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Intelligent transport systems — Electronic information exchange to facilitate the movement of freight and its intermodal transfer — Road transport information exchange methodology

Systèmes intelligents de transport — Échange d'informations électroniques facilitant le mouvement du fret et son transfert intermodal — Méthodologie pour l'échange d'informations concernant le transport routier

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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.

ISO/TS 24533 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

Introduction

Seamless exchange of accurate, complete, and timely data at transportation hand-offs has always been important for efficiency and accountability. There is also an understanding of needs for security of transport information, and for transfer of information related to security against terrorism as well as theft and traditional contraband. It is imperative for standards development organizations to address and facilitate dealing with these needs.

ISO/TR 14813-2:2000, 7.4.1 identifies a commercial vehicle functional domain:

> "These transactions maintain the TICS information about a shipment from the time of the order by the consignor to the reception of goods by the consignee. The key TICS transactions are to provide registers of service providers and to enable the goods to be tracked throughout intermodal journeys."

Consequently, Technical Committee ISO/TC 204, *Intelligent transport systems*, seeks to fill a role focusing on data exchange needs for the international supply chain that relate specifically to motor carrier transportation including data needs for the interface with all modes of transportation since freight movement normally includes interfaces with other modes of transportation. Those needs are essential for transport information and control systems.

Some international shipments are carried out entirely by highway mode, but most begin and end with motor carrier service and travel by other modes in the course of the shipment. This Technical Specification focuses on motor carrier transport interfaces through the supply chain, or those data items that deal specifically with the key pieces of transport information critical to getting the goods to the marketplace without delay related to data sharing. Therefore, the interfacing modes' data structures and formats must accommodate each other to assure efficiency and security from end to end. Truck, rail and ocean transport are vital components of intermodal, international shipping. It is recognized that a robust intermodal standard must include interface connections to all of these modes, and may need to be proven through demonstration tests. Research and tests carried out in the US motivated the use of a truck-air-truck supply chain (shown in Figure 3). Preliminary investigations suggest that there is no single organization responsible for transport data standards through the intermodal supply chain. To achieve a coherent set of transport standards requires coordination among the various international organizations working on component parts of these international standards. TC 204 has advanced the idea of close coordination among other appropriate ISO Technical Committees, OASIS, IATA, IEC, CEN, UN Centre for Trade Facilitation and Electronic Business, and the World Customs Organization. Contact has been made and interest has been expressed in cooperating on the development of intermodal data exchange standards that fully cover the supply chain. This Technical Specification is a preliminary step towards coordinating between the various standards organizations.

The vision expressed in this Technical Specification is to allow electronic data sharing through many-to-many relationships between supply chain partners which will help ensure sustaining standards. One-to-one relationships require only two partners to have standard data relationships with each other, and could require other partners to adopt the standards of the original two or require third party translators, which increases costs in the transport of goods. The many-to-many relationships also ensure that data initiated by the first partner will allow other partners equal access and can also help customs agencies to access data early in the progress of goods coming through the supply chain.

Intelligent transport systems — Electronic information exchange to facilitate the movement of freight and its intermodal transfer — Road transport information exchange methodology

1 Scope

This Technical Specification specifies the data concepts applicable to the movement of freight and its intermodal transfer. These data concepts include information entities (data elements), aggregated/associated information entities (groups of data elements) and messages that comprise information exchanges at transport interfaces along the chain of participants responsible for the delivery of goods from the point of origin through to the final recipient as presented in Figure 1. This Technical Specification focuses on a single "thread" of the overall end-to-end supply chain.

It includes motor transport data needs within the international supply chain to satisfy the requirements of both businesses and governmental organizations. This Technical Specification is applicable to shipments that originate in one country and terminate in another. It may also be applied to shipments that originate and terminate in a single country. This Technical Specification is applicable to freight movements that interface with other modes and incorporates requirements set for those other modes.

