Invitation for Expression of Interest (EOI) from Eligible Multidisciplinary Cleanroom, Engineering and Project Management Firms

For

Cleanroom, Process Utilities, Fab Integration & Project Management Consultancy at the Indian Institute of Science

National 2D Innovation Hub and R&D Fab

Ref No. IISc/EOI/2026-MS/2

02-09-2026

Indian Institute of Science, Bengaluru 560012, India

1. Background

The Indian Institute of Science (IISc) is a premier institution with a vision to achieve excellence in research and education in science and engineering. IISc currently operates advanced academic cleanroom and characterisation facilities that are extensively utilised by researchers and external users.

2D Material Research Fab and Innovation Hub, funded by The Anusandhan National Research Foundation (ANRF), Ministry of Electronics and Information Technology (MeitY), Government of Karnataka and Several other Industry partners will create a national 200-mm/8-inch R&D Fab and technology-translation platform dedicated initially to 2D-material-based next-generation semiconductor technologies, spanning wafer-scale materials growth, atomic-scale processing, integrated devices, PDK/MPW enablement, metrology, reliability, prototypes, technology transfer, start-up support and controlled shared access.

The programme is being developed as a national Hub-and-SPOKE ecosystem rather than a standalone institutional cleanroom. Its initial network brings together a multidisciplinary IISc team of more than 15 faculty and research leaders, 17 SPOKE partner institutions across India, and more than 15 industry and technology organisations engaged across equipment, process, materials, design, metrology, test, applications and translation. It is intended to support researchers, national laboratories, strategic users, semiconductor companies, start-ups and trainees from across India, while enabling appropriate international research and technology collaboration.

As the physical process and technology core of this programme, the IISc team proposes to establish a new advanced semiconductor cleanroom and process-utility facility within an approximately 100,000 sq. ft. G+5 advanced technology building. The facility is intended for 200-mm-compatible process development, pilot fabrication, repeatable wafer-scale integration, high-yield process learning, prototype and product-demonstrator development, design enablement, metrology, reliability, training and controlled external-user access. It is not intended to be a commercial high-volume manufacturing fab, but it shall be designed with production-like process discipline, traceability, safety and maintainability.

The initial 2D semiconductor programme is intended to form the foundation of a larger, enduring national platform for emerging semiconductor and quantum technologies. The cleanroom, utilities and sub-fab architecture shall therefore accommodate controlled future expansion, additional technology bays and process modules, industry and international co-development, shared-access models, start-up and translation programmes, and evolving 200-mm pilot-line requirements without compromising the initial delivery, contamination-control or lifecycle-cost objectives.

This is expected to be a nationally visible reference facility, attracting sustained engagement from Government, academia, industry, strategic organisations, start-ups and international technology centres. Applicants should regard the assignment as a flagship semiconductor-infrastructure opportunity and commit senior leadership, their strongest multidisciplinary team and a partnership mindset. Subject to applicable confidentiality and IISc public-communication policies, the completed facility is expected to constitute a significant professional reference for the consultant and delivery teams involved.

This EOI seeks a specialist multidisciplinary Cleanroom, Process Utilities, Fab Integration and Project Management Consultant capable of delivering the complete assignment from requirement validation and concept development through detailed engineering, statutory approvals, tendering, contractor

selection, construction and installation management, testing, certification, integrated commissioning and final handover.

A separate Building Design, Engineering and Project Management Consultant is proposed under EOI Ref. No. IISc/EOI/2026-MS/1. The consultant appointed through this EOI shall work continuously with the Building Consultant and shall be responsible for defining and coordinating every cleanroom, process-utility, sub-fab, service-chase, vibration, environmental, equipment and commissioning interface. No interface shall be treated as 'by others' unless the demarcation, design responsibility, supply responsibility, installation responsibility, test responsibility and acceptance authority are recorded in a jointly approved interface matrix.

This EOI is intended to shortlist eligible firms or consortia. IISc may issue a detailed Design Brief/RFP to the shortlisted applicants and select one firm or consortium through a subsequent technical and financial evaluation or limited design competition.

