



Expression of Interest (EOI)

For

**Supply, Installation and Maintenance of High
Performance Computing, Artificial
Intelligence and Machine Learning Platform**

**CSIR - FOURTH PARADIGM INSTITUTE
NWTC ROAD, BELUR CAMPUS
BENGALURU - 560037
KARNATAKA - INDIA**

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CSIR FOURTH PARADIGM INSTITUTE (CSIR-4PI) NAL BELUR CAMPUS, BANGALORE – 560 037

Invitation for Expression of Interest for Supply, Installation, Commissioning and 24x7 Operation of High Performance Computing, Artificial Intelligence and Machine Learning Platform at CSIR Fourth Paradigm Institute

CSIR- Fourth Paradigm Institute (CSIR-4PI), a constituent laboratory under the Council of Scientific and Industrial Research (CSIR), is planning to establish **CSIR centralized HPC, AI & ML Platform (CHAMP)** to cater to the computational requirements of CSIR laboratories located across the country. The facility will be hosted at CSIR-4PI, Bangalore and will be remotely accessed by users over the National Knowledge Network (NKN) of India. In this context, CSIR-4PI is inviting **Expression of Interest (Eoi)** in the form of a technical proposal (**Eoi technical response sheet format attached as Format - 9**) from solution providers who can provide a turn-key solution, which includes supply, installation, commissioning, 24x7 operation with Service Level Agreement (SLA) and user support, day to day system administration, commercial and open source application software and model installation, user management, etc. The system needs to be installed in the existing HPC datacenter of CSIR-4PI, Bangalore and 24x7 operation and monitoring of the datacenter infrastructure is also in the scope of the current Eoi.

CRITICAL DATE SHEET

Sl. No.	Stage	Date & Time
1.	Release of Expression of Interest (Eoi)	29 th October 2021
2.	Last Date for submission of written queries by Bidders	8 th November 2021
3.	Response to the Queries	12 th November 2021
4.	Last date for Submission of Eoi	22 nd November 2021
5.	Opening of Eoi	23 rd November 2021
6.	Declaration of Short listed Firms	7 th December 2021

3. Introduction

CSIR- Fourth Paradigm Institute (CSIR-4PI), formerly CSIR-CMMACS, BENGALURU, India, is one of the premier laboratories under Council of Scientific and Industrial Research, an autonomous body under Department of Scientific and Industrial Research (Government of India), New Delhi. CSIR-4PI is a Science and Knowledge based Research and Development Organization.

1.1 Bidding Data Sheet

SL.No	Particulars	Details
1.	Document ID	4PI/PUR/2021/34
2.	Release Date	29 th October 2021
3.	Selection Method	As mentioned in this EOI
4.	Name of the Inviting Authority	The HEAD CSIR Fourth Paradigm Institute NAL Belur Campus Bangalore - 560 037
5.	Eoi issued by	The Head, CSIR-4PI
6.	Availability of Eoi	Eoi can be Downloaded from : 1. CSIR-4PI website www.csir4pi.in 2. Central Public Procurement Portal (CPPP) www.etenders.gov.in
7.	Last date of Submission of Eoi	22 nd November 2021

4. Evaluation of Eol

a. General Instruction

1. The EOI shall be submitted within the stipulated date and time on CPP Portal www.etender.gov.in
2. Eol proposal shall consist of supporting proofs and documents as defined in Section-6, Pre-Qualification Criteria.
3. Bidder shall submit all the required documents as mentioned in Section 12 of this document.
4. The Eol proposal submitted by Bidder should be complete document. The document should be page numbered, must contain the list of contents with page numbers and shall be digitally signed by the Authorized Representative of the Bidder.
5. Eol document submitted by the Bidder should be concise and only relevant information as required shall be furnished.
6. The entire proposal shall be strictly as per the format specified in this Invitation for Expression of Interest and any deviation may result in the rejection of the Eol proposal.
7. Any proposal received by CSIR-4PI after the submission deadline shall not be considered. No further correspondence on the subject will be entertained.

b. Evaluation Process

1. CSIR-4PI shall evaluate the response to the Eol and all supporting documents/Documentary evidences. Non-submission of requisite supporting documents/documentary evidence, may lead to rejection of the Eol Proposal.
2. CSIR-4PI may seek additional documents or clarifications as and when required from the Bidders.
3. All bidders may be required to give their presentation on the date and time fixed by the CSIR-4PI.

