MAZAGON DOCK SHIPBUILDERS LIMITED

(Formerly known as Mazagon Dock Ltd.)
CIN: U35100M
H1934GOI002079
(A Government of India Undertaking)
Dockyard Road, Mazgaon, Mumbai 400010. India.
Certified – ISO 9001:2008 for Shipbuilding Division
Website: www.mazagondock.in

EXPRESSION OF INTEREST (EOI)

Department	**: Planning Additional Project – East Yard**
E-mail ID	**: abpatil@mazdock,com, rdubey@mazdock.com**
Phone no.	**: 022 – 23763596 / 3718**
Fax	**: 022 - 23724932**
EOI no.	**: EY/PLG/AP/GEN/313-H/2022/EOI/04**
EOI date	**: 27 Jun 2022**
EOI closing date & time	**: 01 July 2022, 15:00hrs**

EXPRESSION OF INTEREST (EoI) For GENERIC SUBMARINE COMBAT SYSTEM SIMULATOR (GSCSS) JOINTLY WITH MDL AT MDL PREMISES

एक्स्प्रेशन ऑफ इन्टरेस्ट (ईओ ई) फॉर जनेरिक सबमरीन कॉमबैट सिस्टम सिम्लैटर (जीएससीएसएस) जोइण्टली विथ एमडीएल एट एमडीएल प्रीमइसेस

LETTER OF INVITATION

Mazagon Dock Shipbuilders Limited (MDL) seeks response from Indian Firms meeting the requirements of this EoI for GENERIC SUBMARINE COMBAT SYSTEM SIMULATOR (GSCSS) jointly with MDL at MDL premises (refer Annexure-3 for technical specification of GENERIC SUBMARINE COMBAT SYSTEM SIMULATOR (GSCSS). Initially MoU shall be signed with suitable shortlisted firms based on this EoI & thereafter definitive agreement may be entered into by prospective parties & MDL on project to project basis.

The detailed terms and conditions for work share, investment plan and commercial terms of definitive agreement on project to project basis shall be mutually agreed upon.

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SECTION-1

DISCLAIMER

1. MDL, its employees and advisors make no representation or warranty and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of the EoI document.

2. MDL may, in its absolute discretion, but without being under any obligation to do so, modify, amend or supplement the information in this EoI document.

3. The issue of this EoI does not imply that MDL is bound to select and shortlist any or all the participating firm. Even after selection of suitable participating firm, MDL is not bound to proceed ahead with the participating firm and in no case be responsible or liable for any commercial and consequential liabilities in any manner whatsoever.

4. The participating firm shall bear all costs associated with the preparation, technical discussion/presentation and submission of EoI. MDL shall in no case be responsible or liable for these costs regardless of the conduct or outcome of the EoI process.

5. Canvassing in any form by the participating firm or by any other agency on their behalf shall lead to disqualification of their EoI.

SECTION-2

SCHEDULE OF EoI PROCESS & CONTACT DETAILS

6. **SCHEDULE OF EoI PROCESS**

The schedule of activities during the EoI Process shall be as follows -

Sl. No.	Description	Date
1	Issue of EoI document	27 Jun 2022
2	Last date of Submission of EoI response	01 July 2022; 15:00 Hrs

7. **CONTACT DETAILS**:

Submission of proposal:

Proposal **(Original + one soft copy)** super-scribing the enquiry number, enquiry subject, last date for receipt of EOI and shall be addressed to

Girish Jadav
HoS/DGM (Additional Projects, PLG-EY),
4th Floor, Reclamation Building
Additional Projects, PLG-East Yard,
Mazagon Dock Shipbuilders Limited,
Dockyard road, Mumbai 400010
Tel: 022-23763596
E-Mail: **gjadav@mazdock.com/ abpatil@mazdock.com**

SECTION – 3

DETAILS OF EXPRESSION OF INTEREST (EoI)

8. **ABOUT MDL**

Mazagon Dock Shipbuilders Limited (MDL) is a leading submarine and shipbuilding company in the country with a Miniratna Category-1. The company was taken over by the Government of India and established as a Public Sector Undertaking under the Ministry of Defence in 1960. Over the last six decades, MDL has delivered over 250 warships/submarines/ platforms to various customers in India and abroad. Out of these 30 major warships/submarines have been delivered to the Indian Navy. The diversified platforms delivered to various customers range from Destroyers, Stealth Frigates, Submarines, Missile Boats, Corvettes, Offshore Patrol Vessels, Multipurpose Support Vessels, Offshore Supply Vessels, Dredgers, Tugs and Cargo-Cum-Passenger Vessels.

