Data sharing of Smart Ports for Sustainable Transportation

智慧港口数据共享促进可持续交通
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Smart Port development direction

Intelligent analysis and decision support, business process management information sharing, to realize agile management digitization, and decision-making intelligent and visualization.

Integrate the service resources of the port ecosystem, take the port as the core, and build the port ecosystem, with production and trade companies, shipping logistics companies and port units.

Smart ports empower the logistics supply chain and build a digital logistics supply chain.
Background

Informatization Cooperative of Smart Ports

- High density of port
- Collaborate closely in International trade
- Large demands of Information Cooperation
- Good foundation of cooperation
- Advanced port infrastructure
- High level in smart ports, automated terminals and Informatization

- Many links involved
- Data safety issue
- Lack of information exchange channel
- Demand difference
Background

Existing problems in the data sharing

- Fragmentation and lack of connectivity around ICT-based systems for decision making
- The degree of digital is uneven, lack of data synchronization and sharing.
- Big data application are limited to data island
- The disunited of Standards and regulation of different transport model
- Lack of trust mechanism
In 2018, LOGINK, IPCSA and Alibaba Group, established the Logistics Visibility Task Force, to address the current problems in cross-border logistics information sharing, support to meet the urgent need for end-to-end visualization of logistics status.
Logistics Visibility Data — ISO 23355 Core idea

- **Logistics Visibility Data:** Logistics event status data constitute of logistics event occurring in supply chain.
Based on International and general standards

**ISO/TC 154**
Processes, data elements and documents in commerce, industry and administration

Joint Group with UNECE

Logistics data contents and process
ISO 23355 Main Content

- **Standard Name:**
  Visibility Data Interchange Between Logistics Information Service Providers

- **Scope:**
  This standard specifies logistics visibility data, data elements, interchange message, and framework of LISP interconnection.
  This standard is applicable to regional and inter-regional logistics data interchange services of transport means and goods management in maritime, road, air, and railway import/export transportation.

- **Framework:**
  The standard specifies a framework to clarify how logistics visibility data is exchanged between different LISPs and between data providers and users.
  LISP, for example, an electronic data interchange platform.
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<thead>
<tr>
<th>Party</th>
<th>Example of parties</th>
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<tbody>
<tr>
<td>LISP</td>
<td>1. PCS &amp; CCS</td>
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<td>2. Logistics Data Exchange Platform</td>
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<td>Data provider</td>
<td>1. Maritime Carrier</td>
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<td>2. Freight forwarder</td>
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<td>3. Port/Terminal Operator</td>
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<td>5. PCS &amp; CCS</td>
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<td>6. Logistics Data Exchange Platform</td>
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<td>Data user</td>
<td>1. Maritime Carrier</td>
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</table>
The import process of maritime, air, railway and road transportation.

According to the common key nodes in the process of import of transportation, the above 6 messages are condensed.
International Logistics Export Process and exchange Messages-ISO 23355

- The export process of maritime, air, railway and road transportation.
- According to the common key nodes in the process of export of transportation, the above 6 messages are condensed.
Application Scenario example-ISO 23355

Data User
- Transport Means Data
- Goods Data
- Documents Data
- ...

Data Output
- Query
- Response

Service Provider (LISP)
- Forecast Information Message
- Actual Information Message
- Arrival Report Message
- Tally Message
- Goods Loading Message
- Transport Means and Goods Release Message
- 6 Messages

Data Input
- Terminal
- Customs Agency
- Shipping Company
- ...

Data Provider
How to cooperation

Principles and Key features of International mutual trusted sharing

- **Trustworthy**: building security and authentication tools is essential for digital services
- **Data Sovereignty**: Data sovereignty means maintaining authority and control of data within jurisdictional boundaries. Everyone follows a unified governance mechanism (technology, legal and business)
- **Decentralization**: The data space is decentralized and data is not stored centrally, but the source of the data is stored. All platforms are considered as nodes of the network and always maintain their internal control.
How to cooperation

- Identity authentication and management: local authentication + international authentication
- Service Retrieval + Data Exchange
- Unified Exchange Standards
- Exchange Directory (content) Extension
- Billing system

International Mutual Trusted Sharing Initiative

Trusted Sharing architecture vision
Regional and local authentication methods

Unified user authentication service approach to interoperability:
1. Fixed IP Address
2. National certificate server
   - Issuing certificates to other countries for interconnection
   - Each country that has a certificate is responsible for its own users
How to cooperation

Trusted Logistics Information Sharing Network

Global Partners

Sea Ports & Railway

International Standard

Trusted Platforms
Big Data application in Shipping

Shipping management

Intermodal transport

Cargo Visibility
Situation Analysis: Global traffic flow analysis based on multi-source data fusion

Global ship density

Global traffic heat
Group standard “Smart port level evaluation guide for container terminal”

Issued in January 2022 and implemented in April, the evaluation rules for container terminals have been completed and apply to a comprehensive evaluation for the construction of smart ports, "promoting construction through evaluation".
Supply chain stakeholders participate validating business rules. System generate immutable, transparent and reliable records in real time in the supply chain.
Our shareholders are major Shipping Carriers and Global Terminal Operators. They are committed to collaborate in an open and transparent manner, to bring forward the digital transformation of the entire shipping industry.

The trusted and accessible operating system powering the global shipping trade.

GSBN is built on a permissioned blockchain with strong data governance where only authorized parties are granted the right to contribute and consume shipping related data. By leveraging immutability of the blockchain and data field level privacy through cryptography, participants in the supply chain such as Terminals, Carriers, Shippers, Freight Forwarders, Truckers, Customs and Financial Institutions, can collaboratively design and enable industry wide, end to end, solutions.

GSBN strive to promote the digitization of the global trade sector, which will result in more comprehensive data sharing and help parties reduce their carbon footprint through efficiency, eventually enabling better governance and risk management.
Thank you for your attention!

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