2. Eligibility Criteria

a. **Registration and Legal Status:** The applicant shall be a legally registered company, LLP, partnership, consultancy or consortium/JV eligible to undertake engineering consultancy and project-management services in India. Where architectural services are included, a Council of Architecture-registered architect shall be part of the proposed team. A consortium/JV shall nominate one Indian lead entity with single-point accountability.

b. **Experience:** The applicant shall have at least 12 years of experience in semiconductor, microelectronics, precision cleanroom, controlled-environment, process-utility or comparable high-technology facility assignments, including detailed engineering and construction/installation management.

c. **Comparable Assignment:** The applicant shall have completed or substantially commissioned at least one semiconductor/microelectronics or comparable advanced cleanroom and process-utility project of approximately Rs. 75 Crores or higher during the last ten years. The project should include ISO Class 5 or better areas, ISO Class 6 process areas, process utilities and formal testing/qualification.

d. **End-to-End Delivery:** At least one cited assignment shall demonstrate responsibility from programming or concept design through detailed design, tendering, contractor/vendor evaluation, execution support, commissioning and handover.

e. **Professional Fees:** The applicant should have collected professional consultancy fees of at least Rs. 5 Crores during the last five financial years.

f. **Team and Local Support:** The applicant shall propose a multidisciplinary team and demonstrate an office in Bengaluru or a binding arrangement to establish a fully staffed project office in Bengaluru for the duration of the assignment.

g. **Consortium and Subconsultants:** Specialist international or Indian subconsultants may be proposed, but their responsibilities, availability and contractual commitment shall be demonstrated. The lead consultant shall remain fully accountable for integration and performance of the complete consultancy scope.

h. **Declaration for Transparency:** The applicant shall not be under any declaration of ineligibility for corrupt or fraudulent practices and shall disclose material litigation, professional sanctions and conflicts of interest.

i. **Site Visit:** All interested applicants should visit the identified site and review the available baseline information before submission of the EOI.

3. Project Details

3.1. Facility and Process Brief

The cleanroom is proposed within a new approximately 100,000 sq. ft. G+5 advanced technology building. The immediate cleanroom and service envelope is presently estimated at approximately 14,500 sq. ft., including approximately 10,000 sq. ft. of classified space and approximately 4,500 sq. ft. of unclassified service/chase space. The final area, zoning and vertical arrangement are preliminary and shall be validated against the equipment matrix, service envelopes, maintenance access, contamination segregation, material flows, utility plant, fire/life-safety requirements and future expansion.

The facility is expected to support a substantial multi-tool process line, presently anticipated to include approximately 60-70 process, metrology, test and support systems. Tool families may include a 200-mm 193-nm ArF step-and-scan lithography system, electron-beam lithography, coat/develop and bake systems, advanced material growth and deposition, ALD/PECVD/PVD, material-specific etch/ALE, wet processing, CMP and electrochemical interconnect processes, thermal processing, inline metrology and wafer-level electrical/reliability testing. The final list and vendor facility requirements will be frozen progressively during concept and detailed design.

The process line will support Hub-defined technology roadmaps spanning wafer-scale 2D materials, 2D transistors and CMOS, memories and memristors, sensors and e-nose platforms, neuromorphic hardware, optoelectronics, heterogeneous integration and selected quantum-device technologies. The facility shall enable disciplined transfer of SPOKE-developed know-how into repeatable Hub process modules and controlled use by industry, start-ups, strategic users and external researchers.

3.2. Preliminary Cleanroom and Service Zoning

Area / Zone	Approx. Area	Indicative Requirement
ISO 5 / Class 100	2,000 sq ft	Lithography, critical process/measurement zones and local mini-environments; final allocation to be validated
ISO 6 / Class 1,000	4,000 sq ft	Main process bays for growth, FEOL, deposition, etch, wet and BEOL modules
ISO 7 / Class 10,000	4,000 sq ft	Controlled circulation, staging, gowning, selected inline metrology and clean support functions
Unclassified service/chase area	4,500 sq ft	Rear service chases, sub-fab/utility spaces, maintenance access and utility distribution
Immediate cleanroom + service envelope	Approx. 14,500 sq ft	Preliminary combined envelope; consultant shall validate and optimise

The base-case planning direction is a hybrid wide-bay-and-chase arrangement with process tools facing clean bays and maintenance-intensive services opening to distributed rear chases or sub-fab/service zones. Lithography should be positioned for controlled access from both sides of the process flow and coordinated with adjacent resist coat/develop, bake, wet/strip and critical-metrology functions. The appointed consultant shall validate this topology against the actual tool set and may propose an alternative ballroom, bay-and-chase or hybrid arrangement where it provides superior contamination control, maintainability, flexibility and lifecycle cost within the approved budget.

