FRANCE-JAPAN

JOINT CALL FOR PROPOSALS ON

“Edge Artificial Intelligence”

within the framework of the collaboration between the French Ministry of Higher Education, Research (MESR) – via l’agence National de la Recherche (ANR) and the Ministry of Education, Culture, Sports, Science and Technology (MEXT)

Open jointly by the MESR (via ANR) and Japan Science and Technology Agency (JST)

Opening date:

13 January 2023

Closing date:

12 April 2023 (10 :00 CET/17 :00 JST)

Link to the call on the ANR website:

https://anr.fr/FrJp_EdgeIA2023

Link to the call on the JST website:

https://www.jst.go.jp/inter/english/program_e/announce_e/announce_fr_edge_ai2022.html

Contacts

ANR (on behalf of MESR)
Dr. Aladji KAMAGATE
Digital Technology and Mathematics Dpt
aladji.kamagate@agencerecherche.fr
+33 1 78 09 80 59
Dr. Fanny Lachat
Digital Technology and Mathematics Dpt
fanny.lachat@anr.fr

JST
Ms. Junko Shiraishi
Mr. Akira Yoda
Mr. Shinichi Doi
Dept. of International Affairs
jointfr@jst.go.jp
Tel. +81 (0)3 5214 7375

Applicants are advised to read carefully the entire document as well as the corresponding national documents (National annex and regulation for France and Japan-based applicants) before submitting research project proposals.

CONTEXT AND GENERAL DISPOSITIONS

Japan and France are long-standing partners in the field of information and communication technologies. In the recent years, cooperation has been particularly developed in the field of artificial intelligence with the creation of the Global Partnership on Artificial Intelligence (GPAI). Japan has been elected as incoming GPAI Council Chair for 2022-2023 while France was the previous chair. These elections highlight the major roles played by France and Japan in the field of Artificial Intelligence and show the long standing and strong collaboration between the two countries. In this context, MESR and JST are pleased to launch a call on Edge AI to strengthen the tie between the two countries.

Why Edge AI?

Associated with the AI revolution, increasingly efficient specific AI components are beginning to be integrated into many systems such as smartphones, vehicles, robots, medical devices, connected, portable/wearable electronical devices, etc. For this a wide range of applications, Edge AI, combining edge computing and artificial intelligence, is preferred over AI in the cloud in order to improve privacy and/or latency performances. Such systems require efficient Edge AI computing, i.e., specific AI algorithms, to benefit from the hardware designed to guarantee energy frugality, low latency, local decision autonomy, operational security and data protection.

Edge AI computing targets efficiency, effectiveness, and adaptability. Efficiency relates to the ability to reduce energy consumption while delivering real-time and robust performance (effectiveness) with limited resources such as computing power, memory, storage, and power consumption. Adaptability relates to changing needs, dynamic environment, and operational conditions. Different scientific challenges are to be met to achieve efficient edge AI such as post-training or training-aware quantization and pruning … In addition, Edge AI can also be a tool to ensure security and privacy on the net. Indeed, since Edge AI allows to run algorithms locally on the embedded systems, users' personal data remains local and does not need to be centralised in a cloud, thus enhancing personal data protection and lowering energy consumption. This capability is particularly critical for healthcare applications, privacy in next-generation networks and telecommunication technologies or the increasing role of IoT in the emerging Industry 4.0.

Edge AI has the potential to provide new popular services while simultaneously addressing privacy and environmental concerns. It is a key technology for innovating in many issues of public interest.

From the business perspective, the global Edge AI market size is expected to grow significantly. This is mainly due to significant growth expected in the deployment of Edge Computing use cases in large enterprises to support IoT or immersive experiences, as well as the proliferation of Edge Computing AI in industries such as automotive, healthcare and manufacturing.

Japan and France potential on Edge AI

On November 8th, 2021, Frédérique Vidal, the French Minister of Higher Education, Research, and Cédric O, the French Secretary of State for Digital Transition and Electronic Communications, unveiled the second phase of France's AI strategy which includes a strong focus on Edge AI. In April 2022, the Secretariat of Science, Technology and Innovation Policy Cabinet Office in Japan formulated the "AI Strategy 2022" for AI research and development and presented a comprehensive policy package on AI indicating its development into an edge environment.

Edge AI is clearly a priority in France regarding its AI strategy to transform R&D potential into economic success. In France, many industrial actors are already potentially interested in Edge AI.

