Kolumbus Real Time Open Data

Content

Objective

The objective of this document is to describe the Kolumbus Real Time web service.

SIRI

Kolumbus Real Time Open Data is standardized on SIRI (Service Interface for Real Time Information) which is a web based XML protocol to allow distributed computers to exchange real time information about public transport services and vehicles.

SIRI is a CEN technical specification, and is based on the Transmodel abstract model for public transport information, and comprises a general purpose model, and an XML schema for public transport information.

For more information, see
https://en.wikipedia.org/wiki/Service_Interface_for_Real_Time_Information

Kolumbus has implemented three SIRI interfaces:

- SIRI VM – Vehicle Monitoring (positioning and status for all buses)
- SIRI SM – Stop Monitoring (departure prognosis for individual bus stops)
- SIRI SX – Situation Exchange (deviation messages)

Kolumbus currently support the SIRI version 1.4.

SIRI VM

This interface supports two methods which returns a VehicleMonitoringDelivery element. These are:

- GetVehicleMonitoring
- Subscribe

The service is self-documented by WSDL:

WSDL URL: `http://sis.kolumbus.no:90/VMWS/VMService.svc?wsdl`

VehicleMonitoringDelivery element

A VehicleMonitoringDelivery element represents a set of information regarding the status of one or more selected vehicles. SiriWS provides for this element the following information:

Element	Source data
ResponseTimestamp	The time this response was generated
RequestMessageRef	For request responses, the identifier of the request. For subscriptions responses, a unique identifier
SubscriberRef	For subscriptions responses, the identifier of the subscriber. Omitted for request responses
SubscriptionRef	For subscriptions responses, the identifier of the subscription. Omitted for request responses
Status	Whether the request could be processed successfully or not. If its value is ‚true', this element is omitted
ErrorCondition	Description of any error or warning conditions that apply to the request. See SIRI standard documentation for details. If Status value is ‚true', this element is omitted

ValidUntil	One hour ahead from the generation of this response
ShortestPossibleCycle	One minute
VehicleActivity	A list of elements, one for each selected vehicle, containing the corresponding status information. See VehicleActivity element below for further details

VehicleActivity element

A VehicleActivity element represents the status of a selected vehicle.
Many of the information contained into this element and into its MonitoredVehicleJourney child element are retrieved from real-time data that the AVM stores for each vehicle of the fleet. These information are easily accessible via the ViewMezzo tool. Several of these information are also displayed in the Monilinea „Info mezzo“ form. If the vehicle is not performing a trip many of these information have 0 or empty values.

SiriWS provides for this element the following information:

Element	**Source data**
RecordedAtTime	The last time the vehicle has sent information to the AVM (tlocal field in ViewMezzo)
ItemIdentifier	A unique identifier for this element, although vehicle activity cancellation is not supported
ValidUntilTime	One hour ahead from now
VehicleMonitoringRef	The vehicle code
ProgressBetweenStops	Progress of the vehicle along its current link. Always contains only a LinkDistance sub-element, whose value is retrieved from posarc field in ViewMezzo
MonitoredVehicleJourney	See MonitoredVehicleJourney element below for details

MonitoredVehicleJourney element

A MonitoredVehicleJourney element contains information on the trip performed by this vehicle.

For each vehicle it’s possible to retrieve the corresponding trip, by mapping its current transit (UltimoTransito field in ViewMezzo) with a scheduled transit of transiti table contained into the photo database. The found transit allows to determine several trip information.

SiriWS provides for this element the following information:

Element	**Source data**
LineRef	Line code. Retrieved from codazlinea field of linee table contained into the photo database. The line associated to this vehicle is the one specified into the cinlin field in ViewMezzo

