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FABrIC

IoT Product Development Challenge

Round 2 Guide

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FABrIC

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FABrIC is a five-year, \$223M project to secure Canada's future in semiconductors. FABrIC will lower barriers faced by Canadian companies to develop semiconductor manufacturing processes, to create semiconductor Internet-connected products and services (IoT), and to export into a global market.

FABrIC will build the national ecosystem and foster collaboration between industry, not-for-profits, academics, and government and leverage Canada's technological reputation, strengths, and existing assets.

Powered by CMC Microsystems

In its 40-year history, CMC Microsystems has been at the forefront of technological change, managing federal and provincial government investments to introduce advanced technology, to support research, and to impact Canada's industrial high-tech landscape.

Acknowledgements

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FABrIC IoT Product Development Challenge - Round 2 Guide

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To download a copy of this publication in French: fabricinnovation.ca/fr

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Introduction

FABrIC is a five-year, \$223M project to help secure Canada's future in semiconductors.

Semiconductors power digital economies and are enablers of economic growth: However there have been significant changes in the global semiconductor landscape in the past few years driven by the disruption of supply through the pandemic and recent geopolitical shifts. Governments around the world have committed unprecedented investments to bolster their semiconductor industries, to onshore manufacturing and stimulate research and product development in strategic technologies. Canada also has an opportunity to bolster our position in the global semiconductor market and to benefit from the growth in this sector.

To compete, we believe that we must invest in strategic areas to accelerate the development and commercialization of technologies and products where Canada already has significant capability and global recognition.

Call to Industry and Academics in Canada

IoT Product Development Challenges are calls to Canadian industry and academics for the design, development and commercialization of novel advanced sensors and other semiconductor products in Canada, targeted at the rapidly growing (IoT) market. The calls are focused on key strategic areas including Electrified Vehicles, Clean Tech/Energy, Agri-Tech, Healthcare/Biotech, Digital Technologies (AI, 5/6 G data com, etc.), Advanced Manufacturing, Ocean and Marine and Future Natural Resources.

The main objectives of the calls are to increase the participation and growth of Canadian SMEs who are developing and commercializing IoT products, to grow the level of Canadian semiconductor content in key end sector markets, to increase the development and utilization of Canadian skills and semiconductor technologies, and to provide overall economic benefits to Canada through job creation, product and IP commercialization and sustainable revenue generation in Canada,

FABrIC's strategic objectives:

- **NEW ADVANCED SENSOR AND SEMICONDUCTOR PRODUCTS.** Foster the growth and expansion of companies developing and commercializing advanced sensors and other semiconductor products in Canada targeted at the rapidly growing and strategically important IoT market with direct applications in sectors that are strategically important to Canada.
- **CANADIAN INTELLECTUAL PROPERTY.** Create Canadian intellectual property (IP) and commercialize this IP for the benefit of Canada.
- **ENHANCE** national security and resiliency in the supply of critical semiconductor products and technologies by creating enhanced supply chains with trusted Canadian partners and a larger pool of highly trained specialists in semiconductor product design and fabrication technologies.

Round 2 IoT Product Development Challenge Themes

The Round 2 Challenge call is specifically focused in two areas:

- 1) **Edge-AI, including edge computing, edge sensors and AI Connectivity.**
- 2) **Ocean and Marine IoT devices.**

AI is becoming embedded in almost every aspect of our daily lives and is a major driver of today's global economy. The global semiconductor market is estimated to grow to over \$1 trillion USD by 2030. AI is expected to be the biggest growth engine for both semiconductors and sensors, with AI accelerators, edge processors, and smart sensors leading the growth. Canada has a generational opportunity to participate in this global market. Application sectors range from automotive to healthcare, manufacturing, smart cities/homes, agri-tech, ocean and marine, natural resources and more!

Edge AI devices are critical components that enable the overall advancement, security, scalability and adoption of AI. Edge sensors provide the data that feed AI and Edge AI models. Edge computing moves the compute power out of the datacentre and closer to the data source – the sensors. AI connectivity provides the networking infrastructure to connect sensors, computing and actionable devices together. The key benefits of Edge AI include real-time decision-making, reduced latency, reduced use of bandwidth, lower power consumption, scalability, enhanced privacy and security and reliability in remote and underserved areas.

