PD ISO/TS 24533:2012

BSI Standards Publication

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

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TECHNICAL SPECIFICATION

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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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Foreword

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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order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn.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again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.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*.

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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.

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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

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.

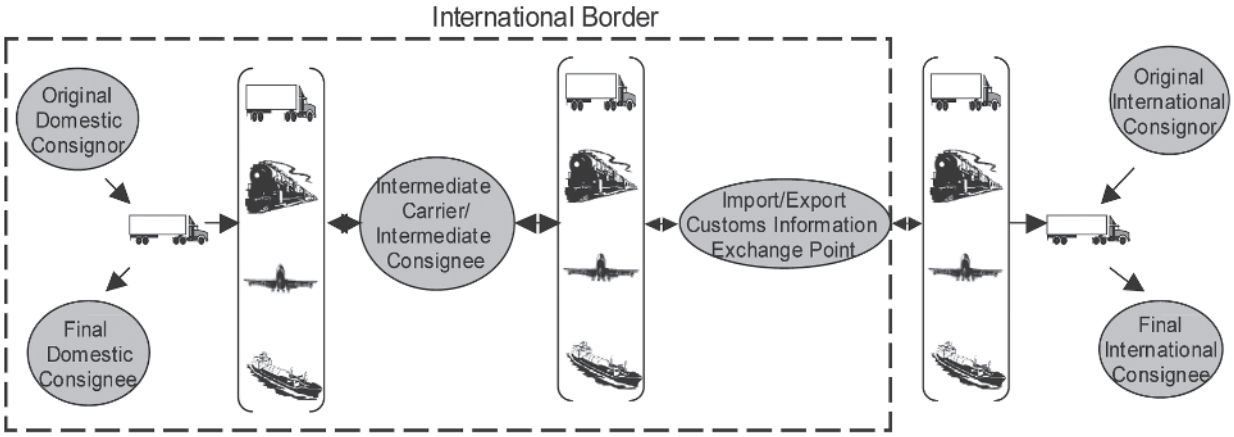

Figure 1 — Information exchanges at intermodal interface

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.

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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

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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

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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

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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

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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

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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

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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.

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Table 1 — Actors and their roles defined in this Technical Specification

Actor class	Actor roles
Customer	Consignee Buyer Receiver Final consignee Ultimate consignee
Supplier	Original consignor (might be the manufacturer) Consignor Shipper Seller
Authority	Customs agencies Receiving authorities (e.g. Port authority) Control government agencies (e.g. Police)
Intermediary	Motor carrier Air carrier Transport services provider Third party logistics provider Freight forwarder Import agent Export agent
Note The seller, supplier, shipper and consignor are different parties that each have a specific role. Depending on the business transaction contract, their action can vary in the process. The same is true for customer, buyer and consignee.	

It is noted that in many supply chains, common business practice may mean that an identified consignee is an intermediate point towards the transport of a consignment to the final, or “ultimate”, consignee. For example, a supplier may give a consignment to a third party logistics provider, who then creates a transaction to deliver to the final consignee. Unless otherwise noted in Clause 4, use of the term “consignee” refers to the “ultimate consignee”.

4.2 Intermodal freight — Road transport component concept of operations

4.2.1 Objectives

There are a great many different types of exchanges of information that are required in a supply chain, particularly one that is intermodal and international in scope. The exchanges span multiple business functions. This Technical Specification is concerned with distribution, transportation and security-related information. A concept of operation of how a data standard would be used operationally is driven by two major types of benefit: operational efficiency and security.