A base-case ISO Class 5 lithography bay is envisaged. The consultant shall evaluate whether a local ISO Class 4/Class 10 mini-environment around the most sensitive lithography equipment, or a larger room-level upgrade, is technically justified. The evaluation shall identify incremental capital, operating,

space, AMC, temperature/humidity, filtration, monitoring and qualification requirements without presuming that the entire lithography room must be ISO Class 4.

General materials characterisation, electrical test, reliability, low-temperature measurement, offices, stores and staff work areas that do not require classified space should be located in adjacent controlled laboratories outside the prime cleanroom footprint. Only inline, contamination-sensitive or route-critical metrology should occupy classified cleanroom space.

3.3. Minimum Design Philosophy

- **Process and equipment driven design:** The process sequence, 200-mm equipment list, operating states, contamination classes, throughput and expansion roadmap shall drive the space and utility design.
- **Controlled design basis:** The consultant shall prepare and maintain the Owner Project Requirements, Basis of Design, Design Requirements Matrix, room/zone data sheets, tool facility-data packages and point-of-connection schedule.
- **Three-dimensional integration:** The cleanroom, ceiling plenum/interstitial, service chases, sub-fab, structure, utilities, maintenance envelopes, egress and future tie-ins shall be coordinated as one federated BIM model.
- **Precision environment:** Tool-specific vibration, acoustics, floor levelling, settlement, temperature, humidity, pressure, ESD, EMI and airborne molecular contamination requirements shall be derived from approved process and OEM data, particularly for 193-nm lithography, electron-beam systems and critical metrology.
- **Controlled flows:** Personnel, wafers, reticles, clean materials, chemicals, gases, waste, maintenance staff, contractors and emergency responders shall have deliberately planned and segregated routes.
- **National multi-user and secure-collaboration model:** The zoning, access control, gowning, training, project segregation, observation and stakeholder-engagement arrangements shall support a high-visibility national shared facility while protecting confidential work, intellectual property, process integrity and safety.
- **Source-to-sink utilities:** Each utility shall be designed from generation/storage through distribution, point of connection, tool, return/exhaust, treatment, monitoring, alarm, degraded operation and recovery.
- **Reliability and expansion:** Installed, firm and usable capacities shall be distinguished. N+1, dual-path or graceful-shutdown provisions shall be proposed according to risk, common-mode failure analysis and future build-out requirements.
- **Hazardous production materials:** Gas, chemical, exhaust, abatement, waste, detection, isolation, purge, emergency shutdown and response shall be designed as one integrated safety system.
- **Clean-build and maintainability:** Construction cleanliness, progressive closure hold points, maintenance access, equipment replacement routes, safe isolation and clean future tie-ins shall be embedded in design and contract documents.

3.4. Mandatory Interface with the Building Consultant

The two consultants shall establish a single coordinated design baseline. The Cleanroom Consultant shall lead the process, cleanroom, utility-quality, hazardous-material, equipment and qualification requirements; the Building Consultant shall lead site, architecture, structure, civil works, base-building

MEPF and general statutory coordination. Both consultants shall jointly sign interface releases affecting the cleanroom or building.

