



NATIONAL INSTITUTE OF
OCEAN TECHNOLOGY

NOTICE INVITING TENDER (NIT)

Form No.

NIOT/S&P/NIT



Tender No.		NIOT/S&P/OA/5867/2023-24
Issued To		Upgradation of COMSOL Multiphysics Software
Tender Mode		GeM (BOQ Bid)- Single Tender
Tender Issue date		25.03.2024
Tender Closing Date and Time		15.04.2024 at 3.00 PM
Tender Opening Date and Time		15.04.2024 at 3.30 PM
Send your queries to the email IDs	Up to Tender finalizations	gopalakrishnaa.niot@gov.in vaidehi.niot@gov.in purchase@niot.res.in

**NATIONAL INSITUTE OF OCEAN TECHNOLOGY VELACHERY
TAMBARAM MAIN ROAD NARAYANAPURAM, CHENNAI
600100**

NIOT WEBSITE: <http://www.niot.res.in/tenders>

Commercial Terms Compliance sheet (format should not be altered)

Sl. No	Particulars	Yes	No	offer Page Ref
1	Whether every page of the tender document is signed for acceptance of tender and uploaded along with the offer?			
2	Whether Taxes and duties are shown separately in the quote. (Registration numbers for claiming the same to be strictly indicated)			
3	Whether accepted to submit the order acceptance within 7 days from the date of order?			
4	Whether Quote is valid for 90 days from the due date of tender or time specified in the tender document whichever is later?			
5	Whether payment terms of the tender is complied with?			
6	Whether the bidder satisfies the Pre- qualification criteria			
	a. a copy of your GST Registration certificates and PAN details are attached (Mandatory qualifying condition)			
	b. Supplier should have previous experience in supply of similar items to recognized institutions (Mandatory qualifying condition)			
7.	a. The Goods / items quoted are manufactured in India and not imported from any country.			
	b. Make in India Clause: If the item/goods are partially imported, specify your category:			
	1. CLASS I Category: Supplier or service provider, whose goods, services or works offered for procurement, has local content greater than or equal to 50%.			
	2. CLASS II Category: Supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%.			
	Only Class I and II categories of vendors are eligible to quote.			
8	Whether self certification form is enclosed (For Class I & Class II supplier only)?			
9	Whether price is FOR NIOT, Chennai?			
10	Whether the freight cost is included, if not included whether the freight cost is indicated separately?			
11	Whether the authorization letter exclusively for this tender, from the original manufacturer is enclosed?			
	a) Whether warranty period accepted as per tender?			
12	b) Whether submission of warranty certificate in the prescribed format is acceptable?			
13	Whether the delivery period is clearly indicated, and is as per tender?			
14	Whether the cost of installation / inspection / testing explicitly mentioned in the quote?			
15	Whether Past track record of quality and service is enclosed?			
16	Whether submission of PS is acceptable if the value exceeds Rs. 25,00,000/-			
17	Whether submission of PBG is acceptable if the value exceeds Rs. 25,00,000/-			
18	Whether list of deliverables attached and comply as per tender?			

19	Whether liquidated damage clause is acceptable in case of delayed supply?			
20	Whether the tender is fully complying with tender specification/Adjustment if no, list out deviations very clearly along with the appropriate reason for the deviation?			
21	Whether item-wise price is quoted as per price bid and quoted price is realistic?			
22	Whether technical specification has been duly filled in and submitted with the tender document is uploaded along with the quotation.			
23	Whether HSN code of the product has been indicated?			
24	Whether your firm is registered under MSME/ NSIC/DIC/UAM? If yes enclose copy of registration			

ANNEXURE-M

**Format for Self Certification under Preference to
"MAKE IN INDIA" Policy**
(Refer Clause No. 2.8 & 3.4.4 of ITT)

CERTIFICATE

In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017, as amended from time to time and as applicable on the date of submission of tender, we hereby certify that we M/s _____ (supplier name) are local supplier meeting the requirement of minimum **Local Content** _____% as defined in above orders for the material against Tender No _____

