SIRI v2.0

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1. RTIX – SIRI

The Service Interface for Real Time Information is a standard for public transport static and real-time information exchange between distributed systems. It is based on an XML protocol and is mainly implemented as a SOAP web service which can be used by various systems as a data source. It is a part of FARA's Real-Time Information Exchange – RTIX.

The exchanged data is a highly structured XML format based on Transmodel. It provides the most import information needed to describe vehicles, stops, timetables, situations and the relation between them to provide an overview on part of the schedule.

SIRI web service is mostly composed of a few interfaces that represent different views on schedule and related real-time data:

* + Stop Monitoring – Provides static and related real-time information about visits at a stop.
	+ Estimated Timetable – Provides static and real-time information on the whole schedule.
	+ Vehicle Monitoring – Provides real-time information about schedule from vehicle perspective.
	+ Situation Exchange – Provides real-time information about situation related to schedule.

Each SIRI service provides functionality both for on-demand data exchange via a request/response mechanism, and also via a publish/subscribe mechanism. The publish/subscribe mechanism makes it possible to do repetitive asynchronous differential data provisioning.

In the Request/Response interaction pattern used to get data, the Client sends a request message to a Server that offers the required RTIX service, and immediately receives a Delivery message in response. The Requestor expresses its specific interests through Topic (filters) on the specific RTIX Service request. If the request cannot be satisfied an error condition is returned diagnosing the reason.

In the Publish/Subscribe interaction, the Subscriber client sends a request message to the Notification Producer of a SIRI Functional Service to create a Subscription. The Subscriber expresses its specific interests through filters, provides the Notification Consumer endpoint on which it will be listening for notifications and sends the data to the selected service. The resulting answer should acknowledge that the subscription for the provide period has been created, or an error condition was triggered. Once a Subscription exists, the service, acting as the Notification Producer, uses it to determine when to send new data notifications to the consumer. The incoming event notification to be published is matched against the interests expressed by the Topic and other filter parameters of the Subscription and if satisfied, a notification message is sent to the Consumer. The actual Notification Message Delivery is made as a one-step Direct Delivery to a Notification Consumer.

* 1. Request

Each SIRI request must be provided to the service in form of correct SOAP envelope composed of two main XML elements:

* ServiceRequestInfo – contains, but is not limited to the following elements:

Table 1 ServiceRequestInfo – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| RequestTimestamp | xsd:dateTime | The timestamp indicating the time when the request was performed. | 2011-08-19T11:50:11.406+02:00 |
| RequestorRef | ParticipantRef | Participant reference that identifies the requestor of data. May be available from context. | Fara |
| MessageIdentifier | MessageQualifier | An arbitrary unique reference associated with the request which may be used to reference it. | faracb3732f6-2c24-47d6-a7d7-b3886f00ebdb |

* XXXRequest – message varying based on service type that contains selected topic to filter the chosen data view and other restrictions and extension.
	1. Response

Each SIRI service returns data in direct delivery as SOAP XML data. The type of data structure returned is based on the service type but is always composed of two main XML elements:

* ServiceDeliveryInfo – contains, but is not limited to the following elements:

Table 2 ServiceDeliveryInfo – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| ResponseTimestamp | xsd:dateTime | The time when the response was created by producer. | 2011-08-19T11:50:11.406+02:00 |
| ProducerRef | ParticipantRef | Participant reference that identifies the producer of data. May be available from context. | Fara |
| ResponseMessageIdentifier | MessageQualifier | An arbitrary unique reference associated with the response which may be used to reference it. | faracb3732f6-2c24-47d6-a7d7-b3886f00ebdb |

* XXXDelivery: message varying based on service type that contains the requested filtered data view.
	1. Subscription

To use the subscription pattern the subscriber client must request the subscription on selected SIRI interface with proper request structure and topics. As subscription request is composed of two XML elements:

* SubscriptionRequestInfo – is similar to service request info and contains, but is not limited to:

Table 3 SubscriptionRequestInfo – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| RequestTimestamp | xsd:dateTime | The timestamp indicating the time when the request was performed. | 2011-08-19T11:50:11.406+02:00 |
| RequestorRef | ParticipantRef | Participant reference that identifies the requestor of data. May be available from context. | Fara |
| ResponseMessageIdentifier | MessageQualifier | An arbitrary unique reference associated with the response which may be used to reference it. | faracb3732f6-2c24-47d6-a7d7-b3886f00ebdb |
| ConsumerAddress | EndpointAddress | Address to which data is to be sent. | http://faraHost:8080/Consumer |

* XXXSubscription: the standard request with additional threshold information. The threshold parameters are used to check if the notification should be send to consumer or the data is not significant enough to be sent. For example:

Stop Monitoring subscription has a property ChangeBeforeUpdate which describes the estimated time changes needed for the notification to trigger.

1. SIRI SM – Stop Monitoring

The SIRI Stop Monitoring service provides a SOAP web service that can provide stop-centric view of vehicles that are servicing specific bus stops. It is mainly used as data source for displays and other presentation services to provide real-time journey information at stop in form of timetables, departure boards etc.

The provided data is based on the system’s schedule that have been imported, prognosis based on real-time data collected from the vehicles, and arrival/departure state based on real-time vehicle events. It is delivered in XML format with highly structured data enforced by the SIRI standard.

The service provides functionality both for on demand data exchange via a request/response mechanism, but also via a publish/subscribe mechanism. The publish/subscribe mechanism makes it possible to do repetitive asynchronous differential data provisioning.

* 1. SM Request

SM Request – contains, but is not limited to the following elements:

Table 4 SM Request – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| StartTime | xsd:dateTime | Initial start time for PreviewInterval. If absent the default start time is take from server current time. Must be within data Horizon. | 2011-08-19T11:50:11.406+02:00 |
| PreviewInterval | xsd:duration | Time frame of returned data. If absent the default window is 1 hour. Must be within data Horizon. | PT3H |
| MonitoringRef | MonitoringRef | The reference of bus stop which will be monitored. (Obligatory) | 1052630 |
| LineRef | LineRef | The reference of line to which assigned journey should be returned. | 150200 |
| DestinationRef | DestinationRef | The reference of destination bus stop for which data should be returned. | 1052025 |
| DirectionRef | DirectionRef | The direction for which data should be returned.0 - Inbound, 1 - Outbound, 2 – Round trip. | 0 |
| OperatorRef | OperatorRef | The reference of operator for which data should be returned. | 151 |

* + 1. SM Request Example

<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">

 <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">

 <GetStopMonitoring xmlns="http://wsdl.siri.org.uk">

 <ServiceRequestInfo xmlns="">

 <RequestTimestamp xmlns="http://www.siri.org.uk/siri">

 2017-09-08T11:19:50.1684105Z

 </RequestTimestamp>

 <RequestorRef xmlns="http://www.siri.org.uk/siri">

 Fara

 </RequestorRef>

 <MessageIdentifier xmlns="http://www.siri.org.uk/siri">

 a7825d22-26a4-4464-bd80-e8882bc9159a

 </MessageIdentifier>

 </ServiceRequestInfo>

 <Request xmlns="">

 <RequestTimestamp xmlns="http://www.siri.org.uk/siri">

 2017-09-08T11:19:50.1684105Z

 </RequestTimestamp>

 <PreviewInterval xmlns="http://www.siri.org.uk/siri">

 PT3H

 </PreviewInterval>

 <MonitoringRef xmlns="http://www.siri.org.uk/siri">

 1052630

 </MonitoringRef>

 <LineRef xmlns="http://www.siri.org.uk/siri">

 150200

 </LineRef>

 <DirectionRef xmlns="http://www.siri.org.uk/siri">

 0

 </DirectionRef>

 </Request>

 </GetStopMonitoring>

 </s:Body>

</s:Envelope>

The above sample request will cause service to respond with bus visits to bus stop with reference 1052630 within next 180 min and only visits of journeys that are assigned to line with reference 150200 and only journeys that have Inbound direction.

