الجمارك الأردنية

Data Warehouse Project

Lot 1: Design and Build the Data Warehouse & Implement What-IF Analysis

Lot 2: Implement Artificial Intelligence (AI)

- Note: Bidders have the right to participate in both LOT 1 and LOT 2, or choose to participate in only one of them.

LOT I
DESIGN AND BUILD THE DATA WAREHOUSE & IMPLEMENT WHAT-IF ANALYSIS

INTRODUCTION

The Jordan Customs Department (JCD) seeks to develop and implement a comprehensive Oracle-based data warehouse (DW) solution (**utilizing available JCD oracle licenses)**, to improve operational efficiency, gain deeper insights into trade activities, and support informed decision-making.

This Statement of Work (SOW) outlines the scope, deliverables, and key technical and functional requirements for designing, building, and deploying the JCD Data Warehouse, leveraging Oracle's industry-standard technologies.

The DW solution must ensure seamless data, process, and security integration with JCD's Integrated Risk Management System (IRMS), fully aligning with the department's risk management framework and operational workflows.

Furthermore, the solution should support JCD's long-term operational and technical sustainability by enabling scalability, maintainability, and internal capacity building.

PROJECT OBJECTIVES

- **Data Integration**: Integrate and consolidate data from the JCD ASYCUDA system, other internal databases, external APIs, and web services into a centralized Oracle-based data warehouse.

• **Data Transformation and Cleansing**: Perform data transformation and Basic cleansing using Oracle Data Integrator (ODI) or any free tools provided by bidder and approved by JCD without extra cost (JCD preferred ODI), to ensure consistency, accuracy, and readiness for analysis.

Implement data cleansing and quality assurance procedures to ensure the accuracy and consistency and reliability of data, this includes the removal of duplicates, (handling of missing values to the greatest extent possible) and ensuring data consistency across sources.

Examples of Basic Data Cleansing:

1. Removing Duplicates – Identifying and eliminating duplicate records to avoid redundancy.

2. Handling Missing Data (Nulls) – Filling in missing values using mean, median, mode, or placeholders like "Unknown," or removing incomplete records if necessary.

3. Correcting Data Types – Ensuring that numerical values are stored as numbers, dates are properly formatted, and text fields are structured correctly.

4. Standardizing Data – Converting data into a consistent format, such as changing "USA" and "United States" to a single standard format.

5. Removing Unwanted Characters – Cleaning up extra spaces, special characters, or incorrect symbols from text fields.

6. Fixing Inconsistencies – Unifying variations of the same data, like ensuring "Male" and "M" are consistently labeled.

7. Validating Data Accuracy – Checking for impossible values (e.g., negative ages) and correcting or removing them.

8. Addressing Outliers – Identifying and handling extreme values that may be errors or require further investigation.

9. Splitting or Merging Data – Separating full names into first and last names or merging fragmented address fields into a structured format.

10. Ensuring Uniqueness and Integrity – Verifying that key identifiers (e.g., customer IDs) are unique and properly formatted.

11. Handling Extra Spaces – Removing leading, trailing, and excessive spaces within text fields.

12. Managing Special Characters – Removing or replacing unwanted symbols (e.g., stripping out $, #, @ from names or product descriptions).

- **Handling of Missing Values to the greatest extent possible**
  Implement mechanisms to minimize missing data by using available unique identifiers to retrieve related information. For example:
  - If a **National ID number** is available but the **name** is missing, use the ID to fetch the name from a trusted source (and vice versa: use the name to find the National ID if it's unique).
  - For companies, if the **tax number** is available but the **company national number** is missing, retrieve it using the tax number—or vice versa.

• **Multidimensional Data Modeling**: Design a multidimensional data model aligned with JCD's analytical and operational requirements, utilizing Oracle's analytical capabilities for efficient data slicing and dicing.

• **ETL/ELT Automation:** Automate the end-to-end ETL/ELT processes using ODI to enable streamlined, reliable data ingestion into the data warehouse.

• **Self-Service Analytics and Reporting**: Empower users with self-service access to dashboards, ad-hoc reporting, and data visualizations via Oracle Analytics Server (OAS) and Oracle BI Publisher.

• **Operational Efficiency:**

Enhance operational efficiency by automating data delivery, minimizing manual effort, and enabling near real-time access (within 10 minutes once data is available at the source) to KPIs and actionable insights through dynamic dashboards.

- **Informed Decision-Making**: Support strategic and operational decision-making across JCD by delivering actionable insights into trade flows, risk indicators, and performance trends.
- **Capacity Building and Sustainability**: Strengthen JCD's internal capabilities through structured training and knowledge transfer, ensuring long-term ownership and sustainability of the solution.

SCOPE OF WORK AND IMPLEMENTATION METHODOLOGY

The project will be delivered through a Two-Iteration Agile Implementation Plan, with each iteration encompassing all five project phases. Each iteration will have its own defined scope of work, as outlined below:

Iterative Approach Summary

The project will be delivered over two iterations, each covering a subset of systems, APIs, and data domains. Every iteration will include the five key phases, ensuring a full delivery cycle with operational outcomes at the end of each iteration. This approach guarantees:

- Early visibility and validation
- Reduced risk through phased delivery
- Embedded training and feedback loops
- Scalability and future readiness

Iteration 1 – Core Systems and Foundational KPIs

Target Scope:

ASYCUDA, and 15+ high-priority databases, and up to 40 APIs

Historical data: Last 5 years

Core KPIs for risk management, trade volume, and inspection efficiency

DWH (Data Warehouse) database version must be Oracle 23ai

Phase 1: Data Discovery & Requirements

- Conduct focused workshops to define scope for ASYCUDA, core customs databases, and related APIs, to understand data needs, and desired analytics capabilities and reporting needs to help define the scope of data to be included in the Data Warehouse and the specific analytical outcomes expected.
- Perform source analysis, assess data quality, and define cleansing needs, to ensure accuracy, consistency, and reliability.
- Deliver conceptual and logical data models for core customs operations.

Phase 2: DW Design & Development

- Implement staging and DW environments.

- Build star schemas and marts for selected systems and APIs.
- Configure ETL/ELT using Oracle Data Integrator.
- Apply bottom-up DW modeling for trade and risk domains.

Phase 3: KPI & Dashboard Development

- Develop initial KPI sets (e.g., clearance times, risk scores).
- Build dashboards and OLAP cubes in Oracle Analytics Server.
- Conduct 2–3 feedback loops and refine outputs accordingly.

Phase 4: Training & Knowledge Transfer

- Train core business users and IT team on Oracle tools (ODI, Analytics).
- Provide manuals, lineage documentation, and BI usage guides.
- Conduct 2 enablement sessions (BI tools + What-If Analysis preview).

Phase 5: Governance & Monitoring

- Introduce foundational data governance and quality policies.
- Set up Oracle Active Data Guard.
- Establish initial data stewardship roles and admin dashboards.

Iteration 2 – Extended Systems and Advanced Insights

Target Scope:

Remaining 30–45 systems and additional 60+ APIs

Extend history to 5 years

Develop advanced KPIs (compliance rates, revenue leakages, regional metrics)

DWH (Data Warehouse) database version must be Oracle 23ai

Phase 1: Data Discovery & Requirements

- Conduct focused workshops to define scope for ASYCUDA, core customs databases, and related APIs, to understand data needs, and desired analytics capabilities and reporting needs to help define the scope of data to be included in the Data Warehouse and the specific analytical outcomes expected.
- Perform source analysis, assess data quality, and define cleansing needs, to ensure accuracy, consistency, and reliability.
- Expand data scoping to include finance, audit, logistics, and cross-border APIs.
- Refine data model based on feedback and usage from Iteration 1.

Phase 2: DW Design & Development

- Extend star schema to cover additional subjects.

- Enhance ETL for complex data relationships.
- Optimize performance for increased data volume and user concurrency.

Phase 3: KPI & Dashboard Development

- Introduce advanced analytics: What-If simulations, trade forecasting, alert thresholds.
- Deliver new dashboards, refine previous KPIs, and incorporate cross-domain views.

Note: What-If Analysis should be priced separately, the bidder is required to provide a separate cost for implementing What-If Analysis functionality. Jordan Customs will evaluate the need and choose to implement one specific scenario based on its internal requirements. The implementation of What-If Analysis will be subject to Jordan Customs' final decision and is not guaranteed as part of the core scope

Phase 4: Training & Knowledge Transfer

- Deep-dive training for advanced users and administrators.
- Conduct full What-If Analysis enablement session.
- Deliver revised documentation including full DW architecture and lineage.

Phase 5: Governance & Monitoring

- Finalize governance framework with versioning, access controls, and data quality metrics.
- Implement proactive monitoring, backup automation, and capacity scaling mechanisms.

<u>General conditions for Data Discovery & Requirements for both Iterations:</u>

- Analyze existing JCD systems and data sources to identify relevant data points for integration into the Data Warehouse.
- The bidder is responsible for all aspects of data basic cleansing.
- Develop a detailed data model specification document aligned with Oracle OLAP Option to facilitate multidimensional analysis and reporting, ensuring compatibility with JCD's analytical needs.
- Revision and updating of the overall project plan after finalizing all necessary components, the Winning Bidder will propose a new updated action plan.
    - ✓ This activity requires an approval of this overall updated plan from the Contracting Authority.
    - ✓ The above activities will take place in parallel.
    - ✓ The Winning Bidder is expected to submit an inception report

- ✓ separated/subsequent reports at the end of each of the first two months, of which the second will
- ✓ Be the consolidated Inception/mobilization and detailed planning phase report. The inception

- reports should include at least the following:
  - ✓ Summary/Progress Report related to each of the above activities
  - ✓ Training plan (that include time of delivery of training manuals)
  - ✓ Quality and test plans
  - ✓ Delivery and Acceptance Procedure
  - ✓ Warranty and maintenance methodology
  - ✓ Revised and detailed overall project plan
  - ✓ Any additional needed information
- These reports as well the consolidated Inception report require an approval from the Contracting Authority

General conditions for DW Design & Development for both Iterations:

- Jordan Customs is looking for a Data Warehouse solution that ensure the data captured and stored be transformed into smart data which will help the institution improve performance and productivity, provide better assistance to decision-makers, Increase customer satisfaction through targeted and relevant processing aligned with its business goals.

- Data Staging Area Development: Design and implement a data staging area to collect and store raw data from various source systems, ETL processes that automate the extraction, transformation, before loading data into the data warehouse.

- The design must be scalable to accommodate future growth in data volume, number of users, and system complexity without significant performance degradation.

- Design and develop data warehouses to store and organize large volumes of data from various sources.
- Ensure data integrity and consistency across different data sources.
- Design and implement the Data Warehouse solution on the staging environment. This includes defining the data model (e.g., Star Schema), developing ETL processes using Oracle Data Integrator, and configuring data quality checks. Data will be loaded from staging into the Data Warehouse to simulate production processes when Go Live.
- Ensure that the staging environment is isolated but mirrors the production environment to allow for accurate testing and debugging. This includes installing required Oracle technologies, setting up necessary databases, and configuring required network access and security.

General conditions for KPI & Dashboard Development for both Iterations:

- The proposed solution must deliver a comprehensive suite of intelligence capabilities, providing seamless data integration across the entire customs organization. This includes an intuitive

dashboard (DBI), Key Performance Indicators (KPIs), and custom reports designed to address the specific needs and operational objectives of the customs department.

