DEENDAYAL PORT AUTHORITY

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OFFICE OF DY. CONSERVATOR
ADMINISTRATIVE OFFICE
POST BOX NO. 50
GANDHIDHAM (KUTCH)

No. MR/WK/1411/ Date: 29/01/2025

To,
M/s. _____
_____
_____
_____

Expression of Interest

Sub: Generation of Geospatial Database & Application for the safety and security of the Deendayal Port Authority as per norms of ISPS & NSPC Standards.

Sir,

Deendayal Port intends to appoint a technology partner for, "**Development of Geospatial Database & GIS Application for Deendayal Port**". Kindly submit your Expression of Interest along with budgetary-offer in the prescribed format at Schedule-B on the basis of Scope of Work at **Annexure-I** & Terms & Conditions at **Annexure-III** enclosed herewith.

The rates quoted must be inclusive of all costs such as material, labour, transportation etc. and any other charges for successful completion of the work excluding GST. The GST applicable shall be shown separately, which shall not be considered for evaluation purposes.

Your Expression of Interest along with budgetary offer for the above work may be submitted on **or before 06/02/2025** at the following address. The Budgetary offer may be submitted by scanning the copy of sealed and signed in email: dyconservator@deendayalport.gov.in & supdtacmarine@deendayalport.gov.in.

Thanking you,

Encl: Annexure I, II & III

Yours faithfully,

Capt. P. Mohanty
Deputy Conservator
Deendayal Port Authority

Annexure-I

SCOPE OF WORK

1.0 Background of the Project

Deendayal Port intends to appoint a technology partner for, "Development of Geospatial Database & GIS Application for Deendayal Port" including detailed assessment of latest available technologies for development of a state-of-the-art portal application with secured database.

The proposed project aims to enhance the safety and security of Deendayal Port as per norms of ISPS & NSPC standards. This initiative focuses on developing a comprehensive and dynamic geospatial database integrated with a GIS-based application. The primary goal is to enable real-time monitoring and management of maritime and port activities, thereby improving operational efficiency, safety, and security.

The project will serve as an effective tool to track port infrastructure, vessel movements, security zones, and other critical elements necessary for enhancing port operations. It will also ensure timely responses to safety and security threats. The GIS platform will act as a decision support system for planning, execution, operation, maintenance, and disaster management activities.

The project is anchored in two critical pillars of maritime operations: compliance with the International Ship and Port Facility Security (ISPS) Code and the integration of Navigation Safety in Port Committee (NSPC) recommendations.

2.0 Broad Scope of Work:

The Scope of Work envisages the followings: -

a) Project Planning and Management

- **Project Kick-off**: Initiate the project with a kick-off meeting to align all Users & stakeholders on objectives, timelines, and deliverables.
- **Project Management**: Establish a project management framework to monitor progress, manage resources, and ensure timely delivery.

b) Data Collection and Integration

- **Data Acquisition**: Collect relevant geospatial data, including port layouts, critical infrastructure, navigational aids, vessel movements, security zones, general infrastructure & other assests details.

Collect additional data, if needed, to ensure comprehensive coverage of all parameters / layers (refer to **Annexure II**).

- **Data Standardisation and Metadata Generation**: Standardize the collected data formats to ensure uniformity and compatibility across various sources and services, create geospatial metadata that documents detailed information about the spatial (and non-spatial) characteristics of the collected data, including geographic location, spatial resolution, coordinate system, and data sources as per the industry standards, such as ISO 19115, FGDC, Dublin Core, etc. database and system design to enable compatibility and interoperability with other geospatial systems.
- **Data Integration**: Integrate collected data into a comprehensive geospatial database, ensuring accuracy and consistency.

c) **System Design and Development**

- **GIS Application Design**: Design a user-friendly GIS-based application tailored to the specific needs of Deendayal Port.
- **System Architecture**: Define the system architecture, including hardware and software components, to ensure scalability and reliability.
- **Database Development**: Develop a dynamic geospatial database to support real-time monitoring and management of port activities including Planning, Execution, Operations & Maintenance as well for Health, Safety & Environment and Disaster Management activities based on the pilot carried out at DPA that can be used by other ports.
- **Development of a web-based Geospatial Portal**: Develop a GIS- based application to integrate all standardized geospatial data, visualizing is as multiple data layers and enable informed decision making by providing interactive views of these data layers.