* 1. SM Response

Each Stop Monitoring response contains the following elements:

* StopMonitoringDelivery – contains, but is not limited to the following elements:

Table 5 SM Response – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| ResponseTimestamp | xsd:dateTime | The time when an individual response element was created. | 2011-08-19T11:50:11.406+02:00 |
| Status | xsd:boolean | Whether the complete request could be processed successfully or not. If any of the individual requests within the delivery failed, it will be set to false. | True |
| MonitoringRef | MonitoringCode | Identifier of bus stop at which visits happen. May be a stop point or a display identifier. | 1052630 |
| MonitoringName | NaturalLanguageString | The name of the bus stop for which the data is returned in form of natural language. | St. Olavs voll |
| MonitoredStopVisits | MonitoredStopVisit | The collection of XML element containing detailed information about visit and related monitored vehicle journey. |  |

* MonitoredStopVisit – contains, but is not limited to the following elements:

Table 6 MonitoredStopVisit

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| ResponseTimestamp | xsd:dateTime | The time when an individual response element was created. | 2011-08-19T11:50:11.406+02:00 |
| MonitoringRef | MonitoringCode | Identifier of Stop Monitoring point at which visits happen. May be a stop point or a display identifier. | 1052630 |
| MonitoredVehicleJourney | MonitoredVehicleJourney | Provides the information about the vehicle journey along which vehicle will be running or is running. |  |

* MonitoredVehicleJourney – contains, but is not limited to the following elements:

Table 7 MonitoredVehicleJourney

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| LineRef | LineCode | Identifier of the line to which the journey is assigned. | 150200 |
| DirectionRef | DirectionCode | Identifier of the relative direction the vehicle is running along the line, this is: in (inbound), out (outbound), clockwise (roundtrip) | 1 |
| FramedVehicleJourneyRef | FramedVehicleJourneyRefStructure | Provides information about the date and journey identifier that will be unique in context of data horizon. |  |
| DataFrameRef | DataFrameQualifier | Unique identifier of data frame within participant service. Used to ensure that the DatedVehicleJourneyRef is Unique with the data horizon of the producer. Often the OperationalDayType is used for this purpose. | 2011-08-22 |
| DatedVehicleJourneyRef | DatedVehicleJourneyCode | A reference to the dated vehicle journey that the vehicle is making. | 21-2000359-20170908 |
| PublishedLineName | NaturalLanguageString | Provides referenced line name information in form of natural language. | 200 |
| DirectionName | NaturalLanguageString | Provides reference direction name information in form of natural language. | Outbound |
| OperatorRef | OperatorCode | Identifier of operator to which this data is related.  | 150 |
| OriginRef | JourneyPlaceCode | Provides identifier of journey origin point reference. Used to help identify the vehicle journey on arrival boards. | 1069901 |
| OriginName | NaturalLanguageString | Provides name of journey origin point in form of natural language. Used to help identify the vehicle to the public. | Banegården Plads C |
| Via | NaturalLanguageString | Collection of names for points that the journey will service during the trip. |  |
| DestinationRef | JourneyPlaceCode | The identifier of the journey’s destination reference. Used to help identify the vehicle to the public. | 1052025 |
| DestinationName | NaturalLanguageString | Provides name of journey destination’s point in form of natural language. Used to help identify the vehicle to the public. | Glommaringen rv.111 Sarpsborg |
| Monitored | xsd:boolean | Informs if the journey is currently monitored by the central system and the data is real-time or not. | False |
| InCongestion | xsd:boolean | Indicates if the vehicle is in congestion. If not, present, not known. | False |
| Delay | xsd:duration | Provides information about the delay of the journey in relation to planned schedule in seconds. Early times are shown as negative values. | PT0S |
| BlockRef | BlockCode | The reference of block to which the journey is assigned. | 70103 |
| VehicleJourneyRef | VehicleJourneyRef | Provide the journey reference identifier. | 2000359 |
| MonitoredCall | MonitoredCall | Provides information about the stop visit that will be/was performed on the monitored stop. |  |

* MonitoredCall – contains, but is not limited to the following elements:

Table 8 MonitoredCall

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| StopPointRef | StopPointRefStructure | Identifier of Stop Monitoring point at which visits happen. May be a stop point or a display identifier. | 1052630 |
| StopPointName | NaturalLanguageString | The name of the bus stop for which the data is returned in form of natural language. | St. Olavs voll |
| Order | xsd:string | The information about order in which the stop will be visited in context of the journey. | 28 |
| VisitNumber | xsd:string | For journey patterns that involve repeated visits by a vehicle to a stop, the VisitNumber is used to distinguish each separate visit. Will be the same as order. | 28 |
| VehicleAtStop | xsd:boolean | Provides the information if the vehicle is currently at the stop. | False |
| DestinationDisplay | NaturalLanguageString | Provides the display name of journey destination’s point in form of natural language. 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.  | Glommaringen rv.111 Sarpsborg |
| AimedArrivalTime | xsd:dateTime | Arrival Time in the planned production timetable.  | 2011-08-22T11:20:00+02:00 |
| ExpectedArrivalTime | xsd:dateTime | The predicate time at which the vehicle will arrive at the bus stop. | 2011-08-22T11:20:00+02:00 |
| LatestExpectedArrivalTime | xsd:dateTime | Provides the pessimistic predication time at which the vehicles will arrive at the bus stop. Can be used to calculate the remaining time to arrival. | 2011-08-22T11:20:00+02:00 |
| AimedDepartureTime | xsd:dateTime | Departure Time in the planned production timetable. | 2011-08-22T11:20:00+02:00 |
| ExpectedDepartureTime | xsd:dateTime | The predicate time at which the vehicle will departure from this bus stop. | 2011-08-22T11:20:00+02:00 |
| EarliestExpectedDepartureTime | xsd:dateTime | Provides the optimistic predication time at which the vehicles will departure from the bus stop. Can be used to calculate the remaining time to departure. | 2011-08-22T11:20:00+02:00 |
| ArrivalStatus | CallStatusEnumeration | Provides the information about the vehicle arrival state at this bus stop. Can be one of the following:onTime, early, delayed, cancelled, arrived, departed, missed, noReport, notExpected. | onTime |
| DeparturePlatformName | NaturalLanguageString | Bay or platform name from which vehicle will depart.  | 2 |
| ArrivalBoardingActivity | ArrivalBoardingActivityEnumeration | Provides the information about the available boarding operation on arrival. Can be one of the following:alighting, noAlighting, passThru. | alighting  |
| DepartureBoardingActivity | DepartureBoardingActivityEnumeration | Provide the information about the available boarding operation before departure. Can be one of the following:boarding, noBoarding, passThru. | boarding |

