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Entwurf

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**Öffentlicher Verkehr –
Dienstschnittstelle für Echtzeitinformationen bezogen auf Operationen im
öffentlichen Verkehr –
Teil 3: Funktionale Dienstschnittstelle;
Englische Fassung prEN 15531-3:2021**

Public transport –

Service interface for real-time information relating to public transport operations –

Part 3: Functional service interfaces;

English version prEN 15531-3:2021

Transport public –

Interface de service pour les informations en temps réel relatives aux opérations de transport public –

Partie 3: Modules d'interface d'application individuels;

Version anglaise prEN 15531-3:2021

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DIN-Normenausschuss Automobiltechnik (NAAutomobil)

Nationales Vorwort

Dieses Dokument (prEN ISO 15531-3:2021) wurde vom Technischen Komitee CEN/TC 278 „Intelligente Verkehrssysteme“, dessen Sekretariat von NEN (Niederlande) erarbeitet.

Das zuständige deutsche Normungsgremium ist der Gemeinschaftsarbeitsausschuss NA 052-00-71 GA „Gemeinschaftsarbeitsausschuss NAAutomobil/DKE: Intelligente Verkehrssysteme“ des DIN-Normenausschusses Automobiltechnik (NAAutomobil).

Dieses Dokument ist derzeit zur parallelen Abstimmung vorgelegt.

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Dienste für den öffentlichen Verkehr verlassen sich zunehmend auf Informationssysteme, welche zuverlässige, einfach handhabbare und überall zugängliche korrekte Information für Reisende liefern. Diese Art von Systemen decken folgende spezifischen Nutzungsprofile ab: Laden von Kalendern und Fahrplänen; Kontrolle von Fahrzeugbeständen; Ticket- und Rechnungsausstellung; Aktuelle Informationen zu laufenden Diensten, usw.

Dieser Normenentwurf legt eine Dienstschnittstelle für Echtzeitinformationen (SIRI) zum öffentlichen Verkehr fest. Er definiert Austauschinformationen zwischen Servern, welche Echtzeitinformationen zum öffentlichen Verkehr oder Reisedaten bereitstellen. Dies beinhaltet Kontrollzentren von Verkehrsanbietern und Informationssystemen welche Echtzeit Fahrzeuginformationen nutzen, wie zum Beispiel Dienste für Reiseinformation.

DIN EN 15531 besteht unter dem allgemeinen Titel *Öffentlicher Verkehr — Dienstschnittstelle für Echtzeitinformationen bezogen auf Operationen im öffentlichen Verkehr* aus folgenden Teilen:

- Teil 1: Kontext und Grundstruktur
- Teil 2: Kommunikationsstruktur
- Teil 3: Funktionelle Dienstschnittstelle
- Teil 4: Funktionale Dienstschnittstellen: Anlagenüberwachung
- Teil 5: Funktionelle Dienstschnittstelle - Situativer Austausch

Änderungen

Gegenüber DIN EN 15531-3:2015-12 wurden folgende Änderungen vorgenommen:

- a) Anpassungen basierend auf Implementierungen in SIRI (Version 2.1) durchgeführt;
- b) redaktionelle Anpassungen.

Nationaler Anhang NA (informativ)

Begriffe

Für die Anwendung dieses Dokuments gelten die folgenden Begriffe in DIN EN 15531-1.

ISO und IEC stellen terminologische Datenbanken für die Verwendung in der Normung unter den folgenden Adressen bereit:

- IEC Electropedia: verfügbar unter <http://www.electropedia.org/>
- ISO Online Browsing Platform: verfügbar unter <http://www.iso.org/obp>

— Leerseite —

English Version

Public transport - Service interface for real-time
information relating to public transport operations -
Part 3: Functional service interfaces

Transport public - Interface de service pour les
informations en temps réel relatives aux opérations
de transport public -

Partie 3 : Modules d'interface d'application individuels

Öffentlicher Verkehr - Serviceschnittstelle für
Echtzeitinformationen, bezogen auf Operationen
im öffentlichen Verkehr -

Teil 3: Funktionelle Serviceschnittstelle

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 278.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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European foreword

This document (prEN 15531-3:2021) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede CEN/TS 15531-3:2015.

SIRI (CEN/TS 15531-1:2006) has been a CEN Technical Specification since 2007 and a European normative standard since 2013 and has been widely used in Europe and elsewhere and proven its usefulness. This document proposes a revised version of SIRI as a European Standard, and is currently submitted to the Formal Vote. The proposed revisions are minor enhancements arising from experience of the deployment of SIRI in many live systems. This document also clarifies the relationship of SIRI to NeTEx, the CEN Technical Standard for the XML exchange of Public Transport Reference data based on the Transmodel CEN European Standard.

This document presents Part 3 of the European Standard known as “SIRI”. 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 SIRI European Standard is presented in three parts:

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

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

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

The XML schema can be downloaded from <https://github.com/SIRI-CEN/SIRI>, guidance on its use, example XML files, and case studies of national and local deployments is located at <http://siri-cen.eu/>.

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

Introduction

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

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

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

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

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

Technical advantages include the following:

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

History

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

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

SIRI includes a Simple Web Services “SIRI-LITE” as an additional transport method and a WSDL document literal version and a WSDL2 version;

Version 2.1 of SIRI was developed in 2020/21 to address lessons from the now widespread implementation of SIRI.

The changes in SIRI version 2.1 include:

- remove the direct relationship with TPEG and other standards to enable support as the other standards change;
- support for new modes in line with TRANSMODEL and NeTEx;
- support for the Reason / Effect / Advice structure for disruptions in SIRI SX;
- increased granularity for occupancy data and Vehicle structures;
- improved subscription renewal options and filtering options;
- additional options and flexibility for STOP POINTS and relationships between journeys;
- migration of XSD to Github to improve access and change control processes.

Compatibility with previous versions

All changes in version 2.1 are intended to be fully backwards compatible, that is to say, existing documents that validate against earlier versions of the schema will also validate against the 2.1 schema without alteration (other than to schema version numbers), and version 2.1 documents that do not use new features will validate against earlier versions. Version 2.1 documents that use new features will not be backwards compatible.

1 Scope

There are many potential ways for passenger transport operations centres to interact. The approach taken by SIRI is for an open-ended set of standard data structures, carried over a communications channel constructed using one of a small number of specific options.

Part 2 of this document specifies the communications channel. This Part 3 section specifies a number of functional modules, based on the 'use cases' identified in Annex B to Part 1:

- **Production Timetable (PT):** this service enables the provision of information on the planned progress of vehicles operating a specific service, identified by the vehicle time of arrival and departure at specific stops on a planned route for a particular Operational Day.
- **Estimated Timetable (ET):** this service enables the provision of information on the actual progress of Vehicle Journeys operating specific service lines, detailing expected arrival and departure times at specific stops on a planned route. There will be recorded data for stops which have been passed, and predicted data for stops not yet passed. In addition the Estimated Timetable service allows Vehicle Journeys to be cancelled, added or changed.
- **Stop Timetable (ST):** this service provides a stop-centric view of timetabled vehicle arrivals and departures at a designated stop. It can be used to reduce the amount of information that needs to be transmitted in real-time to stops and displays, as reference data for a Stop Monitoring Service; and provides a data feed of the static timetables.
- **Stop Monitoring (SM):** this service provides a stop-centric view of vehicle arrivals and departures at a designated stop. It can be used by displays and other presentation services to provide departure board and other presentations of timetable and real-time journey information both at stops and at a distance.
- **Vehicle Monitoring (VM):** this service enables the provision of information on the current location and status of a set of vehicles. It provides all the current relevant information from one AVMS relating to all vehicles fulfilling a set of selection criteria.
- **Connection Timetable (CT):** this service may be used to provide information about the scheduled arrivals of a feeder vehicle to the operator of a connecting distributor service. The distributor operator can then plan how to guarantee the connection, either with the expected vehicle or a different vehicle.
- **Connection Monitoring (CM):** this service is used to provide information about the expected arrival of a feeder vehicle to the operator of a connecting distributor service. The distributor operator can then manage the service to guarantee the connection, based on actual vehicle running.
- **General Message (GM):** the SIRI "General Message" service is used to exchange informative messages between identified individuals in free or an arbitrary structured format. It enables messages to be sent and to be revoked. Messages are assigned validity periods in addition to the actual content.

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.

prEN 15531-1:2021, *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 prEN 15531-1:2021 apply.

4 Symbols and abbreviations

For the purposes of this document, the symbols and abbreviations given in prEN 15531-1:2021 apply.

5 Production Timetable Service [PT]

5.1 Purpose

The SIRI Production Timetable Service transmits daily timetables that include any planned updates that are known about at the time of transmission. The service is used typically to communicate between Scheduling systems and AVMS systems, and also between AVMS systems and intelligent clients of the AVMS system. The timetables exchanged should cover all LINES covered by the AVMS system.

The SIRI Production Timetable Service is also used to transmit the planned interchanges between journeys, including information about the linking of vehicle journey parts through the interchange, such as whether passengers are able to remain seated in the VEHICLE.

The provision of known updates gives a more accurate data set of journeys for the SIRI Estimated Timetable Service to reference, allowing a more efficient real-time exchange of content. However, the provision of a Production Timetable Service is not absolutely essential for the functioning of the Estimated Timetable service.

Because of the enhanced quality of data given by an increased integration with operational and back-office scheduling systems, SIRI implementations that are able to obtain production timetables should always provide and make use of a SIRI Production Timetable Service.

NOTE An AVMS system may be aware of additional operational journeys and CALLs such as dead runs, and layovers. As the schedule information system usually only knows about VEHICLE JOURNEYS that are relevant to the passenger, the AVMS should only transmit passenger carrying VEHICLE JOURNEYS to the schedule information system.

5.2 Capability and Permission Matrices

5.2.1 Capability Matrix

Table 1 shows the set of required and optional capabilities defined for the Production Timetable service.

If the service supports Capability Discovery the **ProductionTimetableCapabilitiesRequest/Production-TimetableCapabilitiesResponse** message pair can be used to determine the implementation's capabilities.

Table 1 — ProductionTimetableCapabilities Matrix

ProductionTimetableCapabilities			+Structure	Capabilities describing implementation of Production Timetable service
<i>inherit</i>	<i>:::</i>	1:1	<i>See xxx-Capability-Response</i>	See SIRI Part 2 for Common Capability attributes.
Topic	TopicFiltering	0:1	+Structure	Which optional filtering features are supported?
	FilterByValidityPeriod	1:1	<i>xsd:boolean</i>	Whether results can be filtered by Validity Period. Required Capability: Fixed is <i>true</i> .
	FilterByOperatorRef	1:1	<i>xsd:boolean</i>	Whether results can be filtered by OPERATOR. Default is <i>'true'</i> .
	FilterByLineRef	1:1	<i>xsd:boolean</i>	Whether results can be filtered by LINE. Default is <i>'true'</i> .
	FilterByVehicleMode	0:1	<i>xsd:boolean</i>	Whether results can be filtered by VEHICLE MODE. Default is <i>'true'</i> . +SIRI v2.1
	FilterByProduct-CategoryRef	0:1	<i>xsd:boolean</i>	Whether results can be filtered by Product Category. Default is <i>'true'</i> . +SIRI v2.1
	FilterByStopPointRef	0:1	<i>xsd:boolean</i>	Whether results can be filtered by SCHEDULED STOP POINT. Default is <i>'true'</i> . +SIRI v2.1
Request Policy	FilterByVersionRef	1:1	<i>xsd:boolean</i>	Whether results can be filtered by TIMETABLE Version. Default is <i>'true'</i> .
	RequestPolicy	0:1	+Structure	Which features of Request Policy are supported by the service?
	Language	1:*	<i>xsd:language</i>	National languages used by service.
	Translations	0:1	<i>xsd:boolean</i>	Whether the producer supports translations. SIRI 2.0 Default is false.
			<i>choice</i>	Location reference system for coordinates.
	a GmlCoordinateFormat	0:1	<i>SrsNameType</i>	Default coordinate format is given by a GML value.
Sub- scription Policy	b WgsDecimalDegrees		<i>EmptyType</i>	Default coordinate data system is WGS 84 latitude and longitude.
	SubscriptionPolicy	0:1	+Structure	Which features of Subscription Policy are supported by the service?
	HasIncremental-Updates	0:1	<i>xsd:boolean</i>	Whether incremental updates can be specified for updates. Default is <i>'true'</i> .
Access Control	AccessControl	0:1	+Structure	Which optional Access Control features are supported by service?
	RequestChecking	1:1	<i>xsd:boolean</i>	Whether access control of requests is supported. Default is <i>'false'</i> .
	CheckOperatorRef	0:1	<i>xsd:boolean</i>	If access control is supported, whether access control by OPERATOR is supported. Default is <i>'true'</i> .
	CheckLineRef	0:1	<i>xsd:boolean</i>	If access control is supported, whether access control by LINE is supported. Default is <i>'true'</i> .
	CheckConnection-LinkRef	0:1	<i>xsd:boolean</i>	If access control is supported, whether access control by CONNECTION link is supported. Default is <i>'true'</i> .
any	Extensions	0:1	<i>xsd:any*</i>	Placeholder for user extensions.

5.2.2 Permission Matrix

If the implementation supports both Capability Discovery and Access Controls, then the **ProductionTimetableCapabilitiesResponse** response can include the access permissions for the requestor participant to access data. Table 2 shows this.

