



SLOVENSKI STANDARD

SIST-TS CEN/TS 15531-5:2011

01-september-2011

Javni prevoz - Vmesnik za storitev informiranja v realnem času za potrebe delovanja javnega prevoza - 5. del: Vmesniki funkcijske storitve - Izmenjava podatkov o situaciji

Public transport - Service interface for real-time information relating to public transport operations - Part 5: Functional service interfaces - Situation Exchange

Öffentlicher Verkehr - Diensteschnittstelle für den Echtzeitaustausch von Betriebsinformationen des ÖPNV (SIRI) - Teil 5: Funktionelle Serviceschnittstelle: Situativer Austausch

[SIST-TS CEN/TS 15531-5:2011](https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-222222222222/sist-ts-cen-ts-15531-5-2011)

[https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-](https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-222222222222/sist-ts-cen-ts-15531-5-2011)

Service d'échanges de données temps réel pour le Transport en Commun - Partie 5: interfaces de service fonctionnel - Echanges de perturbation structurés (causes et conséquences détaillées)

Ta slovenski standard je istoveten z: CEN/TS 15531-5:2011

ICS:

35.240.60	Uporabniške rešitve IT v transportu in trgovini	IT applications in transport and trade
-----------	---	--

SIST-TS CEN/TS 15531-5:2011 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST-TS CEN/TS 15531-5:2011](#)

<https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-e3247fe90c1e/sist-ts-cen-ts-15531-5-2011>

TECHNICAL SPECIFICATION
 SPÉCIFICATION TECHNIQUE
 TECHNISCHE SPEZIFIKATION

CEN/TS 15531-5

July 2011

ICS

English Version

**Public transport - Service interface for real-time information
 relating to public transport operations - Part 5: Functional
 service interfaces - Situation Exchange**

Service d'échanges de données temps réel pour le
 Transport en Commun - Partie 5: interfaces de service
 fonctionnel - Echanges de perturbation structurés (causes
 et conséquences détaillées)

Öffentlicher Verkehr - Diensteschnittstelle für den
 Echtzeitaustausch von Betriebsinformationen des ÖPNV
 (SIRI) - Teil 5: Funktionelle Serviceschnittstelle: Situativer
 Austausch

This Technical Specification (CEN/TS) was approved by CEN on 19 March 2011 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
 COMITÉ EUROPÉEN DE NORMALISATION
 EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
Foreword.....	4
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions.....	8
4 Symbols and abbreviations	12
5 Situations as Software Entities	12
5.1 General.....	12
5.2 Structured Situations	13
5.3 Distributed Situation processing	14
5.3.1 Identity and Write-Only Updates	14
5.3.2 Currency and the Situation Life Cycle.....	15
5.3.3 Representational model for Situation Elements.....	16
5.3.4 Update chains – Causal chains.....	17
5.3.5 Cross-referencing Situations – Causal chains.....	18
5.3.6 Branching and distributed updates	18
5.3.7 Archiving	20
5.4 Summary of Situation Management.....	20
5.4.1 General.....	20
5.4.2 Situation Identity.....	20
5.4.3 Situation Life Cycle.....	21
5.4.4 Situation Update Content.....	21
5.4.5 Example of identifier allocation.....	21
5.4.6 Date time stamps as identifiers.....	22
5.5 Interoperability of Situation management systems	22
5.5.1 General.....	22
5.5.2 Datex2 Interoperability	23
5.5.3 TPEG Interoperability	23
5.5.4 Communications Bandwidth	24
6 The Situation Model.....	24
6.1 General.....	24
6.2 Representing a PT Situation in SIRI-SX.....	25
6.2.1 Summary of PT Situation model	25
6.2.2 PT Situation Element Body	26
6.2.3 PT Situation Body Details	27
6.2.4 PT Situation Reason	29
6.2.5 Situation Consequence	31
6.2.6 The PT AffectsScope	33
6.3 Representing a Road Situation in SIRI-SX	39
6.3.1 Summary of Road Situation model	39
6.3.2 Road Situation Element Body	40
6.3.3 Common Accessibility	41
6.3.4 Publishing Actions	42
6.3.5 Common Types	44
7 Situation Exchange Service [SX]	50
7.1 Purpose.....	50
7.2 Description	50
7.3 Reference Data.....	50
7.4 Capability and Permission Matrices	50

