दीनदयाल पत्तन प्राधिकरण

(आईएसओ 9001:2008 एवं आईएसओ 14001:2004 प्रमाणित पोर्ट)

DEENDAYAL PORT AUTHORITY

(AN ISO 9001:2008 & ISO 14001:2004 CERTIFIED PORT)

यातायात प्रबंधक का कार्यालय, दीनदयाल पत्तन प्राधिकरण,श्रमदीप बिल्डिंग, नया कंडला (कच्छ)370210

SIPC KANDLA — SAGARMALA — Azadi Ka Amrit Mahotsav — स्वच्छ भारत एक कदम स्वच्छता की ओर

File No.TF/SH/ 3728/SROImprove/2025/ **Date: 08.10.2025**

To,

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Sub: "Deployment of a Data Analytics Framework and Engagement of Specialist Resource for Business Intelligence at DPA for a period of 01 year" – Request for Expression of Interest (EoI).

Sir,

Deendayal Port Authority intends to invite Expression of Interest for the work of "Deployment of a Data Analytics Framework and Engagement of Specialist Resource for Business Intelligence at DPA for a period of 01 year"

The Brief of work is detailed below:

A two-part intervention be undertaken, as under:

1. Engagement of a Professional Agency for:
   - One-time sanitization, structuring, and on boarding of legacy data from the last five financial years, and
   - Development of a foundational AI/ML-based analytics model for business insights.
2. Deployment of a Specialist Resource with domain expertise in data analytics, who will:
   - Use the model on a day-to-day basis,
   - Continuously update the model with ongoing data from the EBS, and
   - Provide analytical reports, dashboards, and insights for use in business planning and inter-departmental coordination.

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Terms of Reference (ToR) and Scope of Work

Part I: Scope of Work for Engagement of Professional Agency

Objective: To sanitize, structure, and onboard the port's legacy business data into a relational database, and to build an AI/ML-based analytics model that enables strategic and operational insights for Deendayal Port Authority.

Detailed Scope of Work:

1. Data Audit and Assessment

- Undertake a comprehensive assessment of the existing datasets maintained by the Statistical Research Office (SRO), including Excel-based files, spreadsheets, and any auxiliary sources.
- Map and document the types, formats, volume, and data lineage of legacy records over the past five (05) financial years.
- Identify inconsistencies, redundant entries, non-standard fields, and missing data.

2. Data Cleansing and Validation

- Perform deduplication, null value imputation, standardization of field formats (e.g., date, numeric units, codes).
- Harmonize commodity codes, vessel names, consignee-consignor entries, and other key entities.
- Validate data accuracy through cross-referencing with operational records or gate-in/gate-out logs, where available.

3. Database Design and Structuring

- Design a relational data model (RDBMS) comprising normalized tables for cargo traffic, vessel movement, berth occupancy, importer/exporter records, terminal performance, and revenue data.
- Define primary keys, foreign key relationships, indexes, constraints, and audit trails.
- Implement the structured database on an open-source or licensed platform (e.g., PostgreSQL, MySQL, SQL Server, etc.) as per DPA ' s IT policy.

4. Development of Data Ingestion Pipeline

- Build a semi-automated ETL (Extract-Transform-Load) pipeline to ingest data from the EBS system exports (Excel, CSV, XML) into the structured database.
- Ensure mapping of fields from the EBS export structure to the database schema with logging of errors during ingestion.
- Facilitate schedule-based or manual refresh of datasets.

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5. Design and Development of AI/ML Engine

* Build machine learning models on structured datasets to enable:
  - **Trend Analysis**: e.g., commodity-wise growth, vessel call frequency, shift in trade partners.
  - **Predictive Modelling**: cargo volume forecast, berth congestion likelihood, seasonality effects.
  - **Anomaly Detection**: drop in productivity, revenue leakages, irregularities in cargo flow.
  - **Opportunity Mapping**: underutilized berths, growth potential in certain commodities or hinterland markets.
* Train models using legacy data and validate accuracy/performance.

6. Dashboard and Visualization Module

* Design and deploy a basic web-based dashboard (or integrate with Power BI/Tableau) to visualize model outputs and trends.
* Enable filtering by terminal, cargo type, time period, and vessel type.
* Provide exportable summary tables and charts for report generation.