Table 2 — Production Timetable Service — Permissions

<i>ProductionTimetablePermission</i>			+Structure	Permissions to use implementation of Production Timetable service.
In-herit	⋮	1:1	xxxService-Permissions	See SIRI Part 2 for Common Permission elements.
Topic	<i>OperatorPermissions</i>	0:1	+Structure	OPERATOR permissions for participant. See Part 2.
	<i>LinePermissions</i>	0:1	+Structure	LINE permissions for participant. See Part 2.
	<i>ConnectionLinkPermissions</i>	0:1	+Structure	CONNECTION link permissions for participant. See Part 2.

5.3 ProductionTimetableRequest

5.3.1 ProductionTimetableRequest — Element

The *ProductionTimetableRequest* states which timetables should be returned – see Table 3 below.

Table 3 — ProductionTimetableRequest — Attributes

<i>ProductionTimetableRequest</i>			+Structure	Request for daily production timetables
Attributes	<i>version</i>	1:1	VersionString	Version identifier of <i>Production Timetable</i> Service, e.g. 1.0c
Endpoint Properties	<i>Request-Timestamp</i>	1:1	xsd:dateTime	See SIRI Part 2 for common properties of SIRI Functional Service Requests.
	<i>Message-Identifier</i>	0:1	Message-Qualifier	
Line Topic	<i>ValidityPeriod</i>	0:1	ClosedTimeRange-Structure	Start and end of timetable validity (time window) of journeys for which schedules are to be returned by the data producer. The ValidityPeriod of the timetable must not exceed the ValidityPeriod requested by the subscriber. If omitted, then the full - by the subscriber requested - ValidityPeriod or configured data horizon applies. See also chapter Error! Reference source not found. for details.
	<i>Start</i>	1:1	xsd:dateTime	The (inclusive) start and end time of the ValidityPeriod . See chapter Error! Reference source not found. for the specification of what data must be returned by the producer (i.e. when does data fall within the ValidityPeriod).
	<i>End</i>	1:1	xsd:dateTime	
	<i>Timetable-VersionRef</i>	0:1	xsd:string	Communicate only differences to the timetable specified by this version of the timetable.
	<i>OperatorRef</i>	0:*	→Operator-Code	Filter the results to include only results for the specified operator or operators. Optional SIRI capability: <i>TopicFiltering / ByOperator</i> .
	<i>Lines</i>			
	<i>Line-Direction</i>			
	<i>LineRef</i>	0:1	→LineCode	Filter the results to include only results for the given LINE or LINES.
	<i>Direction-Ref</i>	0:1	→Direction-Code	Filter the results to include only journeys for VEHICLEs running in a specific relative DIRECTION. Optional SIRI capability: <i>TopicFiltering / ByDirection</i> .
	<i>VehicleMode</i>	0:*	VehicleModes-Enum	Filter the results to include only journeys of the specified VEHICLE MODE. +SIRI v2.1
	<i>Product-CategoryRef</i>	0:*	→Product-CategoryCode	Filter the results to include only journeys of the specified TYPE OF PRODUCT CATEGORY. +SIRI v2.1

ProductionTimetableRequest			+Structure	Request for daily production timetables
	StopPointRef	0:*	→StopPoint-Code	Filter the results to include only journeys with a CALL at the specified SCHEDULED STOP POINT. +SIRI v2.1
Policy	Language	0:*	xml:lang	Preferred languages in which to return text values. Optional SIRI capability: <i>NationalLanguage</i> .
	Include-Translations	0:1	xsd:boolean	Whether the producer should include any available translations of NLString text elements into multiple languages. If false elements only one value per text element will be provided. +SIRI.2.0 Default is false.
	Include-Interchanges	0:1	xsd:boolean	Whether SERVICE JOURNEY INTERCHANGE data is to be transmitted or not. Default is true. +SIRI v2.1
	Include-Journey-Relations	0:1	xsd:boolean	Whether Journey Relation data is to be transmitted or not. Default is true. +SIRI v2.1
	Incremental-Updates	0:1	xsd:boolean	Whether the producer should return the complete set of current data, or only provide updates to the last timetable returned, i.e. additions, modifications and deletions, as indicated by the TimetableVersionRef . If <i>false</i> each subscription response will contain the full information as specified in this request.
any	Extensions	0:1	xsd:any*	Placeholder for user extensions.

The **ProductionTimetableRequest** can be used in both a direct request, and for a subscription. If used for a subscription, additional **ProductionTimetableSubscriptionPolicy** parameters can be specified.

The primary *Topic* term on the request is the time window for which timetables are to be returned. Additional topic filtering on LINE and timetable version is also allowed. If filtering is not specified, all LINES known to the AVMS are transmitted.

If the timetable version is not available an error code is returned **NoInfoForTopic**. In this situation a subscription is not set up.

5.3.2 ProductionTimetableRequest — Example

The following is an example of a **ProductionTimetableRequest**.

```

<ServiceRequest>
  <RequestTimestamp>2004-12-17T09:30:47-05:00</RequestTimestamp>
  <RequestorRef>NADER</RequestorRef>
  <ProductionTimetableRequest version="1.0">
    <RequestTimestamp>2001-12-17T09:30:47-05:00</RequestTimestamp>
    <ValidityPeriod>
      <StartTime>14:20:00</StartTime>
      <EndTime>14:20:00</EndTime>
    </ValidityPeriod>
    <TimetableVersionRef>002</TimetableVersionRef>
    <OperatorRef>Smooth</OperatorRef>
    <Lines>
      <LineDirection>
        <LineRef>123</LineRef>
        <DirectionRef>Outbound</DirectionRef>
      </LineDirection>
      <LineDirection>
        <LineRef>124</LineRef>
      </LineDirection>
    </Lines>
  </ProductionTimetableRequest>
</ServiceRequest>

```

5.4 ProductionTimetetableSubscriptionRequest

5.4.1 ProductionTimetetableSubscriptionRequest — Element

The **ProductionTimetetableSubscriptionRequest** (Table 4) requests the asynchronous delivery of the information described by a **ProductionTimetetableRequest**. The **ProductionTimetetableSubscriptionRequest** Policy parameters control the processing of the subscription.

Table 4 — ProductionTimetetableSubscriptionRequest Parameters

ProductionTimetetableSubscriptionRequest			<i>+Structure</i>	Request for a subscription to the SIRI Production Timetable Service.
<i>Identity</i>	SubscriberRef	0:1	→ParticipantCode	See SIRI Part 2 for common SubscriptionRequest parameters.
	SubscriptionIdentifier	1:1	SubscriptionQualifier	
<i>Lease</i>	InitialTerminationTime	1:1	xsd:dateTime	
<i>Request</i>	ProductionTimetetableRequest	1:1	+Structure	See ProductionTimetetableRequest .
	Extensions	0:1	xsd:any*	Placeholder for user extensions.

5.4.2 ProductionTimetetableSubscriptionRequest — Example

The following is an example of a ProductionTimetetableSubscriptionRequest.

```
<SubscriptionRequest>
  <RequestTimestamp>2004-12-17T09:30:47-05:00</RequestTimestamp>
  <RequestorRef>NADER</RequestorRef>
  <ProductionTimetetableSubscriptionRequest>
    <SubscriberRef>NADER</SubscriberRef>
    <SubscriptionIdentifier>0000456</SubscriptionIdentifier>
    <InitialTerminationTime>2001-12-17T09:30:47-05:00</InitialTerminationTime>
    <ProductionTimetetableRequest version="1.0">
      <RequestTimestamp>2001-12-17T09:30:47-05:00</RequestTimestamp>
      <ValidityPeriod>
        <StartTime>14:20:00</StartTime>
        <EndTime>14:20:00</EndTime>
      </ValidityPeriod>
      <TimetableVersionRef>002</TimetableVersionRef>
      <OperatorRef>Smooth</OperatorRef>
      <Lines>
        <LineDirection>
          <LineRef>123</LineRef>
          <DirectionRef>Outbound</DirectionRef>
        </LineDirection>
        <LineDirection>
          <LineRef>124</LineRef>
        </LineDirection>
      </Lines>
    </ProductionTimetetableRequest>
  </ProductionTimetetableSubscriptionRequest>
</SubscriptionRequest>
```

5.5 ProductionTimetableDelivery

5.5.1 Introduction

The **ProductionTimetableDelivery** returns the position of a VEHICLE or group of VEHICLES.

5.5.2 ServiceDelivery with a ProductionTimetableDelivery

One or more **ProductionTimetableDelivery** elements may be returned as part of a SIRI Functional ServiceDelivery. Table 5 shows this element.

Table 5 — ServiceDelivery / ProductionTimetableDelivery — Attributes

ServiceDelivery			<i>+Structure</i>	See SIRI Part 2 ServiceDelivery
HEADER	...	1:1	See ServiceDelivery	
Payload	ProductionTimetableDelivery	0:*	<i>+Structure</i>	See ProductionTimetableDelivery element.

5.5.3 ProductionTimetableDelivery — Element

Each **ProductionTimetableDelivery** is made up of **DatedTimetableVersionFrame** elements. There will be status messages for any request that could not be returned. Table 6 shows this element.

Table 6 — ProductionTimetableDelivery — — Attributes

ProductionTimetableDelivery			<i>+Structure</i>	Describes one or more Dated Timetables.
Attributes	version	1:1	<i>VersionString</i>	Version identifier of Production Timetable Service. Fixed, e.g. 1.0.
LEADER	...	1:1	xxx ServiceDelivery	See SIRI Part 2.xxx ServiceDelivery .
Payload	DatedTimetableVersionFrame	0:*	<i>+Structure</i>	A version of the timetable to run on a specified date. See DatedTimetableVersionFrame element.
any	Extensions	0:1	xsd:any*	Placeholder for user extensions.

5.5.4 DatedTimetableVersionFrame — Element

5.5.4.1 Introduction

Each production timetable is returned as a **DatedTimetableVersionFrame** element. Each **DatedTimetableVersionFrame** contains a version of the timetable for a LINE and DIRECTION, and comprises one or more **DatedVehicleJourney** elements. Table 7 shows this element.

Table 7 — DatedTimetableVersionFrame — Attributes

DatedTimetableVersionFrame			<i>+Structure</i>	Provides a schedule of DATED VEHICLE JOURNEY for a LINE and DIRECTION.
Log	RecordedAtTime	1:1	<i>xsd:dateTime</i>	Time at which data was recorded.
Identity	VersionRef	0:1	<i>→VersionCode</i>	Reference to a TIMETABLE VERSION FRAME.
Validity	ValidityPeriod	0:1	<i>ClosedTimestamp-RangeStructure</i>	Start and end of timetable validity (time window) of journeys for which schedules are to be returned by the data producer. +SIRI v2.1

DatedTimetableVersionFrame			+Structure	Provides a schedule of DATED VEHICLE JOURNEY for a LINE and DIRECTION.
				The ValidityPeriod of the timetable must not exceed the ValidityPeriod requested by the subscriber. If omitted, then the full - by the subscriber requested - ValidityPeriod or configured data horizon applies. See also chapter 6.8.8 for details.
Update Info	ShortestPossibleCycle	0:1	<i>PositiveDuration-Type</i>	Minimum interval at which updates for this DATED TIMETABLE VERSION FRAME can be sent. +SIRI v2.1
Line	LineRef	1:1	→ <i>LineCode</i>	Identifier for the LINE.
	DirectionRef	1:1	→ <i>DirectionCode</i>	Reference to the DIRECTION the VEHICLE is running along the LINE, for example, "in" or "out", "clockwise". Distinct from a destination.
Journey Pattern Info	:::	0:1	<i>JourneyPatternInfo-Group</i>	See SIRI Part 2 JourneyPatternInfoGroup .
Service Info	:::	0:1	<i>ServiceInfoGroup</i>	See SIRI Part 2 ServiceInfoGroup .
Notes	OriginDisplay	0:*	<i>NLString</i>	Name of ORIGIN of journey. One per language (+SIRI v2.0).
	DestinationDisplay	0:*	<i>NLString</i>	Name of DESTINATION of journey. One per language (Unbounded 0:* since +SIRI v2.0).
	LineNote	0:*	<i>NLString</i>	Text associated with LINE. One per language (Unbounded 0:* since +SIRI v2.0).
	FirstOrLastJourney	0:1	<i>unspecified</i>	Whether journey is first or last journey of day. +SIRI v2.0
Real time defaults	HeadwayService	0:1	<i>xsd:boolean</i>	Whether this is a Headway Service, that is one shown as operating at a prescribed interval rather than to a fixed timetable.
	Monitored	0:1	<i>xsd:boolean</i>	Whether VEHICLE JOURNEYS of LINE are normally monitored and thus real-time information is available. Provides a default value for the Monitored element on individual journeys of the line timetable. If not present, not known.
Journeys	DatedVehicleJourney	0:*	+Structure	Provides schedule information about the VEHICLE JOURNEY along which a VEHICLE is running.
	RemovedDated-VehicleJourney	0:*	+Structure	List of all removed VEHICLE JOURNEYS for this LINE and DIRECTION. A data producer may silently remove a journey from the plan if it was previously provided in error. +SIRI v2.1 It is strongly advised to only use this feature in cases where a journey was sent in error and it can be assumed that as few passengers as possible have seen the erroneous information to avoid confusion. Careful: Removal of a journey is different from a Cancellation: (i) For a RemovedDatedVehicleJourney or the removal itself only minimal information, or no information at all, must be communicated to the passengers, i.e., it is removed "silently".

