NGen Next Generation Manufacturing Canada

Project Development Workshop

12th November 2020

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Agenda

1:00 – 1:05 - Welcome and Introduction

1:05 – 1:10 - Funding Streams

- Feasibility Study
- Pilot Project
- Single Stage
- Dual Stage

1:10 – 1:30 - Is my project in scope?

1:30 – 2:15 - How to prepare a strong application

- Ten Question – Guidance

2:15 – 2:25 - Q&A

2:25 – 2:30 - Break

2:30 – 2:50 - Project funding and eligible costs

2:50 – 3:00 - Application Process

3:00 – 3:10 - Q&A

3:10 - Wrap up & Close

Canada is an Advanced Manufacturing Nation

- NGen is the industry-led, not-for-profit organization that connects Canada's strengths.
  - Manufacturers
  - Technology providers
  - Government organizations
  - Research organizations
  - Academia

Canada is an Advanced Manufacturing Nation

Our Mission is to build world leading advanced manufacturing capabilities in Canada.

NGen measures success by the benefits it delivers to Canadians.

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

Canada is an Advanced Manufacturing Nation

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

Expected Outcomes:

New domestic and international sales

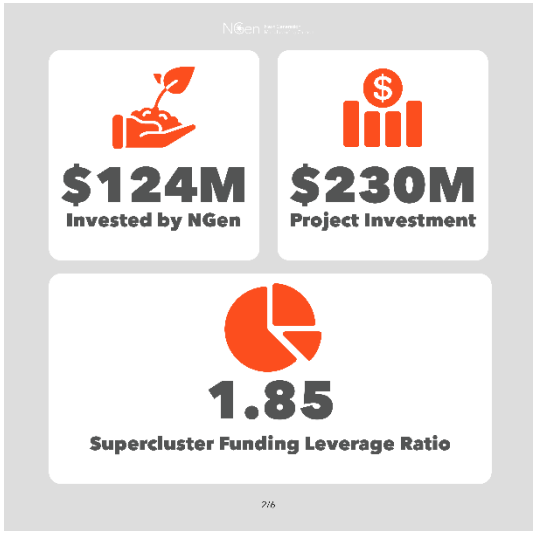
Jobs created

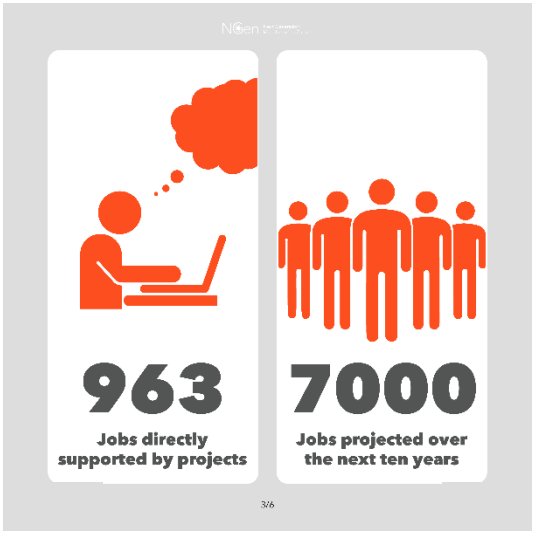
Companies created

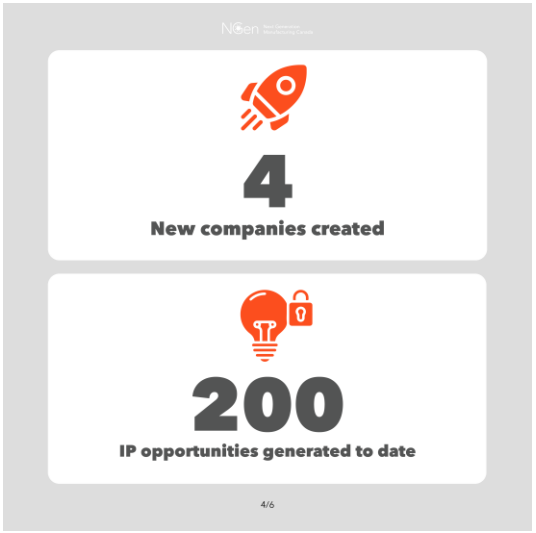
New products, processes, and services

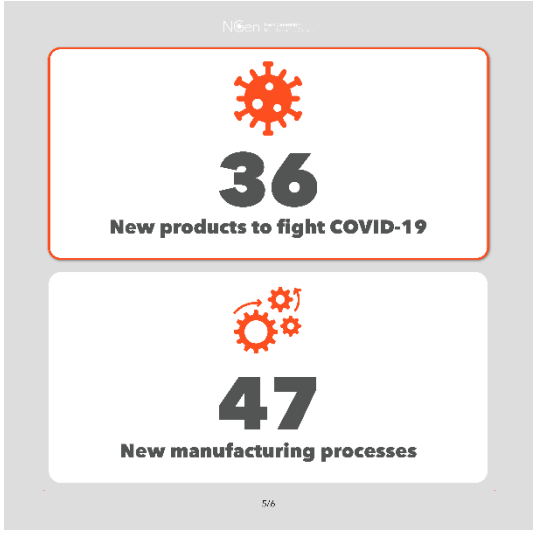
Intellectual property created

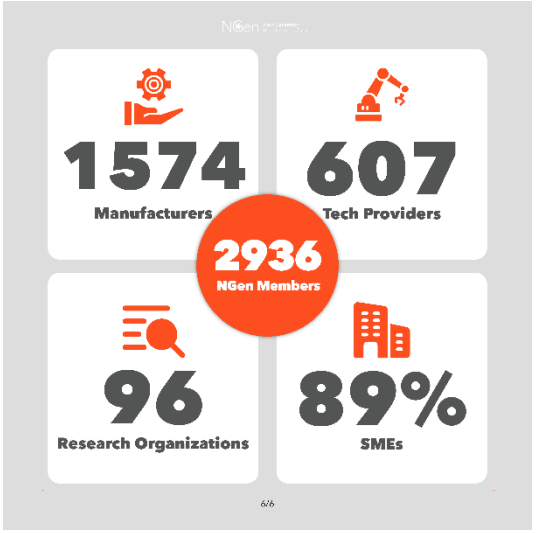
2019-2020 Year in Review





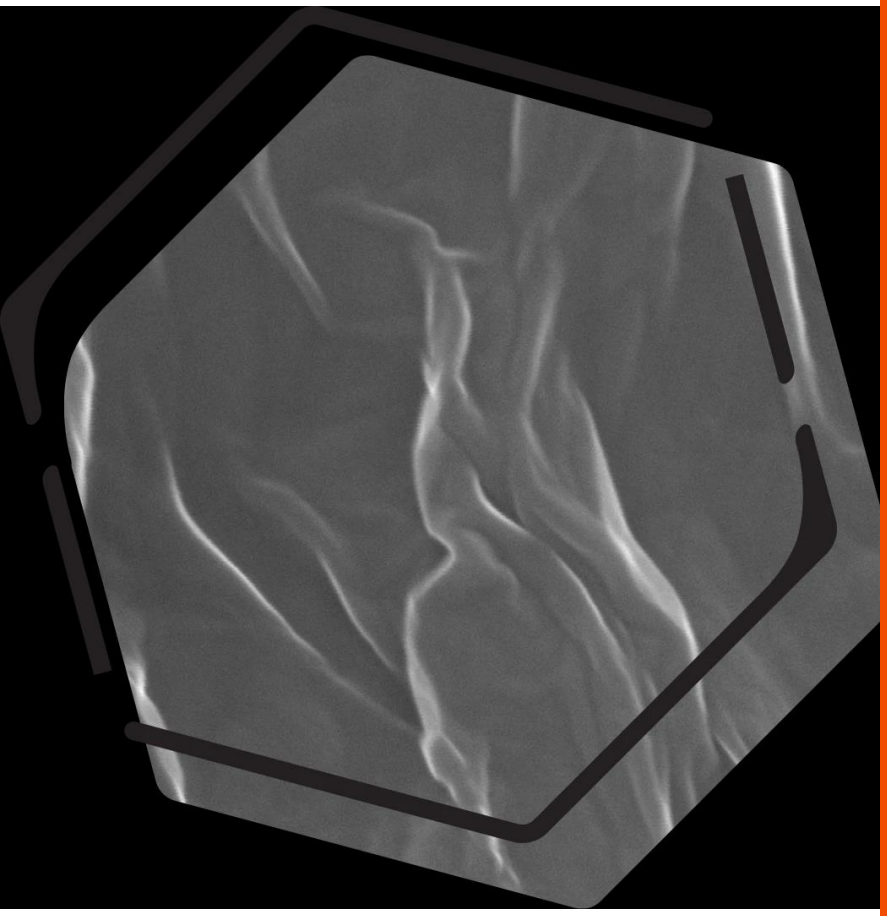






Project Case Study – Pilot ($500k)

EVERCLOAK



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

Project Case Study – Pilot ($500k)

