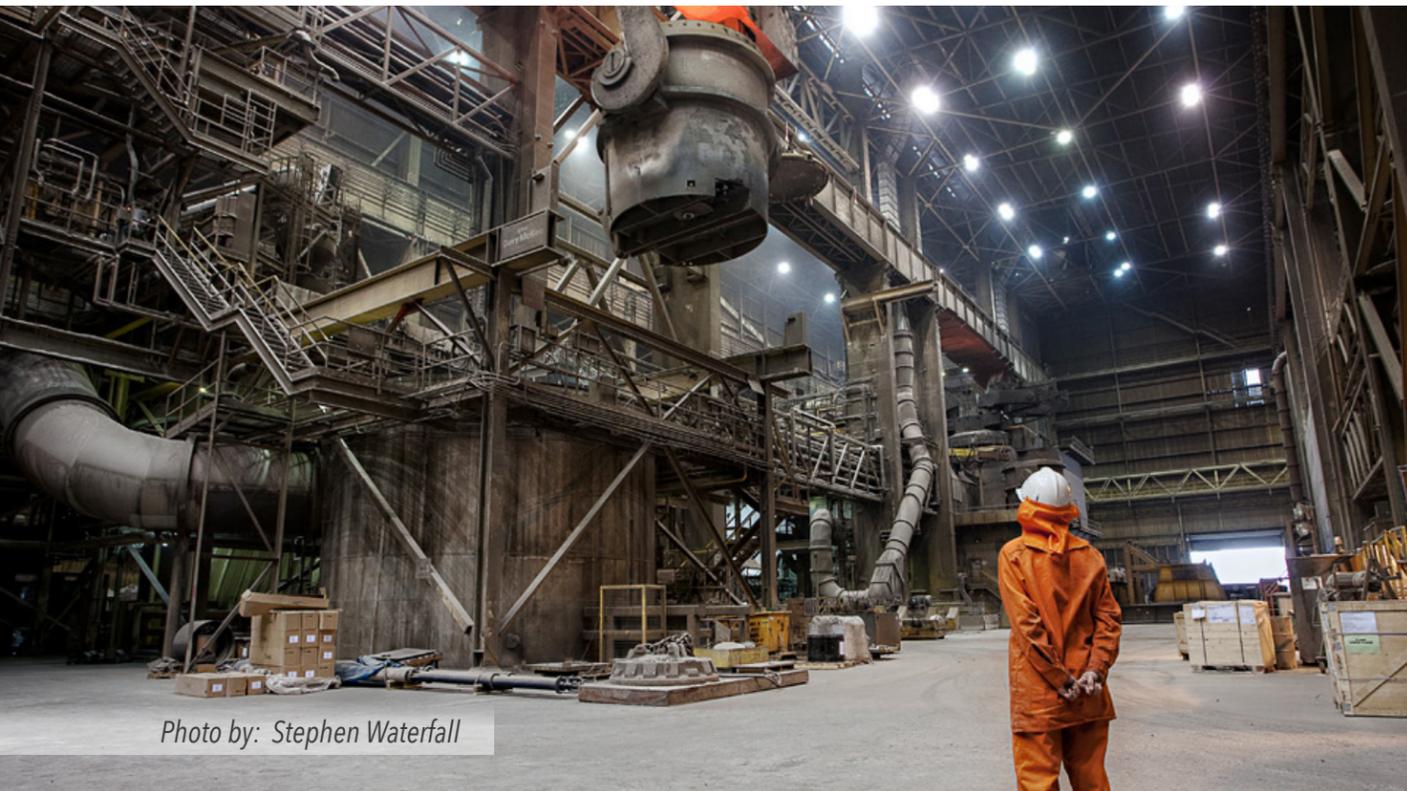


Photo by: Stephen Waterfall

## Revolutionizing Steel Production

For decades, steelmakers have looked into a vat of molten steel to determine when it's ready to cast into slabs. Now steelmaking is going digital. The ArcelorMittal Dofasco-led consortium, including IBM Canada Ltd., Tenova Goodfellow Inc., and i-50 Canada, is creating a smart technology platform to digitally transform ArcelorMittal Dofasco's secondary ladle metallurgy facility.

The project will advance the capabilities and understanding of the digitalization process in a heavy manufacturing environment. Key findings will be gained in the areas of process execution required to implement intelligence, the standards required to enable the flow of data, as well as the impact on the workforce. This is especially critical as all global industrial economies are racing towards these goals.

In addition to the key members of the consortium, the project also brings together

research and collaboration partners from McMaster University, Mohawk College, University of Toronto, University of Windsor, Western University, National Research Council, Natural Resources Canada, Haltech Regional Innovation Centre, Mitacs and Prosensus.

*"Collaboration is key to becoming a global leader in advanced manufacturing technology. NGen's funding support encouraged the inclusion of SMEs and Canadian suppliers that may not have been otherwise included. The supercluster framework enabled collaboration between many partners to accelerate completion and meet the diverse technical needs of the project."*

Roger Tang-Poy, Vice President Technology,  
ArcelorMittal Dofasco

### Facts & Figures

- Dofasco is developing a platform for the deployment of advanced digitization technologies
- 29 jobs and 3 students involved in the project
- 2 SMEs participating in the project
- Generating new IP in the form of protected patents, expert knowledge and trade secrets
- Additional funding from MITACS

## New Materials for Cleantech

NGen funding is allowing Evercloak, along with partner ZEN Graphene, to develop a commercially viable process for graphene and thin-film membrane production that will be primarily applied in the cleantech sector. The commercialization of Graphene Oxide (GO) technology, both in production and thin-film manufacturing will unlock a number of other potential product opportunities.

*"Developing a process that is commercially viable will allow Evercloak and ZEN Graphene to become world leaders in the production and application of graphene and thin-film membrane, opening up opportunities in additional sectors."*

Evercloak

### Facts & Figures

- New products and processes
- Additional funding from MaRS, NRC IRAP and FedDev
- The project has retained 10 jobs, created 20 new jobs and anticipates creating up to 400 new jobs in the future
- Creating new IP with patent opportunities and trade secrets for both project partners



### Building a Mega-Machine

Etobicoke, ON-based Conrex Steel Ltd. is leading a collaborative project that will create the world's most sophisticated steel forming press. The project, conducted in partnership with Concord, ON-based Macrodyne Technologies Inc. and Brampton, ON based Source Industrial Services Inc., will bring new capacity and data to manipulate large thick panels for domestic shipbuilding needs on Canada's East and West coasts, international sphere storage vessel forming and finally thick steel heads for pressure vessels throughout North America. The consortium aims to challenge conventional capabilities

and push new possibilities within the industrial use of Canadian steel, strengthen Canadian supplier networks, and showcase unique Canadian IP and manufacturing capabilities in press and crane technologies.

*"Over the long-term, this project will elevate Canada's ability to compete with European, Asian, and American steel fabricators, all the while strengthening demand for domestic talent within the steel industry."*

Larry Harrison, President, Conrex Steel Ltd.

### Facts & Figures

- Enhanced customization and data collection will enable Conrex to investigate different opportunities in new sectors such as avionics and nuclear products
- Conrex will invest in marketing and outsourced sales to promote their advanced capabilities worldwide
- This initiative will double Conrex's revenue in three years, add new jobs, new IP and allow further investment to establish industry leadership in the Americas
- The consortium is also engaging academic partners to support data collection and interpretation
- 31 jobs supported by the project

### Maximizing Machine Efficiency

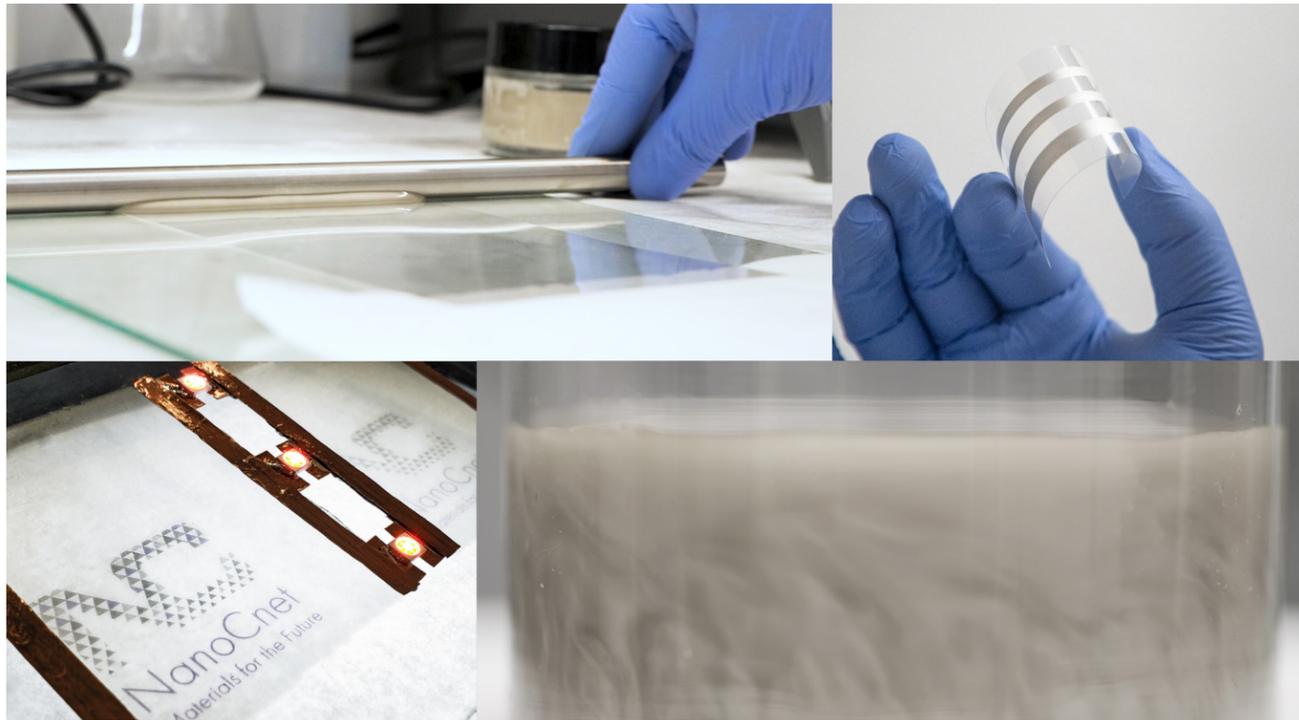
Panevo has partnered with Accuenergy to pilot ioTORQ LEAN OEE software platform which utilizes the latest IIoT technologies to enable cost-effective, real time monitoring of production assets to help manufacturers identify inefficiencies, boost productivity and reduce waste.