<i>DatedTimetableVersionFrame</i>			<i>+Structure</i>	Provides a schedule of DATED VEHICLE JOURNEY for a LINE and DIRECTION.
				(ii) A Cancellation of a journey, on the other hand, is possibly the most important information to provide to the passengers.
<i>Inter-changes</i>	<i>ServiceJourney-Interchange</i>	0:*	<i>+Structure</i>	Provides schedule information about the planned SERVICE JOURNEY INTERCHANGES that connect services.
	<i>RemovedService-JourneyInterchange</i>	0:*	<i>+Structure</i>	List of all removed SERVICE JOURNEY INTERCHANGES from the plan. A data producer may silently remove an interchange from the plan if it was previously provided in error. +SIRI v2.1 It is strongly advised to only use this feature in cases where an interchange was sent in error and it can be assumed that as few passengers as possible have seen the erroneous information to avoid confusion. Careful: Removal of an Interchange is different from Cancellation: (i) For a RemovedServiceJourney-Interchange or the removal itself only minimal information, or no information at all, must be communicated to the passengers, i.e., it is removed "silently". (ii) A Cancellation of an interchange (or its feeder / distributor journeys), on the other hand, is possibly the most important information to provide to the passengers.
any	<i>Extensions</i>	0:1	xsd:any*	Placeholder for user extensions.

5.5.4.2 DatedVehicleJourney — Element

Each **DatedVehicleJourney** contains an ordered list of **DatedCall** elements representing the sequence of stop CALLs, as well as other properties that apply to the VEHICLE JOURNEY as a whole. Table 8 shows this element.

Table 8 — DatedVehicleJourney — Attributes

DatedVehicleJourney			+Structure	Provides schedule information about the VEHICLE JOURNEY along which a VEHICLE is running.
	DatedVehicle-JourneyCode		→Vehicle-JourneyCode	Identifier for a DATED VEHICLE JOURNEY.
Vehicle Journey Identity			<i>choice</i>	
	<i>a</i>	FramedVehicle-JourneyRef	-1:1	+Structure Identifies the DATED VEHICLE JOURNEY by referencing a VEHICLE JOURNEY. The preferred construction is using FramedVehicle-JourneyRef from SIRI 2.0, which is a journey reference usually framed by an OPERATING DAY.
	<i>b</i>	VehicleJourney-Ref	-1:1	
		ExtraJourney	0:1	<i>xsd:boolean</i> Whether this journey is an addition to the plan Can only be used when both participants recognise the same schedule version. If omitted, defaults to <i>false</i> : the journey is not an addition.
		Cancellation	0:1	<i>xsd:boolean</i> Whether this journey is a Cancellation of a journey in the plan. Can only be used when both participants recognise the same schedule version. If omitted, defaults to <i>false</i> : Journey is not a Cancellation.
Journey Pattern Info	:::		0:1	<i>JourneyPattern-InfoGroup</i> See SIRI Part 2 JourneyPatternInfoGroup .
Journey EndNames	:::		0:1	<i>JourneyEnd-NamesGroup</i> See SIRI Part 2 JourneyEndNamesGroup .
Service Info	:::		0:1	<i>ServiceInfoGroup</i> See SIRI Part 2 ServiceInfoGroup .
JourneyInfo Group	:::		0:1	<i>JourneyInfoGroup</i> See above See SIRI Part 2 JourneyInfoGroup .
Notes		OriginDisplay	0:*	<i>NLString</i> The appropriate text to be used as Origin for this VEHICLE JOURNEY. Can be overridden at individual calling points. (+SIRI v2.0). One per language
		DestinationDisplay	0:*	<i>NLString</i> The appropriate text to be used as Destination for this VEHICLE JOURNEY. Can be overridden at individual calling points. One per language (Unbounded 0:* since +SIRI v2.0).
		LineNote	0:*	<i>NLString</i> Additional text associated with LINE. Inherited property. One per language (Unbounded 0:* since +SIRI v2.0).
		FirstOrLastService	0:1	<i>xsd:boolean</i> Whether journey is first or last journey of day. +SIRI v2.0
Timetable-info		HeadwayService	0:1	<i>xsd:boolean</i> Whether this is a HEADWAY JOURNEY GROUP, that is one shown as operating at a prescribed interval rather than to a fixed timetable.
Real-time Info		Monitored	0:1	<i>xsd:boolean</i> Whether there is real-time information available for journey. If not present, not known. Default is 'true'.
Operational Block	:::		0:1	<i>OperationalBlock-Group</i> See SIRI Part 2 OperationalBlockGroup .
Children		DatedCalls	1:1	+Structure Complete sequence of stops along the route path, in calling order. CALLs are in order within a JOURNEY PATTERN.
		DatedCall	2:*	+Structure Individual DatedCall . See below.
any		Extensions	0:1	<i>xsd:any*</i> Placeholder for user extensions.

5.5.4.3 DatedCall — Element

Each **DatedCall** describes the PASSING TIMES of a VEHICLE JOURNEY at a stop, together with other data elements relating to the CALL. A journey shall contain at least two CALLs. Table 9 shows this element.

Table 9 — DatedCall — Attributes

DatedCall			<i>+Structure</i>	Provides information about a CALL in a DATED VEHICLE JOURNEY.
<i>Stop Identity</i>	StopPointRef	1:1	→ <i>StopPointCode</i>	Reference to a SCHEDULED STOP POINT. Defaults to that of context i.e. that specified on StopPoint .
	VisitNumber	0:1	<i>VisitNumberType</i>	For JOURNEY PATTERNS that involve repeated visits by a VEHICLE to a stop, the VisitNumber count is used to distinguish each separate visit. Default is '1'
	Order	0:1	<i>xsd:positiveInteger</i>	For implementations for which the overall Order within JOURNEY PATTERN is not used for VisitNumber , (i.e. if VisitNumberIsOrder is <i>false</i>) then can be used to associate the overall Order as well if useful.
	StopPointName	0:*	<i>NLString</i>	Name of Stop. One per language (Unbounded 0:* since +SIRI v2.0).
<i>Info</i>	TimingPoint	0:1	<i>xsd:boolean</i>	Whether the stop is a TIMING POINT. Times for stops that are not timing points are sometimes interpolated crudely from the timing points, and may represent a lower level of accuracy. Default is 'true'.
	BoardingStretch	0:1	<i>xsd:boolean</i>	Whether this is a Hail and Ride stop. A hail and ride stop may represent a linear stretch in the stop model. Default is 'false'.
	RequestStop	0:1	<i>xsd:boolean</i>	Whether VEHICLE stops only if requested explicitly by passenger. Default is 'false'.
<i>Service Info</i>	OriginDisplay	0:*	<i>NLString</i>	The publicised ORIGIN at this point in the journey; used to help identify the VEHICLE to the public. Since VEHICLES can change their published ORIGIN during a journey, the Origin included here should be what the VEHICLE will display when it reaches this stop. The ORIGIN DISPLAY is specified by exception: if none is specified, the value from any previous DatedCall instances for the same journey will be used. If there are none then any values from the underlying DatedVehicleJourney will be used, or failing that, from the DatedTimetableVersionFrame . One per language (Unbounded 0:* since +SIRI v2.0).
	DestinationDisplay	0:*	<i>NLString</i>	The publicised DESTINATION at this point in the journey; used to help identify the VEHICLE to the public. Since VEHICLES can change their published DESTINATION during a journey, the destination included here should be what the VEHICLE will display when it reaches this stop. The DESTINATION DISPLAY is specified by exception: if none is specified, the value from any previous DatedCall instances for the same journey will be used. If there are none then any values from the underlying DatedVehicleJourney will be used, or failing that, from the DatedTimetableVersionFrame . One per language (Unbounded 0:* since +SIRI v2.0).
<i>Call</i>	CallNote	0:*	<i>NLString</i>	Text annotation that applies to this CALL. One per language (Unbounded 0:* since +SIRI v2.0).
<i>Disruption-Group</i>	---	0:1	<i>DisruptionGroup</i>	See SIRI Part 2 DisruptionGroup . <i>DetailLevel</i> : normal.

DatedCall			+Structure	Provides information about a CALL in a DATED VEHICLE JOURNEY.
Arrival	AimedArrivalTime	0:1	<i>xsd:dateTime</i>	Aimed Arrival Time in either the original or Production Timetable. Can be omitted at the end stop.
	ArrivalPlatform-Name	0:*	<i>NLString</i>	Bay or platform name. Inherited property. Can be omitted if the same as the DeparturePlatformName .
	ArrivalBoarding-Activity	0:1	<i>ArrivalBoarding-ActivityEnum</i>	Type of alighting allowed at stop. Default is 'alighting'. <i>alighting noAlighting passthru</i>
	ArrivalStop-Assignment	0:1	+Structure	Assignment of arrival at SCHEDULED STOP POINT to a physical location, in particular to a QUAY (platform) or BOARDING POSITION. If not given, assume same as for departure. +SIRI v2.0 <i>DetailLevel: <u>normal</u>.</i>
			<i>choice</i>	
	a	AimedQuayRef	0:1	<i>→QuayCode</i> Physical QUAY to use according to the planned timetable. +SIRI v2.0
		AimedQuay-Name	0:*	<i>NLString</i> Scheduled Platform name. Can be used to indicate the originally planned platform. +SIRI v2.0
		QuayType	0:1	<i>TypeOfNested-QuayEnumeration</i> Indicates the type of the referenced QUAY. In case detailed STOP PLACE models are used, a QUAY may be a nested structure. A QUAY may be part of a group of QUAYS, or may be divided into sectors or sub-QUAYS. +SIRI v2.1 <i>platformGroup platform platformEdge platformSector</i> See SIRI Part 2 QuayAssignmentGroup for details.
	b	Aimed-Boarding-PositionRef	0:1	<i>→Boarding-PositionCode</i> Physical BOARDING POSITION to use according to the planned timetable. +SIRI v2.1
		Aimed-Boarding-PositionName	0:*	<i>NLString</i> Scheduled BOARDING POSITION name. Can be used to indicate the originally planned boarding position. +SIRI v2.1
		AimedFlexible-Area	0:1	+Structure Area that encompasses the scheduled flexible stop locations according to the planned timetable. +SIRI v2.1 See SIRI Part 2 FlexibleStopLocationGroup for details.
		AimedFlexible-AreaRef	0:1	<i>→FlexibleArea-Code</i> Reference to the scheduled location or flexible area. +SIRI v2.1
		AimedLocation-Name	0:*	<i>NLString</i> Name or description (e.g. address) of the scheduled location or flexible area. +SIRI v2.1
Depart-ure	AimedDeparture-Time	0:1	<i>xsd:dateTime</i>	Aimed Departure Time in either the original or Production Timetable.
	DeparturePlatform-Name	0:1	<i>NLString</i>	Bay or platform (QUAY) name from which VEHICLE will depart.
	Departure-BoardingActivity	0:1	<i>Departure-BoardingActivity-Enum</i>	Type of boarding allowed at stop. Default is 'boarding'. <i>boarding noBoarding passthru</i>
	DepartureStop-Assignment	0:1	+Structure	Assignment of departure at SCHEDULED STOP POINT to a physical location, in particular to a QUAY (platform) or BOARDING POSITION. +SIRI v2.0 <i>DetailLevel: <u>normal</u>.</i> The structure is identical to ArrivalStopAssignment , i.e., see above for details.
	AimedLatest-PassengerAccess-Time	0:1	<i>xsd:dateTime</i>	Latest target time at which a PASSENGER should aim to arrive at the STOP PLACE containing the stop. This time may be earlier than the VEHICLE departure times and may include time for processes such as checkin, security, etc.(As specified by CHECK CONSTRAINT DELAYS in the underlying data) If absent assume to be the same as Earliest expected departure time, +SIRI 2.0

DatedCall			+Structure	Provides information about a CALL in a DATED VEHICLE JOURNEY.
Headway	AimedHeadway-Interval	0:1	Positive-DurationType	Target headway interval between services for frequency based services.
Interchange	Targeted-Interchange	0:*	+Structure	Information on any planned connections. If omitted: No connections, i.e. TargetedInterchange . <i>Deprecated from SIRI v2.0</i>
Interchange	FromService-Journey-Interchange	0:*	+Structure	Information on any feeder of a planned connections. +SIRI v2.0
Interchange	ToServiceJourney-Interchange	0:*	+Structure	Information on any distributor of a planned connections. +SIRI v2.0
any	Extensions	0:1	xsd:any*	Placeholder for user extensions.

5.5.4.4 RemovedDatedVehicleJourney— Element

A data producer may silently remove a VEHICLE JOURNEY from a line timetable, i.e. DATED TIMETABLE VERSION FRAME, if it was previously provided in error. +SIRI v2.1

It is strongly advised to only use this feature in cases where a journey was sent in error and it can be assumed that as few passengers as possible have seen the erroneous information to avoid confusion.

Careful: Removal of a journey is different from a Cancellation:

- For a **RemovedDatedVehicleJourney** or the removal itself only minimal information, or no information at all, must be communicated to the passengers, i.e., it is removed "silently".
- A **Cancellation** of a journey, on the other hand, is possibly the most important information to provide to the passengers.element.

Table 10 — RemovedDatedVehicleJourney — Attributes

RemovedDatedVehicleJourneyStructure			+Structure	Type for previously planned VEHICLE JOURNEY that is removed from the data producer when using incremental updates. +SIRI v2.1
Vehicle Journey Identity	FramedVehicle-JourneyRef	1:1	+Structure	A reference to the DATED VEHICLE JOURNEY from a previous PT delivery that is removed by the data producer.
	DatedVehicleJourneyIndirectRef	0:1	xsd:boolean	Optionally identify the VEHICLE JOURNEY indirectly by origin and destination and the scheduled times at these stops.
Train Numbers	TrainNumbers	0:1	JourneyPattern-InfoGroup	TRAIN NUMBERS assigned to journey.
	TrainNumberRef	1:*	JourneyEnd-NamesGroup	UE regulation 454/2011 primary code or UIC Train Number.
Reason	ReasonForRemoval	1:1	ServiceInfoGroup	The data producer must provide a reason, e.g. type of error and description, in case he wants to silently remove (instead of cancel) a journey or an interchange from the plan.