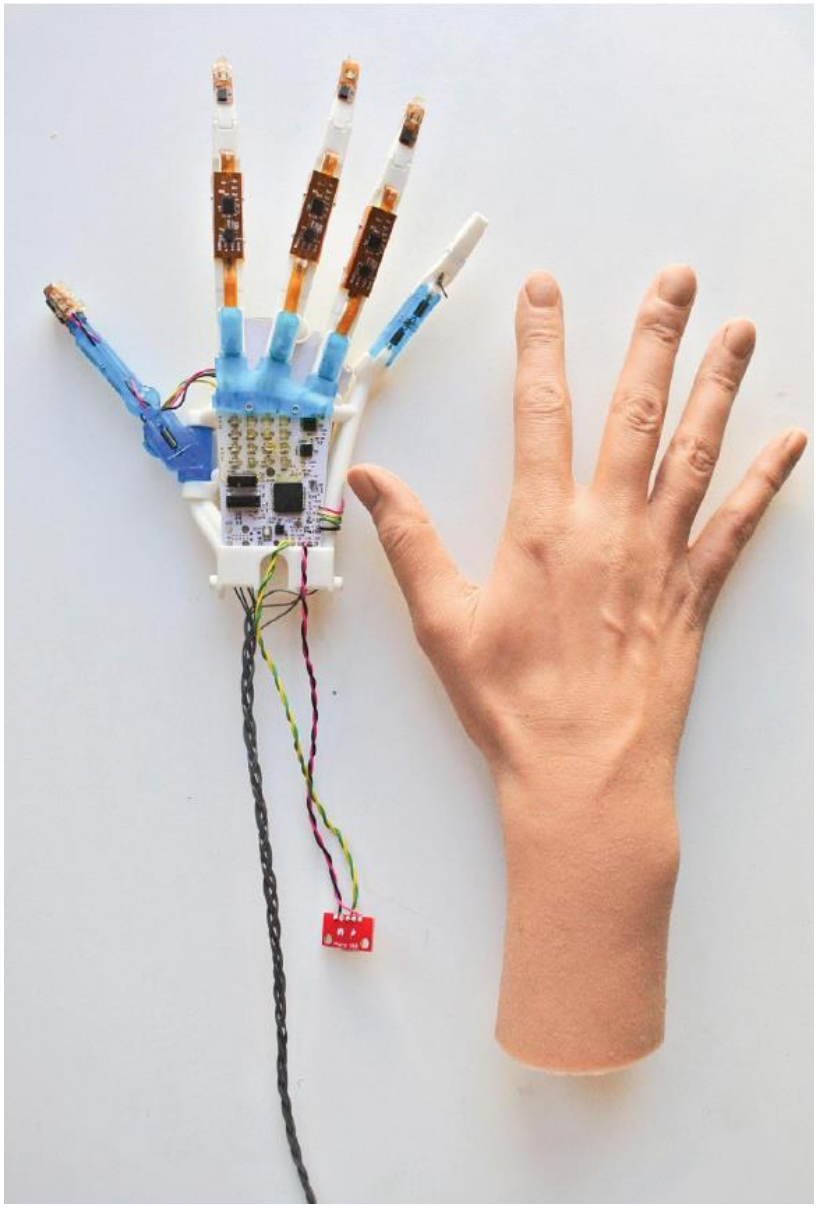
SANCTUARY COGNITIVE SYSTEMS

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 Cognitive Systems



Funding Streams

Ngen: SME Funding Streams from $50K - $500K

Feasibility Studies	Cluster Building	Pilot Projects
Partnership of 2 or more SME's working to prove or demonstrate the technical or economic feasibility of an advanced manufacturing opportunity	Group of SMEs with geographical, industry or technical interests, collaborating to forming a mini-cluster to address shared challenges and opportunities for business growth	Partnership of 2 SME's working on a smaller scale advanced manufacturing project.
Funding at 50%	Funding at 50%	Funding at 50%
Total project size between $50 to $200k	Total project size up to $150k	Total project size between $100 to $500k
400 words per question	400 words per question	400 words per question

Ngen: Funding Streams from $500K - $20m+

Major Projects Single stage	Major Projects Dual Stage
Partnership of at least 2 organizations with an advanced manufacturing project. Project must include 1 SME.	Partnership of at least 3 or with an advanced manufacturing project. Project must include 1 SME.
Funding at 44.4%	Funding at 44.4%
Total project size between $500k to $8m	Total project size between $8m to $20m+
900 words per question	Stage 1 - 900 words per question Stage 2 – 2500 words per question

Project Scope

It's all about... Advanced Manufacturing

Digital Technologies
High fidelity modeling, simulation and analysis, machine learning and AI for manufacturing processes, blockchain, innovative new sensing techniques, advanced vision systems

Advanced Robotics
Autonomous robotics, proximity to or collaboration with humans,

improved manipulation, manufacturing flexibility or precision

New Industrial Platform Technologies
Data Engineering and Analytics, development of 3D printing technologies, the creation of new groundbreaking processes

It's the Cutting Edge

It's all about... Making Canada a global leader

Transformative

Involving the development of Advanced Manufacturing capabilities with the potential to confer a significant global competitive advantage to Canadian industry.

Collaborative

Developing industry relationships including building trust and sharing in knowledge, risk, investment and the resulting benefits.

Projects must include at least 1 small and medium-sized enterprises (SMEs) and are encouraged to consider the inclusion of academic and research organizations.

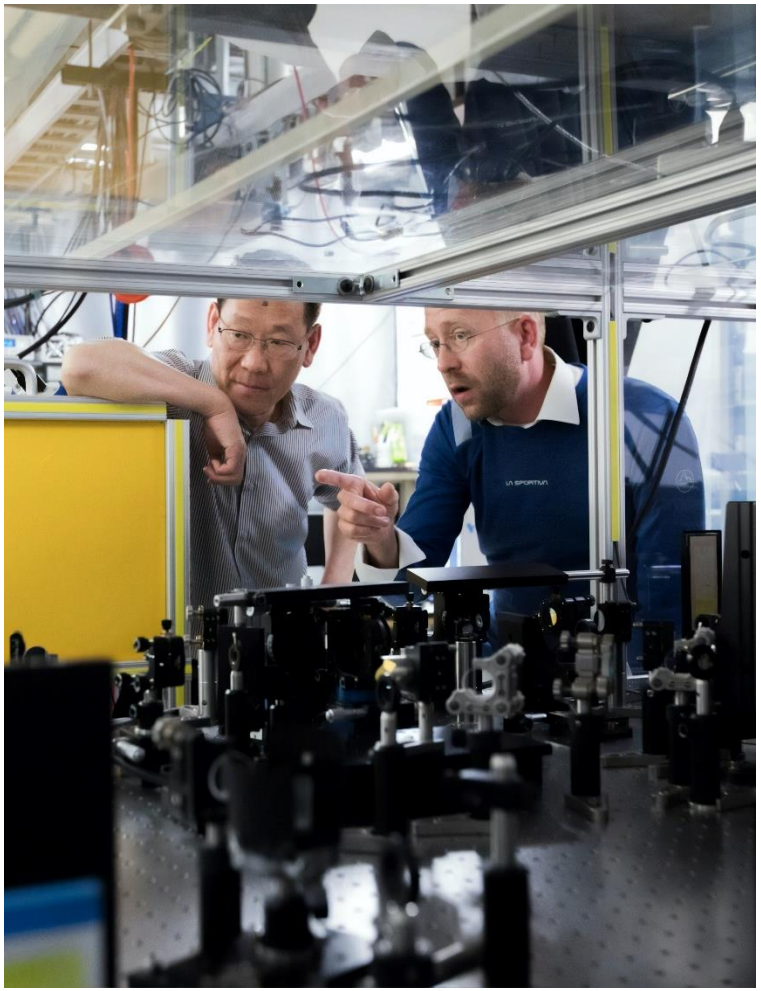
It's all about… Making Canada a global leader

Enduring

Leaving a legacy in skills development, tools, testbeds, intellectual property, business knowledge for Canada's advanced manufacturing ecosystem beyond the partners and timeline of the project.

Applied

Focus on Solutions. Supporting later stage technology and manufacturing readiness with potential to generate significant long-term commercial and economic benefits, including jobs maintained and created.



Project Requirements
Pilot projects and Feasibility studies

Projects Requirements – Feasibility studies & Pilot projects

- All projects must demonstrate the development or application of an Advanced Manufacturing Technology or Process.

- Projects must demonstrate that they are Collaborative, Transformative, Enduring and Applied.

- Projects must have the potential to deliver significant commercial benefits and jobs within the consortium and beyond.

Projects Requirements – Feasibility studies & Pilot projects

- Who can apply?
  - Any Small or Medium sized company (SME; defined as a company with fewer than 500 full-time employees globally)
  - Need to be a member of the Advanced Manufacturing Supercluster.
  - Companies must be incorporated in Canada.
  - Eligible organizations:
    - for-profit organizations;
    - not-for-profit organizations that facilitate and fund research and development and whose funding is received primarily from private-sector organizations;
    - non-federal Crown corporations whose funding is derived from commercial activities.

Projects Requirements – Feasibility studies & Pilot projects

- International organizations may participate as partners, but any project activities undertaken by these organizations will not be eligible for funding.

- Publicly funded not-for-profit organizations, post-secondary institutions, federal, Crown corporations, and government departments or agencies are not eligible to receive Supercluster funding directly, although they may bring their own contributions to projects or be sub-contracted by funded recipients to carry out project activities.

- Project partners cannot also be a funded sub-contractor or consultant within the project.

- Participating companies will be required to pay a one-time, non-refundable project administration fee to NGen equal to 2.5% of the total cost of the project at the time of project launch. This fee can be paid by one partner or divided between partners.

Projects out of Scope

- Those related to experimental or theoretical work without any direct commercial application or use.
- Projects that develop products that are not used for Advanced Manufacturing
- Production activities themselves or activities that subsidize full scale production
- Activities where benefits accrue to a single firm or organization
- Activities that could be viewed as anti-competitive
- Capital investment for production or for purposes not related to the research being conducted
- Projects that would be undertaken at the same scale or scope and within the same timeframe without Supercluster funding
- Any routine or periodic changes made to existing products, production lines, manufacturing processes, services and other operations in progress, even if those changes may represent improvements

Project Requirements

Feasibility studies - only

Projects Requirements – Feasibility Studies

- The total cost of projects must be between $50K and $200K.
- NGen will reimburse up to 50% of eligible costs; up to $100K of NGen funding.
- Projects need to completed within 9 months of initiation.

Projects Requirements – Feasibility Studies

- All projects need to demonstrate meaningful collaboration with at least 1 SME and a partner organization.
  - Partner organizations can be any size of company, a Not-for-profit, an academic or research institution.
  - Only SMEs companies and eligible Not-for Profits are eligible to directly receive NGen reimbursement.
  - To be considered a partner, collaborating companies must be providing some level of cash or in-kind investment into the project, in-kind contributions from any partner are not eligible for reimbursement.
- Capital expenditures may be eligible for reimbursement for Feasibility Studies; however this is expected to be in exceptional circumstances only. Pilot projects are probably a better mechanism if intending to do a physical demonstration.

Projects Requirements – Feasibility Studies

- The total amount of sub-contracting eligible for funding under an NGen Feasibility Study is capped at 70% of total project costs. Only expenses incurred to Canadian subcontractors are reimbursable by NGen.

- The financial structure of the project needs to demonstrate meaningful collaboration.
  - A single SME can receive a full reimbursement of the funding.

  - A partner organization must be providing a meaningful contribution to the project of cash or in-kind that is more than 30% of the total project cost.

Example Project Structures

Example 1 – Simple Collaboration

Project Financials

Company	Cash Contribution ($)	Contribution In-Kind ($)	Funding Sought From Ngen ($)	Funding From Other Programs ($)	Total Project Cost by Partner ($)
SME 1	$70,000		$70,000		$140,000
SME 2	$30,000		$30,000		$60,000
Total Project Cost	$100,000	0	$100,000	0	$200,000
Cost Ratios	50%	0	50%	0	

Total project cost - $200k

- Lead applicant - $140k
- Partner - $60k

Reimbursed costs at 50% of Total eligible project costs

- Lead receives $70k (70%)
- Partner receives $30k (30%)

Admin fee 2.5% on $200k

Example Project Structures

Example 2 – Collaboration with an Unfunded Partner and in excess of $200k

Project Financials

Company	Cash Contribution ($)	Contribution In-Kind ($)	Funding Sought From Ngen ($)	Funding From Other Programs ($)	Total Project Cost by Partner ($)
SME 1	$100,000		$100,000		$200,000
MNE 1	$25,000	$25,000			$50,000
Total Project Cost	$125,000	$25,000	$100,000	0	$250,000
Cost Ratios	50%	10%	40%	0	

Total project cost - $250k

- Total Eligible - Lead applicant $200k
- Partner large organization $25k cash (labour) & $25k in-kind

Reimbursed costs at 50% of Total eligible project costs

- Lead receives $100k (100%)
- Partner receives $0k (0%)

Admin fee 2.5% on $250k

Project Requirements

Pilot Projects - only

Projects Requirements – Pilot Projects

- The total cost of projects must be between $100K and $500K.
- NGen will reimburse up to 50% of eligible costs; up to $250K of NGen funding.
- Projects are expected to be completed within 9 – 12 months of initiation.
  - Note this is a change to the original guidance.