7.4.1	Capability Matrix	50
7.4.2	Permission Matrix	52
7.5	UML Diagrammatic Representation	53
7.5.1	General	53
7.5.2	UML Detailed Diagram of SituationExchangeRequest	54
7.5.3	UML Diagram of SituationExchangeDelivery - Summary	55
7.5.4	UML Diagram of SituationExchangeDelivery - Detail	56
7.5.5	UML Diagram of SituationContext	57
7.6	SituationExchangeRequest	58
7.6.1	SituationExchangeRequest Definition	58
7.6.2	SituationStatusFilter Definition	60
7.6.3	SituationNetworkFilter Definition	60
7.6.4	SituationStopPlaceFilter Definition	61
7.6.5	SituationJourneyFilter Definition	61
7.6.6	SituationPlaceFilter Definition	61
7.6.7	SituationExchangeRequest Example	62
7.7	SituationExchangeSubscriptionRequest	62
7.7.1	SituationExchangeSubscriptionRequest Definition	62
7.7.2	SituationExchangeSubscriptionRequest Example	63
7.8	SituationExchangeDelivery	63
7.8.1	ServiceDelivery with a SituationExchangeDelivery	63
7.8.2	SituationExchangeDelivery Element	64
7.8.3	SituationContext Element	64
7.8.4	SituationNetworkContext Element	65
7.8.5	PtSituationElement	65
7.8.6	RoadSituationElement	104
8	SituationExchangeDelivery Examples - SituationExchangeDelivery PT Examples	107
Annex A (normative)	Notation	109
Annex B (normative)	Comparison of Terms	114
Annex C (informative)	Use Cases for Situation Exchange	117
Bibliography	123

ITeH STANDARD PREVIEW
(standards.iteh.ai)

SIST-TS CEN/TS 15531-5:2011

<http://search.iteh.ai/en/publications/6244/c7176d30-9227-4f59-bca7-e3247fe90c1e/sist-ts-cen-ts-15531-5-2011>

CEN/TS 15531-5:2011 (E)**Foreword**

This document (CEN/TS 15531-5:2011) has been prepared by Technical Committee CEN/TC 278 "Road transport and traffic telematics", the secretariat of which is held by NEN.

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 describes the SIRI Situation Exchange service, one of a modular set of services for the exchange of Real-time information. The Situation Exchange service (SIRI-SX) is concerned with the exchange of planned events and unplanned incident data among systems, including incident capture, real-time management and dissemination systems.

The SIRI Situation Exchange service (SIRI-SX) is an additional functional service based on the European Technical Specification known as "SIRI" – Service Interface for Real-time Information. SIRI provides a framework for specifying communications and data exchange protocols for organisations wishing to exchange Real-time Information (RTI) relating to public transport operations.

The specification for the base SIRI framework on which SIRI-SX is built is presented in three parts:

- a) context and framework, including background, scope and role, normative references, terms and definitions, symbols and abbreviations, business context and use cases (SIRI Part 1: CEN/TS 15531-1);
- b) the mechanisms to be adopted for data exchange communications links (SIRI Part 2: CEN/TS 15531-2);
- c) data structures for a series of individual application interface modules (SIRI Part 3: CEN/TS 15531-3):
 - 1) Production Timetable (SIRI-PT);
 - 2) Estimated Timetable (SIRI-ET);
 - 3) Stop Timetable (SIRI-ST);
 - 4) Stop Monitoring (SIRI-SM);
 - 5) Vehicle Monitoring (SIRI-VM);
 - 6) Connection Timetable (SIRI-CT);
 - 7) Connection Monitoring (SIRI-CM);
 - 8) General Message (SIRI-GM).

