
**Business requirements for end-to-end
visibility of logistics flow**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 154, *Processes, data elements and documents in commerce, industry and administration*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Visibility of logistics traffic flow and finding the precise logistics information in a simple and trusted way are very important for the logistics processes in international trade.

However, the logistics data to be obtained by the logistics operator is often provided by several logistics information service systems (LISS) and other logistics and/or trade parties. Although international standards (such as UN/EDIFACT) have existed for decades and many national and regional systems have been implemented based on such international standards, LISSs are often developed in isolation and fragmentation based on their individual business requirements; and this has led to many different and non-interoperable interpretations of standard messages. In order to realize the visibility of logistics traffic flow, data from different LISSs should be interchanged with each other by using a standardized method to establish an LISS network.

This document specifies three business requirements of a future LISS network. The purpose of including the network architecture in this document is to support the business requirements of data exchanges between different LISSs on the application layer. Existing international standards ([Annex B](#)) can be reused in a standardized way and any gaps filled by new international standards where identified. This document is an important reference and guideline to related logistics parties such as LISS providers, single window/SSP operators, logistics data providers and logistics data users.

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Business requirements for end-to-end visibility of logistics flow

1 Scope

This document specifies three business requirements for the visibility of logistics traffic flow based on the use cases and gap analysis in [Annex A](#). It includes

- 1) LISS network architecture requirements,
- 2) visibility data interchange requirements between LISSs, and
- 3) visibility data interface and process requirements for an LISS network.

These three business requirements are described further in [Clause 6](#), [Clause 7](#) and [Clause 8](#) respectively.

Furthermore, [Clause 8](#) describes the requirement for a guideline for business participants and stakeholders in an LISS network such as logistics information service providers, single window/SSP operators, data providers and logistics data users.

This document does not include standardization

- 1) at the level of logistics devices (areas of standardisation covered by ISO/TC 104, ISO/TC 204),
- 2) for ships, navigation and marine technologies (areas of standardisation covered by ISO/TC 8), or
- 3) related to international data exchange such as standards developed, published and maintained by UN/CEFACT, GS1, WCO which are referenced as appropriate in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

UN/CEFACT Multi Modal High-Level Business Requirements Specification (BRS)¹⁾

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

1) This high-level BRS describes the requirements for a generic reference data model supporting the trade and transport-related processes involved in the cross-border supply chain and covering, at a high-level, the involved business areas, the main parties and the information involved. It provides the framework for any cross-border transport-related business and government domains to specify their own specific information exchange requirements whilst complying with the overall processes and data structures. Reference: https://www.unece.org/fileadmin/DAM/cefact/brs/BRS_T_L-MMT.zip.

3.1 logistics information service system LISS

trusted third party that provides the services of a platform for the electronic exchange of logistics information in the supply chain for increased efficiency and effectiveness

3.2 single window SW

facility that allows parties involved in trade and transport to lodge standardized information and documents with a single-entry point to fulfil all import, export, and transit-related regulatory requirements

Note 1 to entry: If information is electronic, then individual data elements should only be submitted once.

Note 2 to entry: See UN/CEFACT Recommendation 33 (currently under revision).

3.3 single submission portal SSP

portal that allows traders to submit all of the information related to a specific activity to a single electronic platform, which then redistributes the information to all participants within that portal

Note 1 to entry: A single submission portal differs from a *single window* (3.2) in that it can or cannot handle regulatory procedures and it can or cannot be the only portal within a market.

4 Abbreviated terms

API	application programming interface
B2B	business to business
B2G	business to government
CCS	cargo community system
G2B	government to business
LSP	logistics service platform
MEP	message exchange pattern
MMT RDM	multi-modal transport reference data model
MSME	micro, small and medium enterprise
OGA	other government agency
PCS	port community system
PPP	public-private partnership
SCRDM	supply chain reference data model

5 Business requirements overview

Based on the use cases and gap analysis in [Annex A](#), the three business requirements include:

- 1) logistics information service system network architecture requirements;

- 2) visibility data interchange requirements between LISSs;
- 3) visibility data interface and process requirements for an LISS network.

