INTERNATIONAL STANDARD

ISO 26683-2

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Intelligent transport systems — Freight land conveyance content identification and communication —

Part 2: Application interface profiles

Systèmes intelligents de transport — Identification et communication du contenu des marchandises transportées par voie terrestre — Partie 2: Profils d'interface d'application

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Foreword

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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. www.iso.org/directives

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The committee responsible for this document is ISO/TC 204, *Intelligent Transport Systems*

This first edition of ISO 26683-2 cancels and replaces ISO/TS 26683-2:2012.

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*

The following parts are under preparation:

— *Part 3: Monitoring cargo stress measurement information during road transport* [Technical Specification]

— *Part 4: Security profile* [Technical Specification]

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 (i.e. haulage contractor) 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 containers such as sealed ISO intermodal containers. It is a different task to that of progressing order administration from consignor to consignee.

There is no single organization responsible for standards through the intermodal supply chain. The ISO 26683 series is a co-ordinating standard that builds on, uses and can provide data to instantiations which use ISO/TS 24533, ISO 17687, UN/CEFACT, ISO 7372, EDIFACT, UBL, ISO 17261, ISO 17262, ISO 17263 and other standards.

Even where comprehensive international freight transport systems are in place, they rely on the level of detail that exists within its controlling 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);

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

The ISO 26683 series of standards are therefore complementary to the context of ISO 24533 and can provide sources of data required by such systems, and an electronic auditing capability. ISO 17687 does not address the means by which its data are collected and 26683 provides several optional means to collect its data.

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 (although will be suitable for future technical means to deliver its profile data).

Part 1 specifies the context and architecture and provides a list of reference standards for the ISO 26683 series. Further details concerning the complementary nature of the ISO 26683 series 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.

ISO 26683 is designed to present data concerning end-to-end cargo application systems. It does not provide end to end system (consignor to consignee) system design.

This part of ISO 26683 is the second part of a multi-part series of standards and provides optional application interface profiles for ‘Freight land conveyance content identification and communication’ (FLC-CIC). It is limited to the land aspects of transport.

This part of ISO 26683 defines application interface profiles to agglomerate/aggregate and transfer land cargo transport data to an interrogator in order to provide improved land cargo transport data and to specify 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 requirements and definitions.

Intelligent transport systems — Freight land conveyance content identification and communication —

Part 2: Application interface profiles

1 Scope

This part of ISO 26683 provides application interface profiles for land cargo transport data agglomeration and transfer (within the context and architecture described in ISO 26683-1), using one or more of the international standards listed and defined in Annex A of 26683-1.

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

This part of ISO 26683 defines a number of application interface profiles for land cargo transport data to provide more land cargo transport visibility by using current technical standards, specifications and technologies related to cargo transport.

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.

NOTE The principal list of normatively referenced standards for this part of ISO 26683 and summary of their content is to be found in ISO 26683-1.

ISO 7372, *Trade data interchange — Trade data elements directory*

ISO 9897, *Freight containers — Container equipment data exchange (CEDEX) — General communication codes*

ISO 10368, *Freight thermal containers — Remote condition monitoring*

ISO 10374, *Freight containers — Automatic identification*

ISO/TS 10891, *Freight containers — Radio frequency identification (RFID) — Licence plate tag*

ISO 15394, *Packaging — Bar code and two-dimensional symbols for shipping, transport and receiving labels*

ISO/IEC 15418, *Information technology — Automatic identification and data capture techniques — GS1 Application Identifiers and ASC MH10 Data Identifiers and maintenance*

ISO/IEC 15420, *Information technology — Automatic identification and data capture techniques — EAN/UPC bar code symbology specification*

ISO/IEC 15424, *Information technology — Automatic identification and data capture techniques — Data Carrier Identifiers (including Symbology Identifiers)*

ISO/IEC 15438, *Information technology — Automatic identification and data capture techniques — PDF417 bar code symbology specification*

ISO/IEC 15459-2, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 2: Registration procedures*

ISO/IEC 15459-1, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 1: Individual transport units*

ISO/IEC 15459-3, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 3: Common rules*

ISO/IEC 15459-4, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 4: Individual products and product packages*

ISO/IEC 15459-5, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 5: Individual returnable transport items (RTIs)*

ISO/IEC 15459-6, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 6: Groupings*

ISO/IEC 15459-8, *Information technology — Unique identifiers — Part 8: Grouping of transport units*

ISO 15628, *Intelligent transport systems — Dedicated short range communication (DSRC) — DSRC application layer*

ISO/IEC 15961, *Information technology — Radio frequency identification (RFID) for item management — Data protocol: application interface*

