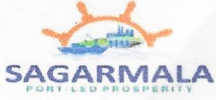


DEENDAYAL PORT AUTHORITY

Certified under ISO 9001:2008, 14001:2004



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Office of the Dy. Conservator

Administrative Office Building

Post Box N. 50

Room No. 211, 2nd Floor _____

Gandhidham - Kutch

Gujarat - 370201

No. MR/WK/1425 / 240

Dated : 09/04/2026.

To,

Expression of Interest

Sub: - "Supply, Installation, Commissioning and Integration of 360 Degree Horizontal Field of view(HFOV) Full Mission Bridge simulator at Deendayal Port, Kandla".

Sir,

Deendayal Port Authority is a major seaport in Kutch District of Gujarat state in western India and is interested in inviting budgetary offers for **"Supply, Installation, Commissioning and Integration of 360 Degree Horizontal Field of view(HFOV) Full Mission Bridge simulator at Deendayal Port, Kandla."**


The Schedule of requirement (Services Required), Applicable Standards and Guidelines, Functions, Characteristics are placed at Annexure -A,

Scope of work includes **Supply, Installation, Commissioning and Integration of 360 Degree Horizontal Field of view(HFOV) Full Mission Bridge simulator at Deendayal Port, Kandla** and in accordance with ISO 9001:2015.

Eligible and Qualified bidders for above work may send their budgetary offers before 20 /04/2026 on email address dyconservator@deendayalport.gov.in, suptacmarine@deendayalport.gov.in or at the following address:

The Dy. Conservator,
Deendayal Port Authority,
Room no. 210, 2nd Floor,
Administrative Office Building,
Gandhidham - 370 201. Kutch - GUJARAT.

Encl: Annexure A.


Deputy Conservator
Deendayal Port Authority

Expression of Interest:
360° HFOV Full Mission Bridge Simulator

Deendayal Port Authority, Kandla (hereinafter referred to as the “Buyer”) invites Expressions of Interest (EOI) from eligible and qualified bidders for the supply, installation, commissioning, and integration of a **360-Degree Horizontal Field of View (HFOV) Full Mission Bridge Simulator**.

1. Scope of Requirement

(a) The **360° HFOV Full Mission Bridge Simulator** is intended to provide advanced training for Marine Pilots in vessel handling, navigational studies, and emergency response. The simulator replicates the bridge environment of a ship, enabling realistic training in:

- Maneuvering in open/restricted waters, pilotage, and blind pilotage conditions
- Ship behavior under various environmental factors such as sea state, currents, wind, tides, shallow water, and narrow channels
- Passage planning, emergency maneuvers, casting off, berthing/unberthing, anchoring, and weighing anchor in crowded harbors and open seas
- Multiple vessel handling operations and complex ship interactions

Key Objectives:

- Enhance trainee understanding of safe and efficient bridge procedures during watch keeping operations
- Reinforce compliance with **International Regulations for Preventing Collisions at Sea (COLREGs)**
- Prepare trainees for safe, efficient, and accident-free ship operations

(b) Applicable Standards

The simulator shall be designed, supplied, and configured to enable training, assessment, and certification in full compliance with:

- National and international maritime standards and regulatory frameworks
- **International Convention on Standards of Training, Certification, and Watch keeping for Seafarers (STCW)**, including all applicable amendments
- **STCW Regulation I/12**, relating to the use of simulators for training and assessment

The system must simulate a realistic operational environment to meet the required STCW competence standards.

STCW Reference	Competence
Table A-II/1.2	Maintain a safe navigational watch.
Table A-II/1.3	Use of radar and ARPA to maintain safety of navigation.
Table A-II/1.4	Use of ECDIS to maintain the safety of navigation.
Table A-II/1.5	Respond to emergencies
Table A-II/1.6	Respond to a distress signal at sea.
Table A-II/1.9	Manoeuvre the ship.
Table A-II/2.6	Maintain safe navigation through the use of information from navigation equipment and systems to assist command decision-making.
Table A-II/2.7	Maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making.
Table A-II/2.10	Manoeuvre and handle a ship in all conditions.
Table A-II/3.2	Maintain a safe navigational watch.
Table A-II/3.3	Respond to emergencies.
Table A-II/3.4	Respond to a distress signal at sea.
Table A-II/4.1	Steer the ship and also comply with helm orders in the English language.
Table A-II/4.2	Keep a proper look-out by sight and hearing.
Table A-II/5.2	Contribute to berthing, anchoring and other mooring operations.
Table A-V/4-1.3	Apply safe working practices, respond to emergencies.
Table A-V/4-2.3	Maintain safety of the ship's crew and passengers and the operational condition of lifesaving, fire-fighting and other safety systems.

