CEN/TC 278

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Secretariat: **NEN**

Public transport — Service interface for real-time information relating to public transport operations — Part 4: Functional service interfaces - Facility Management

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Foreword

This document prCEN/TS 00278181-4 has been prepared by Technical Committee CEN/TC 278 “Road transport and traffic telematics”, the secretariat of which is held by NEN.

This document describes the SIRI Facility Monitoring service, one of a modular set of services for the exchange of Real-time information. The Facility Monitoring service (SIRI-FM) is concerned with the exchange of information about alterations to the availability of facilities for passengers among systems, including equipment monitoring, real-time management and dissemination systems.

The SIRI Facility Monitoring service (SIRI-FM) is an additional service based on the European Technical Specification known as “SIRI” - Service Interface for Real-time Information. SIRI provides a framework for specifying communications and data exchange protocols for organisations wishing to exchange Real-time Information (RTI) relating to public transport operations.

SIRI is presented in three parts:

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

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

- **Facilities Management (SIRI-FM)** (This document) (**Part 4:** prCEN/TS 00278181-4).
- **Situation Exchange (SIRI-SX):** The SIRI Situation & Incident Exchange service is used to exchange information messages between identified participants in a standardised structured format suitable for travel information services. It enables messages to be sent and to be revoked. Messages are assigned validity periods in addition to the actual content. (**Part 5**: prCEN/TS 00278181-5).

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The XML schema can be downloaded from http://www.siri.org.uk/, along with available guidance on its use, example XML files, and case studies of national and local deployments. The SIRI-FM service is included in version 1.3 of the schema onwards.

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

Introduction

Public transport services rely increasingly on information systems to ensure reliable, efficient operation and widely accessible, accurate passenger information.

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

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

This further European Technical Standard specifies an additional SIRI functional service to exchange information about changes to availability of Public Transport facilities between monitoring systems and servers containing real-time public transport vehicle or journey time data. These include the control centres of transport operators, as well as information systems that deliver passenger travel information services.

1 Scope

The SIRI: **Facility Monitoring (SIRI-FM)** service enables the exchange of information on the current status of facilities. It provides a short description of the facility itself, the availability status and specifically the impact of the availability status for various categories of disabled or incapacitated people. The service provides all the current relevant information relating to all facilities fulfilling a set of selection criteria. Both query and publish subscribe interactions are supported.

2 Normative references

The normative references used in this document are presented in Part 1 of the SIRI document set, prCEN/TS 00278181-1. The following additional references pertain to SIRI-FM specifically:

prCEN 00278207-1 Identity of Fixed Objects in Public Transport IFOPT.

3 Terms and definitions

3.1 Transport Related Terms

This section includes additional terms for both PT entities and properties of PT entities used in SIRI.-FM. For each term, it is indicated whether the term derives from TransModel (ENV12896 version 5.0) and its extension IFOPT, or whether the term is specific to SIRI.

This section extends the terms and definitions presented in Part 1 of the SIRI document set, prCEN/TS 00278181-1 to cover the Facility Monitoring Service.

3.1.1 FACILITY – (SIRI)

An equipment or service that to provides a specific convenience or service to passengers. For example, facilities like ticket machines, elevators, mechanical stairs, toilets, porterage, left luggage, etc. A facility may be an equipment, a service, a personal device or a reserved area.

3.1.2 FACILITY CONDITION– (SIRI)

A particular mode of being of a facility; describing its state and availability.

3.1.3 FACILITY CLASS– (SIRI)

Categorisation of the type of a facility: e.g. equipment, service, personal device or reserved area.

3.1.4 PASSENGER ACCESSIBILITY ASSESSMENT – IFOPT

A categorisation of the ACCESSIBILITY characteristics of a PASSENGER to indicate their requirements for ACCESSIBILITY. For example that are unable to navigate stairs, or lifts, or have visual or Auditory impairments. PASSENGER ACCESSIBILITY TYPE corresponds to one or more ACCESSIBILITY LIMITATIONs, allowing the computation of paths for passengers with constrained mobility. For example, Wheelchair, No Lifts, No Stairs.

3.1.5 USER NEED – IFOPT

An ACCESSIBILITY requirement of a PASSENGER. For example, that they are unable to navigate stairs, or lifts, or have visual or auditory impairments.

3.1.6 SUITABILITY – IFOPT

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

3.1.7 MONITORING INFORMATION– (SIRI)

Describes the conditions and circumstances of monitoring: manual/automatic, frequency of measurement, etc.

3.1.8 REMEDY– (SIRI)

A suggested alternative solution for passengers when a facility/service is no longer available.

4 Symbols and abbreviations

The symbols and abbreviations used in this document are presented in Part 1 of the SIRI document set, prCEN/TS 00278181-1.