5.5.4.5 TargetedInterchange — Element

Each **TargetedInterchange** describes the SERVICE JOURNEY INTERCHANGES (i.e. connections) that may be made at a stop to another onwards distributor journey. Each **TargetedInterchange** is described in the context of a specific **DatedCall** for a specific journey. Table 11 shows this element.

Table 11 — TargetedInterchange — Attributes

TargetedInterchange			+Structure	Information on any planned connections. If omitted: No connections.
Identity	InterchangeCode	0:1	→Interchange-Code	Identifier of SERVICE JOURNEY INTERCHANGE.
	DistributorVehicle-JourneyRef	1:1	→DatedVehicle-JourneyCode	Reference to a distributor DATED VEHICLE JOURNEY.
Connection	Distributor-ConnectionLink	1:1	+Structure	CONNECTION link over which SERVICE JOURNEY INTERCHANGE takes place.
	ConnectionCode	1:1	ConnectionCode	Identifier of CONNECTION link.
	StopPointRef	0:1	→StopPointCode	SCHEDULED STOP POINT from which the distributor VEHICLE JOURNEY departs. If omitted: the distributor journey stop is the same as the feeder journey stop, i.e. that of the containing dated CALL.
	Interchange-Duration	0:1	PositiveDuration-Type	Time (Duration) needed by passenger to change from feeder to distributor.
	Frequent-TravellerDuration	0:1	PositiveDuration-Type	Time (Duration) needed by passenger who is familiar with CONNECTION link to change from feeder to distributor. If absent, use InterchangeDuration and a standard weighting.
	Occasional-TravellerDuration	0:1	PositiveDuration-Type	Time (Duration) needed by passenger who is not familiar with CONNECTION link to change from feeder to distributor. If absent, use InterchangeDuration and a standard weighting.
	ImpairedAccess-Duration	0:1	PositiveDuration-Type	Time (Duration) needed by impaired mobility passenger to change from feeder to distributor. If absent, use InterchangeDuration and a standard weighting.
Identity	Distributor-VisitNumber	0:1	VisitNumberType	Sequence of visit to stop within distributor VEHICLE JOURNEY. Increases monotonically, but not necessarily sequentially.
	DistributorOrder	0:1	xsd:positive-Integer	For implementations for which the overall Order within JOURNEY PATTERN is not used for VisitNumber , (i.e. if VisitNumberIsOrder is <i>false</i>) then can be used to associate the overall Order as well if useful.
Interchange Properties	StaySeated	0:1	xsd:boolean	Whether Vehicle stops only if requested explicitly by passenger. Default is <i>false</i> .
	Guaranteed	0:1	xsd:boolean	Whether the SERVICE JOURNEY INTERCHANGE is guaranteed. Default is <i>false</i> ; interchange is not guaranteed.
	Advertised	0:1	xsd:boolean	Whether the SERVICE JOURNEY INTERCHANGE is advertised as a guaranteed connection. Default is <i>false</i> .
Interchange Times	StandardWaitTime	0:1	xsd:duration	Standard wait time for INTERCHANGE. SIRI v2.0
	MaximumWaitTime	0:1	xsd:duration	Maximum time that Distributor will wait for Feeder for INTERCHANGE. SIRI v1.0.
	MaximumAutomatic-WaitTime	0:1	xsd:duration	Maximum automatic wait time that Distributor will wait for Feeder for INTERCHANGE. SIRI v2.0.
	StandardTransfer-Time	0:1	xsd:duration	Standard transfer duration for INTERCHANGE. SIRI
	MinimumTransfer-Time	0:1	xsd:duration	Minimum transfer duration for INTERCHANGE. SIRI
	MaximumTransfer-Time	0:1	xsd:duration	Maximum transfer duration for INTERCHANGE. SIRI
any	Extensions	0:1	xsd:any*	Placeholder for user extensions.

5.5.4.6 ServiceJourneyInterchange — Element (SIRI v2.0)

Each **ServiceInterchange** describes the SERVICE JOURNEY INTERCHANGES, i.e. connections that may be made over a CONNECTION link between a feeder and a distributor journey. The element is similar in purpose to **TargetedInterchange** but also allows feeder connections to be described, as well as the exchange of SERVICE JOURNEY INTERCHANGES independent of the exchange of a specific journey. Table 12 shows this element. Note that redundant Feeder and Distributor information may be excluded when given by context.

Table 12 — ServiceJourneyInterchange — Attributes

ServiceJourneyInterchange			<i>+Structure</i>	Information on any planned connections, i.e. SERVICE JOURNEY INTERCHANGES. If omitted: No connections.
<i>Identity</i>	InterchangeCode	0:1	→Interchange-Code	Identifier of SERVICE JOURNEY INTERCHANGE.
<i>Connection Link Identity</i>	ConnectionLinkRef	0:1	→Connection-LinkCode	Reference to a physical CONNECTION LINK over which the SERVICE JOURNEY INTERCHANGE takes place. +SIRI v2.0
<i>Feeder Vehicle Journey Identity</i>	FeederRef	1:1 (0:1)	+Structure	Reference to a connecting feeder VEHICLE JOURNEY. +SIRI v2.0. This structure is mandatory except when the ServiceJourneyInterchange is in context of the feeder's DATED CALL.
	FramedVehicleJourneyRef	0:1	+Structure	Frame qualified Reference to a connecting feeder VEHICLE JOURNEY. +SIRI v2.0
	DataFrameRef	1:1	→Vehicle-JourneyCode	Reference to a data frame within participant service. Used to ensure that the DatedVehicleJourneyRef is unique with the data horizon of the service. Often the OperationalDayType is used for this purpose. +SIRI v2.0
	DatedVehicleJourneyRef	1:1	→DatedVehicle-JourneyCode	A reference to the DATED VEHICLE JOURNEY that the VEHICLE is making. +SIRI v2.0
	DatedVehicleJourney-IndirectRef	0:1	+Structure	If no VEHICLE JOURNEY reference is available, identify it by origin and destination and the scheduled times at these stops.
	OriginRef	1:1	→StopPoint-Code	The origin is used to help identify the VEHICLE JOURNEY.
	AimedDeparture-Time	1:1	xsd:dateTime	Departure time from origin SCHEDULED STOP POINT.
	DestinationRef	1:1	→StopPoint-Code	The destination is used to help identify the VEHICLE JOURNEY.
	AimedArrivalTime	1:1	xsd:dateTime	Arrival time at destination SCHEDULED STOP POINT.
	LineRef	0:1	→LineCode	A reference to the LINE of the referenced feeder VEHICLE JOURNEY. +SIRI v2.0
	TrainNumberRef	0:1	→TrainNumber-Code	Reference to the TRAIN NUMBER of the referenced feeder VEHICLE JOURNEY. +SIRI v2.1
	OperatorRef	0:1	→OperatorCode	Reference to OPERATOR of the referenced feeder VEHICLE JOURNEY. +SIRI v2.1
	ParticipantRef	0:1	→Participant-Code	A reference to the system from which the feeder reference comes.

ServiceJourneyInterchange			+Structure	Information on any planned connections, i.e. SERVICE JOURNEY INTERCHANGES. If omitted: No connections.
Feeder Stop Identity	FeederArrivalStopRef	1:1 (0:1)	→StopPointRef	SCHEDULED STOP POINT at which feeder journey arrives. +SIRI v2.0. This element is mandatory except when the ServiceJourneyInterchange is in context of the distributors dated Call.
	FeederVisitNumber	0:1	VisitNumber-Type	Sequence of visit to stop within feeder VEHICLE JOURNEY. Increases monotonically, but not necessarily sequentially.
	FeederStopOrder	0:1	xsd:positive-Integer	For implementations in which the overall order is not defined by VISIT NUMBER, i.e. in case VisitNumbersIsOrder is set to 'false', ORDER can be used to associate the stop order instead. ORDER is also used together with VISIT NUMBER in scenarios where an extra CALL is inserted as a result of despatching alterations. Because such an extra CALL may have the same VisitNumber as another (cancelled) CALL, the STOP ORDER is needed. +SIRI v2.1
	AimedArrivalTimeOfFeeder	0:1	xsd:dateTime	Planned time at which feeder VEHICLE is scheduled to arrive. SIRI v2.1
Distributor Vehicle Journey Identity	DistributorRef	1:1 (0:1)	+Structure	Reference to a connecting distributor VEHICLE JOURNEY. +SIRI v2.0. *)This structure is mandatory except when the ServiceJourneyInterchange is in context of the distributor's DATED CALL.
	FramedVehicleJourneyRef	0:1	+Structure	Frame qualified Reference to a connecting distributor VEHICLE JOURNEY. +SIRI v2.0
	DataFrameRef	1:1	→Vehicle-JourneyCode	Reference to a data frame within participant service. Used to ensure that the DatedVehicleJourneyRef is unique with the data horizon of the service. Often the OperationalDayType is used for this purpose. +SIRI v2.0
	DatedVehicleJourneyRef	1:1	→DatedVehicle-JourneyCode	A reference to the distributor DATED VEHICLE JOURNEY that the VEHICLE is making. +SIRI v2.0
	DatedVehicleJourney-IndirectRef	0:1	+Structure	If no VEHICLE JOURNEY reference is available, identify it by origin and destination and the scheduled times at these stops.
	OriginRef	1:1	→StopPoint-Code	The origin is used to help identify the VEHICLE JOURNEY.
	AimedDeparture-Time	1:1	xsd:dateTime	Departure time from origin SCHEDULED STOP POINT.
	DestinationRef	1:1	→StopPoint-Code	The destination is used to help identify the VEHICLE JOURNEY.
	AimedArrivalTime	1:1	xsd:dateTime	Arrival time at destination SCHEDULED STOP POINT.
	LineRef	0:1	→LineCode	A reference to the LINE of the referenced distributor VEHICLE JOURNEY. +SIRI v2.0
	TrainNumberRef	0:1	→TrainNumber-Code	Reference to the TRAIN NUMBER of the referenced distributor VEHICLE JOURNEY. +SIRI v2.1
	OperatorRef	0:1	→OperatorCode	Reference to OPERATOR of the referenced distributor VEHICLE JOURNEY. +SIRI v2.1
	ParticipantRef	0:1	→Participant-Code	A reference to the system from which the distributor reference comes

<i>ServiceJourneyInterchange</i>			<i>+Structure</i>	Information on any planned connections, i.e. SERVICE JOURNEY INTERCHANGES. If omitted: No connections.
<i>Distributor Stop Identity</i>	<i>DistributorDepartureStopRef</i>	1:1 (0:1)	<i>→StopPointRef</i>	SCHEDULED STOP POINT at which distributor journey departs. +SIRI v2.0. This element is mandatory except when the ServiceJourneyInterchange is in context of the distributor's DATED CALL.
	<i>DistributorVisitNumber</i>	0:1	<i>VisitNumber-Type</i>	Sequence of visit to stop within distributor VEHICLE JOURNEY. Increases monotonically, but not necessarily sequentially.
	<i>DistributorStopOrder</i>	0:1	<i>xsd:dateTime</i>	For implementations in which the overall order is not defined by VisitNumber , i.e. in case VisitNumberIsOrder is set to 'false', ORDER can be used to associate the stop order instead. ORDER is also used together with VISIT NUMBER in scenarios where an extra CALL is inserted as a result of despatching alterations. Because such an extra CALL may have the same VisitNumber as another (cancelled) CALL, the STOP ORDER is needed. +SIRI v2.1
	<i>AimedDepartureTime-OfDistributor</i>	0:1	<i>xsd:positive-Integer</i>	Planned time at which distributor VEHICLE is scheduled to depart. SIRI v2.1
<i>Interchange Properties</i>	<i>StaySeated</i>	0:1	<i>xsd:boolean</i>	Whether Vehicle stops only if requested explicitly by passenger. Default is 'false'.
	<i>Guaranteed</i>	0:1	<i>xsd:boolean</i>	Whether the interchange is guaranteed. Default is 'false'; interchange is not guaranteed.
	<i>Advertised</i>	0:1	<i>xsd:boolean</i>	Whether the interchange is advertised as a connection. Default is 'false'.
<i>Interchange Times</i>	<i>StandardWaitTime</i>	0:1	<i>xsd:duration</i>	Standard wait time for INTERCHANGE. SIRI v2.0
	<i>MaximumWaitTime</i>	0:1	<i>xsd:duration</i>	Maximum time that Distributor will wait for Feeder for INTERCHANGE. SIRI v1.0.
	<i>MaximumAutomaticWaitTime</i>	0:1	<i>xsd:duration</i>	Maximum automatic wait time that Distributor will wait for Feeder for INTERCHANGE. SIRI v2.0.
	<i>StandardTransferTime</i>	0:1	<i>xsd:duration</i>	Standard transfer duration for INTERCHANGE. SIRI v2.0
	<i>MinimumTransferTime</i>	0:1	<i>xsd:duration</i>	Minimum transfer duration for INTERCHANGE. SIRI v2.0
	<i>MaximumTransferTime</i>	0:1	<i>xsd:duration</i>	Maximum transfer duration for INTERCHANGE. SIRI v2.0
Any	<i>Extensions</i>	0:1	<i>xsd:any*</i>	Placeholder for user extensions.

5.5.4.7 RemovedServiceJourneyInterchangeStructure— Element

A data producer may silently remove a SERVICE JOURNEY INTERCHANGE from a line timetable, i.e. DATED TIMETABLE VERSION FRAME, if it was previously provided in error. +SIRI v2.1

It is strongly advised to only use this feature in cases where an interchange was sent in error and it can be assumed that as few passengers as possible have seen the erroneous information to avoid confusion.

Careful: Removal of an Interchange is different from Cancellation:

- i) For a **RemovedServiceJourneyInterchange** or the removal itself only minimal information, or no information at all, must be communicated to the passengers, i.e., it is removed "silently".

