



BSI Standards Publication

Service Interface for Real Time Information (SIRI)

Part 7: Passenger Real-Time Information European Profile

National foreword

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English Version

Service Interface for Real Time Information (SIRI) - Part 7: Passenger Real-Time Information European Profile

Serviceschnittstelle für Echtzeitinformationen (SIRI) -
Europäisches Profil für Echtzeitinformationen von
Reisenden

This Technical Specification (CEN/TS) was approved by CEN on 30 June 2025 for provisional application.

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European foreword

This document (CEN/TS 15531-7:2025) has been prepared by Technical Committee CEN/TC 278 “Road transport and traffic telematics”, the secretariat of which is held by NEN.

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This document presents a Real-time Passenger Information European Profile of the European Technical Specification known as SIRI. SIRI provides a framework for specifying communications and data exchange protocols for organizations wishing to exchange Real-time Information relating to public transport operations.

SIRI is presented in eight main parts:

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

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

- Facilities Monitoring (SIRI-FM) (CEN/TS 15531-4);
- Situation Exchange (SIRI-SX): 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. Messages are assigned validity periods in addition to the actual content (CEN/TS 15531-5).
- Control Actions (SIRI CA) to exchange the detailed description of the Control Actions as operated by AVMS (CEN/TS 15531-6).
- European Passenger Information Profile Real-Time – EPIP-RT (this document)

The XML schema can be downloaded from <https://github.com/SIRI-CEN/SIRI>, along with available guidance on its use, example XML files, and case studies of national and local deployments. The SIRI-FM service is included in version 1.3 of the schema onwards.

It is recognised that SIRI is not complete as it stands, and it is designed such that it can be extended over the coming years. Further work is directed by a SIRI Management Group which exists at European level, based on the composition of SG7.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN/CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

Public transport services rely increasingly 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, 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.

Profiles – a Rationale

Standards are by their nature and definition, consensus documents. In the case of the CEN and ISO standards, and more particularly in the field of traffic applications, these are established at an international level, with a significant number of different stakeholders involved in their development and discussion. This means that CEN and ISO standards take into account requirements that are far beyond many local implementations of such standards. Implementing a standard for a complex data model (such as that for transport) represents a significant investment, so care is taken to achieve a comprehensive and well abstracted solution and standards are written to have with the longest possible life and stability.

These factors tend to result in standards documents being large and detailed, consequently requiring significant effort to read and understand – and this is certainly the case for Transmodel and NeTEx. It may also be difficult to see how the standard can best be applied in practice, since there are many subtle choices to make out of all the possibilities and there is insufficient space to include extensive examples in the formal documentation.

Another cause of complexity is that standards such as NeTEx and SIRI (since they were developed to harmonise different national standards), include features and options whose purpose is to ensure compatibility with the different systems developed in specific countries. For example, SIRI includes services dedicated to the advanced management of connection guarantees, as implemented in the German VDV standard, but used only in a few countries such as Switzerland and Germany; NeTEx also includes features to help compatibility with practices peculiar to particular countries, such as are found in the French NEPTUNE, British TransXChange, Swedish NOPTIS, etc. standards.

In addition, local or national specificities may require the specific use of a specific data sets and specific identifier systems for particular information. For example, the UK has a national system for the identification of stops (NaPTAN), which is naturally required to be used within NeTEx and SIRI exchanges, but which is not relevant for other European countries except in a few cross-border services.

Finally, some elements proposed by the standards are optional and relevant only for a particular business context: so that it needs to be decided if these items are relevant for a particular implementation or not.

A profile is intended to address some of the above issues by offering a predefined set of choices for use in specific context, and setting out additional explicit rules that help to simplify implementation.

Additionally, a profile can be accompanied by the definition of specific testing procedures to assess the conformance of the implemented solution with the profile.

A profile remains fully compliant with the standard; it merely implements a subset, using a well-defined code system.

From a practical point of view, profiles can be seen as a set of implementation guidelines; instead of having to face the challenge of analysing the whole standard, discovering the relevant parts for a given application, and then adjusting optional values and parameters for the intended application, a profile can be specified to address the needs of a particular application and then used for any subsequent similar initiatives.

The European Real-Time Passenger Information Profile (EPIP-RT)

This profile focuses on information relevant for feeding passenger information services, it therefore excludes operational information that is not relevant for this purpose. It is designed to complement the NeTEx European Passenger Information Profile (EPIP - FprCEN/TS 16614-4) that focuses on scheduled information.

Typical use cases for the Real-Time Passenger Information Profile are:

- provision of real-time updates to a journey planner, i.e. to previously planned network and journey data.
- provision of data to real-time printing/visualisation tools.
- provision of data to a mapping tool to show the movements of vehicles on a map (possibly interactive).
- Ability to follow up arrival and departure times.

The profile has been designed to be as concise as possible and to focus on the data elements needed to fulfil the EC's *Priority action (b) of ITS-Directive*.

- This means that features specific to a particular country will in general not be included (the profile is designed to be sharable across Europe, and data sets compliant with it are expected to be usable by any SIRI conformant passenger information system in Europe).
- Each country may also define a further national SIRI Profile (for internal use nationally), extending the European profile and providing additional information.
- In the interests of simplicity, a number of the more complex features specific to certain modes have also been omitted from the formal profile, for example boarding position on train platforms.

Practical value

An European profile for exchanging uniform real-time data is valuable for:

- Legislative bodies and National Access Points (NAP) for public transport data
 - To efficiently collect all real-time data from each data provider, ensure consistency of data, and increase data quality
 - To facilitate multimodal information systems
 - To implementing national and international journey planning solutions
 - To publicize business neutral information to interested parties
- Public transport operators
 - To use available data in their own journey planning-, ticketing-, and information systems, offering improved service to their customers
- Travellers
 - To present relevant, and up-to-date, high-quality journey suggestions and ticketing
- Third party service providers
 - To minimizing costs related to supporting exchange formats, and to contribute to continued growth of standardized public transport data exchange

Data consistency and Quality

One of the goals of a profile is to simplify and enhance interoperability. However, mere syntactic compliance with the EPIP-RT profile alone will not guarantee interoperability; the data being exchanged must

also be of good quality -- that is, complete and self-consistent as data -- and correspond to the external reality it is meant to be describing.

The profile therefore also includes a set of consistency and quality checking rules. Following these rules will not, of course, necessarily guarantee the absolute quality of any dataset (nor will it validate the data against the real-world), but will prevent many of the basic quality issues that are commonly encountered. A number of rules may be controlled automatically-- for example, it is possible to check that a SERVICE JOURNEY has MONITORED CALLs for each stop, and that these are plausibly spaced -- but other quality measures cannot necessarily be checked. For example, the lack of a CALL name can be detected, as can the use of a duplicate, but not whether it is actually the correct one in use in the real-world.

SIRI versions

The EPIP-RT is specified for the revised version 2.1 of SIRI, issued in 2021. It may also be used with the previous versions of SIRI, issued from 2009, though certain elements are of course lacking.

If recourse to the SIRI specification is needed, it is strongly recommended that the 2.1 version is used as it contains numerous clarifications and corrections to the previous documents.

1 Scope

This document is a profile of EN resp. CEN/TS 15531 series. It focuses on information relevant to feed passenger information services fulfilling the expectation of the ITS Directive Delegated Regulation (EU-wide Multimodal Travel Information Services, Commission Delegated Regulation (EU) 2017/1926 MMTIS DR, amended by Regulation (EU) 2024/490).

SIRI is dedicated to the exchange of Real Time data, complementing NeTEx which is dedicated to the exchange of scheduled data. Both are based on Transmodel (EN 12986 series). SIRI supports information exchange of relevance to public transport services for passenger information and AVMS systems.

As for most data exchange standards, defining subsets of data and dedicated rules for some specific use case is of great help for implementers and for the overall interoperability. This subset is usually called profile and this profile targets passenger information as only use case.

This profile is also designed to complement the NeTEx EPIP profile with real time information, and is therefore named EPIP-RT: both profiles are well articulated and can be used seamlessly (at national level in NAPs -National Access Points- or at any local level where both scheduled and real time information are consistently provided).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 15531-1:2022, *Public transport - Service interface for real-time information relating to public transport operations - Part 1: Context and framework*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15531-1:2022 apply.

4 Symbols and abbreviations

For the purposes of this document, the symbols and abbreviations given in EN 15531-1:2022 apply.