*"NGen support enabled us to develop the latest IIoT technologies that will enable manufactures to unlock the maximum potential of their assets, increase productivity and transition to Factory 4.0. We now have immediate plans to scale this solution with other industrial partners and develop a global presence."*

Panevo

### Facts & Figures

- New products, services and processes
- 3 new jobs created by project
- Trade secrets developed as a result of dashboard creation
- 10 jobs supported by project



### Developing new Cleantech Possibilities

NanoCnet is developing a printing process capable of depositing continuous and uniform ultra-thin films of Nano Silver Strands utilizing partner Evercloak's proprietary roll-to-roll advanced manufacturing printing process. With NGen support, NanoCnet will design an automated manufacturing system to scale up Nano Silver Strand production, creating a system which can manufacture flexible transparent electrodes and heaters utilizing Nano Silver

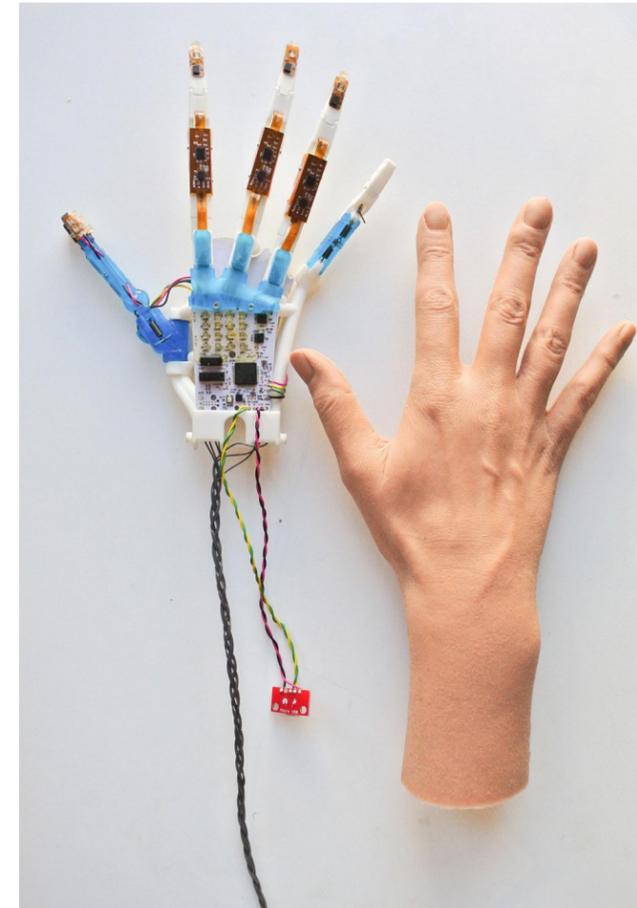
Strand technology with a diverse range of clean technology applications.

*"This innovation in manufacturing will dramatically change the printed electronics industry, as well as the electronics industry in general, while disrupting elements of numerous other industries such as the automotive and aerospace industry. This system will provide Canada with a significant competitive advantage across these industries."*

NanoCnet

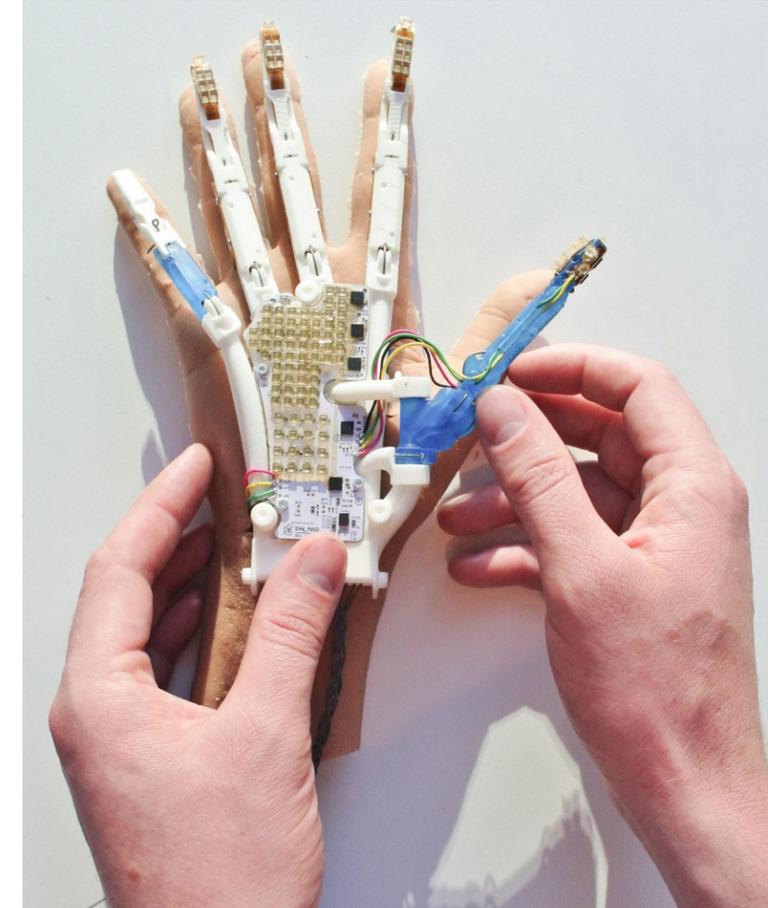
#### Facts & Figures

- This project will enable NanoCnet to meet a growing demand for transparent, flexible heaters
- NanoCnet is working with the University of Waterloo and McMaster University to support characterization of films and materials
- Additional funding from MaRS and FedDev
- Both companies involved in the consortium are SMEs
- 7 jobs supported by the project



### A Next Generation Robotic Hand

Sanctuary is partnering with reconstructive plastic hand surgeon Dr. Chris Doherty and Forcen Technology to develop a robotic hand to mimic the mechanical capability of a human hand for functional small part assembly and object manipulation. The project will showcase an anthropomorphic robotic hand match the functional equivalency of a human hand.



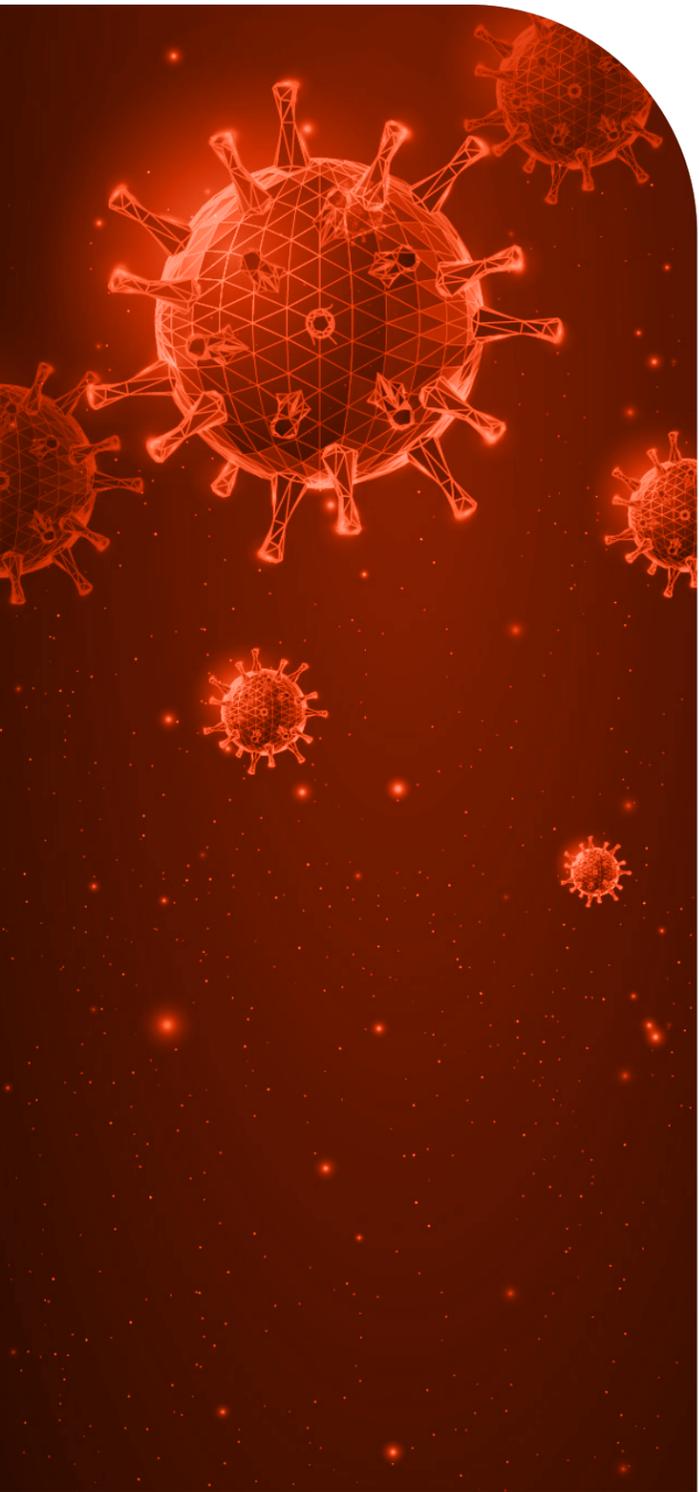
*"This project will result in the development of a prototype demonstrator device that can then be commercialized, allowing Sanctuary and our partners to take a prominent lead in robotic manufacturing."*

Sanctuary

#### Facts & Figures

- Sanctuary is developing new processes and IP with patent opportunities
- 4 new jobs were created through this project
- 7 jobs supported by project

## Combating COVID-19



On March 25, 2020, NGen announced that it would commit at least **\$50 million** in Supercluster funding to support rapid manufacturing scale-up of products critical for fighting the COVID-19 pandemic. By the end of March, NGen had approved **nine** COVID-19 projects valued at **\$28.1** million. NGen’s investment in those projects will total **\$26.8** million.

The COVID-19 projects that NGen approved in March involve **20** industry partners, **18** of which are SMEs, as well as a number of university and college partners. They have led to the manufacturing of Canada’s Pandemic Ventilator, as well as test kits, and personal protective equipment (PPE), including face shields and biometric monitoring textiles, and were delivering products to front-line health care workers by the end of June.