d) **Compliance and Security**

- **ISPS Code Compliance**: Ensure the system complies with the International Ship and Port Facility Security (ISPS) Code.
- **NSPC Recommendations**: Integrate Navigation Safety in Port Committee (NSPC) recommendations into the system design and operations.
- **Data Security**: Implement robust data security measures to protect sensitive information and ensure system integrity.

e) **Stakeholder Engagement**

- **Workshops and Training**: Conduct workshops and training sessions for stakeholders to ensure effective use of the GIS application.
- **Feedback Mechanism**: Establish a feedback mechanism to gather input from stakeholders and make necessary adjustments.

f) **System Implementation**

- **Pilot Testing**: Conduct pilot testing of the system in a controlled environment to identify and resolve any issues.
- **Full-Scale Implementation**: Roll out the system for full-scale implementation at Deendayal Port, ensuring minimal disruption to port operations hosting on a secure cloud infrastructure to ensure scalability, accessibility and reliability.

g) **Monitoring and Evaluation**

- **Performance Monitoring**: Monitor the performance of the system using predefined metrics to ensure it meets the project objectives.
- **Evaluation and Reporting**: Evaluate the system's effectiveness and prepare regular reports for stakeholders.

h) **Maintenance and Support**

- **Ongoing Maintenance**: Provide ongoing maintenance and support to ensure the system remains operational and up-to-date.
- **System Upgrades**: Implement system upgrades as needed to incorporate new features and improvements.

3. System Requirements

The proposed solution is expected to meet the following minimum requirements:

a) **Spatial Data Integration**

- Background Maps: Overlay Google Maps, satellite imagery, and other base maps.

- Vector and Raster Support: Create and maintain vector maps (e.g., boundaries, roads, buildings) and support raster images as background data.
- Data Integration: Integrate various geospatial data sources, including port layouts, infrastructure details, and vessel movements.

b) Real-Time Monitoring

- Live Data Feeds: Incorporate real-time data from sensors, GPS tracking systems, and terminal operating systems (TOS) to monitor vessel activities and cargo movements.
- Dynamic Information Display: Show dynamic on-screen information as users interact with the map.

c) Spatial Analysis and Visualization

- Spatial Analysis Tools: Support buffer, line, point, and intersection analyses to assess spatial relationships and impacts.
- Visualization: Visualize spatial data, such as cargo locations, storage capacity, and infrastructure assets, on interactive maps.

d) Asset and Inventory Management

- Asset Tracking: Track and manage port assets, including equipment, infrastructure, and utilities.
- Inventory Management: Maintain an inventory of port facilities and equipment, ensuring accurate and up-to-date records.

e) Security and Compliance

- Security Zones: Define and monitor security zones within the port.
- Compliance: Ensure compliance with international security standards, such as the ISPS Code.

f) User-Friendly Interfaces

- Web and Mobile Access: Provide web and mobile interfaces for accessing GIS data, ensuring consistency across platforms.

- Customizable Views: Allow users to customize map views and layers based on their needs.

g) Reporting and Analysis

- Report Generation: Generate reports in various formats (e.g., Excel, Word) for analysis and decision-making.
- Predictive Analytics: Use predictive modelling and scenario analysis to forecast demand and optimize resource utilization.

h) Workflow and Design Management

- Workflow Tools: Support project and design management with pre-configured types and state models.
- Design Changes: Track and visualize design changes, ensuring all updates are reflected accurately.

i) Quality Management

- Data Quality Tools: Implement tools to check data quality and integrity, ensuring reliable and accurate information.

j) Interoperability

- Import/Export Capabilities: Support importing and exporting GIS data in standard formats to facilitate data sharing and integration.

k) Operation & updation of application & data

- Support staff to be provided for necessary operation and updation of the portal as and when require with regular monitoring.