* + 1. SM Response Example

The following example presents the response structure:

<StopMonitoringDelivery xmlns="http://www.siri.org.uk/siri">

 <ResponseTimestamp>

 2017-09-08T11:19:53.3436838Z

 </ResponseTimestamp>

 <Status>

 True

 </Status>

 <DefaultLanguage/>

 <MonitoringRef>

 1052630

 </MonitoringRef>

 <MonitoringName>

 St. Olavs voll

 </MonitoringName>

 <MonitoredStopVisit>

 <RecordedAtTime>

 2017-09-08T11:19:53.3436838Z

 </RecordedAtTime>

 <MonitoringRef>

 1052630

 </MonitoringRef>

 <MonitoredVehicleJourney>

 <LineRef>

 150200

 </LineRef>

 <DirectionRef>

 Inbound

 </DirectionRef>

 <FramedVehicleJourneyRef>

 <DataFrameRef>

 2017-09-08

 </DataFrameRef>

 <DatedVehicleJourneyRef>

 21-2000359-20170908

 </DatedVehicleJourneyRef>

 </FramedVehicleJourneyRef>

 <PublishedLineName>

 200

 </PublishedLineName>

 <DirectionName>

 Inbound

 </DirectionName>

 <OperatorRef xsi:type="OperationalUnitRefStructure">

 150

 </OperatorRef>

 <OriginRef>

 1069901

 </OriginRef>

 <OriginName/>

 <Via>

 <PlaceName/>

 </Via>

 <DestinationRef>

 1052025

 </DestinationRef>

 <DestinationName>

 Glommaringen rv.111 Sarpsborg

 </DestinationName>

 <JourneyNote/>

 <Monitored>

 False

 </Monitored>

 <Delay>

 PT0S

 </Delay>

 <VehicleStatus>

 Expected

 </VehicleStatus>

 <BlockRef>

 70103

 </BlockRef>

 <VehicleJourneyRef>

 2000359

 </VehicleJourneyRef>

 <MonitoredCall>

 <StopPointRef>

 1052630

 </StopPointRef>

 <VisitNumber>

 28

 </VisitNumber>

 <Order>

 28

 </Order>

 <StopPointName xsi:type="DefaultedTextStructure">

 St. Olavs voll

 </StopPointName>

 <VehicleAtStop>

 False

 </VehicleAtStop>

 <DestinationDisplay/>

 <AimedArrivalTime>

 2017-09-08T11:24:00Z

 </AimedArrivalTime>

 <ExpectedArrivalTime>

 2017-09-08T11:24:00Z

 </ExpectedArrivalTime>

 <LatestExpectedArrivalTime>

 2017-09-08T11:24:00Z

 </LatestExpectedArrivalTime>

 <ArrivalStatus>

 noReport

 </ArrivalStatus>

 <ArrivalBoardingActivity>

 Alighting

 </ArrivalBoardingActivity>

 <AimedDepartureTime>

 2017-09-08T11:24:00Z

 </AimedDepartureTime>

 <ExpectedDepartureTime>

 2017-09-08T11:24:00Z

 </ExpectedDepartureTime>

 <EarliestExpectedDepartureTime>

 2017-09-08T11:24:00Z

 </EarliestExpectedDepartureTime>

 <DeparturePlatformName xsi:type="DefaultedTextStructure">

 2

 </DeparturePlatformName>

 <DepartureBoardingActivity>

 Boarding

 </DepartureBoardingActivity>

 </MonitoredCall>

 </MonitoredVehicleJourney>

 <Extensions>

 <MinDepartureEWT xmlns="http://fara.no">1</MinDepartureEWT>

 </Extensions>

 </MonitoredStopVisit>

</StopMonitoringDelivery>

1. SIRI SX – Situation eXchange

The SIRI Situation Exchange interface provides view on real-time situation content. It uses a highly structured Situation model to describe notifications, disruptions and alerts that are related to current schedule elements (Journeys, Line, Stops).

The provided data is based on the system’s schedule that have been imported ,and the message created or imported in the message system.

The service provides functionality both for on-demand data exchange via a request/response mechanism, and also via a publish/subscribe mechanism. The publish/subscribe mechanism makes it possible to do repetitive asynchronous differential data provisioning.

Request/Response interaction allows for the immediate fulfilment of one-off data supply requests made by a Requestor to a Service. Pairs of Request/Response patterns are also used for the interactions that make up other patterns, such as Publish/Subscribe.

* 1. SX Request

SX Request – contains, but is not limited to the following elements:

Table 9 SX Request – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| StartTime | xsd:dateTime | Initial start time for PreviewInterval. If absent the default start time is take from server current time. Must be within data Horizon. | 2011-08-19T11:50:11.406+02:00 |
| PreviewInterval | xsd:duration | Time frame of returned data. If absent the default window is 1 hour. Must be within data Horizon. | PT3H |
| StopPointRef | StopPointRefs | The collection of bus stop references to which situation are related. | 1052630, 1052025 |
| LineRef | LineRef orSituationExchangeRequestStructureLines | The reference of line or lines to which situations are related directly or by journeys. | 150200 |
| VehicleJourneyRef | FramedVehicleJourneyRef | The reference to dated journey identifier to which situations are related. | 21-2000359-20170908 |
| VehicleRef | VehicleRef | The vehicle reference for which related situations data should be returned. | 1117 |
| OperatorRef | OperatorRef | The reference of operator for which data should be returned. | 151 |

* + 1. SX Request Example

<SituationExchangeRequest>

 <RequestTimestamp>

 2017-09-11T14:46:58.5627306Z

 </RequestTimestamp>

 <MessageIdentifier xsi:type="MessageRefStructure">

 e80cb0f3-1428-4c23-9769-ddc3fc6ba81a

 </MessageIdentifier>

 <PreviewInterval>

 PT1H

 </PreviewInterval>

 <AirSubmode>

 Unknown

 </AirSubmode>

 <BusSubmode>

 Unknown

 </BusSubmode>

 <CoachSubmode>

 Unknown

 </CoachSubmode>

 <MetroSubmode>

 Unknown

 </MetroSubmode>

 <RailSubmode>

 Unknown

 </RailSubmode>

 <TramSubmode>

 Unknown

 </TramSubmode>

 <WaterSubmode>

 Unknown

 </WaterSubmode>

 <LineRef>

 150006

 </LineRef>

 <StopPointRef>

 1016115

 </StopPointRef>

 <VehicleJourneyRef>

 10021

 </VehicleJourneyRef>

 <Extensions>

 <Platform xmlns="http://fara.no">

 2

 </Platform>

 </Extensions>

</SituationExchangeRequest>

* 1. SX Response

The response is composed of the following data elements:

* SituationExchangeDelivery – contains, but is not limited to the following elements:

Table 10 SituationExchangeDelivery – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| ResponseTimestamp | xsd:dateTime | The time when an individual response element was created. | 2011-08-19T11:50:11.406+02:00 |
| Status | xsd:boolean | Whether the complete request could be processed successfully or not. If any of the individual requests within the delivery failed, it will be set to false. | True |
| Situations | PtSituationElements | The collection of XML elements containing detailed information about the situation and related content. |  |