DirectionRef	Trip direction. Possible values are „go“, „back“ or „null“
VehicleMode	Vehicle type. Usually its value is ‚bus‘
PublishedLineName	Line description. Retrieved from descrlinea field of linee table contained into the photo database. The line associated to this vehicle is the one specified into the cinlin field in ViewMezzo
OriginRef	Stop code of the origin terminal of this trip. Retrieved from codaznodo field of nodi table contained into the photo database
OriginName	Stop description of the origin terminal of this trip. Retrieved from descrnodo field of nodi table contained into the photo database. If the stop description contains the stop code between parentheses, the code is stripped, since it is already delivered in the stop code field
OriginShortName	Always empty. Currently not provided
DestinationRef	Stop code of the destination terminal of this trip. Retrieved from codaznodo field of nodi table contained into the photo database
DestinationName	Stop description of the destination terminal of this trip. Retrieved from descrnodo field of nodi table contained into the photo database. If the stop description contains the stop code between parentheses, the code is stripped, since it is already delivered in the stop code field
DestinationShortName	Always empty. Currently not provided
VehicleJourneyName	Always empty. Currently not provided
OriginAimedDepartureTime	Scheduled departure time from the origin terminal of this trip. Retrieved from the other transits of transiti table belonging to the same trip
DestinationAimedArrivalTime	Scheduled arrival time to the destination terminal of this trip. Retrieved from the other transits of transiti table belonging to the same trip
Monitored	Vehicle status. If its value is ‚True‘ it means that all is working properly and this element is omitted, if it’s ‚False‘ means that one of its components is not working properly, and the following MonitoringError field specifies which is that component
MonitoringError	If the Monitored field above is ‚False‘, it specifies which vehicle component is not working properly, omitted otherwise
VehicleLocation	Last vehicle location. See VehicleLocation element below for details
Occupancy	Level of passenger seat occupancy (retrieved from livcar field in ViewMezzo). Omitted if unknown
Delay	Vehicle delay respect to the scheduled times (ritarm field in ViewMezzo if the vehicle is well localized, 0 otherwise)
CourseOfJourneyRef	Trip code. Retrieved from trip_id field of the transiti record
VehicleRef	The vehicle code
MonitoredCall	See MonitoredCall element below for details

VehicleLocation element

A VehicleLocation element represents the geographical position of the vehicle.

SiriWS provides for this element the following information:

Element	Source data
Longitude	Longitude of the vehicle expressed in WGS-84 decimal degrees (x32 field in ViewMezzo, converted in WGS-84)
Latitude	Latitude of the vehicle expressed in WGS-84 decimal degrees (y32 field in ViewMezzo, converted in WGS-84)

MonitoredCall element

A MonitoredCall element contains information regarding the next stop along the current trip with respect to the vehicle‘s current position.

SiriWS provides for this element the following information:

Element	Source data
StopPointRef	Stop code of the next stop of this trip. Retrieved from codaznodo field of nodi table contained into the photo database
VisitNumber	Visit number at this stop in the same trip
StopPointName	Stop description of the next stop of this trip. Retrieved from descrnodo field of nodi table contained into the photo database. If the stop description contains the stop code between parentheses, the code is stripped, since it is already delivered in the stop code field
DestinationDisplay	Always empty. Currently not provided
ActualArrivalTime	Always set to time 0 (0001-01-01T00:00:00), since this information is not available
ArrivalPlatformName	Always empty. Currently not provided
ArrivalBoardingActivity	Always ‚noAlighting‘, since this information is not available
ActualDepartureTime	Always set to time 0 (0001-01-01T00:00:00), since this information is not available
DeparturePlatformName	Always empty. Currently not provided
DepartureBoardingActivity	Always ‚noBoarding‘,since this information is not available

Example of a SIRI VM XML Request:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:siri="http://www.siri.org.uk/siri">
```

```
  <soapenv:Header/>
  <soapenv:Body>
    <siri:GetVehicleMonitoring>
      <ServiceRequestInfo>
        <siri:RequestTimestamp>2015-05-22T12:20:40+02:00</siri:RequestTimestamp>
        <siri:RequestorRef>KOL</siri:RequestorRef>
      </ServiceRequestInfo>
      <Request version="1.4">
        <siri:RequestTimestamp>2015-05-22T12:20:40+02:00</siri:RequestTimestamp>
      </Request>
    </siri:GetVehicleMonitoring>
  </soapenv:Body>
</soapenv:Envelope>
```

Example of a SIRI VM XML Response:

```
<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">
    <GetVehicleMonitoringResponse xmlns="http://www.siri.org.uk/siri">
      <ServiceDeliveryInfo xmlns="">
        <ResponseTimestamp xmlns="http://www.siri.org.uk/siri">2017-02-
17T13:57:10.7398702+01:00</ResponseTimestamp>
        <ProducerRef xmlns="http://www.siri.org.uk/siri">KOL</ProducerRef>
        <ResponseMessageIdentifier
xmlns="http://www.siri.org.uk/siri">R_</ResponseMessageIdentifier>
      </ServiceDeliveryInfo>
      <Answer xmlns="">
        <VehicleMonitoringDelivery version="1.4" xmlns="http://www.siri.org.uk/siri">
          <ResponseTimestamp>2017-02-
17T13:57:10.7398702+01:00</ResponseTimestamp>
          <ValidUntil>2017-02-17T14:57:10.7398702+01:00</ValidUntil>
          <ShortestPossibleCycle>PT1M</ShortestPossibleCycle>
          <VehicleActivity>
            <RecordedAtTime>2017-02-16T11:28:57</RecordedAtTime>
            <ValidUntilTime>2017-02-17T14:57:11.8398702+01:00</ValidUntilTime>
            <MonitoredVehicleJourney>
              <LineRef>5000</LineRef>
              <VehicleMode>bus</VehicleMode>
              <PublishedLineName>Extra Line</PublishedLineName>
              <Monitored>false</Monitored>
              <MonitoringError>GPRS</MonitoringError>
              <VehicleLocation>
                <Longitude>10.37179</Longitude>
                <Latitude>63.36707</Latitude>
              </VehicleLocation>
              <VehicleRef>1</VehicleRef>
              <MonitoredCall/>
```