NGen was able to move so rapidly to invest in COVID-19 projects because over the course of the year it had built robust project development, assessment, and management systems in support of its advanced manufacturing programs. It had developed a cross-Canada network of organizations with research, technology, and manufacturing capabilities that could be focused quickly on producing critical health care products. And, it had already established strong working relationships

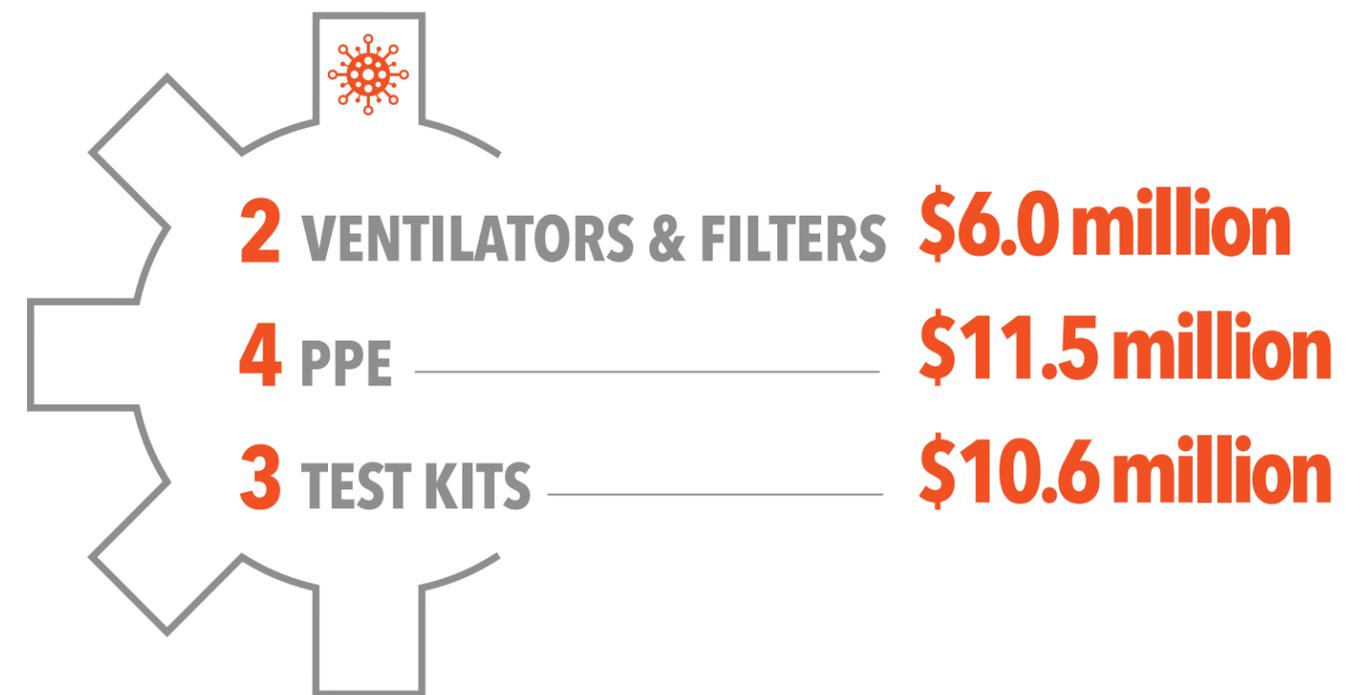
with public funding agencies that were also turning their attention to fighting the pandemic.

NGen has worked closely with federal and provincial government departments and funding agencies, including Innovation, Science, and Industry Canada, Health Canada, the National Research Council, Innovation Challenges Canada, and the Ontario Together Fund, to prioritize projects for funding, identify opportunities for co-investment, and direct manufacturers to other sources of financial and business support.

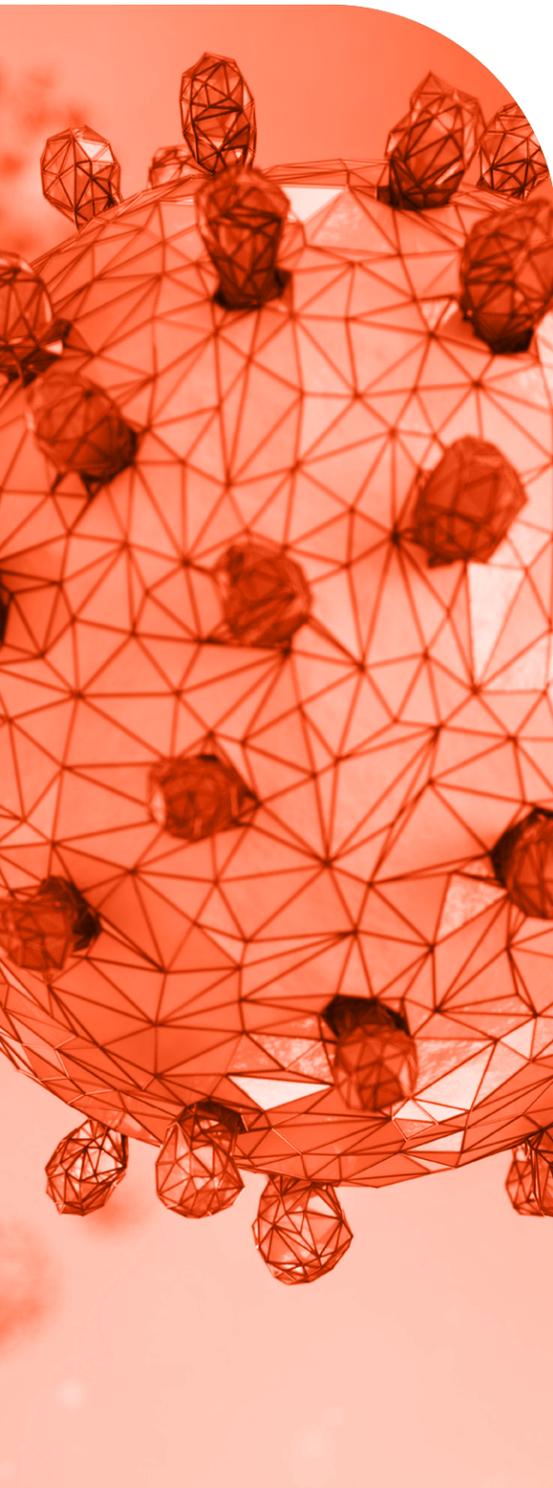
Of the **333** project proposals submitted to NGen by the end of March for COVID-19 funding support, **15** were approved for NGen investment by the end of April while **165** were referred to other federal or provincial funding and procurement initiatives.

NGen’s COVID-19 projects have been announced by Prime Minister Trudeau and Innovation, Science, and Industry Minister Bains in their daily briefings since March. Project announcements can be found at [www.ngen.ca/in-the-news](http://www.ngen.ca/in-the-news).

### COVID-19 Number of projects and Project Value



## Saving Lives



### Ventilators & Breathing Systems



#### StarFish Medical

StarFish Medical produced the “Winnipeg Ventilator,” which is a redesign and re-certification of a previously approved ventilator with Health Canada. The Winnipeg Ventilator is suitable for large scale manufacturing and use during the COVID-19 crisis. The core technology has also been licensed and cleared for use by the FDA in the U.S.

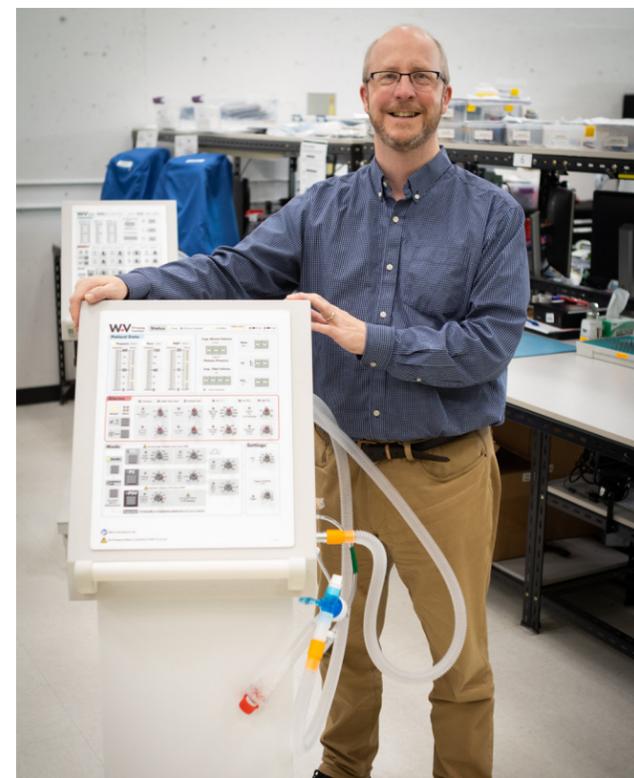
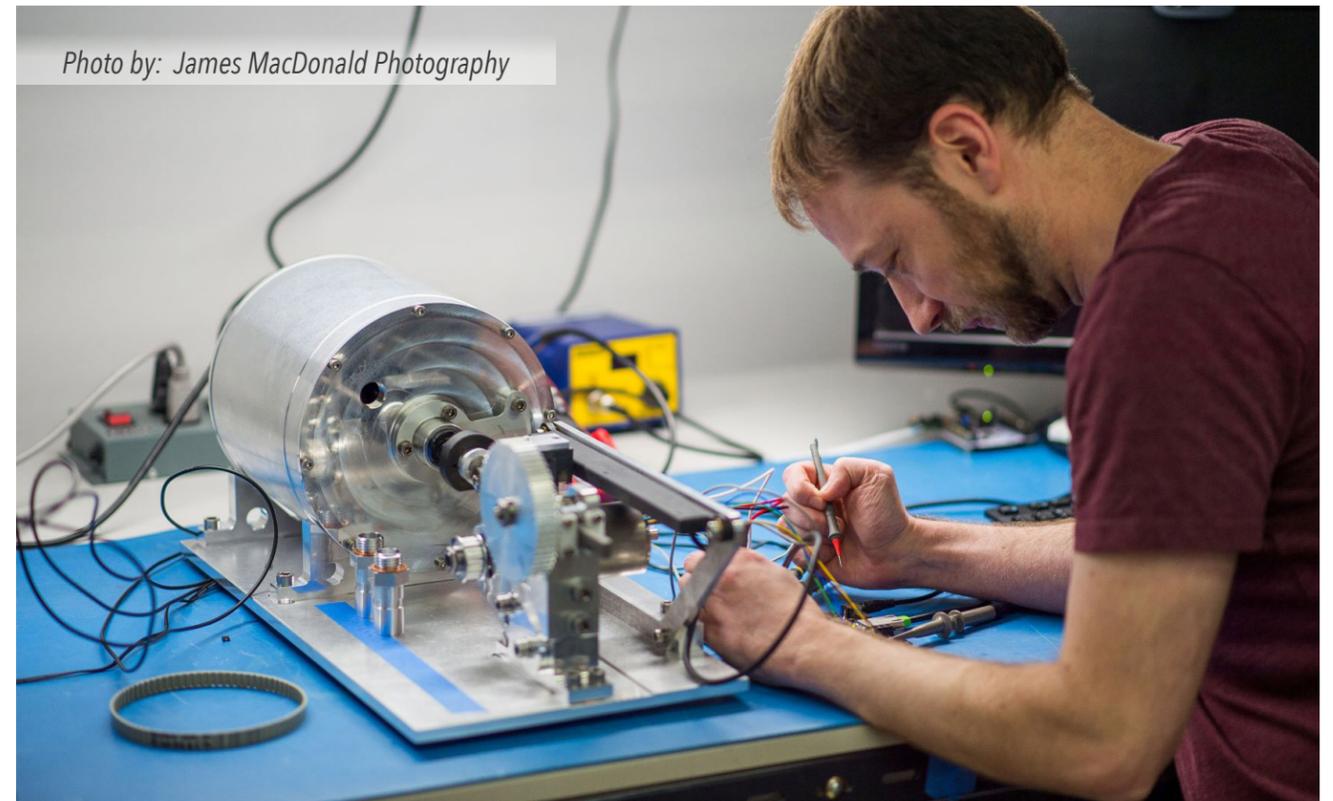
*“This project is providing ventilators for use in challenging COVID-19 triage scenarios. NGen funding allowed us to rapidly begin production and deployment of the ventilators in healthcare settings. Our aim was to produce 10,000 ventilators within 12 weeks, providing a secure supply of a desperately needed resource.”*