Details of location at which local value addition will be made is as follows:

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

Seal and Signature of Authorized Signatory

PRICE BID FORMAT:**Upgradation of COMSOL Multiphysics Software:**

Sl. No.	Description	Quantity (Nos.)	Unit Rate (Rs.)	Amount (Rs.)
1	COMSOL Multiphysics software, Named Single User License	1 Number		
2	COMSOL Acoustics module for use with COMSOL Multiphysics , Named Single User License	1 Number		
3	COMSOL Structural Mechanics module for use with COMSOL Multiphysics , Named Single User License	1 Number		
4	COMSOL Material Library for use with COMSOL Multiphysics , Named Single User License	1 Number		
5	COMSOL AC/DC module for use with COMSOL Multiphysics, Named Single User License	1 Number		
6	COMSOL CAD Import module for use with COMSOL Multiphysics , Named Single User License	1 Number		
7	COMSOL Composite module for use with COMSOL Multiphysics , Named Single User License	1 Number		
8	COMSOL MEMS module for use with COMSOL Multiphysics software, Named Single User License	1 Number		
9	Any other charges, (Details to be indicated.)	Lumpsum		
10	GST	18%		
Total Amount				
(Amount in words: _____)				

Note:**# The goods items quoted are manufactured in India and not imported from any country.****For Supply and Service**

1. GST shall be paid extra as applicable.
2. Deduction of Indian Income Tax Deduction at Source:
Deductible for all the services rendered for India as per avoidance of double taxation treaty between your Country and Govt. of India. Without Tax Residency Certificate / Tax Identification No. at your country of residency, tax deduction at source will be @20% and with Tax Residency Certificate / Tax Identification No. at your country of residency, tax deduction at source will be @ 10% as per DTAA rate. However, the applicable taxes at the time of actual utilization of service, etc. will be deducted.

NIOT has enrolled under GST in the category "Tax Deductor". The bidders are requested to update their database regarding NIOT's Registration under GST-Tax Deductor. (See clause No.51 II (c))

TDS @ 2% on the order value towards GST will be deducted on payments made to the supplier in respect of goods and/or services, supplied/provided if the value exceeds Rs. 2.5 lakhs

1. The copy of the GST registration certificate to be attached.
2. The duly filled technical and commercial compliance sheets should be submitted along with quotation/offer.
3. The above item to be delivered within **3 weeks** from the date of acceptance of purchase order.
4. All the supplies to be warranted for **12 Months** from the date of supply and acceptance. Warranty certificate should be provided as per the prescribed format of NIOT. Supplier shall provide software upgradation support as and when available within the warranty period without any additional charges.
5. **Installation:** Software shall be installed at NIOT-Chennai via online Mode by developers or their qualified representatives and all main and sub modules shall be installed as per specifications/ Purchase order.
6. **Payment: 100%** Payment will be made after successful delivery of license and successful installation of the software within 30 days.
7. **License:** Named Single User License - type should be supplied for all products. The new license includes 12 months subscription which should cover technical support and product upgrades. The offered software should be of latest version. The same should clearly be mentioned in detail.
8. **Liquidated damage:** If the Contractor shall fail to deliver the systems/components within the time specified in the Contract, NIOT shall recover from the Contractor as liquidated damages a sum of 0.5% (1/2 percent) of the contract price of the undelivered systems /components for each week of delay (or) part thereof. The total liquidated damages shall not exceed 5% (5 percent) of the contract price of the unit or units so delayed. Systems / components will be deemed to have been delivered only when all essential components parts are also delivered. If any essential components are not delivered in time, the entire system / components will be considered as delayed until such time the missing parts are delivered.