9. **SCOPE OF ASSOCIATION:**

a) MDL is seeking response from Indian companies, duly registered, (under Indian Companies Act-2013), having experience in Design & manufacturing of simulators development of COMBAT SYSTEM SIMULATOR.

b) The participating firm must be ready for manufacture COMBAT SYSTEM SIMULATOR jointly with MDL at MDL premises.

c) The participating firm must possess basic necessary knowledge of the field of collaboration.

d) The technology if any possessed by participating firm must be non-infringing while delivering the desired performance and it must be clear from third-party IP infringement claims.

e) The participating firm must show willingness on its letter head to achieve more than 50% local content in above mentioned projects in line with GoI policies amended from time to time.

f) Interested companies meeting the Pre-Qualification Requirements (PQR) as given in Section-4 and ready to associate with MDL as per broad scope/ expectations given above are invited to submit their offer in response to this EoI.

g) Upon receipt of responses against this EoI, MDL will review the responses to ascertain suitability of the offer and shortlist participating firm based on prequalification (technical, commercial and financial) documents submitted by firm & this will be binding on bidders. The shortlisted firm will be required to sign a Non-Disclosure Agreement (NDA) regarding the confidentially of Techno Commercial Aspects. If more than one valid responses are there, then Subsequently, tender will be issued only to these shortlisted firms through Limited Tender Enquiry (LTE). Shortlisting of firms will be done as per qualification criteria & other aspects of this EoI.

10. INSTRUCTIONS

a) Language: All correspondences and documents related to the EoI response shall be in English language only.

b) The participating firm shall abide by the terms & conditions, as applicable, of the EoI.

c) All pages of the EoI shall be duly signed by the authorised signatory.

d) Multiple proposals from the same participating firm should not be submitted.

e) MDL at their discretion shall inspect the participating firm works/office/reference site premises for the purpose of evaluation, as deemed necessary before selection of partner. MDL decision in this regard shall be final.

f) Any participating firm which has been debarred/blacklisted or given tender holiday by Central/State Governments or by any entity controlled by Central/State Governments from participating in any of their project, as on date of submission of EoI, shall not be eligible to submit the EoI.

11. PROCESS TO BE CONFIDENTIAL:

Information relating to the examination, clarification, evaluation and comparison of EoI and recommendations shall not be disclosed to participating firm. Any effort by participating firm to influence MDL processing of EoI or selection decisions may result in the rejection of the EoI.

12. MISCELLANEOUS:

Right to accept or reject any or all Applications:

a) Notwithstanding anything contained in this EoI, MDL reserves the right to accept or reject any application and to annul the EoI process and reject all applications, at any time without any liability or any obligation for such acceptance, rejection or annulment and without assigning any reasons, thereof. In the event that MDL rejects or annuls all the applications, it may at its discretion, invite all eligible participating firms to submit fresh applications.

b) MDL reserves the right to disqualify any applicant during or after completion of EoI process, if it is found there was a material misrepresentation by any such applicant or the applicant fails to provide within the specified time, supplemental information sought by MDL.

c) MDL reserves the right to verify all statements, information and documents submitted by the applicant in response to the EoI. Any such verification or lack of such verification by MDL shall not relieve the applicant of his obligations or liabilities hereunder nor will it affect any rights of MDL.

13. GOVERNING LAWS & JURISDICTION:

The EoI process shall be governed by, and construed in accordance with, the laws of India and the Courts at Mumbai (India) shall have exclusive jurisdiction over all disputes arising under, pursuant to and / or in connection with the EoI process.

<u>**SECTION– 4**</u>

PRE-QUALIFICATION CRITERIA

The determination of eligibility will take into account the technical and experience capabilities and past performance of the participating firm along with financial status; it will be based upon an examination of documentary evidence of the participating firm qualifications submitted by the participating firm as well as such other information, as the MDL deems necessary and appropriate. The participating firm willing to associate with MDL should meet the following Pre-Qualification Criteria:

14. **Technical Qualification: -**

    The bidder shall submit the following as a part of technical qualification.