5 Business Context

This section is a complement to the Annex B "Business Context", in Part 1 of the SIRI document set, prCEN/TS 00278181-1):

5.1 Overview of service function

The facility monitoring service allows the rapid real-time exchange of equipment status data.

Figure 1 provides an overview of the main use cases and data exchanges involved in using the SIRI Facility Monitoring service.

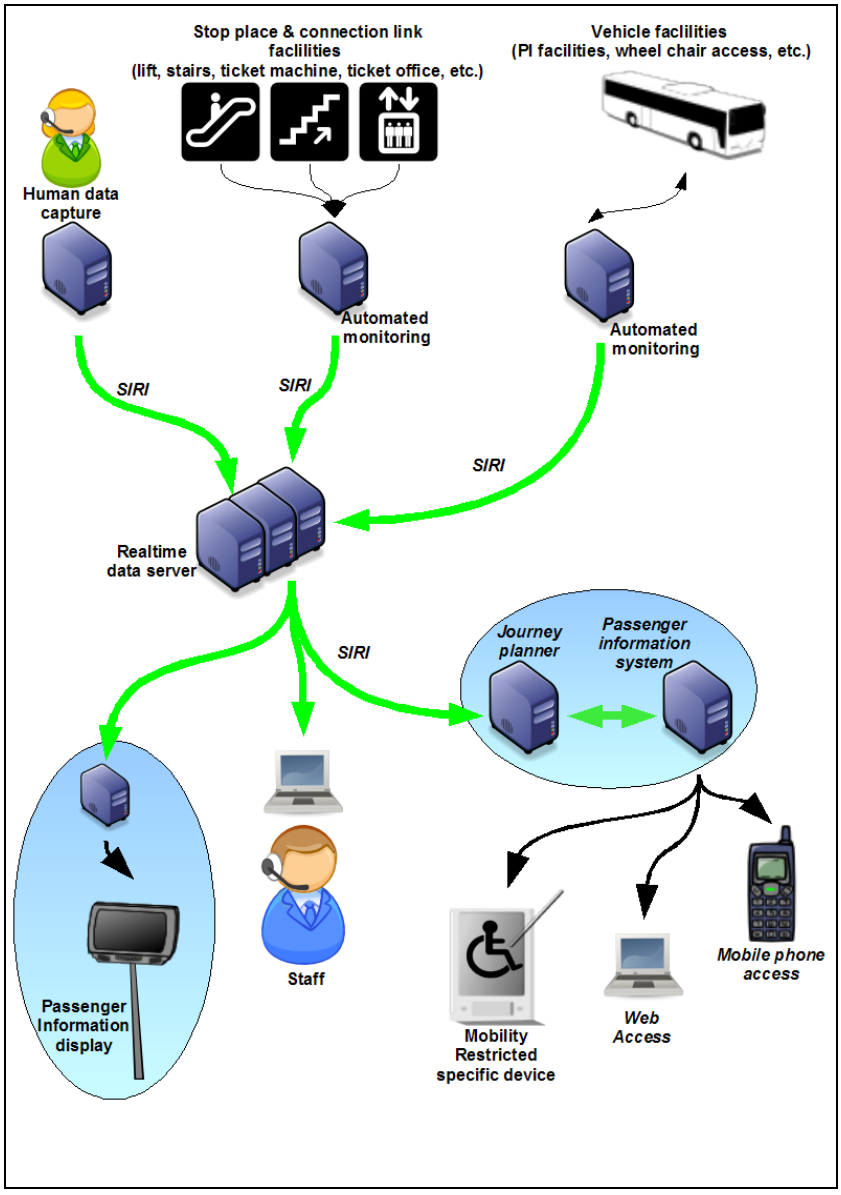

Figure 1 Main Use Cases for Facility Monitoring

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The status data needed for Facility Monitoring is provided by collecting the status of the facilities on the network (top of the figure). This can be achieved either through manual data capture (an individual checks the status of the facilities in situ, and reports them using a customised software interface), or using an automated monitoring system with sensors to detect the equipment status. In both cases, the monitored data is sent to the real-time data server through a SIRI service link. Monitored facilities can be any facility on the network (mainly stop points, stop places, etc.), on connection links or on vehicles, for example:

- Lifts.
- Escalators.
- Wheel chair access.
- Passenger information devices.
- Ticket machine.
- Boarding human assistance.
- Etc. (see the Facility Feature table for a more detailed list).

When several providers are available, all the data flows are merged into a single real-time service. The resulting real-time data set is then available to all downstream systems through a single SIRI-FM access point. A large set of potential user systems can be considered:

- Passenger information displays.
- System providing information for the staff (on board, on stations, on call centres, etc.).
- Passenger information system, possibly including a journey planner, and providing information through:
    - Web access.
    - Mobile phone access.
    - Specific devices for mobility restricted people.
    - Etc.