5. Brief Objective and Scope of Work

The broad specifications of platform are as follows:

The proposed solution should be well engineered and should satisfy the following minimum criteria:

1	Approximate requirement in terms of size and capacity (The actual requirement will be decided at the RFQ stage)	<ol style="list-style-type: none"> 1. Scalable computing architecture of about 2.25 PetaFlops of peak computing power <ol style="list-style-type: none"> a) About two third (2/3)rd computing power (i.e. 1.5 PetaFlops) should come from CPU based compute nodes b) About one third (1/3)rd of computing power (i.e. 0.75 PetaFlops) should be from accelerator-based nodes suitable for AI workloads. <ol style="list-style-type: none"> i. The system is expected to have at least 8 GPUs per node with total aggregate GPU memory of at least 256 GB and bandwidth of at least 600 GBps for inter GPU communication along with a system memory of about 1TB. 2. A high performance parallel file system with a raw capacity of about 5 PiB for use as the scratch file system for both GPU and CPU based nodes
2	Scope of the engagement	<p>The bidder is expected to provide a turnkey solution with the following scope</p> <ul style="list-style-type: none"> • Supply the compute servers (CPU & GPU), storage, switches & related accessories • Upgrade/refurbish of cooling & power infrastructure, if any (<u>please go through Annexure-A for the details and the bidder may visit existing CSIR-4PI HPC datacenter, if required to get additional information</u>) • Maintain (warranty and AMC) and provide facility management services for the complete HPC facility (computing infrastructure + Data center) for 7 years • Buyback the existing system (<u>refer to the detailed specifications in Annexure-B</u>). <u>Dismantling the existing system and taking it out of CSIR-4PI is the responsibility of the vendor.</u> The vendors should propose the buyback option. However, CSIR-4PI reserves the right to exercise or not exercise this option at a later stage.
3	Performance & Benchmark	<ol style="list-style-type: none"> 1. Benchmark_suite-1 (for CPU based nodes): SU2 & GROMACS 2. Benchmark_suite-2 (for GPU based nodes): GROMACS <p>Important Note:</p> <ul style="list-style-type: none"> • The benchmark has to be run by the OEM (Compute node OEM) or the SI and the outputs should be submitted in a <u>non-returnable pen drive</u> to the purchase department before the due date of submission. • The Bidder needs to sign a Non-Disclosure Agreement (NDA format attached as Format-7) and send it to purchase@csir4pi.in , spo@csir4pi.in, office@csir4pi.in • Post that, CSIR-4PI will provide a link to download the necessary input data and relevant instructions for running the benchmarks.

Annexure-A (5.1)

Major Datacenter Components (Make & Model). The bidder needs to provide AMC and FMS for these components along with associated piping, cables, earth pits etc. for next 7 years

A Tier-3 equivalent state-of-the-art water-cooled data center was established in 2013 to host the existing HPC system. The proposed system will be hosted in the same data center, by replacing the existing system and storage. In addition to managing the proposed HPC system, the vendor should also manage the data center. The vendor is requested to visit the location (at CSIR-4PI) and decide on the need for replacement or refurbishing of data center components to ensure smooth operation of data center for next 7 years. The data center comprises of the following components

Sl. No.	Datacenter Component	Qty	Make	Model
1	22 TR PAC	2	STULZ	SEC 1100CW
2	25 TR PAC	2	STULZ	SEC 1500 CW
3	1010 KVA Diesel Generator	3	CUMMINS	KTA38-G5
4	60 KVA UPS	2	Socomec	MasterysMC
5	400 KVA UPS	3	Socomec	Delphys Greenpower
6	Air Cooled Screw chiller - 110 TR	3	Bluestar	LCAX1-0375DA
7	CCTV-Dome camera (6.0 MM fixed lens)	4	Everfocus	EDN3240
8	Fire Alarm System controller panel	1	Honeywell	XLS200
9	Gas release system with 2 cylinders of Novec 1230 gas	1	Ravel	NA
10	Gas release system with 3 cylinders of Novec 1230 gas	1	Ravel	NA
11	Access control system (biometric - 1 & card reader - 3)	1	Honeywell	NA
12	Public Address System (amplifier-2, spk-4, mic)	1	RITTAL	NA
13	Rodent repellent VHFO Controller	3	Master	NA
14	Water leakage detection System (2 box)	1	Sontay	NA
15	VESDA System	2	System Sensor	8100
16	De watering pump - ups room	2	Grundfos	NA
17	Centrifugal pump (Primary) - 250USGPM	3	Grundfos	MIMG132M-4-38FF265-E1
18	Centrifugal pump (Secondary) - 275USGPM	3	Grundfos	MMG1328-4-38FF265-E
19	Hydro MPC Panel with 3xVFD (Danfoss)	1	Grundfos	CU 3510
20	Heat Exchanger	2	GEA Ecoflex	VT 40 ODL-10
21	Closed expansion tank - 16 bar/100lit	2	Anergy	NA
22	Thermal storage tank - 75090 liters	1	Local	NA
23	Pressure Pump	2	Anergy	PSU-225, PN 10
24	MLTP Panel with ACB2000Ax4, 4000Ax1	1	ABB	NA
25	DGCP Panel with ACB 1600Ax3, 2000Ax2, 3200Ax1	1	ABB	NA
26	Chiller Panel with ACB 630Ax2	1	ABB	NA
27*	12v, 42Ah/smf	88	Exide	Powersafe plus
28#	12v, 150Ah/smf	387	Relicell	SP12-150
29	Diesel pump motor	2	Kirloskar	FLAMEPROOF
30	Diesel Tank - 16000 Liter	1	Local	NA
31	RO Plant- 200 Lit/Hr	1	ECO	NA
32	Top-up diesel tank 1000 lit	3	Local	NA
33	Buffer diesel tank 1000 lit	1	Local	NA