StarFish Medical

*“I would like to acknowledge the leadership and transformational assistance that we have received so far from the NGen Supercluster. We would not be where we are now without them and their network.”*

John Walmsley, Executive VP, StarFish Medical

Photo by: James MacDonald Photography



#### Facts & Figures

- StarFish is working with industrial partners across Canada, non-traditional manufacturers, involving hundreds of staff who would have been otherwise furloughed. Companies are based in British Columbia, Manitoba, Ontario
- Overseas sales interest is being managed with Winnipeg Ventilators (another NGen member)
- The Winnipeg Ventilator V2.0 is a full ICU-level ventilator for ongoing support of COVID and non-COVID patients, that fits alongside existing ventilator inventories
- The redesign was developed with extensive input from clinicians at health authorities across Canada
- 84 jobs supported by project



### BOMImed

BOMImed worked with partners Synergy MouldWorks Inc. and Precision ADM to design and manufacture breathing system components required for ventilated hospital patients. This unique collaboration brought together injection molding, ultrasonic welding and 3D printing processes to address the skyrocketing demand for ventilator breathing systems that Canada is experiencing as a result of the COVID-19 pandemic.

*"Most ventilator breathing system components are manufactured in the US or Asia, where demand is also at an all-time high, making order fulfillment uncertain. NGen's support has allowed us to produce manufactured in Canada breathing systems, giving us control of the supply of a critical component needed to meet the medical needs of COVID-19 patients."*

BOMImed

#### Facts & Figures

- BOMImed is developing new products and manufacturing processes through this project
- 2 of the 3 project consortium members are SMEs
- The new IP is conferring an advantage in medical manufacturing know-how for Canada
- 18 jobs supported by project

### Personal Protective Equipment and Garments



### MYANT

NGen support allowed Myant to manufacture and deploy the company's textile-based wearable health monitoring system (called Skiin). Myant knits sensors and actuators into everyday textiles, giving them the ability to sense and react to the human body. The system enables the remote detection and triaging of COVID-19 symptoms, provides patients with chronic illnesses who require social distancing with access to telemedicine, and minimizes risk to front-line healthcare workers. Myant partnered with Celestica, CardioComm and others to share expertise and to create a new standard for remote care.

*"Enabling production of Skiin garments has had an immediate impact on the fight against COVID-19, but also holds long term benefits including the repatriation of the supply chain for critical medical technology back to Canada. NGen has also supported the development of intellectual property in Canada that can be licensed to companies around the world, establishing Canada as a leader in advanced medical technologies."*

Myant

#### Facts & Figures

- Myant is accelerating the ability of Canadians to return safely to work
- Creating new IP
- Creating new product lines, services and processes
- 99 jobs involved in the project
- Potential for 900 jobs in 5 years



## Molded Precision Components

Molded Precision Components (MPC) partnered with Sterling Medical Devices to rapidly design and produce high quality and cost effective face shields to fulfill critical requirements for Canada's COVID-19 response. The face shields are meeting the immediate needs of Canada's frontline workers, providing PPE face shields and having a direct impact by ensuring the safety of Canada's healthcare workers.

*"Big thank you to the NGen team by doing what you are doing. Your service and efforts just saved MPC and 15 other companies that are going full out now because of this project. We have also hired over 115 university and college students on top of that to help get this off the ground. Now hiring another 30 people to support the production of the shield. What you are doing is having a huge ripple effect."*

David Yeaman, President, MPC

### Facts & Figures

- Production capability: 450,000 shields per day
- Expanded facility by 45,000 sqft.
- Additional \$10M capital investment and \$6M in building expansions
- Contracts signed for 27 million shields
- Hired 115 students and 45 full-time employees

## Burloak

Burloak Technologies, working with Hamilton Health Sciences, designed, developed and now manufactures 5000 full face shields per week using 3D printing technology to support front-line workers and responders to the COVID-19 outbreak.

*"Our rapid response manufacturing process, which was developed based on product design and brand new equipment requirements, was possible as a result of the support provided by NGen."*

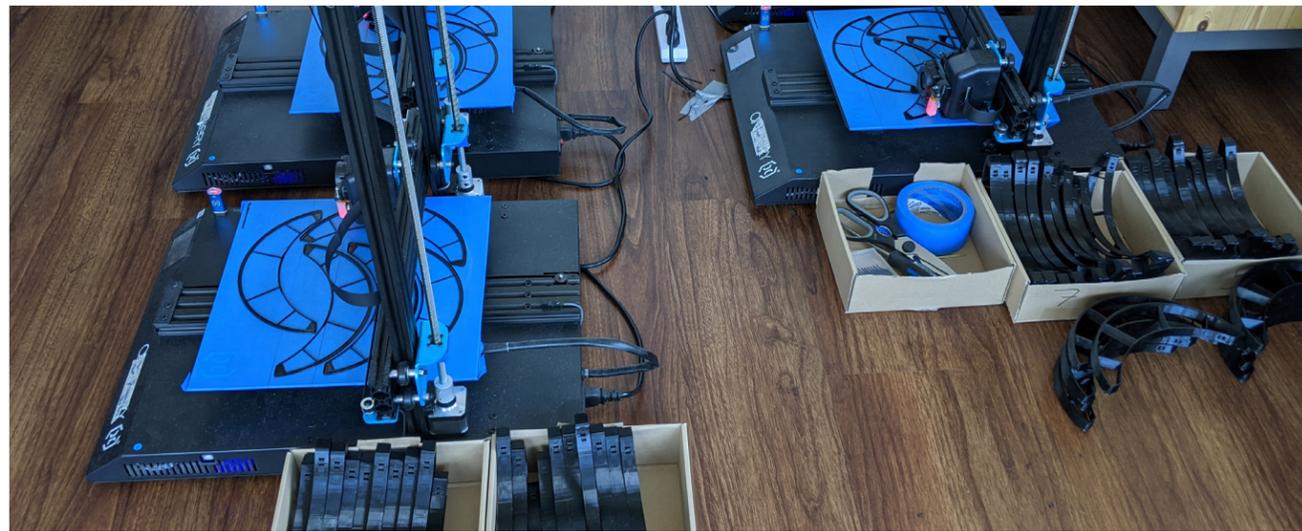
Burloak Technologies

*"NGen played a valuable role in the rapid response to get this project underway. Without this funding, it would not have been possible to achieve the same scale in this accelerated timeframe."*

Colin Osborne, President & CEO,  
Samuel, Son & Co., Limited

### Facts & Figures

- Burloak's rapid response helped supply PPE for front line workers and first responders amidst a global shortage of critical equipment and supplies
- This project also helped to retain jobs during the COVID-19 outbreak
- Mohawk College provided support to distribute PPE locally and across Canada
- 20 jobs supported by project



### Mosaic Manufacturing

Mosaic Manufacturing coordinated a cluster manufacturing approach to provide 3D printer face shields (PPE) to reduce the anticipated product shortage resulting from the COVID-19 pandemic. The cluster, consisting of project partners Rockmass Technologies, and Gila Inc., used 77 3D Printers across 21 locations to produce face shields.

*"NGen's focus on collaboration and support encouraged us to use the expertise of all the project partners to retool our facilities and businesses in such a way that we were able to move 3D printing operations into multiple facilities, including our own homes, scaling up a mass production effort that resulted in 17,000 printed face shields."*

Mosaic Manufacturing



#### Facts & Figures

- Requests totalling over 11,000 units from organizations across Canada
- Mosaic supported hospitals, dental and medical clinics, early childhood education centers, recruiting firms, religious organizations, NGOs, universities, long-term care facilities, pharmacies and more
- 20 Canadian businesses supported
- 26 jobs supported by project

### Test Kits



### Sona Nanotech

Sona Nanotech developed and produced COVID-19 Point of Care test kits to help fight the pandemic, establishing an initial production volume target of 10 million test kits. The test is expected to produce results in five to 15 minutes and is anticipated to be priced similarly to other tests used to diagnose infectious diseases.

*"The funding provided by NGen has allowed us to deploy our proprietary gold nanorod technology towards a credible, easy to use, rapid response, point-of-care Covid-19 test that can be used to reduce the strain on testing laboratories and enhance the capacity of health care systems."*

Sona Nanotech

#### Facts & Figures

- Creation of new rapid antigen test for COVID19 leading to a reduction in time to results
- Addition of 6 new high-value jobs
- Purchase orders secured for multi-million units of test-kits
- Partnerships with St. Mary's University and St. Francis Xavier University to assist in the scale up of raw materials
- Generation of IP related to COVID-19 and scale up and production of Nanorod technology
- Collaborations with suppliers from Canada and around the world to create the new test kit
- 7 jobs supported by project