The major related business requirements for each use case and gap analysis are summarized in [Table 1](#).

Table 1 — Major related business requirements for each use case and gap analysis

Sub-clause	Use cases	Issues and gaps	Gap analysis	Business requirements		
				1)	2)	3)
A.1	Data connection between non-harmonised partners	The logistics information is disseminated and fragmented in the logistics chain, including both logistics status information and administrative data.	Global logistics information networks should be established to provide one-stop logistics information service. The reasons for the fragmentation need to be investigated as they are often commercial or international contractual reasons which technical solutions cannot solve alone.	Y		
A.2	Basic logistics data with non-harmonised technical and data format standards	It is difficult to form closed loop data link because of non-harmonised technical and data format standards.	It is vital to harmonize the differences of industry-level and country-level standards by providing solutions to achieve mutual recognition. The differences in terminology and data rules set by the international contractual conventions in the different modes of transport are a barrier which needs to be addressed.		Y	
A.3	Same logistics data query with different return information from different LISSs	For the same data query from user side, the required parameters and return information of LISSs are not in a simply and uniform way.	Uniform user management and authorization should be standardized for LISSs recognising the importance of harnessing international data standards.			Y
A.4	Public or private data connection	No clear rules and steps for public or private data connection.	Public/private authorization and management should be standardized to set up a trust and controlled LISS network.		Y	Y

1) Logistics information service system network architecture requirements

LISS networks should be multi-party connected logistics networks including national and regional LISS operators, national, regional single window/SSP operators, data providers and trade and data users.

Data connections should be established between national and regional LISSs to realize visibility of logistics flow geographic regions and multi-modal transport modes such as maritime, air, rail, road, inland water, etc. National and regional single window/SSP operators can connect to corresponding national and/or regional LISSs for data connections to an LISS directly and to other LISSs indirectly.

Data providers can share/obtain data to/from connected LISS directly and to/from other LISSs indirectly. Data users can obtain data from multi-LISSs directly or indirectly.

The detailed network architecture requirements are specified in [Clause 6](#).

2) Visibility data interchange requirements between LISSs

Data interchange should be neutral, trusted and controlled. Event data should be classified with regard to commercial and other data security considerations; and data security access levels should be specified for different entities linked to an LISS network in order to assure data owners that their data will at all times only be made available to parties they trust, that they themselves determine which data will be shown, and how, and that they can block access to this data at any time. Data owners should be able to maintain access control to their individual data ownership at all times.

The detailed visibility data interchange requirements are specified in [Clause 7](#).

3) Visibility data interface and process requirements for LISS network

Data interface and process should be open and based on unified user management and authentication. There should be a single way of working that is suitable for all modalities, large and small organizations, public and private-sector parties, bodies requesting data and those supplying it, and their software suppliers, so that data can be shared in a simple manner across the whole sector. As a result, logistics efficiency will be improved; time and costs will be saved.

The detailed visibility data interface and process requirements are specified in [Clause 8](#).

6 Logistics information service system network architecture requirements

6.1 Network architecture requirements overview

An LISS network should be a multi-party connected logistics network including national and regional LISS operators, national plus regional single window/SSP operators, data providers and data users. The network architecture of a LISS is shown in [Figure 1](#). In an LISS network, there are three roles:

- 1) LISS, the third-party logistics data service system, such as a port community system, a cargo community system etc.
- 2) Data providers, who provide the data to an LISS, such as port and sea data providers.
- 3) Data users, who access logistics data from LISS network, such as buyers, sellers and logistics agencies.

An LISS has its own data providers and data users, and the logistics data can be interchanged within the LISS area. Data connection can be established among LISSs. Furthermore, LISS can connect to national and regional single window/SSP to exchange government data. Single window/SSP has the major role of providing government data to LISS, such as custom clearance data. Therefore, data can be interchanged between LISS area to form a multi-party connected logistics network.