This Technical Specification does not constrain the requirements of customs, regulatory, and safety bodies at border crossings but does include the data elements likely to be required by customs authorities. The same is true with the requirements of any particular mode of operation.

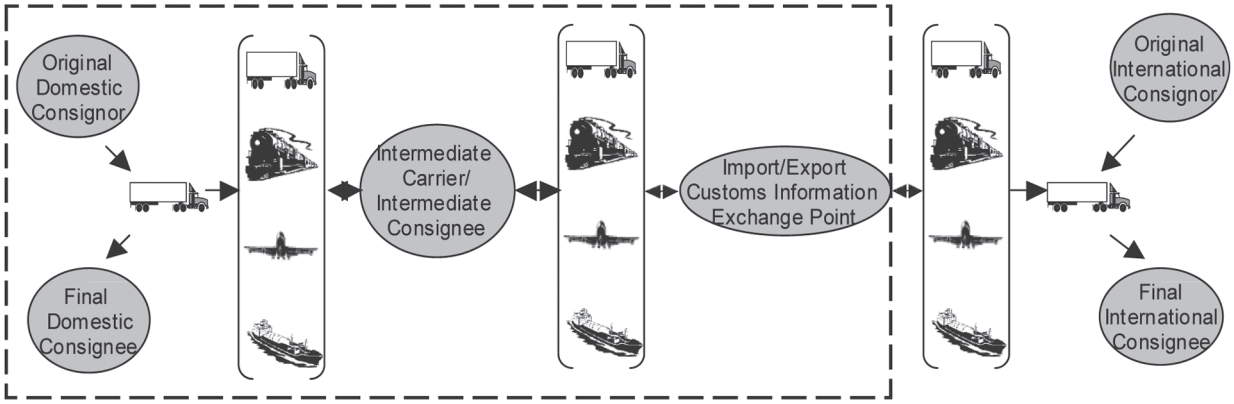

Figure 1 — Information exchanges at intermodal interface

NOTE This thread may be generalized to address the various combinations of segments that occur in the global supply chain while focusing on the information exchange at the interchange points.

2 Terms and definitions

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

2.1
agent
name and address of a person or organization authorized to act for or on behalf of another party

2.2
air carrier
carrier using aircraft to transport goods

2.3
air waybill
particular type of bill of lading, specifically a non-negotiable consignment note used to cover the transport of goods by airfreight

NOTE An air waybill serves as a receipt for the shipper, indicating that the carrier has accepted the goods listed therein, and obligates it to carry the consignment to the airport of destination according to specified conditions.

2.4
authority
statutory body existing within a jurisdiction and a specific area of responsibility that administers legislation to regulate trade and/or monitors compliance with existing legislation

2.5
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 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 authorised 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.

2.6
buyer
customer
ultimate consignee
individual or entity purchasing goods or services

2.7
carrier
person or organisation, which owns and/or operates a transport means, engaged in the transportation of passengers or property by land, rail, air or water

2.8
certificate of origin
international business document that certifies the country of origin of the shipment

2.9
chain of possession
identification and appropriate collection of a history of the party with possession of some unit of freight, such as a consignment, and relevant supporting data attributes about the party, the freight, and the assets involved in enabling the transport or distribution of that freight

2.10
conformance
adherence of a candidate's implementation to a standard

2.11
consignee
receiver
person or company to whom goods are shipped

2.12
consignment
separately identifiable amount of goods items (available to be) transported from one consignor to one consignee via one or more modes of transport and specified in one single transport document

2.13
consignor
shipper
party which, by contract with a carrier, consigns or sends goods with the carrier, or has them conveyed by him

2.14
consolidation
grouping together of individual consignments of goods into a combined consignment for carriage

2.15
consolidator
person or organization engaged in the process of combining more than one consignment loaded in a container destined to one or more consignees, combining carload or truckload consignments to make carload or truckload movements

2.16
container
receptacle for the transport of goods, especially one readily transferable from one form of transport to another