NA: Not applicable

* The current sets of batteries were installed about two years ago and carry a warranty of three years.

The current sets of batteries were installed about one year ago and carry a warranty of three years.

Annexure- B (5.2)

Details of the existing HPC system to be considered under the buyback option

The vendor is expected to buyback the existing system (Scope: Dismantling the existing system and taking it out of CSIR-4PI is the vendor's responsibility).

Sl. No.	Description of the Item	Quantity	Make/Model
Compute System			
1	Compute nodes [Blade server, with two Intel Xeon E-5 2670 (8 cores, Sandy bridge) processors, 64 GB shared memory, 300GB Hard disk]	1092	HP BL460C, Gen 8 10/20Gb FLB CTO Blade (P/N 641016-B21)
2	Chassis (Blade server)	69	HP BLc700 CTO IN LCD ROHS Encl (P/N: 507019-B21)
4	Login node & Head Node	4	HP DL380p Gen8 8-SFF CTO Server (P/N: 653200-B21)
5	OSS and MDS servers	10	HP DL360p Gen8 8-SFF CTO Server (P/N: 654081-B21)
Rack Cooling Infrastructure			
6	Rear Door Heat Exchanger (RDHx), for 600mm/800mm rack with a cooling capacity of 35KW	19	Rittal, SK3301495
7	Rear Door Heat Exchanger (RDHx), for 700mm width rack with a cooling capacity of 35KW	3	Coolcentric, VETTE (P/N 111541)
Compute & Storage Rack			
8	42U height, 600 mm width and 1000 mm depth compute Rack	20	HP Universal Rack 10642 G2 shock Rack, P/N: AF002A
9	42U height, 800 mm width and 1000 mm depth compute Rack	2	HP Universal Rack 10842 G2 shock Rack, P/N: AF042A
10	42U height, 700 mm width and 1200 mm depth compute Rack	3	DDN
Interconnect Switch			
11	648 port FDR Infiniband switch	2	Mellanox IB QDR/FDR 648 Switch Chassis//SX6536 (P/N 674277-B21)
12	36 port Leaf Infiniband switches (blades) within the chassis	68	Mellanox IB
12	Other Switches	39	27 numbers of HP 2910-48G al Switch (P/N: J9147A) 12 numbers of Aruba 2620, 48 port Switch (P/N J9626A)
Storage (Luster based parallel file system)			
13	Applications storage	HP P2000- RAID6, total 300GB SAS X 12	
14	Metadata storage	DDN EF3015-RAID10, total 600GB SAS X 12	
15	Scratch file system	DDN Storage Scalar 7000, with total 3TB x 1000, SFA10000 Controller x 4	

6. Bidder eligibility for participating in Eol

- a. Bidder (compute node OEM/SI) should have carried out at least 3 installations (in last five years) of minimum 200TF CPU based HPC system out of which at least one should be more than 500TF.
- b. Bidder should submit PO and installation report as proof.
- c. The bidder must have an annual turnover of Rupees 100 crores or more in any three years in last five financial years (FY 2016-17, 2017-18, 2018-19, 2019-20, 2020-21). Certified (by chartered accountant) documentary evidence in support of the turnover must be furnished.

7. Nature and Requirements for Facility Management Services

- a. Two teams (at L2 level) one for the HPC management and other for data center management.
- b. Cater to the 24x7 (3 shift operation) for both HPC as well as data center.
- c. A team lead (at least at L3 level) for overall coordination.
- d. Nature of work/responsibility: Day to day operation on 24x7 of system and datacenter, hardware support, system administration, application software installation and support, user support for onsite and remote users, data management etc.