Interface	Cleanroom / Utility Consultant Lead	Building Consultant Coordination Input
Process and space programme	Tool layout, bays/chases, sub-fab, room data, flows and future expansion	Structural grid, floor plates, shafts, egress, envelope and campus constraints
Structure and precision environment	Tool loads, service envelopes, vibration/EMI/AMC criteria and local isolation needs	Geotechnical/structural design, foundations, slabs, inertia blocks, settlement and structural penetrations
Utilities and plant	Demand/quality/redundancy, P&IDs, POCs, distribution, exhaust, abatement and controls	Incoming services, plant rooms/decks, main distribution, shafts, drainage, electrical and fire interfaces
Logistics and safety	Chemical/gas/waste routes, gowning, maintenance, emergency and tool hook-up needs	Roads, loading/rigging, lifts, doors, security, fire access and general circulation
BIM, tender and commissioning	Cleanroom/process-utility model, package specs and integrated performance tests	Federated building model, common data environment, base-build packages and whole-building handover

3.5. Indicative Programme and Cost-Control Basis

[1] Requirement validation, tool-data collection, surveys, OPR and concept options: approximately 2-4 weeks.

[2] Basis of Design, coordinated schematic/detailed design, BIM, tender packages and cost plan: approximately 6-8 weeks, with approved overlaps.

[3] Statutory approvals, prequalification and tendering: approximately 12-14 weeks, overlapping where feasible.

[4] [This is not related to the scope of work of this EOI, however specified here too for completeness] Building, envelope and base-building services construction: approximately 12 months, coordinated with cleanroom and long-lead systems.

[5] [This is not related to the scope of work of this EOI, however specified here too for completeness] Integrated testing, commissioning, occupancy/handover and defects closeout: approximately 1-2 months.

[6] Cleanroom, utility and process-system fabrication/installation: approximately 8-12 months, coordinated with building readiness and long-lead procurement. [to an extent possible part of this activity must go in parallel to Item # 4 and # 5 above.]

[7] Testing, ISO certification, integrated commissioning, tool-ready validation and handover: approximately 2-3 months. [The overall cleanroom development and qualification must get over within 4 months of the work specified in Item # 5 above.]

Overall integrated duration: approximately 22-24 months from consultant appointment, subject to site readiness, approvals, funding, design freezes, contractor procurement and long-lead equipment interfaces. The facility must be ready for tool / equipment hook-up after this duration.

The cleanroom and process-utility package shall be designed and value-engineered within the Client-approved budget. The consultant shall prepare order-of-magnitude, concept, pre-tender and updated cost estimates; lifecycle operating-cost comparisons; package-wise cash-flow projections; and a risk/contingency register. Any proposed option that materially changes capital or operating cost shall be separately identified for IISc approval.

4. Scope of Work

4.1. Requirement Validation, Surveys and Controlled Design Basis

a. **Process and Equipment Review:** Review the Client process roadmap, provisional equipment list, technology requirements, preliminary areas, operating philosophy and future build-out. Facilitate structured workshops with IISc, the Building Consultant and equipment vendors.

b. **Controlled Requirements:** Prepare the cleanroom/facility Owner Project Requirements, Basis of Design, Design Requirements Matrix, room/zone data sheets, utility-quality criteria and code/standards register. Every requirement shall identify source, rationale, operating state, verification method and acceptance authority.

c. **Tool Facility Data:** Create and maintain a controlled facility-data package for every process, metrology and test tool, including footprint, height, weight, point loads, service envelope, rigging, maintenance access, vibration/EMI/environment, heat load, power, UPS, grounding, PCW, CDA, vacuum, gases, chemicals, exhaust, abatement, drains, data and safety interfaces.

d. **Site and Existing-Condition Inputs:** In coordination with the Building Consultant, review topographic, geotechnical, environmental, utility, external-vibration, EMI, flood, access and campus/site constraints; identify additional surveys or investigations required.

e. **Control Registers:** Maintain assumptions, decisions, interfaces, demarcations, deviations, risks, requirements and change registers from concept through handover.

4.2. Space Planning, Cleanroom Architecture and Equipment Integration

a. **Functional Planning:** Develop and compare layout options for process bays, service chases, sub-fab, plenum/interstitial spaces, lithography, wet process, growth/deposition, etch, BEOL, inline metrology, gowning, clean staging, material airlocks, control rooms and support spaces.

b. **Equipment Layout:** Place all tools and support equipment at scale, including front-side operator access, rear maintenance access, doors, lifts, rigging, laydown, replacement routes, service racks, pumps, abatement and future tool positions.

c. **Cleanroom Envelope:** Design modular walls/ceilings, raised access flooring or return-air systems, doors, windows, penetrations, seals, finishes, lighting, yellow-light requirements, ESD provisions, pass boxes, air showers, gowning and cleanability.

d. **Flow and Segregation:** Map people, wafer, reticle, material, chemical, gas, waste, maintenance and emergency routes. Prepare a material/chemistry-to-tool, permitted/prohibited route, carrier, cleaning and risk matrix.

e. **Expansion and Tie-In:** Reserve practical tool positions, utility headers, shafts, breakers, controls, exhaust, floor openings and clean tie-in methods for approved future expansion.