Additional documents are used for additional functional services, to date these are:

- Facilities Management (SIRI-FM) service is used to exchange information on the current status of facilities such as lifts, escalators or ticketing machines. It provides a short description of the facility itself, expresses any change to its operational status and specifically the accessibility status for the disabled or those with special needs people. It provides all the current relevant information relating to all facilities fulfilling a set of selection criteria (Part 4: prCEN/TS 15531-4).
- Situation Exchange (SIRI-SX): this document. The SIRI Situation & Incident Exchange service is used to exchange information messages between identified participants in a standardised structured format

suitable for travel information services. It enables messages to be sent and to be revoked (Part 5: FprCEN/TS 15531-5, this document).

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. The SIRI-SX service is included in version 1.3 of the schema onwards.

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

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST-TS CEN/TS 15531-5:2011](https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-e3247fe90c1e/sist-ts-cen-ts-15531-5-2011)

<https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-e3247fe90c1e/sist-ts-cen-ts-15531-5-2011>

CEN/TS 15531-5:2011 (E)**Introduction**

Public transport services increasingly rely on information systems to ensure reliable, efficient operation and widely accessible, accurate passenger 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 standardised interfaces, systems can be implemented as discrete pluggable modules that can be chosen from a wide variety of suppliers in a competitive market, connecting diverse systems; 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, with a well defined, version interface, individual functional modules can be replaced or evolved, without unexpected breakages of obscurely dependent function.

The SIRI framework is a European Technical Specification that provides a specification for a number of functional interfaces that allow public transport data of specific types to be exchanged readily using structured interfaces.

Furthermore, this European Technical Specification specifies an additional SIRI functional service to exchange incident and event information about disruptions to public transport between servers containing real-time public transport vehicle or journey time data. These include the control centres of transport operators as well as information systems that deliver passenger travel information services.

ITEH STANDARD PREVIEW
(standards.iteh.ai)

[SIST-TS CEN/TS 15531-5:2011](https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-e3247fe90c1e/sist-ts-cen-ts-15531-5-2011)

<https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-e3247fe90c1e/sist-ts-cen-ts-15531-5-2011>

1 Scope

The SIRI Situation Exchange service (SIRI-SX) allows the efficient exchange of data about situations caused by planned and unplanned incidents and events and is intended to support the use cases identified in Annex C. Situations are actual or potential perturbations to normal operation of a transport network. The SIRI-SX service uses the common SIRI communication framework and services which are described in CEN/TS 15531-1 and not repeated in this document.

The Situation Exchange service has a rich Situation model, allowing a structured description of all aspects of multimodal travel Situations, including cause, scope, effect and rules for distribution to an audience. The structured values enabling computer based distribution through a wide variety of channels, and the presentation of data in different formats for different device and different audiences. The Situation Exchange Service allows the exchange of incident and event information between, amongst others:

- Control centres;
- Operations staff;
- Public information systems;
- Alert systems and personalised alert systems;
- UTMC systems;
- Journey planners;
- AVMS (Automatic Vehicle Management Systems).

SIR-SX uses a network model based on the CEN Transmodel conceptual model for public transport networks, schedules and operations, along with the CEN Identification of Fixed Objects in Public Transport (IFOPT) model for describing physical transport interchanges.

The Situation Exchange service is envisaged as a 'back office' capture and exchange service that will feed other public facing travel information dissemination systems, in particular those using the TPEG format. Transport Protocol Expert Group (TPEG) is a European Broadcasting Union fostered standard for broadcasting travel data over Digital Assisted Broadcasting (DAB) radio and other channels. To this end, the SIRI-SX situation classification model has been harmonised as far as possible with that of TPEG and DATEX2 so that full interoperability can be achieved. Uses of structured elements from TPEG, for which translations already exist in most European languages, also facilitates human readability in different national languages. Maintaining and improving a harmonisation with TPEG will be a continuing objective. In addition to the TPEG exchangeable content, SIRI-SX messages contain additional structured information which allows them to be processed in additional ways.