### Precision Biomonitoring

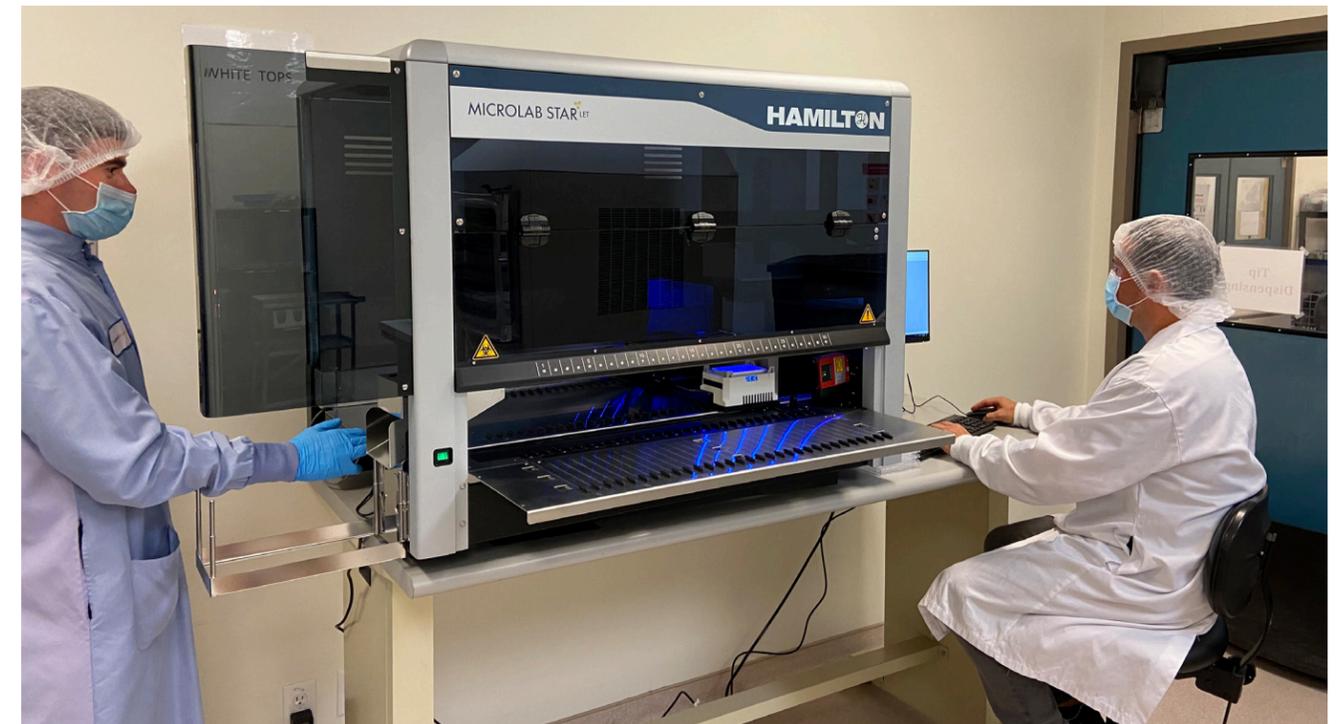
Precision Biomonitoring, in partnership with Evik Diagnostic Innovations, increased production of its TripleLock™ SARS-CoV-2 Strips, a rapid response test that allows for the early identification of COVID-19. Leveraging the capabilities of Canadian manufacturers, Precision Biomonitoring increased production capacity to more than 100,000 tests per day. This project also lays the groundwork for expansion into the growing mobile DNA applications market and export markets.

*"The support provided by NGen allowed us to provide our customers with Made in Canada COVID-19 test kits, putting control of a critical supply needed to fight COVID-19 back in the hands of Canadians."*

Precision Biomonitoring

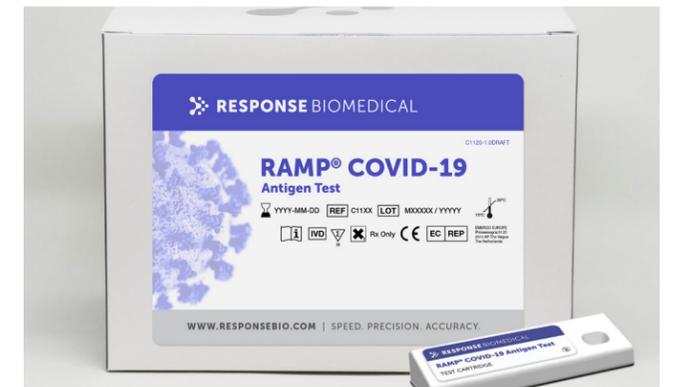
#### Facts & Figures

- Precision Biomonitoring is addressing the anticipated needs of critical reagents for test kits
- Additional funding from NRC IRAP
- Anticipating 27 new jobs in 2 years
- Generating new Canadian IP
- 13 jobs supported by project



### Response Biomedical

Under NGen's COVID-19 initiative, Response Biomedical received funding to support the rapid launch and scale up of a high quality, fast-to-produce and cost-effective point-of-care screening test for coronaviruses. With results in 5-15 minutes, the RAMP coronavirus test meets a critical need for Canada's COVID-19 response and had an immediate impact by allowing testing by front-line healthcare workers. Testing is key to opening the economy, and to supporting ongoing efforts to deal with future outbreaks.



*"With support from NGen, we were able to enter a scale-up phase to increase the production of test kits from 160,000 to 500,000 per month. NGen funding also enabled us to onboard new staff, open new markets and broaden our customer base. This is critically important as Canada moves towards the recovery phase, as well as dealing with outbreaks in the future."*

Response Biomedical

#### Facts & Figures

- 10 new jobs created
- The project has enabled Response Biomedical to enter a scale-up phase
- The project has opened new markets and expanded the customer base
- Generating new IP in the form of hardware test algorithms and manufacturing know-how
- 16 jobs supported by project

## Consulting with Industry



**NGen** conducted **six** Ecosystem Roundtables during October and December 2019. (An additional roundtable planned for Montréal during the Spring of 2020 was postponed due to the pandemic.) NGen’s roundtables brought together **150** stakeholders from industry, universities, colleges, research and innovation centres, local economic development offices, as well as from federal and provincial government agencies. Discussion focused on identifying the strengths, weaknesses, threats, and opportunities of Canada’s regional and national advanced manufacturing ecosystems.

Insights from roundtable participants were supplemented by NGen’s membership survey, the 2019 report of Canada’s Advanced Manufacturing Strategy Table, the 2018 Report of the World Manufacturing Forum on the future of the industry, as well as by other industry surveys conducted by Plant Magazine, the Excellence in Manufacturing Consortium (EMC), and Canadian Manufacturers & Exporters (CME).

What we learned will shape NGen’s program priorities going forward.

## 6 Ecosystem Roundtables



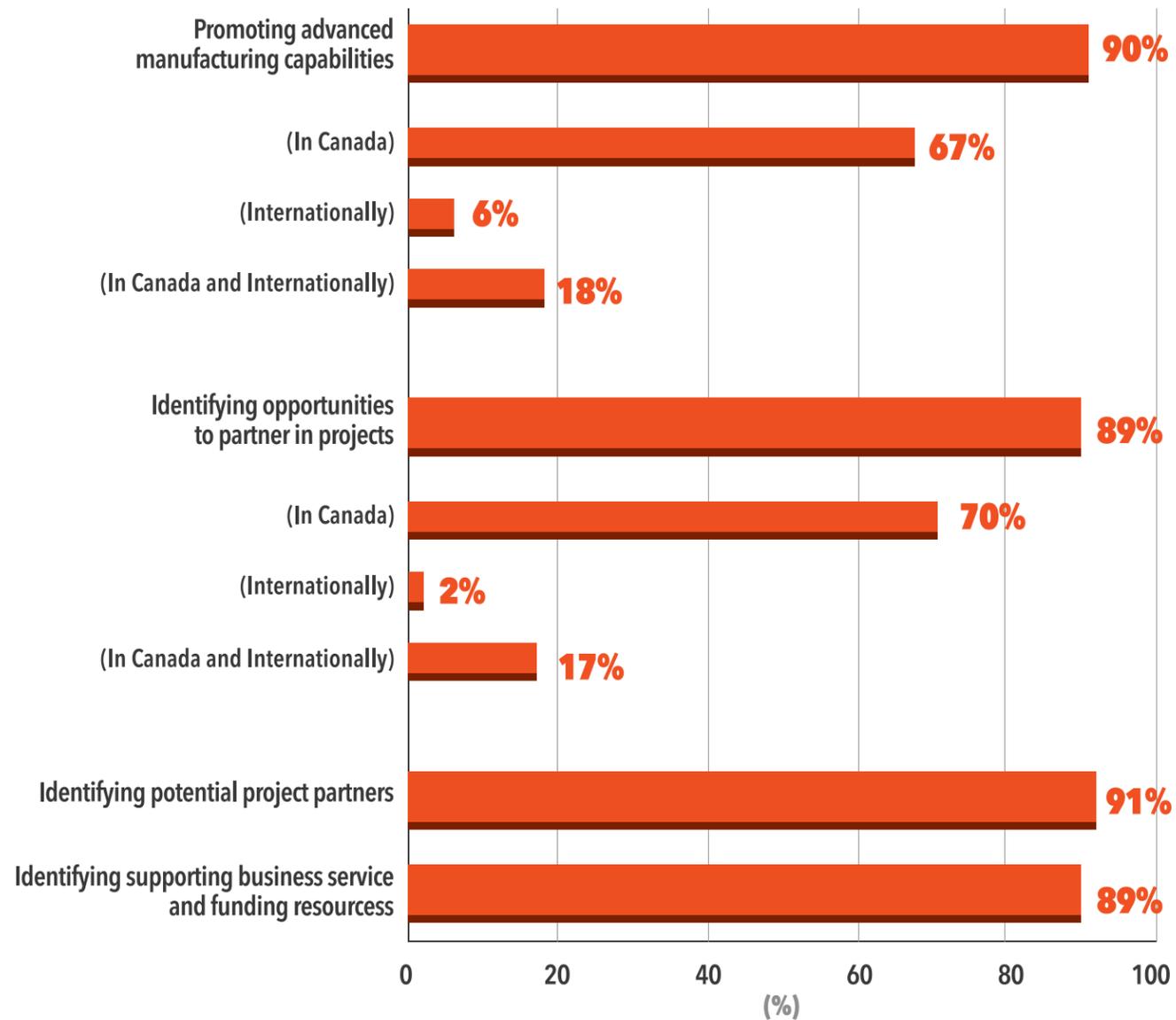
**150**  
STAKEHOLDERS

IDENTIFYING THE STRENGTHS, WEAKNESSES, THREATS, AND OPPORTUNITIES OF CANADA’S REGIONAL AND NATIONAL ADVANCED MANUFACTURING ECOSYSTEMS

