

Reference : C-DOT/MPPLab/EOI/2020-2021/001

**Ministry of Communications and Information Technology
Government of India**

Centre for Development of Telematics
Mandi Road, Mehrauli,
New Delhi-110 030

C-DOT Invites Expression of Interest (EOI) from Technology Partners

For

**PARTICIPATION IN SETTING UP OF EXPLORATORY HIGH
PRODUCTIVITY COMPUTING (HPC) SYSTEM UNDER MPPLab
PROGRAM**

Preamble

This Expression of Interest notice is intended for soliciting responses from Original Equipment Manufacturers (OEM) of Highly Specialised Machines (HSM) for Mission Critical Computing Systems, Or, their Indian subsidiaries ,or, a consortium led by the Main OEM, for participation in the MPPLab program. Response to this EoI notice shall constitute an application for consideration of participation in prototyping an exploratory proof-of-concept High Productivity Computing system based on a unique Unified Architecture. Prospective responders may download a soft copy of this document from www.cdota.in ,or, the Government of India's Central Procurement Portal (CPP) at <https://eprocure.gov.in/eprocure/app>. The prospective responders are advised to carefully go through the instructions provided at 'Instructions for online response submission' and submit duly filled responses online on the website <https://eprocure.gov.in/eprocure/app>, as per the schedule given in this EoI Invitation Document. Failure to provide complete information as sought out in this EoI notice, or, when solicited later during its processing, shall lead to rejection of the submitted application.

EOI Schedule

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| Name of the issuing Organisation | Centre for Development of Telematics, Mandi Road, Mehrauli, New Delhi-110 030 |
| Date of Release of EoI Notice | 15 th January, 2021 |
| Date of Pre-response Meeting | 22 nd January, 2021 @ 1100 Hrs. |
| Place of Pre-response Meeting | Online, to be held at Centre for Development of Telematics, Mandi Road, Mehrauli, New Delhi-110 030 |
| Last date of submission of responses | 5 th February, 2021 1700 Hrs |
| Date of opening of Technical responses | 8 th February, 2021 1100 Hrs |
| Place of opening of Technical responses | Centre for Development of Telematics, Mandi Road, Mehrauli, New Delhi-110 030 |
| Tender Document Fee | Rs. 1000/- Plus 18 % GST |
| Bank Details | Bank Name : Canara Bank Branch & Address: OFFICE OF THE C-DOT, CENTRE FOR DEVELOPMENT OF TELEMATICS MANDI GAON ROAD, CHHATTARPUR, MEHRAULI, NEW DELHI IFSC CODE : CNRB0008657 Type of Account : Savings Account Number: 0347101002508 |

Instructions for On-line Submission of Responses:

The responders are required to submit soft copies of their EoIs electronically through the portal (<https://eprocure.gov.in/eprocure/app>) using valid Digital Signature Certificates (DSC). The instructions given below are meant to provide assistance in registering on the CPP Portal, prepare their responses in accordance with the requirements and submitting their responses online on the CPP Portal. More information useful for submitting online responses on the CPP Portal may be obtained at: <https://eprocure.gov.in/eprocure/app?page=HelpForContractors&service=page>

Assistance to Responders:

Any query relating to the process of online EOI submission or queries relating to CPP Portal in general may be directed to the 24*7 CPP Portal Helpdesk on :- , 0120-4001 002, 0120-4001 005, 0120-6277 787,

- e-mail for Technical - support-eproc@nic.in.

SECTION I: INSTRUCTIONS TO PROSPECTIVE RESPONDERS

I.1. Introduction

I.1.1. The MPPLab Program

"MPPLab" stands for **Mathematical Programming (in) Parallel Laboratory**. This is a geographically distributed, "virtual laboratory" of Govt. of India, to create a "**Unified Architecture(UA)**" Supercomputer to support mathematically oriented High Productivity Computing and its multiple applications in the form of open source, shared library in the same spirit and philosophy as "creative commons" initiative by MIT. Unified Architecture based High Productivity Computing is not the same as the conventionally understood High Performance Computing paradigm, but, a more evolved concept of the HPC.

MPPLab is targeted at HPC software developers, who are interested in making *ab-initio* implementation of new advanced mathematical algorithms. One of the primary purpose of MPPLab is to enhance **programmer productivity**, when creating new parallel software packages in a wide range of applications mentioned below and facilitate testing of such packages on BIGDATA problems. It shall support **computationally assisted scientific discovery**. Another purpose is to provide an HPC platform for **real-time control applications of economic significance** and facilitate efficient utilization of resources in large systems.

In short, it is a technology to improve efficiency of both people and machines. In case of people, it is meant to assist those engaged in creative processes involving natural intelligence, such as conceptualizing and implementing new software packages or in scientific research and discovery. In case of mechanical/electronic systems, it is meant to improve efficiency of processes involving Artificial Intelligence and optimization of Telecommunication, transportation, manufacturing etc.

I.1.2. The MPPLab Applications

Application spectrum of interest includes the following:

I.1.2.1. Advancement of fundamental sciences

I.1.2.2. Scientific, Engineering and Economic applications of interest to social well-being

I.1.2.3. Applications to main pillars of economy including Telecom, Banking, Financial sector, Transportation, Next generation Advanced Manufacturing, Cyber Physical Systems etc.

I.1.3. Unified Architecture (UA) in MPPLab

Unified Architecture (UA) is a highly modular and scalable platform designed to be suitable for both

I.1.3.1. Conventional Batch-mode applications and

I.1.3.2. New Applications requiring fast, Real-time response and control using mission-critical highly reliable hardware with very high MTBF (Mean Time Between Failure)

UA is aimed at providing both types of applications in one and the same integrated HPC system.

Applications of the second type envisaged in point I.1.3.2 mentioned above, include a HSM that can act as "Command and Control" centre for 4G/ 5G Telecom networks, "Digital Factory of the future", Cyber Physical Systems in India's Smart Cities program, operating fleets of drones and robots etc.

I.2. Purpose of Inviting This Expression of Interest

A public funded pilot project for constructing a small working prototype of the Unified Architecture High Productivity System with one sample application related to telecom traffic engineering has been started under the MPPLab program.

This notice is issued as an invitation to OEMs of Highly Specialised Machines for Mission Critical Computing systems, or, their Indian subsidiaries, or a Consortium led by the main OEM, to participate in custom design of a proof-of-concept prototype MPPLab system based on the Unified Architecture of High Productivity System (UA-HPC) explained above.

Please note that MPPLab is not an equipment intensive program, rather it is a knowledge and expertise intensive program. This EoI Invitation is not about procurement of goods from standard catalogue of equipment supplies, instead, it is about participation in prototyping of a unique exploratory proof-of-concept High Productivity Computing system based on the Unified Architecture explained earlier using advanced high performance computing technologies available from the participating OEMs.

I.3. Objectives Of This Expression of Interest Invitation

I.3.1. To identify and evaluate suitable innovations, advanced technologies, components, sub-systems and systems for putting together an optimal Unified Architecture High Productivity Computing (UA-HPC) system as described above.