1. Certification and Standards

a) The simulator shall be **approved and certified by a member of the International Association of Classification Societies (IACS)** and shall fully comply with the **Standard for Certification of Maritime Simulators No. DNV-ST-0033, June 2021**.

b) The simulator shall be suitable for **all training applications as defined under applicable international standards**, ensuring compliance with global maritime training norms.

2. Functional Requirements

The **360° HFOV Full Mission Bridge Simulator** shall be utilized for training Pilots and officers of **Deendayal Port, Kandla**, in the following operations:

1. Handling ships alongside a berth/pier considering wind and tide effects.
2. Entering and leaving major harbors, including Port Kandla, Gujarat.
3. Conducting pilotage in restricted waters.
4. Transiting through straits and traffic separation schemes.
5. Handling ships in canals, rivers, and narrow channels, including interaction effects.
6. Blind pilotage and collision avoidance.
7. Company and fleet maneuvers.
8. Anchoring using visual and blind plans, including wind and tide effects.

9. Navigation circuit training with environmental considerations.
10. Towing operations, including approaches and establishing contact with towed vessels.
11. Breakdown and emergency drills.
12. Handling ships in rough weather and restricted visibility.
13. Coastal navigation up to 50 NM from the Indian coast.
14. Handling ships with the assistance of tugs.

3. Visibility Conditions

The simulator shall allow training under **all visibility and lighting conditions**, including:

- Day, night, dawn, dusk
- Rain, hail, fog, or other restricted visibility conditions

It must provide **smooth, scalable transitions between day and night** and allow **incremental adjustments of visibility** to simulate realistic environmental conditions.

4. Own Ship Models

The simulator shall include **realistic vessel models** with accurate hydrodynamic and manoeuvring characteristics, capable of simulating:

- Merchant Ships (General Cargo Vessels)
- Container Vessels (various sizes)
- Oil Tankers
- Chemical Tankers
- LNG Carriers
- LPG Carriers
- Passenger Vessels / Ferries
- Pilot Boats and Small Service Craft
- Wide range of traffic vessels operating in various environmental and traffic conditions.

Key Features:

- Realistic interaction effects, bank effects, shallow water effects, wind, current, and ship-to-ship interactions
- Simulator shall include **50 Own Ship models**, developed specifically for Deendayal Port, Kandla
- At least **25 vessel models** must exactly match the port's specifications; variations in parameters will **not be accepted**

<u>Own Ship Models</u>	<u>Engine, Design Power (Kw)</u>	<u>Propeller</u>	<u>Thrusters, bow/stern (Kw)</u>	<u>Speed (knt)</u>	<u>Displacement (t)</u>	<u>Dimensions (L x B x T)</u>	<u>To offer</u>
Bulk Carrier	Diesel, 1 x 8827	1 FPP		14	33089	182.90 x 22.60 x 10.70	
Bulk Carrier	Diesel, 1 x 15500	1 FPP		14.6	274000	320 x 46 x 18.90	
Car Carrier	Diesel, 1 x 23743	1 CPP	1 x 1600/ 1 x 1600	19.2	68229	240 x 36.20 x 10.90	
Car Carrier	Diesel, 1 x 10598	1 FPP	1 x 800	19.7	25400	184.20 x 30.60 x 8.20	
Container Ship	Diesel, 1 x 60950	1 FPP	1 x 2210	22.8	132540	299 x 37.10 x 13	
Container Ship	Diesel, 1 x 71785	1 FPP	2 x 3500/ 2 x 3500	25.5	191000	393 x 56 x 13.70	
Container Ship	Diesel, 1 x 54847	1 FPP	1 x 2000	27.1	93130	203.60 x 25.40 x 10	
Container Ship	Diesel, 1 x 60950	1 FPP	1 x 2210	22.8	132540	347 x 42.80 x 14	
LNG Vessel	Steam Turb., 1 x 26800	1 FPP	1 x 2000	19.4	108959	297.50 x 45.80 x 10.80	
LNG Vessel	Diesel, 2 x 14560	2 FPP		19.5	142272	315 x 50 x 12	
LNG Vessel	Diesel, 2 x 17490	2 FPP		19.5	171300	360 x 55 x 12	
LPG vessel	Diesel, 1 x 8827	1 FPP		14	33089	182.90 x 22.60 x 10.70	
Patrol boat	Diesel, 2 x 735	WaterJet		34	35.5	20.30 x 5.20 x 1.20	
High Speed Ferry	Diesel, 2 x 750	2 CPP	2 x 42	30.1	75	27 x 8 x 0.95	
High Speed Ferry	Diesel, 2 x 1829	WaterJet		36	148	40.10 x 10.10 x 1.90	
Passenger Cruise Ship	Diesel Electric, 2 x 17600	2 AZIPOD	3 x 2360	24	44000	294 x 37.90 x 8	
Chemical Tanker	Diesel Electric, 10000	1 FPP	1 x 1100	16.5	49556	176.70 x 31 x 11.95	
Chemical Tanker	Diesel Electric, 4 x 1620	1 AZIPOD	1 x 650	13.7	24033	145.70 x 22 x 10	
Crude oil vessel	Diesel, 1 x 8100	1 FPP		15.3	69177	229 x 32 x 12.20	
VLCC	Diesel, 1 x 29540	1 CPP	1 x 1500	17.4	189406	280.50 x 50 x 16.62	
VLCC	Diesel, 1 x 15730	1 FPP		14.4	122961	250 x 44 x 14.20	
Pilot boat	Diesel, 2 x 964	2 WaterJet		30	42	22 x 6.50 x 1.07	
Fast boat	Diesel, 2 x 325	2 WaterJet		45	6.4	12.80 x 2.60 x 0.90	