Canada's ocean and marine sectors are critical to our economy, environment, culture, and sovereignty. With the longest coastline in the world and access to the Atlantic, Pacific, and Arctic oceans, Canada's prosperity and security are deeply tied to the ocean. In its platform AMBITION 2035, Canada's Ocean Supercluster charts the course to grow Canada's ocean economy by 5x to \$220B by 2035. The development and adoption of advanced technologies and AI are major parts of this platform. More information on the Canadian Ocean Supercluster can be found at oceansupercluster.ca/chartingthecourse. Key areas of opportunity for the Canadian semiconductor ecosystem include shipping & navigation, precision aquaculture & fisheries, climate/ocean science, offshore energy & energy harvesting and national defence and security. Examples of where sensors and other IoT chips can be deployed include smart buoys, smart feeding systems, autonomous underwater vehicles, sonar and imaging systems, collision avoidance and vessel tracking, chemical and environmental monitoring, seabed mapping and more.

This Call is to stimulate Canadian companies to develop and commercialize novel sensors and other chips for Edge AI, AI connectivity and/or Ocean and Marine applications. We are looking for organizations who are aligned to FABrIC's strategic objectives, who are driving made-in Canada technologies to service strategic end sectors and who are working to create long term positive impact on Canada's economy and sovereignty.

Funding Opportunities

FABrIC will provide up to \$1M in non-repayable funding to reimburse Ultimate Recipients up to 37% of eligible project expenses*. Reimbursements are paid quarterly based on actual eligible project costs that are incurred and paid by the Ultimate Recipients.

Ultimate Recipients must provide funding for the remaining costs for the project. Stacking of funding from other government sources is allowed within stacking limits (see [Funding Stacking Limits](#), below). Other sources of government funding include non-repayable grants, loans and re-payable contributions, loan guarantees, equity investments and Federal and Provincial tax credits (e.g. SR&ED).

Management Fees: Each project will have a management fee of 2.5% of funding to be paid to CMC Microsystems. The fees are to be used to directly support activities of the FABrIC team in administering the program and facilitating the work of the project participants in the network.

Note: In exceptional cases, funding of up to \$1.5M may be considered, not to exceed 37% of eligible project expenses. Please contact us for exceptional requests at challenges@fabricinnovation.ca.

Definitions

- **“Lead Organization”** means the organization leading the project proposal application process, seeking funding through FABrIC, the FABrIC main point of contact and, if successful, the organization that ultimately becomes the “Lead Ultimate Recipient” to the Project Agreement responsible for overall management of the project. The Lead Organization must be a FABrIC member.
- **“Co-Lead Organization”** means an organization that is seeking funding from FABrIC and who is signing onto the Project Agreement with a Lead Organization. (Up to 3 Co-Leads per application is acceptable for this Challenge Call.)
- **“Collaborator”** means an organization that is not a signatory to the project agreement and is not seeking funding from FABrIC, but (1) is included in a project work plan and is responsible for project activities outlined in a project proposal, and/or (2) is making in-kind contribution to a project that enables completion of project activities. (Up to 6 Collaborators per application are acceptable for this Challenge Call.)
- **“Project Agreement”** means the agreement that will eventually follow a successful proposal and be signed by the Lead Organization setting out the terms and conditions of the proposed and approved Project.
- **“Ultimate Recipient”** means one or more Lead/Co-Lead Organizations who receive funding and carry out Eligible Projects as part of a Challenge Project.

Expression of Interest (EOI) Submission Process

- A complete Expression of Interest must be submitted through the FABrIC Challenges Portal, hosted on the [Blackbaud platform](#).
- You must create a Blackbaud account to enter your Expression of Interest.
- The [Expression of Interest template](#) posted on the FABrIC Website is for reference only.
- The [Attestation and Signature template](#) must be completed and uploaded into the portal.