Projects Requirements – Pilot Projects

- All projects need to demonstrate meaningful collaboration with at least 2 SME's.
  - Other Partner organizations are encouraged to be part of the collaboration as subcontractors and can be any size of company, a Not-for-profit, an academic or research institution.
  - Only SMEs companies and eligible Not-for Profits are eligible to directly receive NGen reimbursement.
  - To be considered a partner, collaborating companies must be providing some level of cash or in-kind investment into the project, in-kind contributions from any partner are not eligible for reimbursement.

Projects Requirements – Pilot Projects

- The total amount of sub-contracting eligible for funding under an NGen Pilot Projects is capped at 30% of total project costs. Only expenses incurred to Canadian subcontractors are reimbursable by NGen.
  - Where partnering ineligible organizations are being subcontracted such as Universities, Research Organizations, eligible Not-For-Profits then a deviation to this cap can be sought from NGen.

- The financial structure of the project needs to demonstrate meaningful collaboration.
  - A single SME can not receive in excess of 70% of NGen funding.
    - In exceptional circumstances a slight deviation above 70% can be sought and requires a strong rationale and written pre-approval from NGen.

Unsure if you are in Scope?

Still unsure if you are in scope e-mail: project@ngen.ca

New Project Guidance

Project Guide V1 vs V2

There is a new and improved project guide coming out.

Are you looking for more detail in the application?

The guidance has been enhanced based on learning from successfully funded projects. This is help you provide the detail the assessors have been looking for.

Which one should I use?

If you have already passed the screening in Hockeystick then its your choice. Let your NGen contact know.

If you are before screening, we expect version 2 to be used, unless you have an almost complete offline version. Please register your project for screening ASAP and speak to your NGen contact.

Project Guide V1 vs V2

What is the opportunity the project addresses?

What is the overall project and risk management plan?

What is transformative about the project?

What is the nature and size of the potential market the project will address?

What sort of economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?

How will the results of the project be *exploited?*

Does the project team have adequate skills and experience, resources, and access to facilities to deliver the identified benefits?

What is the financial commitment required for the project?

What is the opportunity the project addresses?

What is the overall project and risk management plan?

What is transformative about the project?

What is the nature and size of the potential market the project will address?

What sort of economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?

How will the results of the project be commercialized?

What is the collaborative nature of the project including the partner skills and experience, to deliver the identified benefits?

What is the financial commitment required for the project?

Project Guide V1 vs V2

What are the broader ecosystem, social, and environmental benefits of the project. Including the extent of collaboration with SMEs, academic, and other research organizations?

How does NGen add value to your project?

What is the impact on the broader Advanced Manufacturing ecosystem?

How does NGen add value and what additional benefits will be achieved including social and environmental benefits?

Tips on how to develop a strong proposal

Tips and general principles

- Follow the guide to help support the development of the proposal.
- This new guidance is enhanced with more suggestions of how other projects have previously answered the questions.
- You do not have to apply all the suggestions for each question. Use the ones that are most relevant to your project.

Tips and general principles

- Consider the amount of funding being requested and the impact the project can have on leaving a legacy for Advanced Manufacturing in Canada.

- Every project is unique - therefore please include any other pertinent information not covered in this guidance.

- Feasibility Studies – Question 3,4,5
  - The project will be targeted at a Technical or Economic Feasibility for a new / novel Advanced Manufacturing technology or process.
  - If it is a Technical feasibility the answer to Question 3 will need to demonstrate the transformative potential – recognizing that you may not have all the answers at this time.
  - If it is an Economic feasibility the answer to Question 4 and potentially 5 will be in essence the output of the feasibility and it is recognized that you may not have all the answers at this time.
  - Clearly indicate the knowledge gaps and why the study is essential to fill them.

Tips and general principles

Answer the questions.

- This is not an exam. The assessors however are only able to assess what is written in the application. To the best of your ability, try to address the relevant guidance provided for each question.

- Do not answer the questions in isolation. Work with your partners to understand all the benefits that might accrue from the project.

Tips and general principles

Benefits timescale

- Consider the benefits in the Short, Medium and Long-term.
- The benefits might not be fully realized for up to 10 years.
- These are best estimates as it's impossible to consider the external factors that might positively or negatively affect the end results.
- These projects are earlier stage and potentially more disruptive – therefore it is recognized that these are potential benefits.

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

Tips and general principles

Succinct answers

- Clearly articulate the answers to the questions. Assessors are looking for a straightforward case.
- Graphs, charts and tables are your friends. Use them for:
  - Market projections.
  - The economic case.
  - To provide a project governance or team structure.
- Avoid quoting the guidance back to the assessors or making general unquantified statements.
- The word count limit (400 word) is an indication of the expected level of detail.

Tips and general principles

Quantified answers

- Where possible provide evidence for your statements. Do you have market analysis or survey information?

- Use credible sources. Don't quote Wikipedia.

- What are the specifics relevant to your project?

Tips and general principles - Structuring a new Project

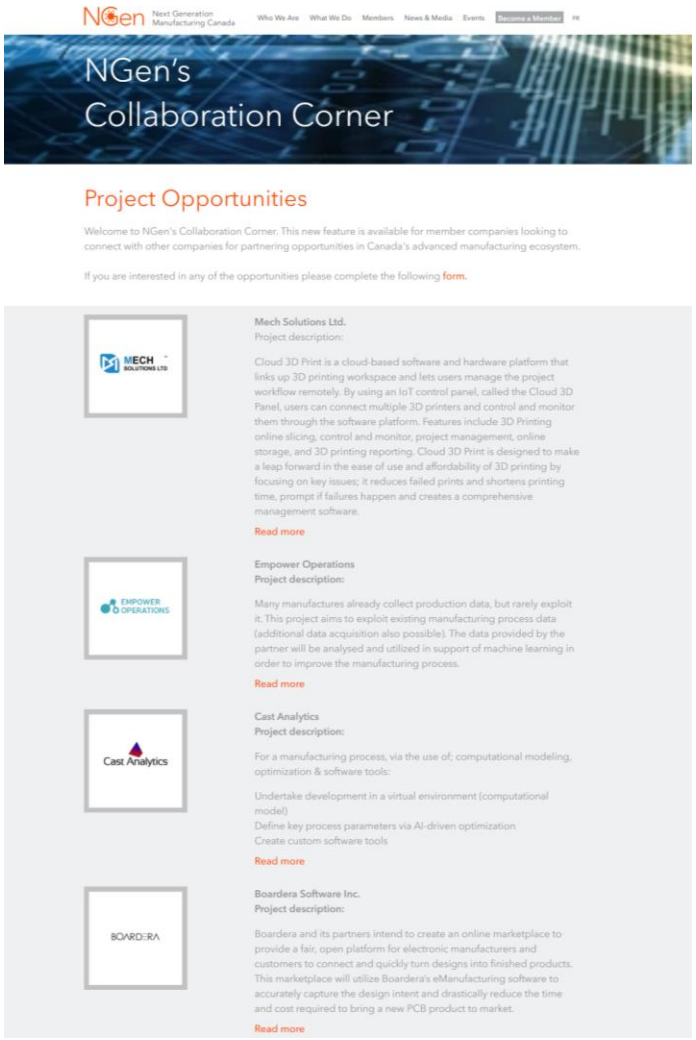
Sketch out the structure

- Sketch out the collaborative structure of the project
  - Who are your partners?
  - What partners do you need?
  - Think about high-level roles.

- Consider the NGen funding requirements.
  - Do you meet them?
  - Got a question? project@ngen.ca

Looking for parnters?

- Do you have a project?
- Do you need partners?
- Are you looking for a project to partner?
    - We have resources to help
    - https://www.ngen.ca/collaboration-corner



Tips and general principles - Structuring a new Project

Plan the project with your partners

- Define the high-level key deliverables to be achieved and how these will be commercialized.

- Brainstorm the project benefits as a consortium and think about all the opportunities that the project might achieve.
  - These will be differentiating factors in the assessment.

Tips and general principles - Structuring a new Project

Plan how you will write the proposal - Example

Take the 10 questions and bullet point out some core answers to each.

- Answer Questions 1, 3 and half of 9 (nature of collaboration).
  - These questions are important in meeting the Project scope requirements for Collaboration and Transformation.
  - NGen is happy to review for initial scope alignment.

- Consider preparing the Project plan.
  - Define the Work packages as a team and build out the tasks within each work package.

- Prepare the full proposal
  - Take care to ensure alignment with the additional 2 scope criteria Enduring - Leaving a Legacy and Focus on Solutions - providing strong economic value.

