

Joint Call for proposal for India-EU Intent of Cooperation on High Performance Computing and Quantum Technologies

Background:

During India EU Leaders' Summit on 8th may 2021, both leaders' inter-alia agreed to deepen technological cooperation on Quantum and High-Performance Computing (HPC).

Post leaders' meeting, both sides have had several rounds of discussions for cooperation in the field of HPC.

On 21st November 2022, Ministry of Electronics and IT (MeitY), Government of India and the Directorate-General for Communications Networks, Content and Technology (DG CONNECT), European Commission **signed an Intent of Cooperation (IoC) on High Performance Computing (HPC), Weather Extremes & Climate Modeling and Quantum Technologies** at a virtual ceremony held simultaneously at MeitY, New Delhi and at DG CONNECT, Brussels. The IoC was signed by Secretary, MeitY and Director General, DG CONNECT, European Commission. The Intent of Cooperation builds further on the commitments made by both sides to deepen technological cooperation on High-Performance Computing and Quantum during the EU-India Leaders' meeting on 8th May 2021.

The cooperation on HPC was also discussed during the Working Group meeting of **"Strategic Technologies, Digital Governance and Digital Connectivity"** under **India-EU Trade and Technology Council (TTC)**. The TTC will be co-chaired on the Indian side by the Ministers in charge of External Affairs, Commerce & Industry, and Electronics & Information Technology. The TTC will be co-chaired on the EU side by the Executive Vice-Presidents (EVP) of the European Commission in charge of digital technology and trade. Under the auspices of the India-EU TTC, it was also agreed between both sides to further explore the possibilities for turning the identified areas of common interest into actionable outcomes.

A Joint India-EU Workshop on High-Performance and Quantum Computing was organized under the India-EU Intent of Co-operation Program (one of the actionable points under the WG1 of Trade and Technology Council) on June 15 - 16, 2023 at the C-DAC facility in Pune. The workshop witnessed the online/ physical presence of eminent scientists from EU and India and rep. from Embassy of India, Brussels, Indian Meteorological Department (IMD), Indian Institute of Tropical Meteorology (IITM), National Institute of Oceanography (NIO), North-Eastern Hill University (NEHU), National Geophysical Research Institute (NGRI) and relevant industry partners. During the two days' workshop, both sides identified a preliminary list of activities of common interest for cooperation in HPC and Quantum Computing and it was proposed to work towards a joint call for proposal for collaboration in selected areas. This matter was also taken-up during TTC Ministerial meeting held in November 2023.

I. Introduction

MeitY, India and EuroHPC, EU is pleased to announce the joint Call for Proposals for India-EU cooperation on HPC. This collaborative initiative seeks to foster high-

performance computing (HPC) research and development, as well as strengthen international partnerships in the field of HPC between India and Europe.

II. Objectives

High-Performance Computing (HPC) are an integral part of Industry 4.0 and adoption of HPC can lead to economic growth in industries. Emerging Technologies have been able to deal with some of the gravest issues in today's fast paced world.

High Performance Computing Systems are in high demand across a wide range of application sectors, and through this agreement, India and the EU will pool their respective skills to maximize HPC in order to produce cutting-edge technological solutions across a multitude of industries.

It is believed that the collaboration between India and the EU in HPC will help to address the challenges (such as better anticipation of natural hazards, etc.) faced by both sides in the implementation of HPC systems.

The objective of the joint call is to create solutions/ use-cases in the mutual areas of interest using High-Performance Computing. Proposals should focus on optimizing specific applications and software codes, with a comprehensive development plan, including clear timelines, KPIs, and deliverables demonstrating cooperative benefits. Most resources should be allocated to technical tasks, with potential for supplementary activities like knowledge exchange. Indian and EU collaborators' contributions should be clearly defined. Proposals should identify target applications, users in Europe and India, and development methodologies.

The primary objectives of this joint Call for Proposals are as follows:

- To create solutions/ use-cases jointly in the mutual areas of interest using High-Performance Computing
- To promote research and development in High-Performance Computing technologies.
- To facilitate collaboration and knowledge exchange between Indian and European HPC communities.
- To advance scientific, industrial, and innovation capabilities through HPC.