    a) Bidders Company Profile.
    b) List of infrastructure/equipment held by them along with details of their manufacturing facilities.
    c) Details of personnel (Project Management Team) with designation, qualification and experience to determine their capabilities.
    d) Vendor shall be a manufacturing entity or a system integrator of Defence equipment and not a trading company.
    e) Minimum **two (02) years of** experience in **manufacturing and simulator development of similar complexity.** If not, then cumulative experience of at **least three years in above areas,** resulting in gaining of competence for manufacturing the proposed product.
    f) Firm should be able to demonstrate the representation of Submarine Combat System Simulator at a notice of two weeks.
    g) Bidder shall not be under a declaration of ineligibility issued by Govt. of India / State govt. / Public Sector Undertakings etc.
    h) ISO 9001:2015 or higher equivalent certificate

15. **Commercial Qualification: -** The bidder shall submit the following as a part of commercial qualification.

    a) Certificate of Incorporation.
    b) Registration certificate from local bodies for conducting business.

16. **Financial Qualification: -**

    a) The Bidder shall have minimum annual average turnover of 1 Cr during the last three years ending as on 31 Mar 2022.

    b) The Bidder shall enclose Balance sheets and Profit and loss statement issued by Chartered Accountant with their seal and signature, stating the firms net worth & turnover during the past three years as per Annexure-2.

Note: - i. MDL on its selection reserves right to waive of any of the requirement of eligibility criteria at section 4 for MSME/Start-up on each case to case basis.
    ii. MDL team may visit the company premises for capability assessment.

SECTION– 5

17. **Bid Rejection Criteria: -** MDL may at its sole discretion and at any time during the evaluation of proposal, disqualify any bidder, if they have:

   a) Bids received after due date.
   b) Bidder's failure to furnish sufficient or complete details for evaluation of the bids within the given period.
   c) Incomplete / misleading / false / ambiguous in the proof of eligibility requirements.
   d) Failed to produce timely clarifications related thereto, when sought.
   e) Bids not meeting qualification criteria mentioned above at Section-4.
   f) Submitted more than one proposal for single specialisation area.
   g) Declared ineligible by the Government of India / State govt. / Public sector undertaking.
   h) Bids with technical requirements and / or terms not acceptable to MDL.
   i) Information relating to the evaluation, clarification and recommendation for pre-qualification shall not be disclosed to bidders or any other persons not officially concerned with such process until the pre-qualification process is completed. Any effort by the bidder to influence MDL prequalification process may result in rejection of his EOI.

SECTION– 6

Documents to be submitted along with EoI*

18. **Submission of EoI:** - List of documents to be submitted as part of EoI

Participating firm should submit following documents along with their Proposal.

Sl.	Document Description	Filled in Formats to be Submitted with Proposal	Remarks
1	Covering Letter		As per format attached
2	General information	Annexure-1	
3	Financial Information	Annexure-2	
4	Documents in support of Pre-Qualification Criteria at Section-4.		

<u>EoI FORMS</u>
Format for Covering Letter
[On the Letterhead of the Participating firm]

To,

Mr. Girish Jadav,
HoS/DGM (Additional Projects, PLG-EY)
Mazagon Dock Shipbuilders Limited (MDL),
Mumbai-400010, India.
Contact No- 022-23763591 / 3596
E-Mail: **gjadav@mazdock.com / rdubey@mazdock.com**
Ref: Submission of Expression of Interest (EoI)

Sir,
Being duly authorized to represent and act on behalf of _____
(Hereinafter Referred to as "the Applicant"), and having reviewed and fully understood the evaluation criteria and information provided, the undersigned hereby applies in response to the EoI document.

We would like to associate with MDL for joint development of '**GENERIC SUBMARINE COMBAT SYSTEM SIMULATOR (GSCSS)'** with Indian Navy.

We understand that MDL is not bound to accept the EoI.

We further show our willingness to work towards achieving more than 50% local content in projects mentioned in subject matter of EoI as per extant GoI guidelines amended from time to time.

I am enclosing the Expression of Interest with the details as per the requirements of the EoI document, for your evaluation.

I hereby declare that the details furnished in this EoI proposal are true and correct to the best of my knowledge and belief. In case any of the information is found to be false or untrue or misleading or misrepresenting, I am aware that I will be held liable for it and MDL is free to take any legal / commercial action not limited to barring / blacklisting.

We hereby declare that we are not under a declaration of ineligibility / blacklisting /debarring/ tender holiday from doing business issued by Govt. of India / State govt. / Public Sector Undertakings etc.

