PUBLISHED DOCUMENT

PD ISO/TR 24529:2008

Intelligent transport systems — Systems architecture — Use of unified modelling language (UML) in ITS International Standards and deliverables

ICS 03.220.20; 35.240.60

BSI British Standards

This Published Document is the UK implementation of ISO/TR 24529:2008.

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.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 May 2008

ISBN 978 0 580 62794 1

Amendments/corrigenda issued since publication

Date	Comments

REPORT **24529**

First edition
2008-04-15

Intelligent transport systems — Systems architecture — Use of unified modelling language (UML) in ITS International Standards and deliverables

Systèmes intelligents de transport — Architecture de systèmes — Emploi du langage de modélisation unifié (UML) dans les Normes internationales ITS et produits livrables

Reference number
ISO/TR 24529:2008(E)

Contents

Page

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 exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard (“state of the art”, for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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/TR 24529 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

Introduction

The objective of this Technical Report is to provide guidance on the use of the “Unified Modeling Language” [UML] in the development of standards for “Intelligent Transport Systems” [ITS].

The advantages of applying UML to the development of ITS include the following:

— UML provides an Internationally Standardized form of system model that should be readily interpreted anywhere world-wide;

— UML enables cohesive description from multiple user views;

— There is available extensive training and tool support for UML;

— UML is capable of manipulation by a metadata registry for ITS;

— UML tools enable conversion directly to computer coding;

— UML is very widely used in the architecture, design and development of software-intensive systems.

The disadvantages of using UML include the following:

— UML is not understood by many stakeholders who are not also software developers;

— UML uses a larger amount of unfamiliar language and jargon which, while it may be necessary for precision, is daunting and off-putting to the non specialist and lay reader;

— UML is not yet developed enough to support the full scope of systems engineering;

— UML is still under active development and therefore the compatibility of UML models may be an issue.

There are therefore some risks in using UML but nevertheless the benefits are widely judged as exceeding the disadvantages. This document is intended to provide guidance to stakeholders who are considering the use of UML for ITS.

blank

Intelligent transport systems — Systems architecture — Use of unified modelling language (UML) in ITS International Standards and deliverables

1 Scope

The scope of this Technical Report is the use of UML within International Standards Technical Specifications and Technical Reports and related documents.

This Technical Report discusses the application of the “Unified Modelling Language” [UML] to the development of standards within the context of “Intelligent Transport Systems” [ITS].

2 Normative references

ISO 14813 (all parts), *Transport information and control systems — Reference model architecture(s) for the TICS sector (Parts 1 to 6)*

ISO 14817, *Transport information and control systems — Requirements for an ITS/TICS central Data Registry and ITS/TICS Data Dictionaries*

ISO/TR 17452, *Intelligent transport systems — Using UML for defining and documenting ITS/TICS interfaces*

ISO/IEC 19501, *Information technology — Open Distributed Processing — Unified Modeling Language (UML) Version 1.4.2*

ISO/TR 25102, *Intelligent transport systems — System architecture — ‘Use Case’ pro-forma template*

3 Terms and definitions

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

3.1
actor
coherent set of roles that users of an entity can play when interacting with the entity.

NOTE An actor may be considered to play a separate role with regard to each use case with which it communicates.

In the metamodel, ‘Actor’ is a subclass of ‘Classifier’. An ‘Actor’ has a ‘Name’ and may communicate with a set of ‘UseCases’, and, at realization level, with ‘Classifiers’ taking part in the realization of these ‘UseCases’. An ‘Actor’ may also have a set of ‘Interfaces’, each describing how other elements may communicate with the ‘Actor’.

An ‘Actor’ may have generalization relationships to other ‘Actors’. This means that the child Actor will be able to play the same roles as the parent ‘Actor’, that is, communicate with the same set of ‘UseCases’, as the parent ‘Actor’.

3.2
architecture
⟨ITS⟩ set of concepts and rules for an intelligent transport system describing the inter-relationship between entities in the entire system, independent of the hardware and software environment

NOTE Architecture is described through a series of viewpoints that may be at varying levels of generality/specificity, abstraction/concretion, totality/component and so on. See also communications architecture, logical architecture, organizational architecture, physical architecture, reference architecture and system architecture definitions below.