TECHNICAL SPECIFICATION

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Intelligent transport systems — Electronic information exchange to facilitate the movement of freight and its intermodal transfer — Governance rules to sustain electronic information exchange methods

Systèmes intelligents de transport — Échange d'informations électroniques pour faciliter le mouvement du fret et son transfert intermodal — Règles de gouvernance pour soutenir les méthodes d'échange d'informations électroniques

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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 204, *Intelligent transport systems*.

This second edition cancels and replaces the first edition (ISO/TS 17187:2013), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Clause 7 and Annexes A to D have been updated to include ISO 19845:2015 (UBL 2.1);

— subclause 7.4 has been updated for Freight-X document exchange standards;

— subclause 7.5 has been updated for Freight-X communication exchange standards.

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.

Introduction

Electronic commerce offers new opportunities to improve the efficiency of business operations and to reduce costs associated with trade procedures, providing increased competitive advantages to the commercial actors ready to embrace new methods of work and trade. Emerging electronic commerce platforms and the use of the internet provide users with a combination of technologies to communicate data, to contract electronically, as well as to manage new business processes leading to new business models.

Improved information sharing among supply chain partners is one of the key business objectives which enable the participants to improve their operational efficiency and optimize their enterprise resource allocations. Due to the existence of heterogeneous IT environments among supply chain partners, it is a challenge for the implementer to seamlessly integrate information from multiple data sources and in different data formats. Each data source is typically designed for a single, stand-alone purpose within an enterprise, not to be part of an integrated data collection. These disparate data repositories tend to be silos, independent of one another, and not working well together. Business entities wishing to engage with other business partners to facilitate certain standards of practice for information interchange will need to abide by certain rules, otherwise the efficiencies sought using the methodologies in this document will be diminished.

Within this context, and within this document, governance is defined as being the rules, processes, and behaviour that affect the way in which powers are exercised, particularly as regards openness, participation, accountability, effectiveness, and coherence. As discussed in ISO/TS 24533, there needs to be a governance process to tie loose ends together and allow the supply chain partners to keep their data exchange standards viable and effective. Governance is key to this process of maintaining the structures that allow for a high degree of supply chain productivity and for holding together the community partnerships that make such an arrangement economically advantageous. A governance specification is critical to making the process described in this document effective. There is an expectation that this document will provide the guidance that will keep the supply chain standards viable and useful for the community of users wishing to maximize their returns on investment.

The processes and process tools include web services technologies to improve the operating efficiency, safety, and security of freight movement. These technologies are used for sharing information between supply chain partners in a commonly understood manner by capturing it only once and sharing it many times, and by giving all partners the same view of the data.

A service-oriented architecture leverages the web services functionality and necessitates the requirement for data exchange standards. These tools hinge on the successful definition and adoption of data standards published in open and accessible forums. The advantages of using information technology tools are undeniable and their use is now widespread across industry. The freight transport and logistics industry is no exception with all businesses using e-business to some extent.

This document does not address liability of any kind as this is considered within the domain of each participating party. However, liability issues can be lessened by following the tenants of this document as a result of cooperating partners actively managing the data and communication transfer protocols.

Intelligent transport systems — Electronic information exchange to facilitate the movement of freight and its intermodal transfer — Governance rules to sustain electronic information exchange methods

1 Scope

This document provides governance rules to be used for executing an organized process for business entities to connect to one another electronically for the conduct of electronic trade in a secure and open environment through a standardized framework for information exchange. This standardized framework includes processes and process tools to ease connections between trading partners, to provide full visibility, and to reduce the time goods spend in transit. The application of these rules and attendant standards and technology applications are expected to allow business entities to engage their legacy systems without the cost of upgrades.

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.

ISO/IEC 19845:2015, *Information technology — Universal business language version 2.1 (UBL v2.1)*

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/

3.1
bill of lading
document which evidences a contract of the carriage and the taking over or loading of the goods by the carrier, and by which the carrier undertakes to deliver the goods against surrender of the document

Note 1 to entry: A provision in the document that the goods are to be delivered to the order of a named person, or to order, or to bearer, constitutes such an undertaking. The document has the following functions: 1) a receipt for goods, signed by a duly authorized person on behalf of the carriers, 2) a document of title to the goods described therein, 3) evidence of the terms and conditions of carriage agreed upon between the two parties.

[SOURCE: ISO/TS 24533:2012, 2.5]

3.2
carrier
person or organization, which owns and/or operates a transport means, engaged in the transportation of passengers or property by land, rail, air or water

[SOURCE: ISO/TS 24533:2012, 2.7]

3.3
consignee
receiver
person or company to whom goods are shipped

[SOURCE: ISO/TS 24533:2012, 2.11]

3.4
consignor
shipper
transport service buyer
party which, by contract with a carrier, consigns or sends goods with the carrier, or has them conveyed by him

Note 1 to entry: It is the party that gives instructions for the transportation services required for a consignment of goods.