- Administrative capabilities that minimize administration overhead of models maintenance such as
    - Enforces existing and adopted security rules
    - Rename ,modify or disable KPIs
    - Create new reports, KPIs, dashboards
- Facilitate daily and periodic data summarization tailored to the specific needs of the customs operations, ensuring relevant and actionable insights are always available.
- Ease of maintenance, allowing for scalability and flexibility to adapt to future needs with minimal effort.
- Highly customizable.
- Ability to export to other formats (Excel, and PDF etc.)

- Utilize JCD Oracle mentioned Licenses :

#	Oracle Licenses
1	Oracle Active Data Guard - Processor Perpetual
2	Oracle Analytics Server - Named User Plus Perpetual
3	Oracle Analytics Publisher - Named User Plus Perpetual
4	Oracle Data Integrator Enterprise Edition - Processor Perpetual
5	Oracle OLAP - Processor Perpetual

General conditions for Training & Knowledge Transfer:

- The **JCD team** will be an integral part of this project, the bidder is required to ensure that the **JCD team works collaboratively with the bidder's team on a step-by-step basis**, throughout the project lifecycle, to ensure seamless knowledge transfer, training, and successful project completion.
- Knowledge Transfer and relevant skills and experience to JC team during the project implementation to assist in the capacity building of JC. A plan must provide illustrating how to perform the knowledge transfer. It will cover system administration, reporting, troubleshooting, and best practices.
- All **training courses** should be conducted **unofficially**, without the issuance of **certifications**.
- Provide comprehensive training to up to 20 JCD staff members on utilizing the DW, Oracle Analytics Server, ODI, and Oracle Analytics Publisher to create and access reports and dashboards. (Without certificates), the trainings should be designed for all types of users such as

end-users, administrators, and support staff. Additionally, trainings must be hands-on trainings to familiarize the users with BI tools and data warehouse functionalities.

- Training component (in parallel with other phases):
  This phase consists of carrying out all training activities as per the defined/approved training plan and in response to the training requirements Four training types have been needed (DW Infrastructure applications, System administration/Maintenance/Configuration, user training or functionalities, Train the trainers).
- An early training activity which will start in parallel with stages inception in order to allow to the JC IT unit and QA unit to join in the customization and adaptation activities and QA/QC activities respectively.

General conditions for Project Management

The Bidder shall provide the following information in his proposal:

1. Description of his methodology and approach for the overall Project Management and implementation.
2. High-Level implementation plan containing sufficient detail to show work Breakdown structure and sequencing and time frame for every activity.
3. Proposed project management structure (including roles, and responsibilities of Team members.
4. Communications Plan that shall contain a list of all items to be communicated Between project teams. For each item, the following will be defined: (as example but not limited)
   • What is the item?
   • Who is issuing it?
   • Who is to be sent to?
   • What form or media will it be in?
   • What is the nature of the communication: mandatory, for-your-info, for approval, etc.?
   At beginning of implementation, the winning Bidder shall meet with the contracting authority and JC PM Team and agree on the Communications Plan.
5. List of project management deliverables

The winning Bidder is expected to provide the following services to facilitate the implementation of this project:

1. Assignment of a dedicated qualified and experienced Project Manager (full-time) to oversee the project implementation throughout the project lifecycle
2. Overall project management, reporting, co-ordination with project stakeholders and technical support for the entire implementation, to ensure smooth Integration/interfacing between different activities/solutions(s) and that the total solution(s) is implemented successfully
3. Project charter
4. Project schedule
5. Develop scope management plan
6. Develop risks and issues management plan (including contingency and mitigation)

7. Develop communications plan; submit scheduled and Ad-hoc reports and presentations
8. Develop cost management plan
9. Develop Human Resources management plan including roles and responsibilities as well as the level of involvement for each stage
10. Develop quality management plan
11. Maintenance of an accurate, timely base of information concerning the projects
Solution and progress

Delay and Responsibility

- ✓ The bidder shall be fully responsible for project deadlines as specified in the contract. Any delay in deliverables, unless caused by delays attributable to JCD and is properly documented, will be considered the responsibility of the bidder.
- ✓ In the event of such delays, JCD reserves right to penalties, stop payments, or terminate the contract in accordance with the agreed terms. The bidder must provide time line updates and plans to prepare any new issues that could affect the timeline.

Estimated Timeline Overview

Iteration	Duration	Target Systems/Databases	APIs	Data History	Key Outputs
Iteration 1	Up to 8 months	ASYCUDA + 15 systems	40	5 years	DW foundation, 8–10 KPIs, core dashboards
Iteration 2	Up to 6 months	30–45 additional systems	60+	5 years	Extended DW, 15+ advanced KPIs

Important Constraint: Incremental Data Processing Requirement
The proposed solution must not rely on full reloads or reprocessing of the entire historical dataset (e.g., the past five years) on a daily or periodic basis. Such approaches are unacceptable due to performance, scalability, and infrastructure limitations.

The system must be designed to support incremental, event-driven updates that maintain near real-time or scheduled data synchronization with the source systems.

This requirement is critical because a significant number of customs declarations may be modified or updated months or even years after the initial phase, particularly during or after the payment stage. Therefore, the solution must include mechanisms to automatically detect and load these late updates into the Data Warehouse, without requiring a full reload of historical data.

The architecture should ensure:

- Efficient change data capture (CDC) or equivalent methods.
- Handling of late-arriving data without manual intervention.

- No degradation in system performance or data availability.

Oracle ILM Compatibility and ZFS Storage Integration

1- Oracle ILM (Information Lifecycle Management) Compatibility
The proposed Data Warehouse solution must be **fully compatible** with Oracle Information Lifecycle Management (ILM) from the first day of implementation.

The system must be designed to support:

- Data classification based on age, access frequency, and business rules.
- Automatic data movement between storage tiers, including archival of data older than 5 years to Oracle ZFS Storage Appliance.

- Seamless integration with Oracle ILM policies and tools, such as table partitioning, Hybrid Columnar Compression (HCC), and policy-based data management.

2- Integration with Oracle ZFS Storage Appliance
The solution must support archiving to Oracle ZFS Storage Appliance with:

- Native Oracle Database integration for tiered storage.
- Efficient compression and long-term retrieval.
- Alignment with Jordan Customs data retention and auditing requirements.

3- Licensing Requirement for ILM
The bidder must:

- Explicitly state in the proposal all the required Oracle licenses to enable ILM functionality (e.g., Oracle Advanced Compression, Oracle Partitioning, etc.).
- Provide a budgetary price for these licenses as a separate line item.
- Acknowledge that Jordan Customs may procure these licenses after 5 years, based on operational and retention policy needs.

❖ **Note: These licenses are not to be included in the initial project scope or cost but must be clearly defined and costed for future budgeting purposes.**

4- Technical Compliance
The solution must include:

- An ILM architecture that supports future activation of archiving and tiering policies.
- Monitoring tools for data lifecycle tracking.
- Documentation and testing provisions to validate data movement and archival mechanisms

General Note for ILM:

The DWH architecture must support a **dynamic data time-shifting mechanism**, ensuring that only the **latest five (5) years of data**—calculated on a rolling basis as (SYSDATE - (365 * 5))—is retained in active storage.

This guarantees that ML models are consistently trained on the most relevant, contextually rich datasets that represent current business trends while still maintaining continuity with historical patterns.

In line with the **Information Lifecycle Management (ILM)** feature outlined in the bid:

- Data older than five years shall be **automatically offloaded to secondary storage** (e.g., Oracle ZFS Storage with required licensing), ensuring long-term retention for historical analysis, compliance, or audit needs.

This approach helps **maintain optimal DWH performance** while enabling access to extended data histories on demand

PARTNER REQUIREMENTS

Vendors are required to demonstrate their expertise and capabilities in the following areas:

- **Proven Implementation Experience**: Demonstrated success in implementing Oracle Data Warehouse technologies, including Oracle OLAP Option, Oracle Data Integrator (ODI), Oracle Analytics Server, Oracle Analytics Publisher, and Oracle Active Data Guard.
- **Comprehensive Data Management Proficiency**: Strong capabilities in data modeling and metadata management, including support for hierarchical structures, data quality assurance, user interface for data maintenance, data loading and synchronization, business service workflows, and end-to-end data warehousing architecture using ETL and OLAP tools.
- **Expertise in Data Warehousing and BI**: Practical experience in applying data warehousing principles, dimensional modeling, ETL development, and the delivery of business intelligence solutions.
- **Iterative KPI and Dashboard Development**: A collaborative approach to KPI and dashboard creation, emphasizing user feedback, continuous refinement, and alignment with evolving business needs.
- **Knowledge Transfer and Capacity Building**: Demonstrated ability to deliver effective training and knowledge transfer programs to empower JCD staff to independently manage and maintain the data warehouse environment.
- **Relevant Project Experience**: The bidder must have a strong track record of successfully delivering similar projects. A comprehensive portfolio of relevant previous engagements—particularly those executed in Jordan—is required. The proposal must include reference contacts (within and outside Jordan), and Jordan Customs reserves the right to contact them for verification.
- **Operational Tenure**: The bidding company must have been operational for at least eight (8) years. Supporting documentation confirming this requirement must be submitted with the proposal.

PARTNER CIRTIFICATES:

- The company must be a certified Oracle Service Partner for Oracle Data Integrator (ODI).
- The team must include at least one Oracle Certified Expert (OCE) in Performance Management and Tuning.
- The team must include at least two Oracle Certified Experts (OCE) in Oracle Real Application Clusters (RAC).

Deliverables

Phase	Deliverable	Description	Approval/Ownership
Phase 1: Data Discovery & Requirements	**Implementation Plan**	**A high-level implementation plan detailing the work breakdown structure, sequencing, milestones, and timeline. This includes activities across both iterations, with clear segmentation by sprint or module, and provisions for iterative feedback.**	**Vendor → JCD for review**
	Initial Requirements Document	**Captures business and technical requirements gathered through workshops with JCD stakeholders. This document will guide data modeling, ETL, and dashboard development.**	**Vendor → JCD**
	Data Source Inventory	**A mapped list of internal systems, databases, and APIs to be integrated into the DW solution, prioritized by iteration.**	**Vendor → JCD**
#	**Phases**	**Deliverables**	**Description**
1	**Scope & Plan**	Detailed Project Work Plan	A comprehensive project plan that outlines timelines, milestones, and responsibilities. • Regular status reports and updates to keep stakeholders informed. • Effective risk management and issue resolution processes in place. Software Components and Tools Plan:

			A comprehensive list of software components, tools, and technologies to be used in the project. • A clear rationale for the selection of each component and tool.
2	**Analysis & Definition**	Business Requirements Data Architecture Analysis (Profiling, Modelling) Staging, Integration, Distribution & Data Analytics Schemas Data Models Technical Architecture Analysis Software & Infrastructure	Detailed Requirements Document: • A detailed and complete list of functional and non-functional requirements, gathered through stakeholder collaboration. • Clear and unambiguous requirements with acceptance criteria.
3	**Architect & Design**	Database Design Data Integration Architecture & Design Analytic Server and AI Architecture & Design	System Design and Data Architecture Document: • A well-documented system architecture that defines data models, data flow, and integration points. • Clear documentation on system scalability,

			security, and data governance. Configure and Program Data Analytics Platform: • A fully configured data analytics platform that meets the specified requirements. • Demonstrated functionality of analytics tools and features. • Data pipelines and ETL processes in place and functioning.
4	**Build & Test**	Data Integration Pilot Data Analytics Pilot/POC Application Data Integration Development & Testing Data Analytics Application Development & Testing Source Data Loaded User Acceptance Testing (UAT) Systems Testing	Developing and Executing Interfaces: • Successfully developed interfaces for data ingestion, transformation, and extraction. • Testing and validation of data transfers between various systems. Testing Results: • Comprehensive test plans and test cases covering all aspects of the data warehouse. • Successful execution of

			various testing phases, including unit, integration, and user acceptance testing. • Identification and resolution of all reported issues and defects.
5	**Implement & Deployment**	User Training Data Analytics & ODI Operations Verification Data Analytics Applications Access & Verifications Data Analytics and AI & DI Production Monitoring & Controls Verifications Data Analytics and AI Roll-Out Data Analytics and AI Project Completion	<u>Reports, Queries, and Analytics:</u> • A library of pre-defined reports, queries, and analytical dashboards based on stakeholder requirements. • A user-friendly interface for generating custom reports and queries. • Demonstration of data analysis capabilities.
6	**Training**	**<u>Administrator Training</u>** Data Architect Data Modeler **<u>Developer Training</u>** ETL Architect ETL Developer AI Architect Report Publisher Portal Developer **<u>Business Users Training</u>** Business Driver QA Lead Tester Business Analyst	Conduct Training and Deliver Manuals: • Training sessions for end-users, administrators, and support staff. • Comprehensive training manuals and documentation cover training courses subjects, program,

			activities, ETLs, Server DWH Configuration and all other details. • Post-training support to address any questions or issues.
7	**Annual Local Support**	SLA Support by Authorized Local Partner	Go-Live Support and Stabilization Services: • A successful transition to the production environment with minimal disruption. • Immediate response and resolution of any issues or outages during the go-live phase. A stabilization plan to ensure system performance and reliability.