4.3. Environmental Control and Complete Process-Utility Engineering

a. **Cleanroom HVAC:** Recirculation systems, make-up air, HEPA/ULPA filtration, FFUs, air-change/coverage strategy, temperature/humidity stability, pressure cascade, airflow patterns, recovery, energy optimisation, AMC control and room/zone monitoring.

b. **Water and Cooling:** Raw/treated water interfaces, ultrapure/de-ionised water generation and distribution, process cooling water, chilled water, heat rejection, sampling, quality, redundancy, storage, recovery and future capacity.

c. **Dry Utilities:** Clean dry air, nitrogen, house/process vacuum, instrument air where required, filtration, quality, pressure stability, metering, alarms and point-of-use control.

d. **Specialty Gases and Chemicals:** Bulk/specialty gas storage, gas cabinets, valve manifold boxes/panels, purging, leak detection, emergency shutdown, delivery, chemical/slurry storage and distribution, compatibility, inventory control and point-of-use systems.

e. **Exhaust and Abatement:** Acid, alkaline, solvent, toxic/reactive, pyrophoric, process, pump and general exhaust systems; capture design; compatible ductwork; wet/dry abatement; stacks; monitoring; redundancy; and safe maintenance.

f. **Waste and Environmental Systems:** Segregated drains, acid/base/metal/slurry/solvent waste, ETP interfaces, wastewater monitoring, air emissions, hazardous/solid waste storage and disposal coordination.

g. **Electrical and Grounding:** Normal/emergency power, power quality, redundancy, UPS, distribution, isolation, clean/technical earthing, equipotential bonding, ESD, lighting and tool/control panels.

h. **Controls and Digital Integration:** FMCS/BMS/SCADA interfaces, alarm management, historian, utility metering, cause-and-effect, remote monitoring, access control, CCTV, communications, tool connectivity interfaces and cybersecurity requirements.

i. **Fire, Life Safety and HPM:** Hazardous-material zoning, detection, fire alarm/suppression, emergency ventilation, gas/chemical shutdown, evacuation, emergency showers/eyewash, oxygen-deficiency monitoring where applicable, and integrated cause-and-effect.

4.4. Precision Environment, Structural and Building Interface

a. **Precision Criteria:** Translate approved OEM/process requirements into room and structural criteria for vibration, acoustics, floor flatness/levelness, settlement, EMI, magnetic fields, AMC, temperature and humidity stability.

b. **Lithography and Critical Tools:** Define local foundations, isolation, environmental zones, maintenance envelopes, utilities and monitoring for the 193-nm ArF lithography system, electron-beam systems and critical metrology.

c. **Building Inputs:** Issue coordinated structural loads, point loads, openings, pits, inertia blocks, floor-to-floor heights, plant-deck loads, shaft/penetration schedules, utility-room needs and equipment-move requirements to the Building Consultant.

d. **BIM and Interface Management:** Operate within a shared common data environment and federated BIM model, perform clash detection and maintain connection-level design/supply/install/test/operate responsibility matrices.

4.5. Statutory Approvals, Tendering and Contractor Selection

a. **Approval Roadmap:** Identify all applicable approvals and permits for cleanroom/process facilities, fire and life safety, electrical systems, hazardous gases and chemicals, environmental consent, pollution control, storage, occupational safety and other authorities having jurisdiction. Prepare, submit, coordinate and pursue approvals on behalf of IISc to the extent permissible.

b. **Package Strategy:** Recommend an integrated or multi-package contracting strategy covering cleanroom envelope/HVAC, utilities, gases/chemicals, exhaust/abatement, ETP, electrical/controls, hook-up and commissioning, with clearly defined battery limits.

c. **Tender Documents:** Prepare drawings, specifications, P&IDs, single-line diagrams, sequences, room/utility schedules, BOQs, cost estimates, qualification criteria, performance guarantees, commissioning requirements, training, spares, warranty and AMC requirements.

d. **Bid and Contractor Evaluation:** Support prequalification, pre-bid meetings, technical/commercial normalisation, site visits, reference checks, bid evaluation, clarification, recommendation and contract finalisation for cleanroom fabricators, system integrators and utility contractors.