8. Local Content & associated Guidelines

- a. The OEM of each major component such as CPU nodes, GPU nodes and storage (including switches) should mention the local content in their solutions. (With reference to Make in India Order No. no. P-45021/2/2017-PP (BE-II) dated 16th September 2020 of Ministry of Commerce and Industry, Government of India and any amendments thereon)
- b. The vendor also should comply to Order No.P-45021/112/2020-PP(BE-II)(E-43780) dated 24.08.2020 of Ministry of Commerce and Industry, Department for Promotion of Industry and Internal Trade and any amendments thereon.

Important Note:

- Complying to the above guidelines is not essential for participating in the Eol. However, the bidder should provide correct information, so that CSIR-4PI takes an informative decision for the RFQ stage.
- All claims regarding the local content should be supported by detailed breakup, valid justifications and OEM certificates.

9. Shortlisting bidders for the for the RFQ stage (next level)

- a. It is essential for a bidder to participate in Eol to be eligible for the RFQ stage.
- b. However, CSIR-4PI reserves the right to shortlist (considering both technical merit including capability to run the benchmark applications as well as procedural/financial compliance) a sub-set of the participating bidders for the RFQ stage.

Also, CSIR-4PI reserves the right to go for a global tender if felt appropriate/necessary after taking necessary approvals as an outcome of the Eol process.

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Eol-RFQ restrictions

- a. The OEM (Compute node) can participate through only one SI and vice-versa.
- b. The OEM-SI pair participated in Eol should be same at the RFQ stage as well.

The proposed solution (in terms of processor, GPU, storage etc.) in the Eol should be the same or next generation while participating in the RFQ. The bidder cannot quote a completely different solution than the one proposed in the Eol.

11. Terms and conditions

a. EOI are invited from Manufacturers or their authorized dealers.

Preference will be given to local suppliers as per Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry Order No.P45021/2/2017-PP (BE-II) dated 16 September 2020 as amended from time to time.

Class - I Local supplier	Whose goods/service offered for procurement has local content equal to or more than 50% as defined below:
Class - II Local supplier	Whose goods/service offered for procurement has local content more than 20% but less than 50% as defined below
Non-Local Supplier	Whose goods/service offered for procurement has local content less than 20% as defined below

Local content: Means the amount of value added in India, which shall, unless otherwise prescribed by Nodal Ministry, be the total value of item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, in percent.

The above bidders/Firms are required to indicate percentage of local content and provide self-certification the items offered meet the local content requirement for Class - I Local Supplier/Class - II Local Supplier as the case may be. Further the bidder shall also give details of the location(s) at which the local value additions is made.

False declaration will be in breach of the Code of Integrity under Rule 175(1)(i) (h) of the General Financial Rules 2017 for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

A supplier who has been debarred by any procuring entity for violation of above cited order shall not be eligible for preference under above order for procurement by any other procuring entity for the duration of the debarment.

b. Requirement of Registration (Order No.F.No.6/18/2019-PPD dated 23.07.2020 of Department of Expenditure, Ministry of Finance, Government of India refers)

- i. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority i.e., Registration Committee as constituted by Department of Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Government of India
- ii. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial judicial person not falling in any of the descriptions of bidder stated hereinbefore, including any agency branch or Officer controlled by such person, participating in a procurement process.
- iii. "Bidder from a country which shares a land border with India" for the purpose of this order means:

i)	An entity incorporated, established or registered in such a country; or
ii)	A subsidiary of an entity incorporated, established or registered in such a country; or
iii)	An entity substantially controlled through entities incorporated, established or registered in such a country; or
iv)	An entity whose beneficial owner is situated in such a country; or
v)	An Indian (or other) agent of such an entity; or
vi)	A natural person who is a citizen of such a country; or
vii)	A consortium or joint venture where any member of the consortium or joint venture fails under any of the above

c. The beneficial owner for the purpose of above will be as under

- i. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more judicial person, has a controlling ownership interest or who exercise control through other means.

Explanation –

a)	"Controlling ownership interest" means ownership of a or entitlement to more than twenty-five percent of shares or capital or profits of the company;
b)	"Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements.

- ii. In case of a partnership firm, the beneficial owner is the natural persons(s) who, whether acting alone or together, or through one or more judicial person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

- iii. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more judicial person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
- iv. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
- v. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- vi. An agent is a person employed to do any act for another, or to represent another in dealings with third person.

Further the following certificate has to be submitted by the bidder/Firms

“I have read the clauses regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered.