[SOURCE: ISO/TS 24533:2012, 2.13, modified — The third term "transport service buyer" has been added and Note 1 to entry has been added.]

3.5
customs broker
party that is licensed to enter and clear goods through customs

Note 1 to entry: The responsibilities of a broker include preparing the entry form and filing it, advising the importer on duties to be paid, advancing duties and other costs, and arranging for delivery to the importer.

3.6
forwarding instructions
document issued to a forwarder, giving instructions regarding the action to be taken for the forwarding of goods described therein

Note 1 to entry: See Clause A.1.

3.7
freight forwarder
transport service provider
party arranging the carriage of goods, including connected services and/or associated formalities, on behalf of a consignor or consignee

Note 1 to entry: It is the party that is contracted to provide the transportation services.

[SOURCE: ISO/TS 24533:2012, 2.25, modified — The second term "transport service provider" has been added and Note 1 to entry has been added.]

3.8
Freight-X
system through which the national and international freight communities' demand for and supply of electronic business services to support freight operations is directed and controlled

EXAMPLE The Electronic Freight Management (EFM) programme in the US; the eFreight programme and its affiliates in Europe.

3.9
Freight-X community
Freight-X participant
Freight-X user community
community of organizations that has formally agreed to collaborate to operate using the principles defined in this document by joining a Freight-X consortium

3.10
Freight-X community provider
organization that implements mechanisms for managing demand and supply of available Freight-X services supporting freight transportation management operations

3.11
Freight-X consortium
organizations that have formally agreed to form a formal association which has established rules and governance procedures to collaborate to operate using the principles defined in this document

3.12
Freight-X community provider agreement
formal agreement by Freight-X community provider in respect of representation rights, access to specifications and services, data and document provision, specification, management, and access and maintenance

3.13
Freight-X governance
Freight-X governing body
system through which national and international freight communities' demand for and supply of electronic business services to support freight operations is directed and controlled

3.14
Freight-X message profile
specification of how one or more Freight-X business processes are executed by specifying the Freight-X business rules governing its business collaborations and the information content of the electronic business transactions exchanged

3.15
Freight-X service
web service created specifically to address business processes related to electronic freight management

EXAMPLE Receive order; confirm booking; obtain status.

3.16
Freight-X specifications
explicit set of requirements to be satisfied by Freight-X

3.17
friends of the shipment
collection of parties whose role in a particular shipment has been established and documented in the Freight-X registry enabling access to the shipment information

3.18
governance
rules, processes, and behaviour that affect the way in which powers are exercised, particularly as regards openness, participation, accountability, effectiveness, and coherence

3.19
level of service
measure to determine the effectiveness of elements of the Freight-X transportation infrastructure

3.20
logistic service provider
party providing logistic services such as warehousing, repacking products, distribution, and assembly

EXAMPLE Third-party logistic provider; container freight station.

3.21
message profile
content of the electronic business transactions exchanged described with an aim to function as part of a formal agreement

3.22
packing list
document stating the distribution of goods in individual packages, such as shipping document issued by shipper to carrier, customs and consignee serving the purposes of identifying detail information of package count, products count, measurement of each package, and weight of each package

3.23
small and medium-sized enterprises
SMEs
entities engaged in an economic activity, irrespective of their legal form, that are characterized by a number of employees, an annual turnover, and/or an annual balance sheet which fall below established limits

3.24
terminal operator
party with operational responsibilities at origin or destination nodes for freight transport journeys

Note 1 to entry: The responsibilities can include overseeing the unloading of goods, checking the quantity of goods against the manifest, transferring of the goods, checking documents and authorizing a carrier to pick up goods.

3.25
transport status document
document issued on individual specific request or through an agreed status reporting procedure by a freight forwarder to communicate to the consignee or consignor or notify party the status of shipments that are currently under the freight forwarder's management

3.26
waybill
document issued by the party that provides the physical transportation services to the party that gives instructions for the transportation services (i.e. shipper, consignor)

Note 1 to entry: A waybill states the details of the transportation, charges, and terms and conditions under which the transportation service is provided. Unlike a bill of lading, a waybill is not negotiable and cannot be assigned to a third-party transport document describing a shipment. It states the instructions for the beneficiary and can contain the details of the transportation, charges, and terms and conditions under which the transportation service is provided.