4.6. Project Management, Construction and Installation Oversight

a. **Integrated Project Controls:** Prepare and maintain the master design/procurement/construction/commissioning schedule, cost plan, cash-flow, risk register, interface register, decision calendar, progress dashboard and recovery plans.

b. **Design and Submittal Control:** Review contractor shop drawings, calculations, material submittals, method statements, control sequences, software, inspection/test plans, samples and mock-ups.

c. **Site Supervision and QA/QC:** Provide qualified resident supervision appropriate to the work fronts; verify workmanship, materials, pressure tests, flushing, cleaning, calibration, labelling, traceability, code compliance and non-conformance closure.

d. **Clean-Build:** Develop and enforce progressive cleanliness zoning, material-entry rules, temporary filtration, duct/pipe cleanliness, closure hold points, final-clean protocols and contamination protection during construction and tool move-in.

e. **Interface and Change Control:** Resolve RFIs and clashes, coordinate with the Building Consultant and tool vendors, assess cost/schedule/safety/qualification consequences of changes, and prevent scope gaps between packages.

f. **Safety and Statutory Coordination:** Coordinate construction EHS, permit-to-work, hazardous-system introduction, emergency planning and inspection readiness with IISc and the Building Consultant.

4.7. Testing, Certification, Integrated Commissioning and Handover

a. **Commissioning Plan:** Develop the commissioning, certification and acceptance plan during design, with system boundaries, responsibilities, scripts, instruments, prerequisites, hold points, evidence and signatories.

b. **Design/Factory/Site Qualification:** Coordinate design qualification, factory inspections/tests where applicable, pre-functional checklists, pressure/electrical/controls tests, flushing, balancing, calibration, safety interlocks and mechanical completion.

c. **Cleanroom Certification:** Conduct or coordinate independent testing to the applicable ISO 14644 series, including particle classification, HEPA/ULPA integrity, airflow velocity/volume, room pressure, temperature/humidity mapping, recovery, smoke visualisation and balancing.

d. **Utility Qualification:** Demonstrate quality, capacity, stability, redundancy, alarms, failure response and recovery for UPW/DIW, PCW/chilled water, CDA, nitrogen, vacuum, gases, exhaust, abatement, electrical/UPS, waste and controls under defined operating states.

e. **Integrated Performance Tests:** Prove cross-system cause-and-effect, loss-of-utility scenarios, emergency shutdown, gas/chemical alarms, fire/life-safety interfaces, degraded operation, safe recovery and communication with the Building systems.

f. **Tool-Ready and Operational Readiness:** Verify released POCs, hook-up readiness, environmental criteria, documentation, trained operators/maintainers, spares, SOPs, emergency plans and readiness for tool installation/SAT and first process qualification.

g. **Handover:** Submit as-built BIM/CAD, P&IDs, single lines, settings, source files, O&M manuals, asset and CMMS data, spares/consumables lists, warranties/AMCs, training records, certificates, punch-list closure and defects-liability support.

4.8. Minimum Stage Deliverables

- Requirement-validation and baseline report, approved OPR and assumptions/interface registers.
- Alternative concept layouts, three-dimensional vertical-stack study and concept cost/schedule.

- Approved Basis of Design, Design Requirements Matrix, room/zone data sheets and code/standards register.
- Complete tool facility-data and point-of-connection matrix, equipment layout and move-in/maintenance plan.
- Coordinated cleanroom, sub-fab, chase, utility, HPM, EHS and control-system design with calculations.
- Federated BIM model and documented clash/interface closeout with the Building Consultant.
- Statutory approval submissions and approval-tracking register.
- Package-wise tender drawings, specifications, BOQs, estimates and bid-evaluation reports.
- Construction/installation supervision records, QA/QC dossiers, clean-build records and monthly project reports.
- Commissioning plan, functional/integrated test scripts and certification/qualification reports.
- Tool-ready and operational-readiness dossier.
- As-built, O&M, training, asset/CMMS and final closeout package.