```
            </MonitoredVehicleJourney>
          </VehicleActivity>
          <VehicleActivity>
            <RecordedAtTime>2017-02-17T13:57:07+01:00</RecordedAtTime>
            <ValidUntilTime>2017-02-17T14:57:11.8408702+01:00</ValidUntilTime>
            <ProgressBetweenStops>
              <LinkDistance>163</LinkDistance>
              <Percentage>35.434782608695652173913043480</Percentage>
            </ProgressBetweenStops>
            <MonitoredVehicleJourney>
              <LineRef>3000</LineRef>
              <DirectionRef>go</DirectionRef>
              <VehicleMode>bus</VehicleMode>
              <PublishedLineName>1</PublishedLineName>
              <OriginRef>11063131</OriginRef>
              <OriginName>Bleikemyr</OriginName>
              <DestinationRef>11066258</DestinationRef>
              <DestinationName>Amanda hpl. 1</DestinationName>
              <OriginAimedDepartureTime>2017-02-
17T13:37:00+01:00</OriginAimedDepartureTime>
              <DestinationAimedArrivalTime>2017-02-
17T14:07:00+01:00</DestinationAimedArrivalTime>
              <Monitored>true</Monitored>
              <VehicleLocation>
                <Longitude>5.276673</Longitude>
                <Latitude>59.40972</Latitude>
              </VehicleLocation>
              <Delay>PT277S</Delay>
              <CourseOfJourneyRef>30001030</CourseOfJourneyRef>
              <VehicleRef>144</VehicleRef>
              <MonitoredCall>
                <StopPointRef>11063116</StopPointRef>
                <VisitNumber>1</VisitNumber>
                <StopPointName>Haugesund sykehus</StopPointName>
              </MonitoredCall>
            </MonitoredVehicleJourney>
          </VehicleActivity>
...
        </VehicleMonitoringDelivery>
      </Answer>
      <AnswerExtension xmlns=""/>
    </GetVehicleMonitoringResponse>
  </s:Body>
</s:Envelope>
```

SIRI SM

SMService provides three methods which returns a StopMonitoringDelivery element:

- GetStopMonitoring
- GetMultipleStopMonitoring
- Subscribe

The service is self-documented by WSDL:

WSDL URL: `http://sis.kolumbus.no:90/SMWS/SMService.svc?wsdl`

StopMonitoringDelivery element

A StopMonitoringDelivery element represents a set of information regarding the forecasts the AVM is generating for the specified stop.
SiriWS provides for this element the following information:

Element	**Source data**
ResponseTimestamp	The time this response was generated
RequestMessageRef	For request responses, the identifier of the request. For subscriptions responses, a unique identifier
SubscriberRef	For subscriptions responses, the identifier of the subscriber. Omitted for request responses
SubscriptionRef	For subscriptions responses, the identifier of the subscription. Omitted for request responses
Status	Whether the request could be processed successfully or not. If its value is ‚true', this element is omitted
ErrorCondition	Description of any error or warning conditions that apply to the request. See SIRI standard documentation for details. If Status value is ‚true', this element is omitted
ValidUntil	One hour ahead from the generation of this response
ShortestPossibleCycle	One minute
MonitoredStopVisit	The list of forecasts currently associated to the specified stop. This list is obtained from the table M_PT_TIMETABLE belonging to the INFOUT_PLUS database. The considered forecasts are those whose validity day (info_date field) is the current day, whose associated stop (PT_STOP_CODE field) is the specified stop, and whose prediction time is greater than now. For the prediction time, it is considered the real-time time if it is available (not null PT_pred_time field) or, if this is not available, the scheduled time (PT_sched_time field). The list of forecasts is ordered by ascending prediction time. For each trip of the scheduled service, Flash keeps in memory only the last real-time forecast, the

	previous ones are not available. See MonitoredStopVisit element below for further details about MonitoredStopVisit structure

MonitoredStopVisit element

A MonitoredStopVisit element represents a single forecast generated by the AVM for the specified stop.

SiriWS provides for this element the following information:

Element	Source data
RecordedAtTime	For real-time forecasts, it is the time this forecast was generated by the AVM (Pred_time_last_upd field). For scheduled times, it is the time the scheduled service has become valid, then the time the photo database got online
ItemIdentifier	Always equal to „ItemIdentifier“, since forecasts cancellation is not supported
MonitoringRef	The specified stop code
MonitoredVehicleJourney	See MonitoredVehicleJourney element below for details

MonitoredVehicleJourney element

A MonitoredVehicleJourney element contains information on the trip associated to this forecast.

For each forecast it’s possible to retrieve the corresponding trip, by mapping the scheduled information (stop code, scheduled passage, shift code) contained in this forecast with a scheduled transit of transiti table contained into the photo database. The found transit allows to determine several trip information.

SiriWS provides for this element the following information:

Element	Source data
LineRef	Line code. Retrieved from PT_service_name field of S_PT_SERVICE table contained into INFOUT_PLUS database. M_PT_TIMETABLE and S_PT_SERVICE tables are linked via their common PT_SERVICE_CODE and ref_azienda fields
DirectionRef	Trip direction. Possible values are „go“, „back“ or „null“
VehicleMode	Vehicle type. For real-time forecasts usually its value is ‚bus‘. For scheduled times this element is omitted, since there is no enumerator value for ‚none‘
RouteRef	Route code. Retrieved from sigla field of tragitti table contained into the photo database. The route associated to this forecast is the one specified into the cintragitto field of the transiti record associated to this forecast

PublishedLineName	Line description. Retrieved from PT_service_descr field of S_PT_SERVICE table contained into INFOUT_PLUS database. M_PT_TIMETABLE and S_PT_SERVICE tables are linked via their common PT_SERVICE_CODE and ref_azienda fields
