Terms of Reference (TORs)

Consulting Services for the Strategic Feasibility Assessment & Solution Design for a National Cargo Tracking System (CTS) with e-Bilty Mechanism for the Federal Board of Revenue

1. Introduction

The Federal Board of Revenue (FBR) is the apex revenue collection agency of Pakistan, responsible for the administration of federal taxes and the implementation of fiscal policies. Pakistan Customs, a department within the FBR, plays a crucial role in regulating and facilitating international trade including collection of duties and taxes as well as ensuring border controls including preventing smuggling.

To put in place a seamless and robust compliance mechanism that discourages transport of smuggled foreign origin goods within the country as well as improve documentation of locally produced/manufactured goods, the FBR, through Pakistan Customs, is seeking proposals from qualified consultants to develop and implement a comprehensive digital solution called the Cargo Tracking System integrated with e-Bilty Mechanism (hereinafter referred to as CTS). This system aims to modernize and streamline the transport of goods within Pakistan, with the aim of minimizing en-route physical inspections, inefficiencies and delays.

This Cargo Tracking CTS is envisioned to be a comprehensive, technology-driven solution that will allow integration of existing systems and databases, adoption of feasible mix of tracking technologies, IoT devices and data analytics with generation of electronic Consignment Note or Way Bill (locally known as Bilty) for each journey. The CTS will enable real-time tracking of goods movement allowing Customs Enforcement teams to identify goods which are either smuggled or being transported without payment of sales tax. The CTS will help control smuggling and encourage documentation for sales tax purpose resulting in enhanced revenue collection. CTS will help in improved transparency and efficiency in the trade and transport environment.

The implementation of such a system is inspired by successful models adopted by other countries to address similar challenges in goods transportation and customs administration. Such systems have also served to address systemic malpractices in the Sales Tax domain, for instance, the use of fake or flying invoices to claim input tax and misreporting or non-reporting of the quantities/price/type of goods manufactured. Examples of such countries include:

- **China's RFID-enabled Container Tracing:** China utilizes RFID technology for container tracing at ports to monitor the flow of goods, verify declarations, and optimize port traffic. This system has significantly sped up clearance processes and established a reliable container tracking mechanism.
- **Brazil's Electronic Transport Document (DT-e):** Brazil has implemented an electronic transport document system with checkpoints and weighbridges across the country to monitor goods movement and detect discrepancies. This system aims to improve customs control and reduce reporting challenges.
- **European Union's Electronic Freight Information (eFTI) Systems:** The EU has launched electronic freight information (eFTI) systems to create a unified legal framework for freight information, reduce paper-based documentation, and improve the efficiency of regulatory compliance.
- **India's E-Way Bill System:** India implemented an electronic waybill (EWB) system in 2017 to track the movement of goods exceeding a specified value and distance. This system has helped to streamline logistics, reduce waiting times at checkpoints, and improve tax

compliance by ensuring proper invoicing and reducing tax avoidance. The Indian system involves generating EWBs electronically, updating vehicle details, and conducting risk-based verification of consignments.

Global examples: Countries use goods tracking systems to resolve tax reporting challenges and facilitate trade for both domestic and cross-border transport

Tax Authorities	Challenges faced	Tracking cross-border movement	Tracking domestic movement	Key facts
1. India	• **Sales tax avoidance** • **Delay in movement of goods** due to checkpoint waiting times	✓	✓	• **EWB mandated in 2018** for all movement meeting value and distance thresholds • **RFIDs embedded on trucks** for location tracking and automated EWB reading
2. Turkey	• **Sales tax avoidance** due to challenges with tracking transport of goods	✓	✓	• **e-İrsaliye (E-Way Bill) mandated in 2020** based on sectors and turnover thresholds • Automatic EWB generation via API integration
3. Brazil	• **Delays in movement** due to long queues at check-points, toll plazas, etc. • **Complicated documentation process** for tracking & tax control on sales	✓	✓	• **DT-E (Electronic transport document)** launched in 2021; currently being rolled out • **Checkpoints & weighbridges** across the country to detect discrepancies
4. South Africa	• **Challenges in customs reporting** for tracking goods movement across borders	✓		• **e-Road Manifest system** launched in 2012 • Strict penalties for non-compliance (incl. fines, imprisonment up to 5 years)
5. European Union	• **Absence of a uniform legal framework** for freight information causing regulation compliance challenges • **Operational burdens** due to paper-based documentation	✓	✓	• **Electronic freight information (eFTI)** system launched in 2020 • **Simplified digital platform to share standardized data covering all legal requirements**

FBR can deploy an E-Way Billing solution to mitigate tax evasion by both domestic and cross -border tracking goods movement

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These international examples demonstrate the potential of technology-driven solutions to modernize customs operations, facilitate trade, and enhance revenue collection. Pakistan Customs aims to leverage these and other international best practices to develop a tailored solution that addresses its specific needs and challenges.

2. Background & Context

Pakistan's economy relies significantly on the efficient movement of goods across its borders and within its territory. Currently, there is a lack of a holistic end-to-end cargo monitoring mechanism for effective segregation of compliant and non-compliant cargo. Resultantly, manual checking of vehicles transporting goods is done by multiple agencies (Customs, Police, Excise, Rangers, Motorways Police, Coast Guards etc.) without any risk-based targeting, causing delays for legitimate traders and reducing efficiency in operations.

This reliance on manual processes and paper-based documentation by multiple agencies presents several challenges that hinder economic growth and efficient trade operations:

2.1 Inefficiencies and Delays:

- Manual processes and paper-based documentation lead to significant delays in the movement of goods, increasing transportation costs and hindering trade competitiveness.
- Physical check-posts and manual verification of documents cause bottlenecks and prolong transit times.
- The absence of real-time tracking makes it difficult to optimize logistics.

2.2 Lack of Transparency:

- Paper-based documentation is prone to errors, loss, and manipulation, creating a lack of transparency and accountability in the tracking of goods.
- The absence of a centralized digital platform makes it difficult to monitor goods movement and verify the authenticity of transactions.
- This lack of transparency increases the risk of mis-declaration of goods, which includes sales not being reported or misreporting of quantity, type of goods and value.
- No digital visibility of cargo to supplier, recipient and law enforcement agencies.

2.3 Opportunities for Smuggling and Tax Evasion:

- The limitations of the current system create opportunities for smuggling and tax evasion, undermining documentation of economy and causing substantial revenue loss to the public exchequer while resulting in in an unfair playing field for legitimate businesses.
- Smugglers exploit loopholes in the system to transport non-compliant and illicit goods, resulting in significant revenue losses for the government as well as creating risks for society and environment.
- Malpractices like smuggling, en-route pilferage of bonded or under transit goods, fake and flying sales tax invoices, and mis-declaration of goods, all can be addressed by adoption of a robust goods tracking system.

2.4 Increased Administrative Burden:

- Multiple law enforcement agencies rely on physical check posts at the roads to identify movement of non-compliant cargos and vehicles which puts burden both on the government and normal traffic.
- Manual processes place a significant administrative burden on both businesses and government
- Businesses face challenges in maintaining accurate records, complying with complex regulations, and interacting with various government agencies.
- Customs officials spend considerable time on manual verification, data entry, and enforcement activities, which could be streamlined through automation.

To address the aforementioned challenges, FBR intends to put in place a robust CTS aimed at tracking the inland movement of all commercial goods and their conveyance from the point of origin/point of entry to the point of destination.

The objective of CTS is primarily to improve supply chain security by introducing a mechanism for generating an Electronic Transport Way Bill on a central portal instead of the manually generated document locally called as Bilty. The Bilty is currently issued by goods transport companies or truck stations that captures detail of associated parties, type and quantity of goods and transporting vehicle. Under CTS the paper based Bilty will be replaced by e-Bilty linking it with electronic systems of FBR.

The proposed system shall enable persons responsible for the movement of goods i.e., suppliers of goods including importers, distributors, manufacturers, exporters, wholesalers, and transporters etc. to enter the details of their cargo movement as follows into a centralized portal:

1. Type, quantity/weight, and value of goods;
2. Purpose of intended cargo movement
3. Details of the consignor, consignee, and transporter (NTN, Name, Address etc.);
4. Details of the vehicle (registration number, type and model)

The portal shall be integrated with Customs declaration data as well as with electronic invoices issued in case of domestically supplied goods to enable data exchange with various FBR databases pertaining to the Inland revenue Wing. This portal will generate an e-Bilty with a unique QR code instantly verifiable by customs and other law enforcement agencies mandated to check cargo on the roads. t Further to that, each vehicle carrying cargo whether imported or domestically manufactured is envisaged to be issued a digital ID by the CTS and shall be further required to affix an active transponder for identification of the vehicle and its cargo during transportation.

In view of the foregoing, the proposed CTS platform shall be highly flexible to incorporate the maximum number of use cases related to movement of cargo, and highly interoperable to allow it to integrate with systems/databases maintained by the Pakistan Single Window, Motor Registration Authorities, NADRA, and other relevant public and private sector entities. Moreover, the platform shall have the capacity and capability to be augmented by the use of AI driven risk management system, and electronic payment system.

3. Objectives

The objectives of the consultancy are as follows:

- Assess the existing practices, and operational environment vis-à-vis international best practices,
- Identify relevant stakeholders, map their high level business processes and roles in the supply chain, and initiate consultative sessions;
- Provide a high-level hardware and infrastructure needs assessment;
- Conduct a legal and policy framework review and provide recommendations for improvement;
- Provide detailed system architecture, workflows, and functional requirements for the CTS and e-bility mechanism;
- Outline an integration blueprint specifying how CTS will integrate with existing FBR systems (WeBOC, PSW, STRIVE, Anti-Smuggling Portal) and external databases (e.g., NADRA, Motor Vehicle Registration Authorities, Motorway Operators system) as well as up-coming initiatives like Customs Targeting Center and National targeting Center. A critical objective in this context is integration with:
    - Import IT platforms (e.g. WeBOC, PSW) for imported cargo movement; and the relevant Goods Declaration (GD) No.
    - Digital invoicing systems (e.g. STRIVE) for locally manufactured or sold goods.
- Propose a phased implementation roadmap complete with timelines, milestones, and sequencing,
- Propose a governance structure for the CTS post implementation,
- Provide high level cost estimates (both CAPEX and OPEX).
- Supervise and monitor implementation of design / procurements after the conclusion of this consultancy.

4 Scope of Work - Consultant Responsibilities

The consultant's work will be structured into three primary work streams, culminating in a final consolidated report and recommendation.

4.1 Work Stream 1: As-Is Landscape Analysis, International Benchmarking and Need Assessment

This foundational work stream focuses on gathering all necessary data on the current domestic environment and learning from global best practices.

4.1.1 In-depth "As-Is" Assessment of the Pakistani Context:

- **Process Mapping**: Document the current end-to-end process of goods movement, including the generation and use of traditional paper Bilty, common transport routes, and the roles of various actors (e.g transporters, goods companies, consignors, consignees, motorway operators).
- **Stakeholder Analysis and ICT Readiness**:
    - Private Sector: Assess the digital literacy, technology adoption (e.g., smartphone penetration, internet access), and current business practices of key private sector groups, including large logistics corporations, small-to-medium transporters, truck drivers, and traders.
    - Public Sector: Evaluate the technological readiness, existing systems, data-sharing capabilities (e.g., availability of APIs), and institutional capacity of all relevant government agencies. This must include, but is not limited to, the Motor Registration Authorities (MRAs) of all provinces, the National Highway Authority (NHA), Motorway Police, provincial Excise & Taxation departments, and Safe City projects.
- **Documentation**: Document operational pain points, requirements, and potential barriers to adoption.
- **Legal and Regulatory Review**: Identify and analyze all existing laws, regulations, and policies that govern the carriage of goods, motor vehicles, and electronic transactions, highlighting potential legal barriers or enablers for a digital CTS.

- **National Infrastructure Assessment**: Evaluate the state of critical enabling infrastructure, such as cellular network coverage (4G/5G), fiber optic connectivity along major trade corridors and the reliability of the power grid at potential checkpoint locations. Also evaluate the ICT infrastructure of FBR for CTS operations.
- **Review And Confirm Requirements:** Engage with FBR/Customs and relevant border agencies to validate business objectives, legal/regulatory constraints, data governance needs, technical environment, and interoperability requirements for a national CTS in Pakistan; produce a requirements traceability matrix and a high-level solution/implementation roadmap.

4.1.2 International Benchmarking and Lessons Learned:

- Conduct a detailed analysis of at least five countries that have implemented similar national cargo tracking or e-way bill systems. The analysis should include examples from both developing and developed economies (e.g., India, Turkey, Brazil, China, and a European nation).
- For each country, the analysis must detail:
    - The chosen technology solution (e.g., RFID, GPS, QR codes) and the rationale behind it.
    - The operating model (e.g., government-owned and operated, public-private partnership, vendor-driven).
    - The change management and adoption strategies used to onboard stakeholders.
    - The total cost of implementation and ongoing operational costs.
    - The key successes, challenges, and failures encountered during and after implementation.
    - The measurable impact on revenue collection, trade facilitation, and compliance.
- The analysis must identify lessons and technologies relevant to Pakistan's operating environment.

4.1.3. Legal and Policy Review

- Review existing laws and regulations (e.g., Customs Act, Sales Tax Act, Carriers Act, Motor Vehicle Ordinances).
- Identify legal gaps affecting CTS/e-Bilty adoption and enforcement.
- Recommend legal amendments or new provisions to provide the necessary legal foundation.

4.1.4 Comprehensive Risk Assessment:

- Identify and categorize all potential risks to the project (e.g., technological, financial, operational, political, social).
- Develop a risk matrix that analyzes the probability and potential impact of each risk.
- Propose high-level mitigation strategies for the most critical risks.

4.1.4 High-Level Hardware & ICT Infrastructure Needs Assessment

- Identify categories of tracking technologies currently in use in Pakistan and/or suitable for Pakistan's context (e.g., RFID, GPS, IoT sensors).
- Recommend hardware types and locations for fixed infrastructure (e.g., toll plazas, city entry points) at a conceptual level.
- Assess ICT hosting options (on-premises vs. cloud, redundancy, DR requirements).

4.2 Work Stream 2: Solution Design

4.2.1. Conceptual System Design (High-Level):

This is not a detailed technical design but a high-level blueprint. It should include:

- A Conceptual Architecture Diagram illustrating the major components of the proposed CTS (e.g., e-Bilty Portal, Tracking Engine, Risk Management Module, Analytics Dashboard) and their interactions with external systems (MRA, NADRA, etc.).
- A Technology Recommendation, proposing the most suitable primary tracking technology (e.g., a hybrid RFID and QR code system) based on the findings of the feasibility study.
- A Core Data Model, defining the essential information fields required for a functional e-Bilty.

4.2.2 Technical Solution Design Document:

Provide a complete SSD containing detailed system illustrating the major components of the proposed CTS (e.g., e-Bilty Portal, Tracking Engine, Risk Management Module, Analytics Dashboard) and their interactions with external systems (MRA, NADRA, etc.).

- Define the end-to-end process flow for CTS and e-Bilty generation, validation, and tracking and its interface with the CTS and other systems;
- Describe system architecture (logical and physical layers);
- Specify core functional modules (user management, document generation, integration, reporting, risk profiling, etc.) and non-functional requirements;
- Suggest data model describing how data will be processed and moved within the solution;
- Recommend data governance, security, and privacy measures;
- Propose suitable technology stack for both the CTS/e-bilty portal as well as recommend the most suitable primary tracking technology (e.g., a hybrid RFID and QR code system) based on the findings of the assessment; and
- Suggest a Core Data Model, defining the essential information fields required for a functional CTS/ e-Bilty.

4.2.3 Integration Blueprint:

- Identify integration points with relevant existing FBR systems (WeBOC, PSW, IRIS, Digital Invoice, STRIVE, Anti-Smuggling Portal).
- Identify integration requirements with relevant external databases (e.g., NADRA, provincial motor vehicle registration).
- Propose API/data exchange framework.

4.3 Work Stream 3: Strategic Roadmap

4.3.1. Strategic Implementation Roadmap:

- Phasing Strategy: Propose a logical, phased approach to project implementation. This could include, for example:
  - Phase 1: Legal Framework and Policy Development.
  - Phase 2: Pilot Project in a specific geographic corridor or for a specific industry (e.g., FMCG).
  - Phase 3: Phased Nationwide Rollout.
- Implementation Packages: Break the overall project into distinct work packages that can be procured and implemented sequentially or in parallel (e.g., Package A: Core Software Platform; Package B: Pilot Hardware Installation; Package C: National Hardware Rollout). This provides FBR with procurement flexibility.
- High-Level Timelines and Budget: Provide an estimated timeline and high-level budget for each proposed phase and package.
- Governance and Team Structure: Recommend a project governance model and the high-level team structure required to manage the full implementation project.

4.4 Implementation Support

- **Develop The Procurement TORs:** Draft a comprehensive technical and functional TOR for the CTS procurement aligned with WB Standard Procurement Documents (SPD) for Information Systems, including scope of work, deliverables, service levels, performance benchmarks, cybersecurity and data protection requirements, integration standards (e.g., WeBOC and /other customs systems, risk engines, watchlists, APIs), implementation approach, and capacity-building/training needs.
- **Prepare Draft Bidding Documents:** Prepare complete draft bidding documents using the latest WB SPD for Information Systems (latest version and applicable selection method), including Instructions to Bidders, Bid Data Sheet, Evaluation and Qualification Criteria, Technical Requirements/Specifications, Contract Conditions (General and Special), and Annexes (pricing/activity schedules, manufacturer authorizations, site readiness, and acceptance testing plans).
- **Define Evaluation Methodology And Contract Management Instruments:** Propose a transparent, fit-for-purpose evaluation model (technical/financial weighting, rated criteria, compliance thresholds), detailed acceptance and testing protocols (factory/site, performance and reliability, security and penetration testing), service level agreements and KPIs, warranty/O&M arrangements, and draft contract administration tools (implementation plan, risk register, change control, and reporting templates).
- **Ensure Compliance And Finalize Procurement Package:** Ensure consistency with Pakistan's applicable laws and regulations, World Bank Procurement Regulations and guidelines, data localization and privacy rules, and border security requirements; conduct a market sounding; address comments from the borrower and the World Bank; and deliver the final TOR and bidding package ready for issuance, with a compliance checklist and cross-references to the SPD.

5 Deliverables

The consultant will be required to submit the following key deliverables:

1. **Inception Report:** Outlining the consultant's detailed methodology, work plan, and timelines. The Inception Report must include a review of requirements, with a requirements traceability matrix and a high-level solution/implementation roadmap.
2. **As-Is Landscape and Needs Assessment Report:** The complete findings from Work Stream 1.
3. **Solution Design Document:** Providing a complete solution design with proposed architecture, functional requirements and integration blueprint.
4. **Strategic Implementation Roadmap:** A detailed document as per scope of work above.
5. **Final CTS Design Document:** A consolidated report combining all work streams and incorporating stakeholders' feedback.
6. **Procurement TORs & Bidding Documentation:** Develop a comprehensive TORs / Scope of Work document for the implementation phase (Phase 2) of the CTS. Provide a complete set of WB Standard Procurement Documents (SPD) for Information Systems package.
7. **Presentation to FBR Leadership:** A final presentation summarizing all findings, analyses, and recommendations for FBR's senior management and stakeholders.
8. **Implementation Support Report:** Brief report based on supervision and monitoring of the implementation of design in Phase 2.

6 Proposed Core Team and Responsibilities

The consulting firms is required to demonstrate access to expertise in:

- ICT system architecture and design for government or customs-related platforms.
- Integration of trade/customs systems with external databases.
- Transport/logistics sector digitalization.
- Legal and policy analysis related to customs, taxation, and transport.
- Project management of donor-funded assignments.

6.1 Lead Strategy Consultant / Project Director

This individual is the overall lead, responsible for the intellectual direction of the project and the ultimate quality of the final recommendation.

Responsibilities:

- Serve as the primary point of contact for the FBR and World Bank, managing all client relationships and communications.
- Provide overall strategic direction for the project, ensuring all work streams are aligned to answer the core question of the CTS's feasibility.
- Synthesize the findings from all work streams (As-Is Analysis, Economic Model, Risk Assessment) into a single, coherent, and evidence-based final report.
- Lead the development of the final "Go/No-Go" recommendation for FBR's leadership.
- Oversee the development of the high-level strategic roadmap and conceptual design if the project is deemed feasible.
- Ensure all project deliverables meet the highest quality standards and are delivered on time.

Required Qualifications & Experience:

- A Master's degree or higher in Business Administration (MBA), Public Policy, Public Administration, or a related field.
- A minimum of 15 years of progressive experience in management consulting or public sector advisory, with a proven track record of leading large-scale strategic assessment or digital transformation projects for government clients.
- Demonstrable experience working with senior government officials and managing complex stakeholder environments.
- Familiarity with projects financed by International Financial Institutions (IFIs) like the World Bank is highly desirable.

6.2 Public Finance / Transport Economist

This expert is responsible for the quantitative analysis that will determine the economic viability of the CTS project.

Responsibilities:

- Lead the development of the comprehensive Cost-Benefit Analysis (CBA).
- Build a detailed financial model to project the project's Capital Expenditures (CAPEX) and Operational Expenditures (OPEX).
- Quantify the potential financial benefits, including projected increases in tax revenue and reductions in logistical inefficiencies.
- Calculate key economic viability metrics, including Net Present Value (NPV), Internal Rate of Return (IRR), and the project's payback period.
- Assess the macroeconomic impact of the CTS on trade facilitation and transport sector efficiency.

Required Qualifications & Experience:

- A Master's degree or higher in Economics, Finance, or a related quantitative field.
- A minimum of 10 years of experience in economic analysis and financial modeling, specifically for large-scale public sector infrastructure or IT projects.
- Proven experience in conducting feasibility studies according to the guidelines of IFIs.
- Experience in transport economics is a significant advantage.

6.3 Logistics & Supply Chain Analyst

This expert provides the critical on-the-ground understanding of Pakistan's logistics sector, ensuring that any recommendation is rooted in reality.

Responsibilities:

- Lead the "As-Is" assessment by mapping the current Bilty system and physical goods movement processes.
- Conduct extensive primary research, including interviews and focus groups with transporters, truck drivers, logistics companies, and traders.
- Analyze the practical operational challenges and pain points within the current system.

- Assess the digital literacy and technology adoption rates within the transport community to inform the viability assessment.
- Provide insights on potential user resistance and strategies for change management and adoption.

Required Qualifications & Experience:

- A Bachelor's or Master's degree in Supply Chain Management, Logistics, or a related field.
- A minimum of 10 years of hands-on operational experience within the Pakistani logistics, freight, or transportation industry.
- Deep, demonstrable knowledge of local transport practices, route dynamics, and the informal economy surrounding goods movement.

6.4 IT & Digital Transformation Strategist

This expert is responsible for evaluating the technological feasibility of the CTS and creating the high-level conceptual design.

Responsibilities:

- Lead the ICT readiness assessment of all relevant government agencies (MRAs, NHA, etc.), evaluating their existing systems, data quality, and potential for integration.
- Analyze and compare the various tracking technologies (RFID, GPS, QR Codes, etc.) and recommend the most appropriate solution for the Pakistani context.
- Evaluate the national telecommunications and power infrastructure along key trade routes.
- If the project is deemed feasible, lead the development of the high-level conceptual architecture for the CTS.
- Identify the key technological risks and propose mitigation strategies.

Required Qualifications & Experience:

- A Bachelor's or Master's degree in Computer Science, Information Systems, or a related technical field.
- A minimum of 10 years of experience in an enterprise architect, solution architect, or senior IT strategy role.
- Experience designing or assessing large-scale, mission-critical government IT systems.
- Strong knowledge of data integration, APIs, cloud infrastructure, and cybersecurity principles.

6.5 Legal and Regulatory Expert

This expert ensures that all recommendations are legally sound and provides a clear path forward for establishing the necessary legal framework.

Responsibilities:

- Conduct a comprehensive review of Pakistan's existing legal and regulatory framework relevant to the carriage of goods, electronic transactions, and data privacy.
- Identify any legal gaps, conflicts, or barriers that would need to be addressed to implement a legally enforceable e-Bilty system.
- Benchmark Pakistan's legal framework against that of the countries analyzed in the international study.
- Provide clear recommendations on the legislative actions required, such as drafting a new act or amending existing rules (e.g., the Carriers Act, 1865).