Situation and computer systems and applications are typically *distributed*, that is information will be captured on one system and exchanged with others for dissemination and further processing. This means that a message design is needed that allows the management of the identity of distributed messages over time and across different systems, so that subsequent updates to a Situation can be reconciled by different systems over a network, and obsolete messages can be retired automatically. The SIRI-SX situation model is designed to support the distributed management of Situations.

2 Normative references

The following referenced documents are 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.

CEN/TS 15531-1:2007, *Public transport — Service interface for real-time information relating to public transport operations — Part 1: Context and framework*

CEN/TS 15531-5:2011 (E)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CEN/TS 15531-1:2007 and the following apply.

NOTE In accordance with Transmodel conventions, capital letters are used to indicate conceptual model entities from Transmodel, for example VEHICLE JOURNEY, STOP PLACE, etc., and also those from IFOPT and SIRI. Later in this document, the names of classes and attributes expressing these entities in the UML diagrams and the XML schema are shown in Upper Camel Case, e.g. VehicleJourney. Note all conceptual entities are expressed as classes and not all concrete classes and attributes relate directly to a conceptual entity.

3.1 Access Space – IFOPT
passenger area within a STOP PLACE such as a concourse or booking hall, immigration hall or security area that is accessible by pedestrians, but without a direct access to vehicles

NOTE Direct access to a VEHICLE is always from a QUAY and/or BOARDING POSITION. An ACCESS SPACE may be a Room, Hall, Concourse, Corridor, or bounded open space within a STOP PLACE.

3.2 Accessibility – IFOPT
possibility of a user with a specific USER NEED, such as a disability or encumbrance, to access either fixed or moving public transport facilities

3.3 Accessibility Assessment – IFOPT
ACCESSIBILITY characteristics of an entity used by PASSENGERS such as a STOP PLACE, or a STOP PLACE COMPONENT

NOTE Described by ACCESSIBILITY LIMITATIONS, and/or a set of SUITABILITIES.

3.4 Accessibility Limitation – IFOPT
categorisation of the mobility characteristics of a STOP PLACE COMPONENT such as a STOP PATH LINK or ACCESS SPACE to indicate its ACCESSIBILITY by mobility constrained users, for example those needing wheelchair access, step-free access or wanting to avoid confined spaces such as lifts

NOTE A small number of well-defined categories are used that are chosen to allow the consistent capture of data and the efficient computation of routes for different classes of user.

3.5 Affects Scope – SIRI-SX
scope of a SITUATION ELEMENT or consequence of a SITUATION ELEMENT in terms of the specific entities such as OPERATORS, NETWORKS, LINES, SCHEDULED STOP POINTS, STOP PLACES, PLACES, etc that are affected

3.6 Base Situation Element – SIRI-SX
original record of a particular SITUATION

NOTE This may subsequently be followed by UPDATE SITUATION ELEMENTS that record further changes.

3.7 Boarding Position – IFOPT
location within a QUAY from which passengers may directly board, or onto which passengers may directly alight from, a PT vehicle

3.8**Connection Link – Transmodel**

physical (spatial) possibility for a passenger to change from one public transport vehicle to another to continue a trip

NOTE Different transfer times may be necessary to cover interchange over a given connection link, depending on the kind of passenger.

3.9**Consequence – Trident**

outcome of a SITUATION

3.10**Control Action – Transmodel**

action resulting from a decision taken by the controller causing an amendment of the operation planned in the PRODUCTION PLAN

NOTE For SIRI-SX, CONTROL ACTIONS may often give rise to a SITUATION, but are entirely distinct concepts.

3.11**Direction – Transmodel**

classification for the general orientation of ROUTES

NOTE In IFOPT the DIRECTION may be an important aspect of a PATH LINK that may only be traversed one way.

3.12**Easement – SIRI-SX**

temporary permission to use a ticket purchased for use of a transport service on a different travel product because the original service has been disrupted

EXAMPLE To use a bus instead of the metro.