- ii) A **Cancellation** of an interchange (or its feeder / distributor journeys), on the other hand, is possibly the most important information to provide to the passengers.confusion.

Table 13 — RemovedServiceJourneyInterchangeStructure — Attributes

RemovedServiceJourneyInterchangeStructure			+Structure	Type for a previously planned SERVICE JOURNEY INTERCHANGE that a data producer wants to silently remove from the plan (because it is erroneous data). Careful: Removal is different from Cancellation. +SIRI v2.1
Identity	InterchangeRef	1:1	→Interchange-Code	A reference to the SERVICE JOURNEY INTERCHANGE from a previous PT delivery that is removed by the data producer.
Connection Link Identity	ConnectionLinkRef	0:1	→Connection-LinkCode	Reference to a physical CONNECTION LINK over which the SERVICE JOURNEY INTERCHANGE takes place. +SIRI v2.0
Reason	ReasonForRemoval	1:1	NLString	The data producer must provide a reason, e.g. type of error and description, in case he wants to silently remove (instead of cancel) a journey or an interchange from the plan. +SIRI v2.1
Feeder Vehicle Journey Identity	FeederRef	1:1	+Structure	Reference to a connecting feeder VEHICLE JOURNEY. +SIRI v2.0.
	FramedVehicleJourneyRef	0:1	+Structure	Frame qualified Reference to a connecting feeder VEHICLE JOURNEY. +SIRI v2.0
	DataFrameRef	1:1	→Vehicle-JourneyCode	Reference to a data frame within participant service. Used to ensure that the DatedVehicleJourneyRef is unique with the data horizon of the service. Often the OperationalDayType is used for this purpose. +SIRI v2.0
	DatedVehicleJourneyRef	1:1	→DatedVehicle-JourneyCode	A reference to the DATED VEHICLE JOURNEY that the VEHICLE is making. +SIRI v2.0
	DatedVehicleJourney-IndirectRef	0:1	+Structure	If no VEHICLE JOURNEY reference is available, identify it by origin and destination and the scheduled times at these stops.
	OriginRef	1:1	→StopPoint-Code	The origin is used to help identify the VEHICLE JOURNEY.
	AimedDeparture-Time	1:1	xsd:dateTime	Departure time from origin SCHEDULED STOP POINT.
	DestinationRef	1:1	→StopPoint-Code	The destination is used to help identify the VEHICLE JOURNEY.
	AimedArrivalTime	1:1	xsd:dateTime	Arrival time at destination SCHEDULED STOP POINT.
	LineRef	0:1	→LineCode	A reference to the LINE of the referenced feeder VEHICLE JOURNEY. +SIRI v2.0
	TrainNumberRef	0:1	→TrainNumber-Code	Reference to the TRAIN NUMBER of the referenced feeder VEHICLE JOURNEY. +SIRI v2.1
	OperatorRef	0:1	→OperatorCode	Reference to OPERATOR of the referenced feeder VEHICLE JOURNEY. +SIRI v2.1
	ParticipantRef	0:1	→Participant-Code	A reference to the system from which the feeder reference comes.

RemovedServiceJourneyInterchangeStructure			+Structure	Type for a previously planned SERVICE JOURNEY INTERCHANGE that a data producer wants to silently remove from the plan (because it is erroneous data). Careful: Removal is different from Cancellation. +SIRI v2.1
<i>Feeder Stop Identity</i>	FeederArrivalStopRef	1:1	→StopPointRef	SCHEDULED STOP POINT at which feeder journey arrives. +SIRI v2.0.
	FeederVisitNumber	0:1	VisitNumber-Type	Sequence of visit to stop within feeder VEHICLE JOURNEY. Increases monotonically, but not necessarily sequentially.
	FeederStopOrder	0:1	xsd:positive-Integer	For implementations in which the overall order is not defined by VISIT NUMBER, i.e. in case VisitNumberIsOrder is set to 'false', ORDER can be used to associate the stop order instead. ORDER is also used together with VISIT NUMBER in scenarios where an extra CALL is inserted as a result of despatching alterations. Because such an extra CALL may have the same VisitNumber as another (cancelled) CALL, the STOP ORDER is needed. +SIRI v2.1
	AimedArrivalTimeOfFeeder	0:1	xsd:dateTime	Planned time at which feeder VEHICLE is scheduled to arrive. SIRI v2.1
<i>Distributor Vehicle Journey Identity</i>	DistributorRef	1:1	+Structure	Reference to a connecting distributor VEHICLE JOURNEY. +SIRI v2.0.
	FramedVehicleJourneyRef	0:1	+Structure	Frame qualified Reference to a connecting distributor VEHICLE JOURNEY. +SIRI v2.0
	DataFrameRef	1:1	→Vehicle-JourneyCode	Reference to a data frame within participant service. Used to ensure that the DatedVehicleJourneyRef is unique with the data horizon of the service. Often the OperationalDayType is used for this purpose. +SIRI v2.0
	DatedVehicleJourneyRef	1:1	→DatedVehicle-JourneyCode	A reference to the distributor DATED VEHICLE JOURNEY that the VEHICLE is making. +SIRI v2.0
	DatedVehicleJourney-IndirectRef	0:1	+Structure	If no VEHICLE JOURNEY reference is available, identify it by origin and destination and the scheduled times at these stops.
	OriginRef	1:1	→StopPoint-Code	The origin is used to help identify the VEHICLE JOURNEY.
	AimedDeparture-Time	1:1	xsd:dateTime	Departure time from origin SCHEDULED STOP POINT.
	DestinationRef	1:1	→StopPoint-Code	The destination is used to help identify the VEHICLE JOURNEY.
	AimedArrivalTime	1:1	xsd:dateTime	Arrival time at destination SCHEDULED STOP POINT.
	LineRef	0:1	→LineCode	A reference to the LINE of the referenced distributor VEHICLE JOURNEY. +SIRI v2.0
	TrainNumberRef	0:1	→TrainNumber-Code	Reference to the TRAIN NUMBER of the referenced distributor VEHICLE JOURNEY. +SIRI v2.1
	OperatorRef	0:1	→OperatorCode	Reference to OPERATOR of the referenced distributor VEHICLE JOURNEY. +SIRI v2.1
	ParticipantRef	0:1	→Participant-Code	A reference to the system from which the distributor reference comes

RemovedServiceJourneyInterchangeStructure			+Structure	Type for a previously planned SERVICE JOURNEY INTERCHANGE that a data producer wants to silently remove from the plan (because it is erroneous data). Careful: Removal is different from Cancellation. +SIRI v2.1
Distributor Stop Identity	DistributorDepartureStopRef	1:1	→StopPointRef	SCHEDULED STOP POINT at which distributor journey departs. +SIRI v2.0.
	DistributorVisitNumber	0:1	VisitNumber- Type	Sequence of visit to stop within distributor VEHICLE JOURNEY. Increases monotonically, but not necessarily sequentially.
	DistributorStopOrder	0:1	xsd:dateTime	For implementations in which the overall order is not defined by VisitNumber , i.e. in case VisitNumberIsOrder is set to 'false', ORDER can be used to associate the stop order instead. ORDER is also used together with VisitNumber in scenarios where an extra CALL is inserted as a result of despatching alterations. Because such an extra CALL may have the same VisitNumber as another (cancelled) CALL, the STOP ORDER is needed. +SIRI v2.1
	AimedDepartureTime-OfDistributor	0:1	xsd:positive- Integer	Planned time at which distributor VEHICLE is scheduled to depart. SIRI v2.1
Any	Extensions	0:1	xsd:any*	Placeholder for user extensions.

5.5.5 ProductionTimetableDelivery — Example

The following is an example of a **ProductionTimetableDelivery**.

```

<ServiceDelivery>
  <!--=====HEADER===== -->
  <ResponseTimestamp>2004-12-17T09:30:46-05:00</ResponseTimestamp>
  <ProducerRef>KUBRICK</ProducerRef>
  <Status>true</Status>
  <MoreData>>false</MoreData>
  <!--=====PAYLOAD===== -->
  <ProductionTimetableDelivery version="1.0">
    <ResponseTimestamp>2001-12-17T09:30:47-05:00</ResponseTimestamp>
    <SubscriberRef>NADER</SubscriberRef>
    <SubscriptionRef>00123456</SubscriptionRef>
    <Status>true</Status>
    <ValidUntil>2001-12-17T10:30:47-05:00</ValidUntil>
    <DatedTimetableVersionFrame>
      <LineRef>123</LineRef>
      <DirectionRef>Out</DirectionRef>
      <PublishedLineName>String</PublishedLineName>
      <DirectionName xml:lang="EN">Outbound</DirectionName>
      <!-- Service Info Group -->
      <OperatorRef>Smooth</OperatorRef>
      <ProductCategoryRef>Fun Special</ProductCategoryRef>
      <ServiceFeatureRef>normalStopping</ServiceFeatureRef>
      <VehicleFeatureRef>lowStep</VehicleFeatureRef>
      <ServiceFeatureRef>cyclesPermitted</ServiceFeatureRef>
      <LineNote>Special services at Easter</LineNote>
      <!-- Timetable real-time info Group -->
      <Monitored>true</Monitored>
      <DatedVehicleJourney>
        <!-- Identity Group -->
        <DatedVehicleJourneyCode>DVC0008767</DatedVehicleJourneyCode>
        <VehicleJourneyRef>VJ123</VehicleJourneyRef>
        <ExtraJourney>>false</ExtraJourney>
        <PublishedLineName>123 Out</PublishedLineName>
        <!-- Service Info Group -->

```

```
<OperatorRef>Sharp</OperatorRef>
<ProductCategoryRef>plusbus</ProductCategoryRef>
<ServiceFeatureRef>hailAndRider</ServiceFeatureRef>
<VehicleFeatureRef>lowDoor</VehicleFeatureRef>
<!-- Journey Info Group -->
<VehicleJourneyName>Shoppers Special</VehicleJourneyName>
<JourneyNote>Not suitable for claustrophobes.</JourneyNote>
<Monitored>true</Monitored>
<HeadwayService>false</HeadwayService>
<!-- == CALL 1 == -->
<DatedCall>
  <StopPointRef>HLTS00101</StopPointRef>
  <BoardingStretch>false</BoardingStretch>
  <RequestStop>false</RequestStop>
  <DestinationDisplay>Limbo</DestinationDisplay>
  <AimedArrivalTime>2001-12-17T09:30:47-05:00</AimedArrivalTime>
  <ArrivalBoardingActivity>alighting</ArrivalBoardingActivity>
  <AimedArrivalTime>2001-12-17T09:30:47-05:00</AimedArrivalTime>
  <DeparturePlatformName>1</DeparturePlatformName>
  <DepartureBoardingActivity>boarding</DepartureBoardingActivity>
</DatedCall>
<!-- == CALL 2 == -->
<DatedCall>
  <StopPointRef>HLTS00102</StopPointRef>
  <BoardingStretch>true</BoardingStretch>
  <DestinationDisplay>Hell First Circle</DestinationDisplay>
  <AimedArrivalTime>2001-12-17T09:30:47-05:00</AimedArrivalTime>
  <AimedDepartureTime>2001-12-17T09:30:47-05:00</AimedDepartureTime>
  <TargetedInterchange>
    <DistributorVehicleJourneyRef>V45681</DistributorVehicleJourneyRef>
    <DistributorConnectionLink>
      <ConnectionLinkCode>01340</ConnectionLinkCode>
      <DefaultDuration>P3M</DefaultDuration>
    </DistributorConnectionLink>
    <DistributorVisitNumber>1</DistributorVisitNumber>
    <Guaranteed>true</Guaranteed>
  </TargetedInterchange>
</DatedCall>
<!-- == CALL 3 == -->
<DatedCall>
  <StopPointRef>HLTS00103</StopPointRef>
  <DestinationDisplay>Hell</DestinationDisplay>
  <CallNote>Can change here to</CallNote>
  <TimetabledArrivalTime>2001-12-17T09:30:47-05:00</TimetabledArrivalTime>
  <ArrivalPlatformName>4</ArrivalPlatformName>
  <TimetabledDepartureTime>2001-12-17T09:30:47-05:00</TimetabledDepartureTime>
  <DepartureBoardingActivity>NoBoarding</DepartureBoardingActivity>
  <TargetedInterchange>
    <InterchangeCode>I765</InterchangeCode>
    <DistributorVehicleJourneyRef>V45678</DistributorVehicleJourneyRef>
    <DistributorConnectionLink>
      <ConnectionLinkCode>01345</ConnectionLinkCode>
    <StopPointRef>HLTS00103</StopPointRef>
    <StopPointName>Gare de Nord</StopPointName>
    <DefaultDuration>P5M</DefaultDuration>
    <FrequentTravellerDuration>P3M</FrequentTravellerDuration>
    <OccasionalTravellerDuration>P7M</OccasionalTravellerDuration>
    <ImpairedAccessDuration>P15M</ImpairedAccessDuration>
  </DistributorConnectionLink>
  <DistributorVisitNumber>2</DistributorVisitNumber>
  <StaySeated>false</StaySeated>
  <Guaranteed>true</Guaranteed>
  <Advertised>true</Advertised>
  <MaximumWaitTime>P15M</MaximumWaitTime>
</TargetedInterchange>
```

```
</DatedCall>  
</DatedVehicleJourney>  
</DatedTimetableVersionFrame>  
</ProductionTimetableDelivery>  
</ServiceDelivery>
```

5.5.6 Efficient Delivery of Large Timetables

Production Timetable Service responses may be very large. The XML messages may be broken down into smaller packets for transmission using the **MoreData** attribute in the **DataSupplyAnswer** message. See Multipart Despatch earlier.