To assess technical capability of OEMs with regard to such innovations, advanced technologies, components, sub-systems and systems in meeting the

minimum requirements for MPPLab program, as set out in this EoI Invitation. OEMs that are assessed to be possessing the requisite technical capability to deliver an efficient working prototype implementation of the novel UA-HPC architecture shall be qualified as being eligible for participation in the planned subsequent tenders/RFPs for the program

I.4 Methodology to be followed for assessment of suitability of OEMs

I.4.1. Legal / Commercial Requirements to be met

These are detailed later in Section-II, Clauses II.4.1 to II.4.3

I.4.2. Required Technological Capabilities.

These are defined later in Section-II, Clauses II.4.4 to II.4.7 and the scoring scheme that would be used for their evaluation is given in Annexure F (Table AII). Given rapid advances in technology and rapidly rising public expectation's in Indian society, it is imperative to emphasize need for speed when evaluating technology partners for projects of public interest. Therefore, a responder who is able to document any technological capability in the form of actual prior supported deployment at an external customer side will score higher than a respondent who may claim to have the capability but is unable to document evidence of prior external supported deployment. It may be noted that, only if none of the responders is able to show evidence of prior external deployment of such required technology, C-DOT can consider accepting the project delays inherent in being first such deployment

I.4.3. Verifiability of Technological Capabilities.

All technological capabilities described by the responder must be publicly verifiable. Examples of verifiable capabilities include but are not limited to the following.

- a) Publication in recognized scientific journals and conferences.
- b) Technologies productized in the past by the respondent.
- c) Systems deployed at external customer site.

I.4.4. Need for Vendor Diversity.

C-DOT reserves the right to give appropriate consideration for vendor diversity in public interest, in the final selection, with all other things being equal.

C-DOT reserves the right to decide on technology partners based on the overall view that emerges after considering the following factors.

1. Results of the scoring of all responders, as per evaluation criteria defined in this document.

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2. Need for achieving vendor diversity.
 3. Priority of public interest over the interest of the Responders.

I.5. Contact information

Centre for Development of Telematics,
Mandi Road, Mehrauli,
New Delhi-110 030
INDIA

Tel No.: +91-11-26802856, 26598323; Fax: +91-11-26803338 ; E-mail:
tenderd@cdot.in

I.6. Preparation of Responses

The electronic system will be followed for this EOI processing. The responses containing following documents in 'pdf' format, are required to be uploaded electronically through <https://eprocure.gov.in/eprocure/app>

- I.6.1. Covering letter, format given in as per Annexure – A
- I.6.2. Authority letter, format given in as per Annexure – B
- I.6.3. Undertaking by Responder format given in as per Annexure-C
- I.6.4. Undertaking by OEM, as per the format given in Annexure – D, in case proposal is being submitted by the Indian subsidiary of the OEM
- I.6.5. Certificate is required from the Responder, as per format given in Annexure – E, towards compliance with the Office Memorandum: F/No/6/18/2019-PPD dated 23rd July 2020, issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, GOVT. OF INDIA
- I.6.6. Compliance to EoI notice requirements, to be submitted as per the format specified in Annexure-F.
- I.6.7. A copy of Certificate of Incorporation, Partnership Deed / Memorandum and Articles of Association / any other equivalent document showing date and place of incorporation, as applicable, in support of eligibility criteria as specified in clause II.4 of Section II in this document.
- I.6.8. Copies of documents in support of eligibility criteria stipulated in clause II.4 of Section II in this document.
- I.6.9. Copies of PAN and GST registration certificates, as applicable.
- I.6.10. Documentary evidence for the annual financial turnover of the bidder during the last 3 years, ending on 31st March of the previous financial year, in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant.
- I.6.11. Wherever applicable, the Teaming Agreement between the Main OEM and associated technology partners, whose collective offering as a whole solution, would fulfill all the requirements of this EoI invitation .

I.6.12. Tender fee of Rs.1000/- (Rupees One thousand only) + GST, to be paid by NEFT to the Bank Account indicated, on or before the last date and time of submission of proposals

I.6.13. Other documents necessary to be provided in support of eligibility criteria, product catalogues, brochures, additional information etc.

Note: C-DOT reserves the right to reject the response, if any of the above listed document(s) are not submitted.

I.7. Pre-Response Meeting

In case of any doubts and/ or queries pertaining to technical solution, specifications terms and conditions of the EOI Invitation, prospective responders may send their queries in writing through e-mail. (Refer point I.5 mentioned above for contact details). The queries, requests for clarifications etc. must be sent at least two days prior to the date of pre-response meeting. The prospective responders to this EoI Invitation are requested to go through the entire EoI Invitation document thoroughly, before raising any query. The pre-response meeting will be held online, as given in schedule, to address the queries raised by the prospective responders. C-DOT will try to sort out the queries during the meeting, as far as possible; in any case, the replies to all the queries would be made available on C-DOT's web site and the CPP portal in due course of time. All the queries, doubts, clarifications etc. must be submitted in the given 'xls' format only.

| Name of the Responder: | | | | |
|------------------------|-------------------|------------------|-------|----------------|
| Sr. No. | Section / Page No | Clause Reference | Query | C-DOT Response |
| | | | | |
| | | | | |

I.8. Last Date for submission/ uploading

The on-line EOI responses, complete in all respect, should be uploaded through <https://eprocure.gov.in/eprocure/app> on or before the date given in EOI schedule. The prospective responders are advised to upload the documents at least one day before the last date for uploading of documents, in order to avoid the possibilities of any last minute surprises. C-DOT does not take any responsibility towards technical snags pertaining to CPP Portal and/or connectivity issues. It may please be noted that Tender Fee needs to be mandatorily paid on or before the last date and time for the submission of proposals.

I.9. Opening of Submitted Responses

The EOI responses will be opened – online, on the date given in EOI schedule, through <https://eprocure.gov.in/eprocure/app> portal at:

Centre for Development of Telematics,
Mandi Road, Mehrauli,
New Delhi-110 030
INDIA
Tel No.: +91-11-26802856, 26598323 E-mail: tenderd@cdot.in

A maximum of two representatives of each responder to this EoI Invitation are welcome to remotely attend the meeting for opening of responses.

I.10. Amendment to EOI Invitation Documents

- I.10.1. C-DOT may, for any reason, whether on its own initiative or in response to the clarification requested by a prospective bidder, modify the EOI Invitation document at any time prior to the submission deadline of the EoI.
- I.10.2. The amendments to the EOI Invitation documents, if any, shall be notified through release of corrigendum notice on the C-DOT website and CPP portal. Such amendments / modifications shall be binding on the Responders.
- I.10.3. C-DOT may, at its own discretion, extend the deadline for submission of EOI, any time before its last date, if it feels necessary to do so, or, if amendments to the EOI Invitation document sufficiently justify extension of time for responders to accordingly update their responses.

I.11. Corrections to the Response Document

Responders should avoid, as far as possible, any corrections, overwriting, erasures or postscripts in the response documents. In case of unavoidable circumstances, if any corrections, overwriting, erasures or postscripts have to be made in the response, they should be supported by dated signatures of the same authorized person who has signed the initial response documents before uploading again. However, the responder shall not be entitled to amend/ add/ delete/ correct the clauses mentioned in whole of the EOI document.