(Name & Signature of bidder)

Date :

(Where applicable, evidence of valid registrations by the competent Authority shall be attached)

Further bidders must comply with order No.6/9/2020 – PPD dated 24.08.2020 from PPD division, Department of expenditure, Ministry of Finance

12. SUBMISSION REQUIREMENTS

The interested parties are requested to submit their EoI bids on-line through NIC eProcurement System/Portal on before the due date of submission along with the following forms:

SL.NO.	FORM	FORMAT
1.	Applicant's Consent Form	1
2.	Firm Contact Details	2
3.	Experience in related fields	3
4.	Financial Strength of the organization	4
5.	Additional Information	5
6.	Declaration	6
7.	Non-Disclosure and Confidentiality Agreement	7
8.	Integrity Pact	8
9	EoI Technical Response Sheet	9

FORMAT – 1

Applicant's consent Form

To,

The Head
CSIR Fourth Paradigm Institute
NAL Belur Campus,
Bangalore – 560 037

Subject : Submission of Expression of Interest for Supply, Installation, Commissioning and 24x7 Operation of High Performance Computing, Artificial Intelligence and Machine Learning Platform

Dear Sir,

In response to the Invitation for Expression of Interest (EOI) published on _____ for Supply, Installation, Commissioning and 24x7 Operation of High Performance Computing, Artificial Intelligence and Machine Learning Platform, as instructed, we attach following documents:

- a. Firm Contact Details (Format – 2)
- b. Experience in related fields (Format -3)
- c. Financial Strength of the Organization (Format – 4)
- d. Additional Information (Format – 5)
- e. Declaration (Format – 6)
- f. Non-Disclosure and Confidentiality Agreement (Format – 7)
- g. Integrity Pact (Format – 8)
- h. EOI Technical Response Sheet (Format-9)

Signature of the Applicant

Stamp & Date

Note : This is to be furnished on the letter head of the organization

FORMAT - 2

FIRM CONTACT DETAILS		
1	Name of the Organization: Website	
2	Name of the Contact Person: a) Name: b) Address c) Telephone: d) Fax: e) E-Mail:	
3	Year of Incorporation	
4	Type of Organization a) Public Sector/ Limited/Private Limited/ Partnership/ Proprietary/ Society/ Any other b) Whether 'Foreign Equity Participation (Please give name of foreign equity participant and percentage thereof) c) Names of Directors of the Board/ Proprietors d) Name and address of NRI(s), if any	
5	Category of the firm: Large/Medium/Small scale unit	
6	Address of the Registered Office:	
7	Number of Offices with addresses (Excluding Registered Office): a) India b) Abroad	
8	Certificate of registration as a manufacturing unit	
9	Permanent Account Number	
10	GST Number	
11	Status of ISO Certification	
12	List of products/technologies worked with as regular activity in last three years. Give the list of products/technologies with general specifications and the customers.	
13	Whether the Organization has been blacklisted by any Central /State Government Department Organization	Yes/No

Place:
Date:

Signature with Name & Seal:

FORMAT - 3

Experience in Related Fields		
Overview of the past experience of the Firm		
Sl.No	Item	Particulars
1.	Experience & Details of work done with any Govt/Public Sector Undertaking (Publically funded)/Autonomous/Universities /R & D Organization	
2.	Experience & Details of work done with other than Sl.No.1	
3.	Experience & Details of Work done in India	

Signature of the applicant _____

Full Name of the applicant _____

Stamp & Date _____

FORMAT - 4

Financial Strength of the Firm		
Annual Turnover for last three Financial Years		
Sl.No	Item	Particulars
1.		
2.		
3.		
Note : Please attach auditor's certificate (certified copy) in support of your claim.		

Signature of the applicant _____

Full Name of the applicant _____

Stamp & Date _____

FORMAT - 5

Additional Information		
i. List of attachments related to the previous sections		
Sl.No	Item	Particulars
1.		
Additional information to support the eligibility (Not more than 2 pages)		

Signature of the applicant _____

Full Name of the applicant _____

Stamp & Date _____

FORMAT - 6

Declaration

We hereby confirm that we are interested to participate with CSIR-4PI in Supply, Installation, Commissioning and 24x7 Operation of High Performance Computing, Artificial Intelligence and Machine Learning Platform under category “ _____ ” and all the information provided herewith is genuine and accurate to the best of our knowledge.

We also confirm that our firm has not been blacklisted or has any litigation or any conflict of interest that may impact on the delivery of services.

Authorized Person's Signature :

Name and Designation :

Date of Signature :

Note : This declaration is to be furnished on the letter head of the organization.

FORMAT - 7

NON-DISCLOSURE AND CONFIDENTIALITY AGREEMENT

THIS Non-Disclosure Agreement is made and entered into as of _____, by and between CSIR- Fourth Paradigm Institute (CSIR-4PI) & _____, (the "Recipient") (Name of the bidder).