5.2 Examples of Service Function

Data from the Facility Monitoring service is useful for many different passenger information services. For example:

- The use of facility disruption information (for instance "*lift broken affecting wheel chair access on a connection link*") in a journey planner. This has to be related to the time of the intended journey vis a vis the start and stop time (or expected stop time) of the disruption. Some disruptions may be planned, other may be unexpected and may occur and be monitored during the current operational day.
- When facilities like Ticket offices are closed, online systems can provide information about the facilities status on a map, on textual information, through RSS feeds, through web site access/ mobile phone access, etc.

- Facility conditions can be converted into a situation message and disseminated using a wide variety of formats, for example, TPEG, and broadcast to any compliant device (i.e. informing on both road and public transport situations).

- Provide information to the staff informing people of the availability of facilities:

    - Inside a station, and on the related CONNECTION LINKs.

    - For a LINE.

    - For a whole network.

- Passengers with specific accessibility needs, because of disability, luggage, etc can check the availability of facility:

    - At a STOP POINT.

    - On a VEHICLE.

    - On a VEHICLE JOURNEY.

    - On a CONNECTION LINK.

- Real-time information about the status of facilities is also useful for operational purposes, for example;

    - To ask for repair when manual monitoring is performed.

    - To report the state of facilities when manual monitoring is performed.

    - To ask for the time when the facility will be available (repaired).

    - etc.

5.3 Use Cases

The following Use Cases illustrate functional cases for using the Facility Conditions service in PT information systems and provide specific scenarios that the SIRI-FM service is intended to support. The purpose of the Use Cases is to identify specific behaviour which requires corresponding support in the SIRI-FM Facility Conditions model and protocol.

The Use Cases are organised under the following headings:

- Capture/Origination of Facility Conditions.

- Relating Facility Conditions to other SIRI services.

- Onwards distribution to other systems.

5.4 Use Cases: Capture & Origination of Facility Condition

The following Use Cases describe the capture and origination of Facility Condition data.

5.4.1 CAPT#01 Facility Condition entered manually by operator staff

Transport Operator staff may see or receive news of a change in the availability of a phone call, fax, email, direct observation or from other systems. In some cases this may be known long in advance as part of a planned schedule of engineering works, major event or other bulletin. Staff in a control room may enter the description of the status into an facility management system using a capture terminal. Staff in the field may use a mobile device. Data will be captured in a structured format including a status, time of origin, source etc. The operator may also direct the requirements for distribution of the data to other systems and to specific staff, either directly by selecting their email phone or pager ids, or by the use of business rules that despatch to particular channels according to the message content.

5.4.2 CAPT#02 Facility Condition updated manually by operator staff

Once in the system, the status of live facilities that are unavailable will continue to be monitored by control staff. The staff will select the current Facility Condition and update its status.

5.4.3 CAPT#03 Facility Condition arising from automatic Facility Monitoring device (e.g. lift failure)

Other automated sources of Facility Conditions are equipment monitoring systems, which may give rise to data about the availability of specific items of equipment such as lifts and escalators, or services, such as a ticket office or accessibility assistance. The information may be tagged with location and equipment identifiers allowing it to be associated with specific routes and journeys.

5.4.4 CAPT#04 Facility Condition being generated automatically from a situation

In some cases a Condition data may be created automatically from a Situation message., A Situation can be fed from an incident management system through a structured interface. Certain Situations may include structured data that can be used to derive a Facility Condition, or change of status to a previous condition..

5.4.5 CAPT#05 Workflow for verification, validation and editorial correction

A transport operator may want to validate and coordinate the information given out by its dissemination systems as part of a workflow process. To do this a review process may be used to check all new messages, especially those arriving automatically from other systems before marking them as ready for wider distribution. Staff will use a facility management console to review current Facility Conditions. They may make additional checks to verify the content, add additional structured content, and also make editorial corrections to improve the human readable content. There may be different staff roles – for example data entry, data review assigned to different users with different capabilities. In order to support this operation the Facility model must include various status and quality attributes.

5.4.6 CAPT#06 Providing of collective guidance of passengers

One of the editorial functions for message management may be to add a Remedy – a course of alternative action- to accompany the Facility Condition. They may also add a Situation that can include advice to passengers as to the course to take to overcome the disruption caused by the Facility Condition. This may include alternative routes, alternative travel times, etc.

5.4.7 CAPT#07 Audit trails, retrospectives and process views

The timely and accurate capture and circulation of information can be of great importance in crisis conditions and it is desirable to keep an exact audit log of all changes made. This can be used both to record the handling of the Facility Condition and to improve future processes. This can include time of capture, as well as time of despatch. The Facility Condition structure should record such information.