I.12. Validity Period

The EOI submitted shall be valid for a minimum of 120 days from the date of submission. Any response having validity for a shorter period of time, shall be rejected.

C-DOT may seek responder's consent for extension of the validity period. Such request and the response to the same shall be made in writing only. The responder shall be free not to accept such a request; however, a responder agreeing to the request for extension of validity period shall not seek to modify the previously submitted response.

(End of Section - I)

SECTION II: GENERAL CONDITIONS OF EOI (GCE)

II.1. Ordering and Payment authority

Whenever a supply order is placed on a successful bidder through a subsequent competitive tender, the following would be the Ordering and Payment authority

Centre for Development of Telematics,
Mandi Road, Mehrauli,
New Delhi-110 030
INDIA

Tel No.: +91-11-26802856, 26598323 E-mail: tenderd@cdot.in

II.2. Location for the Supplies, Installation & Warranty Services:

Whenever a supply order is placed on a successful bidder through a subsequent competitive tender, the entire supplies as described in Schedule of Requirements (SoR) of the respective tender, are initially required to be supplied, installed, commissioned & supported at the following address :

Centre for Development of Telematics,
Mandi Road, Mehrauli,
New Delhi-110 030
INDIA

Tel No.: +91-11-26802856, 26598323 E-mail: tenderd@cdot.in

The responder may subsequently be required to move, re-install and re-commission the supplies at different locations within the country for a maximum of three instances, each occurring at different times.

II.3. Timelines

The desired time lines for delivery, installation & commissioning of required supplies, development activities and training requirements etc. shall be specified in the respective Tender / Request for Proposal documents.

II.4. Minimum Eligibility Criteria for Evaluation of Responses

Eligibility criteria to be fulfilled by Responder to this EOI Invitation, for being qualified for the next stage of RFP, are mentioned further below. Please note that sub-criteria II.4.1,II.4.2, II.4.3, II.4.5.a and II.4.6.a need to be mandatorily complied

with, *in toto*, for getting qualified. Criteria II.4.4, II.4.5 (II.4.5.b to II.4.5.e), II.4.6 (II.4.6.b to II.4.6.f) , II.4.7 (II.4.7.a to II.4.7.b) have to be complied with, such that the responder should score above the Minimum Qualifying Score specified for each criteria; the Scoring Scheme and Minimum Qualifying Score for each criteria are indicated in Annex-F (Table AII). The purpose of this evaluation exercise through the specified scoring scheme is to arrive at the most suitable technology partners for achieving the goals and objectives of MPPLab project.

II.4.1 Only the Principal Manufacturers (OEMs) of High Performance Computing (HPC) Systems, or, their Indian subsidiaries can submit the proposals. If the Main OEM wants to form and lead a consortium of related technology partners to come together and participate collectively as the Responder, then they shall together execute a Teaming Agreement, such that both the Main OEM and each of the related technology partners shall be individually and collectively responsible to C-DOT for fulfilling the requirements of this EOI invitation and subsequent RFPs as well.

II.4.2 The responder must be a legal entity incorporated/established under appropriate Law

II.4.3 The responder shall submit a certificate in the prescribed format (**Annexure-A**) that it is not blacklisted by any government organization as on last date of submission of response to the EoI Invitation. The Responder must also comply with the provisions of Office Memorandum: F/No/6/2019-PPD dated 23rd July 2020, issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, Govt. of India, as per format given in Annexure-E.

II.4.4 Test for Expertise and strong R&D Lab in Physical Research

MPPLab is a highly innovative fundamental R&D program for serving High Productivity Computing needs of a wide spectrum of applications. Therefore, in order to provide customized implementations, when no pre-defined technologies/components/sub-systems/systems might meet the complex and evolving needs of the **MPPLab** program, the responder should have the strong backing of an in-house R&D laboratory supporting the following basic research areas in physical sciences and technology: Solid state physics and devices, material science, new electronic materials, nano-structures, optics, opto-electronics etc. Expertise and in-house experience in these areas is important for **MPPLab**, as simulations in these areas are also in the intended application spectrum of **MPPLab**.

The responder should list 20 publications in widely circulated and recognized scientific journals or conferences in each of the following five areas mentioned:

- a) solid-state physics
- b) solid-state electron devices
- c) material science and new electronic materials
- d) nano-structures for electronics and
- e) optics and Opto-electronics

The Scoring scheme is given in Annex-F (Table AII)

II.4.5 Test of R&D Expertise in High Level Software systems:

a. R&D in High Productivity Languages

The responder must have prior in-house experience in Definition, design and implementation of own High Productivity programming languages for scientific computing. Some examples of such languages are Fortress, X10, Chapel, co-array Fortran etc.

b. R&D in compilers

The responder must have in-house experience in design and implementation of its own compilers for modern Fortran and other equivalent parallel processing languages that were actually productized.

c. R&D in mathematics libraries

Responders must have in-house experience in design and implementation of their own Math Libraries for sequential and vectorized/parallel operations that were actually productized. Simply re-packaging of designs from third parties or open source software stacks such as GNU alone, would not count as in-house expertise.

d. PGAS :

High level frameworks or tools for parallel programming based on partitioned global address space paradigm.

e. Run-time performance of interpreted or compiled languages:

Speeding up run-time performance of popular languages such as Python, Julia on HPC systems.

The Scoring scheme is given in Annex-F (Table AII)

II.4.6 Test of Expertise in Hardware Systems and Hardware-Software co-design

a. Symmetric Multi Processor System Design

Responder should be in business of supplying large Highly Specialised Machines (HSMs) having at least 16-socket SMPs for Mission Critical applications. Responder should have in-house experience and ability of prototyping larger (at least 64-socket or more sockets SMP) HSMs.

b. Processor Design

Responder must have in-house experience in design of general-purpose CPUs, vector processors /engines that were actually productized in the past.

c. Hardware system design

The responder must have in-house experience in :

- i) Design of ASICs
- ii) motherboards and backplanes
- iii) silicon photonics
- iv) hardware synthesis and VHDL

d. Wafer-Scale ,or, Multi Chip Module (MCM) Integrated Systems

In-house experience in integration of Wafer-Scale ,or, Multi Chip Module (MCM) Integrated Systems in complete HPC systems and deployment of the integrated solution at customer site.

e. Operating Systems & Networking Software for HPC

- i) Responder must have track record of substantial contribution to open-source eco-system such as Linux, networking software for HPC.
- ii) Responder must have in-house experience in building large single- image HPC systems.

f. Operating Systems Software for Telecom

Track record of substantial contribution to Open-source Networking Application Platform (ONAP), or, Open Source MANO (OSM)

The Scoring scheme is given in Annex-F (Table AII)

II.4.7 Sustainability Test:

India is a rapidly developing nation aspiring to reach well-developed status as soon as possible. HPC technology has an important role to play in this transformation. **MPPLab** includes a wide spectrum of applications spanning scientific, social and economic needs, which keep growing and becoming more and more demanding. Therefore, it is important for the Responders to have proven track record of sustained performance and the ability to evolve their technology offering as per dynamically changing customer needs and retain the customer. The following points of eligibility criteria are intended to assess sustainability:

a. Sustained Customer Retention

The Responder to this **EoI** Invitation must be able to provide documentary evidence of at least 2 customers in each of the application domains mentioned below, who are their customers since last five years and who continue to remain their customers presently for supports and upgrades. The relevant application domains are :

- 1 Pure or Fundamental Scientific Research
- 2 Applied Scientific Research (including Energy, Health Research etc.)
- 3 Science in service of society (e.g. weather forecasting etc.)
- 4 Telecom
- 5 Financial sector (Banking, Stock exchanges, market regulators etc.)
- 6 Transportation (Railways or Airlines, aircraft manufacturers etc.)
- 7 Manufacturing

As **MPPLab** is similar in spirit to programs of custom designed HPC systems in the US, Europe and Japan, for purposes of clarity, the term ‘customer’ includes businesses, government laboratories, academic institutions or any not-for-profit organizations pursuing ‘science for society’ objectives within India or globally.

b. Track Record of Sustained Performance

One or more systems developed and reported in <http://www.top500.org> by responders to this **EoI** Invitation should have achieved rankings , which are equal to or better than the best rank ever achieved by any HPC system deployed in India. Responders to list 10 such occurrences over the last 15 years, subject to maximum of 2 such occurrences being considered for any one assessment year

The Scoring scheme is given in Annex-F (Table AII)

Note: The responder shall provide sufficient documentary evidence in support of fulfilment of minimum eligibility criteria as mentioned above. C-DOT reserves the right to reject any response not fulfilling the eligibility criteria.

II.5. Evaluation of Proposals

The technical proposals will be evaluated as follows

- i. The proposals will be examined based on the eligibility criteria stipulated at Para II.4 of Section – II.**
- ii.** The Responders complying with essential criteria stipulated at para II.4.1 to II.4.3 & II.4.5.a & II.4.6.a above and securing minimum qualifying Score stipulated for each criteria II.4.4, II.4.5 (II.4.5.b to II.4.5.e), II.4.6 (II.4.6.b to II.4.6.f) & II.4.7 above, will only qualify for subsequent processing.

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- iii. The duly constituted EoI Evaluation Committee (EEC) shall evaluate the proposals. The EEC will be empowered to take decisions, as deemed appropriate, with regard to the various aspects of the evaluation.
 - iv. The Responders may be invited by EEC for technical presentation /discussion as a part of evaluation process.
 - v. Merely shortlisting does not entitle the Responder for selection and/or placement of an order.

II.6 Activities Expected from Qualified Responders Subsequent to this EOI

- i. C-DOT reserves the right to invite techno-commercial proposals (RFP) from the responders qualifying the EoI stage. C-DOT also reserves the right to invite techno-commercial proposals through an open RFP.
- ii. The brief broad scope of supply of material and services/expertise etc. of the RFP is likely to cover the following aspects:
 - 1. Construction, Validation and Demonstration of a Test-Bed System containing a specified base system and subsequent supply and re-installation of the base system along with associated software.
 - 2. RFP will give detailed specification and configuration of a HSM base system containing mission-critical SMP capability, appropriate interconnect, storage and ability to accept multiple accelerators of specified types. It will also contain list of required software, list of benchmarks to be demonstrated and number of experts to be deployed with specified skills to assist the users throughout the three-year duration of MPPLab program
 - 3. The successful technology partner will be required to create a test-bed using the specified base system in their laboratory and make it available for further joint exploration and evaluation of suitability of the system for achieving goals of the MPPLab program as well as training as described in points 4 to 7 below.
 - 4. The successful Technology partner will have to familiarise the users in availing various advanced features and facilities in the system and train them to extract enhanced performance from the system, porting and tuning various library components and exploratory applications, downloading, configuring and tuning various open-source software etc. The technology partner may be required to carry on development/enhancement activities pertaining to their hardware, firmware, middleware, higher-level software to enhance overall performance of the combined system of accelerators, base systems and MPPLab libraries to meet the advanced objectives of MPPLab program. The successful Technology partner will have to demonstrate combined operation of base system with each one of the specified accelerators, and run the specified benchmarks. User training includes effective use of each of the specified accelerators. In other words, the successful technology partner is expected to act like an expert coach to MPPLab team, deploying his all-round deep experience and expertise in High Productivity Computing as defined in the eligibility criteria. In this validation and

demonstration test-bed program, successful technology partner should help MPPLab program in diagnosing any plausible reasons for any observed inefficiency in interoperability of HSM based system, attached accelerator(s), entire software stack including firmware, operating system, middleware, libraries and higher-level software applying his entire spectrum of expertise as defined in the knowledge-intensive criteria assessed in the eligibility test.

5. The successful Technology partner will have to assist the user in measuring specified system parameters pertaining to performance of hardware, firmware, middleware and software. This is to be done both for base system and combined operation of base system and each of the accelerators.

Items 1-5 above describe the mandatory portion of the test-bed program. Maximum time limit for completion of the mandatory portion will be specified in the RFP.

6. The scope of the test-bed program may be extended by mutual agreement between buyer and technology partner. Extended scope may contain the following items:
 - a. Assessing the combined system performance using additional accelerators or software components not in the list given in test-bed RFP.
 - b. Show-casing the system to prospective customers or early adapters, selected by mutual agreement.
 - c. Experts from technology partner side and users will collaborate to optimise and tune various benchmarks, libraries components and applications by mutual agreement.
 - d. Any extension of time for completion of test-bed beyond the limit specified in test-bed RFP.
 - e. Use of beta versions of any hardware or software components during test-bed program.
 - f. Any other extension of scope by mutual agreement.
7. Subsequent to completion of test -bed program, the team of experts deployed by the successful technology partner is expected to continue activities as described above at buyer site.

- Award of test-bed contract implies commitment on part of the buyer to purchase the specified base system including all specified hardware and software components but no commitment to purchase any of the accelerators.
- At the conclusion of test-bed program, technology partner will have to relocate the base system to buyer's premise. Information, knowledge and experience gained during test-bed programme will be used to define detailed specification and configurations of one or more accelerators explored and demonstrated in test-bed programme, and associated software. C-DOT reserves the right to procure the identified items by following appropriate methodology for such procurement.

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- At the conclusion of test-bed programme, C-DOT reserves the right to request expansion of the team of experts to be deployed by the technology partner on user premises, on mutual agreement.
 - Bidders in tender/RFPs, who win the procurement orders may opt to supply the material directly or through their authorised representatives / authorized System Integrators (SI). However, the responsibility of providing necessary technical expertise, design, development and operational support and training, as stipulated in this document, shall rest solely with the OEM or its Indian subsidiary responding to this EoI Invitation.
 - Additional points regarding the subsequent tenders/RFPs
 - i. C-DOT shall issue concessional certificate towards Customs duty and GST, wherever applicable.
 - ii. Payments terms and conditions shall be as specified individually in each tender / RFP.
 - iii. Provisions of Liquidated Damages, Warranty and Annual Maintenance Contract shall be as specified individually in each tender.
 - iv. A Performance Security of up to 10 % of the quoted value may be required to be submitted separately for each tender/RFP.