ISO/IEC 15962, *Information technology — Radio frequency identification (RFID) for item management — Data protocol: data encoding rules and logical memory functions*

ISO/IEC 16022, *Information technology — Automatic identification and data capture techniques — Data Matrix bar code symbology specification*

ISO/IEC 16023, *Information technology — International symbology specification — MaxiCode*

ISO/IEC 16388, *Information technology — Automatic identification and data capture techniques — Code 39 bar code symbology specification*

ISO 17261, *Intelligent transport systems — Automatic vehicle and equipment identification — Intermodal goods transport architecture and terminology*

ISO 17262, *Intelligent transport systems — Automatic vehicle and equipment identification — Numbering and data structures*

ISO 17263, *Intelligent transport systems — Automatic vehicle and equipment identification — System parameters*

ISO 17264, *Intelligent transport systems — Automatic vehicle and equipment identification — Interfaces*

ISO 17364, *Supply chain applications of RFID — Returnable transport items (RTIs) and returnable packaging items (RPIs)*

ISO 17365, *Supply chain applications of RFID — Transport units*

ISO 17366, *Supply chain applications of RFID — Product packaging*

ISO 17367, *Supply chain applications of RFID — Product tagging*

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/IEC 18000-6, *Information technology — Radio frequency identification for item management — Part 6: Parameters for air interface communications at 860 MHz to 960 MHz General*

ISO/IEC 18004, *Information technology — Automatic identification and data capture techniques — QR Code bar code symbology specification*

ISO 18185-1, *Freight containers — Electronic seals — Part 1: Communication protocol*

ISO 21212, *Intelligent transport systems — Communications access for land mobiles (CALM) — 2G Cellular systems*

ISO 21213, *Intelligent transport systems — Communications access for land mobiles (CALM) — 3G Cellularsystems*

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 — Communication access for land mobiles (CALM) — Millimetre wave air interface*

ISO/IEC/IEEE 21450, *Information technology — Smart transducer interface for sensors and actuators — Common functions, communication protocols, and Transducer Electronic Data Sheet (TEDS) formats*

ISO/IEC/IEEE 21451-1, *Information technology — Smart transducer interface for sensors and actuators — Part 1: Network Capable Application Processor (NCAP) information model*

ISO/IEC/IEEE 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*

ISO/IEC/IEEE 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 22742, *Packaging — Linear bar code and two-dimensional symbols for product packaging*

ISO/TS 24533, *Intelligent transport systems — Electronic information exchange to facilitate the movement of freight and its intermodal transfer — Road transport information exchange methodology*

ISO 25111, *Intelligent transport systems — Communications access for land mobiles (CALM) — General requirements for using public networks*

ISO 26683-1, *Intelligent transport systems — Freight land conveyance content identification and communication — Part 1: Context, architecture and referenced standards*

ISO 28219, *Packaging — Labelling and direct product marking with linear bar code and two-dimensional symbols*

ISO 29282, *Intelligent transport systems — Communications access for land mobiles (CALM) — Satellite networks*

ISO 29283, *ITS CALM Mobile Wireless Broadband applications using Communications in accordance with IEEE 802.20*

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

OASIS Universal Business Language v2[1)]

OASIS UBL Common Library transport library[2)]

OASIS UBL-CommonAggregateComponents-2.1

CEFACT UMM Foundation Module V1.0 (2006)

CEFACT UMM Base Module V1.0 (2006)

CEFACT User Guide UMM 1.0

UN/CEFACT Core Components Library CCL 10B

1) http://docs.oasis-open.org/ubl/os-UBL-2.1.zip

2) http://docs.oasis-open.org/ubl/prd1-UBL-2.1/UBL-2.1.xml

3 Terms and definitions

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

3.1
application interface
communication point where one part of a system communicates with another in order to service an application

Note 1 to entry: The communication point is typically but not necessarily wireless in the scenarios of ISO 26683.

3.2
application interface profile
series and sequence of behaviour and protocols including, where appropriate, the identification of chosen classes, conforming subsets, options and parameters of those base standards necessary to accomplish a defined function at an interface in a particular way such that it can be used interoperably between two parties

Note 1 to entry: Profiles, which define conforming subsets or combinations of base profiles identify the use of particular options available in the base standards, and provide a basis for the development of uniform, internationally recognized, interoperability and conformance tests.

3.3
audit
methodical examination/verification/evaluation of the information associated with items in a cargo and other relevant data

3.4
base standard
approved international standard used as the basis of an application interface or an application interface profile

3.5
cargo
goods or produce transported, generally for commercial gain, by ship, aircraft, train, van or truck

Note 1 to entry: In modern times, containers are used in most intermodal long-haul cargo transport.