In Japan, Edge AI is also attracting the attention of industries which are trying to introduce it into their business to differentiate themselves from their competitors by implementing the most recent development of R&D outcomes in the relevant domains. The "AI Strategy 2022" is promoting these social implementations.

France and Japan share a common vision in the area of Edge AI, they will benefit from joint scientific research. Based on the added value obtained through the collaboration between the two countries, such a partnership on Edge AI research will contribute to the strengthening of our digital economies and will reinforce the confidence of our societies in these technologies.

Both countries, in particular through their strong involvement in the GPAI, have reaffirmed their common vision of AI and their willingness to create a common AI ecosystem in order to create new collaborative projects. Together, they commit to combine their efforts based on their national strategies to create the relevant landscape for new collaborative projects between academia and industry.

Hence, this bilateral Call for Proposals on Edge AI aims to fund projects promoting high-quality research collaborations between France and Japan. It targets pre-competitive basic research on Edge AI, including interested industrial partners.

CHALLENGE, SCOPE, APPLICANTS, STRUCTURE AND BUDGET OF THE CALL

Challenge

This call aims to support collaborative research on current challenges in edge and embedded AI and the projects are invited to address – without being limited to – one or more of the following topics:

- AI for embedded systems which autonomously execute learning and inference with low latency at edge locations,
- Distributed AI like, e.g., federated learning in highly distributed networking environments of edge computing domains,
- Green AI requiring less computational and communication resources, e.g., algorithms requiring less energy, less memory, less communication bandwidth, etc.
- Trustworthy AI in Edge context, data and models with high security including certifiable and processing pipelines.

Scope

Project proposals may relate - without being limited - to one or more of the following application domains, excluding project proposals focusing on military use.

- Healthcare
- Industry 4.0/Connected Industries
- Telecom application
- Autonomous driving

Applicants

Japanese and French higher education institutions or research organizations as academia group as well as private companies or commercial enterprises as industrial group. Each project must have at least one partner of each group in each country, resulting in a 2+2 minimal partnership. For consortium composition, please consult the part related to eligibility criteria.

Budget and project duration

The funding amount from the ANR to the French applicants will be up to 420,000 Euros per projects for a maximum project duration of 48 months.
The funding amount from JST to the Japanese applicants will be up to 60 million Japanese yen per project (including 30% overhead expenses) for a maximum project duration of 48 months: around 15 million Japanese yen per project per year.

A maximum of three projects will be funded within the framework of this call for proposals.

Aim

The project results shall contribute to the development of pre-competitive and applied results for products, processes and / or technical services. With this funding measure, both countries will support Research and Development projects aimed at the innovative application of embedded AI in practice. The funding of collaborative projects is intended to strengthen the transfer between science and industry to the advantage of the involved partners in both countries.

It may not always be possible for the proposed research to yield immediate results for a target application. Applicants are expected to show the future roadmap indicating the eventual goal of the pursued technology with timelines and clarify where the outcome of the proposed research is positioned in the overall value chain of technologies.

SUBMISSION

The French and Japanese partners[1] must prepare a joint scientific project proposal respecting the corresponding template documents provided by ANR and JST. Each team from each country must appoint a **national project coordinator** who will act as a contact point for the respective national funding agencies.

Each project proposal

- must be submitted by the:
  - Japanese project coordinator on the following submission website https://www.e-rad.go.jp/
  - French project coordinator on the following submission website https://aap.agencerecherche.fr/_layouts/15/SIM/Pages/SIMNouveauProjet.aspx?idAAP=1923
- be composed of:
  - a project description (20 pages maximum, specific outline templates are provided),
  - an annex presenting the short (max. 1 page per person) CVs of:
    - both national project coordinators
    - and each coordinator of an additional project partner

The project proposal shall describe each partner's role and how the partners complement one another in achieving the project objectives. The project description must provide the information needed for its assessment according to the pre-defined evaluation

[1] Legal entities (research organisations, commercial enterprises, etc.) are considered as partners in the framework of this call for proposals

criteria listed in this call for proposals and follow the proposal structure provided in the project template documents. Project proposals may contain additional information (respecting the page limit), if considered relevant for its assessment.

