PD ISO/TS 26683-2:2012

BSI Standards Publication

Intelligent transport systems — Freight land conveyance content identification and communication (FLC-CIC)

Part 2: Application interface profiles

bsi.

...making excellence a habit.™

Document Sharing Hub

Full document details: PD ISO/TS 26683-2:2012

National foreword

This Published Document is the UK implementation of ISO/TS 26683-2:2012.

The UK participation in its preparation was entrusted to Technical Committee EPL/278, Road transport informatics.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2013. Published by BSI Standards Limited 2013

ISBN 978 0 580 75437 1

ICS 35.240.60; 55.180.01

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 January 2013.

Amendments issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: PD ISO/TS 26683-2:2012

TECHNICAL SPECIFICATION

ISO/TS 26683-2

First edition
2012-05-01

Intelligent transport systems — Freight land conveyance content identification and communication (FLC-CIC) —

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

Reference number
ISO/TS 26683-2:2012(E)

Documents
Document Sharing Hub

© ISO 2012

Full document details: PD ISO/TS 26683-2:2012

COPYRIGHT PROTECTED DOCUMENT

© ISO 2012

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

© ISO 2012 – All rights reserved

Documents
Document Sharing Hub

Full document details: PD ISO/TS 26683-2:2012

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms and definitions 4

4 Abbreviated terms 7

5 Context 9
5.1 General 9
5.2 Transfer of data from tags to interrogators (Profile level 3) 9
5.3 Transfer of data from trailers to OBE (profile level 2) 9
5.4 Transfer of data from OBE to infrastructure (Profile level 1) 9

6 Freight land conveyance content and communication - Application interface profiles 10
6.1 General 10
6.2 Taxonomy of Freight land conveyance content and communication application interface profiles 10
6.3 FLC-CIC Profile No.L1-1: ISO15628 DSRC (OPTIONAL) 11
6.4 FLC-CIC Profile No.L1-2: ISO 21215 CALM M5Hz DSRC (OPTIONAL) 12
6.5 FLC-CIC Profile No.L1-3: ISO 10374 (OPTIONAL) 13
6.6 FLC-CIC Profile No.L1-4: GSM/UMTS/LTE/IMS/PDC/PHS (OPTIONAL) 15
6.7 FLC-CIC Profile No.L1-5: ISO 18000 (OPTIONAL) 17
6.8 FLC-CIC Profile No.L2-1: Item data agglomeration direct to vehicle OBE using RFID (OPTIONAL) 18
6.9 FLC-CIC Profile No.L2-2: Data agglomeration from multiple trailers (OPTIONAL) 21
6.10 FLC-CIC Profile No.L3-1: Item data agglomeration to trailer interrogator using RFID (OPTIONAL) 24
6.11 FLC-CIC Profile No.L3-2: Item data agglomeration to vehicle OBE using short range RFID and/or bar-code or OCR (OPTIONAL) 27
6.12 FLC-CIC Profile No.L3-3: Item data agglomeration to vehicle OBE using short range RFID and/or bar-code where the tractor/truck does not have fixed OBE (OPTIONAL) 31
6.13 FLC-CIC Profile No.D1-1: ITS consignment in UBL format (OPTIONAL) 34

7 Security provisions 38

8 Test and conformance requirements 38

9 Marking, labelling and packaging 38

10 Declaration of patents and intellectual property 38

Bibliography 39

© ISO 2012 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TS 26683-2:2012

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 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 26683-2 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

ISO/TS 26683 consists of the following parts, under the general title *Intelligent transport systems — Freight land conveyance content identification and communication (FLC-CIC)*:

— *Part 1: Context, architecture and referenced standards*

— *Part 2: Application interface profiles*

The following parts are planned:

— *Part 3: Handling of cargo stress information during road transport*

— *Part 4: Security profile*

© ISO 2012 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TS 26683-2:2012

Introduction

This Technical Specification is one of a multi-part family of ISO deliverables (ISO/TS 26683).

In a scenario of international land 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 from that of progressing order administration from consignor to consignee.

There is no single organization responsible for standards through the intermodal supply chain. ISO 26683 is a co-ordinating standard that builds on, uses and may provide data to instantiations which use ISO/TS 24533, ISO 17687, UN/CEFACT, ISO 7372, EDIFACT, UBL, ISO, 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 the central computer system, and without the ability to monitor the actual contents, there is no possibility to do the following:

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 family of standards are therefore complementary to the context of ISO 24533 and may well provide sources of data required by such systems, and an electronic auditing capability. ISO 17687 does not address the means by which its data is collected and ISO 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 it will be suitable for future technical means to deliver its profile data).

ISO/TS 26683-1 specifies the context and architecture, and provides a list of reference standards for the ISO 26683 range of deliverables. Further details 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 in ISO/TS 26683-1:2012, Clauses 5 and 6.

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.

This Technical Specification (ISO/TS 26683-2) is the second part of a multi-part family of deliverables 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/TS 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 requirement and definition.

Documents
Document Sharing Hub

© ISO 2012 – All rights reserved

Full document details: PD ISO/TS 26683-2:2012

Documents
Document Sharing Hub

Full document details: PD ISO/TS 26683-2:2012

Intelligent transport systems — Freight land conveyance content identification and communication (FLC-CIC) —

Part 2: Application interface profiles

1 Scope

This part of ISO/TS 26683 provides application interface profiles for land cargo transport data agglomeration and transfer (within the context and architecture described in ISO/TS 26683-1), using one or more of the reference list of International Standards defined in Annex A of ISO 26683-1:2012.