The Parties hereby agree as follows:

1. For purposes of this Agreement, "Confidential Information" shall mean the input data required for running the SU2 & GROMACS benchmarks for the purpose of evaluating a HPC system proposed to be procured by CSIR-4PI and the output data produced by running the benchmarks.
2. The Recipient agrees (i) not to disclose any Confidential Information or any information derived therefrom to any third person, (ii) to take all the reasonable precautions to protect the confidentiality of such Confidential Information with the same degree of care with which it protects the confidentiality of its own confidential information, (iii) not to use any Confidential Information for any purpose whatsoever except for running the benchmark and submitting the output / results to CSIR-4PI.
3. All rights, title, and interest in and to the Confidential Information shall remain with CSIR-4PI.
4. The validity, construction and enforceability of this Agreement shall be governed in all respects by the law of the Country of India.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first written above.

For CSIR-4PI:

Disclosing Party Representative Signature

Disclosing Party Representative Full Name

For Recipient:

Receiving Party Representative Signature

Receiving Party Representative Full Name

Format – 8

INTEGRITY PACT

Between

Council of Scientific & Industrial Research (CSIR) a Society registered under the Indian Societies Act 1860 represented by _____ hereinafter referred to as “The Principal”.

Andherein referred to as “The Bidder/ Contractor.”

Preamble

The Principal intends to award, under laid down organizational procedures, contract/s forThe Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s) and/or Contractor(s).

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

- (1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:
 - (a) No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - (b) The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - (c) The Principal will exclude from the process all known prejudiced persons.
- (2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary action.

Section 2 – Commitments of the Bidder(s)/Contractor(s)

- (1) The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
 - (a) The Bidder(s)/Contractor(s) will not, directly or through any other Person or firm, offer, promise or give to any of the Principal’s employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
 - (b) The Bidder(s)/Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, Certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

- (c) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s)/Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
 - (d) The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly, the Bidder(s)/Contractors(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s)/Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" is annexed and marked as Annexure.
 - (e) The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- (2) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
 - (3) The person signing IP shall not approach the courts while representing the matters to IEMs and he/she will await their decision in the matter.

Section 3 – Disqualification from tender process and exclusion from future Contracts

- (1) If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as per the procedure mentioned in the "Guidelines on Banning of business dealings". Copy of the "Guidelines on Banning of business dealings" is annexed and marked as Annex -"B".

Section 4 – Compensation for Damages

- (1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- (2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 – Previous transgression

- (1) The Bidder declares that no previous transgressions occurred in the last 3 Years with any other Company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- (2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings."

Section 6 – Equal treatment of all Bidders / Contractors/ Sub-contractors

- (1) The Bidder(s)/Contractor(s) undertake(s) to demand from all Subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.
- (2) The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors and Subcontractors.
- (3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 – Criminal charges against violating Bidders / Contractors/ Subcontractors

- (1) If the Principal obtains knowledge of conduct of a bidder, Contractor or Subcontractor or of an employee or a representative or an associate of a bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8 - Independent External Monitors

- (1) The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- (2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the JS (A), CSIR.
- (3) The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Subcontractor(s) with confidentiality.
- (4) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- (5) As soon as the Monitor notice, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- (6) The Monitor will submit a written report to the JS(A), CSIR within 8 to 10 weeks from the date of reference or intimation to him by the Principal and should the occasion arise, submit proposals for correcting problematic situations.
- (7) Monitor shall be entitled to compensation on the same terms as being extended to/provided to Independent Directors on the CSIR.
- (8) If the Monitor has reported to the JS(A), CSIR, a substantiated suspicion of an offence under relevant IPC/PC Act, and the JS(A), CSIR has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.
- (9) The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 10 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by JS(A), CSIR.

Section 10 – Other provisions

- (1) This agreement is subject to Indian Law. Place of performance and Jurisdiction is the Registered Office of the Principal, i.e. New Delhi
- (2) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- (3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- (4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

Details of Independent External Monitor (IEM) :
Shri. Anand Deep,
117/363, H-I, Next to Gurdawar Pandu Nagar, Kanpur – UP 208005
Mobile : 9044796781

(For & On behalf of the Principal)
(Office Seal)

(For & On behalf of Bidder/Contractor)
(Office Seal)

Place.....

Place.....

Date.....

Date.....

Witness 1:(Name & Address): _____

Witness 2::(Name & Address): _____

Format - 9

Supply, Installation, Commissioning and 24x7 Operation of High Performance Computing, Artificial Intelligence and Machine Learning Platform at CSIR Fourth Paradigm Institute

EoI Technical Response Sheet

The bidder is requested to fill this response sheet in the 3rd column and may provide relevant references and remarks in the 4th column. No field in the 3rd column should be left blank. Please write “Not Applicable”, if any information is not relevant to the proposed solution.