MPPLab is a 'science for society' program in public interest. All procurements for this program made through competitive tender/RFP subsequent to this EoI notice, shall intend to meet overall objectives of the program in public interest. To resolve any unforeseen conflict / contradiction between bidder interest and public interest, the interest of public at large shall prevail.

II.7 C-DOT's Right to Amend or Cancel this EOI Invitation

- a. C-DOT reserves the right to amend the eligibility criteria, commercial terms & conditions, scope of supply, technical specifications etc.
- b. C-DOT reserves the right to cancel the EoI process partially or entirely, without assigning any reasons thereof.
- c. C-DOT reserves the right to accept or reject responses submitted by OEMs or their subsidiaries for any reason it deems valid.

II.8 Corrupt or Fraudulent Practices

- a. The responders to this EOI Invitation are expected to honour the highest standards of ethics.
- b. C-DOT shall reject the proposal of any OEM or its subsidiary, who is found to indulge in any corrupt or fraudulent practices, while competing for this EOI and subsequent RFPs
- c. C-DOT reserves the right to declare a technology partner ineligible, either indefinitely, or, for a stated duration, for being awarded a contract, if at, any time, determines that the technology partner has engaged in corrupt and fraudulent practices, during the award/execution of the contract
- d. Integrity Pacts shall be signed by suppliers as applicable to each tender / RFP.

II.9 Arbitration

In case any dispute arises between the C-DOT and successful responder with respect to this EOI Invitation, regarding its interpretation, implementation or alleged material breach of any of its provisions, both the parties hereto, shall endeavour to settle such dispute amicably. If the parties fail to bring about an amicable settlement within a period of 30 (thirty) days, dispute shall be referred to the sole arbitrator mutually appointed by both the parties. If the sole arbitrator is not appointed mutually by both the parties then the High Court, New Delhi, shall have exclusive jurisdiction for appointment of sole arbitrator through court. Arbitration proceedings shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and Rules made there under, or any legislative amendment or modification made thereto. The venue and seat of the arbitration shall be New Delhi. The language of arbitration shall be English. The common cost of the arbitration proceedings shall initially be borne equally by the parties and finally by the party against whom the award is passed. Any other costs or expenses incurred by a Party in relation to the arbitration proceedings shall ultimately be borne by the party as the arbitrator may decide. Courts in New Delhi alone shall have the exclusive jurisdiction to try, entertain and decide the matters, which are not covered under the Arbitration and Conciliation Act

II.10 Interpretation of clauses in this EOI Invitation document

In case of an ambiguity/ dispute arising between C-DOT & the Responder regarding interpretation of any clause of this EOI Invitation, the interpretation of that clause(s) by Executive Director, C-DOT, shall be final and binding on all parties.

II.11 Jurisdiction

The legal disputes, legal matters, and court matters, if any, shall be subject to New Delhi jurisdiction only.

(End of Section- II)

ANNEXURE A – COVERING LETTER

(To be submitted on company letter head)

Date:

To:

The Centre for Development of Telematics,
Mandi Road, Mehrauli,
New Delhi-110 030
INDIA

Subject: Cover Letter of Response to EoI Invitation Reference No:
C-DOT/MPPLab/EOI/2020-2021/001.

We, the undersigned, would like to be considered as technology partners, in response to your EoI Notice Reference: No C-DOT/MPPLab/EOI/2020-2021/001.

We are hereby submitting our response for same, on <https://eprocure.gov.in/eprocure/app>

We hereby declare that all the information and statements made in this response are true and we accept that any misinterpretation contained in it, may lead to our disqualification.

We hereby certify that my/ our entity has not been disqualified and / or blacklisted by any Office/ Department/ Undertaking of the State Government / Central Govt. of India, PSU/ Autonomous Body of Government of India, at the time of submission of this response.

We agree to abide by all the terms and conditions of the EOI Invitation document,. We would hold the terms of our response valid for 120 days as stipulated in the EOI Invitation document.

We understand that you are not bound to accept any response you receive.

The undersigned is authorized to sign this EOI document. The authority letter to this effect is enclosed.

Name and Seal of OEM or its Indian Subsidiary:

Signature of the Authorized Signatory:

Name and Title of Authorized Signatory:

E-mail:

Mobile No:

ANNEXURE B – AUTHORITY LETTER

(To be submitted on company letter head)

Date:

To:

The Centre for Development of Telematics,
Mandi Road, Mehrauli,
New Delhi-110 030
INDIA

Subject: Authority Letter for Response to EoI Invitation Reference No:
C-DOT/MPPLab/EOI/2020-2021/001.

We, M/s _____ (Name of the OEM) having registered office at
_____ (address of the bidder) herewith wish to submit our EOI against the said
EOI Invitation document.

Mr./Ms. _____ (Name and designation of the signatory), whose signature is appended
below, is authorized to sign and submit the EOI documents on our behalf against said EOI
Invitation

Specimen Signature:

The undersigned is authorised to issue such authorisation on behalf of M/s _____
(Name of the OEM)

Name and Seal of OEM or its Indian Subsidiary:

Name of Signatory :

Designation of Signatory:

E-mail:

Mobile No:

ANNEXURE C – UNDERTAKING BY RESPONDER

(To be submitted on company letter head)

Date:

To:

The Centre for Development of Telematics,
Mandi Road, Mehrauli,
New Delhi-110 030
INDIA

Subject: Undertaking by Responder (as per GFR-2017, rule 170(iii)) to EoI Invitation Reference No: C-DOT/MPPLab/EoI/2020-2021/001.

We, the undersigned, hereby submit our application for consideration of participation in the MPPLab program as response to your EoI Invitation No. C-DOT/MPPLab/EoI/2020-2021/001 through <https://eprocure.gov.in/eprocure/app> .

As a part of eligibility requirements stipulated in the aforesaid EoI Invitation document, we hereby submit a declaration in lieu of earnest Money Deposit (EMD), as given below: :

1. We understand that our response to the EoI invitation is an application for consideration for participation in the MPPLab program and that, any failure on our part to provide complete information as sought by the EoI Invitation document or when solicited later during its processing, shall lead to our application being summarily rejected.
2. We have read, understood and accept all terms and conditions of the EoI Invitation.
3. Our response to EoI Invitation shall remain valid for 120 days from the date of submission and that we will not withdraw or modify our response during the validity period.
4. In case, we are declared as one of the qualified OEMs, we agree to engage with C-DOT and provide information that may be considered necessary by C-DOT, for maintaining our qualification status, for further evaluations of our offerings and for proceeding further with the process of our participation in the program.
5. In case, we do not qualify in the EoI stage, we, as a responding OEM, understand that all terms and conditions of confidentiality agreed upon by us in any and all non-disclosure agreements entered into with C-DOT, shall remain effective. We agree to accept decision of C-DOT as final and not venture to seek its revision or reversal. Notwithstanding provisions of clauses 9, 10 and 11 in Section II of the EoI Invitation, we commit to refrain from any attempt to impede, obstruct, stall or invalidate further progress of the EoI processing in any manner.
6. We understand that ,in case of failure on our part to comply with any of the above said

requirements or requirements of the EoI Invitation, we may be declared as not-qualified - in the said EOI stage.