7. Documentation and Handover

* Provide full technical documentation including:
  - Data dictionary and schema documentation.
  - Model architecture and assumptions.
  - Data ingestion scripts and access credentials.
  - User manual for dashboard/reporting interface.

8. Training and Capacity Building

* Conduct a **one-week on-site training program** for designated port officials.
* Familiarize them with the database structure, data ingestion method, dashboard interface, and basic model usage.
* Provide a list of tools and skills required to independently operate and sustain the system.

Timeline : 12 weeks from date of award

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Part II: Scope of work for Deployment of Specialist Resource (Data Analyst – Port Analytics)

Objective: To ensure continuous operation, utilization, and improvement of the deployed data analytics platform and generate actionable business insights to support the operational and commercial decisions of Deendayal Port Authority.

1. Daily Data Processing and Integration

- Retrieve operational data from the EBS (Enterprise Business System) in prescribed formats.
- Clean, validate, and ingest daily/weekly exports into the analytics database via the ETL pipeline.
- Monitor data integrity and raise flags in case of mismatches or inconsistencies.

2. Model Operation and Retraining

- Run predictive and trend models periodically as per business requirement.
- Re-train models at regular intervals using recent data to enhance prediction accuracy.
- Calibrate parameters and document performance metrics (e.g., model drift, MAE, accuracy).

3. Dashboard Management and Visualization

* Maintain and update dashboards for daily reporting to Traffic Department and Senior Management.

* Customize views to reflect:

  - Cargo handled by commodity and terminal.
  - Vessel call patterns and turnaround time.
  - Berth occupancy, cargo evacuation delays, and storage issues.
  - Revenue earned vs forecast.

* Prepare visual summaries and briefings for monthly review meetings and Board notes.

4. Insight Generation and Business Advisory Support

* Analyse seasonal patterns, shifting trade corridors, and terminal-level performance metrics.

* Identify underperforming areas, deviations from targets, and emerging market potential.

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* Generate insight notes to support:

  - Incentive scheme design
  - Cargo promotion strategies
  - Stakeholder outreach
  - Terminal productivity enhancement

5. Interdepartmental Coordination

* Liaise with the EDP Cell, Traffic Division, Finance Division, and external software vendors (e.g., Tech Mahindra) for alignment on data definitions, consistency, and reporting timelines.

* Map MIS requirements of different departments and develop visual templates or automation wherever feasible.

6. Reporting and Compliance Support

* Assist in preparation of periodic reports for submission to MoPSW, IPA, or any other statutory authority.

* Respond to RTI queries or audit observations related to data, in consultation with concerned officers.

* Maintain version control and backup of all generated datasets and reports.

7. Knowledge Transfer and Documentation

* Maintain daily logs of operations, data ingestion schedules, model results, and anomalies.

* Document procedures for continuity in the event of change in personnel.

Minimum Qualifications:

- **Master's Degree (M.Tech/M.Sc./MCA) in Data Science, Computer Science, Statistics, or allied discipline is preferred.**
- Candidates with a Bachelor ' s degree and relevant experience may also be considered, subject to demonstrated proficiency in the required tools and techniques.
- Proficiency in SQL, Python/R, Power BI/Tableau, and machine learning frameworks is essential.
- Prior experience in port/logistics sector will be considered an added advantage.

Tenure : Initially for one year, extendable based on performance

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Reporting: Will report to the Traffic Manager and coordinate with EDP Section and EBS Team.

If any more information/clarification need, they may contact Mr.Ashok Nihalani, Assistant Traffic Manager, on Mobile No.94272-01411 (Email: ashok.nehlani@deendayalport.gov.in).

The rates quoted must be inclusive of all taxes, duties for performing scope of work & exclusive of GST.

Your Expression of interest for the above work should be submitted through email to the ID: tmshippingkpt@deendayalport.gov.in with in 15 days from the date of issue of EoI.

Yours faithfully,

Sr. Assistant Traffic Manager,
Deendayal Port Authority

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SCHEDULE – B

Sr. No.	Particulars	Rate per month	Units (in month) 12	Amount
1	Deployment of a Data Analytics Framework and Engagement of Specialist Resource for Business Intelligence at DPA for a period of 01 year			
			Total:	

Note: **The rates quoted must be inclusive of all taxes, duties & exclusive of GST for performing scope of work.**