8 Questions and 4 Appendices

AI4M Call for Proposals – Four Appendices

1. Intellectual Property Plan (DOC, PDF)

2. Project Plan (DOC, XLS, MSP, PDF)

3. Risk Register (DOC, XLS)

4. Financial Workbooks – one for each partner

Templates for the IP Plan and Financial Workbook are available on the NGen website under the AI4M challenge.

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

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The 8 Questions

AI4M Call for Proposals – EIGHT QUESTIONS

1. Applicants expected to answer eight questions - maximum 900-words per question.

2. To ensure that the level of information provided is fair for all applicants:

   - Any information provided above 900 words 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 or by providing answers on the template provided on the website and uploaded in the section for eight questions.

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 overall project opportunity, what are the transformative impacts?

Response guidance:

- Outline the **big-picture motivation** and describe how this project enables the **commercialization of AI solution(s)** and promotes **smart manufacturing in Canada**.

- **Describe the type of project** (please see section Project Eligibility Criteria (Scope): Project areas) that is being proposed.

- Describe in detail **the AI solution being deployed and what it is intended to do**. Consider:
  - Defining the specific AI solution, types of algorithms, data sources and any unique capabilities.
  - Outlining where and how the solution is being implemented.
  - The current stage of development.
  - If the solutions are new or existing with new applications.

- Identify the extent to which the project is **transformative from both a technical and business** (e.g., business models, processes, and practices) **perspective**. Explain how the project has the potential to transform or support the **transformation of each partner organization**.

Q1 - What is the overall project opportunity, what are the transformative impacts?

- **Describe how the AI/ML solution(s) will result in transformative impacts on the business performance of the manufacturers involved in the project. Examples:**
    - Describe how the project will lead to productivity, reduce costs/risks, and/or lead to the development of higher value products and services?
    - Describe how the project could lead to technological and business advantages that will allow the manufacturers to compete globally?
    - Highlight how the project leverages or advances the manufacturers' cybersecurity initiatives.

- **Describe how the AI/ML solution(s) will result in transformative impacts for the AI/ML company.**
    - Describe how the project provide an enabling platform and/or revenue stream for the AI/ML company to further technology development and address scale-up in manufacturing in Canada and beyond?
    - Describe how the AI/ML solutions(s) developed and adopted through this project enhance Canada's position as a hub for AI/ML solutions for the manufacturing sector?
    - Highlight how the project leverages or advances the AI/ML company's cybersecurity initiatives.

Q2 - 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 manufacturers and the AI solution providers**.

- Identify the **economic benefits** the project will have **for participating project partners and other suppliers/partners inside and outside the project**. Consider:

    o The impact over the short (1-3 years), medium (4-7 years) long- term (8-10 years).

    o If there are multiple manufacturers/facilities that could benefit from implementing the AI solutions?

    o **Include tables showing the expected additional revenue** that will be generated for each partner over short (1-3 years), medium (4-7 years), and long-term (8-10 years).

Response guidance:

- The economic case can be further strengthened by representing **additional direct and indirect economic benefits**. Examples:

  - 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**

Q2 - What economic benefits is the project expected to deliver to those inside and outside the consortium, and over what timescale?.....CONTD.

Response guidance:

- Include a table showing the **job impact for each project partner** (and if appropriate for suppliers) over short (1-3 years), medium (4-7 years), and long-term (8-10 years). Please identify:
    - the number of direct jobs created
    - the number of direct jobs safeguarded
    - the number of indirect jobs created within the supply chain (consider referencing multiplier effects based on direct jobs)
    - the number of indirect jobs safeguarded

- Highlight the **type of jobs** that the partners will create.

- Indicate any **commercial opportunities for other manufacturers/industry sectors** arising from the application of the AI solutions and use cases involved in the project.

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

Q3 - How will the project benefit Canada beyond the partners involved in the project?