In order to reduce the data volume it is possible to exchange only the changes instead of the entire schedule. However, for this to work the daily updated schedule of the AVMS must originate from the same database as the seasonal schedule of the schedule information system. Note also that the daily updated planned schedules usually exist as a progression of the seasonal schedule, which means that over time, the deviations from the originally created seasonal schedule become greater. To obtain just changes, the active schedule version against which changes are desired shall be specified in the **TimetableVersionRef** of the subscription request. If the same or an earlier version is active in the data sender, then it need only transmit the changes to the planned schedule in the Production Timetable service.

6 Estimated Timetable Service [ET]

6.1 Purpose

The Estimated Timetable service is used by the AVMS to inform interested schedule information systems of the current status of all known VEHICLE JOURNEYS. This enables the schedule information system to provide up-to-the-minute information for short-term journey planning. It can also be used to support intelligent displays that calculate the deviation from timetable themselves using a timetable and a real time difference delay by the SIRI Stop Monitoring Service.

Message content can include:

- Schedule deviations with predictions for future route sections.
- Failure of a VEHICLE JOURNEY.
- Additional journeys.
- Change to the VEHICLE capacity (passenger load).
- Change to VEHICLE TYPE/VEHICLE Equipment.
- Platform changes.
- Stop obstruction.
- Path (i.e. JOURNEY PATTERN) changes.

As with the production timetable service, the AVMS shall only transmit the boardable VEHICLE JOURNEYS, i.e. the VEHICLE JOURNEYS that carry passengers.

6.2 Capability and Permission Matrices

6.2.1 Capability Matrix

The following set of required and optional capabilities is defined for the Estimated Timetable service. If the service supports Capability Discovery, the ***EstimatedTimetableCapabilitiesRequest*** / ***EstimatedTimetableCapabilitiesResponse*** message pair can be used to determine the implementation's capabilities.

Table 14 — EstimatedTimetable Service Capabilities Matrix

<i>EstimatedTimetableCapabilities</i>			<i>+Structure</i>	Capabilities describing implementation of Estimated Timetable service.
<i>inherit</i>	<i>:::</i>	1:1	<i>See xxx-Capability-Response</i>	See SIRI Part 2 for Common Capability attributes.
<i>Topic</i>	<i>TopicFiltering</i>	0:1	<i>+Structure</i>	Which optional filtering features are supported?
	<i>DefaultPreviewInterval</i>	0:1	<i>Positive-DurationType</i>	Default Preview Interval.
	<i>FilterByOperatorRef</i>	0:1	<i>xsd:boolean</i>	Whether results can be filtered by OPERATOR. Required Capability: default is 'true'.
	<i>FilterByLineRef</i>	0:1	<i>xsd:boolean</i>	Whether results can be filtered by LINE. Required Capability: Default is 'true'.
	<i>FilterByVehicleMode</i>	0:1	<i>xsd:boolean</i>	Whether results can be filtered by VEHICLE MODE. Default is 'true'. +SIRI v2.1
	<i>FilterByProductCategoryRef</i>	0:1	<i>xsd:boolean</i>	Whether results can be filtered by PRODUCT CATEGORY. Default is 'true'. +SIRI v2.1
	<i>FilterByStopPointRef</i>	0:1	<i>xsd:boolean</i>	Whether results can be filtered by SCHEDULED STOP POINT. Default is 'true'. +SIRI v2.1
	<i>FilterByVersionRef</i>	0:1	<i>xsd:boolean</i>	Whether results can be filtered by TIMETABLE Version. Default is 'true'.
<i>Request Policy</i>	<i>RequestPolicy</i>	0:1	<i>+Structure</i>	Which optional features of the Request Policy are supported by the service?
	<i>Language</i>	1:*	<i>xsd:language</i>	National languages used by service.
			<i>choice</i>	Location reference coordinate system.
	<i>Translations</i>	0:1	<i>xsd:boolean</i>	Whether the producer supports translations. SIRI 2.0 Default is false.
	<i>a</i> <i>GmlCoordinateFormat</i>	0:1	<i>SrsName-Type</i>	Default coordinate format is given by a GML format name value.
	<i>b</i> <i>WgsDecimalDegrees</i>		<i>EmptyType</i>	Default coordinate data system is WGS 84 latitude and longitude in decimal degrees of arc.
<i>Sub- scription Policy</i>	<i>SubscriptionPolicy</i>	0:1	<i>+Structure</i>	Which features of the <i>SubscriptionPolicy</i> are supported by service?
	<i>HasIncrementalUpdates</i>	0:1	<i>xsd:boolean</i>	Whether incremental updates can be specified for updates. Default is 'true'.
	<i>HasChangeSensitivity</i>	0:1	<i>xsd:boolean</i>	Whether change threshold can be specified for updates. Default is 'true'.

<i>EstimatedTimetableCapabilities</i>			+Structure	Capabilities describing implementation of Estimated Timetable service.
Access Control	<i>AccessControl</i>	0:1	+Structure	Which optional Access Control features are supported by service?
	<i>RequestChecking</i>	0:1	xsd:boolean	Whether access control of requests is supported. Default is 'false'.
	<i>CheckOperatorRef</i>	0:1	xsd:boolean	If access control is supported, whether access control by OPERATOR is supported. Default is 'true'.
	<i>CheckLineRef</i>	0:1	xsd:boolean	If access control is supported, whether access control by LINE is supported. Default is 'true'.
	<i>CheckConnectionLink-Ref</i>	0:1	xsd:boolean	If access control is supported, whether access control by CONNECTION link is supported. Default is 'true'.
any	<i>Extensions</i>	0:1	xsd:any*	Placeholder for user extensions.

6.2.2 Permission Matrix

If the implementation supports both Capability Discovery and Access Controls, then the ***Estimated-TimetableCapabilitiesResponse*** response can include the access permissions for the requestor participant to access data.

Table 15 — EstimatedTimetable Service — Permissions

<i>EstimatedTimetablePermission</i>			+Structure	Permissions to use implementation of Estimated Timetable service.
Inherit	...	1:1	xxxService-Permissions	See SIRI Part 2 for Common Permission elements.
Topic	<i>OperatorPermissions</i>	0:1	+Structure	OPERATOR permissions for participant. See Part 2.
	<i>LinePermissions</i>	0:1	+Structure	LINE permissions for participant. See Part 2.
	<i>ConnectionLinkPermissions</i>	0:1	+Structure	CONNECTION link permissions for participant. See Part 2.

6.3 EstimatedTimetableRequest

6.3.1 EstimatedTimetableRequest — Element

The ***EstimatedTimetableRequest*** states which timetables should be returned.

The ***EstimatedTimetableRequest*** can be used in both a direct request, and for a subscription. If used for a subscription, additional ***EstimatedTimetableSubscriptionPolicy*** parameters can be specified.

The primary *Topic* term on the request is the time window for which timetables are to be returned. Additional topic filtering on LINE is also allowed. If filtering is not specified, all LINES known to the AVMS are transmitted.

If the timetable version is not available, an error code is returned NoInfoForTopic. In this situation a subscription is not set up.

Table 16 — EstimatedTimetableRequest — Attributes

<i>EstimatedTimetableRequest</i>			<i>+Structure</i>	Request for Estimated timetables.
<i>Attributes</i>	Version	1:1	<i>VersionString</i>	Version identifier of Estimated Timetable Service, e.g. '1.0c.'
<i>Endpoint Properties</i>	Request- Timestamp	1:1	<i>xsd:dateTime</i>	See SIRI Part 2 Common properties of SIRI Functional Service Requests.
	Message- Identifier	0:1	<i>MessageQualifier</i>	
<i>Topic</i>	Preview- Interval	0:1	<i>Positive- DurationType</i>	Maximum Preview time in minutes requested by the schedule information system. Preview horizon only limits real time prediction data, information on additional journeys, cancellations etc., that are beyond the interval may still be included.
	Timetable- VersionRef	0:1	<i>xsd:string</i>	Communicate only differences to the timetable specified by this version of the timetable.
	OperatorRef	0:*	<i>→OperatorCode</i>	Filter the results to include only results for the specified operator. Optional SIRI capability: <i>TopicFiltering / ByOperator</i> .
	Lines	0:*	<i>LineDirection</i>	Filter the results to include only VEHICLES along the given LINES. SIRI v1.3
	LineRef	0:1	<i>→LineCode</i>	Filter the results to include only results for the given LINE. If no LineRef is specified as a subscription filter, this implicitly implies transmission of data for all LINES in the AVMS.
	Direction- Ref	0:1	<i>→DirectionCode</i>	Filter the results to include only Stop Visits for VEHICLES running in a specific relative DIRECTION, for example, "inbound" or "outbound". (Direction does not specify a destination.) Optional SIRI capability: <i>TopicFiltering / ByDirection</i> .
	VehicleMode	0:*	<i>VehicleModes- Enum</i>	Filter the results to include only journeys of the specified VEHICLE MODE. +SIRI v2.1
	Product- CategoryRef	0:*	<i>→Product- CategoryCode</i>	Filter the results to include only journeys of the specified TYPE OF PRODUCT CATEGORY. +SIRI v2.1
	StopPointRef	0:*	<i>→StopPoint-Code</i>	Filter the results to include only journeys with a CALL at the specified STOP POINT. +SIRI v2.1
<i>Policy</i>	Language	0:*	<i>xml:lang</i>	Preferred languages in which to return text values. Optional SIRI capability: <i>NationalLanguage</i> .
	Include- Translations	0:1	<i>xsd:boolean</i>	Whether the producer should include any available translations of NLString text elements into multiple languages. If false elements only one value per text element will be provided. +SIRI.2.0 Default is false.
	Include- Interchanges	0:1	<i>xsd:boolean</i>	Whether SERVICE JOURNEY INTERCHANGE data is to be transmitted or not. Default is true. +SIRI v2.1
	Include- Journey- Relations	0:1	<i>xsd:boolean</i>	Whether JOURNEY RELATION data is to be transmitted or not. Default is true. +SIRI v2.1
	Estimated- Timetable- DetailLevel	0:1	<i>Estimated- Timetable- DetailLevelEnum</i>	Level of detail to include in response. <i>minimum / basic / normal / calls / full</i> Default is 'calls'. Optional SIRI capability: <i>DetailLevel</i> (if absent, must support <u>normal</u>). +SIRI.2.0
any	Extensions	0:1	<i>xsd:any*</i>	Placeholder for user extensions.

6.3.2 EstimatedTimetableRequest — Example

The following is an example of an *EstimatedTimetableRequest*.

```
<ServiceRequest>
  <EstimatedTimetableRequest version="1.0">
    <RequestTimestamp>2001-12-17T09:30:47-05:00</RequestTimestamp>
    <PreviewInterval>P1Y2M3DT10H30M</PreviewInterval>
    <TimetableVersionRef>0008</TimetableVersionRef>
    <OperatorRef>SMOOTH</OperatorRef>
    <Lines>
      <LineDirection>
        <LineRef>123</LineRef>
        <DirectionRef>INBOUND</DirectionRef>
      </LineDirection>
    </Lines>
  </EstimatedTimetableRequest>
</ServiceRequest>
```

6.4 EstimatedTimetableSubscriptionRequest

6.4.1 EstimatedTimetableSubscriptionRequest — Element

The *EstimatedTimetableSubscriptionRequest* requests the asynchronous delivery of the information described by an *EstimatedTimetableRequest*. The *EstimatedTimetableSubscriptionRequest* Policy parameters control the processing of the subscription.

At the start of the subscription, the AVMS is responsible for transmitting the current full status to the schedule information system, i.e. it transmits all real-time data that deviates from the planned schedule at the start of the subscription.

Table 17 — EstimatedTimetableSubscriptionRequest — Attributes

<i>EstimatedTimetableSubscriptionRequest</i>			+Structure	Request for a subscription to the SIRI Estimated Timetable Service.
Identity	<i>SubscriberRef</i>	0:1	→ParticipantCode	See SIRI Part 2, Common <i>SubscriptionRequest</i> parameters.
	<i>SubscriptionIdentifier</i>	1:1	Subscription-Qualifier	
Lease	<i>InitialTerminationTime</i>	1:1	xsd:dateTime	
Request	<i>EstimatedTimetable-Request</i>	1:1	+Structure	See <i>EstimatedTimetableRequest</i> .
Policy	<i>IncrementalUpdates</i>	0:1	xsd:boolean	Whether the producer should return the complete set of data, or only provide updates to the previously returned data i.e. changes to the expected deviation (delay or early time). Default is 'true'. If true only changes at the first stop will be returned and the client must interpolate the If false each subscription response will contain the full information as specified in this request. (SIRI 2.0)
	<i>ChangeBeforeUpdate</i>	0:1	PositiveDuration-Type	If incremental update, Threshold value in seconds after which the deviations from planned schedule or the last message are to be transmitted. (Optional from SIRI 2.0)
	<i>SkipRecordedCall-Updates</i>	0:1	xsd:boolean	Indicates whether actual arrival-/departure times should be delivered as incremental updates, i.e. whether <i>RecordedCall</i> updates are transmitted immediately after an event occurs. The server will automatically proceed with 'false' if capability is not supported. +SIRI v2.1

<i>EstimatedTimetableSubscriptionRequest</i>			<i>+Structure</i>	Request for a subscription to the SIRI Estimated Timetable Service.
				(i) 'false': Specifies that the data producer should transmit RecordedCall data, in particular actual arrival-/departure information as an incremental update immediately after an event occurs (with hysteresis taken into account) as is generally the case. (ii) 'true': Can be requested if the data traffic is to be reduced and an immediate transmissions is not required in any of the consumer systems. 'true' specifies that the data producer should skip RecordedCall updates (if capability is supported after all), i.e., deliver them with the next update instead. (iii) No specification: Default value 'false' applies (don't skip updates of recorded data).
	IncludeOnlyRecorded-CallUpdates	0:1	<i>xsd:boolean</i>	Indicates whether ONLY actual arrival- and departure times should be delivered. In other words, whether all updates related to EstimatedCall should be skipped. The server will automatically proceed with 'false' if capability is not supported. +SIRI v2.1 (i) 'false': Specifies that the data producer should transmit Estimated- and RecordedCall data as an incremental update immediately after an event occurs (with hysteresis taken into account) as is generally the case. (ii) 'true': Can be requested if a consumer system is only interested in the actual times / recorded events because it only wants to check the performance for example. 'true' specifies that the data producer should only deliver RecordedCall updates and skip EstimatedCall updates (if capability is supported after all), i.e., deliver EstimatedCall updates only with the next RecordedCall update. (iii) No specification: Default value 'false' applies (don't skip updates of estimated data).
	Extensions	0:1	<i>xsd:any*</i>	Placeholder for user extensions.