The 10 Questions

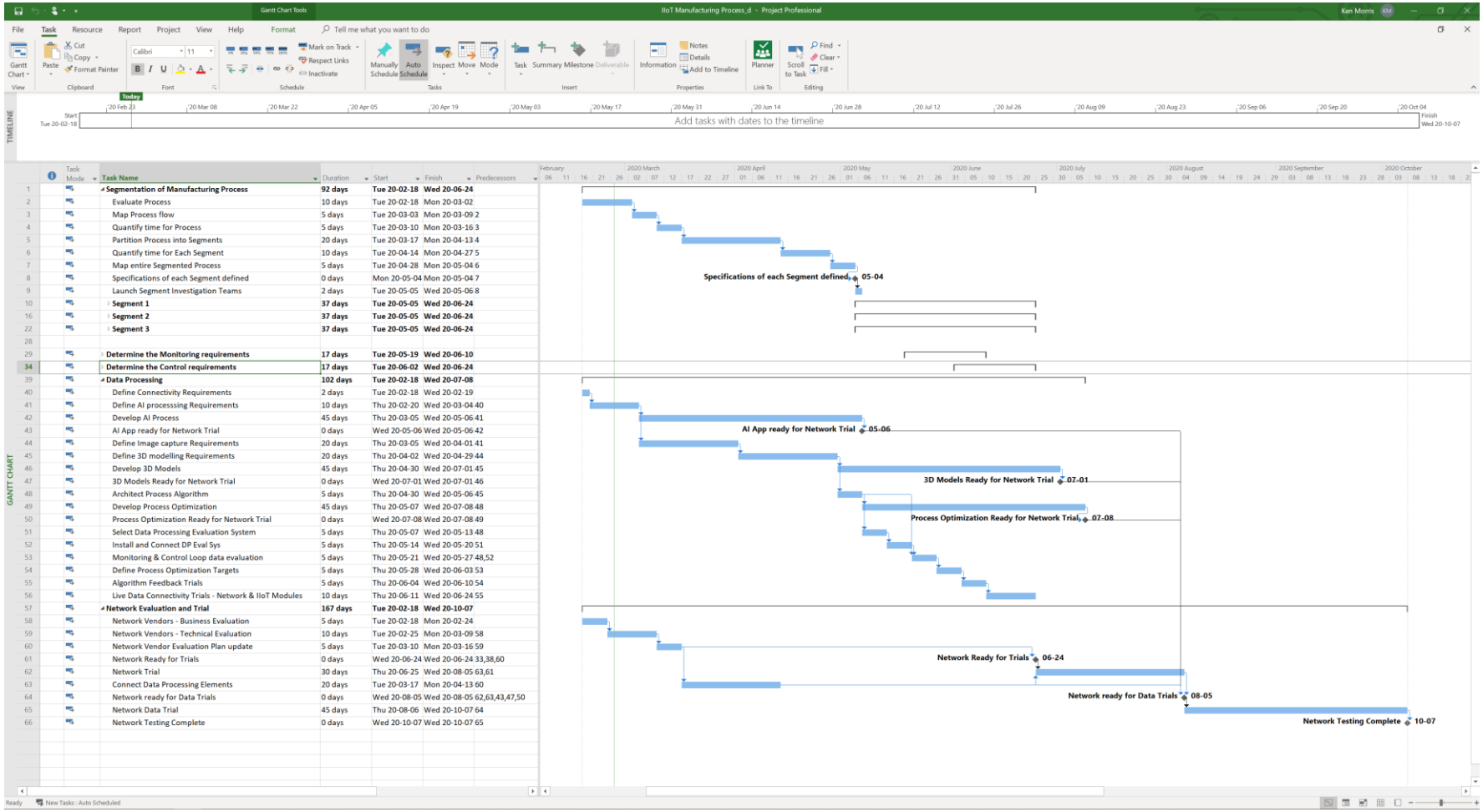
1. What is the opportunity the project addresses?

- Outline the big-picture motivation and the overall advanced manufacturing objectives, that the project intends to achieve.
- Provide an overview of the project considering both technology and business impacts, highlight other strategic benefits.
- Outline what the project team needs to do to successfully achieve the project objectives within the desired timeframe and budget.
- What are the specific challenges, research questions, and/or technical complexities that will be addressed?
- Describe the nature of the challenges facing you and/or your potential customers, along with the potential market challenges or barriers to entry.
- How will the outcomes of the project overcome these challenges?
- Clearly describe the project partners and how the partners will collaborate towards the overall opportunity.

2. What is the overall project and risk management plan?

- Describe the Project and Risk Management approach, identifying key project management tools and mechanisms (e.g. Quality Management Systems) that will be implemented to provide confidence that sufficient control will be in place to minimize risk.
- Describe how you are going to measure the success of the project.
- Summarize your overall project plan, including work-package descriptions and describe the key milestones and deliverables that show how the overall project will be achieved.
- Provide a Project Plan consisting of a Gantt chart (Appendix 1) that details the Work Packages, tasks, timelines, milestones, deliverables, dependencies and resource allocation for all partners.
- Describe the resource and management requirements for successful project completion, including how the work will be shared among project partners.

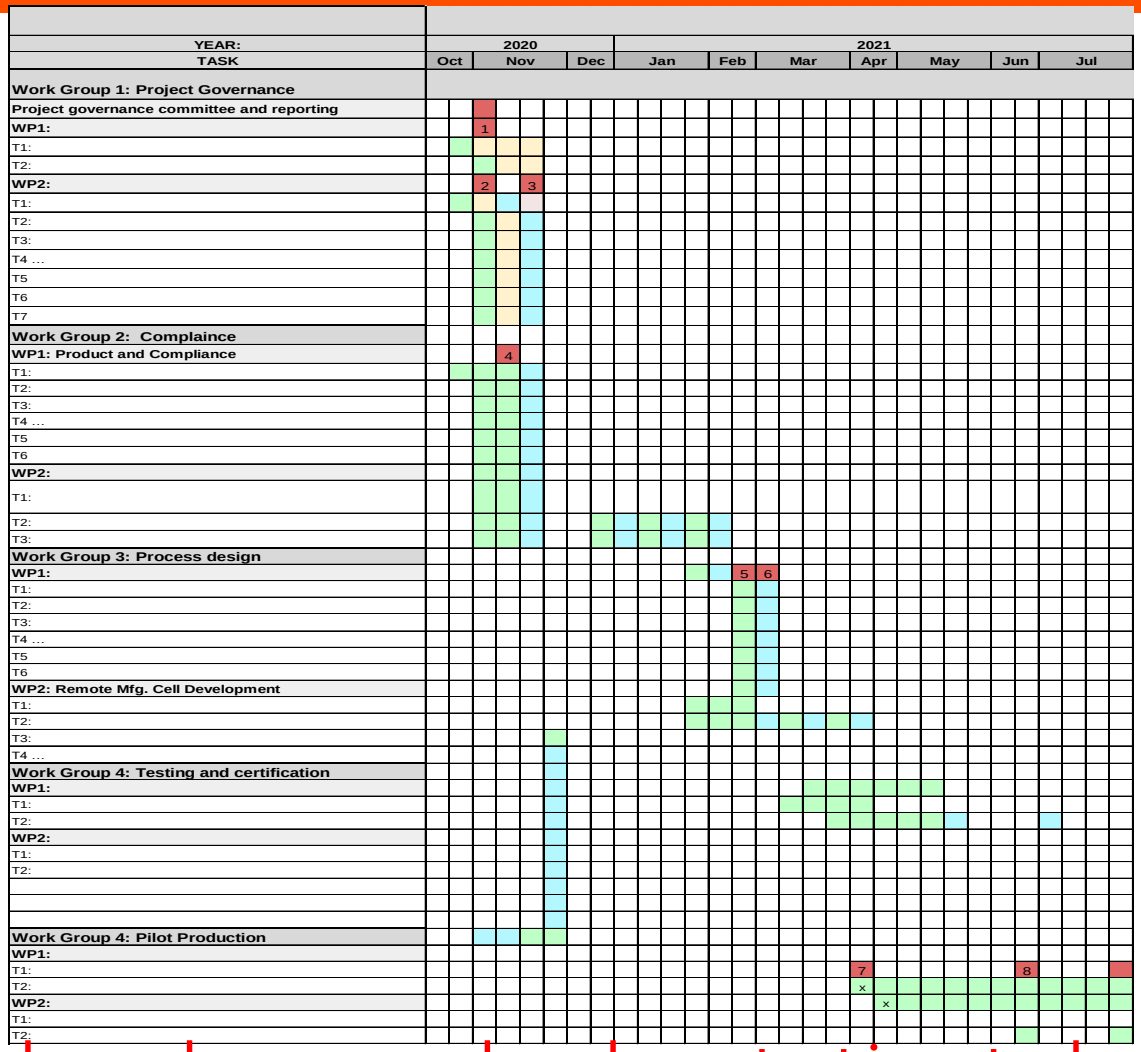
2. What is the overall project and risk management plan?



	Task Name	Duration	Start	Finish	Predecessors
1	Segmentation of Manufacturing Process	92 days	Tue 20-02-18	Wed 20-06-24	
2	Evaluate Process	10 days	Tue 20-02-18	Mon 20-03-02	
3	Map Process flow	5 days	Tue 20-03-03	Mon 20-03-09	2
4	Quantify time for Process	5 days	Tue 20-03-10	Mon 20-03-16	3
5	Partition Process into Segments	20 days	Tue 20-03-17	Mon 20-04-13	4
6	Quantify time for Each Segment	10 days	Tue 20-04-14	Mon 20-04-27	5
7	Map entire Segmented Process	5 days	Tue 20-04-28	Mon 20-05-04	6
8	Specifications of each Segment defined	0 days	Mon 20-05-04	Mon 20-05-04	7
9	Launch Segment Investigation Teams	2 days	Tue 20-05-05	Wed 20-05-06	8
10	Segment 1	37 days	Tue 20-05-05	Wed 20-06-24	
16	Segment 2	37 days	Tue 20-05-05	Wed 20-06-24	
22	Segment 3	37 days	Tue 20-05-05	Wed 20-06-24	
28					
29	Determine the Monitoring requirements	17 days	Tue 20-05-19	Wed 20-06-10	
34	Determine the Control requirements	17 days	Tue 20-06-02	Wed 20-06-24	
39	Data Processing	102 days	Tue 20-02-18	Wed 20-07-08	
40	Define Connectivity Requirements	2 days	Tue 20-02-18	Wed 20-02-19	
41	Define AI processsing Requirements	10 days	Thu 20-02-20	Wed 20-03-04	40
42	Develop AI Process	45 days	Thu 20-03-05	Wed 20-05-06	41
43	AI App ready for Network Trial	0 days	Wed 20-05-06	Wed 20-05-06	42
44	Define Image capture Requirements	20 days	Thu 20-03-05	Wed 20-04-01	41
45	Define 3D modelling Requirements	20 days	Thu 20-04-02	Wed 20-04-29	44
46	Develop 3D Models	45 days	Thu 20-04-30	Wed 20-07-01	45
47	3D Models Ready for Network Trial	0 days	Wed 20-07-01	Wed 20-07-01	46
48	Architect Process Algorithm	5 days	Thu 20-04-30	Wed 20-05-06	45
49	Develop Process Optimization	45 days	Thu 20-05-07	Wed 20-07-08	48
50	Process Optimization Ready for Network Trial	0 days	Wed 20-07-08	Wed 20-07-08	49
51	Select Data Processing Evaluation System	5 days	Thu 20-05-07	Wed 20-05-13	48
52	Install and Connect DP Eval Sys	5 days	Thu 20-05-14	Wed 20-05-20	51
53	Monitoring & Control Loop data evaluation	5 days	Thu 20-05-21	Wed 20-05-27	48,52
54	Define Process Optimization Targets	5 days	Thu 20-05-28	Wed 20-06-03	53
55	Algorithm Feedback Trials	5 days	Thu 20-06-04	Wed 20-06-10	54
56	Live Data Connectivity Trials - Network & IIoT Modules	10 days	Thu 20-06-11	Wed 20-06-24	55
57	Network Evaluation and Trial	167 days	Tue 20-02-18	Wed 20-10-07	
58	Network Vendors - Business Evaluation	5 days	Tue 20-02-18	Mon 20-02-24	
59	Network Vendors - Technical Evaluation	10 days	Tue 20-02-25	Mon 20-03-09	58
60	Network Vendor Evaluation Plan update	5 days	Tue 20-03-10	Mon 20-03-16	59
61	Network Ready for Trials	0 days	Wed 20-06-24	Wed 20-06-24	33,38,60
62	Network Trial	30 days	Thu 20-06-25	Wed 20-08-05	63,61
63	Connect Data Processing Elements	20 days	Tue 20-03-17	Mon 20-04-13	60
64	Network ready for Data Trials	0 days	Wed 20-08-05	Wed 20-08-05	62,63,43,47,50
65	Network Data Trial	45 days	Thu 20-08-06	Wed 20-10-07	64
66	Network Testing Complete	0 days	Wed 20-10-07	Wed 20-10-07	65