4 Abbreviated terms

BBIE	Basic business information entity
BIE	Business information entity
CCT	Core component type
CCTS	Core Components Technical Specification
ebXML	Electronic Business Extensible Markup Language
ESB	Enterprise Service Bus
ICT	Information and Computer Technologies
RBAC	Role-based Access Control

SOA	Service-Oriented Architecture
UBL	Universal Business Language
UDDI	Universal Description Discovery and Integration
XML	Extensible Markup Language
XSD	XML Schema Definition (language)

5 Freight-X governance

5.1 General

Governance of Freight-X is defined as the system through which the national and international freight communities' demand for and supply of electronic business services to support freight operations (referred to as Freight-X) is directed and controlled.

Governance involves directing and evaluating the implementation and operations of Freight-X communities among collaborating organizations and monitoring its employment to achieve planned business objectives. It includes the strategy and policies for using Freight-X among those collaborating communities. For example, governance controls would ensure that changes to Freight-X Profiles are minimal, reached by consensus, and driven by strong business needs.

5.2 Strategic governance requirements

Strategic governance requirements include the following:

- a standardized governance model for all Freight-X implementations based on collaborative levels of responsibilities;
- a recommended implementation process within a community of users, identifying the relationships between all parties to the governance model and the cooperation needed between them to realize the full benefits of adoption. Full benefits will be realized when Freight-X best practices are adopted by all supply chain partners. It is critical that partners serving multiple shippers, like forwarders and brokers and logistics firms adopt Freight-X and perpetuate it with partners in other supply chains to further spread the benefits;
- each Freight-X community to adopt Freight-X profiles (and related standards) that not only promote integration with other services but also capture data coherence and semantic consistency of the information between these services. A Freight-X profile should:
  - identify core set of information bundles,
  - identify how you communicate the information bundles to your partners,
  - include generic rules and procedures for refining a tool for use within your organization, and
  - can include code lists and message schemas;
- to keep the Freight-X standards in a form that will not be altered without the user community's consent. This will also ensure the proper operation and utilization of the standard set of messages for all future adopters;
- a standards-based coherence model that can also be used to pre-qualify incoming participants and set required levels of engagement as dictated by the governance model;
- the Freight-X governance model can be promoted as an international trade facilitation framework standard (similar to initiatives such as "single window", which is the implementation of a single

window system that enables international (cross-border) traders to submit regulatory documents at a single location and/or single entity).

5.3 Management

This open community model covers the policies, systems, and procedures laid down to guide the development and operations of Freight-X communities.

5.4 Ownership

Freight-X shall, to the extent possible, be implemented using an open-source solution and shall not rely on any third-party, proprietary solution that requires purchase of software licenses by the deploying party.

5.5 Central services/registry

For the Freight-X communities to interoperate, a single master registry identifying the various Freight-X communities in operation is essential and shall be given strong consideration by the governing body.

This central service can also be expanded to include publication of specifications, code lists, and other supporting materials.

The registry is vital to the establishment of the Freight-X governance model. Members of the Freight-X consortium shall post their available web services and necessary instructions on the registry for viewing to all other participants of Freight-X. Participants shall be able to view the services available and from which company, then proceed to download the necessary services to begin electronically communicating with the other participants/trading partners.

5.6 Intellectual property rights

The intellectual property of the Freight-X solution shall be offered on a nonexclusive, worldwide, non-sub licensable, perpetual patent license on fair, reasonable, and non-discriminatory terms without payment of royalties or fees to make, have made, use, market, import, offer to sell, and sell, and to otherwise directly or indirectly distribute licensed products that implement the Freight-X specifications. These are the terms for open standards and would be most likely to encourage wider adoption.

5.7 Information security

Only authorized parties involved in the consignment can access certain shipment records. The rules as to who can access the data and what data can be accessed are determined by the shipment owner on a permission basis. Under the terms of the “friends of the shipment” rule, a partner does not have access to information that it does not have a need to know, that is business sensitive, or that can be used against a competitor.

6 Policy

6.1 General

Business entities wishing to engage with other business partners to facilitate electronic trade using the tools described in this document shall follow certain standards of practice for information interchange and shall include the major recognized freight transport data standards, e.g. the Electronic Data Interchange For Administration, Commerce and Transport (EDIFACT), Global Standards One (GS1), and UBL transport data standards for information exchange developed by the Organization for the Advancement of Structured Information Standards (OASIS) that are based on ISO/IEC 19845:2015. It shall not be required for all participating business entities to incorporate ISO/IEC 19845 into their core operation, but if it is not totally adopted, it is possible that some manner of translation/transformation will need to be incorporated to allow the standards to operate as the common language between business entities.