5 Service Interface for Real Time Information (SIRI)

Service Interface for Real Time Information (SIRI) is a CEN-specification (CEN/TS 15531) for exchanging real-time data for public transport and vehicles. Its development was a cooperative effort between France, Germany (Verband Deutscher Verkehrsunternehmen, VDV), Scandinavia and Great Britain (UK Real Time Interest Group, RTIG). The standard is based on the reference model **Transmodel** (EN12896 series) and contains a general model for real-time data and an XML Schema for its implementation.

The SIRI format is used to update planned data with short term changes and deviations in the form of vehicle positions, estimated arrival times, and relevant textual messages.

The guidelines for using SIRI 2.1 XML Schema are specified by a local (European) profile of the SIRI format, which accounts for existing systems, as well as future needs. Like the NeTEx European Passenger Information Profile (EPIP), which defines the planned and fixed portion of public transport data, the European SIRI profile describes how- and which parts of the wider format to use. It is based on successive versions of Transmodel series developed over the last 30 years (the current one - V6.0 - under revision has been published in 2016 and 2019 for parts 1 to 9 and in 2022 for part 10). The purpose of the profile

is to clarify which events and data are expected to be included in a comprehensive data exchange and to make the implementation of common standards easier.

SIRI defines a standardized communication layer with procedures and mechanisms for exchanging data by means of a format which is openly described to the public and in wide use around the world.

- Well known interface
 - Openness
 - Scalability
 - Flexible for particular needs
- Re-useability for architecture, infrastructure and services (cost-saving)
 - Content independent from transfer protocols
 - Standardised publication and message handling
 - WebService (HTTP/SOAP with request/response) and WS-PubSub (WebSocket)
 - Facilitate subscription based (asynchronous) publication over message protocols
 - Supports common mechanisms for access control, versioning and error handling
 - Configurable updating and filtering

Links for more information about the formats

- SIRI: <https://siri-cen.eu/>
- Transmodel: <http://transmodel-cen.eu>
- NeTEx: <http://netex-cen.eu/>

5.1 SIRI high-level model

5.1.1 General

Overview of the functional services from the official SIRI-documentation:

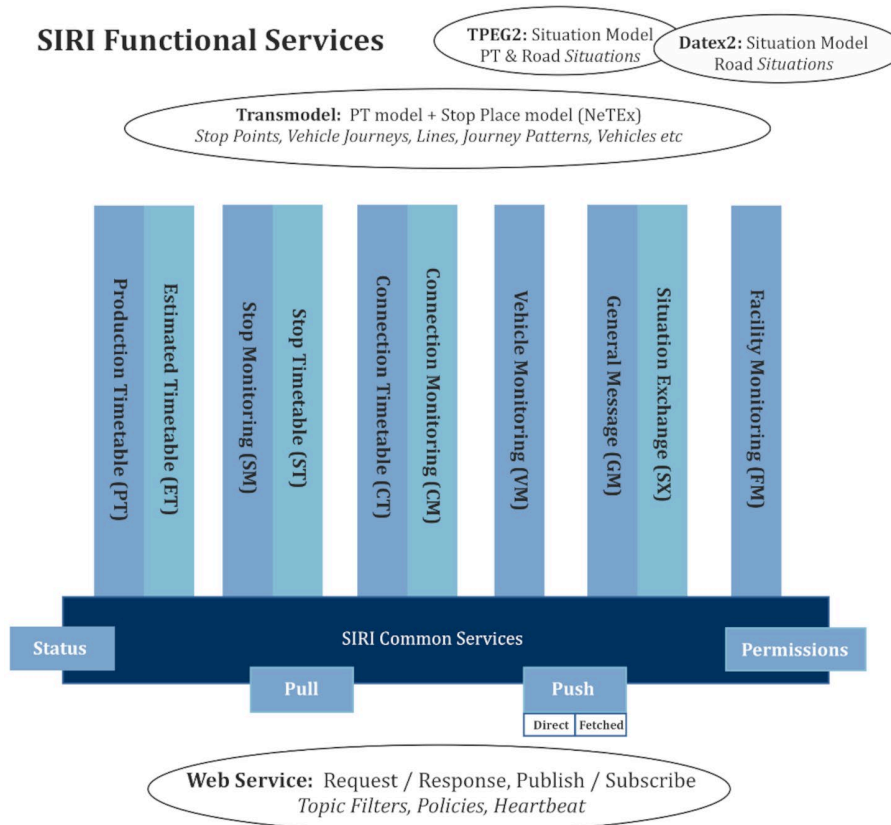


Figure 1 – SIRI Functional Services

5.1.2 Services supported by the European SIRI-standard

Real-time information in the EPIP-RT is exchanged in four formats, **SIRI-ET**, **SIRI-SX**, **SIRI-VM** and **SIRI-FM**:

- **Estimated Timetable (ET)** for continuous updates for VEHICLEJOURNEYS, that are ongoing or start in the near future
 - Changes like delays, cancellations, additional journeys, detours or stops that are not going to be served.
- **Situation Exchange (SX)** for information on disruptions or any irregularities in the public transport service
 - Information about planned deviations (such as maintenance work on the tracks)
 - Information about unplanned deviations (such as accidents, unforeseen issues with passengers, objects blocking the road, or severe weather)
- **Vehicle Monitoring (VM)** for tracking the position of the vehicles used for public transport
 - The actual position of vehicles as they traverse a route (GPS data).
- **Facility Monitoring (FM)** for updating the status of equipment, or services
 - Elevators, escalators, ticket vending machines.

SIRI also supports real-time information data types which are **not** included in the European profile, and should be specified on a local level if needed for regional data exchange:

- **Production Timetable (PT)** for changes in planned timetable data outside the current operational day.

- **Stop Timetable (ST)** changes (theoretic, planned, or calculated) in arrivals and departures for stops outside the current operational day.
- **Stop Monitoring (SM)** arrival- and transfer times for the same operational day.
 - Calculated arrival time for a vehicle, usually based on GPS data.
- **Connection Timetable (CT)** used to inform about guaranteed interchanges outside the current operational day.
- **Connection Monitoring (CM)** for continuous updates on guaranteed interchanges.
 - Whether the guarantee will be upheld.
 - Unplanned interchanges (for example, a bus will wait for a train).
- **General Messaging (GM)** for general text-based information, such as, for example, describing a disruption with a wide impact.

5.2 EPIP-RT : mandatory services

The profile describes a minimal level, that are met to fulfil the obligations under Delegated Regulation (EU) 2017/1926 MMTIS DR, amended by Regulation (EU) 2024/490. The meaning of "mandatory" has to be understood as the European Regulation defines it (it's only mandatory to provide available data, not to create unavailable data).

Table 1 - Concepts requested by the European Regulation

Level (see regulation)	Category	Details	SIRI Service
1	<i>Passing times, trip plans and auxiliary information</i>	Disruptions (all modes)	Situation Exchange
1	<i>Passing times, trip plans and auxiliary information</i>	Real-time status information — delays, cancellations, guaranteed connections monitoring (all modes)	Estimated Timetable Situation Exchange
1	<i>Passing times, trip plans and auxiliary information</i>	Status of access node features (including dynamic platform information, operational lifts/escalators, closed entrances and exit locations — all scheduled modes)	Situation Exchange Facility Monitoring
2	<i>Passing times, trip plans and auxiliary information (all modes)</i>	Estimated departure and arrival times of services	Estimated Timetable
2	<i>Information service</i>	Availability of publicly accessible charging stations for electric vehicles and refueling points for CNG/LNG, hydrogen, petrol and diesel powered vehicles	Facility Monitoring
2	<i>Availability check</i>	Car-sharing availability, bike sharing availability	Facility Monitoring
2	<i>Availability check</i>	Car parking spaces available (on and off-street), parking tariffs, road toll tariffs	Facility Monitoring

In perspective of technical data exchange, this means that SIRI-SX and SIRI-ET *must* be provided, whereas SIRI-VM and SIRI-FM is only mandatory *if such data is readily available*.

5.3 What the European SIRI profile includes

Based on relevant use cases as well as experience from existing real-time systems, the following features have been included:

- Identification of reference data (reference data themselves need to be exchanged previously, typically using NeTEx: SIRI refers to them and adds realtime information), mainly from planned public transport exchanged over NeTEx according to the European Passenger Information Profile (EPIP):
 - Lines, Routes, and VehicleJourneys with arrival- and departure information
 - StopPlaces, including type and Quays
 - Additional site and facility related information such as equipment
 - Connections and Transfers
 - Data values
 - ServiceCategory
 - ProductCategory
 - VehicleFeatures
- Specify technical data exchanges
 - Type of data stream/subscription
 - Categorisation of messages and data
 - Message receipts (when relevant)
 - Filtering mechanisms
 - Consolidation and forwarding of partner-data (including monitoring)
 - Meaning of functions
- Usage of data fields
 - Meanings
 - Whether the field is mandatory or not
- The ability to describe possible expansions outside the bounds of the main SIRI profile.

