



Informational Document

## Opportunity to participate in international R&D&I projects in cooperation with Canadian/German innovation regions

**Topic:** Industrial Artificial Intelligence

**Application Areas:** Tools, equipment, material processing and fabrication facilities

**Deadline for Expression of Interest:** December 14, 2018

**Deadline for Initial "Project Proposal" Submission:** January 8, 2019

**Project Start Date:** Fall 2019

**Constellation:** At least 2 German partners (one being a company in OWL) + at least 2 Canadian partners (one company or a group of companies, and one faculty group from the UBC MMRI).

**German Cooperation Partner:** it's OWL, and associated partners: [www.its-owl.com](http://www.its-owl.com)

**Canadian Cooperation Partner:** UBC Materials and Manufacturing Research Institute (<https://mmri.ubc.ca>), Accelerate Okanagan (<https://www.accelerateokanagan.com>) and their associated partners

Next to the SMEs partnership and innovation at the international level, the program will highly emphasize the value of collaborative expertise and student exchange in academia.

### 1. Background

The technology network [it's OWL](#) together with the UBC Materials and Manufacturing Research Institute ([MMRI](#)) and Accelerate Okanagan ([AO](#)) have initiated a Canada-Germany partnership building effort to identify and serve to secure funding for three cutting-edge collaborative projects at small and medium-sized enterprises (SMEs) in Canada and the Ostwestfalen-Lippe (OWL)-- a high tech region in Germany that is characterized by its numerous strong partners and considerable skills in industrial problem solving. The aim is to match technical challenges of the partnering SMEs from the two countries in high-tech and manufacturing sectors and build the team of experts to develop innovative solutions for those challenges based on **Artificial Intelligence**. Each joint project is expected to bring two or more members of it's OWL (at least one being an SME), one SME in Canada, and one group of academic partner joined through the UBC-MMRI. Having made the necessary preliminary arrangements with the funding organizations namely the [BMBF](#) in Germany, and [NRC-IRAP](#) and [MITACS](#) in Canada, the Accelerate Okanagan, UBC MMRI and it's OWL will work closely with the interested industrial partners to facilitate the joint proposal developments and applications.



## 2. Organizers

### (a) it's OWL (and associated partners)

As part of the leading technology network, it's OWL (Intelligent Technical Systems OstWestfalenLippe) is consist of around 200 global market and technology leaders in *mechanical engineering*, *electronics* and *electrical engineering*, along with the *automotive supply industry*. They are working together with regional research institutes in developing new technologies for intelligent products and production systems. For sample past projects, please visit:

<https://www.its-owl.com/projects/innovation-projects/>

<https://www.its-owl.com/projects/cross-sectional-projects/>

<https://www.its-owl.com/projects/sustainability-initiatives/>

The cluster is one of the largest initiatives for *Industry 4.0* in the SME sector internationally and is characterized by a close alliance of business and science.

- *Companies*: strong, brands, hidden champions, independent family-owned companies
- *Research Institutes*: symbiosis of informatics and engineering sciences

**(b) UBC Materials and Manufacturing Research Institute (MMRI)** – has been established in 2017 by its founding Director Dr. Abbas Milani, P.E.ng. The institute is a highly multi-disciplinary, inter-departmental research hub, based in Kelowna linking researchers from both UBC campuses with other regional, national and international universities, industry partners and government research organizations. The MMRI has created linkages between researchers from traditionally distinct disciplines, including engineering, chemistry, physics, biology, medicine, health and medical science, computer science, social science, applied mathematics, management, among others, to co-create and launch large-scale strategic research projects in the core and applied materials and manufacturing domains.

The MMRI has recently established a cross-disciplinary cluster under [Design for Industry 4.0](#). The aim of this research cluster is to promote data-driven (smart) design and manufacturing paradigm in different industrial sectors, by integrating the recent advances of three core areas: cybernetics, the industrial internet of things (IIOT), and artificial intelligence. This is being accomplished by assessing the Industry 4.0 readiness of multiple parenting SMEs, creating a basic digital copy of modular cyber-physical (CP) factories, and subsequently using on-line sensing and data communication techniques along with networks of artificial intelligence (AIs) to enable optimal, sustainable and feasible decision-making in real-time and in a decentralized manner on the manufacturing floor.

**(c) Accelerate Okanagan (AO)** supports entrepreneurs through mentorship, coaching, and community. As the Okanagan tech community and companies within it continue to grow, so does Accelerate Okanagan's support model. Coined 'Continuous Acceleration,' we deliver unique programming for all stages of growth. The reality is, each stage of the entrepreneurial process demands a different set of tools and we are constantly iterating in an effort to meet these needs. Regardless of stage or company development, having a mentor to help navigate the entrepreneurial journey is key.