Key Dates

- **October 6, 2025** – Round 2 IoT Challenge Call – Portal open for submission
- **October 27, 2025, 9:00 pm EDT** – Deadline for Submission of EOIs
- **No later than November 27, 2025** – Successful applicants will be notified and invited to submit a full proposal.
- **December 2025** – Submission of full proposal
- **February 2026** – Notification of results to applicants

FABrIC Challenge Support

FABrIC Challenge Support provides support to Ultimate Recipients for product prototyping. This support includes access to CMC’s fabrication and packaging services, including aggregated multi-project wafer runs, which provide affordable prototyping with leading Fabs in Canada and around the world. CMC will provide services which may include final DRC, chip finishing etc. and will manage all logistics and interfacing with Fabs. Recipients pay only their portion of direct materials (wafers/chips) and shipping/brokerage costs. These costs are eligible project costs and will be re-imbursed based on the project sharing ratio. There are no additional costs for CMC services. For further information contact challenges@fabricinnovation.ca.

Key Requirements

IoT Product Development Challenge – Round 2

- The project must include the design and development of a novel
 - **chip based product** OR
 - **MEMS, Photonic or Quantum based sensor product.**
- The product being developed must be a device for
 - **Edge Computing, Edge Sensing, AI Connectivity applications** OR
 - **Ocean and Marine IoT applications.**
- The product(s) being developed must have a clear path to commercialization.

- The project must be aligned with the overall strategic objectives of FABrIC. See the FABrIC Program Guide: fabricinnovation.ca.
- The project should leverage new and existing Canadian fabrication capabilities in Canada where possible. Collaboration with fabrication partners in Canada is encouraged.
- Ownership of all foreground IP created through the project must remain in Canada and be used for the benefit of Canada for a minimum of five years after the completion of the project.
- Capital equipment purchases are not eligible for FABrIC funding for this call.
- The project must contribute to the development and retention of highly qualified personnel in Canada including for example training for interns, job creation, job retention etc.
- The project should demonstrate other benefits to Canada including social, environmental and economic benefits.
- The project should demonstrate alignment and advancement of the principles of diversity, equity and inclusion.
- Lead and Co-lead organizations must demonstrate that they have sufficient resources to carry out the project to conclusion.
- Estimated project costs must be greater than \$200K CDN. (Please contact us for exceptional requests at challenges@fabricinnovation.ca.)
- Typical project duration is expected to be 12 to 24 months; however, projects must conclude **no later than December 31, 2027**.
- The product(s) must have evidence of market pull at proposal time and be at a TRL of 7 or higher at the end of the project with the intent of commercialization.
- Applicants must provide evidence for the need for funding from FABrIC.
- Projects must be incremental to the regular business of the participating organizations. The proposed project must not already be approved or in progress, must be distinct from investments that would have otherwise occurred, and would not be undertaken at the same scope or scale without the support of FABrIC.
- Projects related to experimental or theoretical work without any direct commercial application or use will not be considered.

Basic Eligibility for Applicants

- Lead and Co-Lead organization(s) must be incorporated or a registered business in Canada and have significant operations in Canada. Lead and Co-lead organizations include:
 - For-profit Small and Medium-sized Enterprises (SMEs) (<500 employees),
 - Not-for-profit organizations,
 - Post-secondary institutions in Canada or research institutes in Canada that are wholly owned by post-secondary institutions in Canada,
 - Indigenous organizations in Canada.
 - Multinational Enterprises (MNE's) may not participate as a Lead or Co-Lead organization but may participate as a Collaborator.
- At least one of either the Lead or Co-Lead organizations must be a SME (<500 employees).
- The Lead and Co-Lead organization(s) must be FABrIC Members to complete the submission of an EOI. See fabricinnovation.ca/member.
- Only organizations may apply to Challenges. Individuals are not eligible to apply.
- The Lead and Co-Lead organization(s) must have at least three (3) full-time equivalent employees.
- Recipients of FABrIC funding must be in compliance with economic sanctions, financial sanctions, and trade embargoes administered by the Government of Canada.
- Designated Projects (as per applicable federal environmental and impact assessment legislation) are not eligible.