4.2.1.1 Operational efficiency

Suppliers and consignees articulate speed, visibility, and reliability as three important requirements of supply chains, necessary to ensure efficiency, high productivity and competitive positioning. Among the challenges to speed, visibility and reliability are the information requirements that must be met to trigger various activities along the physical supply chain. For example, information transactions accompanying international consignments must be filed with customs authorities as a requirement to gaining customs clearances that

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permit further freight movements towards the consignee. Paper-based information transactions frequently become a process bottleneck, holding up the movement of freight, not only with customs but at all interface points. Existing electronic-based information transactions, in the intermodal and international contexts, use standards that are not globally recognized and adopted, thus introducing the same kind of process delays that are symptomatic of the paper transactions. The use of data messages that are widely adopted throughout the supply chain, and that can be accessed on a real-time basis from the originator on a federated basis, fosters efficiency, and allow freight to flow without interruption. Other operational efficiencies include preventing data re-entry by various stakeholders along any given supply chain, reducing errors and rework, reducing re-orders, and improved operational planning and staging of labour resources by having advance shipping notices.

4.2.1.2 Security

Use of this Technical Specification is expected to promote the use of globally harmonized procedures to effect security, and this is an important requirement of an efficient and secure supply chain system. This Technical Specification promotes certain aspects of a chain of possession concept of the freight supply chain, as described in ISO 28000:2007. Whenever applicable, the existing regulations on security (local, national, European and international), e.g. the customs status Authorized Economic Operator (AEO), should be respected. The chain of possession refers to the 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 that party, the freight, and assets involved in enabling the transport or distribution of that freight. When authorized and authenticated stakeholders are given timely visibility to that information, it may enable preventive, deterrent, and investigative functions of a cargo security implementation. This visibility may take several forms, such as exception reporting, automatic system procedures, or manual querying.

This Technical Specification includes information entities and messages that are directly related to the information exchanges associated with freight consignments. It is intended to be complementary with messaging schemes for the physical, nested levels of shipment. It does not include the data elements and messages that are directly tied to the physical movement of goods (for example, data describing container seals and their status), or to the financial aspect of goods movement, or to any legal requirements between parties (domestic or international). However, the messages within this Technical Specification do have a strong indirect relation to the physical chain. For example, the Unique Consignment Reference (UCR), or equivalent, required by a customs agency, can be used as the access key to retrieve all the relevant information from the electronic exchanges. In a similar manner, the "license plate" (as defined in ISO 15459-1:2006) that uniquely identifies the physical transported unit could be used. The information exchanges encompassed by these messages affect and are affected by progress of the physical freight through the physical chain. Any chain is comprised of a variety of handoff points from one “possessor” to another. Information transactions accompany these handoffs. For example, an air carrier will not release a consignment to a cartage company without verifying the identity of the driver, and, in some countries, verifying security authorization documentation. The information availability provides triggers for the physical release of the consignment. If a physical security device such as a transport seal is being used, there would also be a transaction at this point to effect the change of possession to the motor carrier.

Another aspect of security is ensuring that the data collected, stored and transmitted is accessible by only those stakeholders who are recognized as having legitimate rights to view (or edit, or add or delete) this data. Ensuring this type of security is a requirement of the technology and processes that users would adopt in implementing this data standard.

There is a chain of possession of the information itself, separate from the chain of possession of the physical freight, that is supported by ISO 28000:2007, but that must be enforced through the processes and technologies used to implement it.

4.2.2 Overview of freight physical flow

Figure 2 provides a simplified depiction of the physical movement of the delivery of time-sensitive freight. This process was chosen based upon some testing conducted using four different air cargo supply chains from China to the United States involving fashion textiles. In practice, variations in the specific actors involved and the nature of the value these actors add to the supply chain may result in a more complex physical flow than Figure 2 depicts. This Technical Standard is intended to be sufficiently robust to handle these variations, assuming that the overall modality of the supply chain is: despatch party → motor carrier → air carrier →

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motor carrier → delivery party. The business process that drives this physical flow begins with some form of an order triggering the demand for a freight movement transaction between a seller and a customer. The transaction physically begins at a despatch party location, which may or may not be the seller. This location may be a manufacturing facility or a distribution facility. A motor carrier picks up freight from the despatch party (Link 1). The motor carrier may bring freight to staging or flow-through facilities (this is not separately shown from the trucking icon in Figure 2). The motor carrier delivers freight to the staging facility (Link 2). There may or may not be a consolidation operation in which other freight of the same or different manufacturers are merged and transported on a different truck or trailer (2A versus 2B). After air transport, a motor carrier transaction moves the freight to destination. Whether the consignment is international or not determines whether the freight bypasses a customs authority function (Link 3A), or passes through customs (Link 3B). The eventual delivery to delivery party may, as above, involve a consolidation operation (Link 4B) or not (4A).

NOTE It is recognized that there are numerous variations in such a fundamental process; however the simplification is meant to capture the essence of time-sensitive freight flow for the purpose of dealing with the associated information flow.

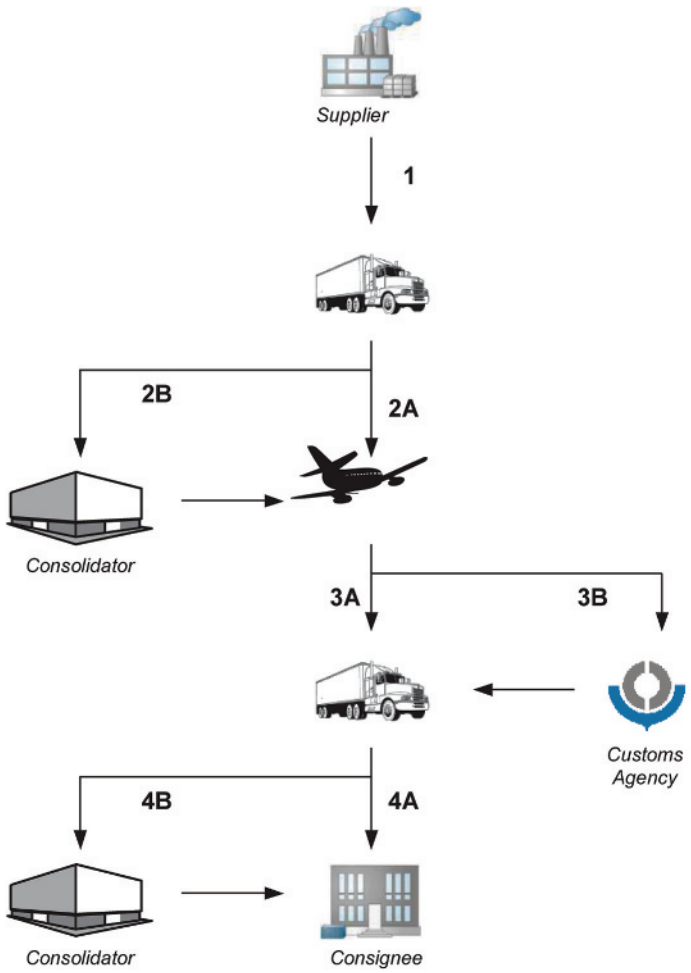

Figure 2 — Simplified depiction of physical freight flow for time-sensitive freight

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4.2.3 Information exchange transactions

Associated with the physical freight movement transactions described in 4.2.2 are supporting information exchanges between two or more actors. This information may serve one of a number of business functions, including security and transportation. The scope of this Technical Specification focuses on distribution/transportation-specific and certain security-specific information. This subclause describes the type of information needed to support the business processes of the delivery time-sensitive freight supply chain.

There is some commonality to the information items that comprise distribution/transportation-specific documents that are transacted, regardless of which actors or links in the supply chain are involved. These include:

— Contract of carriage for the carrier to transport the goods, which have been duly marked, to the indicated consignee noted on the document;

— Title document, which may be negotiable or non-negotiable, depending on the terms of sale;

— Verification of goods receipt which documents that the goods have been physically taken into possession by the receiving actor, and in good condition except as may be specifically noted on the document;

— Mechanism for meeting regulatory and enforcement agencies' requirements, particularly in the air cargo area, where the documents serve this legal role.