* PtSituationElement – contains, but is not limited to the following elements:

Table 11 PtSituationElement – Contents

| Element | Data type | Description | Example |
| --- | --- | --- | --- |
| CreationTime | xsd:dateTime | Time of creation of Situation | 2011-08-19T11:50:11.406+02:00 |
| SituationNumber | EntryQualifierStructure | Unique identifier of Situation within Participant context. Base situation and its updates have the same situation number and different versions. | 2112 |
| Status | boolean | Whether the complete request could be processed successfully or not. | true |
| ValidityPeriod | HalfOpenTimestampOutputRangeStructure | The data structure representing the situation life period. | <StartTime>2011-09-11T11:08:00.638Z</StartTime><EndTime>2011-09-12T11:08:00.638Z</EndTime |
| Progress | WorkflowStatusEnumeration | Represents the workflow progress of the situation. Can be one of the following values:draft, published, closed | published |
| ScopeType | PtSituationElementStructureScopeType | Represents the scope affected by this situation.Can be one of the following values:network, line, stopPoint, vehicleJourney. | line |
| Description | DefaultedTextStructure | The description of the situation in default text format.  | Message for line 200 |
| Affects | AffectsScopeStructure | Represents details about the scope which is affected by this situation. |  |

* AffectsScopeStructure – contains, but is not limited to the following elements:

Table 12 AffectsScopeStructure – Contents

| Element | Data type | Description | Example |
| --- | --- | --- | --- |
| Networks | AffectsScopeStructureAffectedNetwork | Provides information about which high level part of the schedule is affect, mainly lines. |  |
|  | AffectedLines | AffectedLine | Collection of lines affected in the schedule by the situation element. |  |
|  |  | LineRef | LineRef | Provides the information about the affected line reference. | 150001 |
|  |  | PublishedLineName | NaturalLanguageString | Provides the information about the name of the affected line. | R1 |
| StopPoints | AffectedStopPoint | Collection of elements that providing detailed information about affected bus stops by this situation. |  |
|  | StopPointRef | StopPointRefStructure | Identifier of stop point which is affected by the situation. | 1052630 |
|  | StopPointName | NaturalLanguageString | The name of the bus stop which is affected by the situation in form of natural language. | St. Olavs voll |
|  | StopPointType | StopPointTypeEnumeration | Provides the information about the type of stop point. In context of this system its fixed value: busStop | busStop |
|  | Location | LocationStructure | Provides the information about the geographic position of the potion. | <Latitude>59.1193202483913</Latitude><Longitude>11.3891894118734</Longitude> |
| VehicleJourneys | AffectedVehicleJourneyStructure | Provides detailed information about the dated journeys that are affected by the situation element. |  |
|  | DatedVehicleJourneyRefStructure | DatedVehicleJourneyRefStructure | Collection of dated journey references. | 21-1-20170912, 21-2-20170912 |

* + 1. SX Response Example

<SituationExchangeDelivery xmlns="http://www.siri.org.uk/siri">

 <ResponseTimestamp>

 2017-09-11T14:03:52.9465712Z

 </ResponseTimestamp>

 <Status>

 True

 </Status>

 <DefaultLanguage/>

 <Situations>

 <PtSituationElement>

 <CreationTime>

 0001-01-01T00:00:00

 </CreationTime>

 <SituationNumber>

 2112

 </SituationNumber>

 <Progress>

 Published

 </Progress>

 <ValidityPeriod>

 <StartTime>

 2017-09-11T11:08:00.638Z

 </StartTime>

 < EndTime>

 2017-09-12T11:08:00.638Z

 </EndTime

 </ValidityPeriod>

 <ScopeType>

 vehicleJourney

 </ScopeType>

 <Description>

 PM for journey-point

 </Description>

 <Affects>

 <Networks/>

 <StopPoints/>

 <VehicleJourneys>

 <AffectedVehicleJourney>

 <DatedVehicleJourneyRef>

 21-1-20170912

 </DatedVehicleJourneyRef>

 <DatedVehicleJourneyRef>

 21-2-20170911

 </DatedVehicleJourneyRef>

 <DatedVehicleJourneyRef>

 21-2-20170912

 </DatedVehicleJourneyRef>

 <DatedVehicleJourneyRef>

 21-64-20170912

 </DatedVehicleJourneyRef>

 </AffectedVehicleJourney>

 </VehicleJourneys>

 </Affects>

 </PtSituationElement>

 </Situations>

</SituationExchangeDelivery>

1. SIRI ET – Estimated Timetable

The SIRI Estimated Timetable service provides information about the timetables progress and predictions. The delivered data provides information about all active timetables in the request timeframe and their progress, state and prediction on all related journeys and vehicles. This interface provides an overwhelming amount of data on the current state of the system. The main topic filter is related to line and operators, which partitions the data in logically related parts.

It can be used to inform the interested schedule information system about the current status of all known vehicles journeys in the queried period. This enables the schedule information system to provide up-to-the-minute information for short-term journey planning.

Requests to the SIRI Estimated Timetable web service can be done both on demand and by subscriptions. It is also possible to specify a time limit for which deviations from planned schedule or the last message are to be transmitted.

* 1. ET Request

The ET Request – contains, but is not limited to the following elements:

Table 13 ET Request – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| StartTime | xsd:dateTime | Initial start time for PreviewInterval. If absent the default start time is take from server current time. Must be within data Horizon. | 2011-08-19T11:50:11.406+02:00 |
| PreviewInterval | xsd:duration | Time frame of returned data. If absent the default window is 1 hour. Must be within data Horizon. | PT3H |
| Lines | LineDirectionStructure | The collection of line and direction pair reference for which data will be filtered. |  |
|  | LineRef | LineRef | The reference of the line. | 150200 |
|  | DirectionRef | DirectionRef | The reference of the direction.  | 0 |
| OperatorRef | OperatorRef | The reference of operator for which data should be returned. | 151 |

* + 1. ET Request Example

<Request xmlns="">

 <RequestTimestamp xmlns="http://www.siri.org.uk/siri">

 2017-09-11T16:52:26.328836Z

 </RequestTimestamp>

 <MessageIdentifier xsi:type="MessageRefStructure" xmlns="http://www.siri.org.uk/siri">

 74b682db-5aa5-4807-b490-c0e5c29d3e8d

 </MessageIdentifier>

 <PreviewInterval xmlns="http://www.siri.org.uk/siri">

 PT1H

 </PreviewInterval>

 <Lines xmlns="http://www.siri.org.uk/siri">

 <LineDirection>

 <LineRef>

 150200

 </LineRef>

 <DirectionRef>

 Inbound

 </DirectionRef>

 </LineDirection>

 </Lines>

</Request>

* 1. ET Response

Each ET response is composed of following data structures:

* EstimatedTimetableDelivery – contains, but is not limited to the following elements:

Table 14 EstimatedTimetableDelivery – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| ResponseTimestamp | xsd:dateTime | The time when an individual response element was created. | 2011-08-19T11:50:11.406+02:00 |
| Status | xsd:boolean | Whether the complete request could be processed successfully or not. If any of the individual requests within the delivery failed, it will be set to false. | True |
| EstimatedJourneyVersionFrames | EstimatedJourneyVersionFrame | Collation of detailed information about schedule versions active in the requested time frame.  |  |