Fast boat	Diesel, 2 x 992	2 WaterJet		38	48	24.20 x 5.10 x 1.26	
Cement Carrier	Diesel, 1 x 6410	1 CPP	2 x 493/ 1 x 493	15.5	14093	124.70 x 20 x 7	

5. Ship Model Characteristics

- The **mathematical modeling** of all own ship models must accurately replicate the behavioral characteristics of actual ships of similar size, power, type, and propulsion configuration.
- The simulation shall realistically represent **maneuvering behavior**, including turning, acceleration, deceleration, starting, stopping, and speed loss during maneuvers.
- **Propeller simulation** must support:
 - Single and twin shaft configurations
 - Controllable Pitch Propellers (CPP) with continuously turning shafts and pitch-controlled thrust
 - Fixed Pitch Propellers (FPP) with outward turning for twin screws and right-handed turning for single screws, unless otherwise specified
- Rudder simulation shall replicate the type fitted on each ship model and accurately reproduce **turning characteristics**, speed reduction during maneuvers, propeller thrust, and shaft torque effects.
- The **OEM/Bidder** must be an authorized manufacturer of marine ship engines, with proven experience in engine manufacturing, commissioning, retrofitting, and propulsion system integration. This ensures in-depth knowledge of:
 - Ship propulsion characteristics
 - Engine performance curves
 - Propeller interaction and thrust behavior
 - Vessel response under various loading and environmental conditions
- The bidder must demonstrate prior experience in marine engine design, propulsion system integration, vessel performance analysis, and retrofitting of ship propulsion systems. This requirement is essential to ensure that the bidder possesses in-depth practical knowledge of ship propulsion characteristics, engine performance curves, propeller interaction, thrust behaviour, manoeuvring characteristics, and vessel response under various loading and environmental conditions.

Objective: Ensure that own ship models provide a **high-fidelity, realistic representation** for world-class training of Deendayal Port, Kandla Marine Pilots.

- The rudder simulation shall replicate the rudder type fitted on-board the own ship being modelled, and the simulator shall accurately reproduce turning characteristics at various ship speeds, rudder angles, propeller thrust, and shaft torque. The simulation shall also realistically represent the reduction in speed during turning manoeuvres based on hydrodynamic effects and ship characteristics.

6. Traffic Simulation

- The simulator must support **up to 100 simultaneous ships/vessels**.
- Visual traffic must correspond with sensor data from **radar, AIS, and ECDIS**.
- Radar echo sizes must reflect vessel type, aspect, and prevailing weather conditions.
- Traffic vessels must respond to:
 - ROR situations
 - Wind and current