5.4 What the profile does not include

Technical specifications, local protocols, and their referential implementations are *not* included in the European SIRI profile. The same is true for access privileges, the technical details for data transfers, and the administration of data sources and users.

Details regarding the methods of data transfer should however be described in separate protocols, established and agreed upon between system managers, data providers and data users. This includes:

- User guides
- List of available services
- Access privileges
- Monitoring (uptime, technical disturbances, maintenance)

More info on utilisation of the European real-time data feeds, technical examples, real-time API documentation and a complete list of available data streams can be found at <https://data4pt-project.eu/knowledge-database/data4pt-wiki> and <https://www.siri-cen.eu> .

5.5 Terminology

Terms and concepts for real-time data in SIRI are, just as in the case of stops- and timetable data, defined according to the NeTEx format standard, based on the European reference model "Transmodel".

For a more detailed description of Transmodel-specific terms, see the European Passenger Information Profile (EPIP).

Exchanging data in a single format means all communication systems involved need to have a unified interpretation of the terms and concepts being used.

With Transmodel as the source for conceptual names, all objects will have English names, and any use of terminology in another language should be considered as guiding only since local concepts often have widely varying historical meanings and associations. For that reason, in particular, all users of the format should strive to use the unified terminology to the furthest extent possible.

It is likewise important to point out that all ID's for referred stop places data (StopPlace, Quay, etc.) as well as referred planned public transport data (Line, Route, Stop Point, Journey Pattern, Service Journey etc.) in the SIRI data must refer to pre-existing data objects in the National Access Point.

5.6 SIRI-specific objects and formats

Definitions of Transmodel-related objects can be found in the European Passenger Information Profile (EPIP). The following complementary table defines and clarifies SIRI-specific terms.

Table 2 - Data Types

Data	Description of data type
Character encoding	Primarily UTF-8 (English Universal Character Set Transformation Format - 8 bits, without Bit-Order-Mark [BOM]). Should be supplemented by an encoding tag in the header of the XML document: <code><?xml version="1.0" encoding="UTF-8"?></code>
Date/Time	Dates and times must be in local time, according to <i>ISO 8601</i>, where "00:00" is midnight. All timestamps must be stated in accordance with <i>ISO 8601</i> (e.g.: 2000-04-07T18:39:00+01:00) including offset from the UTC time zone. This to avoid problems with changeover between summer and winter time, and journeys spanning multiple time zones. It is recommended that the first 19 characters should correspond to local time. Please note that the minimum granularity of times is in seconds, but even more precise timestamps can be used.
Language	In agreement with the BCP 47 standard, the language is specified as a code from the IANA register.
Location	Locations should be defined according to WGS84/GML (normally EPSG:4326). It is recommended to always use the appropriate number of decimal places that correspond to the measurement accuracy. If the data will be used to localize stationary objects like stops or facilities on a map, we recommend a precision of 5 decimal places.

Data	Description of data type
StopPoint / Stop Place	In accordance with Transmodel, objects refer to a logical stop point, normally where passengers can board and alight. For practical reasons these points always have to be references to valid stops provided on the National Access Point in accordance with NeTEx.
Identify other data objects that have to be pre-defined in NeTEx.	NETWORK / GROUP OF LINES LINE JOURNEY PATTERN DAY TYPE AUTHORITY OPERATOR STOP PLACE QUAY TARIFF ZONE / FARE ZONE JOURNEY / DATED VEHICLE JOURNEY
Destination	Generally the final, or an important intermediary stop, in the journey pattern.
Origin	Generally the first stop in the journey pattern.

Please note that the list is not exhaustive, and it may be expanded when the need arises.

5.6.1 Pre-defined and reference data

Data objects referred within any real-time message exchange must be to pre-existing data (NeTEx or SIRI). Preferably to data maintained and available through NAP (National Access Point) exports or services, or to previously published real-time data, either published separately or in the same message file/bundle, within the same data flow.

Most commonly, static/physical data such as long-term planned (within days, weeks or even months) route, network and journey information is exchanged as NeTEx, whereas short-term and real-time updates to such timetable information (within days, hours or minutes) is exchanged as SIRI.

5.6.1.1 Stops, Network and Timetable data

All references to *network* and *timetable* related data must be correct and verifiable.

- Data for serviced stops, both “physical” (stop places and related objects) and within the serviced network (stop points), must exist and should not be marked as closed or out-of-service
- Referenced organizations must exist and be operational throughout the lifespan of the journey data
- Geographical references must be given in the correct format
- Other data serving as a basis for travel search, journey planning, product relation, offers, sales, ticketing, validation, consumption, control and additional uses of both planned and real-time passenger information data should preferably be referenced rather than regenerated (duplicated) for use with real-time passenger information.

5.7 General requirements on data

For real-time data delivered in XML, the structure and content shall syntactically be well-formed and valid in accordance with SIRS 2.1 XML Schema (XSD), where all data fields contain meaningful information and are correctly formatted.

- Values must be trimmed accordingly (no blanks first or last in data values)
- Characters must be valid and in accordance with the *encoding*.
- More generally, all XML (<https://www.w3.org/TR/REC-xml/>) and XSD (<https://www.w3.org/TR/xmlschema-1/>) rules must strictly be followed

5.8 Using codespace and ID's

5.8.1 General

The use of *codespaces* and *technical data element identifiers (ID's)* in real-time passenger information are described with more detail in the European Passenger Information Profile (EPIP).

Codespace is a unique letter code used to ensure the uniqueness of data (attributes and elements) across datasets. Each data provider must have its own codespace for the delivery of its own data, where the arbitrary identifier structure (ID) is contextualized by its codespace to ensure the given code structure is unique within its context.

It is strictly required that all ID's in the SIRS- and NeTEx datasets are kept stable and consistent across data for real-time, stops, timetables and fares/sales, in order to prevent mismatches and other irregularities, and to ensure identifiers are stable and globally unique.

5.8.2 Fixed IDs

5.8.2.1 General

Just as in the case of timetable data, it is strongly recommended that unchanged objects keep their ID unchanged across datasets. This makes long-term referencing and tracking of changes easier.

5.8.2.2 ID references

If a service is for example replaced by alternative transport through a real-time update, there should as a minimum be a clear reference to which existing service (planned and published journey data object) that has been replaced by this new journey (with a new journey ID). This is key to maintaining references to travel rights / sales / ticketing that exist on the original journey, as well as ensuring validation, consumption and control of access rights on the replacement. The same applies to other uses of, or references to, data such as customer services, settlement accounts, passenger counts and similar.

6 Common components

6.1 General

This clause describes the generic concept used for exchanging real-time information in accordance with the European SIRI profile.

6.2 Service description

6.2.1 Capabilities

A client needs to know which SIRI Functional Services and features a SIRI server supports, and at which version level, and many more aspects of the service that were discussed in the previous paragraphs.

For this purpose SIRI defines the Capability model, in order to document the exact specification of a particular implementation. This may be implemented as a Capability Discovery service, *but that is not mandatory*. However, a server should at least provide an exact description of its capabilities, version level and the configuration details as a static XML document identical to the payload of a **CapabilityDiscoveryResponse** message. In this message the service's actual capabilities are described in the **xxxServiceCapabilities** structure.

If the implementation exposes further capabilities than required by the European Profile, there should be either a Capability Service or a static XML example showing the actual implementation.

