



# GSI CUSTOMSXCHANGE & COMPLIANCE PLATFORM

GSI CustomsXchange & Compliance Platform is an advanced, enterprise-grade digital customs management system, designed to help customs administrations modernize operations, strengthen border security, enhance trade facilitation, and protect revenue.

The platform combines GENERAL STORM INDUSTRY's customs domain expertise with IBM Db2 enterprise data management, IBM AI and analytics capabilities, and secure, scalable government-grade infrastructure to support mission-critical workloads 24/7.

The architecture is web-based, multi-tier, and service-oriented (SOA/microservices), developed using modern technologies such as Java, Javascript, XML, REST APIs, and container-ready components. This design aligns with government digital transformation, interoperability, and cloud adoption strategies.

## OVERVIEW

- Industries:  
Government, Customs and Excise Authorities, Ministries of Finance, Border and Port Authorities, Public Sector Trade & Revenue Agencies.
- Deployment Models:  
On-Premise (in government data centers with IBM Db2 running on secure infrastructure).  
Cloud (including IBM Cloud and other government-approved clouds).  
Hybrid (combining on-premise and cloud environments with secure connectivity).
- Languages:  
Multi-language user interface and content, configurable for local languages and bilingual/multilingual operations.

# CAPABILITIES

## 1. Modernized Customs Operations on an Enterprise Data Platform

GSI CustomsXChange digitizes end-to-end customs processes, from electronic declaration to automated assessment, control and release, on top of IBM Db2's high-performance, highly available data management foundation.

By replacing fragmented legacy systems with a single integrated platform, customs authorities reduce manual interventions, accelerate clearance, and lower long-term IT and operational costs.



## 2. Transparency, Accountability, and Compliance

The solution provides secure, role-based access control, digital signature support, and comprehensive audit trails across all modules.

Combined with IBM Security-aligned practices (encryption, auditing, and segregation of duties), this ensures full traceability of user actions, improves internal controls, and supports anti-corruption initiatives and external audits.

## 3. Advanced Risk and Fraud Detection with IBM AI & Analytics

GSI leverages AI and machine learning models together with IBM Analytics concepts to detect anomalies in declarations, under-valuation, HS code misclassification, and suspicious trader behavior.

Hybrid risk scoring (rules + AI) enables targeted inspections and investigations, strengthening enforcement while minimizing disruption to compliant trade.

## 4. Flexible and Scalable Integration

Built on SOA and microservices, the platform exposes secure APIs and messaging interfaces for integration with:

- Tax and treasury systems (revenue and public finance).
- Port community systems and logistics platforms.
- National Single Window and regional platforms (e.g., ASEAN Single Window).
- Identity management and government service buses.

This approach mirrors IBM Integration and IBM Cloud-native patterns, allowing gradual modernization without disrupting existing investments.

## 5. Data-driven Decision Support

With IBM Db2 and modern analytics concepts at its core, the platform offers real-time dashboards, historical trend analysis, and predictive insights.

Decision-makers can monitor revenue collections, compliance trends, risk performance, and operational KPIs, supporting evidence-based policy, improved forecasting, and continuous reform

# KEY FUNCTIONAL DOMAINS & FEATURES

## 1. Customs Declaration & Clearance

- Electronic processing of import, export, and transit declarations, including pre-arrival and pre-departure.
- Automated validation against legal rules, tariff schedules, preferential regimes, and risk criteria.
- Digital signatures and secure authentication for traders, brokers, and government officials.
- Automated selectivity and channeling (green/yellow/red lanes), with straight-through processing for low-risk shipments.
- Integration with cargo manifests, transport documents, and logistics systems via standardized messages and APIs.

## 2. Taxation & Revenue Management

- Real-time calculation of customs duties, VAT, excise, environmental and other charges, based on centrally managed tariff and valuation rules.
- Configurable valuation logic aligned with WCO standards and national legislation.
- AI-assisted detection of revenue risks (e.g., undervaluation, misclassification, abuse of regimes).
- Seamless integration with tax authorities, treasury and payment gateways for assessment, collection, reconciliation, and refunds.
- Robust audit logs and reporting to support internal audit and external oversight bodies.



## 3. Risk Management & Fraud Detection

- Real-time calculation of customs duties, VAT, excise, environmental and other charges, based on centrally managed tariff and valuation rules.
- Configurable valuation logic aligned with WCO standards and national legislation.
- AI-assisted detection of revenue risks (e.g., undervaluation, misclassification, abuse of regimes).
- Seamless integration with tax authorities, treasury and payment gateways for assessment, collection, reconciliation, and refunds.
- Robust audit logs and reporting to support internal audit and external oversight bodies.

## 4. Trade Facilitation and Single Window Services

- Real-time calculation of customs duties, VAT, excise, environmental and other charges, based on centrally managed tariff and valuation rules.
- Configurable valuation logic aligned with WCO standards and national legislation.
- AI-assisted detection of revenue risks (e.g., undervaluation, misclassification, abuse of regimes).
- Seamless integration with tax authorities, treasury and payment gateways for assessment, collection, reconciliation, and refunds.
- Robust audit logs and reporting to support internal audit and external oversight bodies.

# KEY FUNTIONAL DOMAINS & FEATURES

## 5. Enforcement, Intelligence & Border Security

- Integration with national, regional, and international intelligence systems, including WCO, sanctions and watchlist databases.
- Case management for seizures, infringements, and anti-smuggling operations, with chain-of-custody and outcome tracking.
- Pre-clearance security screening, passenger/cargo data ingestion, and risk targeting for ports, airports, and land borders.
- Enforcement analytics to monitor trends, hotspots, and the effectiveness of targeted operations.



## 6. Data & AI Platform (Powered by IBM DB2)

- IBM Db2 as the core data engine, providing high-performance OLTP and analytics-ready data structures, with strong security controls and advanced workload management.
- Lakehouse-style data architecture using open formats (e.g., Parquet, Iceberg) to support modern analytics, data warehousing, and AI workloads.
- Real-time dashboards, visual analytics, and AI-assisted insights for risk, revenue, and operations.
- Governance, auditing, and data protection aligned with IBM Data Management and IBM Security best practices.

## 7. Technical Architecture and IBM Solution Alignment

- Architecture: Web-based, multi-tier, SOA/microservices aligned with modern IBM Cloud and container orchestration patterns.
- Core Technology Stack: Java, Javascript, XML, REST/JSON, message queues, and container-ready services built to integrate with IBM Db2 and enterprise middleware.
- Deployment Options:
  - On-Premise with IBM Db2 running on secure infrastructure (including IBM-aligned environments).
  - Cloud deployment, including IBM Cloud and government-authorized clouds.
  - Hybrid architectures, allowing sensitive data to remain on-premise while leveraging cloud for analytics and non-sensitive services.

## 8. Security, Governance, and Operations

- Role-based access control and segregation of duties for customs, IT, and oversight functions.
- Comprehensive auditing of user actions, configuration changes, and data access, leveraging IBM Db2's strong logging and auditing capabilities.
- Encryption at rest and in transit, key management, and support for national cybersecurity and data-protection standards.
- High-availability and disaster-recovery options, aligned with IBM Db2 resilience patterns, ensuring continuity of customs operations.
- Central monitoring and administration consoles giving operations teams visibility into performance, capacity, and system health.