OriginRef	Stop code of the origin terminal of this trip. Retrieved from codaznodo field of nodi table contained into the photo database
OriginName	Stop description of the origin terminal of this trip. Retrieved from descrnodo field of nodi table contained into the photo database. If the stop description contains the stop code between parentheses, the code is stripped, since it is already delivered in the stop code field
OriginShortName	Always empty. Currently not provided
DestinationRef	Stop code of the destination terminal of this trip. Retrieved from codaznodo field of nodi table contained into the photo database
DestinationName	Stop description of the destination terminal of this trip. Retrieved from descrnodo field of nodi table contained into the photo database. If the stop description contains the stop code between parentheses, the code is stripped, since it is already delivered in the stop code field
DestinationShortName	Always empty. Currently not provided
VehicleJourneyName	Always empty. Currently not provided
OriginAimedDepartureTime	Scheduled departure time from the origin terminal of this trip. Retrieved from the other transits of transiti table belonging to the same trip
DestinationAimedArrivalTime	Scheduled arrival time to the destination terminal of this trip. Retrieved from the other transits of transiti table belonging to the same trip
Monitored	Whether it's a real-time forecast. Then for real-time forecasts it is always true and it's omitted. For scheduled times it is always false
CourseOfJourneyRef	Trip code. Retrieved from trip_id field of the transiti record associated to this forecast
MonitoredCall	See MonitoredCall element below for details

MonitoredCall element

A MonitoredCall element contains detailed information for this forecast.

SiriWS provides for this element the following information:

Element	**Source data**
StopPointRef	The specified stop code
VisitNumber	Visit number at this stop in the same trip
StopPointName	Stop description of the specified stop. Retrieved from descrnodo field of nodi table contained into the photo database. If the stop description

	contains the stop code between parentheses, the code is stripped, since it is already delivered in the stop code field
VehicleLocationAtStop	Location of the specified stop. See VehicleLocationAtStop element below for details
DestinationDisplay	Route description. Retrieved from descr field of tragitti table contained into the photo database. The route associated to this forecast is the one specified into the cintragitto field of the transiti record associated to this forecast
AimedArrivalTime	Scheduled arrival time to the specified stop. Retrieved from PT_sched_time field of M_PT_TIMETABLE table
ExpectedArrivalTime	Expected arrival time to the specified stop. For real-time forecasts, it is retrieved from PT_pred_time field of M_PT_TIMETABLE table if the specified stop is not a terminal, or if it is a terminal and the AVM is not set to use departure times in generating forecasts for terminals. If it is a terminal and the AVM is set to use departure times in generating forecasts for terminals it is set to time 0 (0001-01-01T00:00:00). For scheduled times it is always set to time 0 (0001-01-01T00:00:00)
ArrivalStatus	For real-time forecasts it is the expected delay status of the vehicle at the arrival at the specified stop, and its possible values are ‚early', ‚delayed' or ‚onTime'. For scheduled times it is always set to ‚noReport' and it is omitted
ArrivalPlatformName	Always empty. Currently not provided
ArrivalBoardingActivity	Always ‚noAlighting', since this information is not available
AimedDepartureTime	Scheduled departure time from the specified stop. Retrieved adding to AimedArrivalTime the scheduled halt time (sosta field) of the transiti record associated to this forecast
ExpectedDepartureTime	Expected departure time from the specified stop. For real-time forecasts, it is set to time 0 (0001-01-01T00:00:00) if the specified stop is not a terminal, or if it is a terminal and the AVM is not set to use departure times in generating forecasts for terminals. If it is a terminal and the AVM is set to use departure times in generating forecasts for terminals it is retrieved from PT_pred_time field of M_PT_TIMETABLE table. For scheduled times it is always set to time 0 (0001-01-01T00:00:00)
DepartureStatus	For real-time forecasts it is the expected delay status of the vehicle at the departure from the specified stop, and its possible values are ‚early', ‚delayed' or ‚onTime'.For scheduled times it is always set to ‚noReport' and it is omitted
DeparturePlatformName	Always empty. Currently not provided
DepartureBoardingActivity	Always ‚noBoarding',since this information is not available

VehicleLocationAtStop element

A VehicleLocationAtStop element represents the geographical position of the stop at which a vehicle is stopped.

SiriWS provides for this element the following information:

Element	Source data
Longitude	Longitude of the stop expressed in WGS-84 decimal degrees. Retrieved from coordx field of nodi table contained into the photo database, converted in WGS-84
Latitude	Latitude of the stop expressed in WGS-84 decimal degrees. Retrieved from coordy field of nodi table contained into the photo database, converted in WGS-84

Example of a SIRI SM XML Request:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:siri="http://www.siri.org.uk/siri">
  <soapenv:Header/>
  <soapenv:Body>
    <siri:GetStopMonitoring>
      <ServiceRequestInfo>
        <siri:RequestTimestamp>2015-05-22T12:20:40+02:00</siri:RequestTimestamp>
        <siri:RequestorRef>KOL</siri:RequestorRef>
      </ServiceRequestInfo>
      <Request version="1.4">
        <siri:RequestTimestamp>2015-05-22T12:20:40+02:00</siri:RequestTimestamp>
        <siri:MonitoringRef>11030881</siri:MonitoringRef>
      </Request>
      <RequestExtension>
        <!--You may enter ANY elements at this point-->
      </RequestExtension>
    </siri:GetStopMonitoring>
  </soapenv:Body>
</soapenv:Envelope>
```