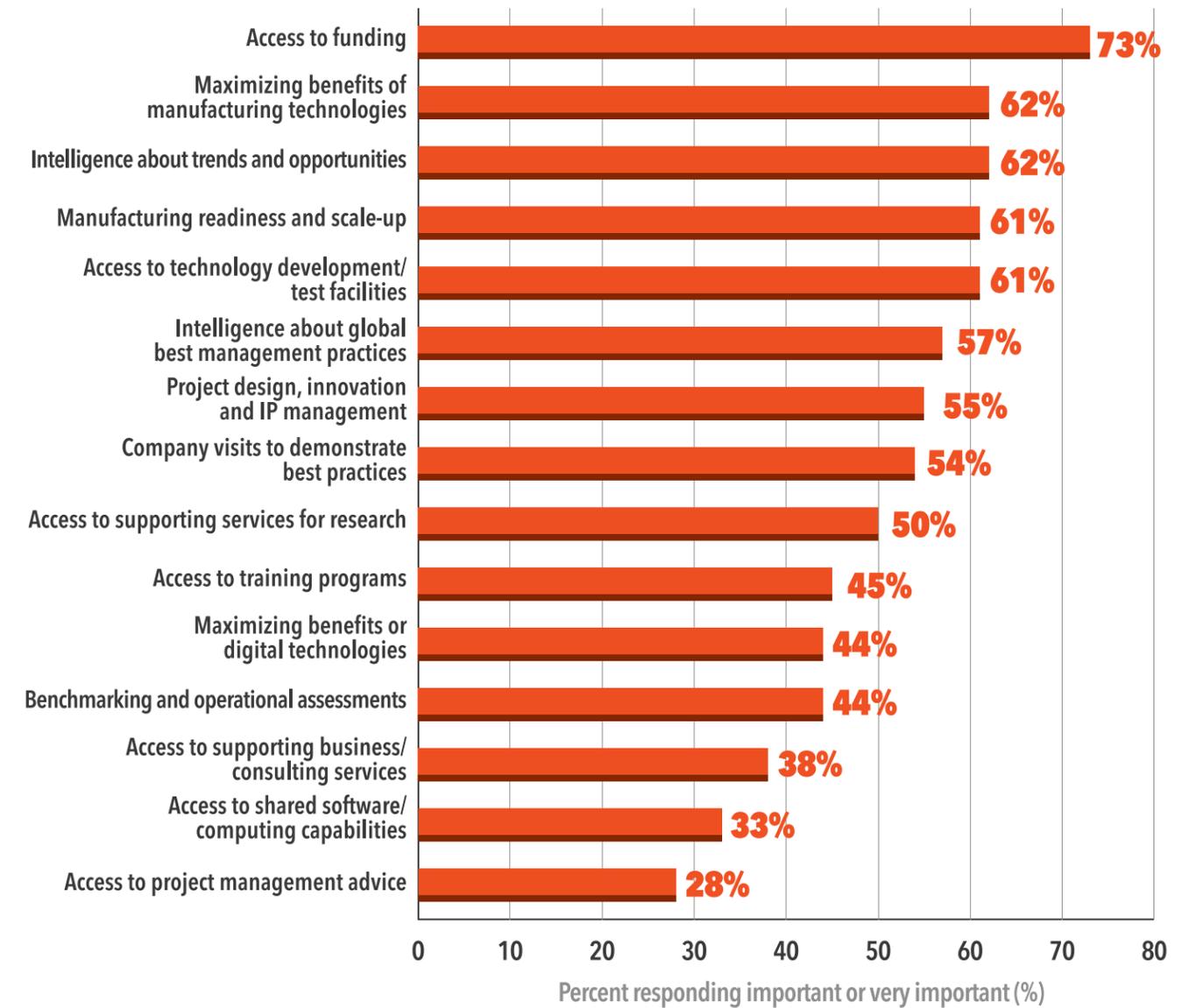
LOCATION	DATE	PARTICIPANTS
Toronto, ON	November 1, 2019	43
Surrey, BC	November 4, 2019	16
Halifax, NS	November 20, 2019	7
Toronto, ON	November 28, 2019	17
Winnipeg, MB	December 3, 2020	32
Red Deer, AB	December 10, 2020	35

## Responding to Member Needs

NGen surveyed its members in March 2020. Members say they joined the Supercluster to promote their advanced manufacturing capabilities in Canada and internationally, identify opportunities to partner in advanced manufacturing projects, find potential partners for their own innovation initiatives, and identify sources of business and financial support for innovation projects.



NGen members also identified and prioritized a number of services that they deem would be of high value to their business. Their input will shape NGen’s operating objectives for the future.



## 2018 World Manufacturing Forum Report: Recommendations for the Future of Manufacturing

The World Manufacturing Forum brings together leaders from advanced manufacturing ecosystems from around the world. NGen is a member of WMF's advisory board.

The Forum's 2018 report provides a global perspective on the high level of disruption being experienced by manufacturers around the world. The report identifies nine significant challenges faced by manufacturers around the world:

1. Competencies and skills gap for advanced manufacturing;
2. Secure and agile supply chain networks;
3. Integration of advanced technologies;
4. Scarcity of natural resources and reduction of energy consumption;
5. Mass personalisation;
6. Hybrid and smart materials;
7. Data-driven manufacturing;
8. Data security and data authority; and,
9. SMEs' digital divide.

The fact that these challenges are being faced by manufacturers across the globe underscores the level of disruption being experienced by the industry. With this very high level of risk comes a very high level of opportunity for those manufacturing supply chains that prove to be the most nimble

and forward thinking in their response. The report goes on to make ten specific recommendations for manufacturing and policy leaders:

1. Cultivate a positive perception of manufacturing;
2. Promote education and skills development for societal well-being;
3. Develop effective policies to support global business initiatives;
4. Strengthen and expand infrastructures to enable future-oriented manufacturing;
5. Encourage eco-systems for manufacturing innovation world-wide;
6. Create attractive workplaces for all;
7. Design and produce socially-oriented products;
8. Assist SMEs with digital transformation;
9. Explore the real value of data-driven cognitive manufacturing; and,
10. Promote resource efficiency and country specific environmental policies.

The WMF report can be found at <https://www.worldmanufacturingforum.org/copia-di-wmf-report>.

Many of the concerns and recommendations covered in the report were subsequently echoed by NGen's members and stakeholders across Canada.



## Ecosystem Gaps and Priorities for NGen Investment

NGen's consultations with its members and other stakeholders in Canada's advanced manufacturing ecosystem identified a number of gaps in ecosystem support and potential opportunities for future NGen investment, including the need for:

- A culture change among advanced manufacturing leaders to focus on solutions rather than products and Lean-oriented systems design and systems thinking rather than top-down management practices;
- Greater visibility for Canada's advanced manufacturing capabilities, both within the country and internationally;
- Curated opportunities for innovation and business partnerships, again both within Canada and internationally;
- Better intelligence about global trends in advanced manufacturing and the impact of advanced technologies;
- Better guidance with respect to best practices in managing the adoption and scale-up of advanced technologies in manufacturing;
- Promoting advanced manufacturing as an attractive career for young people, with a heightened emphasis on diversity and inclusion of under-represented groups in the sector;
- Experiential work-integrated learning opportunities for students and employees in advanced manufacturing focusing on innovation management, engineering and design, technologies and skilled trades;
- More peer-to-peer learning opportunities at all levels across organizations;
- Greater access to capital and funding support to reduce the risks associated with leading-edge and collaborative innovation initiatives;
- Easier access to Canada's research community;
- Leveraging Canada's technology strengths to enhance manufacturing competitiveness and attract international investment and talent into Canada's advanced manufacturing sector; and,
- A sustained and integrated policy approach by governments to support innovation and the development of advanced manufacturing capabilities across Canada.

## Operating Objectives for 2020-2021



During its second year of business, NGen is aiming to:

- Continue to grow its membership and engagement with stakeholders and strategic partners;
- Develop an online collaboration platform for its members;
- Launch strategic workshops and online advanced manufacturing education programs for NGen members;
- Promote advanced manufacturing as an attractive career opportunity to young people; and,
- Support Canada's economic recovery by approving investments from NGen funding of at least:
  - \$65 million in support of projects that stand up globally competitive manufacturing of products critical for fighting the COVID-19 pandemic; and,
  - \$90 million in collaborative advanced manufacturing projects focusing on strategically important sectors including medical devices, aerospace, transportation equipment, food processing, and advanced materials; and,
  - \$20 million in the establishment of regional advanced manufacturing clusters and enhanced ecosystem training and scale-up infrastructure.

## Governance

### Board of Directors

**Linda Hasenfratz,  
Chair**  
President, Chair & CEO  
Linamar Corporation

**Bob Magee,  
Vice Chair**  
Chairman & CEO  
Woodbridge Group

**B. Christopher A. Brown,  
Chair - Finance, Audit &  
Investment Committee**  
Vice President,  
General Dynamics  
Land Systems

**Joris Myny,  
Chair - Human Resources &  
Nominating Committee**  
Senior VP  
Digital Industries Siemens  
Canada Ltd.

**Thomas Ferns,  
(From January 2020),  
Chair - Governance &  
Compliance Committee**  
General Counsel &  
Corporate Secretary  
Mohawk College

**Gary Graham,  
(To October 2019),  
Chair - Governance &  
Compliance Committee**  
Partner  
Graham Stephenson LLP

**Salim Teja**  
Partner  
Radical Ventures

**Mike Andrade**  
CEO  
Morgan Solar

**Mike Baker**  
Executive Director  
Bluewater Wood Alliance

**Rhonda Barnet**  
President & COO  
AVIT Manufacturing

**Tony Chahine**  
CEO  
Myant Inc.

**Melissa Chee**  
President and CEO  
ventureLAB

**Jan De Silva**  
President and CEO  
Toronto Region Board  
of Trade

**Ryan Gariepy**  
CTO  
Clearpath

**Moira Harvey**  
Executive Director  
Ontario Aerospace Council

**Patricia Hawkins**  
Strategic Partnerships  
and Innovation  
Xerox Research Centre  
of Canada

**Sandra Ketchen**  
President & CEO  
Spectrum Health Care

**Jennifer Maki**  
Independent Director

**Carol McGlogan**  
President & CEO  
Electro-Federation Canada

**Angela Pappin**  
COO  
ArcelorMittal Dofasco

**Gerry Remers**  
Independent Director

### Observers

**Mitch Davies**  
Senior Assistant Deputy  
Minister  
Innovation, Science and  
Economic Development  
Canada

**James Meddings**  
President  
FedDev Ontario

**Cory Mulvihill**  
Lead Executive, Policy &  
Public Affairs  
MaRS Discovery District

**Iain Klugman**  
CEO  
Communitech

**Maria Aubrey**  
Special Advisor to  
the President  
National Research Council  
of Canada

**Kenneth Coley,  
(From January 2020)**  
Dean, Faculty of Engineering  
Western University

**Cristina Amon,  
(To October 2019)**  
Dean, Faculty of Applied  
Science and Engineering  
University of Toronto



## The NGen Team



**Jayson Myers**  
Chief Executive  
Officer



**Carol Cutrone**  
Executive Assistant  
& Office Manager



**Robbie MacLeod**  
Corporate Secretary  
& Director, Strategic  
Communications



**John Laughlin**  
Chief Technology  
Officer



**Steven Bell**  
Program Director



**Ken Morris**  
Director of Technical  
Partnerships



**Jenn MacLean**  
Director,  
Collaboration



**Gillian Sheldon**  
Senior Program  
Manager



**Christy Michalak**  
Senior Technology  
Manager



**Rhonda O'Keefe**  
Senior IP Manager



**Frank Haas**  
Senior Program  
Manager



**Ron Pope**  
Program Manager



**Joanne MacKinnon**  
Senior Project  
Coordinator



**Adam Balogh**  
Project Coordinator



**Stewart Cramer**  
Chief Manufacturing  
Officer



**Bridget Bohan**  
Director, Business  
Development



**Frank Defalco**  
Director, Member  
Relations



**Bilal Haffejee**  
Chief Financial  
Officer



**Lara Sanders**  
Director, Finance



**Wendy Young**  
Director, Data,  
Systems & Security



**Ashley Leung**  
Financial Claims  
Analyst



**Arun Lavishetty**  
Systems Admin



**Emily Blodale**  
Financial Claims  
Analyst



## IP Strategy



**NGen**'s Intellectual Property strategy is a critical tool for achieving the objectives of the Supercluster in promoting the commercialization of IP and identifying new business opportunities for project partners, especially SMEs.