Yours faithfully,

_____

(Signature & Seal of Authorised Signatory)

Name:
Designation:
Date:
Address:

General Information to be submitted by applicant along with cover letter

1. Name of the Company/ Companies (if consortium):

2. Legal status of the Company (ies):

3. Brief description of the Company(ies) including details of its business groups / subsidiaries / affiliates:

4. Date of Incorporation:

5. Date of Commencement of Business:

6. Full address including Telephone nos. / Fax nos.:

   Registered Office:

   Head Office:

   Address for communication:

   Contact Details:

   Office Address in India, if any:

7. Documents to be enclosed:

   As per pre-qualification criteria

Signature & Seal
Authorised Signatory of the Party

Annexure-2

Financial Information

Date: [insert day, month, year]

Legal Name: *[insert full name]*

1. Financial Data: -

Sl. No.	Last three Financial Year	Annual Turnover	Annual Net Profit	Net worth as at the end of the financial year
1				
2				
3				

2. Financial documents

   The participating firm shall provide copies of the financial statements including balance
   sheets, P&L and related income statements for latest 3 *years.*
   The financial statements shall:
   - ➢ Reflect the financial situation of the participating firm submitting EoI.
   - ➢ Be audited by a certified accountant.
   - ➢ Be complete, including all notes to the financial statements.
   - ➢ Correspond to accounting periods already completed and audited
     (no statements for partial periods shall be accepted).

(Signature & Seal)
Authorized Signatory of the Party

Name of the Authorized Signatory representing Auditing firm:

Designation:

Name of firm (Chartered Accountant):

Signature of the Authorized Signatory:

Seal of Audit firm.

Annexure-3

The requirements for Generic Submarine Combat System Simulator (GSCSS) are tabulated below. You are requested to bring out *in detail,* all the features that you are able to offer (with numerical values where applicable) for the Generic Submarine Combat System Simulator (GSCSS). Additional information / features available other than those tabulated here may also be given: -

Ser.	Particulars	Bidder Reply / Compliance
(a)	Capability to set up one state-of-the-art Generic Submarine Combat System Simulator (GSCSS) catering for training of *IN* personnel (trainees and Crew) in a realistic, simulated environment for effective operation of Submarine Combat Management System	
(b)	Design and Develop GSCSS with the following features:- (i) The core processes of the GSCSS in such a way that they can be easily configured to function for the selected type of combat management system. (ii) The GSCSS software should be configured so as to provide selection of the required Combat Management System (CMS) by click of a button. The software should configure itself and the GUI for the display panels. (iii) The software should include target and weapon simulator; and the combat management system processes like Sensor Management, Track Motion Analysis etc. going up to firing and controlling wire guided torpedo. (iv) The Simulator should enable training of the complete Command team, limited crew or for an individual. (v) The GSCSS should replicate the control desk for each type of CMS as a detachable / attachable panel. By physically attaching the concerned panel to the DMFC and connecting through rugged electronic connector. (vi) The GSCSS should include courseware and a trainee evaluation package. The pre- installed courseware should provide lessons of incremental complexity (ranging from basic familiarisation, normal functioning, combat and emergency procedures). (vii) The Simulator shall be designed with sufficient redundancy for main processors and important functions. An Ethernet network with sufficient redundancy is to be provided for the Instructor Console(s) to communicate with the Training Consoles.	

Ser.	Particulars	Bidder Reply / Compliance
	(viii) The instructor should be able to view and communicate with trainees during the simulated training.	
	(ix) The GSCSS shall have an 'Instructor Station' for online monitoring, recording and control of a training session by the Instructor(s). The Instructor(s) shall be enabled to create a training scenario, start and stop the training session, freeze, record, replay and reset the simulation and the connected trainee-consoles to a selected initial condition as well as to inject faults and situations during the course of ongoing training exercise. The Instructor Station shall provide for online assessment of the performance of the trainees on the Simulator	
	(x) The Instructor Station should be designed to enable preparation, control and recording of the training sessions and is to be equipped with requisite IT hardware. The recording of training sessions should take place on standard COTS digital storage devices. A minimum recording capacity of a single training session should be 72 hours	
	(xi) The GSCSS should also include the following sub-systems:-	
	(aa) Auto plotter	
	(ab) Periscope Emulator	
	(ac) Steering Control Emulator	
	(ad) Mast Status Panel	
(c)	**Application Software**. The software should enable the following:-	
	(a) Open-architecture.	
	(b) Simulation of all operational capabilities of selected CMS of the submarine and associated equipment.	
	(c) Simulation of realistic environment, own ship (submarine) behaviour, target (air, surface and sub-surface) behaviour and weapon/projectile (torpedo, missile) behaviour.	
	(d) Editing, Modification, Generation of Training Scenario.	
	(e) Recording, replay and Briefing/ Debriefing features.	
	(f) On-line and Off-line processing of training sessions.	