1 st	2 nd	3 rd	4 th
Sl. No.	Information Sought by CSIR-4PI	Response by the Vendor	Remarks/Reference
1	Name & Nature of the bidder Submitting the quotation		Indicate the status of bidder (OEM/SI)
	Participated in the pre clarification meeting?	Yes/No	
2	<i>OEM, Make & Model (provide technical detail in separate document)</i>		
	CPU based Nodes		
	CPU		
	GPU based nodes		
	CPU in GPU based nodes		
	GPU		
	Storage		
	Interconnect		
3	<i>Benchmark System and Ownership Information</i>		
	Signed and submitted the NDA as per format given in Annexure-E	Yes/No	
	Benchmark Results Submitted	Yes/No	
	High-level specification of the CPU based benchmark system. As per the benchmark requirement the system should be configured in the following two mode <ul style="list-style-type: none"> • Configured with a single switch of 100 Gbps • Configured with two switches of 100 Gbps each connecting half of the nodes 		Please provide the detail configuration in a separate sheet.
	High-level specification of the GPU based benchmark system suitable for AI workload		
	Who ran the CPU based benchmark?	OEM/SI	Here, OEM means the manufacturer of the CPU based nodes
	Who ran the GPU based benchmark?	OEM/SI	Here, OEM means the manufacturer of the GPU based nodes

1 st	2 nd	3 rd		4 th	
Sl. No.	Information Sought by CSIR-4PI	Response by the Vendor		Remarks/Reference	
4	Benchmark Performance and Output (Submit all the benchmark outputs [for all options requested] in a <u>non-returnable pen-drive</u> to the purchase section, CSIR-4PI on or before the last date)				
(i)	SU2 benchmark on CPU only nodes	Timings (in seconds)	Maximum memory consumed per node in MB		
	8 nodes				
	16 nodes				
	32 nodes				
(ii)	GROMACS on CPU only nodes	Performance (ns/day)	Maximum memory consumed per node in MB		
	8 nodes				
	16 nodes				
	32 nodes				
(iii)	GROMACS performance (ns/day) on GPU nodes				
	2 GPUs				
	4 GPUs				
	8 GPUs				
5	Demonstrable IOR, HPL and MLPerf Performance				
(i)	I/O performance using IOR/IoZone benchmark from the PFS clients with 1MB I/O block size				
(ii)	HPL performance in TF on the benchmark system (32 nodes)				
(iii)	HPL performance in TF of a GPU node with 8 GPUs with an aggregate memory of minimum 256 GB and aggregate inter-GPU bandwidth of 600 GBps				
(iv)	MLPerf HPC Training v0.7 performance of a GPU node with 8 GPUs with an aggregate memory of minimum 256 GB and aggregate inter-GPU bandwidth of 600 GBps	CosmoFlow			
		DeepCAM			
5	CPU based Nodes (Please provide the details in separate sheet)				
(i)	Architecture (e.g. X-86 based 64-bit etc.)				
	Number of sockets per node				
	Processor name (may provide multiple options for HPC workload)	Number	Frequency in GHz	No. Of Cores	
Best suitable processor (optimum) as per the bidder for CSIR-4PI					
Peak computing performance per node for the optimum processor configuration			in TFlops		

1 st	2 nd	3 rd		4 th
Sl. No.	Information Sought by CSIR-4PI	Response by the Vendor		Remarks/Reference
(ii)	Diskless/Disk based [Please provide number and capacity of disks and the mirroring mechanism in case of disk-based nodes]			
(iii)	Maximum memory/node possible			in GB
	Optimum balanced memory based on the benchmark recommended by the bidder			in GB
	Type of memory (minimum DDR4 3200 MHz ECC RAM)			
	Collective CPU to memory bandwidth per node			
	PCI generation			
	Number of PCI lanes			
(iv)	RACK servers/Blade servers			
	Number of nodes in a Chassis (if chassis based design)			
	Details of the chassis (if chassis based design)			Like the technical details/performance of the backplane
	Number of chassis per 42U rack (if chassis based design)			
	Number of nodes per rack (42U)			
	Power requirements for a fully loaded rack			
	Dimension of the rack			
6	GPU based Nodes <i>(Please provide the details in Separate Sheet)</i>			
	CPU Name	Number	Frequency in GHz	No. of cores
	Number of sockets per node (CPU)			
(ii)	No. of GPUs per node			
	Name of GPU and its number			Provide details
	High level technical details of the GPU			Please provide complete detail
	GPU memory per card			
	Type of GPU memory (e.g. GDDR6)			
	The Rpeak performance of a GPU node			
	CPU to GPU communication mode and Bandwidth			Provide supporting documents
	GPU to GPU communication mode and Bandwidth			Provide supporting documents
(iii)	Power requirement per node			
	Dimension of the Rack to host the GPU based nodes			