We agree to all applicable terms and conditions listed in the tender document

Company's Signature with Seal

Technical Specification - Compliance Sheet for "Supply of Jacketed wire rope with standard termination"

S.No.	Specification Description	NIOT Requirement	Remarks(Yes/No)
1	COMSOL Multiphysics Base module	<p>The software should be capable of:</p> <ol style="list-style-type: none"> 1. Appropriate CAD tools for geometry modeling (1D/2D/3D) OR compatible to import from standard modeling tools like AutoCAD, Pro-E, Solid Edge, Solid Works, Creo, etc. 2. Appropriate Meshing techniques providing flexibility to consider automated meshing and customized meshing (with mesh elements such as triangular, quad, tetrahedral, prismatic, etc.) for less time consumption 3. Simplify meshing operation on relatively thin or thick regions and complex geometries using features such as swept mesh, mapped mesh and boundary layer mesh. 4. Equation based modeling for solving ordinary differential equation (for volume, surfaces, edges, and points), partial differential equations (with general, coefficient and weak forms), Algebraic equations, sensitivity analysis and classical PDEs etc. 5. Numerical Solvers & discretization schemes like Finite element method, Finite volume method. 6. Simplify meshing operation on relatively thin or thick regions and complex geometries using features such as swept mesh, mapped mesh and boundary layer mesh. 7. Appropriate CAD tools for geometry modeling (1D/2D/3D) OR compatible to import from standard modeling tools like AutoCAD, Pro-E, Solid Edge, Solid Works, Creo, etc. 	
2	AC/DC Module	<p>This module should be capable of:</p> <ol style="list-style-type: none"> 1. Analyze resistive and conductive devices efficiently by modeling DC, transient, or AC currents. 2. Calculating quantities such as resistance, conductance, electric field, current density, and power dissipation. 3. Running stationary, frequency-domain, and time-domain analyses, as well as small-signal analysis. 4. Analyze resistive and conductive devices efficiently by modeling DC, transient, or AC currents. 5. Calculating quantities such as resistance, conductance, electric field, current density, and power dissipation. 6. Analyzing capacitive devices and electrical insulators using electrostatics computations. 7. Solve for the electric potential using either finite element method (FEM) or boundary element method (BEM) or combined hybrid finite element-boundary element method. 8. Computation of capacitance matrices, electric field, charge density, and electrostatic energy etc. 	

		<p>9. Computation of magnetostatics fields, parasitic inductances, and forces on coils, conductors, and magnets.</p> <p>10. Providing an extensive material database that includes a wide range of nonlinear magnetic materials, or modeling user defined nonlinear materials.</p> <p>11. Magnetostatics analysis in the absence of currents, using both FEM and BEM or a combination of a hybrid finite element-boundary element method.</p> <p>12. Electromagnetic analysis using vector-field formulation allowing the defining of electric potential and input currents, in presence of both current flow and magnetic materials.</p> <p>13. Frequency-domain, small-signal analysis, and time-domain modeling supported in 2D and 3D simulation.</p> <p>14. Model lumped systems to analyze currents and voltages in circuits including voltage and current sources, resistors, capacitors, inductors, and semiconductor devices.</p> <p>15. Connect electrical circuit models to distributed field models in 2D and 3D.</p>	
3	Acoustics Module	<p>This module should be capable of:</p> <ol style="list-style-type: none"> 1. Modelling acoustics effects, such as the scattering, diffraction, emission, radiation, and transmission of sound. 2. FEM, BEM as well as hybrid FEM-BEM modelling. In the time domain, time implicit (FEM) as well as time explicit (dG-FEM) formulations. 3. Modelling pipe acoustics, computing the acoustic pressure and velocity in flexible pipe systems, examples include HVAC systems, large piping systems 4. Modelling Acoustic-structure interaction, Fully two-way coupling. For miniature transducer systems, like mobile devices, condenser microphones, damping due to the Thermoviscous boundary layer losses to be included. Extensive functionality for modeling piezoelectric transducers of all kinds. 5. Thermo-viscous Acoustics: Accurate micro acoustic analysis of acoustic propagation in geometries with small dimensions; losses associated with viscosity and thermal conduction; particularly, the losses in the viscous and thermal boundary layers. 6. Modelling Elastic Waves and Ultrasound in Solids. Model the propagation of elastic waves in solids and porous materials, for single-physics or Multiphysics applications. 7. Elastic wave propagation over large domains containing many wavelengths using a higher-order dG-FEM timeexplicit method, and Multiphysics enabled for couplings with fluids as well as piezoelectric materials. Account for the effects of shear waves as well as pressure waves. 8. In built Multiphysics Coupling essential for modelling underwater acoustics, modelling transducer, modelling hydrophone, target stealth, 	

