



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 15531-1:2015

Public transport - Service interface for real-time information relating to public transport operations - Part 1: Context and framework

Transport public - Interface de service
pour les informations en temps réel
relatives aux opérations de transport
public - Partie 1 : Cadre et contexte

Öffentlicher Verkehr - Serviceschnittstelle
für Echtzeitinformationen bezogen auf
Operationen im öffentlichen Verkehr -
Teil 1: Kontext und Grundstruktur

08/2015



National Foreword

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EUROPEAN STANDARD ^{ILNAS-EN 15531-1:2015} **EN 15531-1**
NORME EUROPÉENNE
EUROPÄISCHE NORM

August 2015

ICS 35.240.60

Supersedes CEN/TS 15531-1:2007

English Version

**Public transport - Service interface for real-time information
relating to public transport operations - Part 1: Context and
framework**

Transport public - Interface de service pour les informations
en temps réel relatives aux opérations de transport public -
Partie 1 : Cadre et contexte

Öffentlicher Verkehr - Serviceschnittstelle für
Echtzeitinformationen bezogen auf Operationen im
öffentlichen Verkehr - Teil 1: Kontext und Grundstruktur

This European Standard was approved by CEN on 20 June 2015.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 15531-1:2015) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2016 and conflicting national standards shall be withdrawn at the latest by February 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/TS 15531-1:2007.

SIRI (CEN/TS 15531-1:2007) has been a CEN Technical Specification since 2007 and has been widely used in Europe and elsewhere and proven its usefulness. This document proposes a revised version of SIRI as a CEN European Standard, and is currently submitted to the Formal Vote. The proposed revisions are minor enhancements arising from experience of the deployment of SIRI in many live systems. This document also clarifies the relationship of SIRI to NeTEx, the new CEN Technical Standard for the XML exchange of Public Transport Reference data based on the Transmodel CEN European Standard.

This document presents Part 1 of the European Standard known as “SIRI”. SIRI provides a framework for specifying communications and data exchange protocols for organizations wishing to exchange Real-time Information (RTI) relating to public transport operations.

The SIRI European Standard is presented in three parts:

- context and framework, including background, scope and role, normative references, terms and definitions, symbols and abbreviations, business context and use cases (Part 1),
- the mechanisms to be adopted for data exchange communications links (Part 2),
- data structures for a series of individual application interface modules PT, ET, ST, SM, VM, CT, CM, GM (Part 3).

Two additional parts define additional functional services as CEN Technical Specifications:

- additional data structures for additional application interface module FM (Part 4),
- additional data structures for additional application interface module SX (Part 5).

The XML schema can be downloaded from <http://www.siri.org.uk/>, along with available guidance on its use, example XML files, and case studies of national and local deployments.

It is recognized that SIRI is not complete as it stands, and from time to time will need to continue to be enhanced to add additional capabilities. It is therefore intended that a SIRI Management Group should continue to exist, at European level, based on the composition of SG7.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Public transport services rely increasingly on information systems to ensure reliable, efficient operation and widely accessible, accurate passenger information. These systems are used for a range of specific purposes: setting schedules and timetables; managing vehicle fleets; issuing tickets and receipts; providing real-time information on service running, and so on.

This European Standard specifies a Service Interface for Real-time Information (SIRI) about Public Transport. It is intended to be used to exchange information between servers containing real-time public transport vehicle or journey time data. These include the control centres of transport operators and information systems that utilize real-time vehicle information, for example, to deliver services such as travel information.

Well-defined, open interfaces have a crucial role in improving the economic and technical viability of Public Transport Information Systems of all kinds. Using standardized interfaces, systems can be implemented as discrete pluggable modules that can be chosen from a wide variety of suppliers in a competitive market, rather than as monolithic proprietary systems from a single supplier. Interfaces also allow the systematic automated testing of each functional module, vital for managing the complexity of increasing large and dynamic systems. Furthermore, individual functional modules can be replaced or evolved, without unexpected breakages of obscurely dependent function.