Ser.	Particulars	Bidder Reply / Compliance
	(g) Generation of Training Session reports.	
	(h) Online and Offline BITE.	
	(i) Identify defects/ failures in the GSCSS.	
(d)	**System Simulation**. It shall simulate the functionalities, MMI and performance in terms of response time as the CMS currently fitted onboard the *IN* conventional submarines. The Simulator shall include an environment and target behaviour data generator allowing preparation and running of realistic tactical situation. The platform behaviour including manoeuvrability and dynamics shall be faithfully simulated providing feedback of own ship parameters. **However, the platform motion is not needed to be simulated**. (i) The Simulator should provide inputs to and accept simulated outputs from interfaced systems and sub-systems of submarines viz. Weapon Control System, Weapon Handling and Launching System, Sonar Detection System, Air and Surface Detection System, Navigation System, Communication System, Hoisting System, Torpedo Counter Measure, Own platform and Target Situations. (ii) The Simulator shall include functionalities of the Sonar suite, Navigation complex, Radar, ESM suite, including Target Motion Analysis and manoeuvring.	
(e)	(i) The GSCSS Simulator should be able to simulate CMS functions on *IN* conventional submarines in both normal and emergency conditions corresponding to the following:- (ii) Operational capabilities similar to the original operational capabilities of the CMS onboard conventional *IN* submarines (including MMI). (iii) **Simulation of Environment, Platform Motion and Targets Motion**. The Simulator should have an advanced environment and target behaviour data generator allowing preparation and running of realistic tactical situations. The platform behavior including manoeuvrability and dynamics shall be faithfully simulated. The simulation shall take into account the real status of the submarine (diving depth, speed, course, position, propulsion, battery capacity, motion limitation etc.). (iv) Generic, programmable self-noise levels and tonals of various typical ship machinery should be simulated with corresponding effect on sonar performance. Environmental parameters such as visibility (day/night), sea state and hydrology should be programmable.	

Ser.	Particulars	Bidder Reply / Compliance

(f)	**Simulation of Entities / Targets**.
	
	(i) The Simulator will be required to simulate air, surface and sub-surface entities / targets including their sensors and weapons. Sample generic capabilities of the targets and their sensors and weapons must be provided. The Instructor must have data fields to feed in target data in respect of a minimum of 300 entities / targets of various types. Programming of entity / target parameters (motion and weapons) must be possible by the Instructor.
	
	(ii) Respondents are to indicate in detail the parameters in respect of aircraft, helicopters, ships and submarines that their product will cater, for e.g., altitude, depth, speed, weapons types and parameters, sensor parameters, search patterns etc. In addition, provision for simulating the radiated target characteristics relevant for sonar processing (radiated noise levels, tonals etc) is to be provided. The echo characteristics for simulating active sonar modes are also to be simulated.
	
	(iii) The instructor console should be capable to provide the following data:-
	
	   (aa) Target Class
	
	   (ab) Target manoeuvre plan
	
	   (ac) Target machinery
	
	   (ad) Target sensors
	
	   (ae) Target weapons
	
	(iv) **Simulation of Situation Scenario**. One unique scenario, shared by all consoles involved in the training session, must be enabled by the Simulator. Instructors should be able to select, generate, run and modify any scenario.
	
	(v) Global coherence of the simulated data (for example a given surface target will be detected by the sonar, seen from the periscope and detected by the radar depending on local tactical situation in a realistic, coherent manner). The visual display through periscope should provide realistic aspects, ranges etc. at different visibility conditions.	