Basic Requirements During Project Execution

- All project work must be performed in Canada, unless otherwise pre-approved in writing. A maximum of 10% of work may be performed outside of Canada with pre-approval.
- Eligible expenditures must comply with the requirements that are described in the Eligible Project Expenses Guide: fabricinnovation.ca.
- **Funding Stacking Limits:** Total Government Funding (including FABrIC and other federal funding, provincial and federal investment tax credits) must not exceed seventy five percent (75%) of Eligible Supported Costs for any Industry participant and one hundred percent (100%) of Eligible Supported Costs for any Post Secondary participant.
- All Ultimate Recipients are required to report on all project activities and submit financial claims and supporting documents on a quarterly basis. Other reporting may be required.
- Further terms and conditions will be required as stated in the Project Agreement.

Selection Process

Step 1: Call for Challenge Projects

Challenge call will be issued on the FABrIC website and Challenge guides, EOI templates and supporting documents will be posted.

Step 2: EOI Submissions

Lead organizations will complete the Expression of Interest (EOI) submission according to the Challenge guide and submit the EOI through the FABrIC Challenges Portal, hosted by Blackbaud, prior to the posted submission deadline.

Step 3: EOI Screening

The FABrIC Challenge team will review EOIs to ensure that the proposals meet the eligibility requirements as provided in the Challenge Guide according to [Table 1](#), below.

Applicants that submit an accepted EOI will be notified by CMC Microsystem's FABrIC Challenge team and will be invited to submit a full project proposal.

Step 4: Full Project Proposal

Lead organizations will complete the full project proposal with input from Co-Lead organization(s), if applicable.

Upon request, the FABrIC Challenge team will provide support to facilitate the applicants' efforts to produce project proposals that best address FABrIC project goals.

The FABrIC Challenge team will undertake a financial assessment of participating Lead and Co-Lead organizations to ensure they will be able to support their commitment to the project for its entire duration.

Step 5: Project Review and Scoring

All project proposals will be subject to an independent assessment process undertaken by the FABrIC Advisory Committee (FAC). The FAC will select up to five (5) members from FABrIC Challenge Committees to form an expert assessment panel to review, score and rank the submitted project proposals using the screening criteria in [Table 1](#) and [Challenge Project Selection Criteria](#), below. The expert assessment panel will ensure that approved projects are of high quality, meet FABrIC's strategic objectives, and will recommend projects for funding on a fair basis.

The FABrIC Advisory Committee is a group of up to 15 independents reporting to CMC's Board of Directors. The FAC are recognized Canadian experts in the five key technology areas covered by FABrIC: Compound Semiconductors, Silicon Photonics, MEMS, Quantum, and IoT including Edge AI.

The FABrIC Challenge Committee is a pool of up to 50 independent experts from each of the key FABrIC technology areas and includes members from industry (SMEs, MNEs and NFPs) and academia, from across Canada. The members have a variety of sector specific manufacturing and technology backgrounds and technical and strategic expertise.

The identity of experts participating in individual project assessments will be kept confidential.

Members of the FAC and FABrIC Challenge Committees will sign non-disclosure agreements as well as conflict of interest disclosures to ensure independence and confidentiality.

Step 6: Final Project Review and Approval

Based on the Challenge Committee's ranking results and the available funding envelope, the FAC will recommend the final approval for funding of selected projects to the CMC Board.

The CMC Board will review the recommendations from the FAC to ensure the selection process has been followed, and if so, will approve the corresponding funding. Note the CMC Board will not assess or be directly involved in the selection of projects.

The FABrIC Challenge team will notify Innovation, Science and Economic Development Canada (ISED) of the selected projects and the funding allocation.

The FABrIC Challenge team will notify each successful applicant and will proceed with the development and completion of a Project Agreement with the Lead and Co-Lead organizations.