- Ship-to-ship interaction
- Collision events
- Anchor forces
- The traffic vessels and tugs should be able to display correct lights, shapes and sound signals as per the requirements of International Regulations for Prevention of Collision at Sea (IRPCS) and should have selectable functions to show NUC/ RAM/ CBD/ towing/ diving lights. At the same time, the instructor shall have the possibility to turn off any of them or turn on additional lights. The same shall be done with the shapes. The navigational light visibility range should have an option to be adjusted as a visual channel parameter.
- In limited visibility conditions, sound signals on the target ships shall be turned on by Trainee. At the same time, the instructor shall have the possibility to turn them off, or give an additional sound signal with a gong, bell or siren. The simulator sound generator shall ensure the required direction of sound signals and their fading with the growing distance to the target ship.
- Visually, each ship shall have an aspect recognized at a distance of 06 nm in fair weather in the daytime or at night (by navigational lights). In difficult cases, binoculars shall be used.
- The traffic vessels should include Merchant Vessels, Naval Vessels, fishing vessels with nets down, trawler dragging nets, vessel undertaking towing, vessel undertaking diving operations, container carriers, RORO vessels, bulk carrier and VLCC.
- Ships underway shall provide relevant bow waves, side streams and stern waves with a wake overlaid on the rough sea surfaces. The traffic vessels' wake should also be displayed which should be relevant to the vessel's course and speed, and prevailing sea state and current direction.
- The instructor station should have the facility to inject the traffic as required including control of engines, rudder, navigation lights dredging, towing, fishing, trawling and diving operations. The added facility to feed in the route of a traffic vessel (by means of way points) should be available on the instructor station which would enable the instructor to monitor the progress of exercise without time and again altering the course and speed of the traffic vessel.
- The turning characteristics, acceleration and deceleration of the traffic vessel should be as per the general existing characteristics of the particular vessel type.
- **Compliance:** All traffic vessels must display correct lights, shapes, and sound signals in accordance with **IRPCS**, with instructor-selectable options and adjustable visibility ranges.

7. Environmental Simulation

A) The simulator shall provide **realistic environmental conditions**, adjustable from the instructor station:

- i. **Wind.** The 360 Degree Horizontal Field of View (HFOV) Full Mission Bridge Simulator should be capable of simulating wind between 0 to 30 knots from any direction, there should be visible reference of the prevailing wind conditions (exhaust smoke movement direction, fluttering of flag, wind direction indicator, whistling noise of the wind etc.) and realistic effect on the ships. The value of the wind strength and direction should be changeable while the exercise is in

progress. A display of the relative wind and true wind should be available in the Bridge in front of the OOW on the overhead panel.

- ii. Waves.** The waves should be generated realistically with respect to the wind direction and should have visual reference and effect on the all the ships. The instructor station should have the facility to alter wave height, wave length and direction of wave. This should be changeable while the exercise is in progress.
- iii. Current.** The current strength and direction should have realistic effect on the ships. The instructor should be able to change values while exercise is in progress.
- iv. Visibility.** The visual system should be able to provide realistic fog, rain and haze conditions, including changing of opacity from instructor station. The intensity of fog/ haze/ rain should be determined by visibility value set during start of simulation and the instructor should be able to change these conditions during the process of the exercise with an adjustable fading time. The visibility factor should determine when objects become visible due to haze, fog or rain. This effect should be available during both day and night.
- v. Depth/ Height of Tide.** Water depths including tidal effects based on time should be available to all ships. Ships should run aground when under keel clearance becomes zero. Own ship maneuverability is to be affected by shallow water effect depending on under keel clearance. The height of tide should be varying according to the time before/ after high/ low water at a given port. The instructor should be able to alter/ feed values of high/ low water times and the height of tide along with variation according to time. The flow pattern of tide should be realistic at different locations as per a given harbour.
- vi. Tidal Stream.** The tidal stream in an area (especially harbours) should confirm to the flow patterns as actually experienced. The tidal stream strength and direction should have realistic effect on the ships, and the instructor should be able to change values while exercise is in progress.
- vii. Time.** The simulation time should advance realistically. The light conditions and tide should change depending on the passage of time. There should be a smooth transition from day to night conditions. The position of heavenly bodies i.e. sun, moon and stars should change according to the time and they should all be visual at different positions which changes as per passage of exercise time. The facility to change time during the progress of the exercise should be available at the instructor station. The exercise time should be available to the OOW on a display in the Bridge.
- viii. Rain.** Showers of rain should not only affect visibility on screen but also radar detection. The instructor should be able to select position, extent and intensity of rain shower.
- ix. Cloud Cover.** The instructor should be able to select extent of cloud cover and inject thunder (visual and audio) for an adjustable time frame.
- x. Storm.** The instructor should be able to inject a storm from a given position, and should be able to adjust its path, speed and intensity. The effect of storm should also be visible on radar performance. The wind speed, direction of

current and the visibility should be changeable by the instructor in case of storm.

B) Bridge Wing View Facility. The facility to show the bridge wing view of a given ship in the student display screen should be available.

C) Models. The 360 Degree HFOV Full Mission Bridge Simulator must be able to simulate a large number of harbors and sea areas in order to impart training.

D) Characteristics. The exercise area should have following feature :-

1. Geographical origin with reference to latitude and longitude.
2. Land Mass.
3. Conspicuous as per actuals.
4. Skyline as per actuals.
5. Buoys, light houses, leading light, sector light etc.
6. Background lights on coastline.
7. Sea and sky texturing.
8. Bathymetry data in terms of depth and soil type.
9. Time dependent tide curve and flow pattern.
10. Facility for inputting oil rigs/drilling should be available at instructor station.