* EstimatedJourneyVersionFrame – contains, but is not limited to the following elements:

Table 15 EstimatedJourneyVersionFrame

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| RecordedAtTime | xsd:dateTime | The time when the version was recorded at. | 2011-08-19T11:50:11.406+02:00 |
| VersionRef | string | Represents the reference of the schedule version  | 21 |
| EstimatedVehicleJourney | EstimatedVehicleJourney | Provides the information about the vehicle journey along which vehicle will be running or is running. |  |

* EstimatedVehicleJourney – contains, but is not limited to the following elements:

Table 16 EstimatedVehicleJourney

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| LineRef | LineCode | Identifier of the line to which the journey is assigned. | 1502470 |
| DirectionRef | DirectionCode | Identifier of the relative direction the vehicle is running along the line, this is: in (inbound), out (outbound), clockwise (roundtrip) | 1 |
| FramedVehicleJourneyRef | FramedVehicleJourneyRefStructure | Provides information about the date and journey identifier that will be unique in context of data horizon. |  |
|  | DataFrameRef | DataFrameQualifier | Unique identifier of data frame within participant service. Used to ensure that the DatedVehicleJourneyRef is Unique with the data horizon of the producer. Often the OperationalDayType is used for this purpose. | 2011-08-22 |
|  | DatedVehicleJourneyRef | DatedVehicleJourneyCode | A reference to the dated vehicle journey that the vehicle is making. | 21-2000359-20170908 |
| Cancellation | xsd:boolean | Indicates if the journeys is canceled. | false |
| PublishedLineName | NaturalLanguageString | Provides referenced line name information in form of natural language. | 2470 |
| DirectionName | NaturalLanguageString | Provides reference direction name information in form of natural language. | Outbound |
| OperatorRef | OperatorCode | Identifier of operator to which this data is related.  | 150 |
| OriginRef | JourneyPlaceCode | Provides identifier of journey origin point reference. Used to help identify the vehicle journey on arrival boards. | 1052315 |
| OriginName | NaturalLanguageString | Provides name of journey origin point in form of natural language. Used to help identify the vehicle to the public. |  |
| DestinationRef | JourneyPlaceCode | The identifier of the journey’s destination reference. Used to help identify the vehicle to the public. | 1065710 |
| DestinationName | NaturalLanguageString | Provides name of journey destination’s point in form of natural language. Used to help identify the vehicle to the public. | Rødåsen |
| Monitored | xsd:boolean | Informs if the journey is currently monitored by the central system and the data is real-time or not. | False |
| InCongestion | xsd:boolean | Indicates if the vehicle is in congestion. If not, present, not known. | False |
| Delay | xsd:duration | Provides information about the delay of the journey in relation to planned schedule in seconds. Early times are shown as negative values. | PT0S |
| BlockRef | BlockCode | The reference of block to which the journey is assigned. | 70103 |
| VehicleJourneyRef | VehicleJourneyRef | Provide the journey reference identifier. | 2000359 |
| IsCompleteStopSequence | xsd:boolean | Indicates if the sequence of estimated calls provides full data about the journey. | True |
| EstimatedCalls | EstimatedCall | Provides information about the stop visit that will be/was performed on the monitored stop. |  |

* EstimatedCall – contains, but is not limited to the following elements:

Table 17 EstimatedCall

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| StopPointRef | StopPointRefStructure | Identifier of stop point at which call will happen. | 1052315 |
| StopPointName | NaturalLanguageString | The name of the bus stop for which the data is returned in form of natural language. | Inspiria Science Center |
| Order | xsd:string | The information about order in which the stop will be visited in context of the journey. | 0 |
| VisitNumber | xsd:string | For journey patterns that involve repeated visits by a vehicle to a stop, the VisitNumber is used to distinguish each separate visit. Will be the same as order. | 0 |
| DestinationDisplay | NaturalLanguageString | Provides the display name of journey destination’s point in form of natural language. 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.  | Glommaringen rv.111 Sarpsborg |
| AimedArrivalTime | xsd:dateTime | Arrival Time in the planned production timetable.  | 2011-08-22T11:20:00+02:00 |
| ExpectedArrivalTime | xsd:dateTime | The predicate time at which the vehicle will arrive at the bus stop. | 2011-08-22T11:20:00+02:00 |
| ArrivalStatus | CallStatusEnumeration | Provides the information about the vehicle arrival state at this bus stop. Can be one of the following:onTime, early, delayed, cancelled, arrived, departed, missed, noReport, notExpected. | onTime |
| ArrivalPlatformName | NaturalLanguageString | Provides the information about name of the platform on which the call will be performed. | 1 |
| ArrivalBoardingActivity | ArrivalBoardingActivityEnumeration | Represents the available boarding operation on arrival. Can be one of the following values:Alighting, noAlighting, passThru | Alighting |
| AimedDepartureTime | xsd:dateTime | Departure Time in the planned production timetable. | 2011-08-22T11:20:00+02:00 |
| ExpectedDepartureTime | xsd:dateTime | The predicate time at which the vehicle will departure from this bus stop. | 2011-08-22T11:20:00+02:00 |
| EarliestExpectedDepartureTime | xsd:dateTime | Provides the optimistic predication time at which the vehicles will departure from the bus stop. Can be used to calculate the remaining time to departure. | 2011-08-22T11:20:00+02:00 |
| DepartureStatus | CallStatusEnumeration | Provides the information about the vehicle deparute state at this bus stop. Can be one of the following:onTime, early, delayed, cancelled, arrived, departed, missed, noReport, notExpected. | onTime |
| DeparturePlatformName | NaturalLanguageString | Bay or platform name from which vehicle will depart.  | 2 |
| DepartureBoardingActivity | DepartureBoardingActivityEnumeration | Provide the information about the available boarding operation before departure. Can be one of the following:boarding, noBoarding, passThru. | boarding |