7. We understand and accept that any misrepresentation or action on our part, which is in contravention of provisions and spirit of this EoI invitation, shall lead to our debarment from any future dealings with C-DOT and other Government of India organizations for a minimum period of one year.
8. The undersigned is authorized to sign this undertaking.

Name and Seal of OEM or its Indian Subsidiary:

Signature of the Authorized Signatory:

Name and Title of Authorized Signatory:

E-mail:

Mobile No:

**ANNEXURE D – UNDERTAKING BY ORIGINAL EQUIPMENT
MANUFACTURER (OEM)**

(To be submitted by OEM on company letter head if subsidiary company is the responder)

Date:

To:

The Centre for Development of Telematics,
Mandi Road, Mehrauli,
New Delhi-110 030
INDIA

Subject: Undertaking by Original Equipment Manufacturer Responding Through its Indian
Subsidiary to EoI Invitation Reference No: C-DOT/MPPLab/EOI/2020-2021/001.

We, M/s _____ (*Name of the OEM*) having registered office at _____ (*address of the OEM*) by virtue of being manufacturer for _____ (*Name of the related product/s*), hereby certify that M/s _____ (*Name of the responder to the EOI Invitation*) having their office at _____ (*Address of responder*) is our 100 % subsidiary company in India. They are authorised to participate in the aforesaid EoI process on behalf of _____ (name of OEM) and offer our range of products as listed below.

1. HSM (Highly Specialised Machines), Software, Training
2. HSM Storage and archival system
3. HSM interconnects

We undertake to provide technical & other requisite support to M/s (*Name of responder to the EOI Invitation*) for fulfilling requirements stipulated in aforesaid EOI Invitation, regarding technology, components, sub-system and systems manufactured by us and planned to be supplied and installed at C-DOT, New Delhi , by M/s. _____ (Name of responder to the EOI Invitation).

We also certify that the products offered are not nearing, or, will not reach end-of-life / end-of-support, for five years from the date of submission of response to this EoI notice.

The undersigned is authorised to issue this certificate on behalf of M/s _____ (*Name of the OEM*).

Name and Seal of OEM:

Signature of the Authorized Signatory:

Name and Title of Authorized Signatory:

E-mail:

Mobile No:

**ANNEXURE – E: CERTIFICATION BY RESPONDER ON LAND BORDER
SHARING RESTRICTIONS**

(To be submitted on company letter head)

Date:

To:

The Centre for Development of Telematics,
Mandi Road, Mehrauli,
New Delhi-110 030
INDIA

Subject: Certification by Responder to EoI Invitation Reference No:
C-DOT/MPPLab/EOI/2020-2021/001 On Land Boarder Sharing Restrictions

This has reference to the Office Memorandum: F/No/6/18/2019-PPD dated 23rd July, 2020, issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, Government of India.

We have read the clause regarding restrictions on procurement from a bidder of a country, which shares a land border with India.

We certify that,

- a. M/s (Name of responder) is not from such a country
OR*
- b. M/s (Name of responder) is from such a country and is registered with the Indian competent authority. The copy of said registration certificate is enclosed.

*(*Strike out whichever is not applicable.)*

We hereby certify that we fulfil all requirements in this regard and are eligible for consideration in the EoI process.

Name and Seal of Responding Company:

Signature of the Authorized Signatory:

Name and Title of Authorized Signatory:

E-mail:

Mobile No:

ANNEXURE - F : FORMAT FOR COMPLIANCE TO REQUIREMENTS OF EOI Invitation

REF: C-DOT/MPPLab/EOI/2020-2021/001

A.I Compliance to SECTION – I requirements

| SN | EOI Section I Requirement | Compliance (Included / Not- included) | Remarks by Responder (optional) | Remarks by C-DOT |
|-----------|---|--|--|-------------------------|
| A.I.1 | Covering letter, as per Annexure – A | | | |
| A.I.2 | Authority letter, as per Annexure – B | | | |
| A.I.3 | Undertaking by Responder as per Annexure-C | | | |
| A.I.4 | Undertaking by OEM as per Annexure-D | | | |
| A.I.5 | Certificate from Responder as per Annexure-E | | | |
| A.I.6 | Compliance to EoI notice requirements, to be submitted as per format specified in Annexure-F | | | |
| A.I.7 | A copy of Certificate of Incorporation, Partnership Deed / Memorandum and Articles of Association / any other equivalent document showing date and place of incorporation, as applicable, in support of eligibility criteria specified in clause II.4 of Section II of this document. | | | |
| A.I.8 | Copies of documents in support of eligibility requirements stipulated in clause II.4 of Section II of this document. | | | |

| SN | EoI Section I Requirement | Compliance (Included / Not-included) | Remarks by Responder (optional) | Remarks by C-DOT |
|-----------|--|--|---|-------------------------|
| A.I.9 | Copies of PAN and GST registration certificates, as applicable. | | | |
| A.I.10 | Documentary evidence for the annual financial turnover of the bidder during the last three years, ending on 31 st March of the previous financial year, in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant. | | | |
| A.I.11 | Teaming Agreement between the Main OEM and related technology partners whose collective offering as a whole , fulfils all the requirements of this EoI invitation ,where applicable. | | | |
| A.I.12 | Tender Fee Payment and related details | | | |
| A.I.13 | Other documents necessary in support of eligibility criteria, product catalogues, brochures or additional information etc. | | | |

A.II Compliance to SECTION – II requirements

| SN | EoI Section II Requirement | Fixed / Grade Assessment | Maximum Score | Grading Criteria | Supporting Documents' Flag Numbering | Responder's Remarks (optional) | Remarks by C-DOT |
|----------|---|--------------------------|---------------|--|--|--------------------------------|---|
| A.II.4.1 | <i>Only the OEMs of High Performance Computing Systems or their Indian subsidiaries shall respond to this EOI Invitation.</i> | Fixed | | Pass = Complied Fail = Not-complied | <i>Place the supporting document(s) under Flag TA.II.4.1</i> | | This criteria needs to be mandatorily complied with. |
| A.II.4.2 | <i>The Responders to this EoI notice must be legal entities incorporated/established under an appropriate law.</i> | Fixed | | Pass = Complied Fail = Not-complied | <i>Place the supporting document(s) under Flag TA.II.4.2</i> | | This criteria needs to be mandatorily complied with. |