Ser.	Particulars	Bidder Reply / Compliance
	(vi) **Simulation of Weapons Control System**. Capability for preparing, pre-setting and launching of torpedoes and missiles, as would be done from an operational CMS of *IN* conventional submarine, is to be simulated. However, physical replica of torpedo room equipment is not envisaged. (vii) **Simulation of Weapon Handling and Launching System**. This includes the software simulation for behaviour of weapon launching tubes as well as handling system. MMI indications from the weapons compartment that would normally appear on the MFCCs on execution / completion of commands/tasks pertaining to preparation and firing of weapon must be realistically simulated. However, provision of physical replica of the Weapon Handling and Launching systems is not envisaged. (viii) **Simulation of Sonar Detection System**. The simulator will consider all these aspects and allow the user to specify the following:- (aa) Detection levels at various relative bearings. (ab) Blind Zone. (ac) The instructor will specify the detection levels at the relative bearings keeping in mind the condition of Sonar, planned speeds, environment etc. The Blind Zone could be treated as more-or- less-fixed, but the instructor has the option to change it. The instructor will be facilitated to input the data in terms of the expected ranges in different directions. Alternatively, the instructor could specify the detection thresholds against relative bearings. The simulation software will compute the expected detection ranges along the relative bearing for the target in question. (ix) **Simulation of Air & Surface Detection System**. The Simulator shall provide capability to operate Attack Periscope/ Search/ Optronic Mast, Navigation Radar and ESM by a behavioural simulator at MMI level. (x) **Simulation of Navigation System**. Scenario to be simulated will require platform as well as target motion. Navigation behaviour is to be simulated through software and associated data broadcasted to each sub- system. The instructor should be able to modify navigational data at any time. (xi) **Simulation of Communication System**. Communication system is not required to be fully simulated. Limited capability for external communication through dedicated interphones simulating Tx/Rx is to be provided for connection to Instructor desk.	

Ser.	Particulars	Bidder Reply / Compliance
	(xii) **Periscope Emulator**. The mockup periscope will allow the operator to get view of the scenario through periscope. The periscope view will show the targets in the field of view with respect to the target aspect, sea state, time of day, etc. The periscope emulator will provide following features:- (aa) Generic periscope with raise / lower control emulation. (ab) View to provide target picture corresponding to the target class through the view-finder. (ac) Processor card, HDD and Ethernet connectivity. The Simulator must enable environment simulation ding simulation of Sea States from Sea State 1 to 6 and uctor-programmable hydrological conditions and resulting lated effects on target detection and appearance.	
(g)	**Control Panels**. The Control Panels will be dedicated to selected type of CMS with the following major attributes:- (i) The control panels should be attachable (ii) /detachable control panels specific to the type of CMS. (iii) Physically match the control desk of the selected CMS. (iv) Control switches, panels, tracker ball corresponding to the control desk of the selected CMS. (v) Interface card / processor card with standard USB output for electrical connection to the CMS.	
(h)	**Steering Control/Console Emulator**. The Steering Control / Console emulator will provide following features:- (i) Generic steering control/control with plane and rudder control handles, control panels and display panel. (ii) Processor / interface card with Ethernet connectivity. (iii) The Simulator must include simulation of all safety procedures and drills conducted from the selected operational CMS.	

<u>Ser.</u>	<u>Particulars</u>	<u>Bidder Reply</u> / <u>Compliance</u>
(i)	**<u>Training Capacity</u>**. The Simulator shall be managed by not more than two Instructors. The Instructor's Control Console(s) should be mounted in the Instructor Room and be provided with means for the following:- (i) Managing training sessions with pre- defined and stored training scenarios. (ii) Editing/ modifying training scenarios prior to and during training session. (iii) Insert or delete failures, accidental events or modify environmental parameters prior to or during training session. (iv) Create and load a snapshot of a selected console screen. (v) Recording/ storing of new training scenarios. (vi) Execute training scenarios. (vii) See the screens and consoles to observe trainees actions and operate local commands on simulated installations. (viii) View a current training session and stop the training session for safety or pedagogical reasons. (ix) Watch and hear the current training session by video/ audio means (with an option to mute) for evaluation and safety purpose. (x) Communicate with the trainees by audio means. (xi) Recording, re-play (with the option to skip to a selected time of the training session), evaluation of the training sessions and manage recorded training sessions.	

Ser.	Particulars	Bidder Reply / Compliance
(j)	A Briefing / Debriefing Facility for the instructor and trainees for briefing / debriefing before / after the training session, with seating capacity of twenty (20) personnel, visualisation of a training session and replay on latest projection system/Smart Board. Networked PC stations to control the briefing / debriefing along with accessories.	
(k)	**Data Base Management**. The Data Base Management should cater for the following requirements:- (i) The database should contain all parameters and data relevant to reliable operation of GSCSS and faithful conduct of crew training. (ii) Data base should be capable of being backed up on storage media in encrypted form. (iii) There should be a facility to store training scenarios and training sessions for replay at a later date.	
(l)	**Test and Workshop Equipment**. Respondents are to indicate the following:- (i) Equipment that would be needed for undertaking pre-operation checks and routine preventive maintenance. (ii) Specific to Type Test Equipment (STTE) that would be needed to undertake repairs of the system. (iii) Equipment required for carrying out detailed analysis of defects.	
(m)	(i) **Test and Software Loading Terminal**. A suitable PC or Laptop based Test and Software loading Maintenance Terminal is to be provided to facilitate checks of the system and reloading of system software. Back up copy of software is to be provided with the software loading terminal. (ii) <u>Cyber Security</u>. Vendors are to indicate protocols/ security features being followed by them to maintain cyber security of the simulator system. (iii) Willingness for implementation of provisions w.r.t cyber security / malicious code as per DAP-20.	