* + 1. ET Response Example

<EstimatedTimetableDelivery xmlns="http://www.siri.org.uk/siri">

 <ResponseTimestamp>

 2017-09-11T14:07:04.0035091Z

 </ResponseTimestamp>

 <Status>

 True

 </Status>

 <DefaultLanguage/>

 <EstimatedJourneyVersionFrame>

 <RecordedAtTime>

 0001-01-01T00:00:00

 </RecordedAtTime>

 <VersionRef>

 21

 </VersionRef>

 <EstimatedVehicleJourney>

 <LineRef>

 1502470

 </LineRef>

 <DirectionRef>

 1

 </DirectionRef>

 <FramedVehicleJourneyRef>

 <DataFrameRef>

 20170911

 </DataFrameRef>

 <DatedVehicleJourneyRef>

 21-24700004-20170911

 </DatedVehicleJourneyRef>

 </FramedVehicleJourneyRef>

 <Cancellation>

 False

 </Cancellation>

 <JourneyPatternRef/>

 <JourneyPatternName>

 175

 </JourneyPatternName>

 <PublishedLineName>

 2470

 </PublishedLineName>

 <DirectionName>

 Outbound

 </DirectionName>

 <OriginRef>

 1052315

 </OriginRef>

 <OriginName/>

 <DestinationRef>

 1065710

 </DestinationRef>

 <DestinationName xsi:type="DefaultedTextStructure">

 Rødåsen

 </DestinationName>

 <OperatorRef>

 150

 </OperatorRef>

 <JourneyNote/>

 <Monitored>

 False

 </Monitored>

 <EstimatedCalls>

 <EstimatedCall>

 <StopPointRef>

 1052315

 </StopPointRef>

 <VisitNumber>

 0

 </VisitNumber>

 <Order>

 0

 </Order>

 <StopPointName>

 Inspiria Science Center

 </StopPointName>

 <Cancellation>

 False

 </Cancellation>

 <DestinationDisplay>

 Rødåsen

 </DestinationDisplay>

 <AimedArrivalTime>

 2017-09-11T13:40:00Z

 </AimedArrivalTime>

 <ExpectedArrivalTime>

 2017-09-11T13:40:00Z

 </ExpectedArrivalTime>

 <ArrivalStatus>

 noReport

 </ArrivalStatus>

 <ArrivalPlatformName>

 1

 </ArrivalPlatformName>

 <ArrivalBoardingActivity>

 noAlighting

 </ArrivalBoardingActivity>

 <AimedDepartureTime>

 2017-09-11T13:40:00Z

 </AimedDepartureTime>

 <ExpectedDepartureTime>

 2017-09-11T13:40:00Z

 </ExpectedDepartureTime>

 <EarliestExpectedDepartureTime>

 2017-09-11T13:40:00Z

 </EarliestExpectedDepartureTime>

 <DepartureStatus>

 noReport

 </DepartureStatus>

 <DepartureBoardingActivity>

 Boarding

 </DepartureBoardingActivity>

 </EstimatedCall>

 </EstimatedCalls>

 <IsCompleteStopSequence>

 False

 </IsCompleteStopSequence>

 </EstimatedVehicleJourney>

 </EstimatedJourneyVersionFrame>

</EstimatedTimetableDelivery>

1. SIRI VM – Vehicle Monitoring

The SIRI Vehicle Monitoring web service provides vehicles related information’s in context of the current schedule, this is the current vehicle position, its progress along the route and between stop points, the predicated arrival/departure time on the current and next stops. This data can be used to display the vehicle on map, feed the prediction engine with data, compare the performance of a specific vehicle in relation to the schedule, track the vehicle movement etc.

The provided response is a combination of imported schedule, prognosis calculation based on real-time positions and events from vehicles and arrival/departure state registered. It is delivered in highly structured data format enforced by the SIRI standard.

The service provides functionality for both on demand data exchange via a request/response mechanism and via a publish/subscribe mechanism. The second approach makes it possible to provision repetitive asynchronous differential data which leads to smaller workload transfer through the network and allows to act only on data changes (Push).

* 1. VM Request

VM Request – contains, but is not limited to the following elements:

Table 18 VM Request – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| VehicleMonitoringRef | VehicleMonitoringRef | The reference to vehicle or line for which data should be returned. | GA 10973 or150006 |
| DirectionRef | DirectionRef | The direction for which data should be returned.0 - Inbound, 1 - Outbound, 2 – Round trip. | 0 |
| MaximumVehicles | Xsd:positiveInteger | The maximum number of vehicles returned. | 10 |
| MaximumNumberOfCalls | VehicleMonitoringRequestStructureMaximumNumberOfCalls | The maximum number of previous or/and onward calls returned for vehicle journeys. | 5 |

* + 1. VM Request Example

<Request xmlns="">

 <RequestTimestamp xmlns="http://www.siri.org.uk/siri">

 2017-09-13T07:59:29.3683821Z

 </RequestTimestamp>

 <VehicleMonitoringRef xmlns="http://www.siri.org.uk/siri">

 GA\_x0020\_10973

 </VehicleMonitoringRef>

</Request>

The sample request will cause service to respond with information regarding the vehicle GA 10973.

* 1. VM Response

Each Vehicle Monitoring response contains the following elements:

* VehicleMonitoringDelivery – contains, but is not limited to the following elements:

Table 19 VehicleMonitoringDelivery – Contents

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| ResponseTimestamp | xsd:dateTime | The time when an individual response element was created. | 2011-08-19T11:50:11.406+02:00 |
| Status | xsd:boolean | Whether the complete request could be processed successfully or not. If any of the individual requests within the delivery failed, it will be set to false. | True |

* VehicleActivity – contains, but is not limited to the following elements:

Table 20 VehicleActivity

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| ResponseTimestamp | xsd:dateTime | The time when an individual response element was created. | 2011-08-19T11:50:11.406+02:00 |
| ValidUntilTime | xsd:dateTime | The time when the data will be no more valid. | 2011-08-19T11:52:11.406+02:00 |
| VehicleMonitoringRef | VehicleMonitoringRef | Identifier of Vehicle that the activity is attached. | GA 10973 |
| ProgressBetweenStops | ProgressBetweenStops | Provides the information about the vehicle progress between the last visited stop and the next that will be visited. It contains the total distance in meters between the stops and the percentage of the progress. The percentage is 0 when the bus is on stop.  | <LinkDistance>570</LinkDistance><Percentage>81</Percentage> |

* MonitoredVehicleJourney – contains, but is not limited to the following elements:

Table 21 MonitoredVehicleJourney

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| LineRef | LineCode | Identifier of the line to which the journey is assigned. | 150006 |
| DirectionRef | DirectionCode | Identifier of the relative direction the vehicle is running along the line, this is: in (inbound), out (outbound), clockwise (roundtrip) | 1 |
| FramedVehicleJourneyRef | FramedVehicleJourneyRefStructure | Provides information about the date and journey identifier that will be unique in context of data horizon. |  |
|  | DataFrameRef | DataFrameQualifier | Unique identifier of data frame within participant service. Used to ensure that the DatedVehicleJourneyRef is Unique with the data horizon of the producer. Often the OperationalDayType is used for this purpose. | 2017-09-13 |
|  | DatedVehicleJourneyRef | DatedVehicleJourneyCode | A reference to the dated vehicle journey that the vehicle is making. | 21-2000359-20170913 |
| VehicleMode | VehicleModeCode | The identifier of the vehicle type that is performing the activity. Can be air, bus, coach, ferry, metro, rail, tram, underground. | bus |
| PublishedLineName | NaturalLanguageString | Provides referenced line name information in form of natural language. | 6 |
| DirectionName | NaturalLanguageString | Provides reference direction name information in form of natural language. | Outbound |
| OperatorRef | OperatorCode | Identifier of operator to which this data is related.  | 150 |
| OriginRef | JourneyPlaceCode | Provides identifier of journey origin point reference. Used to help identify the vehicle journey on arrival boards. | 1069901 |
| OriginName | NaturalLanguageString | Provides name of journey origin point in form of natural language. Used to help identify the vehicle to the public. | Banegården Plads C |
| Via | NaturalLanguageString | Collection of names for points that the journey will service during the trip. |  |
| DestinationRef | JourneyPlaceCode | The identifier of the journey’s destination reference. Used to help identify the vehicle to the public. | 1052025 |
| DestinationName | NaturalLanguageString | Provides name of journey destination’s point in form of natural language. Used to help identify the vehicle to the public. | Glommaringen rv.111 Sarpsborg |
| JourneyNote | NaturalLanguageString | Provides the message attached to this journey. | Test message |
| Monitored | xsd:boolean | Informs if the journey is currently monitored by the central system and the data is real-time or not. | True |
| VehicleLocation | LocationStructure | Provides the information about the vehicle location coordinates.  | <Latitude>59.9118842</Latitude><Longitude>10.7585698</Longitude> |
| InCongestion | xsd:boolean | Indicates if the vehicle is in congestion. If not, present, not known. | False |
| Delay | xsd:duration | Provides information about the delay of the journey in relation to planned schedule in seconds. Early times are shown as negative values. | PT0S |
| VehicleStatus | VehicleStatusCode | Provides the information about the status of the journey that the vehicle is performing. | InProgress |
| BlockRef | BlockCode | The reference of block to which the journey is assigned. | 70103 |
| VehicleJourneyRef | VehicleJourneyRef | Provide the journey reference identifier. | 66014 |
| PreviousCalls | PreviousCall | The collection of already visited or omitted stop. Provide more detailed information about the registered arrival/departure to each stop. |  |
| MonitoredCall | MonitoredCall | Provides detailed information about the currently visited stop. |  |
| OnwardCalls | OnwardCall | The collection of stop points that are planned to be visited in context of the performing journey. |  |

