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Intelligent Transport Systems — Freight land conveyance content identification and communication architecture —

Part 1:
Application profile

Systèmes intelligents de transport — Identification et communication du contenu des marchandises transportées par voie terrestre —

Partie 1: Profil d'application

ICS 35.240.60; 55.180.01

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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.

[Delete if patent rights are identified in the Introduction (see ISO/IEC Directives, Part 2, 2001, Annex H)]

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 DIS 26683-1 was prepared by Technical Committee ISO/TC 204, *Intelligent Transport Systems*, WG7 "*Commercial Fleet and Freight Management*".

ISO 26683 consists of the following parts, under the general title *Freight land conveyance content identification and communication*

Part 1: Context, architecture and referenced standards

Part 2: Application interface profiles

Part 3: Monitoring cargo stress measurement information during road transport

Part 4: Security profiles

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Introduction

In a scenario of land international transport and logistics, it is often difficult for a consignor and a consignee to know the physical real time location of cargo after consigning the cargo to a transport and logistics service provider. Where a cargo is transferred from one haulier to another, obtaining information of the manifest at a detailed level is often difficult. Auditing the actual content of a consignment en route; and monitoring cargo stress measurement information during road transport; is also difficult, especially in the case of sealed land conveyances such as sealed intermodal containers. It is a different task to that of progressing order administration from consignor to consignee.

Seamless exchange of accurate, complete, and timely data at transportation hand-offs has always been important for efficiency and accountability. There is now a growing 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.

There is no single organization responsible for standards through the intermodal supply chain. To achieve a coherent set of standards requires coordination among the various international organizations working on pieces of these standards.

This part of ISO 26683 — Intelligent transport systems — Freight land conveyance content identification and communication (FLC-CIC) — Part 1: Context, architecture and referenced standards, specifies the data concepts applicable to the movement of freight and its intermodal transfer. This part of ISO 26683 focuses on a single "thread" of the overall end to end supply chain. 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. This work is integrated closely with 'Universal Business Language (UBL) ' espoused by OASIS and refers to the UN/CEFACT standards (Data Elements TDED, Core Components Technical Specifications and Library CCL).

ISO 17687 provides a consistent context for the presentation and storage of 'Dangerous Goods'/HAZMAT information. ISO 17687 is designed to support the automated identification, monitoring and exchange of emergency response information regarding dangerous goods carried on board road transport vehicles. However, ISO 17687 does not specify nor even imply that any particular on-board or off-board systems should be capable of performing such monitoring, data retention, or communications. ISO 17687 deals with the on board information but not the media used for transmitting the information, nor the means of collating and transferring the information. ISO 17687 identifies that such communications are beyond the its scope.

However in domestic land transport, particularly where no border crossings are involved, and except in the case of 'Dangerous Goods'/HAZMAT loads, a trucker usually does not have to report cargo manifest information to any regulator. A trucker receives an order from the client with delivery date/time and location and except in the case of 'Dangerous Goods'/HAZMAT, may not necessarily be given any detail cargo information. The haulier may or may not use a wireless tracking system for its vehicles, and such systems may or may not carry any detailed consignment/cargo details. In these situations real time land transport cargo monitoring is not often possible, and in respect to a auditing the content of the load and monitoring cargo condition information, even where possible, have limitations.

There are also many situations where the tractor and trailer combination changes during the course of a journey from consignor to consignee.

Further, even where such comprehensive systems are in place, they rely on the level of detail that exists within the central computer system, and without the ability to monitor the actual contents, there is no possibility to:

a) audit the actual contents of the consignment. This is particularly difficult in the case of a sealed intermodal container (ISO 668 and subsequent related standards for freight containers)

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b) monitor the condition of the contents of the consignment (cargo stress measurement information).

The ISO 26683 family of standards are therefore complementary to the context of ISO TS 24533 and may well provide sources of data required by such systems, and an electronic auditing capability has yet to be embraced by ISO TS 24533 . As has been seen above, ISO 17687 does not address the means by which its data is collected. ISO 26683 is complementary to ISO 7372.