III. Potential Areas of Research

The objective of the joint call is to create solutions/ use-cases in the mutual areas of interest using High-Performance Computing. MeitY and EU invite active Indian and EU investigators to submit proposals for Joint Research projects of mutual interest in the following areas:

- **Climate Change**
 - Computational benchmarking analysis, profiling and optimization for specific HPC architecture
 - Integrate Indian models and deploy on Indian and EuroHPC platforms
 - Scalable machine learning tools for weather and climate application using Indian data sets
 - Workflow management infrastructure

- **Bioinformatics**
 - Training and capacity building on tools developed by EU and India partners
 - Joint collaboration on HPC based research areas in computational biology
 - Development of tools in a collaborative manner to ease the use HPC clusters for novice users
 - Integrated platform for basic and advanced computational biology analysis

- **Natural Hazard**
 - Following potential natural hazards areas has been identified for collaborative research and advancement
 - Wildfire
 - Tsunami
 - Glacial lake Outburst flood (GLOF)
 - Landslide
 - Earthquake
 - Development of an integrated early warning system to address cascade effects in multi-hazard scenario

Proposals submitted in other research areas may not be considered in this joint Call for proposals.

IV. Proposal Preparation and Submission

Proposal preparation:

Indian and EU consortium must jointly prepare an equivalent proposal for India – EU Cooperation on High Performance Computing.

Each participant/entity must represent the collaborative efforts of the EU and Indian side including roles and responsibilities and means of collaboration. Proposals should adhere to the guidelines, research areas, funding limitation, and award durations according to the requirements and templates provided respectively by EU side & MeitY's administrative and financial requirements. Complying with the formats and templates of EU and MeitY for the respective EU and Indian proposals is mandatory.

A brief bio of each member of the project team, including their affiliation, birthdate, and highlights of their academic and research accomplishments, should be included with all applications.

Proposing teams of EU and India investigators are strongly encouraged to develop appropriate partnerships with testbed providers, local communities, and industry partners to ensure that resources and expertise are available for the success of their project.

The research activities should be fully described in the proposal, together with all of the resources from the EU and India that will be used for the project. EU

investigators need to indicate estimated effort based on the funds allocated by EU in the proposal. Similarly, on the MeitY budget form, MeitY investigators should only indicate the funding sought from MeitY. Proposals that call for duplicative funding will not be considered and shall be rejected.

One proposal submitted by a Consortium (lead by a coordinator/ Chief Investigator (CI)) should contain projects in all the three areas i.e. Climate Change, natural hazard and bioinformatics. The proposal will be submitted by a lead Chief investigator/ Coordinator from the Consortium.

Proposal by a consortium – Coordinator/ Chief Investigator (CI)

Project 1 / Work package 1: Climate Change

Task 1.1: Indian investigator (IA)-1 and European investigator (EA)-1 work together on a joint task on climate change

Task 1.2: IA-2 and EA-2 work together on a joint task on climate change

Task 1.x:

Project 2/ Work package 2: Natural Hazard

Task 2.1: IA-3 and EA-3 work together on a joint task on natural hazard

Task 2.2: IA-4 and EA-4 work together on a joint task on natural hazard

Task 2.x:

Project 3/ Work Package 3: Bioinformatics

Task 3.1: IA-5 and EA-5 work together on a joint task on bioinformatics

Task 3.2: IA-6 and EA-6 work together on a joint task on bioinformatics

Task 3.x:

Work package 4: Communication and Dissemination

Work package 5: Project Management

Work package X: other work packages needed for the project

Proposal Submission:

Proposals have to be submitted to both EU and to MeitY's portal. Proposals are to be submitted to EU side by the EU consortium, with a separate copy of the similar proposal submitted by an Indian Consortium to MeitY.

Indian Consortium must submit the complete application form in the prescribed format via (portal) and submit it by (deadline) with all the relevant information. The EU counterpart also needs to submit the application with the similar Title, Summary, Description and References to the EU Agency before the deadline.

Indian consortia submit a similar proposal to MeitY in addition to the all details on the budget, the Indian entity requires for its participation.

Chief Investigators/ Coordinator are advised that all documents submitted to EU or MeitY may be shared with the other agency in order to implement the two-way agency.

Each Chief Investigator/ Coordinator will also obtain the consent letter on projects from various investigators of both sides and will submit along with proposals.

V. Review Process, Funding Decisions and Awards

Eligible proposals will only be reviewed individually by the respective sides. Indian Side will review the proposals submitted by Indian Chief Investigators/ Coordinators while EU side will review the same proposals submitted by the EU Chief Investigators/ Coordinators. The submitted proposals will be reviewed individually each by Indian and EU side through an expert group/ establishment of a committee, as part of a standalone review panel process. Out of the received proposals both EuroHPC and MeitY will evaluate the proposals independently with the participation of 1-2 members in each other's evaluation committee.

After reviewing the proposals individually, each side will share the list of the recommended proposal to the other side. The proposal which is recommended from both the sides, will be recommended for financial award as per each side's rules, regulations and guidelines.

Out of all received proposals, only one proposal will be awarded including all the collaboration areas.