3.6
cargo stress measurement information
data collected from sensors associated with an item, container or conveyance that provides information about parameters that may affect the condition of the cargo

EXAMPLE Temperature, position/attitude (upright cargo), pressure, shock, dampness, etc.

3.7
carrier
party undertaking or arranging transport of goods between named points

[UN/TDED 3126: UN/CEFACT definition 1001 code CA]

3.8
consignment
separately identifiable amount of goods items (available to be) transported from one consignor to one consignee via one or more than one modes of transport and specified in one single transport document

3.9
consignee
party to which goods are consigned/shipped

[UN/TDED 3132: UN/CEFACT definition 3035 code CN]

3.10
consignor
shipper, sender, party which, by contract with a carrier, consigns or sends goods with the carrier, or has them conveyed by him

[UN/TDED 3336: UN/CEFACT definition 3035 code CZ]

3.11
container
receptacle for the transport of goods, especially one readily transferable from one form of transport to another

[UN/TDED 3336: UN/CEFACT definition 8053 code CN Container]

3.12
conveyance
means of transport

3.13
data carrier
means or function which carries data objects from one point to another point

3.14
freight
goods
any commodity transported

3.15
freight forwarder
party arranging the carriage of goods including connected services and/or associated formalities on behalf of a consignor or consignee

[UN/TDED 3336: UN/CEFACT definition 3035 code FW]

3.16
identifier
unique and unambiguous expression in a written format either by a code, by numbers or by the combination of both to distinguish variations from one to another among a class of substances, items, or objects

3.17
intermodal freight container
large cargo carrying object (of various formats) used for transport or storage that conforms to ISO 6346 and designed and constructed to permit it to be used interchangeably in two or more modes of transport

3.18
ISO intermodal freight container
ISO intermodal container
ISO container
large cargo carrying object used for transport or storage that conforms to ISO 668, Series 1 containers

3.19
international standardized profile
internationally agreed-to, harmonized document which describes one or more profiles

3.20
interoperability
ability of two or more systems to exchange information and to make mutual use of the information that has been exchanged

Note 1 to entry: Sometimes called “open systems”.

3.21
ITS station
communication point for ITS system

3.22
land transport
mode of transport that is effected using roads and railways and may in some cases include use of inland waterways

Note 1 to entry: See *transport*.

3.23
land transport conveyance
transport means to effect the land transport sector(s) of a cargo

3.24
manifest
specification of all cargo on board the transportation means (all modes) containing details of contents, shipper, consignee, and other details that may be required by customs or consular authorities

3.25
rollercage
cage with casters for transporting loose items

3.26
security
protection of information and data against danger, damage, degradation of quality, loss and criminal activity so that unauthorized persons or systems cannot read or modify them and authorized persons or systems are not denied access to them

Note 1 to entry: Security has to be compared to related concepts: Safety, continuity, reliability. The key difference between security and reliability is that security must take into account the actions of people attempting to cause destruction.

3.27
security profile
characterization of security requirements

3.28
shipment
identifiable collection of one or more goods items (available to be) transported together from the original shipper, to the ultimate consignee

Note 1 to entry: A shipment may be transported in one or a multiple number of consignments.

3.29
taxonomy
classification scheme for referencing profiles or sets of profiles unambiguously

3.30
transport
transportation
movement of people and goods from one location to another performed by modes, such as air, rail, road, water, cable, pipeline and space and the field comprises the attributes of infrastructure, vehicles, and operations

3.31
transport means
vehicles, trailers, vessels, aircraft, or combination thereof, used for the transport of goods to perform a journey

3.32
tracking
function of maintaining status information of goods, goods items, consignments or equipment

3.33
visibility
ability to audit the content of a land conveyance while en-route or at strategic points of an overland journey

4 Symbols and abbreviated terms

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

3GPP	3rd generation partnership project
AEI	automatic equipment identification
AVI	automatic vehicle identification
CALM	communication access for land mobiles
CEFACT	See UN/CEFACT
CCL	core component library
DSRC	dedicated short range communication
ebXML	electronic Business eXtensible Mark-up Language
EDIFACT	electronic data interchange for administration, commerce and transport
EFM	electronic freight management
FLC-CIC	freight land conveyance content and communication
GSM	global system mobile
HAZMAT	hazardous materials/dangerous goods
IATA	International Air Transport Association
ITS	intelligent transport systems
JTC1	Joint Technical Committee 1
LTE	(3GPP) long term evolution (sometimes called 4G)
OASIS	Organization for the Advancement of Structured Information Standards
OBE	on-board equipment
OBU	on-board unit
OCR	optical character recognition
PDC	personal digital cellular (Japanese advanced 2G mobile communications standard)
PHS	personal handy-phone system
RFID	radio frequency identification