5. Criteria for Shortlisting

The shortlisting will be carried out by a committee constituted by the Competent Authority, IISc. Shortlisted firms may subsequently be invited to submit a detailed technical and financial proposal or participate in a limited design competition. The following criteria will guide the EOI evaluation:

SL. NO	Criteria	Maximum Marks
1	**Organisational Strength of the Applicant**	**20**
a	Period of relevant professional practice: 12 years = 3 marks; additional experience up to a maximum of 5 marks.	5
b	Scale of operations and local support: Bengaluru office/project office and multiple operating locations with relevant professional staff.	5
c	In-house/committed multidisciplinary team: Project Director, semiconductor cleanroom planner, process-utility lead, HVAC/AMC lead, UPW/PCW engineer, gas/chemical engineer, exhaust/abatement engineer, electrical/grounding engineer, controls/BMS/FMCS engineer, fire/HPM/EHS lead, contamination-control specialist, vibration/EMI specialist, BIM lead, quantity surveyor/tender specialist, construction manager and commissioning/validation lead.	10
2	**Experience of Work**	**25**
a	Comparable semiconductor/microelectronics cleanroom projects completed or substantially commissioned during the last 15 years. Marks based on project scale, ISO class, process utility complexity and applicant scope.	15
b	Demonstrated end-to-end design, tendering, construction/installation management and commissioning/qualification responsibility.	5
c	Experience with 200-mm or comparable wafer-scale facilities, advanced lithography/precision environments, hazardous gases/chemicals, sub-fab/service chases and tool hook-up.	5
3	**Technical Aspects**	**55**
a	Semiconductor cleanroom and process-utility design capability: ISO 5/6 environments, flexible R&D/pilot layouts, equipment planning, HVAC, utility quality/redundancy, contamination and flows. Up to two projects, 10 marks each.	20
b	Integrated utility, HPM, EHS, precision-environment and BIM capability: UPW/PCW/CDA/vacuum/gases/chemicals/exhaust/abatement/waste/electrical/controls, vibration/AMC/EMI and building interfaces. Up to two projects, 10 marks each.	20
c	Project-management, tendering, clean-build, commissioning and validation capability: schedule/cost/interface control, QA/QC, statutory approvals, ISO certification, integrated failure-state testing and operational handover. Up to two projects, 7.5 marks each.	15

6. Documents Required for Validating Eligibility Criteria

a. **Legal Registration:** Certified registration/incorporation documents, partnership/JV/consortium agreement and authorisation of the signatory.

b. **Professional Registrations:** Council of Architecture registration where architectural services are offered, and relevant professional/chartered registrations of key engineers.

c. **Financial Capability:** Audited financial statements and certificate substantiating professional fees for the last five financial years.

d. **Comparable Assignments:** Completion/commissioning certificates, client references, scope documents, project values, cleanroom classes/areas and evidence of process-utility and commissioning responsibility.

e. **Team Evidence:** Organisation chart, CVs, qualifications, employment/commitment status and availability of all key proposed personnel and specialist subconsultants.

f. **Litigation and Integrity:** Self-declaration, details of material disputes/litigation, debarment status, professional sanctions and conflicts of interest.

g. **Site Visit:** Evidence of site visit by the authorised applicant representative.

