



Intelligent Transport Systems (ITS); Architecture of conformance validation framework

(<https://standards.iteh.ai>)

Document Preview

[ETSI TR 103 099 V1.1.1 \(2012-11\)](https://standards.iteh.ai/catalog/standards/etsi/1902a8c5-5098-49ec-9a9b-dc703877017e/etsi-tr-103-099-v1-1-1-2012-11)

<https://standards.iteh.ai/catalog/standards/etsi/1902a8c5-5098-49ec-9a9b-dc703877017e/etsi-tr-103-099-v1-1-1-2012-11>

Reference

DTR/ITS-0030038

Keywords

architecture, conformance, ITS, testing

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

(<https://standards.iteh.ai>)
Document Preview

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2012.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and
of the 3GPP Organizational Partners.
GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	5
Foreword.....	5
Introduction	5
1 Scope	6
2 References	6
2.1 Normative references	6
2.2 Informative references.....	6
3 Abbreviations	7
4 Test platform overview	8
4.1 Constraints and requirements	8
4.2 General architecture	8
5 Hardware equipment	9
5.1 PC.....	9
5.2 G5 adapter box	10
6 Codecs	10
6.1 Advanced details of implementation	12
7 Test Adapter	12
7.1 Lower Tester	13
7.1.1 Overview	13
7.1.2 Advanced details of implementation	15
7.1.3 Extensibility of the test adapter.....	17
7.1.4 Adapter Control primitives	17
7.2 Platform Adapter	17
7.3 Upper Tester.....	17
Annex A: Codecs source code	19
Annex B: Test Adapter source code	20
Annex C: Upper Tester message format	21
C.1 CAM Upper Tester Primitives	21
C.1.1 CamInitialize	21
C.1.2 ChangeHeading	22
C.1.3 ChangePosition.....	22
C.1.4 ChangeSpeed	22
C.1.5 SetCrashSignal	23
C.1.6 SetDangerousGoodsStatus	23
C.1.7 SetLengthWidthPrecision.....	23
C.1.8 SetDistanceToStopLine	23
C.1.9 SetTurnAdvice	24
C.1.10 SetCurvature.....	24
C.1.11 SetOccupancy.....	24
C.1.12 SetDoorStatus.....	25
C.1.13 SetLightBarStatus.....	25
C.1.14 SetSireneStatus	25
C.1.15 SetTrafficLightPriority	26
C.1.16 SetScheduleDeviation	26
C.1.17 SetPtLineDescription.....	26
C.1.18 SetExteriorLightsStatus.....	27
C.1.19 CheckCam	27
C.2 DENM Upper Tester Primitives.....	27

C.2.1	DenmInitialize	27
C.2.2	GenerateDenmEvent	28
C.2.3	CancelDenmEvent.....	28
C.2.4	NegateDenmEvent.....	29
C.2.5	UpdateDenmEvent	29
C.2.6	CheckDenm.....	29
C.3	GeoNetworking Upper Tester Primitives.....	30
C.3.1	GnInitialize.....	30
C.3.2	GenerateGeoUnicast.....	30
C.3.3	GenerateGeoAnycast.....	30
C.3.4	GenerateGeoBroadcast.....	31
C.3.5	GenerateSHB.....	31
C.3.6	GenerateTSB	32
C.3.7	CheckPacket	32
Annex D:	MK2 bridge application	33
Annex E:	Example of Test Platform implementation.....	34
Annex F:	Complete Test Adapter class diagram	38
Annex G:	Validated ATS in TTCN-3 and ASN.1 modules.....	39
Annex H:	Bibliography	40
History		42

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ETSI TR 103 099 V1.1.1 \(2012-11\)](#)

<https://standards.iteh.ai/catalog/standards/etsi/1902a8c5-5098-49ec-9a9b-dc703877017e/etsi-tr-103-099-v1-1-1-2012-11>

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://ipr.etsi.org>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Intelligent Transport System (ITS).

Introduction

In response to EC mandate M/453, ETSI Technical Committee (TC) ITS has standardized base and test specifications for ITS protocols. In a next step a prototype TTCN-3 test system was built and validated. The present document and its related TR 103 061 series, describe the design and validation of the prototype TTCN-3 test system.

The action described in the present document has supported the implementation of ITS standards by:

- Making available validated and standardized test specifications and thus enabling the application of reliable certification schemes.
- Executing conformance validation framework against real Implementations Under Test (IUTs) from industry and thus providing these companies a conformance assessment of their implementations. During the lifetime of this action, the conformance validation framework was as well provided at ITS Cooperative Mobility Services Interoperability events.
- Releasing all software as open source and thus allowing industry to build and run their own conformance validation framework.

1 Scope

The present document provides a description of the architecture of the ITS conformance validation framework, including definition of the test environment, codec and test adapter. It provides, as well, all the necessary source code to build and run the ITS conformance validation framework.

The ITS conformance validation framework integrates the CAM, DENM, BTP and GeoNetworking abstract test suites (ATS) ([i.10] to [i.13]). The results of the validation are described in the TR 103 061 series [i.4] to [i.8].

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

Not applicable.

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI ES 201 873-5 (V4.2.1): "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 5: TTCN-3 Runtime Interface (TRI)".
- [i.2] ETSI ES 201 873-6 (V4.2.1): "Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 6: TTCN-3 Control Interface (TCI)".
- [i.3] ETSI EG 201 015 (V2.1.1): "Methods for Testing and Specification (MTS); Standards engineering process; A handbook of validation methods".
- [i.4] ETSI TR 103 061-1 (V1.1.1): "Intelligent Transport Systems (ITS); Testing; Conformance test specification for Co-operative Awareness Messages (CAM); CAM validation report".
- [i.5] ETSI TR 103 061-2 (V1.1.1): "Intelligent Transport Systems (ITS); Testing; Conformance test specification for Decentralized Environmental Notification basic Service Message (DENM); DENM validation report".
- [i.6] ETSI TR 103 061-3 (V1.1.1): "Intelligent Transport Systems (ITS); Testing; Conformance test specification for Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; GeoNetworking validation report".
- [i.7] ETSI TR 103 061-4 (V1.1.1): "Intelligent Transport Systems (ITS); Testing; Conformance test specification for GeoNetworking Basic Transport Protocol (BTP); GeoNetworking BTP validation report".
- [i.8] ETSI TR 103 061-5 (V1.1.1): "Intelligent Transport Systems (ITS); Testing; IPv6 over GeoNetworking validation report".