Further detail concerning the complementary nature of the ISO 26683 family of Standards to ISO 24533, EFM, ISO 17687, IEEE 1512.3, UN/CEFACT, particularly UN/CEFACT UMM, ISO 7372, OASIS/UBL can be found ISO 26683-1, clauses 5 and 6.

The ISO 26683 family of standards provide a data agglomeration/aggregation capability as one means to capture and transfer information about the content of the cargo load and its condition to a central system. Therefore the ISO 26683 family of International Standards can also support both ISO TS 24533 and ISO 17687/IEEE1512.3 instantiations. ISO 26683 is designed to present data to end-to-end cargo application systems, it does not provide end to end system (consignor to consignee) system design.

The ISO 26683 series envisages that a combination of existing technologies can be used to agglomerate/aggregate relevant data and use a tractor/truck mounted communications means to realize real time cargo visibility of land transport, and is thus not dependent on future technologies or technologies currently in research and development phases (although will be suitable for future technical means to deliver its data).

This part of ISO 26683 is the first part of a multi-part family of standards which provides context and high level architecture for all parts of the ISO 26683 family of International Standards,

Part 2 defines application interface profiles to agglomerate/aggregate and transfer land cargo transport data to provide improved land cargo transport data and specifies one or more modes of transfer using available ICT technologies.

Part 3 will specify the handling of on-board cargo stress measurement information during road transport

Part 4 will provide a Security profile requirement and definition.

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Intelligent Transport Systems — Freight land conveyance content identification and communication architecture —

Part 1:
Application profile

1. Scope

This part of ISO 26683 provides the context for application interface profiles for the exchange of land transport data using current technologies and existing standards for item identification, package identification, container identification, and international standards and practices regarding freight and its movement. This part of ISO 26683 provides:

a) a context of the relationship between the ISO 26683 family of standards and other freight and fleet standards and defines the objectives for the ISO 26683 series of International Standards. The explanation is provided as to how existing International Standards and Technical Specifications can be utilized to agglomerate/aggregate data concepts by using standardised application interface profiles and utilise them within the context of ISO 26683 and how ISO 26683 can be used to provide information/data to cargo management systems.

b) descriptions of use cases of providing information to cargo tracking and tracing in end-to-end transport by exploiting identifiers, data carriers, EDI messages and data elements with respect to various types of cargo and transport means within an international intermodal/multimodal cargo movement context.

c) an architecture for the collation and transfer of data agglomerated / aggregated from information contained in the transport load to transport operating systems. The objective being to enable efficient handling of truck/trailer identification and on-board cargo information for tracking, tracing and cargo monitoring purposes in a land cargo transport situation.

NOTE: ISO 26683 is designed to present information to end-to-end cargo application systems, it does not provide end to end (consignor to consignee) system design.

This part of ISO 26683 is the first part of a multi-part family of standards which provides context, high level architecture and list of referenced standards used for all parts of the ISO 26683 family of deliverables.

Part 2, Application interface profiles provides profiles for land cargo transport data agglomeration and defines a number of application interface profiles for land cargo transport data to provide more land cargo transport visibility by using current cargo related Standards and Technical Specifications and current technologies.

Part 3 will specify the handling of on-board cargo stress measurement information during road transport

Part 4 will provide a security profile requirement and definition.

2 Normative references

The following referenced documents are indispensable for the application 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.

In addition to the references listed below, Annex A of this part of ISO 26683 identifies a large number of International standards that may be used in the identification, labelling and communication with the contents of a land conveyance. Data may conform to any of the International Standards listed below, but shall conform to at least one of the International Standards listed below or in Annex A.

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This Clause provides references for only those standards referenced in the main body of this document.

ISO 6346	Freight containers -- Coding, identification and marking
ISO 7372	Trade data interchange — Trade data elements directory
ISO 13183	Intelligent transport systems — Communications access for land mobiles (CALM) — Broadcast communications
ISO TR 14813-2	Transport information and control systems -- Reference model architecture(s) for the TICS sector -- Part 2: Core TICS reference architecture
ISO 17261	Intelligent transport systems — Automatic Vehicle and Equipment Identification – Intermodal – Architecture
ISO 17262	Intelligent transport systems — Automatic Vehicle and Equipment identification – Intermodal Goods Transport Numbering and Data Structures
ISO 17263	Intelligent transport systems — Automatic Vehicle and Equipment Identification – Intermodal Goods Transport-System Parameters
ISO 17264	Road Transport and Traffic Telematics (RTTT) – Automatic Vehicle and Equipment Identification – AVI/AEI Interfaces
ISO 17687	Transport Information and Control Systems (TICS) -- General fleet management and commercial freight operations -- Data dictionary and message sets for electronic identification and monitoring of hazardous materials/dangerous goods transportation
ISO 21210	Intelligent transport systems — Communications access for land mobiles — IPv6 Networking
ISO 21212	Intelligent transport systems -- Communications access for land mobiles (CALM) -- 2G Cellular systems
ISO 21213	(CALM) -- 3G Cellular systems
ISO 21214	Intelligent transport systems -- Communications access for land mobiles (CALM) -- Infra-red systems
ISO 21215	Intelligent transport systems -- Communications access for land mobiles (CALM) -- M5
ISO 21216	Intelligent transport systems -- Wireless communications -- CALM using millimetre communications -- Air interface
ISO 21217	Intelligent transport systems -- Communications access for land mobiles (CALM) – Architecture
ISO 21218	Intelligent transport systems -- Communications access for land mobiles (CALM)-- Medium service access points
ISO 21451-1	Information technology -- Smart transducer interface for sensors and actuators -- Part 1: Network Capable Application Processor (NCAP) information model
ISO/IEC 21451-2	Information technology -- Smart transducer interface for sensors and actuators -- Part 2: Transducer to microprocessor communication protocols and Transducer Electronic Data Sheet (TEDS) formats

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ISO/IEC 21451-4	Information technology -- Smart transducer interface for sensors and actuators -- Part 4: Mixed-mode communication protocols and Transducer Electronic Data Sheet (TEDS) formats
ISO/IEC 21451-7	Information technology -- Smart transducer interface for sensors and actuators -- Transducer to radio frequency identification (RFID) systems communication protocols and Transducer Electronic Data Sheet (TEDS) formats
ISO TS 24533	Intelligent Transport Systems — Data dictionary and message set to facilitate the movement of freight and its intermodal transfer — Road transport information exchanges
ISO 25111	Intelligent transport systems -- Communications access for land mobiles (CALM) -- General requirements for using public networks
ISO 25112	Intelligent transport systems -- Communications access for land mobiles (CALM) -- Mobile wireless broadband using IEEE 802.16
ISO 25113	(CALM) -- Mobile wireless broadband using HC-SDMA
ISO 26683-2	Intelligent transport systems — Freight land conveyance content identification and communication — Part 2: Application interface
ISO 29281	Intelligent transport systems -- Communications access for land mobiles (CALM) -- Non-IP networking
ISO 29282	Intelligent transport systems -- Communications access for land mobiles (CALM) -- Applications using satellite networks
ISO 29283	ITS CALM Mobile Wireless Broadband applications using Communications in accordance with IEEE 802.20
IEEE 1512.3	IEEE Standard for Hazardous Material Incident Management Message Sets for Use by Emergency Management Centers
OASIS	Universal Business Language v2.1 'http://docs.oasis-open.org/ubl/prd1-UBL-2.1/UBL-2.1.xml (Authoritative)
OASIS	UBL Common Library - - transport library
OASIS	UBL-CommonAggregateComponents-2.1

CEFACT/TMG/N093, UN/CEFACT Modelling Methodology (UMM)

- UMM Foundation Module V1.0 (2006)
- UMM Base Module V1.0 (2006)
- User Guide UMM 1.0

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3 Terms and definitions

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

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