7. Submission Requirements

Applicants shall submit the EOI in the following structured form:

- **Covering Letter:** Expression of interest, confirmation of eligibility and availability for the full design/execution period.
- **Project Understanding and Commitment Note:** A concise statement of the applicant's understanding of the national mission, proposed senior-leadership involvement, distinctive technical value-add and approach to maintaining responsiveness throughout the fast-track programme.
- **Firm/Consortium Profile:** Ownership, locations, relevant practice areas, lead entity, consortium/subconsultant structure and Bengaluru support arrangement.
- **Comparable Project Sheets - Minimum 3:** Cleanroom class and area, tool/process context, utilities, gases/chemicals, sub-fab/chase, project value, applicant scope, delivery model, commissioning evidence, completion status and client contact.
- **Proposed Team and CVs:** Project Director and all key discipline leads, with a responsibility matrix and planned site deployment.
- **Technical Approach and Methodology:** Requirement management, tool-data capture, layout philosophy, cleanroom/utility design, BIM, contamination and HPM strategy, building interface, tendering, clean-build, project controls and commissioning.
- **Preliminary Execution Schedule:** Stage gates, design freezes, approvals, tender packages, construction/installation, commissioning and key dependencies with the Building Consultant.
- **Scope Exclusions and Client Dependencies:** Explicit assumptions, missing data, owner decisions, proposed surveys and counterpart-consultant inputs.
- **Statutory and Compliance Enclosures:** All eligibility documents, declarations and legal disclosures.

8. Key Evaluation and Interface Guidelines

- Demonstrated experience in semiconductor/microelectronics cleanrooms and complete process-utility systems, not only generic HVAC cleanrooms.

- Ability to validate a 200-mm multi-tool R&D/pilot facility against tool data, contamination, maintenance, utility, safety and future-expansion needs.
- Quality of the proposed hybrid bay-and-chase/sub-fab strategy and the justification for any alternative topology.
- Depth of 193-nm lithography/precision-environment, hazardous gas/chemical, exhaust/abatement, UPW/PCW and utility-reliability capability.
- Ability to work as a single-point multidisciplinary consultant while maintaining a clear, enforceable interface with the Building Consultant.
- Strength of BIM, requirements management, tendering, project controls, clean-build, commissioning and operational-readiness methodology.
- Clarity of team deployment, senior-leadership involvement, local support, schedule, lifecycle cost, assumptions and risks.

9. Client Information and Baseline Assumptions

- The stated areas, cleanroom classes, tool count, process families and utility figures are preliminary planning inputs and shall be validated during programming and concept design.
- The facility shall support 200-mm-compatible process development and pilot fabrication; individual coupon/small-wafer tools may be accommodated only where their role and transfer path are technically justified.
- The final equipment list, OEM environmental criteria, exact chemical/gas inventory and operating model will be frozen progressively. The consultant shall maintain an assumptions register and design-change process so that late tool data do not create uncontrolled rework.
- The Building Consultant will be appointed separately. The appointed Cleanroom Consultant shall provide all process/facility requirements in a form that can be incorporated into the building design and shall jointly resolve interfaces through the common BIM and interface-control process.
- All applicable codes and standards, including the ISO 14644 series, applicable SEMI and ASHRAE guidance, National Building Code/BIS requirements, fire, electrical, environmental, occupational-safety and local authority requirements, shall be identified and applied subject to local adoption and authority approval.
- IISc reserves the right to modify the scope, area, phasing, selection process or schedule, and to reject any or all EOIs without assigning reasons.
- Site visit should be completed before 5:00 p.m. on 15 September 2026. The EOI with all enclosures should be emailed to Prof. Mayank Shrivastava at mayank@iisc.ac.in (Lead PI, 2D Innovation Hub and R&D Fab) with cc to Jully Yadav (Program Manager) at jullyyadav@iisc.ac.in and also post to Jully Yadav, Department of Electronic Systems Engineering, Indian Institute of Science, Bengaluru 560012, on or before 5:00 p.m. on 23.09.2026.

IISc reserves the right to reject any or all EOIs without assigning any reason whatsoever.

Annexure A

Self-Declaration Format

Ref. No.: Date:

To:

The Registrar

Indian Institute of Science

With reference to my/our Expression of Interest submitted to IISc, it is hereby declared that I/(name of firm) was not declared ineligible for corrupt and fraudulent practices, either indefinitely or for a particular period, by any Government or other agency.

I/(name of firm) further declare that there are no contractual restrictions, legal disqualifications, conflicts of interest or other obligations that would prohibit me/us from entering this selection process, and that each statement and particular contained in the submission is correct to the best of my/our knowledge.

Signature of the Applicant

Date:

Place:

Seal: