NGen Next Generation Manufacturing Canada

Made Smarter:
Strategic Supply Challenge

How to prepare a strong application…

NGen Next Generation Manufacturing Canada

Agenda

14:00 – 14:05 - Welcome and Introduction
14:05 – 14:15 - The Challenge
14:15 – 14:25 - Is my project in scope for this challenge?
14:25 – 15:00 - How to prepare a strong application
15:00 – 15:20 – Project funding and eligible costs
15:20 – 15:35 - Q&A
15:35 – 15:45 - Break
15:45 – 16:00 - IP Strategy Development
16:00 – 16:15 - Application Process
16:15 – 16:30 - Q&A
16:30 - Wrap up & Close

Tips and general principles

This guide is very detailed. It will help support the development of the proposal. It may not have everything therefore please include any other pertinent information not covered in this guidance.

- How would you prepare an internal business case for your own organization?
  - Define your business case internally.
  - Analyse the benefits.
  - Define your customers.
  - Analyse the problems to be solved.
  - Understand the market opportunities.
  - Map out who your partners are either formally or adjacent to the project.
  - Understand who your key stakeholders are.

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 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.

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.

Tips and general principles

Plan the project with your partners.

- The business case and project plans need to hang together with all your project partner info.
- Brainstorm the project benefits together and think about all the opportunities that the project might achieve. These will be differentiating factors in the assessment.

Quantify

- Where possible provide evidence for your statements. Do you have market analysis or survey information?
- Use credible sources. Don’t quote Wikipedia.

Tips and general principles

Succinct answers

- Clearly articulate the answers to the questions. Assessors are not looking for fancy dissertations. They 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.

- Try not to quote the guidance back to the assessors or make general unquantified statements. What are the specifics relevant to your project.

- The word count is a guide to set the expected level of effort - 900 words per question for a c$4m project. If you have a $20m project, consider providing significantly more information and again quantify statements as much as possible.

1. What is the product, the market and the commercial opportunity that this project addresses?

What's the big idea?

Clearly outline the motivation of the project and how the application or development of Advanced Manufacturing technologies can help achieve the objectives and a sustainable business case.

What is it? And what are the challenges?

- Describe the product to be manufactured and describe the nature of the challenges facing you upstream and downstream in the global supply chain.

- Consider if the product has a differentiating factor, or the new manufacturing process is more flexible, responsive and resilient.

What is the Market Opportunity?

- Describe the market opportunity that this project will address, including details of:
    - the size,
    - price competition
    - margins,
    - market leaders,
    - and barriers to entry nationally and internationally.

1. What is the product, the market and the commercial opportunity that this project addresses?

What is the expected Market penetration?

- Define the market penetration that is expected along with the number of potential customers, identify how much of the market demand is already being met and show the growth opportunity your project will create, including the projected market share it will make possible.

- Demonstrate that the project is not taking market share away from an existing Canadian manufacturer and that the project creates a new manufacturing capability and a supply network to meet current and potential future supply needs nationally or internationally. Consider Canada's ability to provide high quality differentiated product to international markets.

Who are your competitors?

- Identify competitors for supply of the product and describe how this project will attain commercial sustainability.

2. What is the Return on Investment and the overall economic benefits the project is expected to deliver?

What is the Business case?

- Clearly articulate the overall economic case considering market penetration, capital, material, operational, testing, validation and certifications costs.
- Provide a Return on Investment calculation that demonstrates to the assessors the overall viability of the project in the long-term.

What are the direct economic benefits?

- The expected additional revenue that can be generated.
- The number of jobs created or safeguarded.
- The expected exports.

2. What is the Return on Investment and the overall economic benefits the project is expected to deliver?

What are the indirect economic benefits?

- Quantify other economic benefits that might be achieved when applying Advanced Manufacturing technology such as the potential costs saving associated with:
  - Reduced downtime
  - A reduce manufacturing footprint
  - Positive environmental benefits
  - Reduced material usage
  - Higher quality output
  - Reduced scrap and warranty.

What are the spin off economic benefits?

- 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?

Does the project attract additional industry investment?

- Describe how the project can help attract or retain and promote industry investment and product mandates in Canada. Identify any potential future opportunities for co-investment in the project.