Mock-up plan – example only content is not relevant

2. What is the overall project and risk management plan?



Mock-up plan – example only content is not relevant

2. What is the overall project and risk management plan?

WBS Legend and Reference Infromation	

WBS GANT Color Legend	
	Design / Development / Planning
	Sample L/T or Preparation
	Validation or Testing
	Endurance or Scaled Testing
X	Milestone

Key Milestones Register

	Milestone	Date (m/d/y)	Description
1			
2			
3			
4			
5			
6			
7			
8			

Description of WGs and WPs	Description of WGs and WPs
Work Group 1:	
WP1:	
WP2:	
Work Group 2:	
WP1:	
WP2:	

WP and WG	Total cost	Partner activities and resource allocation
Work Group 1:	**$40k**	**Project lead - manages overall project management and governance**
WP1:	**$10k**	**Partner 2**
WP2:	**$30k**	**Lead and Partner 3**
Work Group 2:	**$50k**	Partner 2 takes the lead on all compliance activities
WP1:		Partner 3 supports the testing activities.
WP2:		
Work Group 3:	**$1m**	Lead
WP1:	**$750k**	Lead
WP2:	**$250k**	All

Mock-up plan – example only content is not relevant

2. What is the overall project and risk management plan?

- Provide a comprehensive risk analysis including a Risk Register (Appendix 2) Identify the key risks within the project.
- Consider at least the: *Technical, Commercial, Managerial and Financial risks*
- Other risks to consider may include: *Resource, Intellectual Property, Freedom to Operate, Safety, Regulatory, Legal and Environmental risks*.
- Provide appropriate analyses of the likelihood and impact of each of the risks along with appropriate mitigation strategies.
- The assessors will be looking to see that all the main risks are identified and that there are sufficient risks within the project to warrant NGen funding and that these risks are appropriately controlled.

2. What is the overall project and risk management plan?

Risk Description			Inherent Risk			Risk Strategy	Risk Strategy	Action Owner
Ref	Type	Risk Event	Likelihood	Impact	Score			
1	Technical		1	8	8	Avoid		
2	Technical		4	16	64	Mitigate		
3	Technical		1	16	16	**Accept & Control**		
4	Technical		1	16	8	Avoid		
5	Program		1	16	16	Mitigate		
6	Program		1	16	16	Mitigate		
7	Program		1	16	16	Mitigate		
8	IP		1	16	16	Mitigate		
9	IP		1	16	16	Mitigate		
10	IP		1	16	16	Mitigate		
11	Safety		1	16	16	Mitigate		
12	Safety		1	16	16	Mitigate		
13	Safety		1	16	16	Avoid		
14	Safety		1	16	16	Avoid		
15	Commercial		1	16	16	Avoid		

Risk type Examples

Technical
Commercial
Program
Financial
IP
Resource
Safety
Legal
Managerial
Environmental
Political

Likelihood	Impact
1	1
2	2
3	4
4	8
5	16

Strategies

Avoid
Transfer
Mitigate
Accept & Control

Mock-up plan – example only content is not relevant

2. What is the overall project and risk management plan?

Risk Description			Inherent Risk			Risk Strategy	Risk Strategy	Action Owner
Ref	Type	Risk Event	Likelihood	Impact	Score			
1	Technical		High	High	High	Avoid		
2	Program		High	Medium	High	Mitigate		
3	Commercial		Medium	Medium	Medium	**Accept & Control**		
4	IP		Medium	Low	Medium	Avoid		
5...	Resource		Low	Low	Low	Mitigate		
19								
20								

Probability
Low
Medium
High

Impact
Low
Medium
High

How many risks to show?

- A reasonable spread of risks is recommended from each of the main categories.
- There is no magic number as the size and complexity of each project is different.
- Showing risk and how it is managed will demonstrate the ability to execute and also helps build the case for Question 7. Why do you need the funding.
- Content is important – don't leave any elephants in the room where the assessors would wonder if you really understood the size, complexity and risk involved in the undertaking.
- Consider writing your risk statements so they can be understood in terms of what is the element that is uncertain, what is the cause and what the effect would be.

Mock-up plan – example only content is not relevant

3. What is transformative about the project?

- Clearly define the transformative Advanced Manufacturing aspects of the project and what new knowledge pertaining to advanced manufacturing is being created by each partner organization.

- Outline the current state-of-art manufacturing processes and technologies for your industry (or sector) and describe how this project pushes the boundaries in the context of Advanced Manufacturing.

3. What is transformative about the project?

- Identify the extent to which the project is transformative and innovative both technically and/or commercially. Explain how the project has the potential to transform or support the transformation of each partner organization.
- Provide evidence for these statements.
- This could include the results of:
  - patent searches,
  - competitor analyses,
  - literature surveys.
- If applicable, you should also outline your own background intellectual property rights, as related to the project.

3. What is transformative about the project?

- The transformative impact of each project will be assessed on the following considerations:
  - Will the project lead to technological and business advantages that will allow Canadian companies to leapfrog global competitors and become world leaders in the application and/or production of advanced manufacturing technologies?
  - Will the project provide an enabling platform for further technology development, application, and scale-up in Canadian manufacturing?
  - Will the project be recognized globally as conferring or strengthening Canadian leadership in Advanced Manufacturing?

3. What is transformative about the project?

- If appropriate describe any novel research relating to Advanced Manufacturing that will be undertaken as part of the project. Highlight and explain the timeliness and novelty of these research aspects of the project in an industrial context.

- Are the technologies new or are you looking to apply existing technologies to new sectors in a transformative way?

4. What is the nature and size of the potential market the project will address?

- Describe the potential market(s) that you are entering with the development of a new Advanced Manufacturing Technology OR Describe the existing market that you are operating within and how this Advanced Manufacturing opportunity will enhance your competitive position within the market.
- Consider including details of:
  - the target market, including the size, margins, market leaders, key competitors, price competition, barriers to entry
  - adjacent markets where the new knowledge could be commercialized

4. What is the nature and size of the potential market the project will address?

- Consider including details of:
  - dynamics of the market quantifying its current size, including historical and projected growth rates
  - the specific target product, platform and service applications underpinning the market
  - the expected share of market to be captured as a result of this project
  - the opportunity timeline and when you expect benefits to be realized
  - the impact of the project on existing or future customer relationships
- Provide evidence for your statements about the addressable market your project opens-up and outline your strategy for developing market share.

5. What sort of economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?

- Identify the economic benefits the project will have, both for participating project partners and other suppliers / partners both inside and outside of the project.
- Consider the impact in the short (1-3 years), medium (4-7 years) and long-term (8-10 years).
- For each of the project partners (and appropriate suppliers) provide an analysis of:
  - the expected additional revenue that can be generated.
  - the number of direct jobs created and safeguarded.
  - the number of indirect jobs that can be created within the Supply chain – consider appropriate multiplier effects relevant to your sector
  - expected exports
  - economic impact of new market opportunities or new expanded value chain opportunities

5. What sort of economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?

- Quantify any indirect economic benefits that might be achieved.
- Examples might include the potential cost savings associated with:
  - Reduced downtime
  - A reduce manufacturing footprint
  - Positive environmental benefits
  - Reduced material usage
  - Higher quality output
  - Reduced scrap and warranty

- Outline the benefits each partner will see, and over what timescale.

- How does the partnership help each individual partner to achieve greater economic growth?

5. What sort of economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?

- Define the economic benefits that the project can have on the whole Canadian Supply Network upstream and downstream.

- Will the project enable more localized supply of material or components? What are the spill over economic benefits that this might achieve?

- Will the project create spin-off business opportunities (new businesses, new or expanded supplier or partner relationships) in Canada?

5. What sort of economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?

- Consider a table to clearly articulate the cumulative job potential.
- Ensure you articulate within the application how you have derived the numbers and clearly show multiplier effect source reference.

Partner name	Short Term (1-3) yrs	Medium Term (4-7 yrs)	Long Term (8-10 yrs)
Lead	Direct - 20 Indirect – 80	Direct – 30 Indirect - 120	Direct – 50 Indirect – 200
Partner 1	Direct - 2 Indirect – 8	Direct – 10 Indirect - 40	Direct – 40 Indirect – 160
Partner 2	Direct - 10 Indirect – 40	Direct – 30 Indirect - 120	Direct – 50 Indirect – 200
Subcontractor	Direct - 1 Indirect – 4	Direct – 5 Indirect – 20	Direct – 12 Indirect – 48
Total	**Direct - 33** **Indirect – 132**	**Direct - 75** **Indirect – 300**	**Direct - 152** **Indirect – 608**

6. What is the impact on the broader Advanced Manufacturing ecosystem?

- Broader Ecosystem - Leaving a legacy in Advanced Manufacturing.

- Projects must demonstrate the potential for a significant and lasting impact on the development and capacity of Canada's Advanced Manufacturing ecosystem.

- Describe how the project has the potential to create widespread positive impact, leaving a legacy for Advanced Manufacturing in Canada for the partners and beyond.

6. What is the impact on the broader Advanced Manufacturing ecosystem?

- To highlight this, consider some of the following:
  - Workforce Development:
    - How will the project encourage the engagement of women and under-represented groups in the workforce?
    - Outline the opportunities for attracting, training and developing a highly skilled talent pool (both existing and new staff).

6. What is the impact on the broader Advanced Manufacturing ecosystem?

- To highlight this, consider some of the following:
  - Industry knowledge:
    - Will the project serve as a model or learning platform in Advanced Manufacturing for others? For example, providing tours, or use cases on best practise.
    - Will the project generate intellectual property that can be used by others to accelerate technology applications or scale-up of manufacturing in Canada?
    - Will the project influence the activities of colleges, universities and/or research institutes to support the education of Advanced Manufacturing resulting in the diffusion of this knowledge back into Industry?

6. What is the impact on the broader Advanced Manufacturing ecosystem?

- To highlight this, consider some of the following:
  - Infrastructure support:
    - Will the project help to develop or support the use of tools, testbeds, or data platforms that will foster future technology development, adoption, scale-up, and commercialization activity in Canadian manufacturing?

6. What is the impact on the broader Advanced Manufacturing ecosystem?

- To highlight this, consider some of the following:
  - Collaborative Networks:
    - Will the project further enhance the ability of industry partners, post-secondary education institutions, research centres, and other private and public organizations to work together to strengthen Advanced Manufacturing in Canada?
    - Describe how the project could build greater capacity / provide opportunities and capabilities in the support of Small and Medium Enterprises.