### 3. Expected benefits to SMEs

Complex research questions and innovation topics in the above areas are increasingly being tackled in cooperation with international partners worldwide. In the future, global competitiveness will depend on cross-industry and interdisciplinary cooperation with internationally outstanding innovation regions. The cooperation between it's OWL, UBC-MMRI and Accelerate Okanagan aims for partnerships at eye level, benefiting both regions and all actors associated to the respective organization. This cooperation helps enhance the competence profile of all parties, it contributes to a sustainable development of Germany and Canada, and it strengthens management competencies for international research and innovation cooperation (particularly in open innovation, knowledge management, intercultural competence and protection of intellectual property rights). This cooperation will ultimately result in initiatives as well as forms of organization and tools for greater involvement of small and medium-sized companies (SMEs) and research institutes in international cooperation projects. As a result, all parties will gain access to expertise, know-how, new markets and human capital, making the initiative future-oriented and sustainable.

Specific benefits to SMEs in each respective country may be summarized as:

- Access to complementary German/Canadian engineering research in design and manufacturing under the emerging fourth industrial revolution (Industry 4.0), patented advanced technologies as well as tools, equipment, material processing and fabrication facilities. In turn, this access will significantly enhance the quality of the SME products and processes, while bringing a range of new ideas for broader range of solutions that would not be possible to tackle under a single lab or expertise area.
- Enhance the competitiveness of each SME in the respective country while developing joint IPs and hence opening to both European and North American market.
- Access to facilities of world class researchers in German and Canadian Universities along with their top-notch interns and students who will be working with SMEs and trained under this highly multi-disciplinary program. In turn, they will be potential next hires of the SMEs with substantially higher technical and interpersonal skills.

Next to the SMEs partnership and innovation at the international level, this cooperation highly emphasizes the value of expertise and student exchange in academia.

### 4. Funding level and procedure

This partnership building exercise intends to identify up to three projects and help the partners involved to secure three-year funding (starting in Fall 2019) from their respective funding organizations. Each project must have at least one Canadian SME partnering with UBC MMRI in Canada, and at least one German SME partnering within the it's OWL network. More specifics for funding mechanism in each country are outlined below.

#### In Germany:

It's OWL will be considering a support of €3 million for this cooperation (up to €1.0 million per project for three years). This amount should be matched at least equally by the participating German partners involved under each project.



### In Canada:

The Industrial Research Assistance Program (IRAP) of the National Research Council of Canada (NRC) will be considering a support of \$3 million for this joint venture (up to \$1 million per project for three years). IRAP will be directly supporting the Canadian-based SMEs to be engaged in the joint international R&D projects under this symposium. The level of contributions from the SMEs will be determined according to the NRC-IRAP funding schemes. In addition, for each SME project, matching funds from the Mathematics of Information Technology and Complex Systems (MITACS) Canada will be sought by MMRI to further support the faculty and students who will work with the SMEs towards innovation tasks of each project in Canada.

Upon the application review and approval, each Canadian SME will require to submit an IRAP application to NRC to receive matching support up to a total of \$1 Million over three years. Upon approval of IRAP funding, each SME will be allowed to sub-contract UBC MMRI to directly assist them in the innovation tasks identified in the project by SME. Accordingly, UBC MMRI will apply for research matching funds from MITACS. MMRI faculty and senior staff will assist the SMEs during the IRAP application and submission.

**Note:** Transfer of funds between the international parties will not be allowed (i.e. funds from German partners must be spent in Germany, and funds from Canadian partners must be spent in Canada). It is expected that under each project the partner contributions from the two countries are at a comparable level.

## 5. Application instructions

**Step 1)** Email your Expression of Interest (EOI) before **December 14, 2018** (see contact information below). In EOI submission, please briefly describe your indented project (250 words max).

**Step 2)** Upon the review of EOI and approval, the organizers will invite the matched German and Canadian SMEs and help with the preparation a joint **Project Proposal by January 8, 2019**. The proposal must show that cooperation will occur at eye level and comparable capacities and resources will be brought into the projects with a common work plan by all partners. MMRI will assist the Canadian SMEs in preparation of the proposal and their linkage to the correct faculty labs and expertise in B.C. and across Canada.

The proposal should include a maximum of 10-page project description (in German or English) and contain the following points:

1. Presentation of ideas and description of goals
2. State of science and technology
  - 2.1 State of science and technology related to the intended project
  - 2.2 Own and experiences and competencies of the cooperating international partners
  - 2.3 Presentation of whether the project objective is currently the subject of research / developments / investigations
3. Planned work, including the intended task and division of labor among national and international partners
4. Estimated total cost of national (considering available funding) and international partners (Complete the textual remarks in this section for a brief tabular schedule of work, time and expenditure.)
5. Exploitation options and exploitation intentions



**Step 3)** The proposals will be submitted to the corresponding funding organizations namely BMBF in Germany and NRC-IRAP and MITACS in Canada to secure the matching funds of the SME partners (more detailed instructions will be provided to the selected SMEs).

Contact Information:

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[German Federal Ministry of Education and Research \(BMBF\)](#)

[Industrial Research Assistance Program \(IRAP\) - CNRC-NRC](#)

[Mitacs | Inspiring Innovation](#)