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

This part of ISO/TS 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

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

The following referenced documents are specifically referenced within this part of ISO/TS 26683 and are therefore 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.

ISO 6346, *Freight containers — Coding, identification and marking*

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

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

ISO/IEC TR 10000-1, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 1: General principles and documentation framework*

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

© ISO 2012 – All rights reserved

Documents
Document Sharing Hub

Full document details: PD ISO/TS 26683-2:2012

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

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 — Unique identifiers — Part 2: Registration procedures*

ISO/IEC 15459-1, *Information technology — Unique identifiers — Part 1: Unique identifiers for transport units*

ISO/IEC 15459-3, *Information technology — Unique identifiers — Part 3: Common rules for unique identifiers*

ISO/IEC 15459-4, *Information technology — Unique identifiers — Part 4: Individual items*

ISO/IEC 15459-5, *Information technology — Unique identifiers — Part 5: Unique identifier for returnable transport items (RTIs)*

ISO/IEC 15459-6, *Information technology — Unique identifiers — Part 6: Unique identifier for product groupings*

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

ISO 15628, *Road transport and traffic telematics — Dedicated short range communication (DSRC) — DSRC application layer*

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

ISO 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, *Road transport and traffic telematics — Automatic vehicle and equipment identification — Interfaces*

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

Documents
Document Sharing Hub
© ISO 2012 – All rights reserved
Full document details: PD ISO/TS 26683-2:2012

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

ISO/IEC 18004, *Information technology — Automatic identification and data capture techniques — QR Code 2005 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 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/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 21451-2, *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 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 — 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/TS 26683-1:2012, *Intelligent Transport Systems — Freight land conveyance content identification and communication (FLC-CIC) — 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) — Applications using satellite networks*

Documents
Document Sharing Hub

© ISO 2012 – All rights reserved

Full document details: PD ISO/TS 26683-2:2012

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* 'http://docs.oasis-open.org/ubl/os-UBL-2.1.zip

OASIS, *UBL Common Library — transport library* — http://docs.oasis-open.org/ubl/prd1-UBL-2.1/UBL-2.1.xml (Authoritative)

OASIS, *UBL-CommonAggregateComponents-2.1*

UN/CEFACT, *Core Components Library CCL 10B*

UN/DTED, *United Nations trade data elements directory*

3 Terms and definitions

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

3.1
application interface
communication point (typically but not necessarily wireless in the scenarios of ISO 26683) where one part of a system communicates with another

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; 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; 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

EXAMPLES: temperature, position/attitude [upright cargo], pressure, shock, dampness, etc.

© ISO 2012 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TS 26683-2:2012

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

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

3.8
consignee
party to which goods are consigned

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

3.9
consignment
separately identifiable 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

3.10
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 de 3035 code CZ]

3.11
container
object used for transport or storage, such as a carton, box or cargo-carrying freight container

[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

3.16
goods
freight
any commodity transported

3.17
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

© ISO 2012 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TS 26683-2:2012

3.18
intermodal freight container
large cargo-carrying object (of various formats) used for transport or storage conforming to ISO 6346; container designed and constructed to permit it to be used interchangeably in two or more modes of transport

3.19
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

3.20
international standardized profile
internationally agreed-to, harmonized document which describes one or more profiles

3.21
interoperability
ability of two or more systems to exchange information and to make mutual use of the information that has been exchanged (sometimes called 'open systems')

3.22
ITS station
communication point for ITS system

3.23
land transport
mode of transport that is effected using roads and railways and may, in some cases, include use of inland waterways

See **transport** (3.31).

3.24
land transport conveyance
transport means to effect the land transport sector(s) of a cargo

3.25
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

3.26
roller cage
cage with casters for transporting loose items

3.27
security
protection of information and data against danger, damage, 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: 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.

3.28
security profile
statement of the security functionality provided by the system often as a subset of the available security functionality available in the system

© ISO 2012 – All rights reserved
Documents
Document Sharing Hub
Full document details: PD ISO/TS 26683-2:2012

EXAMPLE: A system may provide confidentiality, integrity, authentication, authorisation and pseudonymity services or may only require an integrity service so its profile will identify the service, the algorithm, the key management and the protocol.

3.29
shipment
identifiable collection of one or more goods items (available to be) transported together from the original shipper, to the ultimate consignee (a shipment may be transported in one or a multiple number of consignments)

3.30
taxonomy
classification scheme for referencing the hierarchical classification profiles or sets of profiles unambiguously

3.31
transport
transportation
movement of people and goods from one location to another; it is performed by modes, such as air, rail, road, water, cable, pipeline and space and the field comprises the attributes of infrastructure, vehicles and operations

3.32
transport means
vehicles, trailers, vessels, aircraft, or combination thereof, used for the transport of goods to perform a journey

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

4 Abbreviated terms

For the purposes of this document, the following terms and definitions 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 eXtensive Mark-up Language

© ISO 2012 – All rights reserved

Documents
Document Sharing Hub
Full document details: PD ISO/TS 26683-2:2012