E) Configuration

a) Simulator Hardware

- 1) a360-degree Horizontal Field of view on LED Displays (Large Screens 65")
- 2) Radar simulation in Bridge Simulator (for anti-Collision and Blind Pilotage with 24" Display).
- 3) A type approved ECDIS with 24" Display,
The Bidder/OEM shall be Manufacturer of Electronic Chart Display and Information Systems (ECDIS) compliant with the latest IHO S-100 data framework.
The ECDIS used in the simulator shall be the Bidders/OEMs own product to ensure seamless integration, update support, and cyber-secure data handling.
Also, in future when S-100 requirement is officially released, the bidder must upgrade its ECDIS system integrated with the installed simulation system suite.
- 4) Conning Module must be included with 24" Display
- 5) General Bearing Console must be included with 24" Display
- 6) Overhead Panel must be included with 22" Display
- 7) GMDSS station must be included with 24" display
- 8) Steering console must be included with 10" Displays for required information
- 9) Maneuvering Console must be included with 4 Nos. 10" Displays for required simulation information
- 10) Chart Table Console must be included with 24" Display for Additional equipment information.
- 11) Pilot Pro Unit including the hardware (11' Apple iPad Air)

b) Simulation Software:-

The trainee station/ Bridge should comprise the following Simulated Software modules including: -

1. Full Mission Bridge Simulator Module
2. Full Mission Bridge Instructor Station Module
3. Conning Display Module
4. Navi Sailor 4000 ECDIS Module

5. Navi Radar 4000 Module
6. Radar/Arpa Simulation Module
7. Navi Planner 4000 Module
8. Interactive Bridge Information Display Overhead Module
9. Interactive Bridge Information Display- Virtual Controls Module
10. Communication Equipment Module
11. Binocular/Bearing Module
12. Functionality Modules
13. Tug And Mooring Functionality Module
14. Search And Rescue (Sar) Module
15. Oil Spill Functionality Module
16. Ice Navigation Functionality Module
17. Advance Ice Operations Module
18. Pilot PRO unit, capable to integrated pilotage solution combining electronic navigational charts, AIS data, ship maneuvering prediction, docking support, and real-time navigation monitoring in a portable system. It must supports official ENC chart formats such as S-63, S-57, and TX-97 with regular updates and displays navigation data including position, heading, speed, rate of turn, and course over ground. The system includes docking and conning modes, own ship maneuvering predictor, fore and aft speed vectors, automatic distance and fender lines for berthing, AIS target tracking with meeting and rendezvous points, CPA/TCPA calculations, route planning and monitoring, alarms and warnings, and data logging with playback for training and incident analysis.
It can connect to AIS pilot plug, independent GNSS sensors, ROT and heading sensors via Wi-Fi, and can integrate tidal, weather, and VTS data to provide complete situational awareness.

F) Instructor Station/Debriefing Station.

Instructor functionality must include below:

1. Change position, course and speed of own ship and traffic ships, etc.
2. Able to control over all objects within the exercise
3. Introduce failures/faults to own ship instantly and/or as preprogrammed event (time, position and complex conditional statements dependent)
4. Weather conditions and failure of ships can be preprogrammed to occur after a certain time, allowing the instructor to create complex scenarios in advance and focus on the trainees while running the exercise.
5. Set sound and navigation signals for traffic ships, helicopters etc
6. Sounds and navigation signals for the traffic ships and helicopters can be preset by the instructor and changed further on.
7. Create pre-programmed routes for traffic ships, helicopters etc.
8. Any number of routes can be prepared and stored each exceeding 50-way points.
9. Do a 'fast forward' to quickly test an exercise
10. Specify environmental conditions (e.g. in fog it must be possible to set the visibility to a desired range).
11. Full control over environmental conditions for the global scene and for the defined local condition zone (with predefined visibilities and other factors).
12. Specify Hydrographic conditions and systems.
13. Supervise the exercise (start, pause, stop and reset)
14. Monitor own ships
15. Add new objects such as traffic ships, helicopters etc.

16. Control traffic ships, helicopters etc. (manual control, modify routes, add new routes)
17. Control sound and navigation signals for traffic ships
18. Control assisting tugs (push / pull / tow, escort towing in direct and indirect mode)
19. Control mooring lines
20. Control own ship failures
21. Control own ship alarms
22. Control ship's anchors (let go, heave and slack).
23. Control environmental settings (time of day, wind, current, depth, waves, rain, fog etc.)
24. Monitor and/or record communications and communicate with all own ships and VTS. Such recordings may be synchronised with the exercise process during debriefing
25. Control and/or record VHF background communication. Such recordings may be synchronized with the exercise process during debriefing.
26. Monitor and/or record live CCTV stream from the bridge (zoom and pan the cameras). Such recordings may be synchronized with the exercise process during debriefing Log exercise data, audio and video.