* PreviousCall – contains, but is not limited to the following elements:

Table 22 PreviousCall

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| StopPointRef | StopPointRefStructure | Identifier of stop point at which the vehicle arrived. | 1052630 |
| StopPointName | NaturalLanguageString | The name of the bus stop for which the data is returned in form of natural language. | St. Olavs voll |
| Order | xsd:string | The information about order in which the stop will be visited in context of the journey. | 28 |
| VisitNumber | xsd:string | For journey patterns that involve repeated visits by a vehicle to a stop, the VisitNumber is used to distinguish each separate visit. Will be the same as order. | 28 |
| VehicleAtStop | xsd:boolean | Provides the information if the vehicle is currently at the stop. | False |
| AimedArrivalTime | xsd:dateTime | The time at which the vehicle is planned to arrive at this bus stop.  | 2011-08-22T11:20:00+02:00 |
| ExpectedArrivalTime | xsd:dateTime | The predicted time at which the vehicle will arrive at the bus stop. | 2011-08-22T11:20:00+02:00 |
| ActualArrivalTime | xsd:dateTime | The registered time at which the vehicle arrived at the bus stop. There can be either ExpectedArrivalTime or ActualArrivalTime in one previous call. | 2011-08-22T11:20:00+02:00 |
| AimedDepartureTime | xsd:dateTime | The time at which the vehicle is planned to departure from this bus stop. | 2011-08-22T11:20:00+02:00 |
| ExpectedDepartureTime | xsd:dateTime | The predicate time at which the vehicle will departure from this bus stop. | 2011-08-22T11:20:00+02:00 |
| ActualDepartureTime | xsd:dateTime | The registered time at which the vehicle departed from the bus stop. There can be either ExpectedDepartureTime or ActualDepartureTime in one previous call. | 2011-08-22T11:20:00+02:00 |

* MonitoredCall – contains, but is not limited to the following elements:

Table 23 MonitoredCall

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| StopPointRef | StopPointRefStructure | Identifier of stop point at which the vehicle arrived. | 1052630 |
| StopPointName | NaturalLanguageString | The name of the bus stop for which the data is returned in form of natural language. | St. Olavs voll |
| Order | xsd:string | The information about order in which the stop will be visited in context of the journey. | 28 |
| VisitNumber | xsd:string | For journey patterns that involve repeated visits by a vehicle to a stop, the VisitNumber is used to distinguish each separate visit. Will be the same as order. | 28 |
| VehicleAtStop | xsd:boolean | Provides the information if the vehicle is currently at the stop. | False |
| DestinationDisplay | NaturalLanguageString | Provides the display name of journey destination’s point in form of natural language. 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.  | Glommaringen rv.111 Sarpsborg |
| AimedArrivalTime | xsd:dateTime | Arrival Time in the planned production timetable.  | 2011-08-22T11:20:00+02:00 |
| ExpectedArrivalTime | xsd:dateTime | The predicate time at which the vehicle will arrive at the bus stop. | 2011-08-22T11:20:00+02:00 |
| LatestExpectedArrivalTime | xsd:dateTime | Provides the pessimistic predication time at which the vehicles will arrive at the bus stop. Can be used to calculate the remaining time to arrival. | 2011-08-22T11:20:00+02:00 |
| AimedDepartureTime | xsd:dateTime | Departure Time in the planned production timetable. | 2011-08-22T11:20:00+02:00 |
| ExpectedDepartureTime | xsd:dateTime | The predicate time at which the vehicle will departure from this bus stop. | 2011-08-22T11:20:00+02:00 |
| EarliestExpectedDepartureTime | xsd:dateTime | Provides the optimistic predication time at which the vehicles will departure from the bus stop. Can be used to calculate the remaining time to departure. | 2011-08-22T11:20:00+02:00 |
| ArrivalStatus | CallStatusEnumeration | Provides the information about the vehicle arrival state at this bus stop. Can be one of the following:onTime, early, delayed, cancelled, arrived, departed, missed, noReport, notExpected. | onTime |
| DepartureStatus | CallStatusEnumeration | Provides the information about the vehicle departure state at this bus stop. Can be one of the following:onTime, early, delayed, cancelled, arrived, departed, missed, noReport, notExpected. | onTime |
| DeparturePlatformName | NaturalLanguageString | Bay or platform name from which vehicle will depart.  | 2 |
| ArrivalBoardingActivity | ArrivalBoardingActivityEnumeration | Provides the information about the available boarding operation on arrival. Can be one of the following:alighting, noAlighting, passThru. | alighting  |
| DepartureBoardingActivity | DepartureBoardingActivityEnumeration | Provide the information about the available boarding operation before departure. Can be one of the following:boarding, noBoarding, passThru. | boarding |

* OnwardCall – contains, but is not limited to the following elements:

Table 24 OnwardCall

| Element name | Type | Description | Example |
| --- | --- | --- | --- |
| StopPointRef | StopPointRefStructure | Identifier of Stop Monitoring point at which visits happen. May be a stop point or a display identifier. | 1052630 |
| StopPointName | NaturalLanguageString | The name of the bus stop for which the data is returned in form of natural language. | St. Olavs voll |
| Order | xsd:string | The information about order in which the stop will be visited in context of the journey. | 28 |
| VisitNumber | xsd:string | For journey patterns that involve repeated visits by a vehicle to a stop, the VisitNumber is used to distinguish each separate visit. Will be the same as order. | 28 |
| VehicleAtStop | xsd:boolean | Provides the information if the vehicle is currently at the stop. | False |
| DestinationDisplay | NaturalLanguageString | Provides the display name of journey destination’s point in form of natural language. 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.  | Glommaringen rv.111 Sarpsborg |
| AimedArrivalTime | xsd:dateTime | Arrival Time in the planned production timetable.  | 2011-08-22T11:20:00+02:00 |
| ExpectedArrivalTime | xsd:dateTime | The predicate time at which the vehicle will arrive at the bus stop. | 2011-08-22T11:20:00+02:00 |
| LatestExpectedArrivalTime | xsd:dateTime | Provides the pessimistic predication time at which the vehicles will arrive at the bus stop. Can be used to calculate the remaining time to arrival. | 2011-08-22T11:20:00+02:00 |
| AimedDepartureTime | xsd:dateTime | Departure Time in the planned production timetable. | 2011-08-22T11:20:00+02:00 |
| ExpectedDepartureTime | xsd:dateTime | The predicate time at which the vehicle will departure from this bus stop. | 2011-08-22T11:20:00+02:00 |
| EarliestExpectedDepartureTime | xsd:dateTime | Provides the optimistic predication time at which the vehicles will departure from the bus stop. Can be used to calculate the remaining time to departure. | 2011-08-22T11:20:00+02:00 |
| ArrivalStatus | CallStatusEnumeration | Provides the information about the vehicle arrival state at this bus stop. Can be one of the following:onTime, early, delayed, cancelled, arrived, departed, missed, noReport, notExpected. | onTime |
| DepartureStatus | CallStatusEnumeration | Provides the information about the vehicle departure state at this bus stop. Can be one of the following:onTime, early, delayed, cancelled, arrived, departed, missed, noReport, notExpected. | onTime |
| DeparturePlatformName | NaturalLanguageString | Bay or platform name from which vehicle will depart.  | 2 |
| ArrivalBoardingActivity | ArrivalBoardingActivityEnumeration | Provides the information about the available boarding operation on arrival. Can be one of the following:alighting, noAlighting, passThru. | alighting  |
| DepartureBoardingActivity | DepartureBoardingActivityEnumeration | Provide the information about the available boarding operation before departure. Can be one of the following:boarding, noBoarding, passThru. | boarding |

* + 1. VM Response Example

The following example presents the response structure:

<VehicleMonitoringDelivery xmlns="http://www.siri.org.uk/siri">

 <ResponseTimestamp>

 2017-09-13T09:27:00Z

 </ResponseTimestamp>

 <Status>

 True

 </Status>

 <Version>

 2.0

 </Version>

 <VehicleActivity>

 <RecordedAtTime>

 2017-09-13T09:27:00Z

 </RecordedAtTime>

 <ValidUntilTime>

 2017-09-13T09:29:58Z

 </ValidUntilTime>

 <VehicleMonitoringRef>

 GA\_x0020\_10973

 </VehicleMonitoringRef>

 <ProgressBetweenStops>

 <LinkDistance>

 570

 </LinkDistance>

 <Percentage>

 81

 </Percentage>

 </ProgressBetweenStops>

 <MonitoredVehicleJourney>

 <LineRef>

 150006

 </LineRef>

 <DirectionRef>

 Inbound

 </DirectionRef>

 <FramedVehicleJourneyRef>

 <DataFrameRef>

 2017-09-13

 </DataFrameRef>

 <DatedVehicleJourneyRef>

 156-66014-252-20170913

 </DatedVehicleJourneyRef>

 </FramedVehicleJourneyRef>

 <VehicleMode>

 Bus

 </VehicleMode>

 <PublishedLineName>

 6

 </PublishedLineName>

 <DirectionName>

 Inbound

 </DirectionName>

 <OperatorRef xsi:type="OperationalUnitRefStructure">

 150

 </OperatorRef>

 <OriginRef>

 3010619

 </OriginRef>

 <OriginName/>

 <Via>

 <PlaceName/>

 </Via>

 <DestinationRef>

 1118735

 </DestinationRef>

 <DestinationName/>

 <JourneyNote/>

 <Monitored>

 True

 </Monitored>

 <VehicleLocation>

 <Latitude>

 59.9118842

 </Latitude>

 <Longitude>

 10.7585698

 </Longitude>

 </VehicleLocation>

 <Bearing>

 0

 </Bearing>

 <Delay>

 PT0S

 </Delay>

 <VehicleStatus>

 inProgress

 </VehicleStatus>

 <VehicleJourneyRef>

 66014

 </VehicleJourneyRef>

 <VehicleRef>

 GA\_x0020\_10973

 </VehicleRef>

 <PreviousCalls>

 <PreviousCall>

 <StopPointRef>

 1360695

 </StopPointRef>

 <VisitNumber>

 4

 </VisitNumber>

 <Order>

 4

 </Order>

 <StopPointName xsi:type="DefaultedTextStructure">

 Fjellom

 </StopPointName>

 <VehicleAtStop>

 False

 </VehicleAtStop>

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 2017-09-13T09:23:00Z

 </AimedArrivalTime>

 <ActualArrivalTime>

 2017-09-13T09:23:23Z

 </ActualArrivalTime>

 <AimedDepartureTime>

 2017-09-13T09:23:00Z

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 2017-09-13T09:23:33Z

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 1360710

 </StopPointRef>

 <VisitNumber>

 3

 </VisitNumber>

 <Order>

 3

 </Order>

 <StopPointName xsi:type="DefaultedTextStructure">

 Øreåsen skole

 </StopPointName>

 <VehicleAtStop>

 False

 </VehicleAtStop>

 <AimedArrivalTime>

 2017-09-13T09:22:00Z

 </AimedArrivalTime>

 <ActualArrivalTime>

 2017-09-13T09:22:53Z

 </ActualArrivalTime>

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 2017-09-13T09:22:00Z

 </AimedDepartureTime>

 <ActualDepartureTime>

 2017-09-13T09:23:03Z

 </ActualDepartureTime>

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 </PreviousCalls>

 <OnwardCalls>

 <OnwardCall>

 <StopPointRef>

 1360685

 </StopPointRef>

 <VisitNumber>

 5

 </VisitNumber>

 <Order>

 5

 </Order>

 <StopPointName xsi:type="DefaultedTextStructure">

 Varnaveien Skoland

 </StopPointName>

 <VehicleAtStop>

 False

 </VehicleAtStop>

 <AimedArrivalTime>

 2017-09-13T09:25:00Z

 </AimedArrivalTime>

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 2017-09-13T09:24:58Z

 </ExpectedArrivalTime>

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 </ArrivalStatus>

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 Alighting

 </ArrivalBoardingActivity>

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 2017-09-13T09:25:00Z

 </AimedDepartureTime>

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 2017-09-13T09:25:09Z

 </EarliestExpectedDepartureTime>

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 1360680

 </StopPointRef>

 <VisitNumber>

 6

 </VisitNumber>

 <Order>

 6

 </Order>

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 Varnaveien bensin

 </StopPointName>

 <VehicleAtStop>

 false

 </VehicleAtStop>

 <AimedArrivalTime>

 2017-09-13T09:26:00Z

 </AimedArrivalTime>

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 2017-09-13T09:25:57Z

 </ExpectedArrivalTime>

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 </ArrivalStatus>

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 Alighting

 </ArrivalBoardingActivity>

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 2017-09-13T09:26:00Z

 </AimedDepartureTime>

 <EarliestExpectedDepartureTime>

 2017-09-13T09:26:08Z

 </EarliestExpectedDepartureTime>

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 2

 </DeparturePlatformName>

 <DepartureBoardingActivity>

 Boarding

 </DepartureBoardingActivity>

 </OnwardCall>

 </OnwardCalls>

 </MonitoredVehicleJourney>

 </VehicleActivity>

</VehicleMonitoringDelivery>