Post-implementation Maintenance and Support contract [mandatory]

- ✓ **First 3 Years :** Free support (Free warranty).
- ✓ **After free supporting Years :** bidder must provide the costs/percentage for each year
- ✓ **نسبة الصيانة ما بعد المجانية سوف تدخل في مفاضلة الأسعار لخمس سنوات بعد المجانية**

The Maintenance and Support contract should Starting from final acceptance. The cost of support must be itemized and quoted separately for each year, this contract will be **included in financial evaluation and technical evaluation.**

The maintenance contract **must cover any enhancements or modifications to the KPIs** originally included in the tender scope, **provided such enhancements do not alter the core system architecture or workflow structure**.

- ❖ **Bidder must sign the Jordan Custom's Maintenance Contract.**

Improvement Contract (Separated) [mandatory]

As part of the bid submission, bidders are required to provide a separate official quotation for potential future improvements, enhancements (i.e., change requests).

This quotation must remain valid for a period of eight (8) years from the date of final project acceptance.

The quotation must include a **fixed unit price** for **one (1) change request** in each of the following categories:

(هذه الفئات استرشادية)

1. **ODI (Oracle Data Integrator)**
2. **ETL (Extract, Transform, Load)**
3. **KPI (Key Performance Indicators)**
4. **Visualization (Dashboards and Reports)**

OR

(هذه الفئات استرشادية)

1. **Data Discovery & Requirements Gathering**
2. **DW Design & Development**
3. **KPI & Dashboard Development**
4. **Training & Knowledge Transfer**
5. **Governance & Operationalization**

Each category must be priced individually, with clear and separate cost breakdowns for a single change request.

يجب أن يتضمن عرض المناقص **آلية واضحة ومفصلة لاحتساب طلبات التغيير.(Change Requests)**

في حال كان طلب التغيير متعلقًا بـ **إدامة عمل النظام و/أو صيانته**، فلا يُعد هذا الطلب **طلب تغيير**، وإنما يندرج ضمن **عقد الصيانة والدعم الفني**.

يُعد الطلب **طلب تغيير (Change Request)** في حال تضمّن **إضافة جديدة أو تحسينًا على النظام**.

على سبيل المثال: إذا تم طلب خدمة معينة لاستكمال خدمة موجودة أصلًا ضمن شروط ومواصفات العطاء، مثل :**إضافة حقول، أو فلاتر، أو غيرها لأحد مؤشرات الأداء الرئيسية (KPIs)** بهدف **استكمال الربط مع عمليات ال (ETL)** ، فإن هذا يُعتبر طلب تغيير، **شريطة أن يُكمل سلسلة عمل متكاملة**.

This improvement contract will be treated as **financially independent** from both:

- The main project contract.
- The post-implementation Maintenance and Support contract.
- في حال تم شراء عقد التحسينات مستقبلا وحدث تأخير في تنفيذه، فإنه يتم احتساب غرامات التأخير – في حال وجودها – على قيمة عقد التحسينات فقط، وليس على كامل قيمة العطاء.

Furthermore, this improvement quotation will be **included in the financial evaluation**.

The purpose of this contract is to streamline potential future developments without requiring a new procurement cycle, while maintaining transparency and separation of scope.

Bidder Experience Requirements

Performance will be evaluated based on the following criteria:

- Demonstrated Experience: A proven track record of successfully delivering software solutions for projects of similar scope and complexity.
- Timeliness: Consistent adherence to project deadlines, including the timely delivery of software, hardware, and related equipment.

The bidder must meet at least one of the following requirements:

- ❖ Relevant Projects in Jordan (max Past 3 Years) :
  The bidder must have successfully completed or be actively engaged in projects of a similar nature within Jordan during the last three (3) years.

For each project, the bidder must provide comprehensive details, including:

- Project Title
- Project Scope and Description
- Project Duration
- Client Organization Name
- Client Contact Person (Name, Title, Email, and Phone Number)
- Key Deliverables and Achieved Outcomes
  - ❖ Relevant International Projects (Past 5 Years):
    The bidder must have successfully completed or be actively engaged in similar projects outside of Jordan during the last five (5) years.

For each international project, the following information must be submitted:

- Project Title
- Project Scope and Description
- Project Duration

- Client Organization Name
- Client Contact Person (Name, Title, Email, and Phone Number)
- Key Deliverables and Achieved Outcomes

❖ Contact Verification Requirements

The bidder must ensure that the client contact persons listed for both local and international projects are available for reference checks. These individuals should be authorized and capable of validating the project details, the bidder's responsibilities, and the quality of the services delivered .

Data Sources and Indicators

EACH KEY PERFORMANCE INDICATOR (KPI) IS BUILT UPON DISTINCT DATA SOURCES, WITH EACH SOURCE CONTRIBUTING TO THE MEASUREMENT OF CRITICAL ASPECTS OF CUSTOMS OPERATIONS, CARGO HANDLING, AND VEHICLE PROCESSING. BELOW IS A **SAMPLE** BREAKDOWN DEMONSTRATING HOW SPECIFIC DATA SOURCES ARE LINKED TO RELEVANT INDICATORS

ASYCUDA Data: The Automated System for Customs Data (ASYCUDA) provides comprehensive details on customs declarations, including entry and exit points, declaration types, tariff codes, customs lanes, and countries of origin. These data elements support KPIs related to customs processing efficiency .and clearance status

X-Ray Scanning Data: X-ray data supports the identification of anomalies or suspicious content in cargo and vehicles. KPIs derived from this source may include the number and percentage of flagged cases or high-risk detections.

Suspension Data: This data tracks suspended customs declarations, highlighting those held due to risk or non-compliance. It enables KPIs that monitor the volume, duration, and causes of suspensions.

Customs Case Data: Contains information on smuggling, violations, or other enforcement cases. It supports KPIs related to regulatory enforcement, classification of offenses, and trends in non-compliance.

Shipping Agent, Clearance Company, and Entity Information:

These fields enable performance tracking of entities involved in customs processes, facilitating KPIs that assess efficiency, compliance, and throughput by agent, company, or entity

Public Security Data: Includes information on travel bans, flagged individuals, and other security-related activities. KPIs in this area help monitor and assess the handling of high-risk individuals and enforcement .cooperation

Electronic Tracking and Maritime Shipping Data: **Near Real-time** tracking of shipments and maritime movements provides insights into transit times, route deviations, and overall cargo flow. Related KPIs .focus on tracking accuracy and logistics visibility

Case Management Data; Encompasses case numbers, value adjustments, legal justifications, and declaration statuses (e.g., pre-exit vs. post-exit). These elements are critical for KPIs that measure audit .outcomes, compliance follow-ups, and legal processing effectiveness

KEY PERFORMANCE INDICATORS (KPIS) AND ASSOCIATED DATA SOURCES

Each KPI is tied to specific datasets and technical indicators that reflect operational performance across customs processes. Below is a **sample** mapping of KPIs to their respective data sources and intended purposes:

1. TOTAL DECLARATIONS BY CUSTOMS LANES

- **Data Source:** ASYCUDA
- **Indicators:** Customs lanes, declaration stages, declaration status
- **Purpose:** Measures the volume and distribution of customs declarations across Green, Yellow, and Red lanes, including the percentage per lane.

2. X-RAY SCANNED DATA (SUSPICIOUS ITEMS)

- **Data Source:** Scanning Systems
- **Indicators:** Number of suspicious items/cases, discrepancies in declared vs. scanned quantities or values
- **Purpose:** Evaluates the effectiveness of X-ray inspections in detecting non-compliant or concealed goods.

3. SUSPENDED DECLARATIONS

- **Data Source:** ASYCUDA / Suspension Logs
- **Indicators:** Suspension reasons, involved entities, clearance companies
- **Purpose:** Monitors the rate and causes of suspended declarations within a defined period.

4. RE-ROUTED DECLARATIONS BETWEEN CUSTOMS LANES

- **Data Source:** Lane Routing Systems
- **Indicators:** Changes in lane assignments, associated cases, value adjustments, penalties
- **Purpose:** Tracks declaration movements between lanes and the resulting legal or financial outcomes.

5. INSPECTION ACTIVITIES

- **Data Source:** Inspection Logs
- **Indicators:** Number of trucks, containers, and goods inspected; value adjustments
- **Purpose:** Assesses the scope and effectiveness of inspections at borders, ports, and customs centers.

6. DECLARATION MODIFICATIONS

- **Data Source:** ASYCUDA
- **Indicators:** Modified declarations, adjusted values, fees, and guarantees
- **Purpose:** Ensures compliance and proper documentation of changes in declaration details.

7. COMPANY COMPLIANCE (FACILITATION PROGRAMS)

- **Data Source:** Entity Management Systems
- **Indicators:** Participation in programs (e.g., Golden/Silver List), compliance rates, processed declarations
- **Purpose:** Evaluates company performance and adherence to customs regulations under facilitation schemes.

8. TARGETING LISTS AND COMPLIANCE

- **Data Source:** Risk Management Systems
- **Indicators:** Target list names, criteria (e.g., tariff codes, countries), compliance rates
- **Purpose:** Assesses the success and coverage of implemented targeting strategies.

9. PORT TRAFFIC AND CARGO MOVEMENT

- **Data Source:** Maritime Systems
- **Indicators:** Number of ships, dwell times, customs center peak periods
- **Purpose:** Tracks port throughput and identifies congestion or processing inefficiencies.

10. TRUCK AND VEHICLE PROCESSING

- **Data Source:** Border Crossing and Tracking Systems
- **Indicators:** Number of trucks, nationalities, entry/exit data, location points
- **Purpose:** Monitors logistics flow and border management performance.

11. PASSENGER CLASSIFICATION AND RISK

- **Data Source:** Public Security and Immigration Data
- **Indicators:** Risk level, nationality, travel frequency, linked customs cases
- **Purpose:** Supports risk-based passenger screening and enforcement actions.

12. TIR (TRANSPORTS INTERNATIONAUX ROUTIERS) MONITORING

- **Data Source:** TIR System
- **Indicators:** TIR cover information, truck status, origin/destination countries, cases
- **Purpose:** Provides visibility into international road transport and customs requirements.