Response guidance:

Projects must provide **enduring ecosystem benefits**. It is important to highlight any workforce development and Equity, Diversity & Inclusion (EDI) opportunities practiced by the partners.

☐ Describe how the project will help **promote Canadian AI capabilities** and create a widespread positive impact leaving a **legacy in manufacturing in Canada for the partners and beyond** (consider how the project impacts beyond the partners, throughout the supply chain, and internationally). To highlight this, consider the following:

  ☐ **Workforce Development**, for example:

   ○ How will the project encourage the engagement of women, indigenous, and underrepresented groups in the workforce and enhance or create equity, diversity, and inclusion (**EDI**) efforts?

   ○ Outline the opportunities for attracting, training, and developing a highly skilled talent pool (both existing and new staff).

   ○ Outline any initiatives to engage students in the project.

Q3 - How will the project benefit Canada beyond the partners involved in the project?   ….CONTD.

Response guidance:

☐ **Other Social Benefits**, for example:
- ○ Social inclusion/exclusion
- ○ Enhanced quality of life
- ○ Public empowerment
- ○ Health and safety

☐ **Industry knowledge**, for example:
- ○ Will the project serve as a model, learning platform, or data lake for others? For example, providing tours or use cases on best practices or data access.
- ○ Will the project generate any intellectual property that others can use to accelerate technology applications or scale-up manufacturing in Canada?
- ○ Will the project influence the activities of colleges, universities, research institutes, or public services to support advanced manufacturing and AI education, resulting in the diffusion of this knowledge back into the industry?

Q3 - How will the project benefit Canada beyond the partners involved in the project? ....CONTD.

Response guidance:

- **Infrastructure support**, for example:

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

- **Collaborative Networks**, for example:

  - Will the project further enhance the ability of industry partners, post-secondary education institutions, research centers, and other private and public organizations to work together to strengthen advanced manufacturing in Canada?

  - Will the project provide greater capacity, opportunities, and capabilities to support Small and Medium Enterprises?

Response guidance:

- **Environmental** Benefits - Outline the environmental improvements and impacts as an outcome of this project, for example:
    - 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 to more efficient and optimized transportation and distribution within the supply chain
    - Use or Creation of Sustainable Materials
    - Reuse, Recycle, and remanufacture
    - Other Life cycle benefits
    - Other sustainability opportunities

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

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

Response guidance:

- Please ensure there is a compelling commercialization plan describing how this proposal's benefits will be achieved.

- The Commercialization plan should highlight the **new business opportunities anticipated by each partner in collaboration and individually**.

- Describe **what will be commercialized**, such as new or improved: Products, Services, Processes, Capabilities, Applications

- The **potential to commercialize** the outcomes **in the existing market, future or adjacent markets** should be considered.

- Describe the **market(s) for the AI solution(s)** adopted in this project. Consider including:
  - the target market
  - the market size
  - potential margins
  - market leaders
  - key competitors
  - price competition
  - barriers to entry

Response guidance:

- Provide a **description of how each of these outputs will be achieved along with a timeline for commercialization**. Consider:
    - A roadmap showing the route to market.
    - The number of manufacturers or facilities the AI solution will be implemented in.
    - Highlight your competitive advantage and value proposition.
    - Include insights into the sales and marketing plan aligned with the direct and indirect economic benefits.
    - The plan for managing Intellectual Property (appendix 1). (Please note: IP is not just patents and includes trade secrets, know-how, copyrights, industrial design, etc).
    - Outline the plan for protecting and sharing IP among your consortium partners and, if appropriate, beyond this with other NGen members.
    - Include a patent filing plan for domestic and foreign jurisdictions.
    - Describe opportunities to commercialize the Intellectual Property, including the license to manufacture, licensing of IP, manufacturing, or direct sales in your IP Plan.

- Outline any other **commercial spill-over opportunities and** highlight how your activities will **contribute to the wider industry and other sectors**.