MeitY will fund the Indian partners/ entities for the project duration up to 3 years. EuroHPC Joint Undertaking will fund EU partners/ entities for the project duration up to 3 years. The project duration should match-up with the durations of all partner countries. Retained proposals of EU CIs will receive up to € 5 million from the EuroHPC Joint Undertaking and Indian CIs will receive up to an equivalent amount from MeitY

In the case of EU, an award requires a formal recommendation by the Governing Board of the EuroHPC Joint Undertaking.

In the case of MeitY, an award requires formal administrative and financial approvals of competent authorities of MeitY.

EU intends to make awards to the EU CI/ Coordinator participating in the recommended collaborative proposal, and MeitY intends to make awards to the Indian CI/ Coordinator participating in the recommended collaborative proposal. Awards are to be subject to the terms and conditions of each party. The parties may negotiate final budget with the investigators prior to award and in a timely fashion to avoid delays in the award start date.

The Parties aim to synchronize communication on the selected proposal (i.e. investigators in both EU and India should be notified at approximately the same time of the decision on their proposals).

Post-award consideration

Awardees are expected to comply with the award conditions and reporting requirements of the agencies from which they will receive funding.

Awardees are to acknowledge both EU and MeitY in any publications or other public communications arising from the grant.

The parties intend to consider requests for extensions using standard procedures. The parties intend to discuss and reach mutual decisions on requests for changes to awards.

Recipients need to be aware that compliance to all federal laws, including the full range of export controls statutes, penalties, and other obligations pertaining to national security, rest with the parent organization.

In accordance with both EU and MeitY standard procedures, awards are expected to be publicly announced.

For proposals involving human subjects/participants or vertebrate animals, investigators should consult both Participants' policies.

VI. Confidentiality

- i). All information and documents to be exchanged pursuant to the Joint proposal will be kept confidential by both participants and will be used subject to such terms as each participant may specify. The participant will not use the information for purposes other than specified and without the prior written consent of the other participant.
- ii). All confidential information shall remain the exclusive property of the disclosing participant. The Participants agree that this agreement and the disclosure of confidential information do not grant or imply any license, interest or right to the recipient in respect to any Intellectual property right of the disclosing Participant.
- iii). Unpublished information, whether oral, in writing or otherwise, discovered or conceived by the scientists or technicians and exchanged under the provision of the MoU will not be transmitted to a third participant, unless otherwise agreed by the Participants in writing.
- iv). Unless the Committee recommends otherwise and maintains records for doing so, the Reviewers and Committee Members shall protect the confidentiality of all conversations and decisions made during the process and shall not discuss the same with any applicant or a third party.

Intellectual Property Rights

- i). Each Participant will ensure appropriate protection of Intellectual Property Rights (IPR) generated from cooperation pursuant to Joint proposal, consistent with their respective laws, rules and regulations and multilateral agreements to which both Participants are committed.
- ii). In case, research is carried out solely and separately by the Participant or the research results are obtained through the sole and separate efforts of the

- Participant, the Participant concerned alone will apply for grant of IPR and once granted, the IPR will be solely owned by the concerned Participant.
- iii). In case of research results obtained through joint activities, the grant of intellectual property rights will be sought by both the Participants jointly and once granted these rights will be jointly owned by the Participants.
 - iv). The Participants will not assign any rights and obligations arising out of the IPR generated to inventions or activities carried out under the Joint Proposal to any third participant without prior written consent of the other Participant.
 - v). A Consortium Agreement (CA) will be developed collaboratively by the members. The Collaboration Agreement (CA) is a special contract that needs to be signed by all parties involved in collaborative research. It covers topics such as ownership, protection, rights of users for research and development, exploitation, and dissemination. It also includes provisions for joint publication, visiting researchers' rights and obligations, and dispute resolution processes. The CA will also handle deliverables, licensing, and background and foreground data. The IPR issues for all the proposals need to satisfy above-para (i) to (iv).

VII. Limitation and Dispute Settlement

The Participants will consult each other for any difficulty relating to the implementation of the cooperation on call for proposals under the India-EU Intent of Cooperation on High Performance Computing and Quantum Technologies. Any disagreement between the Participants concerning the interpretation of the Joint proposals shall be settled amicably through mutual consultation only. The heads of the Parties or their designees intend to mutually consult regarding any disagreements arising out of the implementation of this call for proposal.

Both sides need to share the updates with regards to proposal and project implementation and shall be considerate of inputs and suggestions received from either side with autonomy on individual sides on the inclusion of selective inputs.

This document in no way restricts either of the party from participating in any activity with other public or private agencies, organizations or individuals. This document is strictly for internal management purposes for each Party.

VIII. Duration and Modifications

Cooperative activities pursuant to this call for proposal are expected to become operative upon signature of both parties and will report the progress to Working Group1 of Trade and Technology Council. The termination of the earlier signed IoC will not in any way affect the validity and completion of any activities undertaken before the date of termination, which will be carried out until due discharge by performance.