13. DATA MATCHING AND INTEGRITY

- **Data Source:** Multiple Systems (ASYCUDA, Clearance, Entity DBs)
- **Indicators:** Mismatches between importer/exporter details, country codes, and clearing companies
- **Purpose:** Detects and flags data inconsistencies across systems for corrective action.

GENERAL NOTE ON KPI GOVERNANCE

The project's progress and success will be measured against a defined set of KPIs, aligned with the **technical specifications of the Data Warehouse Project**. However, Jordan Customs reserves the right to revise or expand the KPI set under the following conditions:

- Any **significant change impacting project progress** may trigger a KPI review.
- **KPI reviews** will be scheduled **monthly** or as needed.
- Any modification or addition of KPIs must be:
  - **Justified during periodic reviews**
  - **Mutually agreed upon by all parties**
  - **Documented in an official annex signed by all stakeholders**
- All KPI changes must align with:
  - The **strategic objectives** of Jordan Customs
  - The **functional requirements** of the Intelligent Risk Management System (IRMS)
  - The **goals of system efficiency, transparency, and accuracy**

PROJECT EXECUTION FRAMEWORK

1. PROJECT DELIVERY APPROACH

The project will follow a **Two-Iteration Agile Delivery Model**, where each iteration encompasses the following five core phases:

1. **Data Discovery & Requirements Gathering**
2. **DW Design & Development**
3. **KPI & Dashboard Development**
4. **Training & Knowledge Transfer**
5. **Governance & Operationalization**

Each iteration will have a distinct scope of work, clearly defined deliverables, and structured review milestones. This iterative model promotes adaptability, early value delivery, and continuous alignment with Jordan Customs Department (JCD) objectives.

2. RESOURCE DEPLOYMENT & WORK MODEL

To ensure effective collaboration and knowledge transfer, an **ON-SITE work model** will be adopted as follows:

Full Onsite Model :

- One Senior specialize in Data Modeling or specialize in Transformation (Data Science) should work **onsite full-time** at Jordan Customs Department (JCD) premises to work and transfer knowledge to JCD team
- One Junior should work **onsite full-time** at JCD premises too.
- Other team members shall join the work onsite as needed.
- The proposed Senior specialist:

- should have two reference same project (Local, or international) at least. (documents should be provided)
- Must have certificates in Data Modeling or in Transformation (Data Science)
- The bidder must include the CVs of both the proposed Senior and Junior resources in the bid submission.
- The bidder must include the CVs of other team members resources in the bid submission.

❖ The bidder is required to cover all travel and accommodation expenses for its team during periods of on-site presence at the Customs premises.

3. **PAYMENT TERMS FOR LOT 1:**

The payment structure is aligned with an iterative delivery methodology, ensuring that payments are directly tied to the successful completion of project milestones and deliverables.

• FIRST PAYMENT:

Upon signing the contract, the Jordan Customs Department (JCD) will issue the **first payment of 25% of the total contract value**, upon successful completion of the following milestones:

- Data Warehouse (DW) setup,
- Establishment of the staging environment,
- Deployment of initial ETL pipelines.

• ITERATION-BASED PAYMENT MILESTONES:

The remaining **75% of the contract value** will be disbursed based on the successful completion and acceptance of deliverables, according to the following milestone structure:

Iteration 1 – 40% of Total Contract Value

Payments under Iteration 1, totaling 40% of the total contract value, shall be disbursed in accordance with the following milestone achievements:

- Upon formal approval of the implementation plan and requirements documentation.
- Upon successful completion of the Data Warehouse (DW) setup, establishment of the staging environment, and deployment of initial ETL pipelines.
- Upon delivery of core Key Performance Indicators (KPIs) and corresponding dashboards.
- Upon completion of Iteration 1 training and effective knowledge transfer to designated Jordan Customs Department (JCD) personnel.
- Upon successful completion of User Acceptance Testing (UAT) and formal sign-off by JCD.

Disbursement of the above payments (totaling 40% of the total contract value) is conditional upon:

- **Formal acceptance for iteration 1 by JCD** of the project.
- **Submission of corresponding progress reports and valid invoices**

ITERATION 2 – 35% OF TOTAL CONTRACT VALUE

Payments under **Iteration 2**, representing **35% of the total contract value**, shall be disbursed based on the achievement of the following milestones:

- Upon formal approval of the **enhanced requirements** and **data model extensions**.
- Upon successful **completion of additional data source integrations** and development of **advanced ETL processes**.
- Upon **delivery of advanced dashboards**, (**What-If analysis tools** – if Jordan Customs choose to implement What-If analysis**-)**, and implementation of **OLAP (Online Analytical Processing) features**.
- Upon **completion of final training**, **submission of comprehensive system documentation** and **formal project closure** as accepted by Jordan Customs Department (JCD).

Disbursement of the above payments (totaling 35% of the total contract value) is conditional upon:

- **Formal acceptance for iteration 2 by JCD** of the project.
- **Formal final acceptance by JCD** of the project;
- **Submission of corresponding progress reports and valid invoices**.

GENERAL NOTE ON PAYMENTS AND INVOICES:

INVOICES SHALL BE PAID WITHIN FORTY (40) DAYS FROM THE DATE OF SUBMISSION, IN ACCORDANCE WITH THE ENTITLEMENTS SPECIFIED IN THE PAYMENT MECHANISM OUTLINED IN CLAUSE (3. PAYMENT TERMS) OF THIS BID (LOT 1).

FUNCTIONAL AND TECHNICAL REQUIREMENTS CATEGORIZED

Below is a categorized breakdown of key project requirements and expectations extracted and translated from the provided content:

A. DATA AND KPI INTEGRATION REQUIREMENTS

- KPIs will be driven by a diverse set of data sources including ASYCUDA, X-Ray systems, TIR systems, shipping records, inspection logs, and public security data, etc.
- Each KPI will map to specific operational domains such as customs processing, lane routing, risk detection, company compliance, cargo flow, and passenger classification.
- KPIs must be designed to reflect both operational insights and strategic risk intelligence as part of the Intelligent Risk Management System (IRMS).

B. TRAINING AND CAPACITY BUILDING

- A structured training program must be delivered to JCD staff covering:
    - Use of Oracle Data Warehouse tools
    - BI dashboard development
    - KPI modeling and maintenance

    - End-user and admin-level functions
- Training formats should include classroom sessions, on-the-job coaching, and hands-on labs.
- Documentation deliverables must include:
    - User manuals
    - Data dictionaries
    - Data lineage diagrams
    - System admin guides

C. PROJECT GOVERNANCE AND CHANGE CONTROL

- KPI reviews and adjustments will be conducted monthly or as needed.
- JCD reserves the right to:
    - Add or modify KPIs based on performance reviews
    - Align all changes with the strategic goals of the IRMS
- Any changes must be formally agreed upon by all parties and documented in an official annex.

D. **Data Management and AI/ML Continuity Requirements**

The deployment of Artificial Intelligence (AI) and Machine Learning (ML) components shall occur either at the final stage of the LOT1 —prior to Final Acceptance of LOT 1—, provided that all technical and operational prerequisites for AI/ML activation have been fully satisfied.

- The Data Warehouse (DWH) must maintain a dynamic rolling data window covering the last five (5) years, calculated as a continuous range (e.g., SYSDATE - 5 years).
- Machine Learning models must:
    - Support automatic retraining based on newly ingested data
    - Maintain version control and rollback capabilities
    - Utilize incremental learning techniques where feasible to avoid full model retraining cycles
    - Prioritize recent data trends while preserving long-term historical patterns

To ensure full readiness for the deployment of Artificial Intelligence (AI) and Machine Learning (ML) components, both the Bidder in Lot 1 **— responsible for the Data** Warehouse and core data infrastructure — and the Bidder in Lot 2 — responsible for the development and implementation of AI/ML components — **shall be jointly responsible for establishing effective coordination and technical integration**, in the event that the two Lots are awarded to separate entities.

This joint coordination aims to ensure that all data, infrastructure, and integration prerequisites necessary for the activation of AI/ML technologies are fully met, in alignment with the project's architectural and operational requirements.

In case that Lot 2 is not awarded to any bidder, the awarded Bidder of Lot 1 shall be required to coordinate directly with the JCD team to ensure that all necessary preparations and technical enablers for AI/ML deployment are fully addressed.

COMPLIANCE MATRIX REQUIREMENT

All bidders are required to submit a **Compliance Sheet (Compliance Matrix)** as part of their technical proposal. This document must clearly indicate the bidder's level of compliance with each of the functional, technical, and contractual requirements outlined in this RFP.

- The compliance sheet must use the following format:

| Requirement ID | Requirement Description | Compliant (Yes/No/Partial) | Comments / Reference to Proposal Section |

- Any "Partial" or "No" responses must be accompanied by clear explanations or proposed alternatives.
- Failure to submit a complete and accurate compliance sheet may result in the proposal being deemed non-responsive.

Note: The Compliance Matrix allows the evaluation team to assess how well the bidder aligns with the specified technical, functional, and contractual requirements. It also ensures transparency and traceability during the evaluation process.

Data Warehouse (DWH) Use Cases:
The detailed Data Warehouse use cases are provided in **Annex 1** of this document. Bidders are required to review and comply with all specified use cases as part of their technical proposal.

EVALUATION CRITERIA FOR JCDWH PROJECT BIDS - PROJECT: JORDAN CUSTOMS DATA WAREHOUSE (JCDWH)
I. TECHNICAL EVALUATION – 70% FOR LOT 1

#	Requirement ID	Requirement Description	Marks weight	marks weight (70 marks)	Compliant (Yes/No/Partial)	Comments / Reference to Proposal Section
1	Introduction		1	0.238		
2	PROJECT OBJECTIVES	Data Integration	5	1.190		
		Data Transformation and Cleansing	6	1.429		
		Multidimensional Data Modeling	5	1.190		
		ETL/ELT Automation	5	1.190		
		Self-Service Analytics and Reporting	3	0.714		
		Operational Efficiency	5	1.190		
		Informed Decision-Making	3	0.714		
		Capacity Building and Sustainability	2	0.476		
3	Scope of Work and implementation methodology	Iterative Approach Summary	3	0.714		
		Iteration 1 – Core Systems and Foundational KPIs	15	3.571		
		Phase 1: Data Discovery & Requirements	3	0.714		

		Phase 2: DW Design & Development	4	0.952		
		Phase 3: KPI & Dashboard Development	3	0.714		
		Phase 4: Training & Knowledge Transfer	3	0.714		
		Phase 5: Governance & Monitoring	3	0.714		
		Iteration 2 – Extended Systems and Advanced Insights	12	2.857		
		Phase 1: Data Discovery & Requirements	4	0.952		
		Phase 2: DW Design & Development	3	0.714		
		Phase 3: KPI & Dashboard Development	2	0.476		
		Phase 4: Training & Knowledge Transfer	3	0.714		
		Phase 5: Governance & Monitoring	2	0.476		
4	General conditions for Data Discovery & Requirements for both Iterations:		3	0.714		
5	General conditions for DW Design & Development for both Iterations:		7	1.667		
6	General conditions for KPI & Dashboard Development for both Iterations:		7	1.667		
7	General conditions for Training & Knowledge Transfer:		4	0.952		
8	Estimated Timeline Overview		10	2.381		
9	Important Constraint: (reload data)		10	2.381		
10	Oracle ILM Compatibility and ZFS Storage Integration		17	4.048		