Different names are used for these documents throughout the supply chain, depending mostly on which actors are transacting the document, and to a lesser extent, by which companies, industry sectors and geographic regions are involved. Table 2 lists the documents, and their specific name, according to position in the supply chain. The differences can create some confusion. For example, "manifest" is a loosely defined term that is at times used interchangeably with "bill of lading" (a more formal transportation document of title of the goods) or "waybill" (which conveys the same basic information as a bill of lading but does not convey title).

Table 2 — Distribution document type by link in the supply chain

Link[1)]	Source	Destination	Typical distribution document
1	Supplier	Motor carrier	The supplier can issue a transport booking, followed by an instruction for the execution of the transport. The carrier will issue a bill of lading for the shipper. Often, the destination actor providing the motor carriage function is a freight forwarder. They will also produce a Bill of Lading.
2A	Motor carrier	Air carrier	The motor carrier will produce a waybill or manifest
2B	Consolidator	Air carrier	Master waybill or master manifest created from individual waybills/manifests
3A	Air carrier	Motor carrier	Waybill or motor carrier's bill of lading
3B	Air carrier	Motor carrier (via customs authority)	Customs' commercial invoice
4A	Motor carrier	Consignee	Bill of lading — Arrival notice
4B	Consolidator	Consignee	Bill of lading — Arrival notice

1) Link numbers correspond to the depiction in Figure 2.

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The information items that comprise these documents are generally:

— Consignor: name, address, other contact information,

— Consignee: name, address, other contact information,

— Freight description: cargo type, weight, quantity,

— Consignment description: reference number, date of consignment, package and piece count, special instructions, signature of recipient.

Other kinds of data may also appear. For example, bills of lading typically include the terms by which a motor carrier assumes liability for the freight.

Ancillary information that is also exchanged electronically by two or more supply chain actors, and that is consistent with the stated scope of the Technical Specification are also governed by this Technical Specification.

Figure 3 chronologically depicts the distribution and transportation information exchanges that may occur in a truck-air-truck supply chain, which is primarily used as an example in this Technical Specification, based up work that was conducted between China and the US on air cargo, as previously described. Figure 3 shows how these information exchanges relate to the physical flows.

Yet another parallel flow is the security-related exchanges that effect a chain of possession solution. To create the complete chain that is needed for a robust security definition, exchanges would be included at every place along the supply chain in which there is a transfer of possession from one individual/organization pair to another. This begins when the despatch party relinquishes a consignment (typically to a transport services provider), and ends when the delivery party confirms receipt of the consignment or a rejected consignment returns to a consignor or their agent.

4.2.4 Operational scenario

This subclause describes the processes and behaviours that the actors might perform in an operating scenario that could use a technical specification like this one. The vision of the scenario is as an operating environment that could be implemented and that delivers the goals of improved efficiency and security (the latter with specific regard to enabling a chain of possession concept).

4.2.4.1 Consignor trigger

The consignor triggers a request for consignment with some form of order. This transaction begins a process of transport and distribution that is the focus of this Technical Specification. The ordering process itself is not within the scope of this Technical Standard.

4.2.4.2 Supplier actions

The Technical Specification's reach begins when a supplier (or another actor who initiates the consignment process, such as a seller) places a request for a motor carrier pickup with a carrier, forwarder, or third-party logistics provider. This request may use a technology solution (for example, based on biometrics) that authenticates and authorizes the user to perform the transaction. This Technical Specification does not include messaging for such a biometric solution, but is seen as consistent with the activities of other international standards that, taken together with this Technical Specification, provide an integrated security solution.

A system that implemented an electronic supply chain manifest (ESCM) would likely have a manifest template from which the base information describing the consignment would be constructed. The supplier will know most or all of the items in the template, and the user will fill out the data items, groups of which include consignor and consignee names, addresses, etc., and item level details about the consignment contents.

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If an integrator will also be providing the air carriage services with the motor carrier role, then the supplier does not need to be concerned with the air services as a separate transaction to the motor carriage. If an integrator is not involved, then the system's architecture, using the intermodal data standard, permits the air carrier to easily be notified of the consignment without requiring a separate manual transaction to be constructed.