Other Advanced Manufacturing Ecosystem Benefits?

7. How does NGen add value and what additional benefits will be achieved including social and environmental benefits?

- Provide evidence that NGen support is essential to achieve the project goals. Questions to consider:
  - How has the project technical or commercial scope changed due to NGen support?
  - Is NGen funding critical to undertake the project as proposed?
  - Does NGen funding allow the project to be undertaken differently (more quickly, at a larger scale, with more partners)?
  - Would the collaborative partnership have been formed without the project?
  - Is the project too risky for commercial investors?

7. How does NGen add value and what additional benefits will be achieved including social and environmental benefits?

- Describe the Social and Environmental benefits that this project enables for each partner.
- Social Benefits
- Describe any expected social impacts, for example:
  - Diversity and inclusion, including activities that will be undertaken to ensure that women and underrepresented groups are meaningfully represented in, and benefit from, the project
  - Enhanced quality of life
  - Social inclusion/exclusion
  - Public empowerment
  - Health and safety

7. How does NGen add value and what additional benefits will be achieved including social and environmental benefits?

- Environmental Benefits
- Clearly outline the environmental improvements and impacts as an outcome of this project?
  Consider:

  - GHG, Particulate matter reduction
  - Process and Resource Efficiency
  - Better Energy Management
  - Reduced Volatile Organic Compounds
  - Reduced land degradation
  - Reduced water usage
  - Footprint Reduction
  - Reduced emissions due more efficient and optimized transportation and distribution within the supply chain
  - Use or Creation of Sustainable Materials
  - Reuse, Recycle, and Remanufacturing
  - Other Life cycle benefits
  - Other sustainability opportunities

- Describe any other benefits that might be achieved as a result of this project. (Regulatory, certification, standards development, regional and policy benefits etc).

8. How will the results of the project be commercialized?

- The response should highlight the new potential business opportunities for each partner in collaboration and individually.

- Outline the commercial spill over opportunities, demonstrating how your activities will contribute to the wider industry and other sectors.

- For each partner describe the activities that will be undertaken to ensure the sustainability and continued growth of the project outcomes beyond the project end date.
- Including:
  - the expected project outputs that will be commercialized - including new or improved products, services, processes, capabilities, and manufacturing technologies.

8. How will the results of the project be commercialized?

- Including (continued):
  - the route to market – what commercialization channels will you exploit to gain customer traction, if possible, identify specific channels being targeted and the timeframe.
  - an outline of the measures for protection, exploitation and dissemination of the project outcomes
  - other market opportunities (considering adjacent markets) that will emerge as a result of this project?

8. How will the results of the project be commercialized?

- Including (continued):
  - opportunities to commercialize the Intellectual Property, include licence to manufacture, licensing of IP, manufacturing or direct sales (IP Strategy Appendix 4)
  - the plan and rationale for the protection of IP and sharing of IP among your consortium partners and, beyond this, with other NGen members. Including a patent filing strategy for domestic and foreign jurisdictions, changes to business models or processes, research and development (R&D), manufacturing services (IP Strategy Appendix 4)

9. What is the collaborative nature of the project including the partner skills and experience, to deliver the identified benefits?

- Describe the collaborative nature of the project and how the consortium working together will achieve more than if they were working individually.
- Describe how the project partners will:
  - develop relationships and build trust
  - increase knowledge sharing

- Describe any additional collaborative activities related to suppliers, sub-contractors, academic or research organizations involved in the project.

- Consider using the IP Strategy (Appendix 4) to demonstrate the nature of the collaboration in terms of the licensing and access to background and foreground IP during and after the project.

9. What is the collaborative nature of the project including the partner skills and experience, to deliver the identified benefits?

- Describe the track record of the project team members in undertaking and exploiting the results of research and development projects, to show your capability to develop and commercialize the technology.
- Consider whether:
  - the project team has the right available mix of skills and experience to deliver the project successfully. Provide a description of the partners track record in achieving similar manufacturing R&D projects.
  - appropriate governance structures between the consortium partners are in place to manage and deliver the project, consider providing a high-level diagram
  - the make-up of the consortium, along with their knowledge and experience will help improve the capabilities of the Canadian supply chain during the project and beyond
  - there is appropriate access to facilities and resources, including identifying and allocating appropriate space and/or infrastructure in order for the project to be successful (consider floor space, specialized equipment needs, specialist resources etc.)

10. What is the financial commitment required for the project?

- Indicate the anticipated project cost, making clear the level of contribution from any project participants and the level of funding required from NGen. This information should be provided in the financial workbooks.

- Supporting information and explanation for project costs should be provided in this section. For each partner explain how the funding will be used and why it is required for each of the main cost categories in the finance workbook (Labor, Subcontract, Equipment, Materials, Travel and Other eligible costs).

- Provide a breakdown of the costs per work package, showing how it aligns with the project plan.

10. What is the financial commitment required for the project?

- In evaluating the project, the assessors will consider the following questions:
  - has a realistic budget breakdown been provided is the budget realistic for the scale and complexity of the project?
  - is a financial commitment from other sources demonstrated for the balance of the project costs?
  - have the costed work package breakdowns been described and justified adequately?

- Ensure that all key points relating to the finances are described. For example:
  - the reason for, and use of, subcontractors, their impact on the project, and why they are not formal project partners.

10. What is the financial commitment required for the project?

- Please describe other private sector co-investment/financial contributions that this project will attract in the short, medium and long-term, identifying any future planned follow on funding.

- Please outline other government funding, including stacking limits, that this project has secured or plans to secure against the project.

- Describe how the project can help attract or retain and promote industry investment and product mandates in Canada.

- Assessors will consider the above aspects as well as a determination of the value for money for NGen funding, considering the total potential impact and return of the project against the amount of funding being requested.

Intellectual Property Strategy

- The Supercluster program puts a focus/importance on Intellectual Property
- A Project IP Strategy is a requirement for every project
- IP Strategy Deep Dive Workshop on November 17th https://www.ngen.ca/events
- In the meantime review the following documents: https://www.ngen.ca/project-guides
  - NGen Intellectual Property Strategy – highlights the overall "rules" around IP
  - Project IP Strategy Guide for Applicants and the Project IP Strategy Template Tables
- Busting myths about Superclusters and IP- found in the news section of our website - https://www.ngen.ca/blog/busting-myths-about-superclusters-and-ip
- Access the Expert series on IP - Peter Milne, Partner, Gowling WLG and Rhonda O'Keefe, IP Manager, NGen https://www.ngen.ca/events (Archived Events)

Summary and Final Tips

- Answer the questions.
- Quantify answers.
- Provide succinct answers.
- Plan the project with your partners.

Second pair of eyes

- When you have a draft, ask someone that understands how to write a business case and project plans, that has not been involved in the project to read the 10 questions along-side the guidance to determine if a fresh pair of eyes picks up on the same points as the project team preparing the proposal.

Agenda

1:00 – 1:10 - Welcome and Introduction

1:10 – 1:15 - Funding Streams

- Feasibility Study, Pilot Project
- Single Stage
- Dual Stage

1:15 – 1:30 - Is my project in scope?