11	PARTNER Requirements		7	1.667		
12	PARTNER CIRTIFICATES		3	0.714		
13	Deliverables		2	0.476		
14	post-implementation Maintenance and contract [mandatory] Support		4	0.952		
15	Improvement Contract (Separate) [mandatory]		4	0.952		
16	Bidder Experience Requirements		10	2.381		
17	Data Sources and Indicators		9	2.143		
18	Key Performance Indicators (KPIs) and Associated Data Sources	General Note on KPI Governance	13	3.095		
		GENERAL NOTE ON KPI GOVERNANCE	8	1.905		
19	REQUIREMENTS FOR MACHINE LEARNING MODEL CONTINUITY	Continuous Model Training	5	1.190		
		Data Time Shifting & ILM Alignment	4	0.952		
		Automated Model Retraining	5	1.190		
		Model Versioning	4	0.952		
		Incremental or Online Learning	4	0.952		
		Time-Window Flexibility	3	0.714		
20	Project Execution Framework	Project Delivery Approach	7	1.667		
		Resource Deployment & Work Model	10	2.381		
21	Payment Terms		0	0.000		
22	Functional and Technical Requirements Categorized	Data and KPI Integration Requirements	3	0.714		
		Training and Capacity Building	9	2.143		

		Project Governance and Change Control	4	0.952		
		Data Management and AI/ML Continuity	6	1.429		
23	Compliance Matrix Requirement		10	2.381		
24	Mandatory Conditions	Non-Disclosure Agreement (NDA)	2	0.476		
		National Cybersecurity Compliance	2	0.476		
25	General Note This project will be implemented on-premises only		1	0.238		
	زيارة دائرة الجمارك الأردنية للاطلاع على تفاصيل حالات الاستخدام		2	0.476		
Total			294	70		

II. FINANCIAL EVALUATION – 30% FOR LOT 1

Criteria	Weight	Details
1. Total Project Cost	18 points	Final cost with detailed breakdown per phase.
3. What-If Analysis (one case)	2 points	**What-If Analysis should be priced separately**
4. Maintenance & Support Contract	5 points	5-year after 3 years free maintenance and support agreement.
5. Improvement Contract	2 points	Final cost for separate official quotation for future improvements.
6. Licensing Flexibility and Integration Readiness	3 points	Licensing for components like ZFS for ILM with the option to purchase post-project completion.

Financial Evaluation Formula:
Bidder Score = (Lowest Bid* / Bidder's Price) × 30%

- The lowest-priced bid* will receive the full 30 points.
- Other bids will be scored proportionally.

* The lowest-priced bid = (**Total Project Cost +** 5-year post-implementation maintenance and support agreement cost)

ELIGIBILITY REQUIREMENTS

- Bidders must score **at least 50 out of 70 points** -210 points out of 294 points- in the technical evaluation to qualify for financial evaluation.
- The technical proposal must include a **clear plan for integrating DWH with predictive analytics/AI** as a final project phase.
- What-IF analysis **should be priced separately (for one representative business case).**
- The bidder must submit a **separate official quotation for future improvements**, valid for **8 years**. This quote will be part of the financial evaluation and will be **financially separated** from the main project and from the maintenance/support contract.

MANDATORY CONDITIONS FOR LOT1 & LOT2:

1. **Non-Disclosure Agreement (NDA):**
   The awarded bidder shall be required to sign a Non-Disclosure Agreement (NDA) with the Customs Department prior to the commencement of any work. Failure to comply with this requirement may result in disqualification or termination of the contract.
2. **National Cybersecurity Compliance:**
   The bidder must formally accept and comply with all information security policies, regulations, and directives issued by the National Cyber Security Center (NCSC). Non-compliance with these directives at any stage of the project may lead to the suspension or cancellation of the contract.

General Note FOR LOt1 & LOT2:

- This project will be implemented **on-premises** only. The use of cloud services or cloud-based infrastructure is **not permitted** in any part of the solution, in accordance with the national information security policies and internal cybersecurity guidelines.

- It will be the Bidder responsibility of the configuration for the project based on Jordan Customs Needs; Bidder must grantee a high-standards configuration on mother company recommendations, Any Features need extra license must be mentioned in detailed and prices for each year (first 5 years) The cost must be itemized and quoted separately for each year.

LOT 2

Implement Artificial Intelligence (AI)

1. REQUIREMENTS FOR MACHINE LEARNING MODEL CONTINUITY (SEPARATE PRICING)

1.1 The Large Language Model (LLM):

The Large Language Model (LLM) to be used in this LOT will be chosen by JCD during the first phase of the project, the selected LLM will be open-source, with the following specs:

1.2 Requirements for the Large Language Model (LLM)

The Large Language Model (LLM) to be used in this LOT will be selected by the JCD during the first phase of the project. The chosen LLM will be open-source and must meet the following functional and technical requirements:

1.2.1 Interactive Data Integration

- The LLM must interact directly with the DWH to extract, process, and analyze data dynamically.
- It should support real-time integration with structured and unstructured datasets stored within the DWH.

1.2.2 Interactive Statistical Reporting

- The LLM must enable users to generate interactive statistical reports based on textual or voice-based queries.
- These reports should include visualizations (e.g., charts, graphs, tables) and allow users to drill down into specific data points for deeper insights.

1.2.3 Natural Language Processing (NLP) Capabilities

- The LLM should support advanced NLP techniques to interpret and respond to user queries accurately, whether provided in textual or voice format.

- It must handle multilingual inputs, including Arabic and English, to be able to repones different users requirements base of the JCD.

1.2.4 Customizable Query Templates

- The system should allow the creation of customizable query templates for common reporting needs (e.g., customs risk analysis, trade volume trends).
- Users should be able to modify these templates dynamically through natural language interactions.

1.2.5 Voice Interaction Support

- The LLM must include a voice-enabled interface that allows users to submit queries and receive responses in a conversational manner.
- Voice recognition and synthesis technologies should comply with international standards for accuracy and accessibility.

1.2.6 Explainability and Transparency

- The LLM should provide clear explanations of how it processes queries and generates reports.
- This includes detailing the data sources used, analytical methods applied, and any assumptions made during the reporting process.

1.2.7 Security and Access Control

- The LLM must adhere to strict security protocols to ensure only authorized users can access sensitive data through the system.
- Role-based access control (RBAC) should be implemented to restrict access to certain types of reports or datasets based on user permissions.

1.2.8 Scalability and Performance

- The LLM must be scalable to handle increasing data volumes and user loads without degradation in performance.
- Response times for generating interactive reports should be optimized to ensure a seamless user experience.

1.2.9 Open-Source Compliance

- The chosen LLM must be open-source, allowing for customization and integration with existing systems.
- Any additional licensing costs for third-party tools or libraries required for enhanced functionality must be clearly documented and included in the financial proposal.

To ensure the long-term effectiveness and adaptability of the Machine Learning (ML) component within the Data Warehouse (DWH) project, the system must adhere to the following technical and architectural requirements:

1. CONTINUOUS MODEL TRAINING

The system must be designed to support **ongoing, automated ML training** as new data is ingested into the DWH over time. This training process should be seamless and require minimal manual intervention, ensuring the models remain up to date with evolving data patterns.

2. DATA TIME SHIFTING & ILM ALIGNMENT

The DWH architecture in LOT1 must support a **dynamic data time-shifting mechanism**, ensuring that only the **latest five (5) years of data**—calculated on a rolling basis as (SYSDATE - (365 * 5))—is retained in active storage.

This guarantees that ML models are consistently trained on the most relevant, contextually rich datasets that represent current business trends while still maintaining continuity with historical patterns.

In line with the **Information Lifecycle Management (ILM)** feature outlined in the bid:

- Data older than five years shall be **automatically offloaded to secondary storage** (e.g., Oracle ZFS Storage with required licensing), ensuring long-term retention for historical analysis, compliance, or audit needs.
- This approach helps **maintain optimal DWH performance** while enabling access to extended data histories on demand.

3. AUTOMATED MODEL RETRAINING

ML models must support **automated retraining** upon the arrival of new data from future periods (e.g., 2026, 2027, etc.). The retraining process should:

- Be integrated into the data pipeline.
- Require minimal manual configuration.
- Leverage both newly ingested and historically retained data within the 5-year window.

This will ensure the models remain **accurate, adaptive**, and capable of producing **reliable forecasts and trend analyses**.

4. MODEL VERSIONING

The system must implement **model version control** to:

- Track each iteration of model training.
- Allow rollback to previous versions if needed.
- Ensure transparency and traceability in the ML lifecycle.

Each version should be properly documented, including changes in features, parameters, and training datasets.

5. INCREMENTAL **OR** ONLINE LEARNING

Where applicable, the solution should support **incremental or online learning** approaches that enable the model to:

- Learn continuously from new data.
- Avoid the need for full retraining cycles.
- Scale effectively as data volume grows over time.

This is critical for maintaining responsiveness and reducing computational overhead.

6. TIME-WINDOW FLEXIBILITY

The ML system must be designed to accommodate **adjustable training time windows** (e.g., sliding 5-year windows). While newer data should take precedence, the system must retain insights from older data to:

- Preserve long-term trend recognition.
- Prevent model drift or short-term bias.

This ensures balanced, historically aware, and context-sensitive model outputs.

AI Use Cases – Scope, Pricing and Evaluation Criteria

Given the absence of clearly defined AI use cases in the current tender scope

The identification and definition of AI use cases will either be:

- Determined by the JCD at a later stage,
- Or proposed by the bidder, then reviewed, discussed, and approved by the JCD prior to implementation.

As AI use case pricing varies depending on complexity (Simple, Medium, Complex), bidders are required to submit separate unit pricing for **one representative business case for each complexity level**. Each complexity level must follow specific evaluation **criteria** mentioned in below table.

Accordingly, the final selection and pricing of AI use cases will be subject to mutual agreement between the JCD and the awarded bidder, based on complexity and effort required for implementation.

AI Use Case Classification by Complexity Level

Complexity Level	General Description	Suggested Technical Criteria	Illustrative Examples
Simple	A limited, well-defined use case with clear input and direct processing	- Small data volume- No external system integration- Basic or pre-trained ML model- No real-time updates required	- Automatic document classification- Detection of missing fields in records- Sentiment analysis of user feedback
Medium	A use case with multiple inputs and requiring custom model training	- Medium data volume- Some integration with external systems- Custom ML model development- Periodic updates needed	- Predicting customs risk based on historical patterns- Detecting anomalies in declarations- Behavioral analysis of traders
Complex	A broad use case involving large-scale data, multiple integrations, and advanced algorithms	- Large and complex data volume- Deep integration with multiple systems (e.g., ASYCUDA)- Use of advanced techniques (e.g., Deep Learning, complex NLP)- Real-time inference required	- Real-time intelligent risk scoring of customs transactions- Automatic extraction of multilingual unstructured document data- AI-powered recommendations for inspections or clearance paths

❖ **تحديد حالة استخدام الذكاء الاصطناعي وآلية التعامل مع اختلاف درجة التعقيد**

سيتم تحديد حالة استخدام الذكاء الاصطناعي بشكل نهائي خلال مراحل تنفيذ المشروع، وذلك من خلال عقد سلسلة من الاجتماعات المشتركة بين **دائرة الجمارك الأردنية** و**الشركة المنفذة** بهدف تحديد الحالة الأنسب وتحديد درجة تعقيدها (بسيطة، متوسطة، معقدة) وفقًا لمتطلبات العمل الفعلية..

عند التوصل إلى اتفاق حول حالة الاستخدام المطلوبة، يتم **توثيق هذا الاتفاق بتوقيع رسمي من كلا الطرفين** (دائرة الجمارك الأردنية والشركة المنفذة)، وذلك استنادًا إلى المخرجات الفنية والتشغيلية للاجتماعات.