2.17
customs
government organization that deals with the levying of duties and taxes on imported goods from foreign countries and the control over the export and import of goods

2.18
customs manifest
document itemising a list of cargo prepared by shipping companies from bills of lading which is presented to customs for formal report of cargo

2.19
delivery party
party to whom goods should be delivered, if not identical to consignee

2.20
despatch party
party to whom goods are to be, or have been, taken over, if not identical to carrier

2.21
electronic freight manifest
electronic supply chain manifest (ESCM)
proposed concept of generating, storing, distributing, and accessing manifest-related data along the end-to-end supply chain, facilitated by this Technical Specification

2.22
export agent
person or organisation authorised to act for or on behalf of another person or organisation in business or as a broker in respect of services concerning the export of goods out of the country

2.23
exporter
name and address of the person who makes, or on whose behalf the "export declaration" is made, and who is the owner of the goods or has similar right of disposal over them at the time when the declaration is accepted

2.24
freight
goods
any transported commodity

2.25
freight forwarder
party arranging the carriage of goods, including connected services and/or associated formalities, on behalf of a consignor or consignee

2.26
governance
system by which organizations are directed and controlled

2.27
house air waybill
document made out by an agent/consolidator which evidences the contract between the shipper and the agent/consolidator for the arrangement of carriage of goods

2.28
house bill of lading
freight forwarder's document which performs similar functions to the bill of lading but which is not a document of title, nor is it negotiable

NOTE A house bill of lading is used mainly as a control for the goods within the freight forwarder's own service system.

2.29
import agent
person or organisation authorised to act for or on behalf of another person or organisation in business or as a broker in respect of services concerning the import of goods into the country

2.30
importer
name and address of party who makes, or on whose behalf a customs clearing agent or other authorised person makes, an import declaration

NOTE This may include a person who has possession of the goods or to whom the goods are consigned.

2.31
intermediary
commercial party who provides services to customers, suppliers or authorities within the supply chain

NOTE This includes, but is not limited to, freight transport.

2.32
intermodal container
freight container designed and constructed to permit it to be used interchangeably in two or more modes of transport

2.33
intermodal freight
cargo containers interchanged between transport modes, and where equipment is compatible within multiple systems

NOTE Transport modes include: motor, rail, water, and air carriers.

2.34
intermodal (freight) transport
movement of goods in one and the same loading unit (e.g. intermodal container) or vehicle which uses several modes of transport successively without handling the goods themselves when changing modes

2.35
journey
physical movement of goods from the supplier to the consignee

2.36
manifest
specification of all cargo on board the transportation vessel or any other means of transport

NOTE The manifest contains details of contents, shipper, consignee, and other details that may be required by customs or consular authorities. Copies of manifests are provided for the country of export and country of import customs authorities.

2.37
manufacturer
party that manufactures goods

NOTE In the context of this Technical Specification, the manufacturer may be the seller.

2.38
master air waybill
air waybill covering a consolidated consignment, showing the consolidator as shipper

2.39
master bill of lading
bill of lading issued by the master of a vessel (in actuality, the owner or charterer of the vessel)

NOTE A master bill of lading can cover a number of house bills.

2.40
(transport) mode
any transportation method, including rail, highway, air, water or pipeline

2.41
motor carrier
motor carriage
carrier using for-hire or private motorized transport on roads to transport goods

2.42
multimodal transport
carriage of goods by at least two different modes of transport

NOTE In contrast, "intermodal transport" implies the change from one mode to another using the same form of loading unit. Multimodal transport implies that either there is more than one modal shift or that loads may be broken into partial loads as part of a modal change.

2.43
seller
name and address of party selling merchandise to a buyer

2.44
shipment
identifiable collection of one or more goods items (available to be) transported together from the original shipper to the ultimate consignee

NOTE A shipment can be transported in different consignments.

2.45
shipping marks
physical identification shown on individual packages, used to help move them without delay or confusion to their final destination, and to facilitate verifying goods against their associated documents

2.46
supplier
party that provides goods

NOTE This may or may not be the same entity as the consignor/shipper. The supply chain physically begins with the supplier.