5.5 Use Cases: Relating Facility Conditions to other SIRI services

The following Use Cases describe the correlation and association of Facility Conditions with the data content of other systems, including the content of other SIRI functional services.

5.5.1 XREF#01 Problem affecting a specific vehicle journey

The Facility Condition may provide information about the available services on a specific dated vehicle journey. Each of the SIRI services that reference a dated vehicle journey can associate a Facility Condition reference with the journey element. This association may have been made manually, by choosing the journey as part of the Facility Condition capture process, or inferred automatically, for example by noting that the journey uses a network, line or station that is affected by a Facility Condition (see other XREF use cases). This can be used by any information system with access to the relevant Facility Condition service to obtain the Facility Condition description.

5.5.2 XREF#02 Problem at a stop place affecting some or all journeys for some or all modes

A Facility Condition at a stop place, such as full or partial closure of a lift, may affect access to transport, or transfer between particular lines or modes at the stop place. The Facility Condition needs to be tagged with identifiers that can be used to automatically collate it with the references to stop places used in other information services. Once the relevance is established, the identifier of the Facility Condition can be associated with the data of the other service to allow linking of data. It may be relevant to show Facility Condition data in Stop departures (e.g. as part of the SIRI-SM results), on journey planner results and in estimated Vehicle Journeys (e.g. in the SIRI-ET and VM results), and in travel news lists, localised by area or mode or route (E.g. in the SIRI-SX results).

5.5.3 XREF#03 Problems affecting an interchange

Certain types of disruption affect not the whole stop place or interchange, but just the ability to transfer between particular services. For example, transfer in rush hour between certain metro lines may be restricted during building works within a tunnel. In this case the Facility Condition can be tagged with the details of the specific connection links and or journey interchanges that are affected. Subsequently journeys and trips that use the line section can be associated with the Facility Condition, as in use case XREF#02.

5.5.4 XREF#04 Problems affecting particular classes of users e.g. impaired mobility

Certain types of disruption affect certain categories of passenger disproportionately. For example, lift failures affect wheelchair users, and excessive crowding affects most mobility impaired users. A systematic tagging of Facility Condition with the effect on accessibility is important.

5.6 Use Cases: Onwards Distribution to other systems (e.g. in TPEG & Datex2)

The following Use Cases describe the distribution of Facility Conditions to different types of dissemination system.

5.6.1 DIST#01 Distribution of Facility Condition to displays

A Facility management system may send the Facility Condition it captures or in-station, at stop and onboard displays of the transport operators own systems. In some cases the Facility Condition will be displayed as additional notes and warnings accompanying other data, such as stop departures. In other cases relevant Facility Conditions will be shown as a specific bulletin. Content on displays is typically highly filtered for a particular context, for example a station or route, so the Facility Conditions will need to be tagged with precise scope information (or be associated with other entities so tagged) so that they can to be distributed automatically.

5.6.2 DIST#02 Distribution of Facility Condition to staff

A transport operator may want to inform their staff about Facility Conditions as they occur so that they are in a position both to conduct operations and to inform passengers. Management may need to be informed of certain types of Facility Condition as well.

5.6.3 DIST#03 Distribution of Facility Condition to external Systems

To disseminate facility conditions to external systems, such as for radio and TV broadcasting, personal alerts, web sites, mobile phone service, or any other information system, Situations may be used. The situation can include the facility condition reference along with structured content to explain the nature and effect of the condition status.

5.6.4 DIST#04 Distribution of Facility Condition to journey planners

Journey planners can integrate Facility Condition data into their results, showing both planned and unplanned Facility Condition that may affect a particular journey. In order to do this they need Facility Conditions to me tagged with identifiers that can be related to specific journeys (or stops used by journeys). Connection Link information and Interchange information are although useful.This allows users to check the status of facilities at a station or fro a specific journey.

5.6.5 DIST#04 Distribution of Facility Conditionfor recording Facility Failures

A Facility Condition management system may send the Facility Conditions it aggregates to other systems that hold a systematic historic log of the facility status. Such a historic record can be used for quality monitoring and analysis purposes.

5.6.6 DIST#05 Distribution of Facility Condition to other systems

A Facility Condition management system may send the Facility Conditions it aggregates to systems (that is, which also capture and originate Facility Conditions), as well as itself receiving them from other systems.

6 Modelling Facilities in SIRI

SIRI's Facility Monitoring Functional Service is designed to provide the specific details about the status of a facility.

SIRI-FM uses a structured model for describing changes to the availability of facilities, designed to be suited for any kind of facility. The representation includes structured elements to relate the facility to other transport elements, such as stop point, network, vehicle journey etc, following a Transmodel model. The detailed description of facilities themselves, including all the related specific information (height of a stair, number of level of a elevator, price of a commercial facility, etc.) is outside the scope of SIRI-FM, but can be referenced using a Facility Identifier. See for example IFOPT for a model for many types of facility. The name space scope of Facility Identifiers will normally be that of the Participant System.

The Facility Condition structure includes sufficient information about the facility to be used as a standalone element in an information services.

6.1 Facility Model Overview

Figure 2 introduces the SIRI-FM facility condition model.

A FACILITY CONDITION describes a changed condition of a FACILITY.

- A FACILITY identifies the affected facility itself and its FACILITY LOCATION in terms of network identifiers for the STOP, LINE etc.
- An ACCESSIBILITY ASSESSEMENT describes the normal accessibility of the FACILITY.
- A MONITORING INFO describe show the facility is monitored and how often.
- A FACILITY STATUS to describe the nature of the change to availability of the facility and any effect upon the ACCESSIBILITY ASSESSEMENT.
- A VALIDITY CONDITION may be used to specify the temporal duration of the condition,
- A REMEDY may be used to suggest alternative facilities.

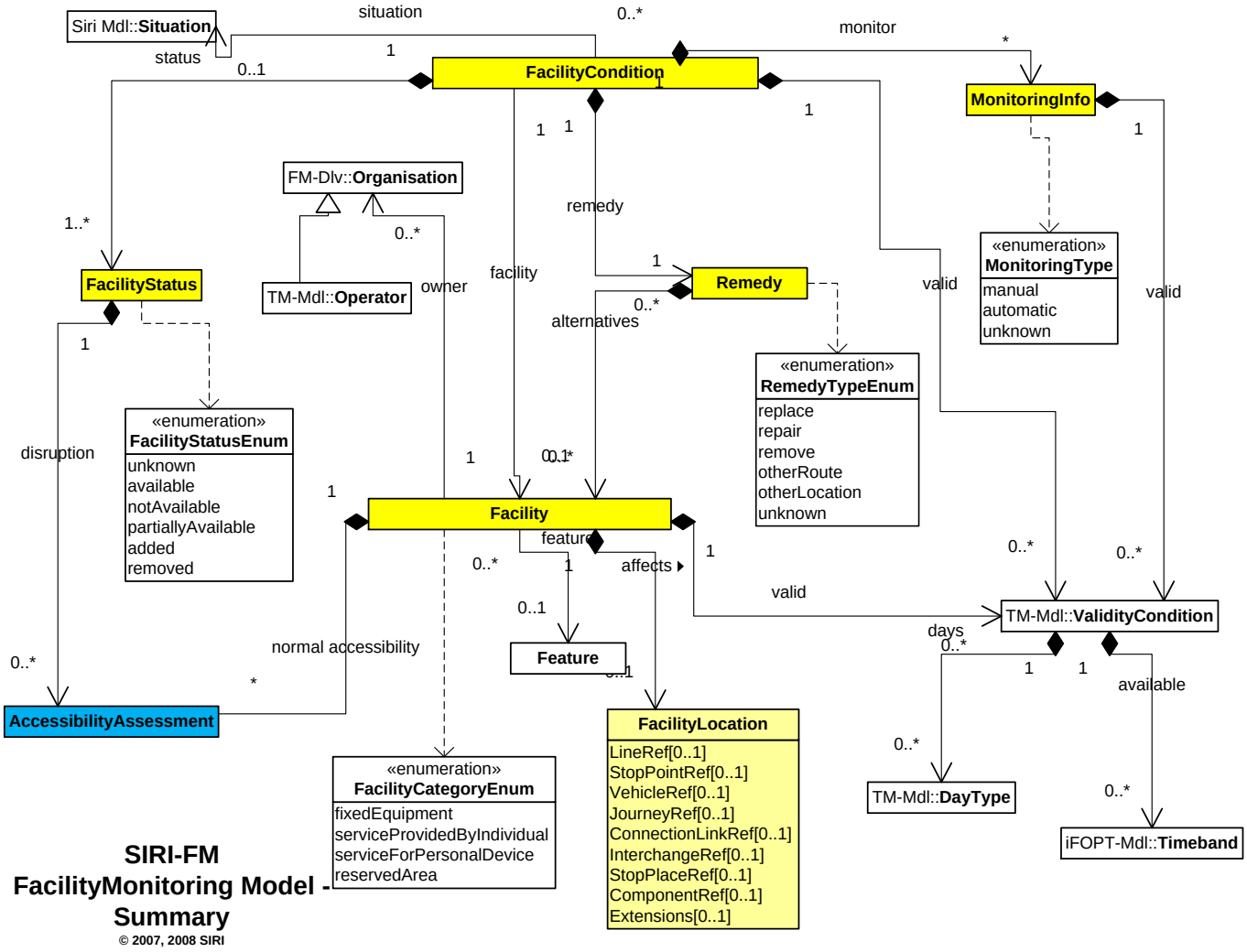

Figure 2 — UML Diagram for Facilities – Summary

6.2 Facility Model Details

Figure 3 elaborates the SIRI-FM facility condition model and includes the definitions of the enumerations.