Such a system would provide appropriate reports and hard copy records of the manifest transactions, in addition to the electronic transaction captured within the system. At this point, the electronic manifest is transmitted to a system host, where the information becomes available to appropriate downstream supply chain providers.

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Typical "Truck-Air-Truck" supply chain

with international component for time-sensitive delivery

Information flow

	Name	Created by	Used by	Notes	Triggers
1	**Shipment request**	**Supplier**	**Forwarder/Broker**	**May be faxed, emailed, telephoned, communicated by system, or simply part of a regular pickup schedule**	**Begin export clearance process**

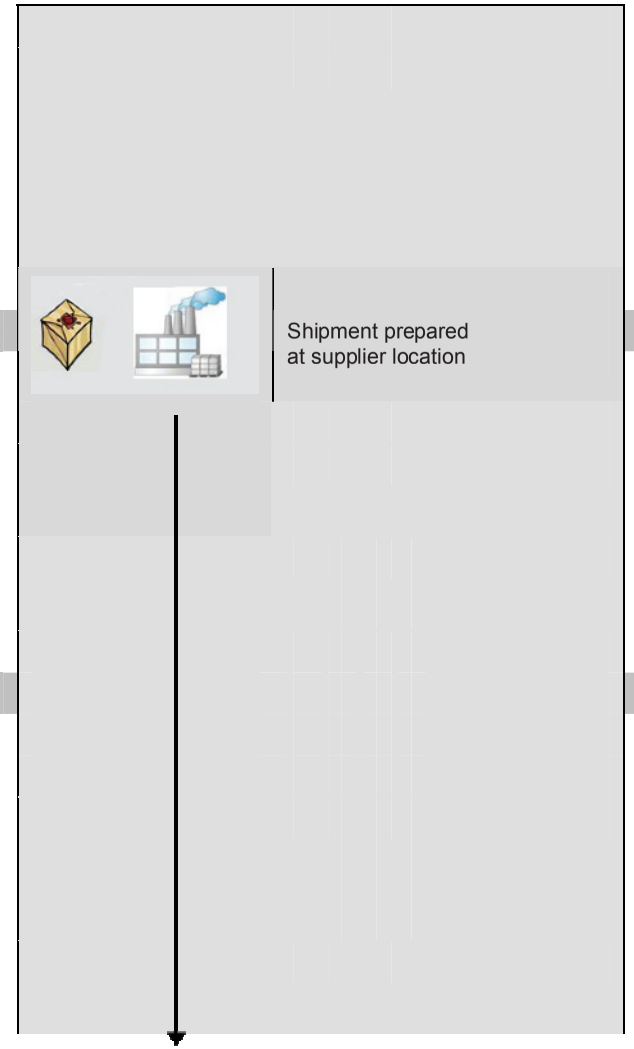
MILESTONE STATUS: Consignment is at, or being assembled at, point of origin (the "supplier")

	Name	Created by	Used by	Notes	Triggers
2	Entry to AES	Forwarder/Broker	Customs authority	In US only, a requirement after March 2004	
3	Export clearance	Customs authority	Forwarder/Broker		Shipment may now be scheduled.

MILESTONE STATUS: Consignment at point of origin, now cleared for entry in the supply chain

	Name	Created by	Used by	Notes	Triggers
4	**Pre-alert**	**Forwarder/Broker**	**Import agent**	**Optional**	**May begin inbound shipment scheduling process**
5	**Assign unique tracking number**	**Import agent**	**Various**	**Referred to as "Customs Entry Number" in US**	