3. What are the broader healthcare, social, and environmental benefits of the project?

What are the non-economic benefits?

- Describe how the project will create widespread positive impact and leave a legacy for advanced manufacturing in Canada.
- Describe the healthcare benefits of the project both inside and outside of Canada.
- Describe any longer-term benefits the project would provide Canada beyond the COVID-19 crisis.

What might the potential environmental or lifecycle impacts?

- How will the project affect the environment or improve environmental impacts of company activities?
- Will the product being manufactured have any differentiating positive environmental benefits either in relation to the product design or the manufacturing processes?
- Identify any positive benefits on the global manufacturing footprint in terms of the whole life cycle considering emissions, water use, land degradation and the wider social impacts of manufacturing within the supply chain.

What are the potential social impacts?

Describe any expected social impacts, for example:

- gender and diversity, including activities that will be undertaken to ensure that women and underrepresented groups are meaningfully represented in, and benefit from, the project
- quality of life
- social inclusion/exclusion
- public empowerment
- health and safety
- regulation

3. What are the broader healthcare, social, and environmental benefits of the project?

What is the potential to build greater capacity in the Advanced Manufacturing Ecosystem?

- Points to consider might be:
  - Workforce development – Will the project contribute to the development of a skilled talent pool?
  - Industry knowledge – Will the project serve as a model or learning platform for others or generate intellectual property that can be used by others to accelerate advanced manufacturing technology applications or scale-up of manufacturing in Canada?
  - Infrastructure support – Will the project help to develop the use of tools, testbeds, or data platforms that will foster future technology development, adoption, scale-up, and commercialization activity in Canadian manufacturing?
  - Collaborative networks – Will the project further enhance the ability of industry, education, research, and other private and public organizations to work together to strengthen advanced manufacturing in Canada? Outline any interactions with colleges, universities and/or research institutes.

Describe any additional non-economic benefits that the project will create.

4. How does this project lead to the establishment of a long-term, sustainable, and globally competitive manufacturing capability in Canada?

What are the Advanced Manufacturing Technologies being created or deployed?

- Describe the advanced manufacturing technologies that will be applied or developed as part of the project that enables the establishment of a long-term, sustainable, and globally competitive manufacturing capability in Canada.

- Explain how the project pushes the boundaries over and beyond current leading-edge technology or business practices that can make the project competitive.

What are the new processes or business practices being created?

- Identify any processes or business practices that the project may create or outline the existing capabilities are going to be applied in new ways to achieve competitive manufacturing.

What is the transformational nature of the project?

- Identify any transformation that could appear in this new supply chain or the transformation in parts of or all of an existing supply chain.

- Describe how you will build flexibility into the system to ramp up and ramp down capacity as needed.

- Identify any other technologies that are being adopted to achieve success such as technologies that could digitize the supply chain.

5. How will the results of your project be achieved?

How will the objectives be achieved?

- Describe the activities that will be undertaken to ensure the stated objectives will be achieved.

- Provide assurance that the product and manufacturing process can meet applicable standards and regulatory approvals.

- Outline a plan that demonstrates the ability of the project team to achieve the project outcomes within the stated timeline. Consider:
  - The route to market, changes to business models or processes.
  - Intellectual property protection including patent filing strategies for domestic and foreign jurisdictions.
  - Outline measures for protection, commercialization and dissemination of the project outcomes.

What are the supply chain requirements up stream and down stream to get the product to market?

- Describe the supply chain from raw material through to testing, certification and distribution for the product(s) that you are targeting and identify the gaps.

- Describe the source of all materials and components within the project for those sourced outside of Canada and provide evidence of quality, security and the sustainability of supply.

- Describe how you will structure distribution and pricing for the products you will produce.

5. How will the results of your project be achieved?

What are the quality and regulatory requirements?

- Demonstrate a clear understanding of the required quality control, regulatory framework for the product or process and demonstrate that regulatory steps are integrated in the project plan.

What is required beyond the end of the project to be successful?

- Describe the activities that will be undertaken to ensure the sustainability and continued growth of the project outcomes beyond the project end.

- Details of planned follow-on spend if required to achieve the result.

What consideration has been made towards Intellectual Property? – also use the IP Appendix.
What is the plan and rationale for the protection and or sharing any IP that may be created as a result of this project.

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

What is the project plan? (Can be provided as a separate document).

- Provide your overall project plan, including work-package descriptions and sub-tasks, and identify the key milestones and deliverables that show how the overall project will be achieved.

- Each work package should include:
  - Description of activities, objectives and areas of work;
  - a list of partner(s) involved;
  - key dependencies for each work-package.

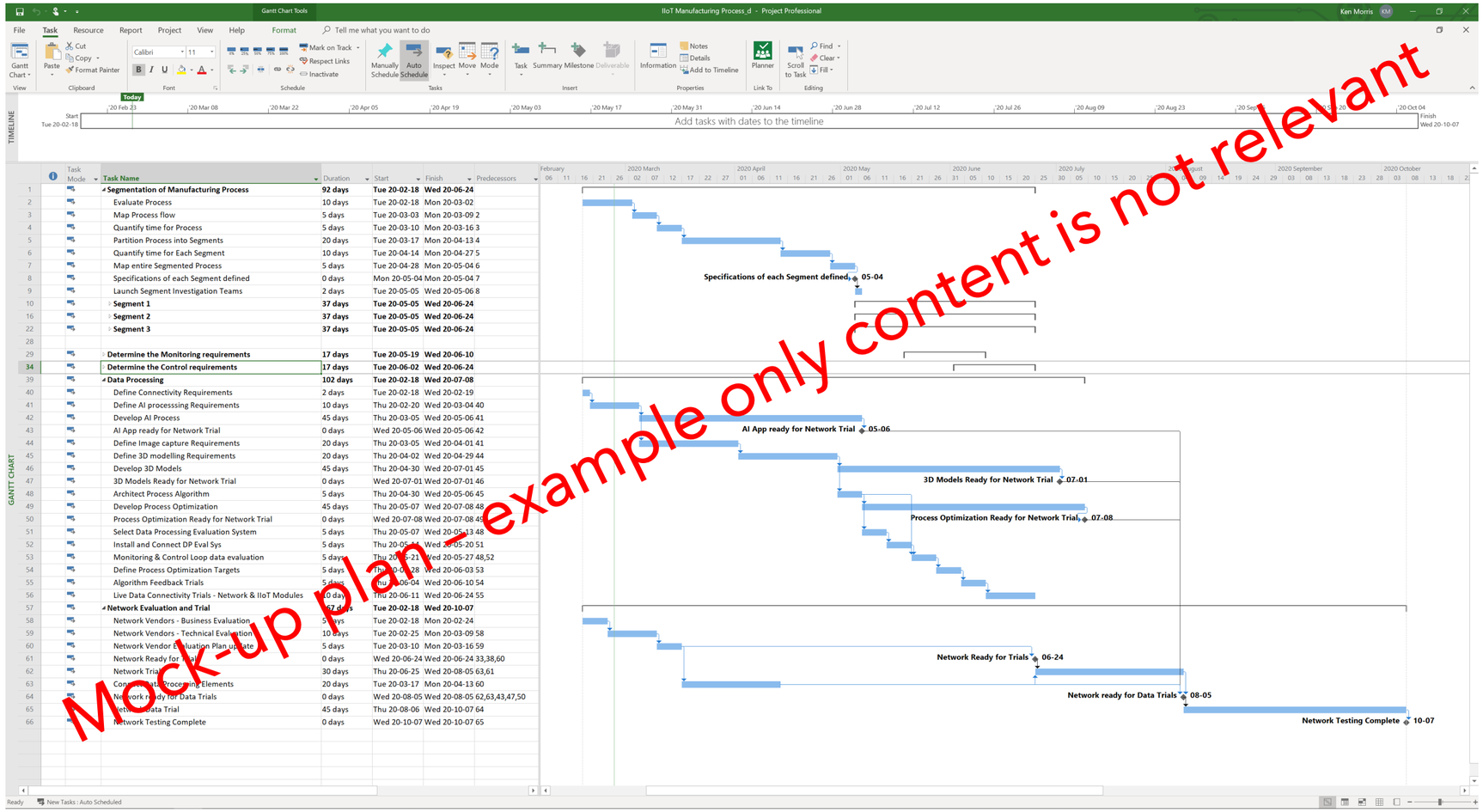
- Where there are interdependencies between work-packages please highlight these and include in the risk management plan where appropriate.