<https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-e3247fe90c1e/sist-ts-cen-ts-15531-5-2011>

3.13**Level – IFOPT**

identified storey (ground, first, basement, mezzanine, etc.) within an interchange building on which STOP PLACE COMPONENTS reside

NOTE A STOP PATH LINK may connect components on different levels.

3.14**Local Service – IFOPT**

named service relating to the use of the STOP PLACE or transport services at a particular location, for example portage, assistance for disabled users, booking offices, etc.

NOTE The service may have a VALIDITY CONDITION associated with it. A LOCAL SERVICE is treated as a form of non-material EQUIPMENT.

3.15**Location – Transmodel**

position of a POINT with reference to a given LOCATING SYSTEM (e.g. coordinates)

3.16**Operator – Transmodel**

organisation in charge of the operation of some or all transport services within a particular area

3.17**Passenger Accessibility Assessment – IFOPT**

categorisation of the ACCESSIBILITY characteristics of a PASSENGER to indicate their requirements for ACCESSIBILITY

CEN/TS 15531-5:2011 (E)

NOTE For example that are unable to navigate stairs, or lifts, or have visual or auditory impairments. PASSENGER ACCESSIBILITY TYPE corresponds to one or more ACCESSIBILITY LIMITATIONS, allowing the computation of paths for passengers with constrained mobility. For example, wheelchair, no lifts, no stairs.

3.18**Place – Transmodel**

geographic location of any type which may be specified as the origin or destination of a trip

NOTE 1 A PLACE may be of dimension 0 (a POINT), 1 (a road section) or 2 (a ZONE).

NOTE 2 In IFOPT a PLACE may be of dimension 3 and be further associated with a LEVEL.

3.19**Plannedevent – SIRI-SX**

cause of a SITUATION that is known about in advance

NOTE 1 It will have a known start and likely end time.

NOTE 2 In SIRI-SX this is recorded as an attribute of a general purpose incident description.

3.20**Publishing Action – SIRI-SX**

part of SITUATION ELEMENT content that contains guidance as to how the SITUATION should be disseminated

3.21**Quay – IFOPT**

place where passengers have access to PT vehicles, such as a platform, stance, or quayside

NOTE 1 A QUAY may serve one or more VEHICLE STOPPING PLACES and be associated with one or more STOP POINTS.

NOTE 2 A QUAY is a recursive structure that may contain other sub QUAYS. A child QUAY must be physically contained within its parent QUAY.

3.22**Reason – TPEG**

classification of a SITUATION ELEMENT as being of a particular type

NOTE The nature of the REASON is likely to have implications for the duration and consequence of the SITUATION.

3.23**Route – Transmodel**

ordered list of located POINTs defining one single path through the road (or rail) network

NOTE 1 A ROUTE may pass through the same POINT more than once.

NOTE 2 Each JOURNEY PATTERN may be associated with a particular ROUTE.

3.24**Situation – Trident**

disruption to the planned operation of services

3.25**Situation Element – Trident**

record of SITUATION STATE at particular time or over a particular period

NOTE 1 A SITUATION is represented by one or more SITUATION ELEMENTS.

NOTE 2 A SIRI SITUATION ELEMENT corresponds to a DATEX2 'Situation Record'.

3.26**Situation Identifier – SIRI-SX**

unique identifier of a SITUATION ELEMENT made up of several parts, the Country Code, Participant Code, Situation Number and Version number

3.27**Scheduled Stop Point – IFOPT**

POINT in a journey where passengers can board or alight from vehicles

NOTE SCHEDULED STOP POINT refines the primary Transmodel sense of a STOP POINT, which is that of the logical stop point within a scheduled journey, rather than a physical point in the infrastructure where boarding and alighting, may take place, for which the terms for specific STOP PLACE COMPONENTS such as QUAY or BOARDING POSITION are used. Although the same identifiers are often used for both SCHEDULED STOP POINT and STOP PLACE COMPONENT, a practice which provides significant benefits for data management, they nonetheless represent distinct concepts. A STOP POINT ASSIGNMENT is used to associate a SCHEDULED STOP POINT with a STOP PLACE COMPONENT.