For each SIRI Functional service there is a separate **xxxServiceCapabilities** structure, because of the different nature of each service, but a number of capabilities are common to all services. In the European Profile at least the following aspects should be specified (the values reflect what is required by the Profile):

Table 3 - ServiceCapabilities

xxxServiceCapabilities			Capabilities for implementation of SIRI XXX service.
GeneralInteraction			General capabilities common to all SIRI Functional Service request types.
	Interaction		Interaction capabilities. <i>See next rows.</i>
	RequestResponse	<i>true</i>	Whether the service supports Request Response Interaction.
	PublishSubscribe	<i>true</i>	Whether the service supports Publish Subscribe Interaction.
	Delivery		Interaction capabilities. <i>See next rows.</i>
	DirectDelivery	<i>true</i>	Whether the service supports Direct delivery.
	FetchDelivery	<i>false</i>	Whether the service supports Fetched delivery.
	MultipleSubscriberFilter	<i>false</i>	Whether the service supports multiple Subscriber Filters.
	HasConfirmDelivery	<i>false</i>	Whether the service supports Delivery confirmation.
	HasHeartbeat	<i>true</i>	Whether the service has a heartbeat message.
	VisitNumberIsOrder	<i>false</i>	Whether VisitNumber can be used as a strict order number within JOURNEY PATTERN.

xxxServiceCapabilities		Capabilities for implementation of SIRI XXX service.
TransportDescription		Nature of Communications Transport protocol. <i>See next rows.</i>
	CommunicationsTransport-Method	<i>httpPost</i> Communications Transport method used to exchange messages. (<i>httpPost, other, wsdlSoap, wsdlSoapDocumentLiteral, httpUrlProtoBuffers, httpUrlJSON</i>).
	CompressionMethod	<i>gzip</i> Method of compression used to optimise transmission of messages (<i>none, gzip, other</i>).
xxxCapabilities		Service Specific Functional capabilities - <i>See the specification of the individual services.</i>

6.2.2 ServiceRequestContext

The SIRI standard describes another structure to document important properties of a given SIRI implementation, **ServiceRequestContext**. Examples are the delivery method, the default National Language, and any predetermined Namespaces (e.g. a National Stop Registry). Normally these items will be preconfigured (i.e. fixed for the implementation) and cannot be changed on individual requests. Check the SIRI Part2 documents for more information.

6.2.3 SubscriptionRequestContext

The **SubscriptionRequestContext** documents important properties of a given SIRI implementation with respect to the Publish-Subscribe mechanism. Normally these will be preconfigured (i.e. fixed for the implementation) and cannot be changed on individual subscription requests.

Table 4 - SubscriptionRequestContext

SubscriptionRequestContext		General values that apply to subscription. Usually set by configuration.
HeartbeatInterval	<i>t.b.d.</i>	Interval for heartbeat.

6.3 Message objects

6.3.1 ServiceRequest

Container for *SIRI Functional Service requests*.

The European SIRI profile supports:

- SituationExchangeDelivery (*SIRI-SX*)
- EstimatedTimetableDelivery (*SIRI-ET*)
- VehicleMonitoringDelivery (*SIRI-VM*)
- FacilityMonitoringDelivery (*SIRI-FM*)

Table 5 - ServiceRequest — Attributes

ServiceRequest			<i>+Structure</i>	Request from a Consumer to a Producer for immediate delivery of data. Answered with a ServiceDelivery . (For <i>Fetches Delivery</i> this will be after a further DataReadyRequest).
	ServiceRequestContext	0:1	+Structure	General request properties – typically configured rather than repeated on request.
<i>log</i>	RequestTimestamp	1:1	<i>xsd:dateTime</i>	Timestamp on request.
<i>End-point Properties</i>	Address	0:1	<i>EndpointAddress</i>	Address to which response is to be sent: [Notify] endpoint. If omitted, this may also be determined from RequestorRef and pre-configured data, or the http request.
	RequestorRef	1:1	<i>ParticipantCode</i>	Identifier of Requestor. May be used to identify an individual participant system or individual device client. If used for a device client should be an anonymous token, divulged with user consent.
	MessageIdentifier	0:1	<i>MessageQualifier</i>	Arbitrary identifier that may be given to message.
	<i>Concrete service subscription</i>			If more than one, must all be same type.
	<i>b</i> EstimatedTimetableRequest		<i>+Structure</i>	See SIRI Part 3 – Estimated Timetable.
	<i>f</i> VehicleMonitoringRequest		<i>+Structure</i>	See SIRI Part 3 – Vehicle Monitoring.
	<i>j</i> FacilityMonitoringRequest		<i>+Structure</i>	See SIRI Part 4 – Facility Monitoring.
	<i>k</i> SituationExchangeRequest		<i>+Structure</i>	See SIRI Part 5 – Situation Exchange.

6.3.2 ServiceDelivery

Container for *SIRI Functional Service delivery*.

The European SIRI profile supports:

- SituationExchangeDelivery (*SIRI-SX*)
- EstimatedTimetableDelivery (*SIRI-ET*)
- VehicleMonitoringDelivery (*SIRI-VM*)
- FacilityMonitoringDelivery (*SIRI-FM*)

Table 6 - ServiceDelivery

ServiceDelivery				
	Name	Type	Cardinality	Description
element	ResponseTimestamp	xsd:dateTime	1: 1	Time when the dataset was generated/published.
element	ProducerRef	xsd:NMTOKEN	1: 1	Codespace for dataset producer.
(choice) element	EstimatedTimetableDelivery	EstimatedTimetableDeliveryStructure	1: 1	Data element for Estimated Timetable (SIRI-ET), with changes in one or more planned <i>VehicleJourneys</i> within the same operating day.
	SituationExchangeDelivery	SituationExchangeDeliveryStructure		Data element for Situation Exchange (SIRI-SX), with information regarding one or more situations (or updates to previously published situations).
	VehicleMonitoringDelivery	VehicleMonitoringDeliveryStructure		Data element for Vehicle Monitoring (SIRI-VM), with monitoring information for one or more <i>VehicleJourney</i> and the respective vehicle positions.
	FacilityMonitoringDelivery	FacilityMonitoringDeliveryStructure		Data element for Facility Monitoring (SIRI-FM), with information regarding updates to the status of Facilities, Services or Equipment, e.g. elevators.

6.4 Data types

6.4.1 NaturalLanguageStringStructure

Text strings with an assigned language code.

Table 7 - NaturalLanguageStringStructure

NaturalLanguageStringStructure				
	Name	Type	Cardinality	Description
attribute	xml:lang	xsd:string	0: 1	IANA language code according to BCP 47.
element	(element content)	xsd:string (<i>non-empty</i>)	1: 1	The message text.

6.4.2 NaturalLanguagePlaceNameStructure

Text strings with an assigned language code.

Table 8 - NaturalLanguagePlaceNameStructure

NaturalLanguagePlaceNameStructure				
	Name	Type	Cardinality	Description
attribute	xml:lang	xsd:string	0: 1	IANA language code according to BCP 47.
element	(element content)	xsd:string (<i>non-empty</i>)	1: 1	The message text

6.4.3 FramedVehicleJourneyRefStructure

Reference objects for *DatedVehicleJourneyRef* with a specified *DataFrameRef* (date), in order to ensure that *VehicleJourney* objects with the same ID can be separated based on their dates.

Table 9 - FramedVehicleJourneyReferenceStructure

FramedVehicleJourneyRefStructure				
	Name	Type	Cardinality	Description
element	DataFrameRef	xsd:NMTOKEN	1: 1	Date must have the ISO 8601 format (YYYY-MM-DD) for the departure in question. Must be in local time.
element	DatedVehicleJourneyRef	xsd:NMTOKEN	1: 1	ID for the related <i>VehicleJourney</i> (must be the same as the ID of the corresponding <i>VehicleJourney</i> in the NeTEx dataset).

7 SIRI-SX

7.1 The Service Interface for Real Time Information - Situation Exchange

The SIRI Situation Exchange service (SIRI-SX) allows the efficient exchange of data about Situations caused by planned and unplanned incidents and events. Situations are actual or potential perturbations to normal operation of a transport network.

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 messages can be applied directly to stops, lines, vehicles etc. in the already existing public transport data by the use of ID references.

The structured values enable computer based distribution through a wide variety of channels, and the presentation of data in different formats for different device and different audiences. The SIRI-SX situation classification model has been harmonized as far as possible with that of TPEG and DATEX2. Use of structured elements from TPEG, for which translations already exist in most European languages, also facilitates human readability in different national languages.

7.2 Data requirements

7.2.1 General

Sending of a SIRI-SX *ServiceDelivery* data must be in accordance with this profile.

It is permitted for client systems to send more than one *Situation (PtSituationElement)* per *SituationExchangeDelivery*, in order for real-time information to be conflated and be transferred as part of the same *ServiceDelivery*.

Note that the profile does not present an exhaustive list of all real-time information technically possible to transfer with SIRI-SX, but it lays the foundation for a common European exchange of SIRI-SX data while being fully compliant to the requirements of the standard and the implementation of its XML Schema.

The examples associated with this profile are meant to show practical implementations of specific use cases, and may contain supplementary optional data fields, or lack mandatory data fields, compared to a full and complete dataset. See the following components for a closer descriptions of the data types, specifications and requirements on the unique elements of the SIRI-SX data.