6.4.2 EstimatedTimetableSubscriptionRequest — Example

The following is an example of an EstimatedTimetableSubscriptionRequest.

```

<SubscriptionRequest>
  <!--=====ENDPOINT REFERENCES=====-->
  <RequestTimestamp>2004-12-17T09:30:47-05:00</RequestTimestamp>
  <RequestorRef>NADER</RequestorRef>
  <!-- Subscription 1 for VIS123 to Place 975 -->
  <EstimatedTimetableSubscriptionRequest>
    <SubscriberRef>NADER</SubscriberRef>
    <SubscriptionIdentifier>000765</SubscriptionIdentifier>
    <InitialTerminationTime>2001-12-17T09:30:47-05:00</InitialTerminationTime>
    <EstimatedTimetableRequest version="1.0">
      <RequestTimestamp>2001-12-17T09:30:47-05:00</RequestTimestamp>
      <PreviewInterval>P1Y2M3DT10H30M</PreviewInterval>
      <TimetableVersionRef>0008</TimetableVersionRef>
      <OperatorRef>SMOOTH</OperatorRef>
      <LineRef>123</LineRef>
      <DirectionRef>INBOUND</DirectionRef>
    </EstimatedTimetableRequest>
    <ChangeBeforeUpdates>P1Y2M3DT10H30M</ChangeBeforeUpdates>
  </EstimatedTimetableSubscriptionRequest>
</SubscriptionRequest>

```

6.5 The EstimatedTimetableDelivery

6.5.1 Introduction

The *EstimatedTimetableDelivery* returns the predicted arrival times of a VEHICLE or group of VEHICLES.

6.5.2 ServiceDelivery with a EstimatedTimetableDelivery — Element

One or more *EstimatedTimetableSubscriptionRequest* elements may be returned as part of a SIRI *ServiceDelivery*.

Table 18 — ServiceDelivery / EstimatedTimetableDelivery — Attributes

<i>ServiceDelivery</i>			+Structure	See SIRI Part 2 <i>ServiceDelivery</i>
HEADER	...	1:1	See <i>ServiceDelivery</i>	
Payload	<i>EstimatedTimetableDelivery</i>	0:*	+Structure	See <i>EstimatedTimetableDelivery</i> element.

6.5.3 EstimatedTimetableDelivery — Element

Each *EstimatedTimetableDelivery* is made up of *EstimatedVehicleJourney* elements. There will be status messages for any requests that could not be fulfilled.

Table 19 — EstimatedTimetableDelivery — Attributes

<i>EstimatedTimetableDelivery</i>			+Structure	Describes one or more Dated Timetables.
Attributes	<i>version</i>	1:1	<i>VersionString</i>	Version identifier of Production timetable Service. Fixed.
LEADER	...	1:1	<i>xxxServiceDelivery</i>	Inherits from <i>xxxServiceDelivery</i> : See SIRI Part 2.
Payload	<i>EstimatedJourney-VersionFrame</i>	0:*	+Structure	See <i>EstimatedJourneyVersionFrame</i> element.
any	<i>Extensions</i>	0:1	xsd:any*	Placeholder for user extensions.

6.5.4 EstimatedJourneyVersionFrame — Element

Each production timetable is returned as an *EstimatedJourneyVersionFrame* element. Each *EstimatedJourneyVersionFrame* comprises one or more *EstimatedVehicleJourney* elements grouped for a version of the timetable.

Table 20 — EstimatedJourneyVersionFrame — Attributes

<i>EstimatedJourneyVersionFrame</i>			+Structure	Provides a schedule of DATED VEHICLE JOURNEY for a LINE and DIRECTION
Log	<i>RecordedAtTime</i>	1:1	xsd:dateTime	Time at which data was recorded.
Identity	<i>VersionRef</i>	0:1	→VersionCode	Reference to a TIMETABLE VERSION FRAME.
Journeys	<i>EstimatedVehicleJourney</i>	1:*	+Structure	Provides real-time information about a VEHICLE JOURNEY along which a VEHICLE is running. See <i>EstimatedVehicleJourney</i> element.
Connections	<i>EstimatedService-JourneyInterchange</i>	0:*	+Structure	Connection parameters for a monitored SERVICE JOURNEY INTERCHANGE between a feeder and distributor journey. SIRI 2.0
any	<i>Extensions</i>	0:1	xsd:any*	Placeholder for user extensions.

6.5.5 EstimatedVehicleJourney — Element

6.5.5.1 Overview

Each **EstimatedVehicleJourney** contains an ordered list of **EstimatedCall** elements, as well as other properties.

There are three different ways to match the journeys described in the real-time data to the planned schedule:

- A full DatedVehicleJourneyRef, if known.
- A signature of the journey comprising its origin and destination points and arrival and departure times at those points.
- A real-time VEHICLE JOURNEY code (**EstimatedVehicleJourneyCode**).

Method (ii) allows installations that do not have a Production Timetable service still to make use of data.

Table 21 — EstimatedVehicleJourney — Attributes

EstimatedVehicleJourney			<i>+Structure</i>	Provides real-time information about the VEHICLE JOURNEY along which a VEHICLE is running.
<i>Log</i>	RecordedAtTime	1:1	<i>xsd:dateTime</i>	Time at which data for individual journey was recorded if different from that .on frame. SIRI 2.0
<i>Vehicle Journey Identity</i>	LineRef	1:1	<i>→LineCode</i>	Reference to the LINE of the VEHICLE JOURNEY.
	DirectionRef	1:1	<i>→DirectionCode</i>	Reference to the relative DIRECTION the VEHICLE is running along the LINE, for example, "in" or "out", "clockwise". Distinct from a destination.
			<i>choice</i>	One of the following three ways of identifying a journey.
	a FramedVehicle-JourneyRef	1:1	<i>+Structure</i>	Reference to the VEHICLE JOURNEY. The Frame is provided by the EstimatedJourneyVersionFrame that contains the journey.
	DatedVehicle-Journey-IndirectRef	0:1	<i>+Structure</i>	If no VEHICLE JOURNEY reference is available, identify it by origin and destination and the scheduled times at these stops.
	OriginRef	1:1	<i>→StopPointCode</i>	The origin is used to help identify the VEHICLE JOURNEY.
	Aimed-Departure-Time	1:1	<i>xsd:dateTime</i>	Departure time at origin stop.
	DestinationRef	1:1	<i>→StopPointCode</i>	The origin is used to help identify the VEHICLE JOURNEY.
	AimedArrival-Time	1:1	<i>xsd:dateTime</i>	Arrival time at origin stop.
	b EstimatedVehicle-JourneyCode	1:1	<i>Estimated-VehicleJourney-Code</i>	If this is the first message about an extra unplanned VEHICLE JOURNEY, a new and unique code must be given for it. ExtraJourney should be set to 'true'.
<i>Change</i>	ExtraJourney	0:1	<i>xsd:boolean</i>	Whether this journey is an addition to the plan. Can only be used when both participants recognise the same schedule version. If omitted, defaults to <i>false</i> : the journey is not an addition.
	Cancellation	0:1	<i>xsd:boolean</i>	Whether this journey is a cancellation of a journey in the plan. Can only be used when both participants recognise the same schedule version. If omitted, defaults to <i>false</i> : Journey is not a cancellation.

<i>EstimatedVehicleJourney</i>			<i>+Structure</i>	Provides real-time information about the VEHICLE JOURNEY along which a VEHICLE is running.
<i>JourneyPatternInfo</i>	:::	0:1	<i>JourneyPatternInfoGroup</i>	See SIRI Part 2 <i>JourneyPatternInfoGroup</i> .
<i>ServiceInfo</i>	:::	0:1	<i>ServiceInfoGroup</i>	See SIRI Part 2 <i>ServiceInfoGroup</i> .
<i>JourneyInfoGroup</i>	:::	0:1	<i>JourneyInfoGroup</i>	See SIRI Part 2 <i>JourneyInfoGroup</i> .
<i>Estimated Info</i>	<i>HeadwayService</i>	0:1	<i>xsd:boolean</i>	Whether this is a Headway Service, that is one shown as operating at a prescribed interval rather than to a fixed timetable.
	<i>FirstOrLastJourney</i>	0:1	<i>FirstOrLastJourneyEnum</i>	Whether journey is first or last journey of day. +SIRI v2.0
<i>DisruptionGroup</i>	:::	0:1	<i>DisruptionGroup</i>	See SIRI Part 2 <i>DisruptionGroup</i> . <i>DetailLevel</i> : normal.
<i>Real-time Info</i>	<i>Monitored</i>	0:1	<i>xsd:boolean</i>	Whether there is real-time information available for journey. Default is 'true'. It is recommended to specify a <i>MonitoringError</i> if <i>Monitored</i> is set to 'false'.
	<i>MonitoringError</i>	0:1	<i>xsd:nmtokens</i>	If <i>Monitored</i> is 'false', a (list of) reason(s) for non-availability of real-time data. Examples are "GPS", "GPRS", "Radio" etc. <i>MonitoringError</i> must not be used if <i>Monitored</i> is omitted or set to 'true'.
	<i>PredictionInaccurate</i>	0:1	<i>xsd:boolean</i>	Whether the VEHICLE is in congestion. If not, present, not known. Inheritable.
	<i>PredictionInaccurateReason</i>	0:1	<i>PredictionInaccurateReasonEnum</i>	Can be used to inform the passenger about the reason for a change of the prediction (in)accuracy in case <i>PredictionInaccurate</i> is set to 'true'. See Part2 Common definitions. +SIRI v2.1 <i>vehicleInTrafficJam</i> / <i>technicalProblem</i> / <i>dispatchAction</i> / <i>missingUpdate</i> / <i>unknown</i>
	<i>Occupancy</i>	0:1	<i>OccupancyEnum</i>	An approximate figure of how occupied the journey is across all of its stops, e.g. 'manySeatsAvailable' or 'standingRoomOnly'. If omitted: Passenger load is unknown. See Part 2 Common definitions. <i>full</i> / <i>seatsAvailable</i> / <i>standingAvailable</i> / <i>unknown</i> / <i>empty</i> / <i>manySeatsAvailable</i> / <i>fewSeatsAvailable</i> / <i>standingRoomOnly</i> / <i>crushedStandingRoomOnly</i> / <i>notAcceptingPassengers</i> Occupancies and capacities for individual VEHICLES, e.g. parts of a COMPOUND TRAIN, can also be specified in more detail for the departure on CALL level.
<i>Operational Info</i>	:::	0:1	<i>OperationalInfoGroup</i>	See SIRI Part 2 <i>OperationalInfoGroup</i> .

<i>EstimatedVehicleJourney</i>				<i>+Structure</i>	Provides real-time information about the VEHICLE JOURNEY along which a VEHICLE is running.
<i>Calls</i>		<i>RecordedCalls</i>	0:1	<i>+Structure</i>	Complete sequence of stops already visited along the route path, in calling order. Only used if observed stop data is being recorded. (SIRI 2.0)
		<i>RecordedCall</i>	2:*	<i>+Structure</i>	Individual <i>RecordedCall</i> . See below. Only used if observed stop data is being recorded. (SIRI 2.0)
		<i>EstimatedCalls</i>	0:1	<i>+Structure</i>	Complete sequence of stops along the route path, in calling order. Normally this is only the onwards stops from the vehicle's current position.
		<i>EstimatedCall</i>	2:*	<i>+Structure</i>	Individual <i>EstimatedCall</i> . See below.
		<i>IsComplete-StopSequence</i>	0:1	<i>xsd:boolean</i>	Whether the above CALL sequence is complete, i.e. represents every CALL of the route and so can be used to replace a previous CALL sequence Default is 'false'. See also chapter 6.8.9.
<i>any</i>	<i>Extensions</i>		0:1	<i>xsd:any*</i>	Placeholder for user extensions.

6.5.5.2 RecordedCall — Element (SIRI 2.0)

Each **RecordedCall** describes the observed times at a stop that has already been visited.