		<p>UAV modelling, Torpedo modelling and sea bed mapping simulation using ray tracing approach. Modelling of acoustics absorption material.</p> <p>9. Modelling Ultrasound in Fluids (transient linear acoustics in a simulation that contains many wavelengths in a stationary background flow) and Modelling Aeroacoustics.</p>	
4	CAD Import module	<p>This module should be capable of:</p> <ol style="list-style-type: none"> 1. CAD Import Module Supports Both Import and Export of CAD Files. 2. The CAD Import Module supports the import of a variety of different file formats including the Parasolid and ACIS formats, and standard formats like STEP and IGES. 3. These file formats are supported by basically all CAD packages, and you can readily import your files into COMSOL Multiphysics by saving in any of these formats. On top of that, the CAD Import Module allows you to import the native file formats of a number of CAD systems, such as Inventor, PTC Creo Parametric, and SOLIDWORKS. 4. The optional File Import for CATIA V5 provides support for importing the native file format for this system. 5. When you have installed the CAD Import Module, all CAD files are automatically converted to a Parasolid geometry, using the Parasolid geometry engine that is included with the module. These geometries can subsequently be changed by a number of tools within COMSOL Multiphysics and the CAD Import Module. This can include geometry repair or defeaturing or a conscious change to the geometry. An example of this is creating a model domain around a CAD design. 6. The CAD Import Module should be able to export in the Parasolid or ACIS file formats for import into other tools. STEP and IGES format export from geometry is also possible. 7. Encapsulate geometries to model phenomena in the surrounding domains 8. Export geometry files to the Parasolid and ACIS file formats 9. Geometry repair through identification of geometric inconsistencies and knitting surfaces to create solids 10. De-featuring through the finding and deletion of fillets, short edges, sliver faces, small faces, spikes, and faces 11. Manually deleting faces and healing the resulting gaps through filling (creating a new face) or patching (shrinking or expanding adjacent faces) 12. Detaching faces from a solid object to create a new solid object 13. Cap holes or empty spaces to fill the space and create modelling domains 14. Patch removed faces by growing or shrinking the surrounding surfaces to cover the removed face 15. Encapsulate geometries to model phenomena in 	