A **Consortium Agreement** (CA) has to be signed by all project partners (i.e., legal entities) within the first year of the project and must specify:

- the partners' contributions (scientific and financial)
- the governance of the partnership and dispute resolution arrangements
- the tasks sharing
- the intellectual property rights (IPR) sharing relating to prior knowledge and results as we well those obtained within the framework of the project
- the results exploitation and dissemination

It will be the responsibility of the national project coordinators to draw up a CA in order to fix a common project start date, manage the delivery of the project activities, finances, intellectual property rights (IPR) and to avoid disputes which might be detrimental to the completion of the project and compliance – if applicable (Research Organisations and Undertakings participating in the same project) – with the Framework for State aid for research and development and innovation 2014/C 198/01.

ELIGIBILITY

The project proposals must meet all the following criteria, which **are cumulative**. Project proposals that do not meet all the eligibility criteria, whether common to both agencies or specific to each, will not be evaluated and therefore cannot be selected for funding. **Project proposals may be declared ineligible at any stage of the process.** When analyzing eligibility, the information entered online, even if incorrectly indicated or missing, takes precedence over the information in the project description, if these two sources of information are not consistent.

Each project proposal will be evaluated based on the information completed and submitted online, through the submission websites before the call for proposals closure deadline. No other information will be sought or requested from the applicants if any information is missing. **No changes to data will be possible and no documents will be accepted after the closure date and time of the call for proposals**. Data is entered subject to the direct liability of the project coordinators (French and Japanese), who must plan for submission and allocate the necessary time.

An applicant is not allowed to submit more than one project as project coordinator.

Common eligibility criteria

Consortium composition: each project proposal must have at least **four partners**: **two partners** (at least) applying for ANR funding and **two partners** (at least) applying for JST funding.

These partners have to be on each side:

- ANR: at least one public stakeholder involved in French research (laboratory of a research and knowledge dissemination organisation or institution eligible for ANR funding[2]) and at least one company conducting research and development in France[3] eligible for ANR funding.
- JST: at least one higher education or research institution partner (universities, independent administrative institutions, national/public testing and Research Institutions, specially authorized corporations, public-service corporations) eligible for JST funding and at least one industrial partner(enterprise) eligible for JST funding. The Japanese partners must satisfy predetermined requirements designated by MEXT, more information on the following webpage: https://www.mext.go.jp/a_menu/kansa/houkoku/1324571.htm

In order to facilitate the cooperation between partners of both countries, the participation of independent industrial partners in both countries is encouraged.

Specific eligibility criteria

ANR checks the eligibility of project proposals by taking into account the criteria described above and those available in the document called *"les modalités de participation pour les partenaires sollicitant une aide de l'ANR"* available on the web page dedicated to the present call.

JST checks the eligibility of project proposals by taking into account the criteria described above and those available in the Annex section of this document as well as rules and guidelines downloadable from the JST's website for this call. Japan-based applicants are expected to carefully read all these documents for application to this call.

EVALUATION

Each project proposal is evaluated by the evaluation committee based on the information completed and submitted online through ANR and JST submission websites before the closing date.

The evaluation committee will be composed of French and Japanese recognized, independent, responsible AI experts nominated jointly by both countries.

[2] See the ANR's funding regulations

[3] Includes large, small and medium-sized enterprises and start-ups whose R&D project work will be conducted in France. Only companies with their real head office in a European Union country and with an establishment or branch in France may benefit from ANR funding.

The evaluation criteria are as follows:

Criteria	Description of the criteria
R&D innovation, technical excellence and societal relevance	• Level of innovation of the scientific and technical concept • Scientific and technical quality of the solution • Assessment of the social, economic and environmental opportunities and risks associated with scientific and technological innovations
Feasibility and implementation efficiency	• Quality of the science and technology approach • Adequacy of the workplan to the budget, resources, time schedule, and/or infrastructure.
Significance in consortium and international collaboration	• Project management, governance, and consortium structure • Relevance of the partners with respect to the proposal • Added value from bilateral cooperation and synergy effects
Exploitation and dissemination	• Relevance of the proposed solutions for targeted scientific and industrial applications • Validity of the plan for standardization effort and open data policy of research outcomes • Validity of the plan for possible operation and/or commercialization in practical use

SELECTION

The evaluation committee will meet once the individual evaluations by the experts have been conducted. The project proposals will be discussed and ranked against each other.
The evaluation committee is composed of French and Japanese experts jointly appointed by the two agencies.
This committee will recommend to the funding agencies a list of proposals based on a consensual agreement.

Based on this list and on the available budget, the Funding Agencies, from JST and ANR, representatives will issue a list of project proposals eligible for funding.

