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Intelligent transport systems — Communications access for land mobiles (CALM) — Architecture

Systèmes intelligents de transport — Accès aux communications des services mobiles terrestres (CALM) — Architecture

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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 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*.

This second edition cancels and replaces the first edition (ISO 21217:2010) which has been technically revised.

Introduction

"Communications Access for Land Mobile" (CALM) is the acronym used to refer to ISO TC204 WG16 work items. This acronym is used in the titles of the set of International Standards on communication for "Intelligent Transport Systems" (ITS). These International Standards focus on specifying open interfaces with regard to the functionalities required for all relevant layers and entities of the ITS station reference architecture specified in this International Standard. Note that these International Standards may also specify implementation details in situations where such specifications are deemed essential to interoperability of interface protocols.

The set of CALM International Standards is designed to allow interoperable instantiations of ITS stations which are based on the concept of abstracting applications and services from the underlying communication layers of the ITS station. This abstraction and the functionalities and services that can be easily implemented make the ITS station architecture described herein also well-suited to the development and deployment of ITS applications and services that share information amongst each other to improve the safety, sustainability and efficiency of transport systems.

The set of CALM International Standards include specifications for

— ITS station management,

— ITS communications security,

— ITS station facilities layer protocols,

— ITS station networking and transport layer protocols,

— communication interfaces (CIs) designed specifically for ITS applications and services such as those designed specifically for safety of life and property,

— interfacing existing access technologies into ITS stations,

— distributed implementations of ITS stations, and

— interfacing ITS stations to existing communication networks and communicating with nodes thereon.

This International Standard describes the common architectural framework around which ITS stations are instantiated and provides references to relevant International Standards, including access technology support standards, various networking and transport protocol standards, facilities standards, and ITS station management and security standards. It also describes the general architecture of peer-to-peer communications over various communication networks between ITS communication nodes. These nodes may be ITS stations as described in this International Standard or any other reachable nodes.

The set of CALM International Standards is complemented by ITS communication International Standards from other International Standards development organizations which together form the basis for implementation of ITS communications networks around the world.

Intelligent transport systems — Communications access for land mobiles (CALM) — Architecture

1 Scope

This International Standard describes the communications reference architecture of nodes called "ITS station units" designed for deployment in intelligent transport systems (ITS) communication networks. The ITS station reference architecture is described in an abstract way. While this International Standard describes a number of ITS station elements, whether or not a particular element is implemented in an ITS station unit depends on the specific communication requirements of the implementation.

This International Standard also describes the various communication modes for peer-to-peer communications over various networks between ITS communication nodes. These nodes may be ITS station units as described in this International Standard or any other reachable nodes.

This International standard specifies the minimum set of normative requirements for a physical instantiation of the ITS station based on the principles of a bounded secured managed domain.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

None.

3 Terms and definitions

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

3.1
access technology
technology employed in a communication interface to access a specific medium

3.2
application data unit
data unit exchanged between ITS-S application processes

3.3
communication adaptation layer
set of protocols and functions to adapt access technologies to the ITS-S networking and transport layer

3.4
communication interface
instantiation of a specific access technology and ITS-S access layer protocol

3.5
communication path
directed sequence of nodes connected by links, starting at a source node and ending at one or more destination nodes

3.6
FA interface
interface between the ITS-S facilities layer and the ITS-S applications entity