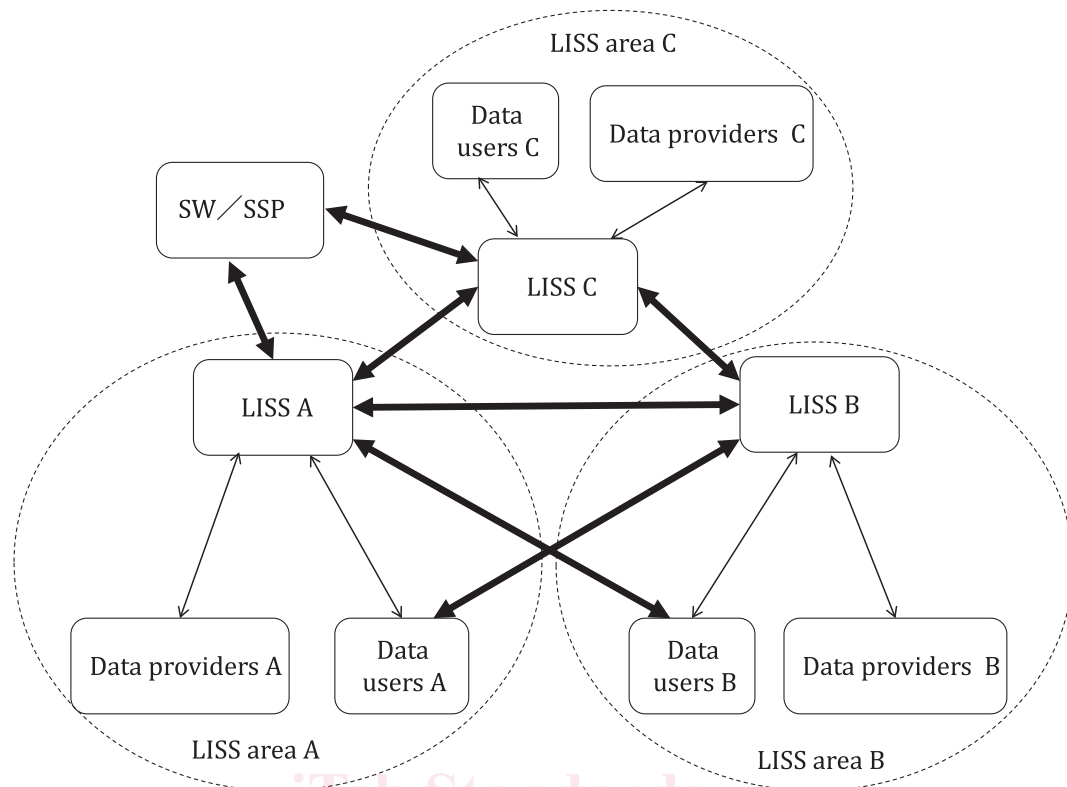


Figure 1 — Network architecture of a logistics information service system (LISS)

6.2 LISS network entities

6.2.1 Logistics information service system (LISS)

Most logistics information service systems (LISS) serve the entire logistics chain: maritime transport, land transport, warehousing to support international trade eBusiness and internet platform-based e-commerce sales transactions. Some LISSs also support administrative functions and provide information services relating to international trade regulations.

Data providers and data users can interact or exchange data with an LISS. Data can be interchanged between data providers and LISS. Besides, users can obtain specific data from LISS by exchanging messages between users and LISS.

Sometimes, users require data exchange from multiple LISSs. This can be enabled via a data communications connection (such as an APIs) between users and other LISSs. Similarly, data sharing among LISSs can be enabled, as well as B2G and G2B data interchanges between an LISS and a SW. Therefore, national or regional LISSs could enable data exchange among LISSs and SWs to establish a global logistics network.

The types of LISS include:

- Port community system (PCS)

A port community system is a neutral and open electronic platform enabling intelligent and secure exchange of information between public and private stakeholders in order to improve the competitive position of the sea and airports' communities (sometimes referred to as port user groups).