		the surrounding domains 16. Export geometry files to the Parasolid and ACIS file formats	
5	Composite module	This module should be capable of: 1. Should be capable of modeling and analyzing layered composite structures. Like layered composite materials are fiber-reinforced plastic, laminated plates, and sandwich panels. 2. Layerwise approach, Equivalent single layer approach, Micromechanical analysis, Linear buckling analysis, Delamination model, features to define and visualize laminates, Layered Material Feature, Layer Preview Plots, Layered Material Connection, Layered Material Dataset, Layered Material Slice Plot and Through Thickness Plot.	
6	Material Library Module	This module should be capable of: 1. Having the material properties data which can be used in any other physics simulation couplings that also depend on the property function variable in your Multiphysics modeling. 2. Should have Fe & Ni Alloys, Al & Cu Alloys, Mg & Ti Alloys, Oxides, Carbides, Cermets, & Tool Steels, Carbons & Thermal Insulation, Intermetallics, tbc & Refractory Metals, Polyamides & Polyesters, Acetal, pvdf, & eva, Elastomers & Epoxies, Misc. Polymers & Polymer Composites, Minerals, Rock, Soil & Woods, Polypropylenes & pet, Controlled Expansion & Thermocouple Alloys, Semi-conductors, Optical, & Other Materials, Solders, Dental & Co Alloys, Resistance & Magnetic Alloys, Metal Matrix & Ceramic Matrix Composites, Salts, Fuel Cell, Battery & Electroceramics, Silicides & Borides, Glasses, Metallic Glasses, Nitrides, & Beryllides and Cast Irons & Mold Materials	
7	MEMS Module	This module should be capable of: 1. Design and modeling of microelectromechanical systems including the design of resonators, gyroscopes, accelerometers, and actuators. 2. Modelling of thin-film gas damping, anisotropic loss-factors for solid and piezo materials, anchor damping, and thermoelastic damping. For elastic vibrations and waves, perfectly matched layers (PMLs) provide state-of-the-art absorption of outgoing elastic energy. 3. Simulation of Piezoelectric and piezoresistive modeling including composite piezo-elastic-dielectric materials. 4. Modelling Buckling, Elastic waves, Electrohydrodynamic, Electrostatics, Electrostatic actuation, Fluid-structure interaction (FSI), Joule heating, Large deformations, Gravity force, Modal analysis, Mechanical contact, Perfectly matched layers (PMLs), Piezoelectricity, Piezo resistivity, Prestressed structures, Solid mechanics, Rotating Frames with centrifugal, Coriolis, and Euler forces, Thermal stress, Thermoelectricity, Thin-film damping, Sensors, SPICE circuits, Vibrations, Viscoelasticity and Spin softening effect 5. Modelling	

		Accelerometers, Actuators, Bulk Acoustic Wave (BAW) devices, Cantilever beams, Capacitors, Gyroscopes, Magnetostrictive devices, Resonators, Piezoelectric devices, Piezoresistive devices, RF MEMS Sensors, Surface Acoustic Wave (SAW) devices and Thermal actuators	
8	Structural Mechanics module	<p>This module should be capable of:</p> <ol style="list-style-type: none"> 1. Modeling strain levels, deformations, stiffness. 2. Modeling of static and dynamic contact with additional functionalities to account for friction, adhesion/cohesion, wear etc. 3. Analyzing material models that depend on stress, strain, spatial coordinates, time, or fields coming from another physics including deformed geometry to study effects of shape changes in geometry. 4. Simulating thermally generated strain and stress in thin structures like thin films and membranes. 5. Analyzing shell elements for thin and thick structures, thin films & membrane elements formulations including wrinkling. 6. Evaluating thermal stresses and strains for shell elements. 7. Providing a bidirectional coupling between the structural and thermal effects for modeling thermal control devices. 8. Performing Stationary study, Transient study, Eigenfrequency, Frequency response analysis, and Random vibration study. 9. Performing 2D and 3D device simulation. 	
9	Design and simulation capability	<p>The software should be capable of:</p> <ol style="list-style-type: none"> 1. Simulate the multi-physical phenomena like thermal, electrical, structural, AC/DC, Acoustics, Electromagnetic, etc. on single software platform with appropriate physics interfaces and modules for coupled and uncoupled physical analysis. 2. Fully integrated software with comprehensive visualization package and extensive database of examples. 3. COMSOL Multiphysics simulation software should be capable of simulating all kinds of underwater acoustics simulation 4. The software license should be Named Single user License (NSL)-One Year term license. 5. The installation of software under a named user should be done in four computers with individual Host IDs. 	

We agree to all terms and conditions as per tender document.

Date:

Signature of supplier

Place:

Stamp

+MANDATORY DOCUMENTS:

1. GST Registration Certification
2. PAN details
3. Cancelled cheque Leaf / Bank details
4. Copy of NIT documents affixing company seal and signed in all the pages.
5. Duly filled commercial compliance sheet and Technical Compliance sheets
6. Any other documents sought in the NIT
7. Valid Authorisation Letter from OEM
8. MSME Certificate, if any
9. Self Certification under Preference to "MAKE IN INDIA" Policy (format attached)

We agree to all applicable terms and conditions listed in the tender document

Company's Signature with Seal