



Next Generation Manufacturing Canada  
Fabrication Nouvelle Génération Canada

# **Advanced Manufacturing Quantum Program 10 Questions and 3 Appendices**

**Contact Us:**

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# Advanced Manufacturing Technology Call for Proposals – Three Appendices

1. IP Tables (DOC – use the template available on the application portal)
2. Project Plan (DOC, XLS, MSP, PDF)
3. Risk Register (DOC, XLS)

Financial Workbooks – one for each partner will be input into Salesforce fields in the application portal.

There are no templates for the Project Plan or Risk Register. Applicants should use the project management tools available within their company.

# The 10 Questions

# AMQP Call for Proposals – TEN QUESTIONS

1. Applicants expected to answer ten questions - maximum 7000 characters per question.
2. To ensure that the level of information provided is fair for all applicants:
  - Any information provided above 7000 characters will not be sent out to the assessors.
  - No external links are allowed.
3. Consider utilizing graphs and charts as they will not count towards the total word count. Text-heavy tables will count towards the question word count.
4. The questions can be answered within the portal.
5. The assessors will answer two yes/no gateway questions.
  - Is the project in scope for funding for this challenge?
  - Is the project recommended for funding based on the overall application?

# Q1 - What is the opportunity the project addresses?

## Response guidance:

- Outline the big-picture motivation and the overall advanced manufacturing objectives that the project intends to achieve.
- Describe how this project aligns to at least one of the three missions of the National Quantum Strategy commercialization pillar (sensors, communication or computing)
- Provide an overview of the project considering both technology and business impacts, highlight other strategic benefits.
- Outline the gap and or opportunities that the project will be addressing in growing and strengthening Canada's quantum capabilities.
- 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 need to be addressed within the timeframe of the project?
- Describe the nature of the challenges facing you and/or your potential customers, along with the potential market challenges or barriers to entry that the project addresses.
- How will the outcomes of the project overcome these challenges?
- Clearly describe the project partners and how the partners will collaborate towards achieving the overall opportunity the project addresses.

## Q2 - What is transformative about the project?

### Response guidance:

Projects must be globally transformative in nature. This is a core pillar of NGen projects. Projects that are not adequately transformative will be deemed out of scope for funding, regardless of the quality of the rest of the proposal.

- 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.
- Identify the extent to which the project is transformative and innovative both technically and commercially:
  - Are the technologies new or are you looking to apply existing technologies to develop unique transformative manufacturing solutions?
  - 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 and quantum technologies.
  - 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?
  - Describe how the project could be recognized globally as conferring or strengthening Canadian leadership in advanced manufacturing and/or quantum

## Q2 - What is transformative about the project?

### Response guidance:

- Provide evidence for the above statements. This could include the results of:
  - patentability searches,
  - competitor analyses,
  - literature surveys,
- If applicable, you should also outline your background IP rights, as related to the project.
- If applicable, describe any novel research 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.
- What is the plan and rationale for the protection of IP and sharing of IP among your consortium partners and, beyond this, with other NGen members?
- Elements of product development are eligible for funding under this program, and the novel transformative aspects of the product or technology can be described in response to this question. These other novel aspects are important to provide context. It is essential to note that the assessors will be awarding marks based on what is transformative for advanced manufacturing and Canada's quantum industry.

# Q3 - What is the nature and size of the potential market the project will address?

## Response guidance:

For each project partner, describe the market(s) that you are entering with the development of a new Advanced Manufacturing or Quantum Technology

AND/OR

Describe the existing market that you are operating within and how this advanced manufacturing or quantum opportunity will enhance your competitive position within the market.

- Include the details of:
  - the specific target product, platform and or service applications.
  - the target market, including the size and projected growth rates, margins, market leaders, key competitors, price competition, and barriers to entry.
  - the market differentiators for your project outcomes.
  - the expected share of market to be captured because 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.
- Describe the additional adjacent markets where the new technologies or capabilities could be commercialized.
- Provide evidence for your statements about the market opportunities your project opens up.



## Q4 - How will the results of the project be commercialized?

### Response guidance:

A key objective of this program is to develop and strengthen Canada's quantum industry by scaling-up and commercializing Advanced Manufacturing and Quantum capabilities. Please ensure there is a compelling commercialization plan describing how this proposal's benefits will be achieved.

- The commercialization plan should highlight:
  - how each partner will take their expected project outputs to market and commercially integrate them into the Canadian Quantum industry and/or manufacturing value chain
  - other potential business opportunities for each partner in collaboration and individually.
- Outline the expected project outputs that will be commercialized, such as new or improved products, services, processes, capabilities, intellectual property, and manufacturing technologies.