Example of a SIRI SM XML Response:

```
<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">
    <GetStopMonitoringResponse xmlns="http://www.siri.org.uk/siri">
      <ServiceDeliveryInfo xmlns="">
        <ResponseTimestamp xmlns="http://www.siri.org.uk/siri">2017-02-
17T14:25:12.4511243+01:00</ResponseTimestamp>
        <ProducerRef xmlns="http://www.siri.org.uk/siri">KOL</ProducerRef>
```

```
        <ResponseMessageIdentifier
xmlns="http://www.siri.org.uk/siri">R_</ResponseMessageIdentifier>
      </ServiceDeliveryInfo>
      <Answer xmlns="">
        <StopMonitoringDelivery version="1.4" xmlns="http://www.siri.org.uk/siri">
          <ResponseTimestamp>2017-02-
17T14:25:12.5061298+01:00</ResponseTimestamp>
          <ValidUntil>2017-02-17T15:25:12.5061298+01:00</ValidUntil>
          <ShortestPossibleCycle>PT1M</ShortestPossibleCycle>
          <MonitoredStopVisit>
            <RecordedAtTime>2017-02-17T14:25:11.6804823</RecordedAtTime>
            <MonitoringRef>11030881</MonitoringRef>
            <MonitoredVehicleJourney>
              <LineRef>1009</LineRef>
              <DirectionRef>go</DirectionRef>
              <VehicleMode>bus</VehicleMode>
              <RouteRef>10091031</RouteRef>
              <PublishedLineName>14</PublishedLineName>
              <OriginRef>11031330</OriginRef>
              <OriginName>Stokka kirke</OriginName>
              <DestinationRef>11032646</DestinationRef>
              <DestinationName>Stavanger hpl. 20</DestinationName>
              <OriginAimedDepartureTime>2017-02-
17T14:12:00+01:00</OriginAimedDepartureTime>
              <DestinationAimedArrivalTime>2017-02-
17T14:25:00+01:00</DestinationAimedArrivalTime>
              <Monitored>true</Monitored>
              <CourseOfJourneyRef>10091031</CourseOfJourneyRef>
              <MonitoredCall>
                <StopPointRef>11030881</StopPointRef>
                <VisitNumber>1</VisitNumber>
                <StopPointName>Knud Holms gate</StopPointName>
                <VehicleLocationAtStop>
                  <Longitude>5.729117</Longitude>
                  <Latitude>58.96786</Latitude>
                </VehicleLocationAtStop>
                <DestinationDisplay>Stavanger-Kvernevik-Viste Hageby</DestinationDisplay>
                <AimedArrivalTime>2017-02-17T14:23:00+01:00</AimedArrivalTime>
                <AimedDepartureTime>2017-02-17T14:23:00+01:00</AimedDepartureTime>
                <ExpectedDepartureTime>2017-02-17T14:25:20</ExpectedDepartureTime>
                <DepartureStatus>delayed</DepartureStatus>
              </MonitoredCall>
            </MonitoredVehicleJourney>
          </MonitoredStopVisit>
          <MonitoredStopVisit>
            <RecordedAtTime>2017-02-17T14:24:55.2898434</RecordedAtTime>
            <MonitoringRef>11030881</MonitoringRef>
            <MonitoredVehicleJourney>
```

```
            <LineRef>1011</LineRef>
            <DirectionRef>back</DirectionRef>
            <VehicleMode>bus</VehicleMode>
            <RouteRef>10112032</RouteRef>
            <PublishedLineName>8</PublishedLineName>
            <OriginRef>11275943</OriginRef>
            <OriginName>Randaberg sentrum</OriginName>
            <DestinationRef>11032650</DestinationRef>
            <DestinationName>Stavanger hpl. 12</DestinationName>
            <OriginAimedDepartureTime>2017-02-
17T13:55:00+01:00</OriginAimedDepartureTime>
            <DestinationAimedArrivalTime>2017-02-
17T14:24:00+01:00</DestinationAimedArrivalTime>
            <Monitored>true</Monitored>
            <CourseOfJourneyRef>10112032</CourseOfJourneyRef>
            <MonitoredCall>
              <StopPointRef>11030881</StopPointRef>
              <VisitNumber>1</VisitNumber>
              <StopPointName>Knud Holms gate</StopPointName>
              <VehicleLocationAtStop>
                <Longitude>5.729117</Longitude>
                <Latitude>58.96786</Latitude>
              </VehicleLocationAtStop>
              <DestinationDisplay>Stavanger-Kvernevik-Viste Hageby</DestinationDisplay>
              <AimedArrivalTime>2017-02-17T14:22:00+01:00</AimedArrivalTime>
              <AimedDepartureTime>2017-02-17T14:22:00+01:00</AimedDepartureTime>
              <ExpectedDepartureTime>2017-02-17T14:25:24</ExpectedDepartureTime>
              <DepartureStatus>delayed</DepartureStatus>
            </MonitoredCall>
          </MonitoredVehicleJourney>
        </MonitoredStopVisit>
…
      </StopMonitoringDelivery>
    </Answer>
    <AnswerExtension xmlns=""/>
  </GetStopMonitoringResponse>
 </s:Body>
</s:Envelope>
```