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| A.II.4.3 | <p>The responder shall submit a certificate in the prescribed format (Annexure-A) that it is not blacklisted by any government organization as on last date of submission of response to the EoI Invitation. The Responder must also comply with the provisions of Office Memorandum: F/No/6/2019-PPD dated 23rd July 2020, issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, Govt. of India, as per format given in Annexure-E.</p> | Fixed | | <p>Pass = Complied Fail = Not-complied</p> | <p>Place the supporting document(s) under Flag TA.II.4.3</p> | | <p>This criteria needs to be mandatorily complied with.</p> |
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| A.II.4.4 | <p>Test for Expertise and Strong R&D Laboratory in Physical Research: The responder should have the strong backing of an in-house R&D laboratory supporting the following basic research areas: The responder shall have expertise in and shall list 20 publications (along with details of Titles of publications / journals / conferences in which they appear) in widely circulated and recognized scientific journals or conferences in each of the following areas::</p> | | 100 | | | | <p>Minimum Qualifying Score would be 60 out of the total maximum possible marks of 100 in this criteria II.4.4 (Break up of total score of '100' is given below in the sub-criteria 4.4.a to 4.4.e that are mentioned below)</p> |
| A.II.4.4.a | Solid state physics | Graded | 20 | 1 Mark for each Publication, with maximum marks of 20 | Place the supporting document(s) under Flag TA.II.4.4.a | | |

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| A.II.4.4.b | Solid state electronic devices | Graded | 20 | 1 Mark for each Publication, with maximum marks of 20 | Place the supporting document(s) under Flag TA.II.4.4.b | | |
| A.II.4.4.c | material science and new electronic materials | Graded | 20 | 1 Mark for each Publication, with maximum marks of 20 | Place the supporting document(s) under Flag TA.II.4.4.c | | |
| A.II.4.4.d | nano-structures for electronics | Graded | 20 | 1 Mark for each Publication, with maximum marks of 20 | Place the supporting document(s) under Flag TA.II.4.4.d | | |
| A.II.4.4.e | optics and opto-electronics | Graded | 20 | 1 Mark for each Publication, with maximum marks of 20 | Place the supporting document(s) under Flag TA.II.4.4.e | | |

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| A.II.4.5 | Test of R&D Expertise in high level Software Systems: | | 100 | | | <p>Sub-criteria II.4.5.a needs to be mandatorily complied with.</p> <p>For remaining part of the criteria (II.4.5.b to II.4.5.e) , the Minimum Qualifying Score would be 60 out of the total maximum possible marks of 100 (<i>Break up of total score of '100' is given below in the sub-criteria 4.5.b to 4.5.e that are mentioned below</i>)</p> |
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| A.II.4.5.a | <p>R&D in High Productivity Languages: The responder must have prior in-house experience in Definition, design and implementation of own High Productivity programming languages for scientific computing. Some examples of such languages are Fortress, X10, Chapel, co-array Fortran etc.</p> | Fixed | | <p>Pass = Complied Fail = Not-complied</p> | <p>Place the supporting document(s) under Flag TA.II.4.5.a</p> | | <p>This sub- criteria needs to be mandatorily complied with.</p> |
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| A.II.4.5.b | <p>R&D in Compilers : The responder must have in-house experience in design and implementation of its own compilers for modern Fortran and other equivalent parallel processing languages, that were actually productized.</p> | Graded | 30 | <p>0 = No design & implementation experience in Compilers R&D</p> <p>15 = Inhouse design & published experience, but not productized</p> <p>30 = Inhouse design & implementation experience and productized</p> | Place the supporting document(s) under Flag TA.II.4.5.b | | Please note that score awarded will be only one among the 3 grades (0/15/30) as described under Grading Criteria |
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| A.II.4.5.c | <p>R&D in Mathematics Libraries : Responders must have in-house experience in design and implementation of their own Math Libraries for sequential and vectorized/parallel operations that were actually productized. Simply re-packaging of designs from third parties or open source software stacks such as GNU alone, would not count as in-house expertise.</p> | Graded | 30 | <p>0 = No design & implementation experience in Math Libraries R&D 15 = Inhouse design & published experience, but not productized 30 = Inhouse design & implementation experience and productized</p> | Place the supporting document(s) under Flag TA.II.4.5.c | Please note that score awarded will be only one among the 3 grades (0/15/30) as described under Grading Criteria |
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| A.II.4.5.d | <p>PGAS : Responders must have carried out design and implementation of its own high level tools/frameworks for parallel programming such as partitioned global address space (PGAS) paradigm.</p> | Graded | 20 | <p>0 = No design & implementation experience wrt PGAS 10 = Verifiable Inhouse design & experimental experience, but not productized 20 = Verifiable Inhouse design & implementation experience and productized</p> | Place the supporting document(s) under Flag TA.II.4.5.d | Please note that score awarded will be only one among the 3 grades (0/10/20) as described under Grading Criteria |
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| A.II.4.5.e | <p>Run-time performance of interpreted or compiled languages : Responders must have in-house experience in speeding up run-time performance of popular languages such as Python, Julia on HPC systems.</p> | Graded | 20 | <p>0 = No experience in speeding up run-time performance of such languages 10 = Verifiable Experience in speeding up run-time performance of 1 such language 20 = Verifiable Experience in speeding up run-time performance of 2 such languages</p> | Place the supporting document(s) under Flag TA.II.4.5.e | | Please note that score awarded will be only one among the 3 grades (0/10/20) as described under Grading Criteria |
| A.II.4.6 | <p>Test of Expertise in Hardware Systems and Hardware--Software Co-design: The responder must have in-house experience in :</p> | | | | | | <p>Sub- criteria II.4.6.a needs to be mandatorily complied with.</p> |

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| | | | 100 | | | | For remaining part of criteria (II.4.6.b to II.4.6.f) , the Minimum Qualifying Score would be 60 out of the total maximum possible marks of 100 (Break up of total score of '100' is given below in the sub-criteria 4.6.b to 4.6.f that are mentioned below) |
| A.II.4.6.a | <i>Symmetric Multi Processor System Design : Responder should be in business of supplying large HSMs having at least 16-socket SMPs for Mission Critical applications. Responder should have verifiable in-house experience and ability of prototyping larger (at least 64-socket or more sockets SMP) HSMs.</i> | <i>Fixed</i> | | <i>Pass = Complied Fail = Not-complied</i> | <i>Place the supporting document(s) under Flag TA.II.4.6.a</i> | | This sub- criteria needs to be mandatorily complied with. |