# Q4 - How will the results of the project be commercialized?

## Response guidance:

- Describe how each of these outputs will be commercialized in the existing market, future, or adjacent markets as defined in Question 3. Consider:
  - A roadmap showing the routes to market, including details of specific channels being targeted, and estimated timelines.
  - Describing the number of manufacturers or facilities the project expects the technology to be implemented in.
  - Identifying the organizations necessary to access the intended market for the results of the project
  - Identifying the route(s) to market provided by the market-pull partner or Manufacturing customers that would be involved as a commercialization route.
  - Highlighting your competitive advantage and value proposition.

## Q4 - How will the results of the project be commercialized?

### Response guidance:

- Provide insights into the sales and marketing plan aligned with the direct and indirect economic benefits (benefits to be described further in the response to Question 5.)
- Describe the plan for managing and commercializing the Intellectual Property as supported by your IP Tables (Appendix 3). (Please note: IP is not just patents and includes trade secrets, know-how, copyright, industrial design, etc. Refer to the IP Guide for definitions).
  - Ensure that the lists of IP assets in your IP Tables have granularity that aligns with that of the commercialization plan. (Example)
- Outline the plan for protecting IP and sharing IP among your consortium partners and, if applicable, beyond this with other NGen members. Include a patent application filing plan for domestic and foreign jurisdictions, if applicable.
- Outline any other commercial spill-over opportunities and highlight how your activities will contribute to the wider industry and other sectors.

## Q5 - What economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?

### Response guidance:

- Projects must deliver significant economic benefits to the partners. Identify the economic benefits the project will have for participating project partners and other suppliers/partners inside and outside the project. How does the partnership help each partner achieve greater economic growth?

Consider:

- The impact over the duration of the project, 0-2 years after the project and 3-5 years after the project.
- If there are multiple manufacturers/facilities that could benefit from implementing the technology.
- Include tables showing the expected additional revenue that will be generated for each partner over the duration of the project, 0-2 years after the project and 3-5 years after the project. (Tables as part of Salesforce)
- Include tables showing the expected direct and indirect jobs that will be created and maintained for each partner over the duration of the project, 0-2 years after the project and 3-5 years after the project.
  - Highlight the type of jobs that the partners will create.

## Q5 - What economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?

### Response guidance:

- The economic case can be further strengthened by representing additional direct and indirect economic benefits. Examples include:
  - The potential economic opportunity to implement the solutions in multiple manufacturers/facilities
  - The economic value associated with:
    - Efficiency gains
    - Reduced downtime
    - Reduced manufacturing footprint
    - Positive environmental benefits
    - Reduced material usage
    - Higher quality output
    - Reduced scrap and warranty.

## Q5 - What economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?

### Response guidance:

- Indicate any commercial opportunities for other manufacturers/industry sectors arising from the application of the technology. Define the economic benefits that the project can have on the whole Canadian supply network upstream and downstream.
- Will the project create spin-off business opportunities (new businesses, new or expanded supplier or partner relationships) in Canada?

# Q6 - What is the impact on the broader advanced manufacturing ecosystem and Canadians?

## Response guidance:

Projects must provide enduring ecosystem benefits. Benefits cannot accrue to one partner; the project must leave a legacy beyond the partners for Canadian manufacturing. It is important to highlight any workforce development and Equity, Diversity & Inclusion (EDI) opportunities practiced by the partners.

- Describe how the project will create widespread positive impact, leaving a legacy for advanced manufacturing in Canada for the partners and beyond (considering how the project impacts beyond the partners and throughout the supply network).
- Describe the potential that this Quantum project can have for the good of Canada.

Describe any other benefits that might be achieved because of this project, for example:

- Outline the environmental improvements and impacts as an outcome of this project.
- Describe any expected positive 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
  - Health and safety

# Q6 - What is the impact on the broader advanced manufacturing ecosystem and Canadians?

## Response guidance:

Describe other benefits that may arise from the project, for example:

- Regulatory,
- certification,
- standards development,
- supply chain transparency,
- workforce development,
- industry knowledge,
- tools,
- testbeds,
- collaborative networks,
- infrastructure support, and
- regional and policy benefits, etc.



# Q7 - What is the overall project plan?

## Response guidance:

- Describe the overall Project Plan, 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 deliver the project on time, within budget, and according to the specifications.
- Describe how you are going to measure the success of the project.
- Provide a summary of the project, including work package descriptions, a description of the key project milestones, resource, and management requirements, and key metrics to measure success.
- As part of Appendix 1, provide a detailed project plan consisting of a Gantt chart that details the Work Packages, tasks, timelines, milestones, deliverables, dependencies, and resource allocation for all partners, and work package costs.
- Describe the resource and management requirements for successful project completion, including how the work will be shared among project partners

# Q7 - What is the overall project plan?

## Response guidance:

The assessment and scoring for this question will consider both the written answer and Appendix 1. In evaluating the project plan, the assessors will consider the following:

- Is there sufficient detail provided when considering the complexity of the project?
- Is there sufficient detail to understand the tasks involved and the resources required?
- Is the timing of the key milestones realistic?
- Is there a demonstration of sufficient resource commitment and capability to undertake the project?
- Is the Project Plan aligned with the costs described in the response to Question 10?