SIRI SX

This interface implements two methods:

- GetSituationExchange
- Subscribe

The service is self-documented by WSDL:

WSDL URL: `http://sis.kolumbus.no:90/SXWS/SXService.svc?wsdl`

SituationExchangeDelivery element

A SituationExchangeDelivery element represents a set of information regarding the service disruptions currently defined into the AVM.

Service disruptions can be of two types:

- Service anomalies, defined manually by AVM operators using the web deviation module
- Queue messages, generated automatically by the AVM when it detects that a vehicle is stopped along the service

SiriWS provides for this element the following information:

Element	**Source data**
ResponseTimestamp	The time this response was generated
RequestMessageRef	For request responses, the identifier of the request. For subscriptions responses, a unique identifier
SubscriberRef	For subscriptions responses, the identifier of the subscriber. Omitted for request responses
SubscriptionRef	For subscriptions responses, the identifier of the subscription. Omitted for request responses
Status	Whether the request could be processed successfully or not. If its value is ‚true', this element is omitted
ErrorCondition	Description of any error or warning conditions that apply to the request. See SIRI standard documentation for details. If Status value is ‚true', this element is omitted
ValidUntil	One day ahead from the generation of this response
ShortestPossibleCycle	One minute
Situations	A list of PtSituationElement elements, one for each disruption defined into the AVM. The list of service anomalies is obtained from the table D_DISSERVICES belonging to the FLASH_STORICO database. The list of queue messages is obtained from the table D_STOP_MESSAGES belonging to the FLASH_STORICO database. Since this table can contain a lot of old

	queue messages, and since queue messages usually have a short lifetime, the considered queue messages are always only those whose validity time (ValidityEndTime field) is greater than now. Also, the considered queue messages are always only those whose ID (ID field) starts with “QUEUE”. See PtSituationElement element below for further details about PtSituationElement structure

PtSituationElement element

A PtSituationElement element represents a single disruption defined into the AVM.

SiriWS provides for this element the following information:

Element	**Source data**
CreationTime	For both types, it is the time this disruption was created (CreationTime field)
ParticipantRef	Always equal to „Swarco Mizar“
SituationNumber	For service anomalies, it is the ID field. For queue messages, it is the unique ID formed joining the second and the fifth sub-fields of the ID field, both of them padded with 0 to form a 8 digit number
Source	Always contains only a SourceType sub-element, whose value is always ‘other’
Verification	Always ‘verified’
Progress	‘closed’ if its validity end time (ValidityEndTime field) is lesser than now, omitted otherwise
QualityIndex	Always ‘certain’
Reality	Always ‘real’
ValidityPeriod	Validity period of this disruption. See ValidityPeriod element below for details
Repetitions	The list of weekdays for which this disruption is valid. If it’s empty it means for all weekdays. For service anomalies, it is retrieved from the ActivationWeekDays field, if a time selection is defined (TimeSelection field equal to true). For queue messages, it is always empty
UnknownReason	Always present
Priority	For service anomalies, it is retrieved from the Priority field. For queue messages, it is always ‘extremelyUrgent’
Planned	For service anomalies, it is always ‘true’. For queue messages, it is always ‘false’ and it’s omitted
Summary	Disruption description. If no text is defined, it is omitted. For service anomalies, if stop text messages are enabled (StopsTextEnabled field equal to 1), it is or the first stop message retrieved from D_DISSERVICES_BSD_MESSAGES (if there are messages linked to this

	disruption by its ID), or the text contained into the StopsText field. For queue messages, it is the Text field of the first record for this queue message ID
Affects	The stops affected by this disruption. Always contains only a StopPoints sub-element, which contains a list of AffectedStopPoint elements. For service anomalies, this list is retrieved from the Stops field, if a space selection is defined (SpaceSelection field equal to true). For queue messages, it contains always one single element, and this is retrieved from the StopCode and StopType fields. See AffectedStopPoint element below for further details about AffectedStopPoint structure

ValidityPeriod element

A ValidityPeriod element represents the time interval between which this disruption is valid.

SiriWS provides for this element the following information:

Element	Source data
StartTime	Disruption start time. For both types it is the ValidityStartTime field
EndTime	Disruption end time. For both types it is the ValidityEndTime field

AffectedStopPoint element

An AffectedStopPoint element represents a stop affected by this disruption.

SiriWS provides for this element the following information:

Element	Source data
StopPointRef	The stop code
StopPointType	Always ‘busStop’