7.2.2 Textual versus structured situation information

A situation exchange message is recommended to have as a minimum a textual description provided in Summary on PtSituationElement-level and/or contain TextualContent within a PublishingAction, or more precisely PassengerInformationAction. The use of structured enumerations for AlertCause, Affects, Priority, Planned, Progress is also *highly recommended* for supplementing such description, as structuring the *situation exchange* message will enhance its contextualization and facilitate categorization of the data for use in e.g. public information systems and journey planning.

7.3 Components

7.3.1 SituationExchangeRequest

Request for information about SITUATIONS.

In order to simplify the implementation on the provider side, the OperatorRef filter parameter alone should suffice in most subscription scenarios. This way the provider can decide how to manage his notifications (typically publishing the same content to all subscribers at the same time).

NOTE The available filter list can be limited by the provider, and it is not mandatory for all implementations to support all filters (they are non-mandatory elements). However, it is up to the provider to decide the extent of the delivery regardless of any requested Topic and the provider needs to clearly state which filters are supported (in an ad-hoc document). This is true for all services in this document.

Table 10 - SituationExchangeRequest

SituationExchangeRequest				
<i>Attributes</i>	version	0:1	VersionString	Version Identifier of Situation Exchange Service, e.g. '1.0c'.
<i>Timestamp</i>	RequestTimestamp	1:1	xsd:dateTime	See SIRI Part 2 Common properties of SIRI Functional Service Requests.
<i>ContextualisedRequestEndpointGroup</i>	MessageIdentifier	0:1	MessageQualifier	
<i>TemporalSubscriptionGroup</i>	PreviewInterval	0:1	PositiveDuration- Type	Forward duration for which SITUATIONS should be included, that is, only SITUATIONS that start before the end of this window time will be included. Normally used for subscriptions to keep a sliding window of interest.
	StartTime	0:1	xsd:dateTime	Initial start time for PreviewInterval . If absent, then current time is assumed. Shall be within data Horizon. of system Only SITUATIONS or updates created after this time will be sent. This enables a restart without resending everything.
<i>Temporal-Content-Filter-Group</i>	ValidityPeriod	0:1	+structure	Temporal range for incidents to be included all current incidents will be included (Siri 2.0++). .
	StartTime	1:1	xsd:dateTime	Start time for incidents. Incidents with a start time after this time will be included.
	EndTime	0:1	xsd:dateTime	End time for incidents. Incidents with an end time before this time, or no end time this time will be included
	EndTimePrecision	0:1	EndTimePrecisionEnumeration	Precision with which to interpret the inclusive end time. Default is to the second. See Table D.22.
<i>AffectedMode-Group</i>			Group	
	VehicleMode	0:1	VehicleMode- sOfTransportEnu- meration	Vehicle mode. See Table D.2.
	Severity	0:1	SeverityEnumera- tion	Severity filter value to apply: only SITUATIONS with a severity greater than or equal to the specified value will be returned. Default is all. See Table D.19.
	Keywords	0:1	xsd:NMTOKENS	Any arbitrary filter keywords to use. Only incidents containing these words in their texts all be returned.

SituationExchangeRequest				
Situation-Classifier-Filter-Group	SituationNetworkFilter-Group	0:1	Group	Filter the results to include only SITUATIONs relating to the NETWORK filter elements.
	Situation-PlaceFilter-Group	0:1	Group	Filter the results to include only SITUATIONs relating to the given Place filter elements. <i>Remark: Element NOT to be used for subscription</i>
Request Policy	Language	0:1	xsd:language	Preferred language in which to return text values. Optional SIRI capability: <i>NationalLanguage</i> . Default: <i>en</i> .
	Include-Translations	0:1	xsd:boolean	Whether additional translations of text names are to be included in elements. If false, then only one element should be returned. Default is false. Where multiple values are returned The first element returned will be used as the default value.
	MaximumNumberOfSituationElements	0:1	xsd:positiveInteger	The maximum number of SituationElements to includes in a given delivery. The n most recent Events within the look ahead window are included.

Table 11 - SituationNetworkFilterGroup

SituationNetworkFilterGroup				
OperatorRef		0:1	OperatorCode (xsd:NMTOKEN)	Filter the results to include only SITUATIONs relating to the Operator. <i>Remark: Element NOT to be used for subscription</i>
NetworkRef		0:1	NetworkCode	Filter the results to include only SITUATIONs relating to the NETWORK.
		0:*	choice	Filter the results to include only SITUATIONs along the given LINES.
a	LineRef	0:*	LineCode (xsd:NMTOKEN)	Filter the results to include only results for the given LINE. If no <i>LineRef</i> is specified as a subscription filter, this implicitly implies transmission of data for all LINES in the AVMS. <i>Remark: Element NOT to be used for subscription</i>
b	Lines	0:1	+Structure	
	LineDirection	1:*	LineDirection	Filter the results to include only SITUATIONs along the given LINE directions. LineDirection Element <i>Remark: Element NOT to be used for subscription</i>
StopPointRef		0:*	StopPointCode (xsd:NMTOKEN)	Filter the results to include only SITUATIONs relating to the STOP POINTs. <i>Remark: Element NOT to be used for subscription</i>

FacilityRef	0:*	FacilityCode	Filter the results to include only SITUATIONs relating to the specific facilities. <i>Remark: Element NOT to be used for subscription</i>
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Table 12 - SituationStopPlaceFilterGroup

<i>SituationStopPlaceFilterGroup</i>			
Stop-PlaceRef	0:1	StopPlaceCode (xsd:NMTOKEN)	Filter the results to include only SITUATIONs relating to the StopPlace.

7.3.2 SituationExchangeDelivery

A data type for the representation of one or more situations, or updates on previously published situations through *Situations (PtSituationElement)* per *SituationExchangeDelivery* with the status and scope of the affected services.

Table 13 - SituationExchangeDelivery

SituationExchangeDelivery				
	Name	Type	Cardinality	Description
attribute	version	xsd:NMTOKEN	1:1	Version ID for SituationExchangeDelivery
element	ResponseTimestamp	xsd:dateTime	1:1	Timestamp for when the dataset was created/published.
element	SubscriptionRef	xsd:NMTOKEN	1:1	Depending on the providers capabilities, may be a shared Identifier supplied by the provider or an identifier from a SubscriptionRequest supplied by the requestor.
element	Situations	PtSituationElement	1:*	Data object for a Public Transport Situation Exchange.

7.3.3 PtSituationElement

A container element for situation data.

Table 14 - PtSituationElement

PtSituationElement				
	Name	Type	Cardinality	Description

PtSituationElement				
element	CreationTime	xsd:dateTime	1:1	Timestamp for when the SITUATION was created.
element	CountryRef	ifopt:CountryRefStructure	1:1	Reference to a Country of a Participant who published SITUATION.
element	ParticipantRef	ParticipantCode	1: 1	Codespace of the data source.
element	SituationNumber	xsd:anyURI	1: 1	Unique situation-ID for <i>PtSituationElement</i> .
element	UpdateCountryRef	ifopt:CountryRefStructure	0:1	Country code of Participant that creates Update if different from CountryRef.
element	UpdateParticipantRef	ParticipantCode	0: 1	Identifier of participant system that creates Update if different from ParticipantRef. See Part 2.
element	Version	xsd:positiveInteger	1:1	Version of Update SITUATION element
element	Source	SituationSourceStructure	1: 1	Information on the source of the message.
element	VersionedAtTime	xsd:dateTime	0: 1	Timestamp when the situation element was updated.
element	Progress	WorkflowStatusEnumeration	1: 1	Status of a situation message. <i>See Table D.23.</i> <i>Please note that when Progress is set to 'closed' the message is considered expired and should not be presented to the public.</i>
element	ValidityPeriod	HalfOpen-TimestampRangeStructure	1: *	Validity period(s) set with a start and end time. If the end time of the situation is unknown by the time of the (initial) message, the producer should provide an estimate in the future to give passengers an idea of the magnitude, e.g. an hour, a whole day, several days or a week respectively.