Required Qualifications & Experience:

- A degree in Law (LLB/LLM) from a recognized university; must be licensed to practice in Pakistan.
- A minimum of 7 years of experience specializing in commercial, regulatory, or technology law in Pakistan.
- Proven experience in legislative review and policy drafting for government bodies or regulated industries.

Note: The bidder should clearly define the roles and responsibilities of each team member, their qualifications, and their relevant experience. The team should possess a combination of technical expertise, domain knowledge, and project management skills to ensure the successful implementation of the CTS.

The successful bidder shall be required to submit, in the bid, undertaking from each identified key expert that it shall be available to undertake the project as per resource loading plan provided, if the contract is awarded to the bidder. The same key experts shall be deployed on the project and no key expert shall be replaced without prior written approval of FBR; and the replacement thereof will also be approved by FBR, which shall be equivalent or better in qualifications and experience than the key expert being replaced.

During project implementation periodic reports shall be submitted by successful bidder on performance of the key experts, along with duly signed, by the key experts and bidder, time sheets.

Any deviation from the requirement shall be considered a material violation of the contractual obligations.

6.6 IT Infrastructure & Security Architect - System Architecture & Cybersecurity
Responsibilities:

- Design the overall technical architecture for the e-Bilty system, including cloud infrastructure, network topology, and integration points with existing systems (e.g., FBR, customs, banking).
- Define the security architecture, policies, and controls to ensure the confidentiality, integrity, and availability of e-Bilty data.
- Select appropriate technologies, platforms, and tools for system development and deployment, considering scalability, performance, and cost-effectiveness.
- Develop strategies for data backup, disaster recovery, and business continuity.
- Oversee the implementation of robust cybersecurity measures, including encryption, access control, identity management, and threat detection.
- Ensure compliance with local and international IT security standards and data protection regulations.
- Provide technical guidance to the development team on best practices for secure coding and infrastructure configuration.

Educational Background:

- Required: Bachelor's or Master's degree in Computer Science, Software Engineering, Information Technology, or Cybersecurity.
- Preferred: Industry certifications such as CISSP, CISM, TOGAF, AWS Certified Solutions Architect, Azure Solutions Architect Expert, or equivalent.

Experience:

- Minimum 10 years of experience in designing, implementing, and securing large-scale enterprise IT infrastructure, cloud solutions, and distributed systems.
- At least 5 years in an architect role, focusing on security, scalability, and high availability.
- Extensive knowledge of cybersecurity best practices, data encryption, digital signatures, and secure network design.
- Experience with regulatory compliance frameworks (e.g., data privacy laws) from an IT security perspective.

Familiarity with telecommunication infrastructure and regulatory requirements in Pakistan.

7 Timelines

- Project Duration: The consultant shall propose a detailed project plan to execute the Scope of Work. It is expected this phase can be completed within 5 months of the contract award.

Bidders to provide the following table mentioning timelines of each milestone in their technical bids:

S.N	Deliverables	Timelines
1.	Inception Report	
2.	As-Is Landscape and International Benchmarking Report	

S.N	Deliverables	Timelines
3.	Solution Design Document	
4.	Strategic Implementation Roadmap	
5.	Final CTS Design Document including Implementation Roadmap	
6.	Procurement TORs & Bidding Documentation:	
7.	Presentation to FBR Leadership	
8.	Implementation Support Report	

5 Assumptions and Constraints:

a) The consulting firm shall provide the solution design however it shall not be involved in the development, deployment, and maintenance of the CTS platform.

b) There should not be any implicit or explicit third-party/vendor dependencies on procurement and operations of the solution. If any such dependency exits it should be clearly identified and disclosed in the bid.

c) The qualified selected firm will provide complete disclosure of the international integrations and ensure that these integrations are secured and trustworthy

d) Dedicated resources should be nominated for handling all support related tasks

6 Base of Operations

The base of operations shall be Islamabad (or wherever required) with occasional traveling to other cities. No TA/DA or any other expenses shall be borne by the FBR/Customs.

7 Reporting

The selected firm will report to the FBR/Pakistan Customs and any other monitoring body/organization as nominated by Pakistan Customs/FBR.