3.28**Stop Place – IFOPT**

place comprising one or more locations where vehicles may stop and where passengers may board or leave vehicles or prepare their trip

NOTE A STOP PLACE will usually have one or more well known names.

3.29**Stop Point – Transmodel**

POINT where passengers can board or alight from vehicles

3.30**Suitability – IFOPT**

whether a particular facility such as a STOP PLACE COMPONENT or VEHICLE can be used by a passenger with a particular USER NEED

3.31**Transport Mode – Transmodel**

characterisation of the operation according to the means of transport (e.g. bus, tram, metro, train, ferry, ship)

3.32**Traffic Element – Datex2**

type of Datex2 Situation Record (i.e. Situation Element) used to describe a road situation

3.33**Update Situation Element – SIRI-SX**

record of a change to a particular SITUATION, originally established by a BASE SITUATION ELEMENT

3.34**Unplanned Incident – SIRI-SX**

cause of a SITUATION that is not known about in advance

3.35**User Need – IFOPT**

ACCESSIBILITY requirement of a PASSENGER

EXAPMLE if the passenger is unable to navigate stairs, or lifts, or has visual or auditory impairments.

3.36**Validity Condition – Transmodel**

condition used in order to characterise a given VERSION of a VERSION FRAME

CEN/TS 15531-5:2011 (E)

NOTE A VALIDITY CONDITION consists of a parameter (e.g. date, triggering event, etc.) and its type of application (e.g. for, from, until, etc.).

3.37**Vehicle Journey – Transmodel**

planned movement of a public transport vehicle on a DAY TYPE from the start point to the end point of a JOURNEY PATTERN on a specified ROUTE

4 Symbols and abbreviations

The common symbols and abbreviations used in the SIRI document set are presented in CEN/TS 15531-1. In addition the following terms are used:

DATEX2 Data Exchange Version 2

EBU European Broadcasting Union

ICS Incident Capture System

QoS Quality of Service

TPEG-PTI Transport Protocol Experts Group Public Transport Information

SIRI-SX SIRI Situation Exchange

SIRI-FM SIRI Facilities Management

STANDARD PREVIEW
(standards.iteh.ai)

5 Situations as Software Entities**5.1 General**

SIST-TS CEN/TS 15531-5:2011

[https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-](https://standards.iteh.ai/catalog/standards/sist/a7d76d30-9227-4f59-bca7-32476904d61c/sist-ts-15531-5-2011)

In a travel information system, 'Situations' are data objects describing an incident, typically an unplanned event such as a disruption, but also planned events that affect public transport or its use, such as engineering works, or major public events that will affect use of transport. They will be captured and recorded on one system and then be transmitted to other systems to convey information about the current status to travellers and to transport operator staff. Those other systems will need to transform the data to suit different delivery channel requirements. At any time, further developments may occur that need to be represented by updates to the original Situation (or as further related Situations), and a distributed situation model must allow for the propagation and reconciliation of these changes across systems.

To support distributed processing of Situations a number of basic principles need to be followed:

- use of a rich structured Situation representation that can be emitted in standards compliant renderings such as the European Broadcasting Union (EBU) Transport Protocol Experts Group (TPEG) specification;
- assignment of a persistent Identity to Situations within a global namespace; so they may pass into and out of different systems and still be matched with previous instantiations;
- use of write-only updates suitable for store and forward processing in a distributed environment;
- use of a lifecycle model with well defined edit-version-release states;
- use of well defined data reference systems. SIRI-SX uses a conceptual model for the scope of the application domain – Public Transport Situations – based on open standards (CEN Transmodel), allowing the sharing of references with other Transmodel based systems and services.

We elaborate on these below.

5.2 Structured Situations

A Situation object needs to be both machine readable and human readable (see Figure 1). To be machine readable requires a set of structured elements with precise meaning as to the nature and scope of the Situation, in particular as to its temporal and network scope (indicated by a location model) and its categorisation that can be interpreted by agents such as station displays, journey planners and alert engines. To be human readable, the Situation must be renderable on different devices in different formats as a textual and graphic representation that a human can understand. The text may be generated automatically from the structured elements, be explicitly encoded, or both.