The Instructor Station should display the following:

1. Position and track of own ships with identification
2. Position and track of traffic ships and other dynamic objects with identification
3. Route of traffic ships
4. Instructor generated information / cues (lines, symbols etc.)
5. Own ship specifications
6. Traffic ships specifications and routing
7. Environmental conditions
8. Own ship status
9. Failure status
10. Navigation equipment status
11. Tugs and mooring lines specifications
12. Anchors status
13. AIS information
14. Appropriate hydrographic information

After performing a simulation, the instructor should be able to rewind the exercise to any previous time step thereby recreating the scenario at that specific time (own ship, traffic ship, environmental settings etc. will change according to the logged data). After the completion of exercise all its data is available for review, layback or replay from any point. The data is stored in the dedicated log file.

A dedicated Debriefing Station shall be provided as part of the Full Mission Bridge Simulator system for conducting post-exercise analysis, replay, evaluation, and training review sessions. The Debriefing Station shall enable instructors and trainees to review the simulation exercise in detail and analyze ship handling decisions, traffic situations, communication, and environmental conditions.

G) Compliance –

- a) All standards pertaining to the convention should be followed without any deviation, Full Mission Bridge Simulator should meet all the requirements of the STCW convention.
 - b) The Simulator software should comply with DNV Class 'A' standards.
- **Ambient Condition.** The system should be capable of withstanding the harsh marine environment in extreme tropical conditions and operate without any degradation in system performance under the following ambient conditions:-

(i)	Operating Temperature	-	0 to +55 ⁰ C (internal sub-units)
(ii)	Storage Temperature	-	0 to + 50 ⁰ C (external sub-units)
(iii)	Relative Humidity	-	95% (non-condensing) at 40C

H) Maintenance..

- **CAMC.** The system would be maintained through Comprehensive Annual Maintenance Contract (CAMC) by means of Smart Support by the OEM for period of 5 years.
- **Product Support.** The firm should provide warranty for 360 Degree HFOV Full Mission Bridge Simulator for a period of 12 months from the date of completion of installation and Power on. Vendor should provide CAMC for a period of Three (03) years. The system should be supported by the manufacturer/supplier for a period of 3 years and can be extended. Likely obsolescence of any component/ module should be catered for by the firm undertaking CAMC, through stocking of adequate spares. The firm should also recommend/ offer suitable substitutes for such components. In addition, up-gradation/ modifications to the system resulting in enhancement to system performance should be intimated and offered to the Deen Dayal Port, Kandla.
- **Documentation.** Relevant Documentation must be supplied . The documentation is to comprise essentially the following sets are to be supplied free of cost:-
 - 1.a **Part Identification List.** This list, besides including the relevant data to identify the component, should include the addresses of the vendors.
 - 1.b Installation specification/ drawings.
 - 1.c Site acceptance Trials Schedule.
 - 1.d User Manuals
 - 1.e Software Requirement Specifications.
 - 1.f Project Schedules.

Software Development Software development, documentation and testing are to be in accordance with ISO 9001:2015.

Installation.

- i.** Technical services for installation and commissioning including acceptance trials of system are to be provided by the seller.
- ii.** Supply of installation material and its installation on basis of site survey at Deen Dayal Port, Kandla installation site and critical installation tools are to be included in the

scope of supply of the system.

I) Hardware

- o **Proposed Configuration.** The hardware is required to be the best available, and suitable at the time of placing order and exact specifications would be frozen at that stage. The hardware should include:-

- i. Server Computer with minimum
- ii. Xeon E / 2x8GB / 2x1TB RAID 1 / min 2x 1GbE RJ45 / Win Server 2022 Standard*
- iii. Display system shall be at least 24" LED/LCD display.