Applicants for projects that are not recommended for approval will be notified, with a summary outlining the reasons why they were not approved, as well as any recommendations to strengthen their applications. These applicants may re-apply for subsequent Challenges.

Table 1: Challenge Project Pass/Fail Criteria

1) Organizational requirements:

- a. All Lead and Co-Lead organizations are incorporated or registered in Canada and have significant operations in Canada are one of (a) for-profit organizations (<500 employees), (b) not-for-profit organizations, (c) post-secondary institutions situated in Canada, (d) research institutes situated in Canada that are wholly owned by post-secondary institutions in Canada, d) Indigenous Organization in Canada
- b. For not-for-profit organizations based in Canada, the organization is incorporated under the Canada Not-for Profit Corporations Act (CNCA) or similar Provincial Act.
- c. There is a minimum of one Lead or Co-Lead who is a SME (<500 employees). No Leads or Co-Leads are MNEs. (MNEs are not eligible for funding but may participate as collaborators.)
- d. All Lead and Co-Lead organizations have minimum 3 full-time equivalent employees.
- e. If applicable, the structure of subsidiary organizations have been identified and verified. Evidence that Canadian operations are substantial with appropriate autonomy.

2) Project alignment with FABrIC and call objectives:

- a. develops made-in-Canada IoT products for commercialization in Canada, develops highly qualified personnel (HQP) in Canada, creates/retains jobs in Canada.
- b. develops semiconductor based IoT devices, including sensors, with primary use in any one or more of the following areas
 - i. Edge AI Computing
 - ii. Edge AI Sensing
 - iii. AI Connectivity
 - iv. Ocean and/or Marine IoT applications

3) Project Budget:

- a. Evidence of sufficient working capital and other resources to complete project, with no more than 75% of total industry eligible project costs being funded with government sources (up to 100% for post-secondary Ultimate Recipients)
- b. The Lead and Co-Lead organization have applied for, are planning to apply for or have received funding from other federal/provincial sources
- c. funding request does not exceed 37% of eligible project costs
- d. funding request does not exceed \$1M
- e. funding request does not exceed \$1.5M (exceptional case)
- f. total eligible project expenses are greater than \$200K CDN

4) Market Opportunity and Commercialization Plan:

- a. Target markets have been identified
- b. Realistic estimates of TAM, SAM and obtainable market have been provided
- c. Realistic commercialization plan has been identified
- d. Realistic revenue projections have been provided
- e. Lead customers or potential lead customers have been identified
- f. Major competitors have been identified

Table 1: Challenge Project Pass/Fail Criteria, continued

5) Ability to execute:

- a. Evidence that the team has the technical skills and human resources to complete the project and commercialization skills to bring the product to market
 - b. Evidence that critical collaborators have been identified (supply chain, manufacturing partner(s), subcontractors, etc.)
 - c. Major project work activities have been identified
 - d. Current TRL is 3 or higher, with reasonable justification
 - e. Planned TRL is 7 or higher, with reasonable justification
-

6) Benefits to Canada:

- a. evidence of job creation/retention, HQP training
 - b. evidence of EDI initiatives
 - c. evidence of IP that will be generated and commercialized in Canada
 - d. evidence of positive impact to the Canadian value chain and sovereignty
 - e. evidence of other social, environmental and economic impact
-

7) Need For FABrIC Funding:

- a. There is a demonstrated need for FABrIC funding
 - b. There is evidence that the project is incremental to the organization's current business activities
-

Challenge Project Selection Criteria

Projects will be assessed based on the following criteria**:

1) Commercial opportunities and outcomes including:**

- a. Alignment with Challenge Call objectives
- b. Market opportunity
- c. Engagement with lead and potential customers
- d. Letter of support (customers, advisors, investors)
- e. Business case and ROI
- f. Commercialization plan and ability to execute
- g. Sustained longer term commercial opportunities within Canada

2) Advancement of the Canadian semiconductor ecosystem and benefits to Canada

- a. Alignment with Challenge Call objectives
- b. Generation and commercialization of IP and related assets in Canada.
- c. Advancement of the Canadian semiconductor ecosystem within the global semiconductor value chain
- d. Impact on Canadian economy, sovereignty and security
- e. Jobs creation, retention and skills development
- f. Collaborations within Canada
- g. Contribution/sharing of knowledge with ecosystem
- h. Advancement of EDI principles
- i. Other benefits to Canada (social, environmental etc.)