Table 22 — RecordedCall — Attributes

RecordedCall			+Structure	Provides real-time information about a CALL at a SCHEDULED STP POINT..
Stop Identity	StopPointRef	1:1	→StopPointCode	Reference to a SCHEDULED STOP POINT.
	VisitNumber	0:1	VisitNumberType	For JOURNEY PATTERNS that involve repeated visits by a VEHICLE to a stop, the VisitNumber count is used to distinguish each separate visit. If not specified, Default is '1'.
	Order	0:1	xsd:positiveInteger	For implementations for which the overall order within JOURNEY PATTERN is not used for VisitNumber , (i.e. if VisitNumberIsOrder is false) then can be used to associate the overall Order as well if useful.
	StopPointName	0:*	NLString	Name of stop. One per language (Unbounded 0:* since +SIRI v2.0).
Change	ExtraCall	0:1	xsd:boolean	Whether this CALL was an addition to the plan.
	Cancellation	0:1	xsd:boolean	Whether this CALL was a cancellation of a CALL in the plan
Real-time Info	Prediction-Inaccurate	0:1	xsd:boolean	Whether the prediction was flagged as being inaccurate because of congestion.
	Prediction-InaccurateReason	0:1	Prediction-Inaccurate-ReasonEnum	Can be used to inform the passenger about the reason for a change of the prediction (in)accuracy in case PredictionInaccurate is set to 'true'. See Part 2 Common definitions. +SIRI v2.1 <i>vehicleInTrafficJam / technicalProblem / dispatchAction / missingUpdate / unknown</i>

RecordedCall			+Structure	Provides real-time information about a CALL at a SCHEDULED STP POINT..
	Occupancy	0:1	<i>OccupancyEnum</i>	An approximate figure of how occupied or full the journey is after departing from a given stop. If omitted: Passenger load is unknown. See Part 2 Common definitions. <i>full seatsAvailable standingAvailable unknown empty manySeatsAvailable fewSeatsAvailable standingRoomOnly crushedStandingRoomOnly notAcceptingPassengers</i> Occupancies and capacities for individual VEHICLES, e.g. parts of a COMPOUND TRAIN, can also be specified in more detail for the departure on CALL level.
<i>Call Property</i>	TimingPoint	0:1	<i>xsd:boolean</i>	Whether the stop is a TIMING POINT. Times for stops that are not TIMING POINTs are sometimes interpolated crudely from the TIMING POINTs, and may represent a lower level of accuracy. Default is 'true'.
	BoardingStretch	0:1	<i>xsd:boolean</i>	Whether this is a Hail and Ride stop. Default is 'false'.
	RequestStop	0:1	<i>xsd:boolean</i>	Whether VEHICLE stops only if requested explicitly by passenger. Default is 'false'.
	OriginDisplay	0:*	<i>NLString</i>	The name of the origin of the VEHICLE JOURNEY; used to help identify the VEHICLE to the public: Since VEHICLES can change their displayed origin during a journey, the origin included here should be what the VEHICLE will display as it reaches this stop. (SIRI v2.0). One per language
	DestinationDisplay	0:*	<i>NLString</i>	The name of the destination of the VEHICLE JOURNEY; used to help identify the VEHICLE to the public: Since VEHICLES can change their destination during a journey, the destination included here should be what the VEHICLE will display when it reaches this stop. One per language (Unbounded 0:* since +SIRI v2.0).
<i>Note</i>	CallNote	0:*	<i>NLString</i>	Text annotation that applies to this CALL.
<i>Disruption</i>	:::	0:1	<i>DisruptionGroup</i>	See SIRI Part 2 DisruptionGroup . <i>DetailLevel</i> : normal.
<i>Arrival</i>	AimedArrivalTime	0:1	<i>xsd:dateTime</i>	Planned arrival time in either the original or Production Timetable. Can be omitted if equal to the departure time, or if the time is for the VEHICLE at the origin stop.
	ExpectedArrival-Time	0:1	<i>xsd:dateTime</i>	Predicted time of arrival of VEHICLE at time of record. If different from aimed arrival time
	ActualArrivalTime	0:1	<i>xsd:dateTime</i>	Recorded time of arrival of VEHICLE.
	ArrivalStatus	0:1	<i>CallStatus-Enumeration</i>	Classification of the timeliness of the arrival part of the CALL according to a fixed list of values. This may reflect a presentation policy, for example CALLs less than one minute behind target time are still classified as on-time. Applications may use this to guide their own presentation of times. If not specified, same as <i>DepartureStatus</i> . +SIRI v2.1 <i>onTime early delayed cancelled arrived departed missed noReport</i> See Part 2 common definitions. <i>DetailLevel</i> : normal.
	Arrival-Cancellation-Reason	0:1	<i>NLString</i>	Text annotation to be used in cases where <i>ArrivalStatus</i> is set to 'cancelled'. +SIRI v2.1
	ArrivalPlatform-Name	0:1	<i>NLString</i>	Bay or platform (QUAY) name at which VEHICLE actually arrived if different from departure platform.

RecordedCall			+Structure	Provides real-time information about a CALL at a SCHEDULED STP POINT..
	ArrivalBoarding-Activity	0:1	<i>ArrivalBoarding-ActivityEnum</i>	Type of alighting activity allowed at stop. +SIRI v2.1 <i>alighting noAlighting passthru</i> Default is 'alighting'. DetailLevel: normal.
	ArrivalStop-Assignment	0:*	<i>StopAssignment-Structure</i>	Assignment of arrival at SCHEDULED STOP POINT to a physical location, in particular to a QUAY (platform) or BOARDING POSITION. If not given, assume same as for departure. +SIRI v2.1 DetailLevel: <u>normal</u> .
			<i>choice</i>	
	a :::	0:1	<i>QuayAssignment-Group</i>	Elements for assignment of a SCHEDULED STOP POINT to a specific QUAY or platform. +SIRI v2.0
	b :::	0:1	<i>BoardingPosition-AssignmentGroup</i>	Elements for assignment of a SCHEDULED STOP POINT to a specific BOARDING POSITION or location on a QUAY. +SIRI v2.1
	:::	0:1	<i>FlexibleStop-LocationGroup</i>	Elements for location of flexible stops or service that allows pickup anywhere in a designated area. +SIRI v2.1
	ArrivalFormation-Assignment	0:*	+Structure	Assignment of the arrival of a VEHICLE within a formation, e.g. carriage in a TRAIN composition, to a physical QUAY or nested QUAY (i.e. platform or sector of a platform). +SIRI v2.1 If not given, assume same as for departure.
	:::	1:1	<i>TrainFormation-ReferenceGroup</i>	See SIRI Part 2 TrainFormationReferenceGroup .
	Vehicle-InFormation-Status	0:1	+Structure	Information about a change of a VEHICLE within the formation, e.g., whether a VEHICLE is open, booked or has defective doors.
	TrainStop-Assignment	1:*	+Structure	See ArrivalStopAssignment above. References to the QUAY on which the particular VEHICLE, i.e., component of the formation, arrives at. If a QUAY is divided into sub-QUAYs or sectors (with the help of ARRIVAL STOP ASSIGNMENTS), and a TRAIN COMPONENT spans over multiple sectors of the QUAY, the FORMATION ASSIGNMENT must reference all of them (in multiple assignments).
<i>Departure</i>	AimedDeparture-Time	0:1	<i>xsd:dateTime</i>	Planned departure time in either the original or Production Timetable. Can be omitted if equal to the departure time, or if the time is for the VEHICLE at the origin stop.
	Expected-DepartureTime	0:1	<i>xsd:dateTime</i>	Predicted time of departure of VEHICLE at time of record.
	ActualDeparture-Time	0:1	<i>xsd:dateTime</i>	Recorded time of departure of VEHICLE.
	DepartureStatus	0:1	<i>CallStatus-Enumeration</i>	Classification of the timeliness of the departure part of the CALL according to a fixed list of values. This may reflect a presentation policy, for example CALLs less than one minute behind target time are still classified as on-time. Applications may use this to guide their own presentation of times. +SIRI v2.1 <i>onTime early delayed cancelled arrived departed missed noReport</i> See Part 1 common definitions. DetailLevel: normal.
	Departure-Cancellation-Reason	0:1	<i>NLString</i>	Text annotation to be used in cases where DepartureStatus is set to 'cancelled'. +SIRI v2.1

RecordedCall			+Structure	Provides real-time information about a CALL at a SCHEDULED STP POINT..
	Departure-PlatformName	0:1	<i>NLString</i>	Bay or platform (QUAY) name from which VEHICLE actually departed.
	Departure-BoardingActivity	0:1	<i>Departure-BoardingActivity-Enum</i>	Type of boarding activity allowed at stop. +SIRI v2.1 <i>boarding noBoarding passthru</i> Default is 'boarding'. DetailLevel: normal.
	DepartureStop-Assignment	0:*	<i>StopAssignment-Structure</i>	Assignment of departure at a SCHEDULED STOP POINT to a physical location, in particular to a QUAY (platform) or BOARDING POSITION. +SIRI v2.1 DetailLevel: <u>normal</u> .
			<i>choice</i>	
a	:::	0:1	<i>QuayAssignment-Group</i>	Elements for assignment of a SCHEDULED STOP POINT to a specific QUAY or platform. +SIRI v2.0
b	:::	0:1	<i>BoardingPosition-AssignmentGroup</i>	Elements for assignment of a SCHEDULED STOP POINT to a specific BOARDING POSITION or location on a QUAY. +SIRI v2.1
	:::	0:1	<i>FlexibleStop-LocationGroup</i>	Elements for location of flexible stops or service that allows pickup anywhere in a designated area. +SIRI v2.1
	Departure-Formation-Assignment	0:*	<i>+Structure</i>	Assignment of the departure of a VEHICLE within a formation, e.g. carriage in a TRAIN composition, to a physical QUAY or nested QUAY (i.e. platform or sector of a platform). +SIRI v2.1
	:::	1:1	<i>TrainFormation-ReferenceGroup</i>	See SIRI Part 2 TrainFormationReferenceGroup .
	Vehicle-InFormation-Status	0:1	<i>+Structure</i>	Information about a change of a VEHICLE within the formation, e.g., whether a VEHICLE is open, booked or has defective doors.
	TrainStop-Assignment	1:*	<i>+Structure</i>	See DepartureStopAssignment above. References to the QUAY on which the particular VEHICLE, i.e., component of the formation, departs from. If a QUAY is divided into sub-QUAYs or sectors (with the help of ARRIVAL STOP ASSIGNMENTS), and a TRAIN COMPONENT spans over multiple sectors of the QUAY, the FORMATION ASSIGNMENT must reference all of them (in multiple assignments).
	Recorded-Departure-Occupancy	0:*	<i>+Structure</i>	Real-time occupancies of a VEHICLE and reservations after departing from a given stop. +SIRI v2.1 Could be feedback from an automatic passenger counting system (APC) or estimated values from statistics.
	:::	0:1	<i>TrainFormation-ReferenceGroup</i>	See SIRI Part 2 TrainFormationReferenceGroup .
	FareClass	0:1	<i>FareClass-Enumeration</i>	Fare class in VEHICLE for which occupancy or capacities are specified.
	Passenger-Category	0:1	<i>NLString</i>	Adult, child, wheelchair etc.

RecordedCall			+Structure	Provides real-time information about a CALL at a SCHEDULED STP POINT..
	Occupancy-Level	0:1	<i>Occupancy-Enumeration</i>	An approximate figure of how occupied the journey is across all of its stops, e.g. 'manySeatsAvailable' or 'standingRoomOnly'. If omitted: Passenger load is unknown. See Part 2 Common definitions. <i>full / seatsAvailable / standingAvailable / unknown / empty / manySeatsAvailable / fewSeatsAvailable / standingRoomOnly / crushedStandingRoomOnly / notAcceptingPassengers</i> More accurate data can be provided by the individual occupancies or capacities below.
	Occupancy-Percentage	0:1	<i>PercentageType</i>	Utilised percentage of maximum payload after departing the SCHEDULED STOP POINT.
	AlightingCount	0:1	<i>NumberOf-Passengers</i>	Total number of alighting passengers for this vehicle journey at this SCHEDULED STOP POINT.
	Boarding-Count	0:1	<i>NumberOf-Passengers</i>	Total number of boarding passengers for this vehicle journey at this SCHEDULED STOP POINT.
	OnboardCount	0:1	<i>NumberOf-Passengers</i>	Total number of passengers on-board after departing the SCHEDULED STOP POINT.
	SpecialPlaces-Occupied	0:1	<i>NumberOf-Passengers</i>	Total number of special places, e.g. seats for the disabled or lounge seats, that are occupied after departing the SCHEDULED STOP POINT.
	Pushchairs-OnboardCount	0:1	<i>NumberOf-Passengers</i>	Total number of pushchairs on-board after departing the SCHEDULED STOP POINT.
	Wheelchairs-OnboardCount	0:1	<i>NumberOf-Passengers</i>	Total number of wheelchairs on-board after departing the SCHEDULED STOP POINT.
	Prams-OnboardCount	0:1	<i>xsd:non-NegativeInteger</i>	Total number of prams on-board after departing the SCHEDULED STOP POINT.
	Bicycle-OnboardCount	0:1	<i>xsd:non-NegativeInteger</i>	Total number of bicycles on-board, i.e., number of bicycle racks that are occupied after departing the SCHEDULED STOP POINT.
	TotalNumber-OfReserved-Seats	0:1	<i>NumberOf-Passengers</i>	Total number of booked seats from individual and group reservations.
	Group-Reservation	0:*	+Structure	Used to specify that a travel group has booked a section of the vehicle for a part of the journey, and if so under what name. +SIRI v2.1
	NameOf-Group	1:1	<i>NLString</i>	Name for which the travel group has made the reservation.
	NumberOf-Reserved-Seats	1:1	<i>NumberOf-Passengers</i>	Number of seats that the group has booked.
	Recorded-Departure-Capacities	0:*	+Structure	Recorded capacities of a VEHICLE after departing from a given stop. Alternative way to communicate occupancy measurements. +SIRI v2.1
	:::	0:1	<i>TrainFormation-ReferenceGroup</i>	See SIRI Part 2 TrainFormationReferenceGroup .
	FareClass	0:1	<i>FareClass-Enumeration</i>	Fare class in VEHICLE for which occupancy or capacities are specified.
	Passenger-Category	0:1	<i>NLString</i>	Adult, child, wheelchair etc.