Ser.	Particulars	Bidder Reply / Compliance
(n)	Technical Facility to accommodate all electronic and electrical devices located outside training and trainer/ instructor stations (COTS computers, storage disks, audio and video distribution matrix etc.), documentation, onsite spares, onsite tools, jigs and test benches, main and emergency power supply distribution boards etc. The facility should have a Maintainer's post, suitable IT work stations and furniture for maintainers.	
(o)	**Software Development and Documentation**. Respondents are to indicate their acceptance for undertaking Software Verification and Validation/ Software Quality Assurance (SQA) at the appropriate time / stage of procurement.	
(p)	**Design Data**. Vendors are to indicate design data viz. cycle fatigue, material composition, MTBF and MTTR etc.	
(q)	**Built-in Test Equipment**. The design of the system shall cater for an integrated Built-In Test (BIT) facility to enable both offline and online monitoring, fault-diagnosis, automatic fault localisation and failure identification such as to identify, locate and indicate to the instructor/ maintainer any fault during operation in all modes. The BIT shall isolate at least 95% of all detected faults to one PCB/ Line Replaceable Unit (LRU) and 100% of all detected faults to two or three PCBs/ LRUs. BIT messages shall be displayed on the Instructor's and Maintainer's screen. This should include facility to test all sub-systems of the GSCSS Simulator.	
(r)	**Interchangeability and Commonality**. Respondents are to mention the level of commonality within the system at the Module/ Sub-module, PCB and Component levels. The Simulator is envisaged to be designed such that the PCBs/ Modules similar in physical construction and functions are interchangeable within the system.	

Ser.	Particulars	Bidder Reply / Compliance
(s)	**Hardware Requirements**. The hardware and technical approach shall comprise the main elements listed herein under: - (i) **Operator Consoles/DMFC**. The system will have three Dual Multi-Function Consoles with following specifications:- (aa) Number of display panels – Two LED panels 21" / 24", high resolution; vertically stacked (ab) Dual processors intel i5 processor or latest (ac) Power supply module with IPS (ad) Provision to attach external control panel and connect through USB (ae) High speed Ethernet connectivity (af) USB Port for connecting external keyboard (ii) **Instructor Station**. The Instructor Station should have following specifications:- (aa) Two side-by-side mounted 21" / 24" high resolution LED display panels. (ab) Keyboard, touch-panel, mouse etc. (ac) Software to support the control of training and simulation. (ad) Ethernet connectivity. (ae) Two processors with terabyte HDD. (iii) **Auto Plotter**. Tactical Plotting Table functionally replicating any one of the plotting table installed on conventional *IN* submarines with W-ECDIS feature, interfaced with the CMS over Ethernet.	

Ser.	Particulars	Bidder Reply / Compliance
	(iv) **Mast Status Panel**. The Mast Status emulator will provide following features:- (aa) Emulator to show the status of masts raised / lowered with indication. (ab) Communication with CMS.	
(t)	(i) Automatic fire detection system to be incorporated. (ii) Suitable Ventilation and Air Conditioning (VAC) facilities for tropical Indian climate.	
(u)	**Power Supply**. Respondents are to indicate the power supply for their proposed solution that would be used for operation (preferably 440V/ 220V, 50Hz, 1Phase/ 3 Phase). Online Uninterrupted Power supply to provide emergency back-up, saving of data and safe shut-down is required. Vendors are to indicate type, hardware, capability, safety and space likely to be occupied by the Power Supply units of the Simulator.	
(v)	**Life**. The Simulator should have a service life of at least twenty (20) years. Accordingly, respondents to this RFI are to propose methodology to provide through-life logistic support for hardware as well as application software.	
(w)	**Exploitation Pattern**. The Simulator is expected to be robust and to support extended operation not less than:- (i) 10 hours per day. (ii) 25 days per month. (iii) 300 days in a year.	
(x)	**Environmental Specifications**. Respondents are to indicate the environmental specification standards that their products shall meet. These standards should be contemporary and internationally accepted.	
(y)	**Endurance (Burn-in) Test**. Respondents are to indicate readiness to undertake Endurance (Burn-in) test on successful completion of Factory Acceptance Trials for mutually agreed duration of not less than Eight hours.	