وفيما يلي آلية التعامل مع السيناريوهات المحتملة بعد الإحالة

1. **في حال كانت الحالة المختارة أقل تكلفة من الحالة المُحال عليها العطاء:**
يتم خصم فرق السعر من **الدفعة الثالثة (الأخيرة)** من قيمة العطاء، والتي تشكل **35% من إجمالي قيمة العطاء** ، او اي دفعة أخرى - من الدفعات المالية الثلاثة المشار اليها في العطاء- تحددها دائرة الجمارك.
2. **في حال كانت الحالة المختارة أعلى تكلفة من الحالة المُحال عليها العطاء:**
يتم تقديم **طلب رسمي من دائرة الجمارك الأردنية إلى دائرة المشتريات الحكومية (اللجنة المركزية)**للموافقة على زيادة قيمة العطاء بمقدار فرق السعر، وذلك استنادًا إلى **الأسعار الافرادية** لكل نوع (Simple, Medium, Complex) المقدمة والمعتمدة في العرض المالي للعطاء.

3. **في حال عدم التوصل إلى اتفاق بين دائرة الجمارك والشركة المنفذة** بشأن تحديد حالة استخدام الذكاء الاصطناعي و/أو درجة تصنيفها (Simple, Medium, Complex) ، يتم **إلغاء هذا البند (الذكاء الاصطناعي)** بموجب **وثيقة رسمية موقعة من الطرفين**، ويتم **خصم قيمة هذا البند المُحال من الدفعة المالية التالية المستحقة**، او اي دفعة أخرى - من الدفعات المالية الثلاثة المشار اليها في العطاء- تحددها دائرة الجمارك.

ملاحظة: يجب ان تكون الحالات الثلاثة أعلاه موثقة بشكل رسمي وموقعة من الطرفين في حال حدوثها.

❖ **تعديل درجة تعقيد حالة استخدام الذكاء الاصطناعي بعد الإحالة**

نظرًا للطبيعة المتغيرة لتعريفات حالات استخدام الذكاء الاصطناعي، تحتفظ **دائرة الجمارك الأردنية** بحق **ترقية أو تخفيض درجة تعقيد حالة الاستخدام المختارة** (بسيطة، متوسطة، معقدة) بعد الإحالة.

وفي هذه الحالة، يتم **الرجوع إلى الأسعار الافرادية المعتمدة والمقدمة في العرض المالي للمناقص** من أجل **تعديل القيمة الإجمالية للعقد** من خلال **إصدار أمر تغيير رسمي (Change Order)** دون تجاوز الأسعار المحددة والمعتمدة ضمن العرض الأصلي.

Specific Requirements for Artificial Intelligence (AI) Integration

This section outlines the specific requirements and considerations related to the integration of Artificial Intelligence (AI) capabilities within the Data Warehouse project for the Jordan Customs Department (JCD). Bidders are required to carefully review these requirements and provide comprehensive responses in their proposals.

1. Background:

As outlined in the main body of this RFP, the JCD seeks to establish a robust and efficient Data Warehouse to enhance its operational capabilities. Recognizing the transformative potential of Artificial Intelligence, the JCD intends to integrate AI-powered solutions to further optimize processes, improve decision-making, and enhance overall efficiency.

2. Scope of AI Integration:

Given the evolving nature of AI applications and the specific needs of the JCD, the precise AI use cases to be implemented will be determined collaboratively during the project execution phase. This will involve joint workshops and discussions between the JCD and the awarded bidder.

Bidders are required to demonstrate their expertise and capabilities in identifying, developing, and implementing a range of AI solutions across different complexity levels.

3. Pricing for AI Components:

Due to the yet-to-be-defined specific AI use cases, bidders are required to submit separate unit pricing for representative business cases at three complexity levels: Simple, Medium, and Complex. This pricing should be clearly outlined in the Financial Proposal section of their response.

4. Unit Pricing Requirements:

For each complexity level (Simple, Medium, Complex), bidders shall provide a detailed breakdown of the unit price, including but not limited to:

- Software licensing costs (if applicable)
- Development and customization costs
- Deployment and integration costs
- Initial training costs
- Any other relevant cost components

Bidders must clearly define the scope and deliverables associated with each representative business case for which unit pricing is provided.

5. Evaluation Criteria for AI Capabilities:

Proposals will be evaluated based on the criteria outlined in the main RFP document, as well as the following specific criteria related to AI integration:

- **Understanding of AI Applications in Customs:** Demonstrated understanding of relevant AI use cases within a customs or similar regulatory environment.
- **Innovation and Creativity of Proposed Solutions:** The originality and potential value-add of the representative AI business cases presented.
- **Technical Expertise and Experience:** Proven experience in developing and deploying AI solutions of varying complexity, including the technologies and methodologies proposed.
- **Scalability and Sustainability of Proposed Architectures:** The ability of the proposed AI architecture to accommodate future growth and the long-term sustainability of the solutions.
- **Security and Data Privacy Considerations:** Approach to ensuring the security and privacy of data within the AI solutions.
- **Integration Capabilities:** Demonstrated ability to integrate AI solutions with existing data warehouse and other relevant systems (e.g., ASYCUDA).
- **Ease of Use and User Adoption Strategy:** Approach to ensuring user-friendliness and facilitating the adoption of AI-powered tools.
- **Potential Impact and Measurable Benefits:** Clear articulation of the potential impact of AI integration on JCD operations and how benefits will be measured.
- **Knowledge Transfer and Capacity Building Plan:** A comprehensive plan for transferring AI knowledge and building the JCD team's capabilities.
- **Proposed Methodology for Use Case Definition and Implementation:** A clear and effective methodology for the collaborative identification and subsequent implementation of specific AI use cases.

- **Adherence to Ethical AI Principles:** Demonstrated commitment to ethical AI practices and strategies for mitigating bias and ensuring responsible use.
- **Approach to Explainability (XAI):** Methodologies and techniques proposed to ensure the transparency and interpretability of AI model outputs.
- **Design for Easy Maintenance:** Architectural considerations and development practices that facilitate the long-term maintenance and updating of AI solutions.
- **MLOps Framework and Implementation Plan:** A comprehensive approach to Machine Learning Operations, covering the lifecycle management of AI models.

6. Mechanism for Defining AI Use Cases and Handling Complexity Differences:

The final determination of specific AI use cases and their complexity levels (Simple, Medium, Complex) will occur during the project implementation phase through a series of joint workshops and meetings between the JCD and the awarded bidder.

- **Collaborative Definition:** The selection process will be driven by the JCD's actual business requirements, the potential value-add, technical and operational feasibility, and cost considerations.
- **Formal Agreement:** Once an agreement is reached on a specific use case and its complexity, it will be formally documented and signed by both the JCD and the awarded bidder, based on the technical and operational outcomes of the meetings.
- **Cost Adjustment Mechanism:**
    - **Lower Cost Use Case:** If the selected use case has a lower cost than the representative case corresponding to the awarded complexity level, the price difference will be deducted from the third (or any other installment as determined by the JCD).
    - **Higher Cost Use Case:** If the selected use case has a higher cost, the JCD will submit a formal request to the relevant government procurement authority for approval of a contract value increase, based on the unit prices provided in the bidder's Financial Proposal.
    - **Failure to Agree:** In the event that the JCD and the awarded bidder cannot reach an agreement on a specific AI use case and/or its complexity classification, this AI component of the project may be canceled through a formal written agreement signed by both parties. The corresponding value of this component will be deducted from the next due payment (or any other installment as determined by the JCD).

Note: All instances of cost adjustments or cancellation of the AI component must be formally documented and signed by both the JCD and the awarded bidder.

7. Modification of AI Use Case Complexity After Award:

The JCD reserves the right to upgrade or downgrade the complexity level of a selected AI use case (Simple, Medium, Complex) after the contract award, recognizing the dynamic nature of AI application definitions. In such cases, the approved unit prices provided in the bidder's Financial Proposal will be used to adjust the total contract value through the issuance of a formal Change Order, without exceeding the original quoted and approved unit prices.

8. Knowledge Transfer and Capacity Building Requirements:

The awarded bidder shall provide a comprehensive Knowledge Transfer and Capacity Building Plan for the JCD team in the field of AI. This plan must include:

- Detailed training programs covering fundamental AI concepts and relevant applications within the customs domain.
- Hands-on workshops focusing on the specific AI use case(s) implemented.
- Comprehensive documentation of the implemented AI solutions, including technical specifications and user manuals.
- A defined period of post-implementation support and consultation.

* Additionally, the bidder is required to obtain official approval from the Ministry of Digital Economy and Entrepreneurship (MODEE) to validate the accreditation and reliability of the training programs to be delivered.

9. Preliminary AI Implementation Plan:

Bidders are required to submit a preliminary AI Implementation Plan outlining their proposed approach for identifying, developing, and deploying AI use cases within the JCD Data Warehouse. This plan should demonstrate an understanding of the collaborative nature of the use case definition process and include:

- Proposed phases and activities for AI integration.
- Indicative timelines for key milestones.
- Proposed team structure and roles for AI development and implementation.
- Preliminary list of AI tools and technologies that may be utilized.

10. Ethical AI and Explainability:

The JCD places significant importance on the ethical implications of AI and the need for transparency and accountability in AI-powered systems. Bidders must address these considerations in their proposals.

- **Ethical AI Principles:** Proposals should outline the bidder's commitment to ethical AI principles, including fairness, non-discrimination, transparency, and accountability. Bidders should describe how they will mitigate potential biases in data and algorithms and ensure that AI systems are used responsibly and ethically within the JCD context.
- **Explainability (XAI):** Bidders must describe their approach to ensuring the explainability of AI models, particularly for medium and complex use cases. Proposals should detail the techniques and methodologies that will be employed to provide insights into how AI systems arrive at their decisions or predictions. This includes the ability to understand the factors influencing outcomes and provide justifications when necessary. The level of explainability should be appropriate for the specific use case and the sensitivity of the decisions being made.

11. Easy Maintenance and Scalability:

The JCD requires AI solutions that are designed for ease of maintenance, updates, and long-term sustainability. Scalability to accommodate growing data volumes and evolving business needs is also critical.

- **Maintainability:** Proposals should detail the architectural design and development practices that will ensure the maintainability of the AI systems. This includes modular design, well-documented code, clear interfaces, and the use of industry-standard technologies and frameworks. Bidders should describe their approach to facilitating future updates, modifications, and troubleshooting of the AI solutions.
- **Scalability:** Bidders must describe how their proposed AI solutions can be scaled effectively to handle increasing data volumes, user loads, and the potential addition of new features or use cases without significant performance degradation or architectural redesign.

12. MLOps (Machine Learning Operations):

To ensure the reliable and efficient operation of AI systems in a production environment, the JCD emphasizes the importance of MLOps practices. Bidders should outline their approach to MLOps.

- **MLOps Framework:** Proposals should describe the MLOps framework and processes that will be implemented for the development, deployment, monitoring, and management of AI models throughout their lifecycle. This includes aspects such as version control for models and data, automated testing, continuous integration/continuous deployment (CI/CD) pipelines for AI models, and robust monitoring and alerting mechanisms to track model performance and data drift.
- **Model Monitoring and Governance:** Bidders must detail their approach to monitoring the performance and accuracy of deployed AI models over time. This includes defining key performance indicators (KPIs), establishing monitoring dashboards, and implementing mechanisms for detecting and addressing model degradation or bias drift. Proposals should also address the governance aspects of AI models, including auditability and compliance with relevant regulations.