The agencies will the published the list of the funded projects on their website by the end of November 2023.

FUNDING PROVISIONS

Each agency will cover expenditures for their respective country's research consortia according to its own rules.
ANR's funding regulations are available at: https://anr.fr/fr/rf/
JST's funding regulations are available as the annex to this call text.

REPORTING AND MONITORING

Each national project coordinator will have to report to his/her respective funding agency according to specific national rules.

However, both national agencies encourage national project coordinators to work together in order to align the content of their formal mid-term and final reports.

In addition, a kick-off (venue: Paris, date: late February to early March 2024) and a final review (venue: Tokyo, date: late October to early November 2027) meetings[4] alternatively in France and Japan of all funded projects will be organized by the agencies. The participation of each consortium is highly encouraged, and a budget should be foreseen accordingly in the budget of the project.

[4] Funding organisations reserve the right to change the venue and date at any stage.

TIMELINE

- Opening of the submission websites: 13 January 2023
- Closure of projects proposals submission: 12 April 2023 (10 :00 CET/17 :00 JST)
- Publication and/or notification of the results: Late September 2023
- Start date of the project: 1 December 2023

Annex 1: National Funding Regulations

- Japan – Japan Science and Technology Agency (JST)

→ Who can apply?

The applicant requirements are as follows:

- The applicant must be an independent researcher who is capable of carrying out the Research Project jointly with the French research groups in the consortia.
- The applicant must be personally affiliated with a research institution in Japan and must conduct research there.

Research institutions in Japan refer to universities, independent administrative institutions, national/public testing and research institutions, specially authorized corporations, public-service corporations and private companies or enterprises, etc. that must satisfy predetermined requirements designated by MEXT. Please refer to the MEXT homepage for more information:
https://www.mext.go.jp/a_menu/kansa/houkoku/1324571.htm

Any individual who satisfies the following conditions is also eligible to apply:

- Researchers holding citizenship other than Japanese who belong to a research institution in Japan.
- Researchers who are not currently affiliated with a particular research institution or are affiliated to a research institution abroad, but who will be affiliated with a research institution in Japan and will be able to conduct research there if selected. (Any nationality is acceptable.)

→ What types of funding are eligible for Japanese researchers?

The level of the funding to Japanese researchers may be up to around 15,000,000 Japanese Yen per year (i.e., total 60,000,000 Japanese Yen at maximum for the four years of funding) including 30% indirect costs. (Funding will be made in Japanese Yen.) Due to the budgetary appropriations available, amounts provided in support may be adjusted each year.

1. Eligible direct costs

The basic rule is that the eligible direct costs shall be the typical costs directly needed for accomplishing the research, indicated below from 1.1 to 1.5, and that they are subject to the regulations of each research institution. Please refer to guidance documents in the following link for further details of eligible direct costs (available in Japanese only).
https://www.jst.go.jp/contract/index2.html
https://www.jst.go.jp/contract/inter/2022/intera.html

1.1 Research materials and small-scale research equipment
Research equipment, spare parts, prototypes, software (in-line product), and purchase of books, reagents, materials and consumables.

1.2 Personnel costs
Personnel costs of the researchers, temporally staff, etc., who are hired for the research, and other costs such as honoraria for invited lecturers.

1.3 Travel costs
Costs of the Project Coordinator and research project members registered in the research project plan associated with travel to counterpart countries participating in the joint project and other countries with appropriate justification (contact the national contact point for details), as well as travel costs of invited external experts.

1.4 Living expenses
Included in the Travel costs (1.3 above)

1.5 Expenses for the organisation of small scientific events in Japan
Rental costs of the event venue, food & beverage (excluding alcohol) costs and other costs which are deemed to be necessary for organizing the event.

2. Eligible indirect costs
Please refer to the following link for the provisions regarding indirect costs which are subject to the 30% of the direct costs described above.
https://www8.cao.go.jp/cstp/compefund/shishin2.pdf

→ Is an additional/parallel application requested to the funding organisation?
Yes, it is. You are supposed to fill required information on e-Rad in the following link:
https://www.e-rad.go.jp/

3. For industrial participants in the project as a Japanese team
Industrial participants in the project as a Japanese team are not allowed to pay equipment costs, personnel costs including honorariums from the contract research expenses in terms of budget planning. Equipment costs are defined for goods with an acquisition price of 500,000 yen or more and a usable period of 1 year or more.