- Describe the resource requirements for successful project completion, including how work will be shared among project participants and partners.

What is the project management approach you will take?

- Describe the technical approach, project management tools and explain how and why it is appropriate for the project. How will the steps in the project be achieved? How you will measure success?

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



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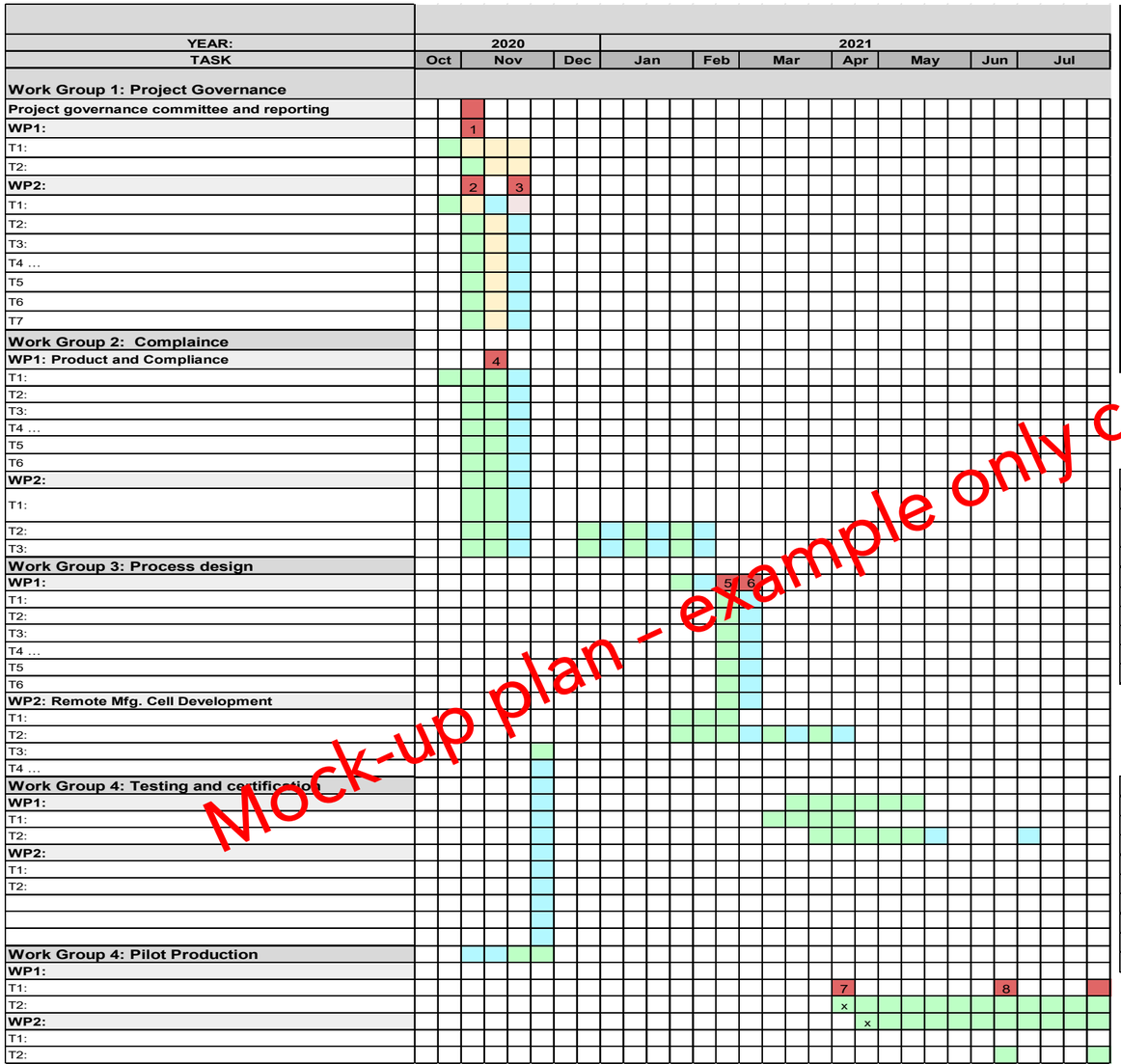

WBS Legend and Reference Infromation

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

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

What is the risk management plan?