2.47
tracing
function of retrieving information concerning goods, goods items, consignments or equipment

2.48
tracking
function of maintaining status information of goods, goods items, consignments or equipment

2.49
transport document number
reference assigned by the carrier or his agent to the transport document

2.50
transport documentation
legal and commercial documents that accompany the transport means during a journey

2.51
transport means
vehicle used for the transport of goods

EXAMPLE 1 A vessel, train, or truck.

EXAMPLE 2 The vehicles, trailers, vessels, aircraft, or combination thereof, to perform the journey to deliver the consignment to the receiver or return returnables, together with the driver/pilot/crew physically conducting the journey.

2.52
transport seal
equipment seal
mechanical or electronic device applied to a container, unit load device, trailer, etc. to guarantee authenticity or security

2.53
transport services provider
provider (seller) of transport services

2.54
waybill
document made out by, or on behalf of, the shipper and which evidences the contract between shipper and carrier for carriage of cargo

NOTE A "through air waybill" covers the entire transportation from departure to destination of consignment. It is not a document of title.

3 Symbols and abbreviated terms

ABIE	Aggregate Business Information Entity
ACC	Aggregate Core Component
AEO	Authorized Economic Operator
AES	Automated Export System
ASBIE	Association Business Information Entity
ASCC	Association Core Component
BCC	Basic Core Component
BIE	Business Information Entity
BBIE	Basic Business Information Entity
BPAWG	Business Process Analysis Working Group
CC	Core Component
CCT	Core Component Type
CCTS	Core Component Technical Specification
CDL	Commercial Drivers License
DUNS	Dun & Bradstreet D-U-N-S Number
ebXML	Electronic Business Extensible Markup Language
EIN	Employer Identification Number
ESCM	Electronic Supply Chain Manifest
JIT	Just In Time
NDR	Naming and Design Rules (UBL)
OASIS	Organization for the Advancement of Structured Information Standards
SSN	Social Security Number
UBL	Universal Business Language
UCR	Unique Consignment Reference

UN/CEFACT United Nations Centre for Trade Facilitation and Electronic Business

UN/ECE United Nations Economic Commission for Europe

UN/TDED United Nations Trade Data Element Directory

USDOT US Department of Transportation

4 Intermodal freight context

4.1 General

The procedures active within the international supply chain are complex, and often cumbersome. At work are numerous interactions between different parties, which are guided by many factors, including type of product, country, terms of business, and the methods of operation of both the consignee and the seller. Given the broad range of activities possible, it is hardly surprising that within the context of actually transporting goods, a single transaction may involve many languages (both electronic and human), standards, and operational practices.

This Technical Specification addresses a methodology for using standard messages and tools that will maximize the efficiencies for transporting goods from a seller (or "consignor") to a buyer (or "consignee"), using intermodal transport that includes motor carrier and air links. It is appropriate for supporting operational freight movements that occur worldwide, whether that freight travels from point of origin to destination domestically or internationally. While this Technical Specification is not focused on single mode movements, and any unique requirements therein, it is considered complementary to standards of uni-modal freight movement.

This Technical Specification considers the four types of economic agents involved in business, as defined by the basic resource-event-agent ontology used by UN/CEFACT's Unified Modeling Methodology. For the purposes of this Technical Specification, these are considered to be the following actor classes:

— Customer: A party who acquires, by way of trade, goods or services.

— Supplier: A party who provides, by way of trade, goods or services.

— Authority: A statutory body existing within a jurisdiction and a specific area of responsibility that administers legislation to regulate trade and/or monitors compliance with existing legislation.

— Intermediary: A commercial party who provides services to customers, suppliers or authorities within the supply chain. This includes, but is not limited to, freight transport.

There are many specific actors' roles within these classes that participate in the supply chain. Those that are affected by this Technical Specification are shown in Table 1.