Physical flow



Time flow

Shipment request received at time = 0

Can occur within 4 h, assuming no complications

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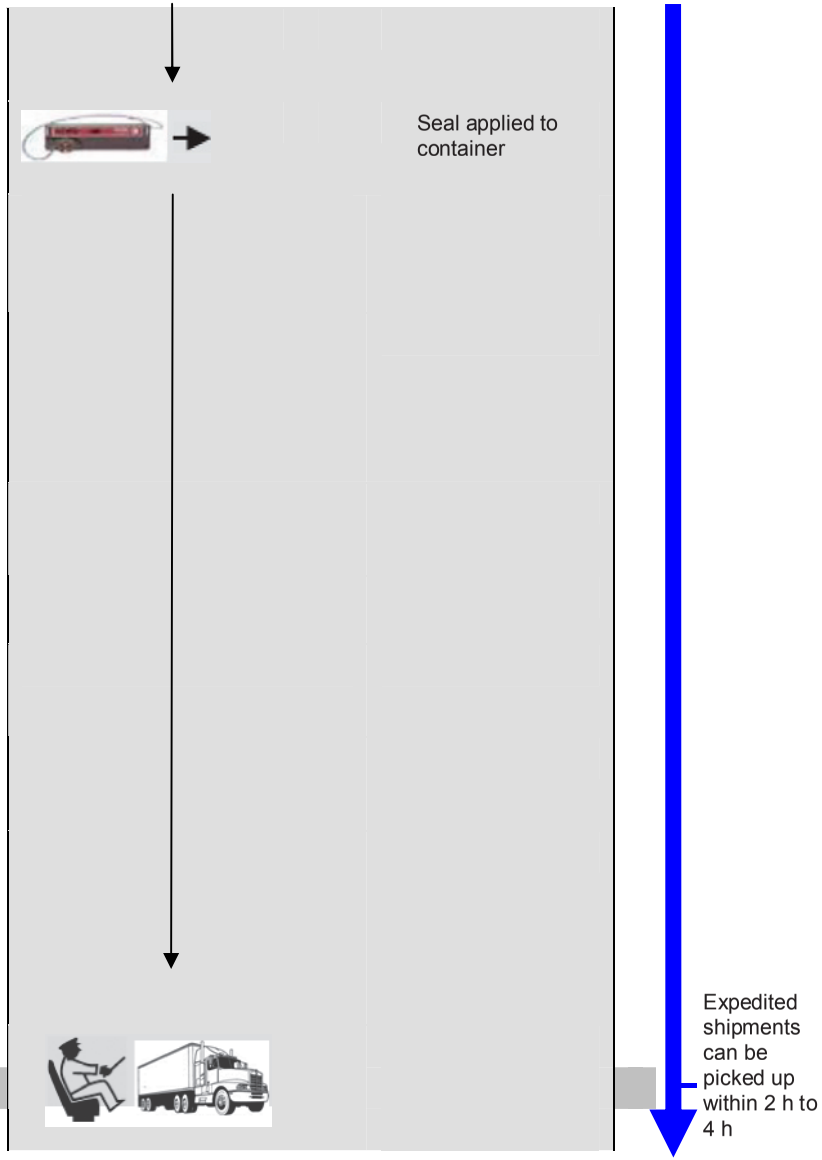
6	Shipping marks and packing list	Supplier	Various parties throughout the shipment cycle		
7	**Container sealed and locked**	**Supplier**	**Various**		
8	**Book outbound pickup**	**Forwarder/Broker**	**Motor carrier**	**May be delivered to consolidation facility or to air facility**	**Motor carrier schedules outbound pickup**
9	**Book inbound pickup from destination air facility**	**Forwarder/Broker**	**Motor carrier**	**Optional (may be completed after consignment has departed from origin air facility)**	**Motor carrier schedules inbound pickup**
10	**Dispatch advice**	**Supplier**	**Consignor**	**This is typically an unstructured communication**	
11	**Create manifest**	**Supplier**	**Various**		
12	Prepare consignment endorsements	Supplier	Motor carrier	As needed	
13	**Prepare bill of lading for consignment**	**Motor carrier**	**Various**		
14	**Book air carriage**	**Forwarder/Broker**	**Air carrier**	**Only done if forwarder is not using pre-existing capacity already purchased with air carrier**	



MILESTONE STATUS: Driver arrives at supplier location for pickup

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