1:30 – 2:00 - How to prepare a strong application

- Ten Question – Guidance

2:00 – 2:15 - Q&A

2:15 – 2:20 - Break

2:20 – 2:40 - Project funding and eligible costs

2:40 – 2:50 - Application Process

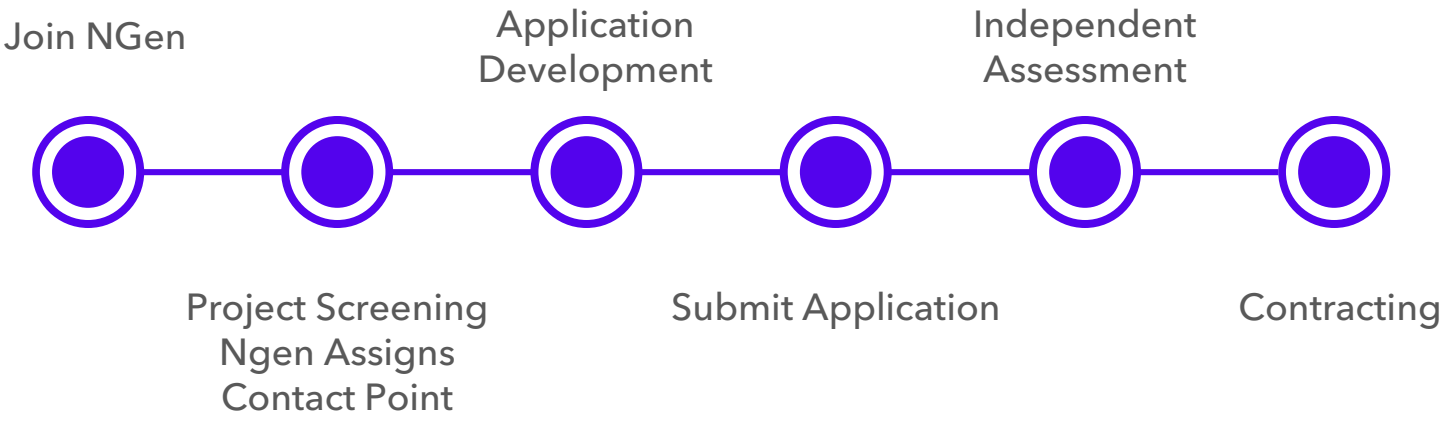
2:50 – 3:10 - Q&A

3:10 - Wrap up & Close

Project funding and eligibility rules…

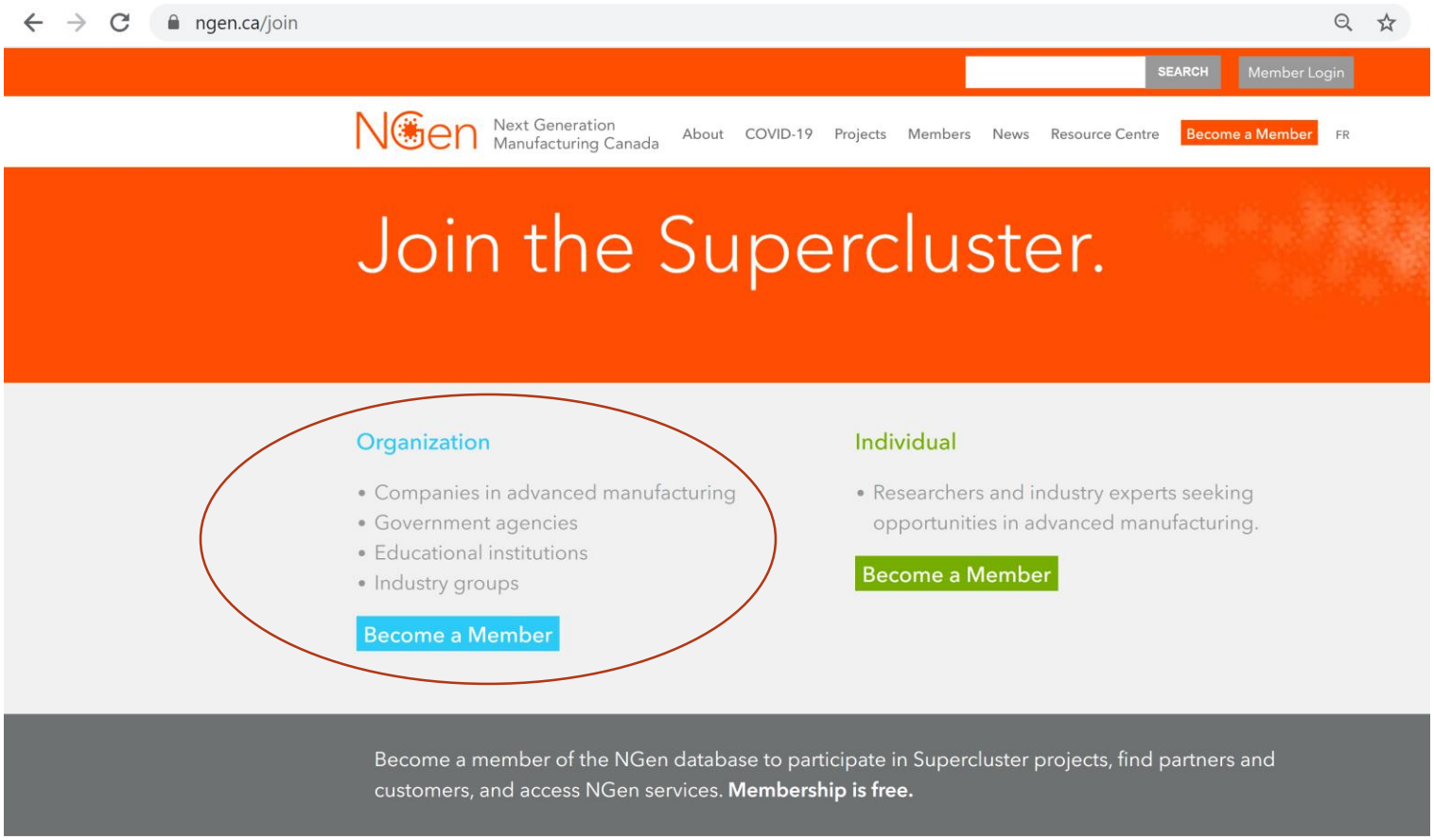
Application process…

Project Application Process



Join NGen

https://www.ngen.ca/join

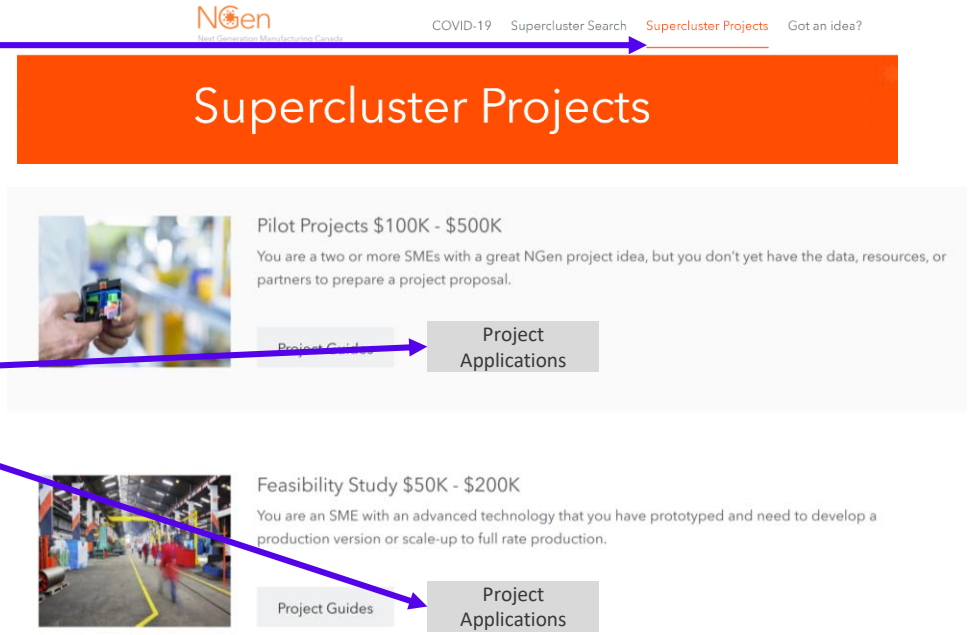


Next Generation Manufacturing Canada

Project page

Go to the project page on the member site once logged in Super Cluster Projects

Click Project Applications



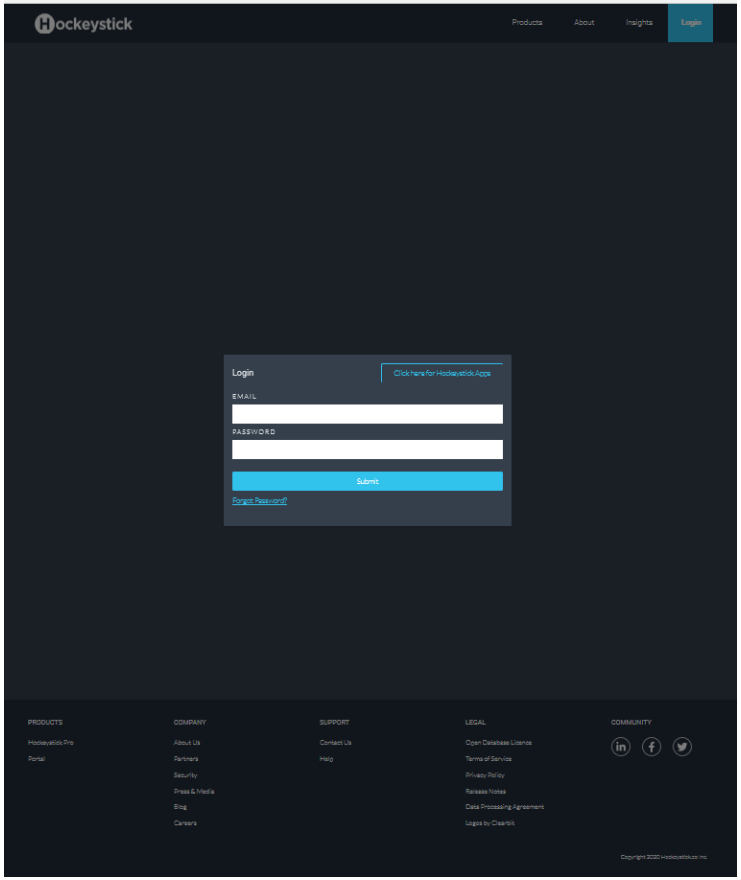
Note:

- This is not the NGen public site, this is the member site.
- Only Organizational members can access the Applications. Individual Members cannot.
- You will be redirected to a Hockeystick site. Hockeystick is the host of the NGen application portal.

Next Generation Manufacturing Canada

HockeyStick application portal

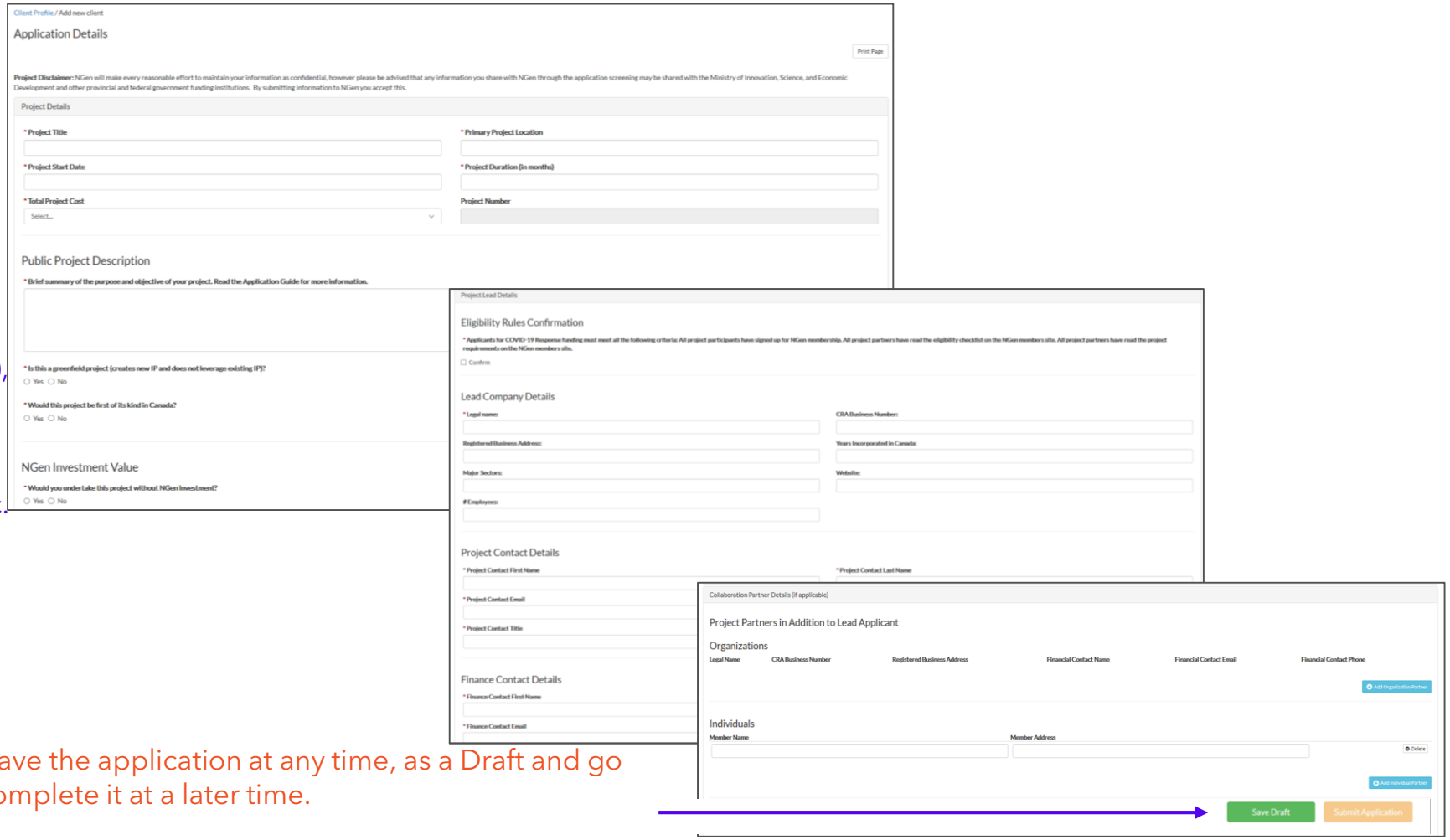
Please login with the NGen member login username and password



Next Generation Manufacturing Canada

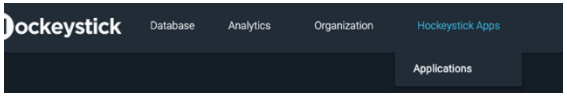
Complete the Initial Application Details

Project title, projected start date, project duration (can be estimates), applicant and partner details etc.