1 st	2 nd	3 rd	4 th
Sl. No.	Information Sought by CSIR-4PI	Response by the Vendor	Remarks/Reference
7	Storage Subsystem		
	Name and model of the storage system proposed		
	Parallel File System proposed		
	No. of storage controllers for achieving no-single point of failure		Provide relevant technical information
	Number of metadata and I/O (depending on the architecture)		Provide relevant info
	Accessible to both CPU only and GPU based nodes simultaneously	Yes/No	No partitioning of storage for CPU and GPU based system
	Disk Type		
	Disk Capacity & RPM proposed		
	Data Protection proposed for no data loss		
	No. of disks required for 5PiB PFS storage (raw capacity)		
	Expected no. of racks and dimension of the rack		
	Power requirement per rack		
8	Interconnect (Please provide the details in separate sheet)		
	Interconnect proposed for high throughput HPC workload		Designed to minimize the number of end-to-end hops, cable length and latency.
	Speed of the Interconnect		
	<u>Proposed Topology for HPC workload</u> [typically about 500 nodes (both CPU and Accelerator based nodes, IO nodes, storage devices, login nodes, master nodes etc.)]		Provide an architectural diagram along with relevant technical literature
	Number of switches (e.g. leaf switch, spine switch etc.)		
9	Proposed OS for HPC workload on both CPU as well as GPU based nodes		
10	Proposed Job Scheduler [that can handle Co-existing workloads of HPC (socket level control), AI and ML (container support)]		Supported version
11	Software stack including optimized compilers for proposed CPU and GPU architecture [Also propose open source software for containers, machine learning framework and data science kit]		Please provide the licensing mechanism and details
12	Bidder willing to commit for 7 year (warranty of 3 years and AMC of 4 years) support including providing an undertaking that the quoted product should not be End-of-Life (EoL) for next 7 years.	Yes/No	
13	Security and management capabilities of the proposed system.		Please mention about GUIs, CLI and web based solutions.
14	Proposed cooling mechanism for the racks		CSIR-4PI has chiller plants that can supply chilled water outlet/inlet below the floor.
15	Suggest mechanism for buyback option of the existing system	Yes/No	Please refer to the details of the existing system provided in the Eol document.

1 st	2 nd	3 rd	4 th
Sl. No.	Information Sought by CSIR-4PI	Response by the Vendor	Remarks/Reference
16	Local Content of the component & Class of the bidder as per Government of India guidelines. [Please provide valid justifications to substantiate the claims, including certificates from the OEMs]		Please refer to point no. 5 of the EoI document for ref.
	CPU based nodes	Local Content_____ % Class _____	
	GPU based nodes	Local Content_____ % Class _____	
	Storage	Local Content_____ % Class _____	
	Interconnect and Switches	Local Content_____ % Class _____	
	Total Solution	Local Content_____ % Class _____	
17	Does the bidder complies to Order No.P-45021/112/2020-PP(BE-II)(E-43780) dated 24.08.2020 of Ministry of Commerce and Industry, Department for Promotion of Industry and Internal Trade and any amendments thereon.	Yes/No	
18	Indicate the SLA (in %) the bidder is willing to support		
19	Vendor eligibility information		
	List three installations of minimum 200TF CPU based HPC system (<u>in which at least one should be more than 500TF</u>)	(i)	Please provide the PO/Installation report as proof
		(ii)	
		(iii)	
20	Authorization letter from major OEMs		
	CPU based nodes	Yes/No	
	GPU based nodes	Yes/No	
	Storage sub system	Yes/No	
	Interconnect	Yes/No	
21	Have the bidder visited CSIR-4PI before quoting for the solutions?	Yes/No	
22	Is the vendor willing to provide the 24x7 FMS services for the entire 7 years period?	Yes/No	The vendor should commit to provide two teams (at L2 level) one for the HPC management and other for data centre management

1 st	2 nd	3 rd	4 th
Sl. No.	Information Sought by CSIR-4PI	Response by the Vendor	Remarks/Reference
23	Transition plan	The vendor should propose a transition plan for installation of the new system and dismantling of the old system, the time lines etc. in a separate sheet. Note: <u>CSIR-4PI prefers to install the storage first and move the data from existing DDN storage before dismantling the computing infrastructure.</u>	
24	Any other information that the vendor would like to provide		