Bidders are advised to carefully consider all aspects of this section when preparing their technical and financial proposals

General Notes (LOT 2):

- **AI/ML components should be priced separately for one representative business case for each complexity level.**
- **The implementation of LOT 2 shall commence upon the full (100%) completion of LOT 1.**
- **Any proposal submitted for Lot 2 shall remain valid and binding for a period of two (2) years at least starting from the Final delivering of Lot 1.**
- لا يحق للمناقص الفائز بال (LOT2) البدء بأي أعمال ضمن هذا الجزء إلا بموجب كتاب رسمي صادر عن دائرة الجمارك الأردنية يبيّن رغبتها الصريحة في البدء بالمشروع. كما تحتفظ دائرة الجمارك الأردنية بحقها في إلغاء هذا الجزء من العطاء (LOT2) في أي وقت **قبل** صدور ذلك الكتاب، دون أن يترتب عليها أي مسؤولية تجاه المناقص.

ملاحظة هامة تتعلق بحالات الاستخدام (LOT 2)

نظرًا لطبيعة المعلومات المرتبطة بحالات الاستخدام المطلوبة، والتي تصنّف على أنها **بيانات غير مفتوحة** وتتضمن تفاصيل تشغيلية وتقنية حساسة تخص دائرة الجمارك الأردنية، **يتعذر إدراج هذه التفاصيل الدقيقة ضمن وثيقة المواصفات** حفاظًا على سرية وأمن البيانات.

وعليه، **يُطلب من المناقصين الراغبين في الاطلاع على تفاصيل هذه الحالات** التقدم بطلب رسمي لعقد **زيارة ميدانية إلى دائرة الجمارك الأردنية**، وذلك بالتنسيق مع دائرة المشتريات الحكومية. تهدف هذه الزيارات إلى:

- الاطلاع التفصيلي على سيناريوهات الاستخدام الفعلية
- فهم مصادر البيانات ذات العلاقة
- التعرف على طبيعة التحليل المطلوب
- ضمان تقديم عروض فنية دقيقة ومبنية على فهم واقعي لبيئة العمل

لن يُنظر بأي تفسير و/او استفسار و/أو تحليل خاص بجزئية (حالات الاستخدام [Use Cases]-البيانات غير المفتوحة-) غير مبني على هذه الزيارات، كما أن فهم هذه التفاصيل يُعد عنصرًا جوهريًا في تقييم مدى استجابة العروض الفنية لمتطلبات المشروع.

ملاحظة هامة – الاطلاع على تفاصيل حالات الاستخدام:

يتوجب على المناقصين الراغبين في الاطلاع على التفاصيل الكاملة لحالات الاستخدام المدرجة في LOT2، الالتزام بالإجراءات التالية:

1. أن يكونوا قد قاموا بشراء نسخة من العطاء (LOT2) من خلال دائرة المشتريات الحكومية.
2. تقديم كتاب رسمي إلى دائرة المشتريات الحكومية يتضمن طلب تنسيق زيارة ميدانية إلى دائرة الجمارك الأردنية، بهدف الاطلاع على تفاصيل حالات الاستخدام والبيانات ذات العلاقة.
3. توقيع اتفاقية عدم إفشاء المعلومات (**Non-Disclosure Agreement – NDA**) قبل القيام بالزيارة، وذلك لضمان حماية سرية المعلومات والبيانات التي سيتم الاطلاع عليها.

PARTNER REQUIREMENTS FOR AI INTEGRATION

The Jordan Customs Department (JCD) seeks a highly qualified partner for AI integration into its on-premise data warehouse. Bidders must demonstrate the following core competencies, experience, and certifications:

1. General Partner Capabilities & Experience

- Proven Expertise & Track Record: Demonstrable success in developing and deploying AI solutions across all complexity levels within on-premise environments. This requires a robust track record of similar projects, especially in Jordan, supported by verifiable client references. Expertise in end-to-end data warehousing, including data quality, ETL, and OLAP, is also essential.

- Collaborative & User-Centric Approach: A clear methodology for collaborative AI use case definition with JCD stakeholders, focusing on user-friendliness and successful adoption of AI tools.

- Ethical AI & Explainability (XAI): Commitment to ethical AI principles (fairness, transparency, accountability) with strategies for bias mitigation. Proven methodologies for ensuring the interpretability of AI model outputs, particularly for complex cases.

- Robust MLOps Implementation: A comprehensive approach to Machine Learning Operations (MLOps) for on-premise AI models, covering lifecycle management, version control, automated testing, CI/CD pipelines, and robust monitoring for performance and bias.

- Knowledge Transfer & Capacity Building: Ability to deliver extensive training, hands-on workshops, comprehensive documentation, and post-implementation support to empower the JCD team.

2. Partner Certifications: On-Premise AI & Data Excellence

- AI/ML Engineers (2 individuals): Individuals must hold industry-recognized certifications in AI/ML Engineering applicable to vendor-agnostic or on-premise environments (e.g., NVIDIA, vendor-neutral certifications, open-source framework expertise), OR demonstrate equivalent proven expertise through extensive project experience and contributions in the field.

- MLOps Professional (1 individual): Certification in MLOps best practices and tooling applicable to on-premise infrastructure (e.g., Kubernetes, GitOps frameworks, on-premise MLOps tools), OR demonstrable proven expertise in designing and implementing robust MLOps workflows in complex on-premise environments.

- AI Ethics Specialist: Certification or proven expertise in AI ethics and governance.

COMPLIANCE MATRIX REQUIREMENT

All bidders are required to submit a **Compliance Sheet (Compliance Matrix)** as part of their technical proposal. This document must clearly indicate the bidder's level of compliance with each of the functional, technical, and contractual requirements outlined in this RFP.

- The compliance sheet must use the following format:

| Requirement ID | Requirement Description | Compliant (Yes/No/Partial) | Comments / Reference to Proposal Section |

- Any "Partial" or "No" responses must be accompanied by clear explanations or proposed alternatives.
- Failure to submit a complete and accurate compliance sheet may result in the proposal being deemed non-responsive.

Note: The Compliance Matrix allows the evaluation team to assess how well the bidder aligns with the specified technical, functional, and contractual requirements. It also ensures transparency and traceability during the evaluation process.

Post-implementation Maintenance and Support contract [mandatory]

- ✓ **First 3 Years :** Free support (Free warranty).
- ✓ **After free supporting Years :** bidder must provide the costs/percentage for each year
- ✓ **نسبة الصيانة ما بعد المجانية سوف تدخل في مفاضلة الأسعار لخمس سنوات بعد المجانية**

The Maintenance and Support contract should Starting from final acceptance.
The cost of support must be itemized and quoted separately for each year, this contract will be **included in financial evaluation and technical evaluation.**

- ❖ **Bidder must sign the Jordan Custom's Maintenance Contract.**

Improvement Contract (Separated) [mandatory]

As part of the bid submission, bidders are required to provide a separate official quotation for potential future improvements, enhancements (i.e., change requests).

This quotation must remain valid for a period of eight (8) years from the date of final project acceptance.

The quotation must include a **fixed unit price** for **one (1) change request** in each of the following categories (استرشادية)

Category	Description
1. **Algorithmic Enhancements**	Updates or upgrades to AI algorithms (e.g., improving accuracy, efficiency, or fairness of models).
2. **Model Retraining & Optimization**	Retraining AI models using new datasets or improved data to maintain relevance and accuracy.
3. **Integration with New Systems**	Adding compatibility with new government systems, platforms, or APIs.
4. **User Interface (UI) Improvements**	Enhancing the dashboard, user experience, or accessibility of the AI solution.
5. **Data Schema/Format Updates**	Adjustments to support new data types, formats, or structures as government standards evolve.
6. **Security & Compliance Updates**	Implementing new cybersecurity standards or changes due to updated regulatory/policy requirements.
7. **Language or Localization Support**	Adding new official languages or regional customizations as required.
8. **Reporting & Analytics Upgrades**	Enhancements to reporting dashboards, data exports, or visualization features.
9. **AI Ethics & Bias Monitoring**	Improvements or additions to ethical monitoring, audit trails, and fairness tools.
10. **Performance Scalability Changes**	Infrastructure-related changes to scale the solution for more users or higher data volumes.
11. **Training Material Updates**	Providing updated training materials or sessions for users/staff based on improvements.
12. **Chatbot/NLP Model Tuning**	Specific to AI with conversational or text-based capabilities — tuning for better intent recognition.

Each category must be priced individually, with clear and separate cost breakdowns for a single change request (Each bidder must **quote a fixed unit price per change request per category**, valid for 8 years.)

This improvement contract will be treated as **financially independent** from both:

- The main project contract.
- The post-implementation Maintenance and Support contract.
- في حال تم شراء عقد التحسينات مستقبلا وحدث تأخير في تنفيذه، فإنه يتم احتساب غرامات التأخير – في حال وجودها – على قيمة عقد التحسينات فقط، وليس على كامل قيمة العطاء.

Furthermore, this improvement quotation will be **included in the financial evaluation**.

The purpose of this contract is to streamline potential future developments without requiring a new procurement cycle, while maintaining transparency and separation of scope.

JCD's Core AI Use Cases: Bid Requirements (هذه الحالات استرشادية)

Proponents are required to submit comprehensive technical and financial proposals detailing their capacity to implement the following critical AI use cases. Each proposal must clearly articulate the proposed methodology, project timelines, allocated human and technical resources, and a precise cost estimate for each use case. A key focus must be on demonstrating the seamless integration of proposed solutions with JCD's existing strategic data warehouse infrastructure.

1. Proactive Risk Management & Fraud/Smuggling Detection

JCD requires a **multi-layered AI system**, leveraging both **Machine Learning (ML)** and **Deep Learning (DL)**. This system will meticulously analyze vast and diverse datasets residing within the strategic data warehouse, encompassing shipment data, declarations, involved parties, inspection logs, and external intelligence. The primary objective is to **detect suspicious patterns, anomalies, and potential indicators of organized fraud or smuggling** (e.g., counterfeiting, money laundering, illicit goods trafficking) in near real-time or semi-real-time.

- **Technical Specifications:**
  - Capability to process and analyze substantial volumes of structured and unstructured data from multiple internal and external sources.
  - Application of advanced **Anomaly Detection** techniques to identify previously unknown or emerging fraud patterns.
  - Integration of **Explainable AI (XAI)** functionalities to provide transparency and justification for system-generated decisions and recommendations, thereby empowering human operators.
  - Development of a sophisticated and customizable alert system to efficiently guide JCD personnel in executing necessary interventions.
  - Seamless integration with existing/future risk management systems and customs enforcement platforms.
- **Key Performance Indicators (KPIs):** Fraud and smuggling detection rate, reduction in false positive rates, enhancement of targeted inspection effectiveness, and mitigation of financial losses associated with illicit activities.

2. Intelligent Tariff Classification

JCD seeks the design and development of an **automated system** predicated on **Natural Language Processing (NLP)** and **Deep Learning (DL)**. This system shall analyze detailed textual descriptions of goods (and associated images, where available) extracted from customs documentation stored within the

data warehouse. Its core function is to **propose the most accurate Harmonized System (HS) Code**, adhering to the General Interpretive Rules of the HS and pertinent local customs regulations.

- **Technical Specifications:**
  - Development of advanced NLP models capable of comprehending complex customs and commercial terminology, including contextual and semantic nuances.
  - Capability for seamless integration with national and international tariff classification databases to ensure continuous updates and regulatory compliance.
  - Implementation of a **Human-in-the-Loop** mechanism to facilitate human review and feedback, thereby continuously improving model accuracy and performance.
  - Demonstrable contribution to accelerating customs clearance processes and minimizing human errors related to classification.
- **Key Performance Indicators (KPIs):** Automated classification accuracy, reduction in human classification errors, and accelerated average customs clearance times for shipments.