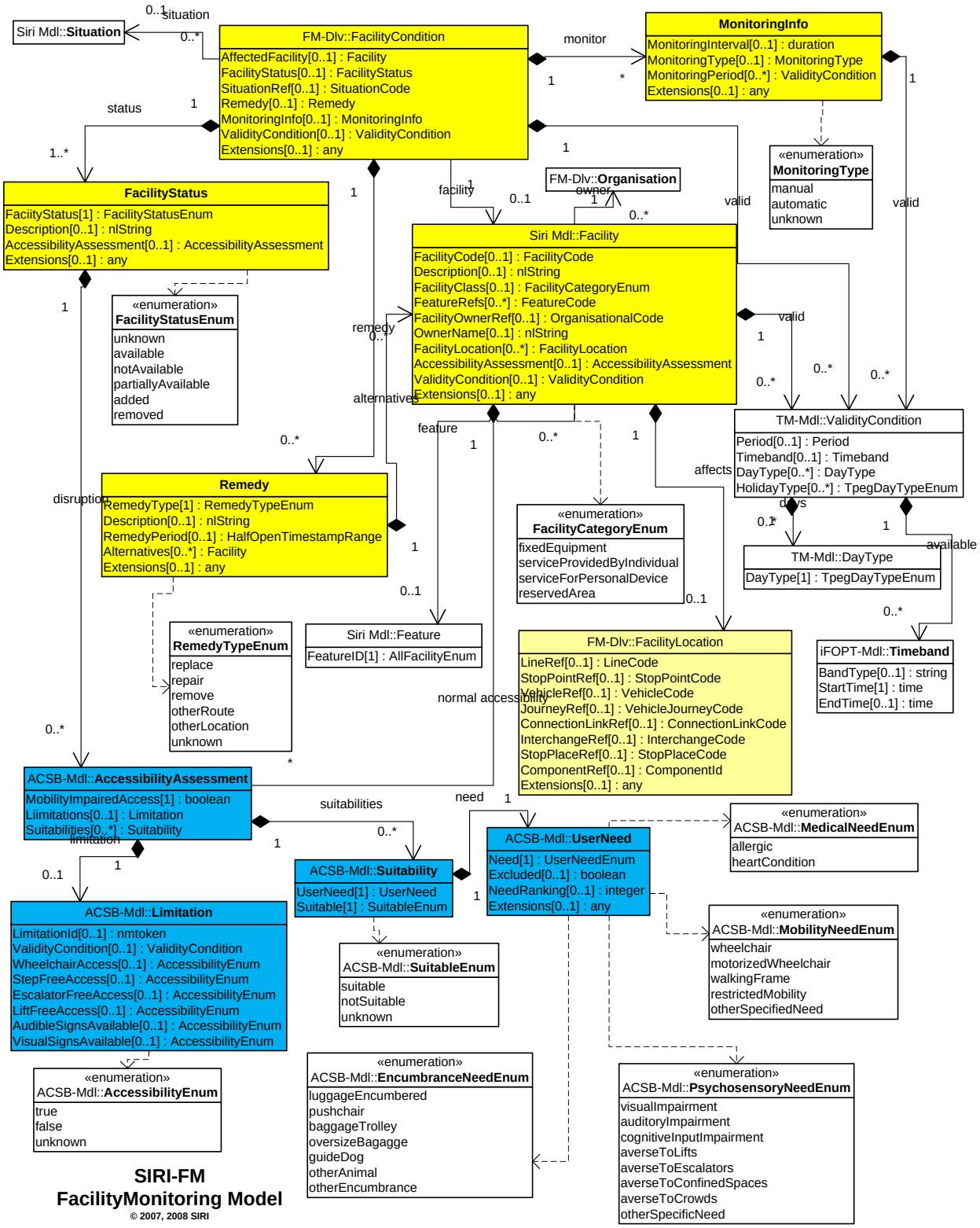

Figure 3 — UML Diagram for Facilities - Detailed model

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6.3 Facility Model Elements

The status of a facility is modelled by a number of elements, as follows.