This European Standard will improve a number of features of public transport information and service management:

- Interoperability – the European Standard will facilitate interoperability between information processing systems of the transport operators by: (i) introducing common architectures for message exchange; (ii) introducing a modular set of compatible information services for real-time vehicle information; (iii) using common data models and schemas for the messages exchanged for each service; and (iv) introducing a consistent approach to data management.
- Improved operations management – the European Standard will assist in better vehicle management by (i) allowing the precise tracking of both local and roaming vehicles; (ii) providing data that can be used to improve performance, such as the measurement of schedule adherence; and (iii) allowing the distribution of schedule updates and other messages in real-time.
- Delivery of real-time information to end-users – the European Standard will assist the economic provision of improved data by: (i) enabling the gathering and exchange of real-time data between AVMS systems; (ii) providing standardized, well defined interfaces that can be used to deliver data to a wide variety of distribution channels. Version 2.0 of SIRI includes a new Simple Web Service designed to support the widespread, massively scalable use of mobile devices and web browsers and other applications to display public transport data directly to users.

Technical advantages include the following:

- Reusing a common communication layer for all the various technical services enables cost-effective implementations, and makes the European Standard readily extensible in future.

History

Version 1.0 of SIRI was developed in 2004-2005 and submitted to vote, eventually passing through the CEN process to become an approved CEN Technical Specification in 2007. As well as the normative Version 1.0 XSD schema, successive informal working versions of the schema (v 1.1 – 1.4) were released to allow for fixes and to implement some very minor enhancements agreed by the working group. A WSDL version was also developed.

Version 2.0 of SIRI was developed in 2012 to coincide with making the SIRI standard a full CEN norm.

The changes in SIRI version 2.0 include:

- a) consolidating the fixes and minor changes from SIRI in the informal working schemas;
- b) dropping the flat groups provided for VDV;

NOTE Not backwards compatible.
- c) clarifying a number of points of interpretation;
- d) a small number of functional enhancements to the ET, PT, ST, SM, and VM services as agreed by the SIRI Working Group. See Readme for further details. For example for Prediction Quality. All such enhancements are marked 'SIRI v2.0' in this document;
- e) updating and clarifying the use of terminology to relate to NeTEx and revised Transmodel usage;
- f) adding the SIRI Simple Web Services "SIRI-LITE" as additional transport method;
- g) adding a WSDL document literal version and a WSDL2 version;
- h) revising the internal modularization of SIRI packages to improve maintainability, and a number of minor corrections to types;
- i) reviewing the documentation to correct a number minor inconsistencies and errors.

Compatibility with previous versions

All changes except #2 above are intended to be fully backwards compatible, that is to say, existing documents that validate against earlier versions of the schema will also validate against the 2.0 schema without alteration (other than to schema version numbers), and version 2.0 documents that do not use new features will validate against earlier versions. Version 2.0 documents that use new features will not be backwards compatible.

1 Scope

1.1 Interfaces specified by this standard

1.1.1 Business context

Real-time information may be exchanged between a number of different organizations, or between different systems belonging to the same organization. Key interfaces include the following:

- Between public transport vehicle control centres – generally, for fleet and network management.
- Between a control centre and an information provision system – generally, to provide operational information for presentation to the public.
- Between information provision systems – generally, sharing information to ensure that publicly available information is complete and comprehensive.
- Between information provision systems – and data aggregation systems that collect and integrate data from many different sources and different types of data supplier and then distribute it onwards.
- Between information provision systems and passenger information devices such as mobile phones, web browsers, etc.

Annex B describes the business context for SIRI in more detail.

SIRI is intended for wide scale, distributed deployment by a wide variety of installations. In such circumstances it is often not practical to upgrade all the systems at the same time. SIRI therefore includes a formal versioning system that allows for the concurrent operation of different levels at the same time and a disciplined upgrade process.

In this general framework, SIRI defines a specific set of concrete functional services. The services separate the communication protocols from the message content ('functional services'). This allows the same functional content to be exchanged using different transport mechanisms, and different patterns of exchange. Figure 1 below shows this diagrammatically.

1.1.2 SIRI communications

SIRI provides a coherent set of functional services for exchanging data for different aspects of PT operation. A common data model, based on Transmodel 5.1, is used across all services.