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| A.II.4.6.b | <p>Processor Design : Responder must have in-house experience in design of general-purpose CPUs, vector processors/engines , that were actually productized in the past.</p> | Graded | 20 | <p>0 = No design experience on processor design 10 = Inhouse design experience on either General Purpose CPUs, or, vector processors/engines , that were actually productized in the past. 20 =Inhouse design experience on both General Purpose CPUs and vector processors/engines , that were actually productized in the past.</p> | Place the supporting document(s) under Flag TA.II.4.6.b | Please note that score awarded will be only one among the 3 grades (0/10/20) as described under Grading Criteria |
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| A.II.4.6.c | <p>Hardware system design :The responder must have in-house experience in Design of</p> <ul style="list-style-type: none"> i) ASICs, ii) Motherboards/backplanes, iii) silicon photonics, iv) hardware synthesis and VHDL | Graded | 20 | 5 marks each for verifiable experience in each of the indicated 4 areas of Hardware system design | Place the supporting document(s) under Flag TA.II.4.6.c | | Please note that score awarded will be only one among the 3 grades (0/10/20) as described under Grading Criteria |
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| A.II.4.6.d | <p>Wafer-Scale / Multi-chip Modules based Integrated Systems: Responder must have in-house experience in integration of solutions with Wafer-Scale /Multi Chip Modules Integrated Systems, as part of complete HPC systems and deployment of the integrated Systems at customer site</p> | Graded | 20 | <p>0 = No experience on Integration with Wafer-Scale / Multi Chip Modules Integrated Systems, as part of complete HPC systems 10 = Inhouse design experience in integration of solutions with Multi Chip Modules Integrated Systems, as part of complete HPC systems 20 = Inhouse design experience in integration of solutions with Wafer-Scale , as part of complete HPC systems</p> | Place the supporting document(s) under Flag TA.II.4.6.d | Please note that score awarded will be only one among the 3 grades (0/10/20) as described under Grading Criteria |
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| A.II.4.6.e | <p>Operating Systems & Networking Software for HPC:</p> <p>i) Responder must have Track record of substantial contribution to open-source eco-system such as Linux and other Networking software for HPC.</p> <p>ii) Responder must have in-house experience in building large single- image HPC systems.</p> | Graded | 20 | <p>0 = No Track record of i) and no experience in ii)</p> <p>10 = Track record of i) , OR, experience in ii)</p> <p>20 =Track record of i) , AND, experience in ii)</p> | Place the supporting document(s) under Flag TA.II.4.6.e | | Please note that score awarded will be only one among the 3 grades (0/10/20) as described under Grading Criteria |
| A.II.4.6.f | <p>Operating Systems Software for Telecom :</p> <p>Track record of substantial contribution to Open-source Networking Application Platform (ONAP) /Open Source MANO (OSM)</p> | Graded | 20 | <p>0 = No Track record of substantial contribution to ONAP /OSM</p> <p>10 = Track record of substantial contribution to OSM only.</p> <p>20 =Track record of substantial contribution to ONAP</p> | Place the supporting document(s) under Flag TA.II.4.6.f | | Please note that score awarded will be only one among the 3 grades (0/10/20) as described under Grading Criteria |

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| A.II.4.7 | Sustainability Test | | 100 | | | | Minimum Qualifying Score would be 60 out of the total maximum possible marks of 100 in this criteria II.4.7 (Break up of total score of '100' is given below in the sub-criteria 4.7.a to 4.7.b that are mentioned below) |
| A.II.4.7.a | Sustained Customer Retention: Documentary evidence of at least 2 customers in each of the following application domains mentioned below, who are customers since last five years and who continue to remain customers presently for support and upgrades : | | 70 | | | | Total Score for this sub- criteria II.4.7.a would be 70 |

| | | | | | | |
|--------------|---|--------|----|---|---|--|
| A.II.4.7.a.1 | Pure or Fundamental Scientific Research | Graded | 8 | 0 = No Customer 4 = One Customer 8 = Two or more Customers | Place the supporting document(s) under Flag TA.II.4.7.a.1 | Please note that score awarded will be only one among the 3 grades (0/4/8) as described under Grading Criteria |
| A.II.4.7.a.2 | Applied Scientific Research (including Energy and Health related research etc.) | Graded | 10 | 0 = No Customer 5 = One Customer 10 = Two or more Customers | Place the supporting document(s) under Flag TA.II.4.7.a.2 | Please note that score awarded will be only one among the 3 grades (0/5/10) as described under Grading Criteria |
| A.II.4.7.a.3 | Science in service of society (e.g. weather forecasting etc.) | Graded | 8 | 0 = No Customer 4 = One Customer 8 = Two or more Customers | Place the supporting document(s) under Flag TA.II.4.7.a.3 | Please note that score awarded will be only one among the 3 grades (0/4/8) as described under Grading Criteria |

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|--------------|---------|--------|----|--|---|---|
| A.II.4.7.a.4 | Telecom | Graded | 12 | <p>0 = No Customer 4 = One Customer in Batch Mode Applications 8 = Two or more Customers in Batch Mode Applications 10 = One Customer in Batch Mode Application and one customer in Mission Mode Application 12 = Two + Customers in Mission Mode Applications</p> | Place the supporting document(s) under Flag TA.II.4.7.a.4 | Please note that score awarded will be only one among the 5 grades (0/4/8/10/12) as described under Grading Criteria |
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|--------------|---|--------|----|--|---|--|---|
| A.II.4.7.a.5 | Financial sector (Banking, Stock exchanges, market regulators etc.) | Graded | 12 | <p>0 = No Customer 4 = One Customer in Batch Mode Applications 8 = Two + Customers in Batch Mode Applications 10 = One Customer in Batch Mode Application and one customer in Mission Mode Application 12 = Two + Customers in Mission Mode Applications</p> | Place the supporting document(s) under Flag TA.II.4.7.a.5 | | Please note that score awarded will be only one among the 5 grades (0/4/8/10/12) as described under Grading Criteria |
|--------------|---|--------|----|--|---|--|---|

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|--------------|--|--------|----|--|---|--|---|
| A.II.4.7.a.6 | Transportation (Railways or Airlines, aircraft manufacturers etc.) | Graded | 12 | <p>0 = No Customer 4 = One Customer in Batch Mode Applications 8 = Two or more Customers in Batch Mode Applications 10 = One Customer in Batch Mode Application and one customer in Mission Mode Application 12 = Two + Customers in Mission Mode Applications</p> | Place the supporting document(s) under Flag TA.II.4.7.a.6 | | Please note that score awarded will be only one among the 5 grades (0/4/8/10/12) as described under Grading Criteria |
| A.II.4.7.a.7 | Manufacturing | Graded | 8 | <p>0 = No Customer 4 = One Customer 8 = Two or more Customers</p> | Place the supporting document(s) under Flag TA.II.4.7.a.7 | | Please note that score awarded will be only one among the 3 grades (0/4/8) as described under Grading Criteria |

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|---|---|--------|----|---|---|--|--|
| A.II.4.7.b | Track Record of Sustained Performance: One or more systems developed and reported in www.top500.org by responders to this EoI notice should have achieved performance rankings which are equal to or better than the best rank ever achieved by any HPC system deployed in India. Responder must list upto 10 such occurrences over the last 15 years, subject to maximum of 2 such occurrences being considered for any one assessment year | Graded | 30 | 3 Marks each for upto 10 such occurrences over the last 15 years, subject to maximum of 2 such occurrences being considered for any one assessment year | Place the supporting document(s) under Flag TA.II.4.7.b | | Total Score for this sub- criteria II.4.7.b would be 30 |
| <u>NOTE TO THE RESPONDERS ON VERIFIABILITY</u> | | | | | | | |

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|---|--|
| 1 | Wherever experience, or, expertise required is shown as Complied, please note that it should be a verifiable experience/expertise; in the form of some of the acceptable ways of meeting 'verifiability' of any such claim, like a previously released product, previous publication in recognized scientific journal/conference, installation at a customer site etc. |
|---|--|

Note: The responder shall provide sufficient documentary evidence in support of fulfilment of minimum eligibility criteria as mentioned above. C-DOT reserves the right to reject any response not fulfilling the eligibility criteria.

(End of Document)