6.3.1 Facility Condition

A ***FacilityCondition*** represents the current status of a nominated ***Facility***. It may contain a ***Situation*** reference to link the current status of the facility to an external event ("the escalator is unavailable *due to weather conditions*"...). A validity period can state the start time and estimated duration of the current status. The Situation can be accessed through SIRI-SX or other Situation service such as TPEG.

6.3.2 Facility

Each ***FacilityCondition*** refers to a ***Facility,*** which describes the properties of the facility itself. This is a generic description suitable for any facility, and not a detailed description of all the properties specific to a particular type of facility. If such a structured description is needed a Facility Reference can be included to link this description to an external ***Facility*** object.

The SIRI ***Facility*** has a description, and a facility type (fixed equipment, service, Personal device, reserved area or onboard facility). It is further described by one or several features (a *Ticket Machine* can provide *Local Tickets* and *National Tickets*).

6.3.3 Monitoring Info

The ***Monitoring Info*** element describes the method and circumstances of monitoring: manual/automatic, frequency of measurement, etc. This can be used to indicate that, for example, an escalator status is checked manually everyday at eight o'clock – with the implication that the status provided may not be the current status, but the one measured at eight o'clock.

6.3.4 Facility Location

Each ***Facility*** can be associated with a ***Facility Location*** which can provide a location reference in terms of both fixed and moving elements of the PT network:

Fixed

- A ***Stop Point*** (or Stop Area) (Transmodel)
- A ***Line*** (Transmodel)
- A ***Connection Link*** (Transmodel)
- An ***Interchange*** (Transmodel)
- ***Stop Place*** **(**IFOPT)
- ***Stop Place*** **Component (**IFOPT)
  - ***Access Space*** **(**IFOPT)
  - ***Quay*** **(**IFOPT)
  - ***BoardingPosition*** **(**IFOPT)
  - ***Path Link*** **(**IFOPT)
  - ***Entrance*** **(**IFOPT)

Moving

- a ***Vehicle*** (Transmodel)
- a ***Vehicle Journey*** (Transmodel)

The referenced elements are components of the Transmodel model, including its IFOPT extensions for stop places. More than one reference may be relevant at the same time.

6.3.5 Facility Status

The ***Facility Status*** describes the current status of the facility: This may be:

- Unknown.
- Available.
- Not Available.
- Partially available (for example: “available except for Wheel Chair”...).
- Added (its a new facility, added temporarily or definitely).
- Removed (the facility has been removed, temporarily or definitely).

The effect upon accessibility is described by an ***AccessibilityAssessment*** see above.

6.3.6 Accessibility Assessment

Each ***Facility*** can have an ***AccessibilityAssessment***, which describes the normal status of accessibility of the facility for different categories of user need.

Each ***Facility Condition*** can state a change to the normal accessibility status, for different categories of user need.

The ***AccessibilityAssessment*** can be stated in terms of either or both a ***Limitation,*** or of one or more ***Suitability*** instances***.***

- A ***Limitation*** describes the status of an accessibility property of the infrastructure e.g. *liftFreeAccess*.

- ***Suitability*** describes the suitability of a facility for use by some one with a specific ***User Need***, e.g. *baggageEncumbrance*.

A particular limitation may affect more than one ***User Need***, and a ***User Need***, may be affected by more than one ***Limitation***.

6.3.7 User Need

A user need can be any specific passenger need for accessibility: it may be a mobility restricted need (wheel chair, no stairs, etc.), a need due to the use of a stroller or to the fact of being encumbered by luggage, etc.

6.3.8 Remedy

The Remedy describes suggested advice to passengers as to an alterative course of action when a facility/service is no longer available.

6.3.9 Facility Feature

Facility features are used to classify facilities as having particular properties of interest to the travelling public, for example, ‘*suitable for Wheelchairs*’, ‘*Ticket Machines*', ‘*Bike Carriage*’, etc.

This section refines and replaces the table shown in “3.3.13— Service Feature”, in Part 1 of the SIRI document set, prCEN/TS 00278181-1) with the addition of the SIRI-FM facility types.

6.3.10UML Diagrams of Facility Types

Figure 4 and **Error! Reference source not found.** summarise the different types of facility from IFOPT listed in Table 1.