PtSituationElement				
element	Publication-Window	HalfOpen-TimestampRangeStructure	0: *	Publication Window for SITUATION if it is different from validity period. Period during which audience is informed of SITUATION. May start before or after SITUATION, i.e. may start earlier and last longer than ValidityPeriod. Once EndTime has expired, the situation should no longer be published to end consumers. An end time is always required and hence EndTimeStatus not supported. PublicationWindows defined in PublishingActions or other subordinate structures override the top-level one.
element	AlertCause	AlertCauseEnumeration	1: 1	Nature of SITUATION. <i>See Table D.29.</i>
element	PublicEventReason	PublicEventTypeEnum	0: 1	Further information on the nature of SITUATION. <i>See Table D.30.</i>
element	ReasonName	NaturalLanguage-StringStructure	0: *	Textual explanation of SITUATION reason. Not normally needed. Can be used to generate standardized text when no structured Reason or PublicEventReason is provided. (if more than one, the <i>xml:lang</i> attribute must be set)
element	Severity	SeverityEnumeration	0: 1	How severely the situation affects public transport services. Default is normal. <i>See Table D.19.</i>

PtSituationElement				
element	Priority	xsd:nonNegativeInteger	1: 1	Number value indicating the priority (urgency) of the situation message. For example used in case a consuming system has limited space to display SITUATIONS. 1 - First (i.e. highest) message priority. <i>Equivalent to DATEX2 urgency level "extremelyUrgent"</i> 2 - 10 - Urgent, of various priority. <i>Equivalent to DATEX2 urgency level "urgent" with added priority order.</i> One way to distinguish further (more levels are generally not recommended): 2 - Urgent, 3 - Normal 4 - Not important (general information).
element	ReportType	ReportTypeEnumeration	0: 1	Type of situation report. <i>See Table D.20</i>
element	Planned	xsd:boolean	0: 1	Whether the situation in question is due to planned events, or an unexpected incident. Default is false, i.e. unplanned.
element	Summary	DefaultedTextStructure	0: *	The textual summary of the situation. One summary per language (if more than one, the <i>xml:lang</i> attribute must be set). Recommended to be less than 160 characters to ensure readability for all types of devices and distribution (use PublishingActions for full details) . Can be 0 when Progress = "closed".
element	Description	DefaultedTextStructure	0: *	Expanded textual description (if more than one, the <i>xml:lang</i> attribute must be set) of the situation (do not repeat information from Summary). Please do not add advice on how to avoid the situation, as this should be presented in the Advice field.
element	Advice	DefaultedTextStructure	0: *	Textual advice (if more than one, the <i>xml:lang</i> attribute must be set) on how a passenger should react/respond to the situation.

PtSituationElement				
element	InfoLinks	InfoLinks	0: 1	Link to a website which has further information on the situation.
element	Affects	AffectsScopeStructure	0: 1	A description of what the situation affects.
element	Consequence	PtConsequencesStructure	0: 1	One or more consequences of the SITUATION.
element	PublishingAction	ActionStructure	0:1	The PublishingActions element groups information about the actions which should be undertaken by a receiving system to publish the information about the SITUATION, e.g. detailed texts in multiple variants to display per output channel.

7.3.4 SituationSourceStructure

Information on the source of the message.

Table 15 - SituationSourceStructure

SituationSourceStructure				
	Name	Type	Cardinality	Description
element	SourceType	SituationSourceTypeEnumeration	1: 1	Information type. <i>See Table D.24</i> <i>Required by the format specification, but not used.</i>
element	SourceMethod	D2LogicalModel:Source-TypeEnum	0:1	Nature of method used to get Source.
element	Name	NaturalLanguageStringStructure	0:1	Name of source.

7.3.5 HalfOpenTimestampRangeStructure

Period can be open- or closed-ended (recommended).

Table 16 - HalfOpenTimestampRangeStructure

HalfOpenTimestampRangeStructure				
	Name	Type	Cardinality	Description
element	StartTime	xsd:dateTime	1: 1	Start time for the period.
element	EndTime	xsd:dateTime	0: 1	End time for the period.

7.3.6 InfoLinks

Collection of information links

Table 17 - InfoLinks

InfoLinks				
	Name	Type	Cardinality	Description
element	InfoLink	InfoLink	1: 1	Link to a website which has further information on the situation.

7.3.7 InfoLink

Link to a website which has further information on the situation.

Table 18 - InfoLinks

InfoLink				
	Name	Type	Cardinality	Description
element	Uri	xsd:anyURI	1: 1	Link to a website which has further information on the situation.
element	Label	NaturalLanguageStringStructure	0: *	Label for the link.

7.3.8 PtConsequencesStructure

Collection of consequences.

Table 19 - PtConsequencesStructure

PtConsequencesStructure				
	Name	Type	Cardinality	Description
element	Consequence	PtConsequenceStructure	1: *	Consequence of the SITUATION.

7.3.9 Consequence

A specific consequence for a SITUATION. The object aggregates several structured content elements, specifically the **Condition** and the **Advice** (both the enumerated value and the textual representation).

Table 20 - Consequence

Consequence				
	Name	Type	Cardinality	Description
element	Period	HalfOpenTimestamp-OutputRangeStructure	0:1	Period of effect of disruption, if different from that of SITUATION.
element	Condition	ServiceConditionEnumeration	0: *	Structured classification of effect on service, from which a standardised message can be generated. <i>See Table D.26.</i> It is allowed to specify more than one Condition.
element	ConditionName	NaturalLanguageStringStructure	0: *	Textual classification of effect on service, from which a standardized message can be generated. Not normally needed, except when Condition is absent. (If more than one, the <i>xml:lang</i> attribute must be set)
element	Severity	SeverityEnumeration	0:1	Severity of disruption if different from that of SITUATION. Corresponds to TPEG pti26.
element	Affects	AffectsScopeStructure	0:1	Parts of transport network affected by disruption if different from that of SITUATION. See 7.3.12.
element	Advice	PtAdviceStructure	0: 1	Advice to passengers.

Consequence				
element	Blocking	BlockingStructure	0:1	How Disruption should be handled in Info systems. Only intended for very special cases. For example to inform stationary monitors at a stop place that no real-time departures should be displayed. If a disruption is so massive that real-time data can no longer be generated reliably, a "full screen" warning would be displayed on departure monitors instead.
element	Delays	DelaysStructure	0:1	Predicted delays.
element	Extensions	ExtensionStructure	0:1	Placeholder for user extensions.

7.3.10 PtAdviceStructure

Advice to passengers.

Table 21 - PtAdviceStructure

PtAdviceStructure				
	Name	Type	Cardinality	Description
element	AdviceRef	AdviceCodeType (= xsd:NMTOKEN)	1: *	Reference to a standard advisory NOTICE to be given to passengers if a particular condition arises.
element	AdviceType	AdviceTypeEnumeration	0: 1	Structured classification of advice for passengers in the given SITUATION, from which a standardized message can be generated. <i>See Table D.25.</i>
element	AdviceName	NaturalLanguageStringStructure	0: *	Textual classification of advice, from which a standardized message can be generated. Not normally needed, except when AdviceType is absent. (if more than one, the <i>xml:lang</i> attribute must be set)

7.3.11 DelaysStructure

Structured classification of the predicted delays, from which a standardized message can be generated.

Table 22 - DelayStructure

DelaysStructure				
	Name	Type	Cardinality	Description
element	DelayBand	DelayBandEnumeration	0: 1	Name of predefined Time band into which delay will fall. <i>See Table D.27.</i>
element	DelayType	DelaysTypeEnum	0: 1	Nature of delay. <i>See Table D.28.</i>
element	Delay	PositiveDuration	0: 1	Additional journey time needed to overcome disruption.

7.3.12 AffectsScopeStructure

Data objects for a closer description of required element affected by the situation.

AffectsScopeStructure can be used on three levels in an SX message:

- PtSituationElement / Affects
- PtSituationElement / Consequences / Consequence / Affects
- PtSituationElement / PublishingActions / PublishingAction / PublishAtScope / Affects

On PtSituationElement-level, Affects describes the part of the network where the disruption originates from. It is neither used to describe the impact on the public transport network nor to describe the information spaces of the passenger information to be generated out of the SX message. An example of a typical top-level affects is a stop place that is “affected” by roadworks or the malfunctioning of a specific vehicle that results in the closure of a route or line.

On Consequence-level, if it exists, Affects describes to which parts of the network the disruption has propagated and to what extent they are impacted. If the top-level Affects describes a disrupted facility like an elevator, the Consequence/Affects would in turn describe the platform/quay which – as a consequence – is no longer accessible for passengers in wheelchairs.

On PublishingAction-level, Affects is used to describe information spaces by means of public transport objects. Each information space defines where a certain information shall be published. We might want to inform passengers waiting at stop place X differently compared to passengers sitting in a vehicle of line Y or compared to customers searching for an affected trip in a journey planning app two days in advance.