3. Trade Flow & Logistics Forecasting

The initiative involves the creation and implementation of **advanced predictive models** utilizing **Machine Learning (ML)** and **Deep Learning (DL)** (e.g., time series models, recurrent neural networks). These models will analyze historical data available within the strategic data warehouse, encompassing import/export volumes, commodity types, seasonal trends, economic indicators, and geopolitical events. The system's objective is to **forecast future goods flows, predict peak periods at ports and border crossings, and assess the potential impact of external variables on supply chains**.

- **Technical Specifications:**
  - Ability to integrate and analyze multi-dimensional data from diverse sources to enhance forecasting precision.
  - Provision of highly accurate forecasts across various time horizons (short-term, medium-term, long-term).
  - Development of interactive **Dashboards** and data visualization tools to present forecasts and trends to JCD officials in an intuitive manner.
  - Support for the strategic planning of human and material resources (e.g., workforce deployment, storage optimization, equipment allocation).
- **Key Performance Indicators (KPIs):** Forecasting accuracy (measured by RMSE, MAE), improved efficiency in resource allocation, and reduction in operational congestion at entry and exit points.

4. AI for Citizen - Chatbots & Personalized Information

This initiative involves the design and deployment of advanced virtual assistants powered by an **on-premise Large Language Model (LLM)**. This solution will provide instant, accurate, and personalized information to citizens (importers, exporters, travelers) and customs employees regarding procedures, documentation, tariff classifications, and real-time status updates. The service will be available 24/7.

Technical & Operational Considerations:

- Comprehensive Knowledge Base: A continuously updated knowledge base will feed directly into the LLM's training and retrieval processes.
- System Integration: Secure, direct API connections with JCD's core customs systems and data warehouse are essential for real-time information retrieval.
- Multilingual Support: The LLM will be configured and fine-tuned for robust performance in Arabic and English.
- Infrastructure & Expertise: Investment in high-performance computing resources (GPUs, servers) and an in-house team with expertise in LLM deployment, MLOps, and data engineering are critical for successful implementation and maintenance.

Key Performance Indicators (KPIs):

- First Contact Resolution Rate
- Enhanced Citizen Satisfaction Index (CSI)
- Improved employee efficiency and access to information
- Reduced inquiry volume to human contact centers and internal support departments
- Successful security audit compliance
- Optimal LLM inference latency and domain-specific model accuracy

This on-premise LLM approach positions JCD to provide superior, secure, and highly specialized information services to both the public and its internal workforce.

Bidders are required to review and comply with all specified use cases as part of their technical proposal.

زيارات ميدانية للاطلاع على تفاصيل حالات الاستخدام للذكاء الاصطناعي

يحق للمناقصين الراغبين بزيارة دائرة الجمارك الأردنية للاطلاع على تفاصيل حالات الاستخدام المذكورة أعلاه، وذلك بموجب كتاب رسمي موجه إلى دائرة المشتريات الحكومية يتضمن طلب التنسيق لهذه الزيارة .تُنظَّم هذه الزيارات بالتنسيق مع الجهة الفنية المختصة في دائرة الجمارك، بهدف تمكين المناقصين من فهم أفضل للمتطلبات والبيانات والأنظمة ذات العلاقة، لضمان إعداد عروض فنية دقيقة وشاملة.

مرونة التوسعة لحالات الاستخدام للذكاء الاصطناعي

تحتفظ دائرة الجمارك الأردنية بالحق في اختيار إحدى حالات الاستخدام الأربعة الواردة أعلاه، كما يحق لها إضافة حالة استخدام جديدة أثناء تنفيذ المشروع، وذلك استنادًا إلى الاحتياجات التشغيلية أو التحليلية التي قد تظهر خلال سير العمل.

وقد تكون هذه الحالات الإضافية:

- مقترحة من قبل المناقص أو مقترحة من قبل دائرة الجمارك الأردنية.

ويستلزم الأمر اتفاقًا مسبقًا بين الطرفين لتحديد نطاق كل حالة استخدام، ونهج التنفيذ، والمتطلبات البيانية، ونوع التحليل أو العرض المطلوب، وطريقة التنفيذ (مثل لوحة تحكم، تحليل السبب والنتيجة، أو نموذج تقني).

وفي النهاية، يكون المطلوب تنفيذ حالة استخدام واحدة للذكاء الاصطناعي يتم الاتفاق عليها بين الطرفين، مع تصنيف وتحديد مستوى تعقيدها (سهل، متوسط، أو معقد) وفقًا للشروط الواردة في وثائق العطاء.

Post-implementation Maintenance and Support contract [mandatory]

- ✓ **First 3 Years :** Free support (Free warranty).
- ✓ **After free supporting Years :** bidder must provide the costs/percentage for each year
- ✓ **نسبة الصيانة ما بعد المجانية سوف تدخل في مفاضلة الأسعار لخمس سنوات بعد المجانية**

The Maintenance and Support contract should Starting from final acceptance.
The cost of support must be itemized and quoted separately for each year, this contract will be **included in financial evaluation and technical evaluation.**

The maintenance contract **must cover any enhancements or modifications to the KPIs** originally included in the tender scope, **provided such enhancements do not alter the core system architecture or workflow structure**.

Improvement Contract (Separated) [mandatory]

As part of the bid submission, bidders are required to provide a separate official quotation for potential future improvements, enhancements (i.e., change requests).

This quotation must remain valid for a period of eight (8) years from the date of final project acceptance.

The quotation must include a **fixed unit price** for **one (1) change request** in each categories:

Each category must be priced individually, with clear and separate cost breakdowns for a single change request.

يجب أن يتضمن عرض المناقص **آلية واضحة ومفصلة لاحتساب طلبات التغيير.(Change Requests)**

في حال كان طلب التغيير متعلقًا بـ **إدامة عمل النظام و/أو صيانته**، فلا يُعد هذا الطلب **طلب تغيير**، وإنما يندرج ضمن **عقد الصيانة والدعم الفني**.

يُعد الطلب **طلب تغيير (Change Request)** في حال تضمّن **إضافة جديدة أو تحسينًا على النظام**.

This improvement contract will be treated as **financially independent** from both:

- The main project contract.
- The post-implementation Maintenance and Support contract.
- في حال تم شراء عقد التحسينات مستقبلا وحدث تأخير في تنفيذه، فإنه يتم احتساب غرامات التأخير – في حال وجودها – على قيمة عقد التحسينات فقط، وليس على كامل قيمة العطاء.

Furthermore, this improvement quotation will be **included in the financial evaluation**.

The purpose of this contract is to streamline potential future developments without requiring a new procurement cycle, while maintaining transparency and separation of scope.

PAYMENT TERMS for LOT 2:

- 50% payment (First Payment) shall be made upon the commencement of the Machine Learning (ML) phase, subject to the provision of a bank guarantee.
- 50% payment (Last Payment) upon:
    - **Completion of final training**, **submission of comprehensive system documentation** and **formal project closure** as accepted by Jordan Customs Department (JCD).
    - **Formal final acceptance by JCD** of the LOT2 project;

- **Submission of corresponding progress reports and valid invoices**.

General Note on Payments and Invoices:

Invoices shall be paid within forty (40) days from the date of submission, in accordance with the entitlements specified in the payment mechanism outlined in Clause (3. Payment Terms) of this bid (LOT 2).

EVALUATION CRITERIA FOR Artificial Intelligence (AI) BIDS
I. TECHNICAL EVALUATION – 70% FOR LOT 2

#	Requirement ID	Requirement Description	marks weight (70 marks)	Compliant (Yes/No/Partial)	Comments / Reference to Proposal Section
1	The Large Language Model (LLM)		1		
2	Continuous Model Training		1		
3	DATA TIME SHIFTING & ILM ALIGNMENT		1		
4	AUTOMATED MODEL RETRAINING		3		
5	MODEL VERSIONING		1		
6	INCREMENTAL or ONLINE LEARNING		3		
7	TIME-WINDOW FLEXIBILITY		1		
8	AI Use Cases – Scope, Pricing and Evaluation Criteria		3		
9	AI Use Case Classification by Complexity Level		3		
10	تحديد حالة استخدام الذكاء الاصطناعي وآلية التعامل مع اختلاف درجة التعقيد		2		
11	Specific Requirements for Artificial Intelligence (AI) Integration	Background	1		
		Scope of AI Integration	1		
		Pricing for AI Components	1		
		Unit Pricing Requirements	5		
		Evaluation Criteria for AI Capabilities	7		
		Mechanism for Defining AI Use Cases and Handling Complexity Differences	5		

		Modification of AI Use Case Complexity After Award	2		
		Knowledge Transfer and Capacity Building Requirements	4		
		Preliminary AI Implementation Plan	4		
		Ethical AI and Explainability	2		
		Easy Maintenance and Scalability	2		
		MLOps (Machine Learning Operations)	2		
12	PARTNER REQUIREMENTS		2		
13	COMPLIANCE MATRIX REQUIREMENT		2		
14	Post-implementation Maintenance and Support contract		2		
15	Improvement Contract		2		
16	PAYMENT TERMS for LOT 2		2		
17	MANDATORY CONDITIONS	Non-Disclosure Agreement (NDA)	1		
		National Cybersecurity Compliance	1		
18	General Note	This project will be implemented on-premises only	1		
19	زيارة دائرة الجمارك الأردنية للاطلاع على تفاصيل حالات الاستخدام		2		
Total			70		

II. FINANCIAL EVALUATION – 30% FOR LOT 2		
Criteria	**Weight**	**Details**
1. Total Project Cost	20 Points	JCD have the Rights to choose one case of the Complexity Level
2. Maintenance & Support Contract	5 Points	5-year after 3 years free maintenance and support agreement.
3. Improvement Contract	5 Points	Final cost for separate official quotation for future improvements.

Financial Evaluation Formula:
Bidder Score = (Lowest Bid* / Bidder's Price) × 30%

- The lowest-priced bid* will receive the full 30 points.
- Other bids will be scored proportionally.

* The lowest-priced bid = (**Total Project Cost +** 5-year post-implementation maintenance and support agreement cost)

ELIGIBILITY REQUIREMENTS

- Bidders must score **at least 50 out of 70 points** in the technical evaluation to qualify for financial evaluation.
- The technical proposal must include a **clear plan for integrating DWH with predictive analytics/AI** as a final project phase.
- The bidder must submit a **separate official quotation for future improvements**, valid for **8 years**. This quote will be part of the financial evaluation and will be **financially separated** from the main project and from the maintenance/support contract.

  ❖ **Bidder must sign the Jordan Custom's Maintenance Contract.**

MANDATORY CONDITIONS FOR LOT1 & LOT2:

3. **Non-Disclosure Agreement (NDA):**
   The awarded bidder shall be required to sign a Non-Disclosure Agreement (NDA) with the Customs Department prior to the commencement of any work. Failure to comply with this requirement may result in disqualification or termination of the contract.
4. **National Cybersecurity Compliance:**
   The bidder must formally accept and comply with all information security policies, regulations, and directives issued by the National Cyber Security Center (NCSC). Non-compliance with these directives at any stage of the project may lead to the suspension or cancellation of the contract.

General Note FOR LOt1 & LOT2:

❖ This project will be implemented **on-premises** only. The use of cloud services or cloud-based infrastructure is **not permitted** in any part of the solution, in accordance with the national information security policies and internal cybersecurity guidelines.

❖ It will be the Bidder responsibility of the configuration for the project based on Jordan Customs Needs; Bidder must grantee a high-standards configuration on mother company recommendations, Any Features need extra license must be mentioned in detailed and prices for each year (first 5 years) The cost must be itemized and quoted separately for each year.