- Provide a risk analysis. Identify any obstacles that you foresee standing in the way of successful project completion.

- Identify key risks within the project. Consider risk types that could appear in the project and provide appropriate analysis of the likelihood and impact of each of the risks along with appropriate risk management strategies.

- Consider at least the following risk types:
  - Technical
  - Regulatory
  - Commercial
  - Managerial
  - Financial

- The assessors will be looking to see that all the main risks are identified. This will provide confidence to the assessors that the project team has thought through the project in terms of its scale and complexity.

6. 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

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

Strategies

Avoid
Transfer
Mitigate
Accept & Control

6. 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 8. Why do you need the funding.

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

OR consider residual risk

Risk Description			Inherent Risk			Risk Strategy	Risk Strategy	Action Owner	Mitigated Risk			Continjgency Plan
Ref	Type	Risk Event	Likelihood	Impact	Score				Likelihood	Impact	Score	
1	Technical	The final system does not have the reliability required for 72 hour lights out operation and cannot be achieved with the system that is designed within this project timeframe.	4	8	32	Mitigate	As this is one of the core metrics of the system, we need to mitigate this risk by building our development strategy around it and building provisions into our project development strategy to monitor this risk on an ongoing basis. We recognize that the reliability of the entire system is the product of the reliability of each major subsystem of it including the control software, robotics, sensors, storage, etc. To mitigate this risk we have broken these major risk areas into the primary work packages and within this identified which tasks most directly relate to reliability and have chosen to work on them first where possible.	Lead Partner	2	8	16	Depending on how this technical risk evolves, if the proposed risk strategy does not work and the system is not meeting technical goals, an alternative solution could be to invest in redundancy although this comes with performance costs in other areas.

- 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.

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

Does the team have the right skills?

- Describe how the project team has the right mix of partners and skills to deliver the project requirements successfully.
- Do you have the right skills to fully integrate Advanced Manufacturing Capabilities into the manufacturing process?
- Describe the track record of the project team members to show your capability to develop and execute on the proposed project.
- Demonstrate that the objectives and roles of each participant are clearly defined among members of the project team.

What are the existing capabilities and facilities and what are the gaps?

- Outline the existing capabilities that you have in terms of equipment and work force and outline what you will need in order to stand up production. Consider if new training is required to reskill the workforce and describe how will this be undertaken.
- Describe the testing and facility requirements in order to achieve the stated outcomes, including the suitability of the facilities and any modifications that are required.
- Are there gaps in the expertise required to complete the project? If so, what are those gaps and how will they be addressed?

8. What are the financial requirements involved and why does the consortium need NGen funding?

Why do you need the money from NGen? Don’t repeat the guidance, what is specific to your project..

- Provide evidence that NGen support is essential to achieve the project goals.
- Questions to consider:
  - Has the project 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?

- Describe any other rationales for needing the NGen funding.
- Consider:
  - is there benefit to the Canadian Advanced Manufacturing ecosystem and economy.
  - will it strengthen customer demand for technology.
  - will it allow for greater acceleration of the scale-up of Canadian technologies for production or application in Canadian Advanced manufacturing.

8. What are the financial requirements involved and why does the consortium need NGen funding?

What is the money going to be used for?

- Indicate the anticipated total project cost, making clear the level of contribution from any project participants and the level of funding required from NGen.
- Provide a breakdown costing of the work packages in the project.
- In evaluating the project, the assessors will consider the following questions:
  - 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?
- Justify the required spending on the project, outlining the funding requirements and structure.
- 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 (Labour, Subcontract, Equipment, Materials, Travel and Other eligible costs).

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 8 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.

Manufacturing.
Revolutionized.

NGen Next Generation Manufacturing Canada

Thank You

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Become a member today.

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