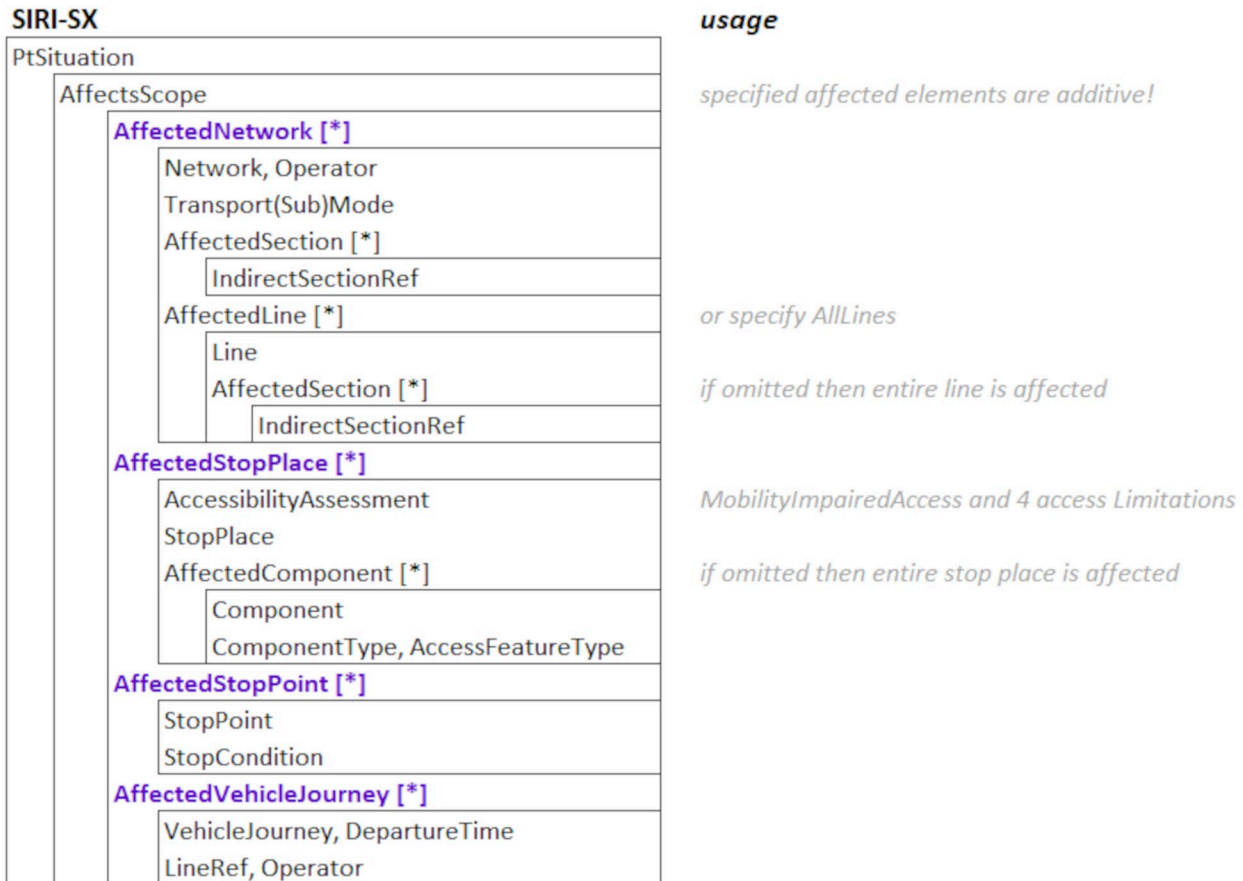


Figure 2 - SIRI-SX PtSituation - Affected Enumerations

Table 23 - AffectsScopeStructure

AffectsScopeStructure				
	Name	Type	Cardinality	Description
element	Operators	Operators	0:1	Operators affected by the SITUATION.
element	Networks	Networks	0: 1	Networks with operators and lines affected by the SITUATION.
element	StopPlaces	StopPlaces	0: 1	Stops affected by the SITUATION.
element	StopPoints	StopPoints	0: 1	Stops affected by the SITUATION, with the possibility of specifying criteria of situation relevance.
element	VehicleJourneys	VehicleJourneys	0: 1	Vehicle Journeys affected by the SITUATION.

7.3.13 Networks

Collection of affected networks.

Table 24 - Networks

Networks				
	Name	Type	Cardinality	Description
element	AffectedNetwork	AffectedNetworkStructure	1: *	Network with operators and lines affected by the SITUATION.

7.3.14 StopPlaces

Collection of affected stop places.

Table 25 - StopPlaces

StopPlaces				
	Name	Type	Cardinality	Description
element	AffectedStopPlace	AffectedStopPlaceStructure	1: *	STOP PLACE affected by the SITUATION.

7.3.15 StopPoints

Collection of affected stop points.

Table 26 - StopPoints

StopPoints				
	Name	Type	Cardinality	Description
element	AffectedStopPoint	AffectedStopPointStructure	1: *	STOP POINT affected by the SITUATION, with the possibility of specifying criteria of SITUATION relevance.

7.3.16 VehicleJourneys

Collection of affected vehicle journeys.

Table 27 - VehicleJourneys

VehicleJourneys				
	Name	Type	Cardinality	Description
element	AffectedVehicleJourney	AffectedVehicleJourneyStructure	1: *	Vehicle Journey affected by the SITUATION.

7.3.17 AffectedNetworkStructure

References to an affected Network element(s).

Please note that VehicleMode and Submode are the same as in European NeTEx Passenger Information Profile, TransportModes

Table 28 - AffectedNetworkStructure

AffectedNetworkStructure				
	Name	Type	Cardinality	Description
element	VehicleMode	VehicleMode- sOfTransportEnumeration	0: 1	Affected modality. <i>See Table D.2</i> <i>Modes must be specified together with corresponding submode (when applicable), whenever the situation does not affect all modalities in the affected planned data.</i>
(choice) element	AffectedLine	AffectedLineStructure	1: *	Reference(s) to affected line(s) or section(s). Must be stated explicitly <i>AffectedLine(s)</i> , <i>AffectedSection(s)</i> or <i>AllLines</i> due to technical demands on the element in the SIRI standard.
	AffectedSection	AffectedSectionStructure	1: *	

7.3.18 AffectedOperatorStructure

Reference to an affected Operator.

Table 29 - AffectedOperatorStructure

AffectedOperatorStructure				
	Name	Type	Cardinality	Description
element	OperatorRef	xsd:NMTOKEN	1: 1	Reference to an affected operator.

7.3.19 AffectedLineStructure

Information about an affected Line.

Table 30 - AffectedLineStructure

AffectedLineStructure				
	Name	Type	Cardinality	Description
element	LineRef	xsd:NMTOKEN	1: 1	Reference to <i>Line</i> in question (<i>ID to the corresponding object in the timetable data</i>).
element	PublishedLineName	NaturalLanguageStringStructure	0: 1	Number or name by which the LINE is known to the public (e.g. T13).
element	Origins	AffectedStopPointStructure	0: *	Restrict the affected scope to lines running from a specific origin.
element	Destinations	AffectedStopPointStructure	0: *	Restrict the affected scope to lines running to a specific destination.
element	Direction	DirectionStructure	0: *	Restrict the affected scope to a specific direction(s).
element	Sections	Sections	0: 1	Reference to <i>Section(s)</i> in question, when the situation does not apply to the entire Line.
element	StopPoints	StopPoints	0: 1	Reference to STOP POINT(s) in question, when the SITUATION does not apply to the entire LINE
element	StopPlaces	StopPlaces	0: 1	Reference to STOP PLACE(s) in question, when the SITUATION does not apply to the entire LINE

7.3.20 Sections

Wrapper object to describe information about a section affected by the situation.

Table 31 - Sections

Sections				
	Name	Type	Cardinality	Description
element	AffectedSection	AffectedSectionStructure	1: *	Reference to <i>Section(s)</i> in question.

7.3.21 AffectedSectionStructure

Information about an affected section.

AffectedSection describes how only some COMMON SECTIONs are affected. This can be done by the use of IndirectSectionRef.

Note that only the **indirect** reference to the SECTION is used in the Profile, i.e. by specifying the first and the last point (SCHEDULED STOP POINT or STOP PLACE or QUAY) and optionally some intermediate points.