Q5 - What is the overall project plan?

- 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.

- 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 2** 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.

- The assessment and scoring for this question will consider both the written answer and appendix 2. 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 key milestones realistic?
  - Is there a demonstration of sufficient resource commitment and capability to undertake the project?

Q6 - What is the overall risk management plan?

Response guidance:

- NGen recognizes that projects of this type are inherently risky and therefore seeks assurance that the projects it funds 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 3.
  - 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.
  - 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.

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Q6 - What is the overall risk management plan?

Response guidance:

- Include at least the **following risks categories**: Technical, Commercial, Managerial, Resource, Financial, Intellectual Property

- All relevant risks should be identified.

- **Additional risks categories** could include and are not limited to: Freedom to Operate, Safety, Regulatory, Legal, Environmental, Supply chain risks

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

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Q7 - Describe the collaboration and the partner skills experience, resources, and access to facilities to deliver the identified benefits?

Response guidance:

☐ 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, build trust, and increase knowledge sharing**.

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

☐ Consider **using the IP Plan** (Appendix 1) to **demonstrate the nature of the collaboration** in terms of the licensing and access to background and foreground IP during and after the project.

• Demonstrate that the consortium has the **right skills and experience** to deliver the project successfully.
  • Include a high-level description of the partner's record of accomplishment in achieving similar projects.

• Describe the **accomplishment of the project team members** in undertaking and exploiting the results of AI projects to show your capability to develop, commercialize and adopt the technology.

Q7 - Describe the collaboration and the partner skills experience, resources, and access to facilities to deliver the identified benefits?......CONTD.

Response guidance:

- Demonstrate that there are **appropriate management reporting and governance structures** between the consortium partners to manage and deliver the project. Consider including a governance structure diagram.

- Demonstrate **appropriate access to facilities and resources**, including identifying and allocating appropriate space and infrastructure for the project to succeed (consider floor space, specialized equipment needs, specialized resources, etc.).

Q8 - Why is NGen funding being requested and what is the financial commitment for the project?

Response guidance:

- Projects must clearly articulate **why NGen funding is being requested, how it will benefit the project, and how much financial support is being requested.** Financial commitments must be reasonable and must be managed effectively by project partners. Questions to consider:
    - How has the project's technical or commercial scope changed due to 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?

- Provide a **breakdown of the costs per work package and by milestone**, showing how it aligns with the project plan. Consider adding this to appendix 2 or described in this section.

- Using the Financial workbooks (appendix 4), **indicate the anticipated project costs, making clear the level of contribution from all project participants and the level of funding required from NGen**.

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Response guidance:

- 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.

- Consider:
    - **Labour:** Justification for the use of 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.
    - **Equipment**: It is essential that:
        - The equipment purchase is directly linked to the project goals. This can include pilot production, where the project team is proving out the new AI capabilities.
        - 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 the Government of Canada approval).

Q8 - Why is NGen funding being requested and what is the financial commitment for the project? ……CONTD.

Response guidance:

- o **Materials:** Please explain any excessive amounts of material or the use of expensive materials. The amount of material listed should be for the project's R&D aspects and for the prove out of the AI capability.

- 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.

- Please identify any **potential follow-on funding from government or private sector sources**.

- To further enhance the value for money case, please **outline if the project has the potential to attract future private sector investment in the short, medium, and long term**. Describe how the project can help **attract, retain, and promote industry investment in Canada.**

Q8 - Why is NGen funding being requested and what is the financial commitment for the project? ......CONTD.

Response guidance:

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.

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

AI for Manufacturing Challenge

Important dates

Application Submission deadlines:

- ❑ November 23, 2023 – Project Screening

- ❑ December 7, 2022 – Initial Application

- ❑ January 19, 2023 – 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 80 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.

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Questions?

Official Guides, Resources, and Templates:
https://www.ngen.ca/funding/challenge/ai4m

Email:
ai@ngen.ca

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