NGen maintains clear, transparent, and predictable IP ownership policies and licensing structures for Foreground IP arising from NGen-funded projects, including processes for NGen members to request and negotiate licenses to use such arising IP.

Title to any IP arising from Supercluster-funded projects is determined by a collaboration agreement among consortium partners undertaking the project. Collaboration agreements are developed in consultation with NGen's IP Manager and must be concluded before a final Master Project Agreement is concluded and funding finally approved by NGen.

Collaboration agreements include:

- Assurance of adherence to commitments set out in NGen's IP Strategy;
- A right for each participant in a project to access on fair, reasonable, and non-discriminatory terms, and

subject to relevant competitive issues all Foreground IP arising from the project, at least for research and development purposes; and,

- A commitment from each project participant to enter into negotiations regarding access to Foreground IP arising from the project with other members of NGen Canada subject to any limitations placed on such access.

In 2019-2020, to support the goals of the Supercluster Program and provide alignment with its Intellectual Property Strategy, NGen:

- Developed model IP agreements for project consortia members;
- Employed an IP manager whose responsibility is to assist in maximizing the benefits of Foreground IP likely to arise in NGen-funded projects and help SMEs in NGen projects access independent expertise and advice related to strategic IP management, generation and retention; and,
- Provided individualized advice and assistance to project consortia members in developing their IP strategies as part of project proposals prior to assessment and contracting.

- Created a Project IP Strategy (Rationale) workshop that is being delivered early in the project application process to help applicants better understand:
  - Intellectual Property Basics
  - Issues with respect to protecting IP and preserving patentability
  - NGen's IP Strategy
  - How to put together an IP strategy that meets NGen's requirements.
- Developed and delivered workshops on IP Collaboration and NGen's project application process; and,
- Drafted IP Registry requirements.

**INTELLECTUAL PROPERTY REPORTING METRICS AS OF MARCH 31, 2020**

<b>Copies of all satisfactory IP Rationales (Project IP Strategy)</b>	<b>There are 4 contracted projects with Finalized IP Strategies</b>
<b>Number of licences executed for each Eligible Project</b>	<b>None specifically but all currently contracted projects have licensing obligations in both the Master Project Agreement and Collaboration agreements (as applicable)</b>
<b>Number of patent applications which have been filed to date</b>	<b>0</b>
<b>Number of entries protected by a copyright to date</b>	<b>0</b>
<b>Number of entries protected by other legal means to date</b>	<b>No Foreground IP added to the Registry-too early in projects to have developed Foreground IP</b>
<b>Instances where Foreground Intellectual Property was not included on the Member-accessible registry</b>	<b>There have been no refusals to enter eligible Foreground IP onto the Registry</b>
<b>Member disputes referred for dispute resolution</b>	<b>As of March 31<sup>st</sup>, 2020, there are no new disputes to report</b>
<b>SME Members that have accessed independent expertise and advice in respect of Intellectual Property</b>	<b>None</b>
<b>Project partners to whom access to Foreground IP has been denied</b>	<b>None</b>

**Data Strategy**



**NGen**’s data strategy outlines how NGen acquires, stores, governs, manages, uses, and shares data to accomplish its mission, achieve its strategic objectives, create value for its clients, carry out its operations, and ensure its long-term business success.

NGen’s data strategy is based on:

- leveraging data as a strategic asset, focusing on business results, using data as a competitive advantage for NGen and its members, and supporting NGen’s strategic objectives.
- robust operational, governance, and compliance processes to ensure data integrity, privacy, and security.

In 2019-2020, NGen developed a robust membership portal to connect, strengthen collaboration, and facilitate partnerships across Canada’s advanced manufacturing ecosystem. The new project application portal was introduced to support project eligibility and selection process and posted on the member portal. With introduction of analytic tools, NGen has been able to extract data with respect to partnership and other commercial opportunities from the input it received by members interested in its collaboration platform and applications by organizations to partner in Supercluster projects. NGen validates, secures and guarantees the reliability of collected data to be useful.

Operationalizing its strategy, NGen has developed, implemented, and oversees the policies and procedures related to the governance and management of data contained in, transferred in and out of, and between NGen’s data sources and NGen’s corporate services IT stack. Attention has been given to ensuring the security of data through cyber security awareness training.

## Statements and Affirmations for Year ending March 31, 2020

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### Investment Policy

There have been no updates to NGen's investment policies, standards, and procedures.

### Executive Compensation

Total compensation comprising salary and benefits for one employee was in excess of \$300,000.

### Financial Controls

NGen management maintains a system of financial and internal controls to provide reasonable assurance that transactions are accurately recorded on a timely basis, are properly approved, and result in reliable financial information. NGen's financial and internal controls have operated as intended.

### IP Strategy

There have been no updates to NGen's Intellectual Property Strategy.

NGen's IP Strategy has operated as intended and has supported the objectives as outlined in NGen's Corporate Plan.

There have been no instances where project partners have refused to enter eligible Foreground IP onto NGen's IP Registry or where project partners have been denied

access to Foreground IP. There have been no disputes arising among project partners that have been referred to dispute resolution.

### Data Strategy

There have been no updates to NGen's Data Strategy. NGen continues to leverage data as a strategic asset and provide strong security policies and procedures to ensure governance and compliance of data activities.

### Evaluations and Audits

NGen conducts regular reviews of its financial controls and project performance. NGen's financial statements for 2019-20 were subject to independent financial audit. The results of the audit are appended at the end of this report.

### Statements of Funding

- a. Funded Eligible Costs incurred and paid by NGen in the Fiscal Year amounted to \$4,617,454.
- b. No Unfunded Eligible Costs were incurred or paid in the Fiscal Year.
- c. Industry matching funds contributed in the Fiscal Year amounted to \$548,404.
- d. Total funding received from all sources to support NGen's eligible operating and administrative expenses in the Fiscal Year amounted to \$5,341,274.

Financial Statements of

## **NEXT GENERATION MANUFACTURING CANADA**

And Independent Auditors' Report thereon  
Year ended March 31, 2020



KPMG LLP  
Commerce Place  
21 King Street West, Suite 700  
Hamilton ON L8P 4W7  
Canada  
Tel 905-523-8200  
Fax 905-523-2222

## INDEPENDENT AUDITORS' REPORT

To the Shareholder of Next Generation Manufacturing Canada

### **Opinion**

We have audited the financial statements of Next Generation Manufacturing Canada (the Entity), which comprise:

- the statement of financial position as at March 31, 2020
- the statement of operations and changes in net deficiency for the year then ended
- the statement of cash flows for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Entity as at March 31, 2020 and its results of operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

### **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 Financial Statements**" section of our auditors' report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements 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.

### **Responsibilities of Management for the Financial Statements**

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.



Page 2

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

### **Auditors' Responsibilities for the Audit of the Financial Statements**

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are 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 financial statements.

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 financial statements, 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 Entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.



- 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

Hamilton, Canada

June 17, 2020

# NEXT GENERATION MANUFACTURING CANADA

Statement of Financial Position

March 31, 2020, with comparative information for 2019

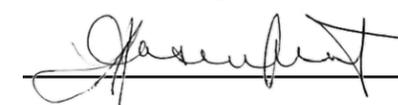
	2020	2019
<b>Assets</b>		
Current assets:		
Accounts receivable	\$ 53,544	\$ -
HST receivable	139,716	76,922
Contributions receivable (note 10)	30,664,604	-
Prepaid expenses	113,851	58,872
	<u>30,971,715</u>	<u>135,794</u>
Capital assets (note 2)	37,450	44,004
Intangible assets (note 3)	597,062	300,552
	<u>\$ 31,606,227</u>	<u>\$ 480,350</u>

## Liabilities and Net Assets (Deficiency)

Current liabilities:		
Bank overdraft (note 4)	\$ 154,430	\$ 322,585
Accounts payable and accrued liabilities (note 5)	1,756,222	272,698
Deferred contributions (note 6)	31,094,644	684,557
	<u>33,005,296</u>	<u>1,279,840</u>
Deferred capital contributions (note 7)	447,797	225,414
	<u>33,453,093</u>	<u>1,505,254</u>
Net deficiency	(1,846,866)	(1,024,904)
Subsequent event (note 10)		
	<u>\$ 31,606,227</u>	<u>\$ 480,350</u>

See accompanying notes to financial statements.

On behalf of the Board:

 Director

 Director

## NEXT GENERATION MANUFACTURING CANADA

Statement of Operations and Changes in Net Deficiency

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

	2020	2019
Revenue:		
Federal contributions	\$ 3,327,427	\$ 844,151
Administration fees	470,383	-
Other government contributions	-	200,000
Industry in-kind contributions	111,805	6,842
Industry sponsorships	15,000	25,000
Interest income	3,020	4,862
	<u>3,927,635</u>	<u>1,080,855</u>
Expenses:		
Salaries and benefits	3,073,700	1,297,161
Administration and governance	638,402	296,441
Outsourced services (note 8)	619,358	335,742
Communications and events	217,528	58,054
Project and program expenditures	177,823	-
Amortization of capital assets	22,786	7,496
	<u>4,749,597</u>	<u>1,994,894</u>
Excess of expenses over revenues	(821,962)	(914,039)
Net deficiency, beginning of year	(1,024,904)	(110,865)
Net deficiency, end of year	<u>\$ (1,846,866)</u>	<u>\$ (1,024,904)</u>

See accompanying notes to financial statements.

## NEXT GENERATION MANUFACTURING CANADA

Statement of Cash Flows

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

	2020	2019
Cash provided by (used in):		
Operations:		
Excess of expenses over revenues	\$ (821,962)	\$ (914,039)
Item not involving cash:		
Amortization of capital assets	22,786	7,496
Changes in non-cash operating working capital:		
Increase in accounts receivable	(53,544)	-
Increase in HST receivable	(62,794)	(76,922)
Increase in contributions receivable	(30,664,604)	-
Increase in prepaid expenses	(54,979)	(54,022)
Increase in accounts payable and accrued liabilities	1,483,524	155,544
Increase in deferred contributions	30,410,087	684,557
	<u>258,514</u>	<u>(197,386)</u>
Financing:		
Bank overdraft	(168,155)	322,585
Proceeds from promissory notes	-	550,000
Repayment of promissory notes	-	(550,000)
	<u>(168,155)</u>	<u>322,585</u>
Investing:		
Purchase of capital assets	(16,232)	(51,500)
Purchase of intangible assets	(296,510)	(300,552)
Deferred capital contributions	222,383	225,414
	<u>(90,359)</u>	<u>(126,638)</u>
Decrease in cash	-	(1,439)
Cash, beginning of year	-	1,439
Cash, end of year	<u>\$ -</u>	<u>\$ -</u>

See accompanying notes to financial statements.