Table 32 - AffectedSectionStructure

AffectedSectionStructure				
	Name	Type	Cardinality	Description
element	IndirectSectionRef	(see next rows)	1: 1	Indirect reference to <i>Section</i> in question.
(choice) element	FirstStopPointRef	xsd:NMTOKEN	1: 1	Used to indicate the SCHEDULED STOP POINT at the start of the SECTION.
	FirstStopPlaceRef	xsd:NMTOKEN		Used to indicate that any SCHEDULED STOP POINT with a stop assignment to the indicated STOP PLACE is to be considered as start of the SECTION.
	FirstQuayRef	xsd:NMTOKEN		Used to indicate that any SCHEDULED STOP POINT with a stop assignment to the indicated QUAY is to be considered as start of the SECTION.
(choice) element	IntermediateStopPointRef	xsd:NMTOKEN	0: 1	Intermediate SCHEDULED STOP POINT that must be part of the SECTION.
	IntermediateStopPlaceRef	xsd:NMTOKEN		Used to indicate that at least one SCHEDULED STOP POINT with a stop assignment to the indicated STOP PLACE must be part of the SECTION.

AffectedSectionStructure				
	Name	Type	Cardinality	Description
	IntermediateQuayRef	xsd:NMTOKEN		Used to indicate that at least one SCHEDULED STOP POINT with a stop assignment to the indicated QUAY must be part of the SECTION.
(choice) element	LastStopPointRef	xsd:NMTOKEN	1: 1	Used to indicate the SCHEDULED STOP POINT at the end of the SECTION.
	LastStopPlaceRef	xsd:NMTOKEN		Used to indicate that any SCHEDULED STOP POINT with a stop assignment to the indicated STOP PLACE is to be considered as end of the SECTION.
	LastQuayRef	xsd:NMTOKEN		Used to indicate that any SCHEDULED STOP POINT with a stop assignment to the indicated QUAY is to be considered as end of the SECTION.

7.3.22 Calls

Wrapper object to describe information about calls affected by the situation.

Table 33 - Calls

StopPoints				
	Name	Type	Cardinality	Description
element	Call	AffectedCallStructure	1: *	Reference to <i>Calls(s)</i> in question.

7.3.23 StopPoints

Wrapper object to describe information about a stop points affected by the situation.

Table 34 - StopPoints

StopPoints				
	Name	Type	Cardinality	Description
element	AffectedStopPoint	AffectedStopPointStructure	1: *	Reference to <i>StopPoint(s)</i> in question.

7.3.24 AffectedStopPointStructure

Reference(s) to affected stop(s).

NOTE Please consider using AffectedSection mechanism instead.

Table 35 - AffectedStopPointStructure

AffectedStopPointStructure				
	Name	Type	Cardinality	Description
element	StopPointRef	xsd:NMTOKEN	1: 1	Reference to the STOP POINT in question (<i>ID corresponding to objects in the National Access Point</i>). <i>If the quay is currently unknown, or the message applies to all quays, a reference to the StopPlace may be used instead. However, in such a case it is recommended to use Affected-StopPlace with StopPlaceRef instead.</i>
element	StopPointName	NaturalLanguageStringStructure	0: 1	Name of STOP POINT (<i>Not used, but may be set to increase human readability.</i>)
element	Location	LocationStructure	0: 1	Coordinates of STOP POINT.
element	StopPlaceRef	xsd:NMTOKEN	0: 1	Reference to the corresponding StopPlace in question (<i>ID corresponding to objects in the National Access Point</i>). <i>Should be set if StopPointRef cannot be set.</i>
element	StopPlaceName	NaturalLanguageStringStructure	0: 1	Name of STOP PLACE (<i>Not used, but may be set to increase human readability.</i>)

AffectedStopPointStructure				
	Name	Type	Cardinality	Description
element	StopCondition	RoutePointTypeEnumeration	0: *	Specifies which passengers the message applies to, for example, people who are disembarking at an affected stop. <i>See Table D.18</i> If this field is left blank or omitted the message will be interpreted as affecting boarding and alighting. NOTE Route is not a relevant concept here, please consider using AffectedSection mechanism instead.

7.3.25 AffectedStopPlaceStructure

References to affected stops.

Table 36 - AffectedStopPlaceStructure

AffectedStopPlaceStructure				
	Name	Type	Cardinality	Description
element	AccessibilityAssessment	AccessibilityAssessmentStructure	0: 1	Specifies whether the object is still available for users with special needs.
element	StopPlaceRef	xsd:NMTOKEN	1: 1	Reference to StopPlace or specific Quay (<i>ID corresponding to objects in the National Access Point</i>).
element	PlaceName	NaturalLanguageStringStructure	0: 1	Name of the stop (not used due to the reference to the National Access Point, but <i>can</i> be included to make the XML easier to read).
element	AffectedFacilities	AffectedFacilities	0: 1	Facilities of the stop place that are affected.
element	AffectedComponents	AffectedComponents	0: 1	Reference(s) to which part(s) of the stop(s) are being affected.

7.3.26 AffectedFacilityStructure

References to affected facilities.

Table 37 - AffectedFacilityStructure

AffectedStopPlaceStructure				
	Name	Type	Cardinality	Description
element	FacilityRef	xsd:NMTOKEN	0: 1	Reference to a Facility, e.g. its public OpenStreetMap ID or internal facility number that can be resolved by the consuming systems.
element	FacilityName	NaturalLanguageStringStructure	0: 1	Facility name passengers can understand. For example, human readable name of an elevator that enables passengers to locate the elevator within the stop place and determine whether their journey is affected by non-availability.
element	FacilityStatus	NaturalLanguageStringStructure	0: 1	Status of facility, e.g. 'notAvailable'.

7.3.27 AccessibilityAssessment

Description of (changed) availability as a result of the situation.

Table 38 - AccessibilityAssessment

AccessibilityAssessment				
	Name	Type	Cardinality	Description
element	acsb:MobilityImpairedAccess	xsd:boolean	1: 1	Specifies whether the object is still available for users with special needs.
element	acsb:Limitations	acsb:AccessibilityLimitation	1: 1	Specifies limitations for users with special needs.

7.3.28 AccessibilityLimitation

Descriptions of limitations for users with special needs.

*Must be in accordance with **AccessibilityLimitation** for the stop, defined in accordance with the European NeTEx Passenger Information Accessibility Profile (EPIAP).*

Table 39 - AccessibilityLimitation

AccessibilityLimitation				
	Name	Type	Cardinality	Description
element	WheelchairAccess	AccessibilityEnumeration	1: 1	<i>See Table D.4.</i>
element	StepFreeAccess	AccessibilityEnumeration	1: 1	<i>See Table D.4.</i>
element	EscalatorFreeAccess	AccessibilityEnumeration	1: 1	<i>See Table D.4.</i>
element	LiftFreeAccess	AccessibilityEnumeration	1: 1	<i>See Table D.4.</i>
element	AudibleSignsAvailable ¹	AccessibilityEnumeration	1: 1	<i>See Table D.4.</i>
element	VisualSignsAvailable	AccessibilityEnumeration	1: 1	<i>See Table D.4.</i>

7.3.29 AffectedComponents

Wrapper object to describe information about which part(s) of the stop place are being affected.

Table 40 - AffectedComponents

AffectedComponents				
	Name	Type	Cardinality	Description
element	AffectedComponent	AffectedStopPlaceComponentStructure	1: *	Reference(s) to which part(s) of the stop place are being affected

7.3.30 AffectedStopPlaceComponentStructure

Complementary information regarding parts of a stop being affected by the situation (for example which quay).

¹ In the existing SIRI Specification this element is named “AudibleSignsAvailable”, in future versions this is expected to be renamed to “AudibleSignalsAvailable”.

Table 41 - AffectedStopPlaceComponentStructure

AffectedStopPlaceComponentStructure				
	Name	Type	Cardinality	Description
element	ComponentRef	xsd:NMTOKEN	0: 1	Reference to the Quay in question (<i>ID corresponding to objects in the National Access Point</i>). <i>Used if ComponentType is "quay"</i>
element	ComponentType	ifopt:StopPlaceComponentTypeEnumeration	1: 1	See Table D.5 .
element	AccessFeatureType	ifopt:AccessibilityFeatureEnumeration	0: 1	See Table D.6 . <i>Used when it necessary to specify limitations for users with special mobility needs.</i>

7.3.31 AffectedVehicleJourneyStructure

Reference(s) to affected VehicleJourney(s).

Table 42 - AffectedVehicleJourneyStructure

AffectedVehicleJourneyStructure				
	Name	Type	Cardinality	Description
(choice) element	VehicleJourneyRef	xsd:NMTOKEN	1: 1	Reference to affected VehicleJourney (<i>ID to the corresponding object in the timetable data</i>).
	FramedVehicleJourneyRef	FramedVehicleJourneyRef-Structure		Reference with date to affected VehicleJourney (<i>ID to the corresponding object in the timetable data</i>).