## Q7 - Project Plan: Tips to Consider

- Combine the details and Gantt chart into one visual
- Label each task with a unique identifier (1.1, 1.1.1, etc.)
- Note detailed dependencies in the Gantt Chart
- Include resources – consider allocating resources by role in the project
- Time resolution should be monthly
- Tasks should be no longer than 1 project quarter and broken down into sub tasks when needed

## Q7 - Project Plan: Tips to Consider

- Account for IP protection in the project plan
- Account for procurement in the timeline, particularly for large and long-lead-time items
- Make sure the milestone table matches the Project Plan
- Ensure all Milestone percentage complete is 0% at the start of the project
- Use real dates
- If possible, start the project at the beginning of the month
- Project Plan should not exceed March 2028

# Q8 - What is the overall risk management plan?

## Response guidance:

- NGen recognizes that projects of this type are inherently risky and therefore have adequate arrangements for managing this risk.
  - Describe the Risk Management approach, including the management tools and mechanisms to identify, evaluate and address the project risks.
  - Key risks identified in the risk register can be elaborated upon as part of the answer to this question.
- Provide a comprehensive risk analysis as part of the Risk Register Appendix 2.
  - Identify the key risks within the project. Please provide enough information in the risk statement so that the cause, uncertainty, and effect are clear.
  - Provide an analysis of the likelihood and impact of each risk and provide a relative ranking for each risk.
  - Identify the management strategies for each risk. Strategies can include: - Avoid, Transfer, Mitigate (reduce), Accept (and manage).
  - For complex, high-risk projects, it would be advantageous to provide the effect of each risk management strategy in terms of the residual risk.

## Q8 - What is the overall risk management plan?

### Response guidance:

Include at least the following risks categories:

- Technical,
- Commercial,
- Managerial,
- Resource
- Financial,
- Intellectual Property (e.g., freedom to operate, patentability, etc.)

All relevant risks should be identified. Additional risks categories could include and are not limited to:

- Safety,
- Regulatory,
- Legal,
- Environmental,
- Supply chain risks.

Assessors will be looking to see that all key risks are identified and that there is sufficient risk in the project **to warrant NGen funding and that these risks are appropriately controlled.**

# Q8 - Risk Analysis Framework

- It is preferred that companies use their own risk management framework with the response guidance to develop the risk management plan
- In the absence of an internal risk management framework, it is encouraged that companies use the guidance to develop a plan. The table below is an example for such a framework:

ID	Theme	Risk Details	Owner	Severity	Likelihood	Rank before treatment	Treatment Strategy	Severity	Likelihood	Rank after treatment	Comments
1	Technical	Technical risk in project description	Partner 1	5	4	20	Mitigate: Details about risk mitigation.	5	2	10	

5

6

3

1

2

1. Strategies can include Avoid, Transfer, Mitigate (reduce), Accept (and manage).
2. The Strategy and subsequent ranking should make sense
3. The risks should have a relative ranking
4. The risk rankings should have a legend to understand the scoring
5. Risk statement should be written in a cause-and-effect manner
6. Identify an owner for each risk

Likelihood

Almost Certain 5	Moderate	High	Extreme	Extreme	Extreme
Likely 4	Moderate	Moderate	High	Extreme	Extreme
Possible 3	Low	Moderate	Moderate	High	Extreme
Unlikely 2	Low	Low	Moderate	High	High
Rare 1	Low	Low	Low	Moderate	Moderate

4

1	2	3	4	5
Insight	businessanalyststoolkit.com		Major	Critical

Consequence

## Q9 - Describe the collaboration and the partner skills, experience, resources, and access to facilities to deliver the identified benefits?

### Response guidance:

Projects must demonstrate meaningful collaboration. This is a core pillar of NGen projects. Projects that do not adequately demonstrate collaboration will be deemed out of scope for funding, regardless of the quality of the rest of the proposal.

- 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 and increase knowledge sharing.
- Describe any additional collaborative activities related to suppliers, sub-contractors, academic or research organizations involved in the project. Academic and research institutions will be recognized as contributing partners to the project, even though they cannot be formal industry partners.
- Use the IP Tables to demonstrate the nature and extent of the collaboration in terms of the licensing and access to background and foreground IP during and after the project.



# Q9 - Describe the collaboration and the partner skills, experience, resources, and access to facilities to deliver the identified benefits?