- o In addition, to the already stated hardware requirements, following has to be specifically implemented: -

#	Description	Q-TY
1	IT Infrastructure	
1.2	Netwrok Rack 42U	2
1.3	Server	1
1.4	24" Screen	1
1.5	UPS 1KVA for Server	1
1.6	Communication Device (EPABX, Desktop Phones)	1
1.7	Instructor Station	
1.8	Main instructor control and monitoring module	1
1.9	Tug and Mooring Functionality Module	1
1.10	Evaluation and Assessment Functionality Module	1
1.11	SAR Operations Functionality Module	1
1.12	PC - Instructor	1
1.13	Display 24" - Instructor	2
1.13	DP-HDMI Converter	1
1.14	Desktop Speaker 2.0 USB Powered	1
1.15	Selective Visualization	
1.16	Sel Vis PC	1
1.17	24" Display	1
1.18	Repeater Display at Instructor Station	
1.19	24" Display	12
1.20	HDMI Cable	12
1.21	DP-HDMI Converter	12
1.22	CCTV	
1.23	Milestone Software	1
1.24	PC-CCTV	1
1.25	24" Display	1
1.26	IP Camera with mic inbuilt	3
1.27	Debriefing	
1.28	65" LED Screen	1

1.29	HDMI Cable	1
1.30	Vesa Mount	1
1.31	Communication	
1.32	Instructor Workplace Software	1
1.33	PC- GMDSS Instructor	1
1.34	24" Display	1
1.35	USB Audio Unit	1
1.36	Handset	1
1.37	Desktop Speaker 2.0 USB Powered	1
1.38	Printer A4	1
1.39	Instructor Table	1
1.40	Instructor Chair	1
1.41	Navigational Bridge 360° HFOV	
1.42	Manoeuvring Console	1
1.43	Console (Conning Display) Module	1
1.44	PC - Conning	1
1.45	Display 24" - Conning	1
1.46	E38 Trackball kit (red ball)	1
1.47	Dual Handle Telegraph	1
1.48	Dual Handle Thruster	1
1.49	RCIB Kit	4
1.50	LF-70R RG +-100 soldering, with cables	1
1.51	LF-70L RG +-100 soldering, with cables	1
1.52	Mounting kit for Lilaas Controls	2
1.53	Joystick and Encoder kit	1
1.54	Button and Potentiometer kit	1
1.55	Interactive Bridge Information Display Module	4
1.56	Display 10" Touch Screen	4
1.57	NUC PC	2
1.58	General Console Radar	2
1.59	Radar/ARPA Simulation Module	2
1.60	PC -Radar	2
1.61	24" Display	2
1.62	ES8 Keyboard / Trackball	2
1.63	2.0 Speakers	2
1.64	General Console ECDIS	2
1.65	Navi-Sailor 4000 Module	2
1.66	PC -Navisailor	2
1.67	24" Display	2
1.68	ES8 Keyboard / Trackball	2
1.69	2.0 Speakers	2
1.70	General Console Bearing	1
1.71	Visualization Channel 6000 Module	1
1.72	PC -Bearing PC	1
1.73	24" Display	1

1.74	Joystick and Encoder kit	1
1.75	E38 Trackball kit (red ball)	1
1.76	OHP	1
1.77	Interactive Bridge Information Display Module	1
1.78	PC -OHP	1
1.79	22" Display	2
1.80	DP-HDMI Converter	1
1.81	Vesa Mount	2
1.82	HDMI Cable	2
1.83	GMDSS Station	1
1.84	Trainee Workplace Software	1
1.85	PC -GMDSS	1
1.86	24" Display	1
1.87	E38 Trackball kit (red ball)	1
1.88	USB Audio Unit	1
1.89	Handset	1
1.90	2.0 Speakers	1
1.91	Chart Table	1
1.92	Additional Instruments Console Module	1
1.93	PC -Add info	1
1.94	24" Display	1
1.95	Steering Console	1
1.96	Interactive Bridge Information Display Module	2
1.97	Display 10" Touch Screen	2
1.98	NUC PC	1
1.99	Joystick and Encoder kit	1
1.100	Steering Wheel	1
1.101	RCIB Kit	2
1.102	Visual System (with LED Screen)	
1.103	Visualization Channel 6000 Module	12
1.104	PC -Visualization	12
1.105	65" LED Screen for Visualization	12
1.106	HDMI Cable	12
1.107	Vesa Mount	12
1.108	Sound System	
1.109	5:1 Speaker System	1
1.110	Infrastructure	
1.111	Power & LAN Arrangments (Deen Dayal Port, Kandla Scope)	1
1.112	Video Wall Preparation	1
1.113	Installation & Consumable	1
1.114	Spares	
1.115	PC	3
1.116	Monitor	3
1.117	65" Monitor	1

J) Commercial and Administrative Conditions

o2.1 Payment Terms

The payment schedule for the 360° HFOV Full Mission Bridge Simulator shall be as follows:

- **50% Advance** upon issue of work order
- **40% Upon delivery** of the equipment at the Deendayal Port, Kandla site
- **10% Upon installation, commissioning, and completion of training**

K) Language of Proposal and Correspondence

All proposals, correspondence, and documentation exchanged between the bidder and **Deendayal Port, Kandla** must be in **English** only.