The Situation must also include identity and cross-referencing information that can be used to track its progress across different systems.

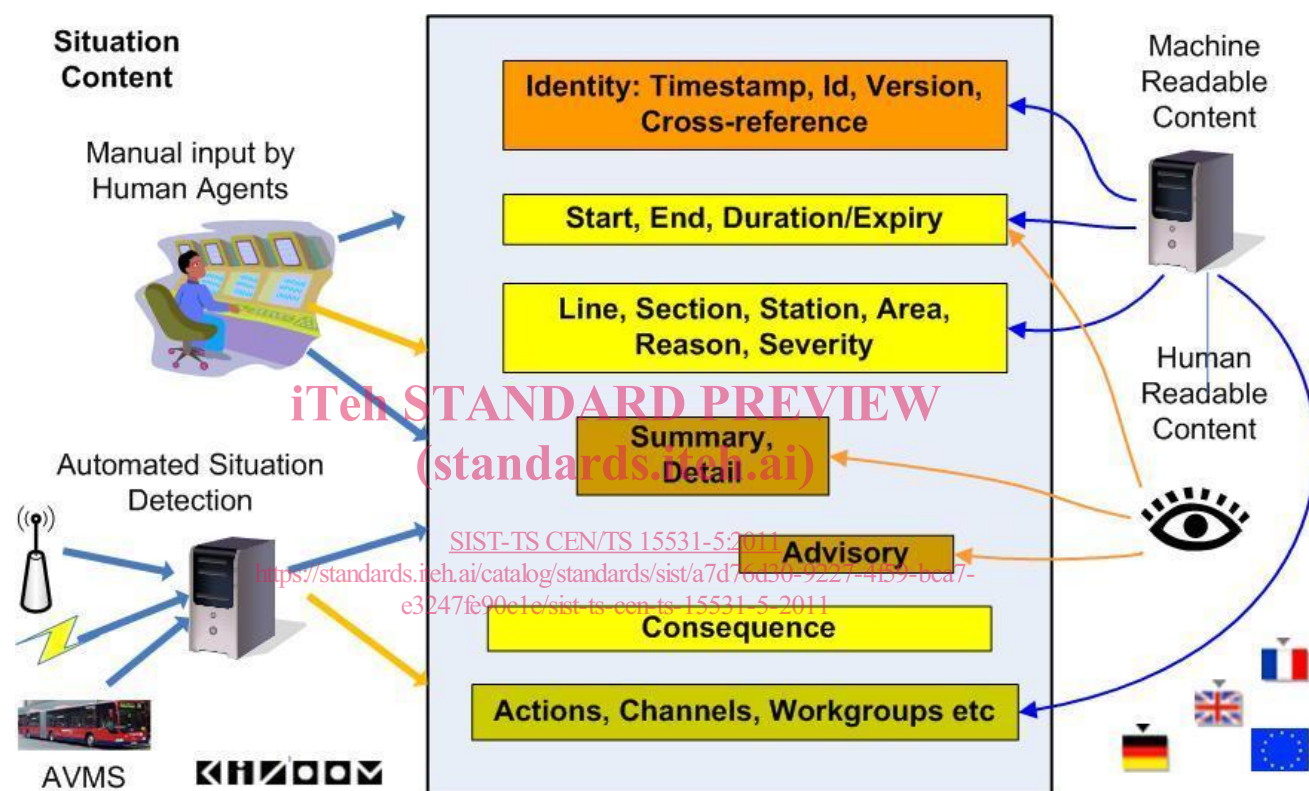


Figure 1 — Situation Structure elements

The actual structured Situation model needs to have components to describe its import, including:

- Identity: elements to identify and manage the situation and its components;
- Cross-reference: elements to relate the situation to other situations to which it is related;
- Audit: elements to identify the source of the situation;
- Situation body: elements – a set of structured details characterising the nature and processing of the situation, including its current status, scope of effect, classification, human readable description, consequence and suggested distribution.