3) Project execution, budget and likelihood of success including**

- a. Skills and experience of project team and ability to execute
- b. Team readiness for execution within 60 days of project agreement
- c. Engagement with critical project partners
- d. Workplan, activities, deliverables, milestones and KPIs
- e. Budget and ability to fund
- f. Need for FABrIC funding and distinctiveness of project from normal business
- g. Risk management, identified risks, risk mitigation strategies

Each of these criteria categories will have nominally equal weighting unless otherwise decided by the FAC. Proposals evaluated to be excessively weak in their demonstration of any selection criteria may not be successful.

** Subject to changes

Equity, Diversity, and Inclusion

The FABrIC project is powered by and managed by CMC. CMC is unwavering in its commitment to the principles of Equity, Diversity, and Inclusion (EDI). We believe that fostering an inclusive environment enhances innovation, creativity, and excellence. We recognize that a breadth of perspectives, skills, and experiences contribute to excellence in research and innovation. This culture is the responsibility of every participant in the ecosystem, including employees, funders, investors, sponsors, institutions, companies, researchers, advisors, administrators, and reviewers. As part of our dedication to EDI, CMC is also actively participating in the Government of Canada's 50-30 Challenge, which aims to accelerate gender parity and the inclusion of under-represented groups in leadership roles.

EDI is a cornerstone of our governance and operational practices. FABrIC Challenge, Innovation Platform and Ecosystem Development proposals that advance EDI principles are given additional assessment points, reflecting our commitment to creating a diverse and inclusive community. We recognize that embracing EDI is not just a goal, but a continuous journey. By embedding these values into our decision-making and resource allocation processes, we aim to ensure that our investments yield the maximum benefit for all members of our community.



Technology Readiness Levels (TRLs)

Activities for proposed projects will generally fall under Technology Readiness Levels (TRLs) 3 to 7 but could cover the whole range of TRLs 1 to 9. Innovation, Science and Economic Development Canada (ISED) (Innovation Canada) describes stages of development, including a TRL assessment tool and checklist, online at <https://ised-isde.canada.ca/site/innovation-canada/en/technology-readiness-levels>.

Technology Development Stage	TRL	Definition	Description
Fundamental Research	1	Basic principles observed and reported	Scientific research begins to be translated into applied research and development (R&D). Activities might include paper studies of a technology's basic properties.
	2	Technology concept and/or application formulated	Invention begins. Once basic principles are observed, practical applications can be invented. Activities are limited to analytic studies.
Research and Development	3	Analytical and experimental critical function and/or proof of concept	Active research and development is initiated. This includes analytical studies and/or laboratory studies. Activities might include components that are not yet integrated or representative.
	4	Product and/or process validation in laboratory environment	Basic technological components are integrated to establish that they will work together. Activities include integration of "ad hoc" hardware in the laboratory.
	5	Component and/or validation in a simulated environment	The basic technological components are integrated for testing in a simulated environment. Activities include laboratory integration of components.
Pilot and Demonstration	6	System/subsystem model or prototype demonstration in a simulated environment	A model or prototype that represents a near desired configuration. Activities include testing in a simulated operational environment or laboratory.
	7	Prototype ready for demonstration in an appropriate operational environment	Prototype at planned operational level and is ready for demonstration in an operational environment. Activities include prototype field testing.
	8	Actual technology completed and qualified through tests and demonstrations	Technology has been proven to work in its final form and under expected conditions. Activities include developmental testing and evaluation of whether it will meet operational requirements.
Early Adoption	9	Actual technology proven through successful deployment in an operational setting	Actual application of the technology in its final form and under real-life conditions, such as those encountered in operational tests and evaluations. Activities include using the innovation under operational conditions.



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