Ser.	Particulars	Bidder Reply / Compliance
(z)	Respondents are to specify the contemporary, internationally accepted technical standards their product meets with regards to the following:- (a) Documentation. (b) Requirements of Electrical Installations. (c) Environmental Test Specifications. With specific reference to Indian tropical conditions.	
(aa)	Vendors are to indicate the manpower that would be required to operate and maintain the GSCSS. Details of training required for such personnel are also to be indicated.	
(ab)	(i) **Warranty**. Technical support being provided for maintenance and support of the platform during its service life including warranty. (ii) **Comprehensive Annual Maintenance Contract (CAMC)**. Respondents are to indicate scope and terms of CAMC and Support Package for a period of atleast 15 years, including the period of Warranty. (ii) Rate Contract Agreement (RCA)/ Annual Maintenance Contract (AMC). Modalities for RCA for spares/services in addition to AMC post warranty period is also to be indicated.	
(ac)	The delivery schedule for GSCSS is to be indicated	
(ad)	**Approximate Cost Estimate**. The indicative cost (on unit basis) for setting up the the GSCSS **inclusive of taxes** (to be indicated separately) shall be provided by respondents in detail. Respondents are to take into account all aspects of supply of production material, manufacture, installation, integration, training, documentation, Factory Acceptance Trials (FATs), Onsite System Acceptance Test (OSAT) and life cycle support for a period of 20 years.	
(ae)	Vendors also need to indicate their experience in design, manufacture and fitment in Shore- based facilities / Simulator development of similar complexity.	
(af)	Standards, Certifications and Specifications. Details of compliance to various MIL standards and specifications w.r.t operation and safety for various components and sub-components of the simulator	

Ser.	Particulars	Bidder Reply / Compliance
(ag)	(i) **Key Technologies**. Vendors shall mention key technologies and materials required for manufacturing the GSCSS and the extent of their availability or accessibility in case they are not available in India. Vendor shall also indicate utilisation of Indigenous Military material and software, and plan for material sourcing and cost implications vis-à-vis foreign sourcing of materials. (ii) **Indian Vendors**. Capability of Indian Vendors to indigenously design, develop, manufacture, deliver, maintain and provide life- time support for the GSCSS is to be elaborated in detail. Details of collaboration with a Technology Partner is also to be brought out in the response to this RFI. (iii) Vendors are to indicate the Indigenous Content percentage for their product. (iv) Import content (if applicable). (v) **Software Codes and Intellectual Property Rights**. Willingness to supply software source codes for software used in the GSCSS. Any reservations in this regard are to be indicated specifically. Cost of supplying these codes is to be indicated separately. Respondents are to clearly indicate the details of agency holding Intellectual Property Right (IPR) for various hardware and software components of the proposed Simulator along with OEMs for manufacture of major assemblies. (vi) **Manpower and Training**. Vendors are to indicate the manpower that would be required to operate and maintain the GSCSS. Details of training required and tentative training schedule for such personnel are also to be indicated. (vii) **Trials/Acceptance**. Respondents are to propose in detail the acceptance procedure in respect of their product, i.e, through Demonstration, Certification, Simulation or Documentation or combination thereof. (viii) **Obsolescence Management**. Vendors are to indicate the provisions for upgradeability of equipment to avoid system obsolescence. (ix) **Suggestions**. *Suggestions for alternatives (in terms of Simulation technologies, hardware design configuration, materials, standards, life-cycle support etc.) to meet the same objective as mentioned in this RFI may be offered*	

Ser.	Particulars	Bidder Reply / Compliance
(ah)	Dimensions of various facilities of the Simulator are to be given. The details of the floor space requirement and electrical power requirements for creation of the training facility are to be stated. Any special infrastructure requirement to be provisioned into the building is to be brought out in detail.	
(ai)	<u>Transfer of Technology</u> Vendors are to indicate willingness to provide Transfer of Technology along with scope of ToT and transfer of maintenance technology.	
(aj)	Vendors are to indicate restrictions related to export of outsourced components (if any) and how long will it take to get clearance.	
(ak)	No. of pages enclosed in the reply.	

Note: The above mentioned technical specification is not inclusive but a general overview, further details may be shared later.