## Response guidance:

- Describe the track record of the project team members in undertaking and exploiting the results of research and development projects.
- Consider whether:
  - the project team has the right available mix of skills and experience to deliver the project successfully. Provide a high-level description of the partner's track record in achieving similar manufacturing R&D projects.
  - there are appropriate management reporting and governance structures between the consortium partners to manage and deliver the project. Consider including a governance structure 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 infrastructure for the project to be successful (consider floor space, specialized equipment needs, specialized resources, etc.

# Q10 - Why is NGen funding being requested, and what is the financial commitment for the project?

## Response guidance:

### Part 1: Why is NGen Funding being requested?

Projects must clearly articulate why NGen funding is being requested, how it will benefit the project, and demonstrate that the project activities are in addition to the regular business undertakings of the applicants. Questions to consider:

- Will the project's technical or commercial scope be affected by NGen support?
- Why 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 partnerships have been formed without the project?
- Is the project too risky for commercial investors?

# Q10 - Why is NGen funding being requested, and what is the financial commitment for the project?

## Response guidance:

### Part 2: Financial Commitment

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.

Provide a breakdown of the costs per work package, showing how it aligns with the project plan. Consider adding this to Appendix 1 or described in this section.

- Supporting information and an explanation of extraordinary or specialized project costs should be provided in this section.
- For each partner, ensure that all key points relating to these costs are described per cost category.
- Ensure that project funding is not subsidizing production.

# Q10 - Why is NGen funding being requested, and what is the financial commitment for the project?

## Response guidance:

Consider providing additional explanation of the eligible costs in the finance workbooks. Including:

- **Labour:** Justification for the use of specialized labour or labour with especially high rates.
- **Subcontract:** Explain the reason for and use of subcontractors, their impact on the project, and why they are not formal project partners. Include details about any relevant inclusion of academics and researchers as subcontractors to achieve project goals.
- **Equipment:** It is essential that:
  - The equipment purchase is directly linked to the project goals.
  - The equipment is linked to the R&D capabilities supporting the creation of a new advanced manufacturing capability. It cannot subsidize full production.
  - It is creating a new capability that does not already exist within the organization.
  - It is not the purchase of multiple similar pieces of equipment that would be seen as subsidizing future production activities.
  - Considering the points above, please describe the capital required with a justification of why it is necessary to achieve the goals of the project and a rationale for any pieces of capital equipment exceeding \$1M CAD (Please note: these costs require pre-approval).
- **Materials:** Please explain any excessive amounts of material or the use of expensive materials. Projects are not intended to subsidize production; the amount of material listed should be for the purposes of the project's R&D aspects. It should be linked to the prove-out of the advanced manufacturing capability.

# Q10 - Why is NGen funding being requested, and what is the financial commitment for the project?

## Response guidance:

It is recognized that other funding sources may be required to complete the project. Specify other government or private sector funding sources necessary to achieve the project goals.

To further enhance the value for money case, please outline if the project has the potential to attract future government or private sector investment in the short, medium, and long term.

In evaluating this question, the assessors will consider the following questions:

- Has the project presented a clear case that these activities are in addition to regular business undertakings?
- Has a realistic budget breakdown been provided, and is the budget realistic and reasonable for the scale and complexity of the project?
- Is a financial commitment from other sources demonstrated for the balance of the project costs?
- Is the project providing value for money for NGen funding? Considering the project's total potential impact and return against the amount of funding being requested.

## Q10 – Financial Workbook Tips

- Read the finance guide, watch the finance presentation
- Load your FWBs well in advance of the Application Deadline to give us time to review
- Provide adequate descriptions (not just job title, or machine name).
  - Explain how this contributes to the project
- All charges for labour must be supported by detailed timesheets and P/R registers, MERCs only.
- This program is meant to stimulate the Canadian economy, while some Foreign Subcontracting may be approved, consider in your sourcing the objectives of the program.
- Ensure proper classification of Equipment vs. Materials & supplies.
- Avoid grouping too many items into one line
- SMEs ensure you review budget needs to cover IP costs (filing costs, FTO, etc.).
- Costs incurred prior to project start date as awarded are not reimbursable:
  - Rental contracts; inventory; existing equipment
- **Save the “Funding Sought from NGen” figure until the end, but don’t forget about it!**

# Summary and Final Tips

- Answer the questions – read and follow the response guidance.
- Quantify answers.
- Provide succinct answers.
- Plan the project and answer all the questions with your partners.
- Get a second pair of eyes

# Advanced Manufacturing Technology Funding Program

## Important dates

Application Submission deadlines:

- ❑ January 24, 2024 – Final Application Submission



# 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.

# Questions?

Official Guides, Resources, and Templates:  
<https://www.ngen.ca/funding/quantum>

Email:  
[quantum@ngen.ca](mailto:quantum@ngen.ca)