L) Delivery and Commissioning

The bidder shall complete **delivery, installation, testing, commissioning, and operational readiness** of the simulator within **180 days from the date of issue of the work order**.

M) Tender Validity

- Tenders must remain valid for **90 days from the last date of submission**.
- During this validity period, the terms and conditions stated in the proposal shall remain unchanged.
- Any request for modifications during this period may result in disqualification or denial of contract award.

N) Force Majeure

a) **Definition:** Neither party shall be held liable for complete or partial non-performance of its contractual obligations (except for payment obligations for delivered goods) due to **Force Majeure events**, which include but are not limited to:

- Flood, fire, earthquake, or other acts of God
- War, military operations, or blockades
- Acts or actions of state authorities
- Any other circumstances beyond the reasonable control of the parties occurring after contract execution

b) **Extension of Time:** Performance obligations affected by a Force Majeure event shall be extended for a duration equal to the event and its consequences.

c) **Notification:** The affected party shall notify the other party in writing of the commencement and cessation of the Force Majeure event **as soon as possible, and in any case within 10 days** from the start of such event.

d) **Proof of Event:** A certificate issued by the **Chamber of Commerce or any other competent authority** shall be considered sufficient evidence of the commencement and cessation of the Force Majeure event.

O) Eligibility Criteria

- Bids not meeting the **mandatory qualification criteria** will be rejected during the technical evaluation stage.
- Compliance with all requirements specified in the EOI, including technical specifications, experience, certifications, and financial criteria, is mandatory.

Sl.No.	Qualification Criteria	Supporting documents
1	<p>The Bidder/OEM shall be the Original Equipment Manufacturer (OEM) of a real Electronic Chart Display and Information System (ECDIS) used onboard seagoing vessels. The ECDIS equipment manufactured by the Bidder must be type-approved and widely accepted and installed on operational ships in the maritime industry.</p> <p>This requirement is mandatory to ensure that the simulator provides highly realistic and industry-relevant ECDIS equipment and training environment for Marine Pilots of Deen Dayal Port, Kandla. The ECDIS provided in the simulator shall be based on the bidder's actual shipborne ECDIS system and not a generic or third-party replicated software.</p> <p>Bidders who are not OEM manufacturers of shipborne ECDIS equipment, or who provide third-party ECDIS software, or who fail to submit documentary proof of OEM ECDIS manufacturing and installations onboard ships, shall not be considered for technical evaluation.</p>	<p>Documentary evidence such as type approval certificates, class approvals, installation references, and client certificates shall be submitted along with the bid to establish the bidder's credentials as an OEM ECDIS manufacturer.</p>
2	<p>It is mandatory that the OEM / Bidder shall be an authorised manufacturer of marine ship engines and shall have a proven track record in manufacturing, commissioning, retrofitting, and servicing marine propulsion engines for seagoing vessels.</p> <p>The bidder must demonstrate prior experience in marine engine design, propulsion system integration, vessel performance analysis, and retrofitting of ship propulsion systems. This requirement is essential to ensure that the bidder possesses in-depth practical knowledge of ship</p>	<p>The Bidder/OEM shall submit documentary evidence to prove compliance with this requirement. Media coverage on a particular subject shall be accepted as valid documentary evidence, provided that such coverage is published by credible, verifiable, and recognized sources including reputed newspapers, industry journals, official press releases, or established digital media platforms.</p>

	<p>propulsion characteristics, engine performance curves, propeller interaction, thrust behaviour, manoeuvring characteristics, and vessel response under various loading and environmental conditions.</p> <p>This will ensure that the simulator provides highly realistic ship handling characteristics and enables world-class training for Marine Pilots of Deen Dayal Port, Kandla.</p> <p>Non-compliance with this clause will result in the bid being treated as technically non-responsive.</p>	
3.	<p>The Bidder/OEM must have been awarded and must be currently executing at least one (01) similar confirmed order during the calendar year 2026 for the supply, installation, commissioning, and integration of Full Mission Bridge Simulator and Engine Room Simulator in India. The total value of such project/order shall not be less than INR 9 Crore.</p> <p>Documentary evidence in the form of Purchase Order/Work Order/Agreement along with client certification or execution proof shall be submitted as proof of compliance with this requirement.</p> <p>Non-submission of documentary evidence or non-compliance with this requirement shall render the bid technically non-responsive and the bid shall be liable for rejection.</p>	<p>Copy of Purchase Order/Work Order/Contract Agreement.</p>
4.	<p>The Bidder/OEM should not have been blacklisted or debarred from bidding for any government or central government autonomous organization.</p>	<p>Self-declaration to this effect.</p>