Note:
You can save the application at any time, as a Draft and go back to complete it at a later time.

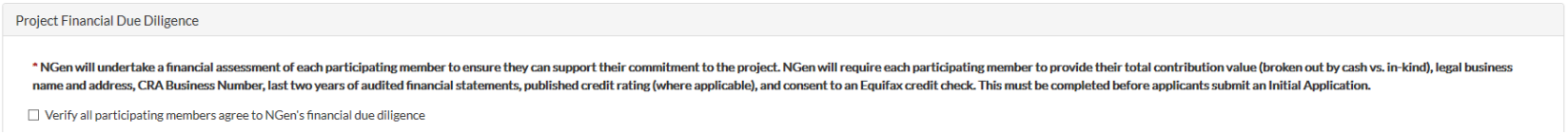
To go back into your Project: Log back into Hockeystick: https://www.hockeystick.co/applications



Select Hockeystick apps & then Applications.

Each section has a drop down and as you move through the process more drop downs will appear.

You can save the application at any time, to start to add information you need to click the edit button when you go back in.

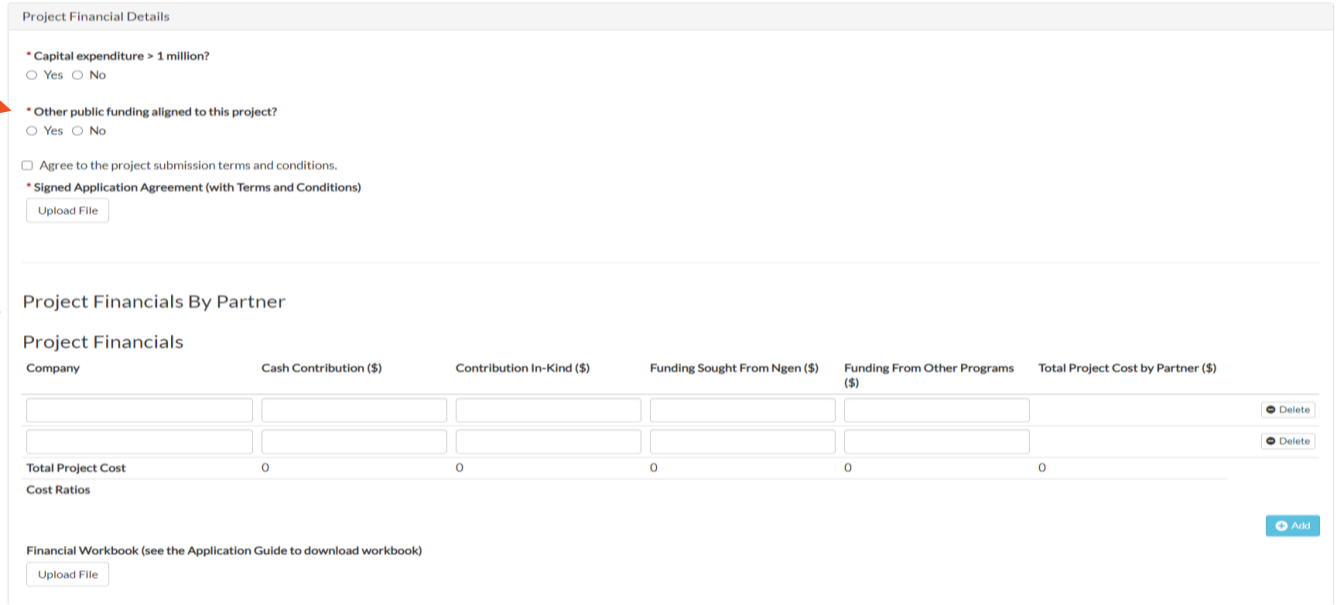


Provide consent for NGen to conduct financial due diligence

Complete Project financials

Complete and sign the Application Agreement and upload here.

Application template can be found here. https://www.ngen.ca/project-guides



Note:
The application agreement is essential before assessment as it provide NGen the authority to share your application with the independent assessors. Finance workbooks should be uploaded on this screen. However they are not expected at the project screening phase.

- Once complete and the files uploaded. Click submit screening application and it will go to the NGen team for Screening.

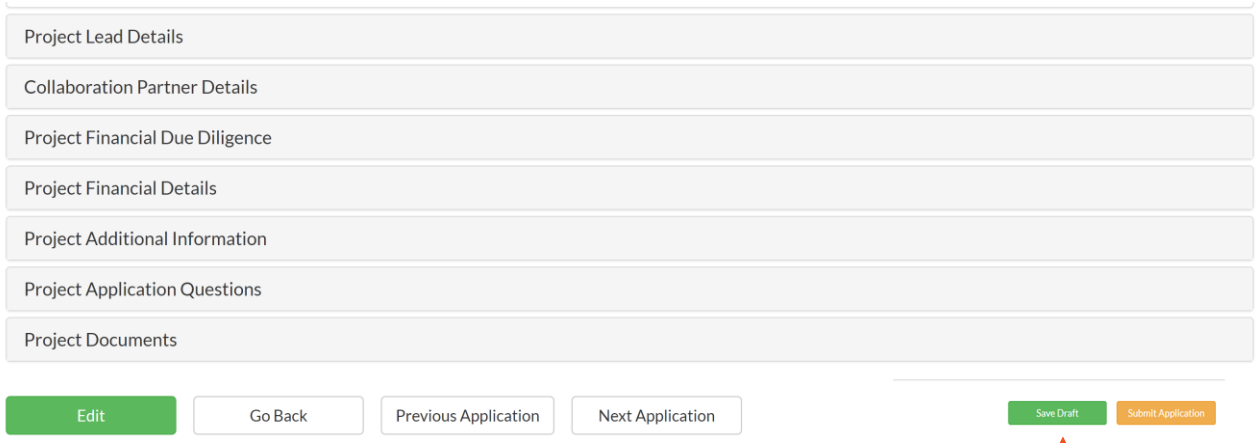
  Submitting for screening is not submitting an application for funding.

- The screening allows NGen to identify any projects that do not meet the NGen Project Scope so that the issues can either be resolved or the applicant can withdraw without putting time and effort into the full application.

- Following a notification of successful screening, NGen finance will begin a Financial Due Diligence (FDD) check.

- If there are any issues or concerns at this stage, you will be contacted by NGen Finance team.

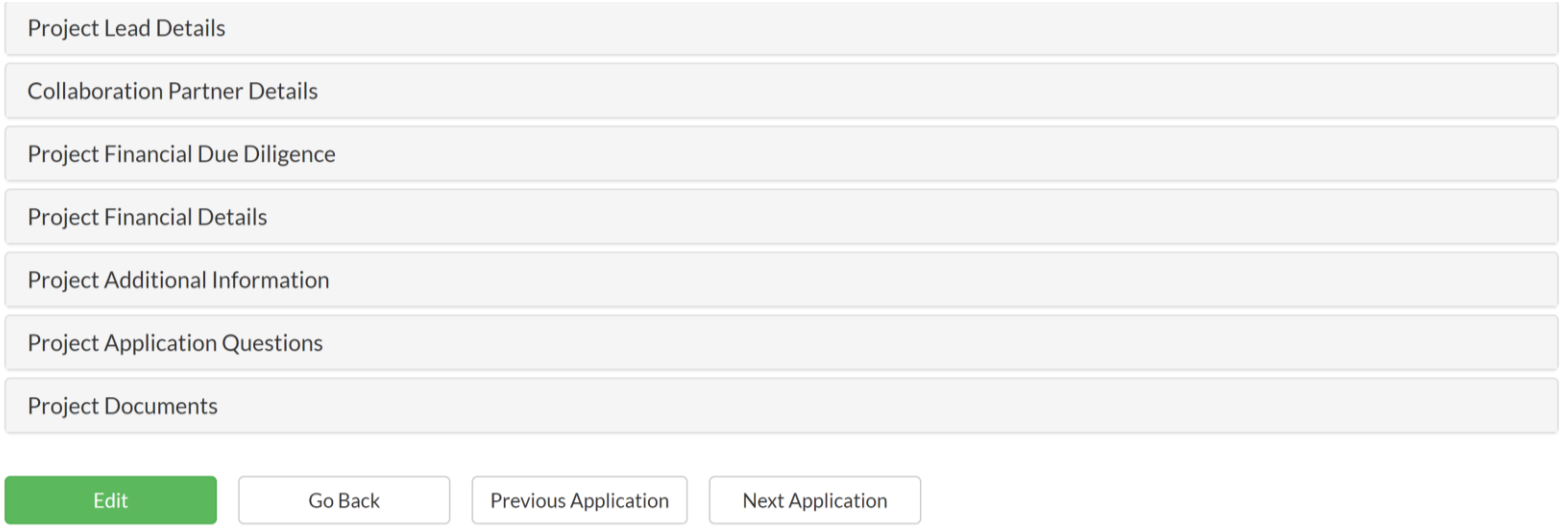
Note:



- Once screening and FDD is complete.
- The applicant can now complete the 10 questions (Project Application Questions) in the portal.

Please **"Save Draft"** and not "Submit Application" while you are still working on your application. Once you are complete and all your final documents uploaded, you "Submit Application".

Project Documents



Five (5) appendices

1. Project Plan (DOC or XLS or MPP)
2. Risk Register (DOC or XLS)
3. Question Appendix (DOC or PDF) - If needed
4. IP Strategy (DOC or PDF)
5. Financial Workbooks – one for each partner

Independent Assessment

- 5 expert assessors separately, anonymously and independently score projects before the assessment panel meets to discuss the highest scoring proposals.
- Assessors are screened for conflict of interest, are under NDA and do not represent a particular organization.
- Assessors conduct an evaluation in three parts:
    1. Scope Gateway – Is the project in scope for NGen Funding?
    2. Overall recommendation Gateway – based on the information presented, would you recommend the project for funding?
    3. Assess and score 10 Evaluation questions - 10 marks per question application; scored out of 100 marks.
- The assessment will only be based on the information contained within the application.

- Links to websites are not permitted within the applications. If the information is important it should be incorporated into the application and with an appropriate source reference.

You're Approved!

Consortium and NGen sign a
Master Project Agreement.

We Kick-off the project

Q&A

Thank You!

NGen Next Generation Manufacturing Canada

Canada's Advanced Manufacturing Supercluster

John.Laughlin@ngen.ca | project@ngen.ca