# NEXT GENERATION MANUFACTURING CANADA

Notes to Financial Statements

Year ended March 31, 2020

Next Generation Manufacturing Canada ("NGen") was incorporated under the laws of Canada as a not-for-profit corporation without share capital on November 23, 2017. NGen is an industry-led, organization dedicated to building next generation manufacturing capabilities nationally. Our mission is help Canadian companies become global leaders in the application of leading technologies to manufacturing products and/or processes.

NGen projects and programs are aimed at driving greater technology development and technology adoption in Canadian manufacturing. To further support cluster growth, we also use data to increase connections and collaboration across the Canadian advanced manufacturing network.

With the signing of the Contribution Agreement between the Federal Government, represented by Minister of Industry and NGen dated November 9, 2018, the Federal Government's Ministry of Innovation, Science and Economic Development ("ISED") committed to fund NGen for eligible project costs over a five year period commencing in Fiscal Year 2018/19. Under the terms of the contribution agreement, ISED will provide a non-repayable contribution to NGen for 75% of eligible operating expenses that do not exceed 15% of the total contribution, and 100% of eligible project costs. The total is not to exceed the lesser of \$229,765,127 or 100% of total Industry Matching Funds obtained by the organization over the five year period. The amount of ISED contributions varies from year to year based on forecasted operating and project spend and amounts may be reallocated to other fiscal years within the five year period with the written approval from the Minister of ISED.

Payment by the Federal Government of the contribution is conditional on there being a legislated appropriation for the Fiscal Year in which the contribution is due. The Minister shall have the right to terminate or reduce the contribution in the event that the amount of the appropriation is reduced or denied by Parliament.

## 1. Significant accounting policies:

These financial statements are prepared in accordance with Canadian accounting standards for not-for-profit organizations. NGen's significant accounting policies are as follows:

### (a) Revenue recognition:

NGen receives grant revenue from ISED under the Innovation Superclusters Initiative ("ISI") and from industry.

NGen follows the deferral method of accounting for contributions. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

# NEXT GENERATION MANUFACTURING CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020

## 1. Significant accounting policies (continued):

### (a) Revenue recognition (continued):

Externally restricted contributions are recognized as revenue in the year in which the related expenses are incurred.

Deferred capital contributions related to capital and intangible assets represent amounts received specifically for the purpose of purchasing capital and intangible assets. Externally restricted contributions related to the purchase of capital and intangible assets are deferred and amortized to revenue on the same basis as the related capital or intangible asset.

### (b) Cash:

Cash consists of amounts held in a bank account which earns interest on a monthly basis.

### (c) Contributions receivable:

Contributions receivable represents amounts due from ISED for project and operating costs. Since those amounts relate to the following fiscal year, these have been deferred (see note 6).

### (d) Capital assets:

Purchased capital assets are recorded at cost. Contributed capital assets are recorded at fair value at the date of contribution.

Capital assets are amortized on a straight line basis using the following annual rates:

Asset	Rate
Computers	55%
Furniture and fixtures	20%

# NEXT GENERATION MANUFACTURING CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020

---

## 1. Significant accounting policies (continued):

### (e) Intangible assets:

Intangible assets, consisting of a database in development which will capture data in a taxonomy built around capabilities and services in the technology and manufacturing ecosystem in Canada, with advanced search tools that drives match-making between manufacturing companies and technology providers.

Development activities are recognized as an asset provided they meet the capitalization criteria, which include NGen's ability to demonstrate: technical feasibility of completing the intangible asset so that it will be available for use or sale; NGen's intention to complete the asset for use or for sale; NGen's ability to use or sell the asset; the adequacy of NGen's resources to complete the development and to use or sell the asset; NGen's ability to measure reliably the expenditures during the development; and NGen's ability to demonstrate that the asset will generate future economic benefits.

The database is measured at cost less accumulated amortization. Amortization is provided for, upon the commencement of the utilization of the database, on a straight-line basis over the estimated useful life of 3 years.

### (f) Contributed services:

The value of in-kind services for professional fees, materials and administrative services is recognized in the statement of operations at the fair value of such services at their date of contribution.

### (g) Income taxes:

NGen is a not-for-profit organization under the Income Tax Act (Canada) and accordingly is exempt from income taxes.

# NEXT GENERATION MANUFACTURING CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020

---

## 1. Significant accounting policies (continued):

### (h) Financial instruments:

Financial instruments are recorded at fair value on initial recognition. Freestanding derivative instruments that are not in a qualifying hedging relationship and equity instruments that are quoted in an active market are subsequently measured at fair value. All other financial instruments are subsequently recorded at cost or amortized cost, unless management has elected to carry the instruments at fair value. NGen has not elected to carry any such financial instruments at fair value.

Transaction costs incurred on the acquisition of financial instruments measured subsequently at fair value are expensed as incurred. All other financial instruments are adjusted by transaction costs incurred on acquisition and financing costs, which are amortized using the straight-line method.

Financial assets are assessed for impairment on an annual basis at the end of the fiscal year if there are indicators of impairment. If there is an indicator of impairment, NGen determines if there is a significant adverse change in the expected amount or timing of future cash flows from the financial asset. If there is a significant adverse change in the expected cash flows, the carrying value of the financial asset is reduced to the highest of the present value of the expected cash flows, the amount that could be realized from selling the financial asset or the amount NGen expects to realize by exercising its right to any collateral. If events and circumstances reverse in a future year, an impairment loss will be reversed to the extent of the improvement, not exceeding the initial impairment charge.

### (i) Use of estimates:

The preparation of the financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the year. Significant items subject to such estimates and assumptions include the carrying amounts of capital and intangible assets. Actual results could differ from those estimates.

## NEXT GENERATION MANUFACTURING CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020

### 2. Capital assets:

			2020		2019	
	Cost	Accumulated amortization	Net book value	Net book value		
Computers	\$ 43,952	\$ 24,211	\$ 19,741	\$ 21,785		
Furniture and fixtures	23,780	6,071	17,709	22,219		
	\$ 67,732	\$ 30,282	\$ 37,450	\$ 44,004		

Cost and accumulated amortization at March 31, 2019 amounted to \$51,500 and \$7,496, respectively.

### 3. Intangible assets:

			2020		2019	
	Cost	Accumulated amortization	Net book value	Net book value		
Database	\$ 597,062	-	\$ 597,062	\$ 300,552		

The database was available for use and subject to amortization commencing April 1, 2020.

### 4. Bank overdraft:

NGen has an authorized operating line of credit of \$1,000,000, repayable on demand. The interest rate charged on the operating line is prime plus 1.00%, payable monthly in arrears. At year-end, the balance drawn on the operating line was \$154,430 (2019 - \$322,585). In addition, NGen has credit facilities in the form of corporate credit cards which total \$100,000 (2019 - \$100,000) of which \$16,138 (2019 - \$2,312) was utilized and is included in accounts payable and accrued liabilities.

### 5. Accounts payable and accrued liabilities:

Included in accounts payable and accrued liabilities are trade amounts due and performance-based incentive accruals. Also included is a \$1,167,045 (2019 - \$nil) amount due to ISED.

## NEXT GENERATION MANUFACTURING CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020

### 6. Deferred contributions:

Deferred contributions represent unspent externally restricted government funds from the ISED program, for the purpose of providing funding to eligible recipients for future projects and for the payment of NGen's subsequent years' operations. The change in the deferred contributions balance is as follows:

	2020		2019	
Balance, beginning of period	\$ 684,557	\$ -		
Funding receivable	30,664,604	-		
Funding received	3,072,910	1,528,978		
Amount recognized as revenue	(3,327,427)	(844,421)		
Balance, end of period	\$ 31,094,644	\$ 684,557		

Funding receivable includes \$30,237,321 (2019 - \$nil) related to COVID-19 specific projects as further described in note 10.

### 7. Deferred capital contributions:

Deferred capital contributions represent the unamortized amount of restricted government funds from the ISED program received for the purchase of intangible assets. Details of the change in the unamortized deferred capital contribution balance is as follows:

	2020		2019	
Balance, beginning of period	\$ 225,414	\$ -		
Funding received	222,383	225,414		
Balance, end of period	\$ 447,797	\$ 225,414		

### 8. Outsourced services:

Outsourced services represent payments for the web application platform software fee for the member database, independent expert assessors for project reviews and marketing, social media and technology consulting costs.

## NEXT GENERATION MANUFACTURING CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020

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### 9. Financial risks and concentration of risk:

NGen has a risk management framework to monitor, evaluate and manage the principal risks assumed with its financial instruments. The following analysis provides a summary of NGen's exposure to and concentrations of risk at March 31, 2020:

(a) Liquidity risk:

Liquidity risk is the risk that NGen will be unable to fulfill its obligations on a timely basis or at a reasonable cost. NGen manages its liquidity risk by monitoring its operating requirements and prepares budget and cash forecasts to ensure it has sufficient funds to fulfill its obligations. As referenced in Note 4, the organization also has access to an operating line of credit. There has been no change to the risk exposures from 2019.

(b) Interest rate risk:

Interest rate risk arises from fluctuations in interest rates depending on prevailing rates. NGen has exposure to interest rate risk through its operating line of credit, however, management assess that the impact on NGen financial position would be insignificant.

(c) Projects and Programs risk:

Projects and Programs risk is the risk where companies that have contracted with NGen may not be able to continue to fund their portion of the costs given unstable economic conditions referenced in Note 10. If requested by companies, NGen will provide advances to cover eligible project and program expenditures to assist companies with cash flow.

## NEXT GENERATION MANUFACTURING CANADA

Notes to Financial Statements (continued)

Year ended March 31, 2020

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### 10. Subsequent event:

On March 11, 2020, the World Health Organization declared the Coronavirus COVID-19 (COVID-19) outbreak a pandemic. This has resulted in governments worldwide, including the Canadian and Ontario governments, enacting emergency measures to combat the spread of the virus. These measures, which include the implementation of travel bans, self-imposed quarantine periods and social distancing, have caused material disruption to businesses globally and in Ontario resulting in an economic shutdown. Governments and central banks have reacted with significant monetary and fiscal interventions designed to stabilize economic conditions however the success of these interventions is not currently determinable.

From the declaration of the pandemic to the date of approval of these financial statements, NGen experienced the following in relation to the COVID-19 pandemic:

a) *Current year transactions:*

ISED has increased the non-repayable contribution to NGen to 100% (from 75%) of eligible operating expenses that do not exceed 15% of the total contribution.

b) ISED has agreed to reallocate \$30,237,321 of the total contribution of \$229,765,127 for the purpose of funding COVID-19 related projects. In the year ended March 31, 2020, NGen has recognized this funding as deferred revenue and recorded a corresponding receivable.

c) *Subsequent events related to COVID-19:*

NGen received the \$30,237,321 of COVID-19 funding from ISED and approved 20 new project funding agreements related to COVID-19 response efforts.



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