4. Schedule of Deliverables

Sl. No.	Description	Timeline (months)
1.0	Collection of Data, Survey, Inception Report etc.	T0 + 2
2.0	Data Standardization and Metadata Generation for Geospatial data layers	T1 + 1
3.0	Development of Data Model	T2 + 1
4.0	Development of Web-based App	T1 + 2
5.0	Pilot Testing with Draft Report	T3 + 1
6.0	Final report & Full Scale Implementation	T4 + 1
7.0	**Total (a)**	**6 months**
8.0	Operation & udation of application by support staff stationed at DPA	**12 months**
9.0	**Total (b)**	
10.0	**Grand total (a) + (b)**	**18 months**

Annexure-II

Sr. No.	Layer Name
1	Port Area (Land)
2	Port Limit(Water)
3	Berth / Jetty Inside Port Area
4	Lighthouses Of Port
5	SEZ Area For Port
6	Cruise Terminals In Port Area
7	Port Rail Connectivity
8	Pipeline Network In Port Area
9	Tank Farms In Port Area
10	Road Connectivity In Port Area
11	Warehouse / Sheds In Port Area
12	Aministrative Buildings In Port Area
13	Quarter/Residential Areas
14	Commercial Establishments
15	Hospital And Emergency Assistance In Port Area :
16	Fire Fighting Centers Inside Port Area
17	Amenities In Port Area
18	Port Specific Layer In Port Area
19	Project Information In Port Area
20	Dredging Location / Volume
21	Historical and Archaeological Sites
22	Coastal Erosion Zones
23	Marine Protected Areas
24	Underwater Cables and Pipelines
25	Port Wastewater Treatment Plants
26	Oil Spill Containment Zones
27	Stormwater Management Areas
28	Floating Structures and Facilities
29	Public Access Areas
30	Anchorage Areas
31	Port Security Zones
32	Marine Fueling Stations
33	Emergency Evacuation Routes and Safe Zones
34	Tsunami Inundation Zones
35	Utilities Network
36	Electric Poles
37	CCTV Survilance
38	Parking Spaces
39	Open Spaces
40	Trees
41	HT Lines / Towers
42	Fueling Stations
43	Sensitive Areas
44	Contours
45	Digital Elevation Model
46	High Resolution Image
47	Establishing TBM for Maintaning Uniformity of Levels Across the Areas
48	Existing Layouts / Plans / Drawings / Maps of Area
49	Proposed Layouts / Plans / Drawings / Maps of Area
50	3D Topographical Model

Annexure-III

Other Terms & Conditions

1. All costs and expenses towards manpower, expertise and resources including transportation, communication, residential facilities etc. will be borne by the Developer firm.

2. One Project Coordinator/IT Specialist (with at least 3 years' experience in GIS application) shall be deployed at DPA during the project and maintenance period.

3. The firm will have to execute a legally binding undertaking towards non-disclosure of any information related to the project without approval of Competent Authority. The firm will also have to ensure and declare no Conflict of Interest before accepting the assignment.

4. All softwares/ hardwares generated during the assignment, will be the property of DPA and the firm will guarantee no claim / restrictions in any means.

5. PRICE OFFER format is given below to be filled exclusive of GST. Payments will be made after the achievement of each milestone.

Sl. No.	Description	Unit	Qty	Rate	Amount
1.0	Collection of Data, Survey, inception report etc.	1	LS		
2.0	Data Standardization and Metadata Generation for Geospatial data layers	1	LS		
3.0	Development of Data Model	1	LS		
4.0	Development of Web-based App	1	LS		
5.0	Pilot Testing with Draft Report	1	LS		
6.0	Final report & Full Scale Implementation	1	LS		
7.0	Operation & updation of application by Support Staff stationed at DPA	12	Per Month		
8.0	**Total**	**1**	**LS**		

Total in Words _____.

Seal & Sign of the Bidder

Dy. Conservator

Deendayal Port Authority