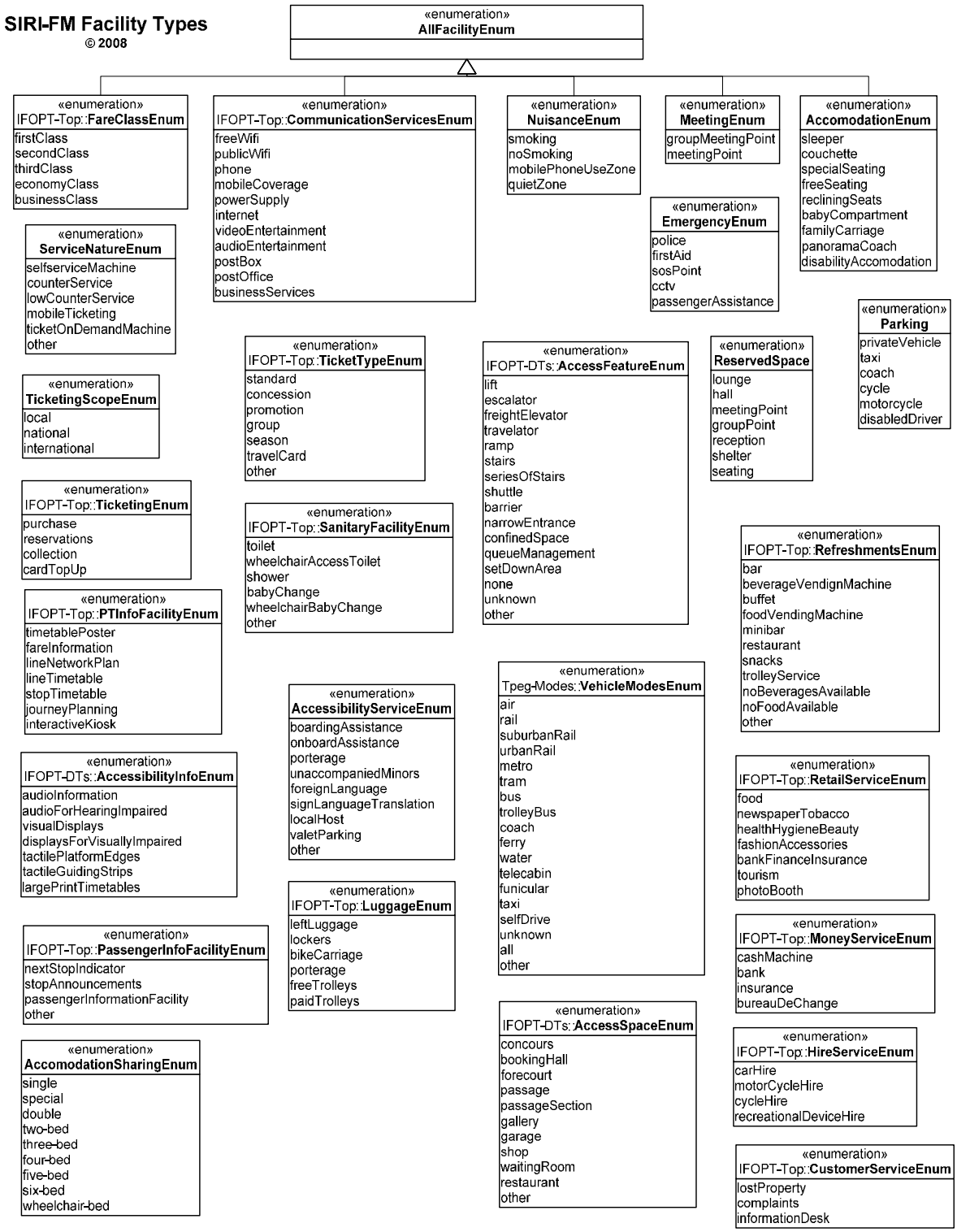

Figure 4 UML diagram of Facility types

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Type	Feature	Fixed Equipment	Service	Area	Specific Personal Device	On Board
Fare Class	*First Class*		X	X		X
	Second Class		X	X		X
	Third Class		X	X		X
	Economy Class		X	X		X
	Business Class		X	X		X
Service Nature	*Self Service Machines*	X			X	X
	Counter Service	X				X
	Ticket On Demand Machines	X				X
	Low Counter Service	X				X
	Mobile Ticketing			X	X	X
Ticket Scope	*Local Tickets*		X		X	X
	National Tickets		X		X	X
	International Tickets		X		X	X
Ticketing Services	*Purchase*		X		X	X
	Ticket Collection		X		X	X
	Reservations		X		X	
	Card Top up		X		X	X
Ticket Types	*Standard*		X		X	X
	Concession		X		X	X
	Promotion		X		X	
	Group		X		X	
	Season		X		X	
	Travelcard		X		X	
Nuisance	*Smoking*			X		X
	No Smoking			X		X

Type	Feature	Fixed Equipment	Service	Area	Specific Personal Device	On Board
	MobilePhoneUseZone			X		X
	Quiet Zone			X		X
Passenger Information facility	*Next Stop Indicator*	X			X	X
	Stop Announcements		X		X	X
	Passenger Information Display	X			X	X
Accessibility Information	*Audio Information*		X		X	X
	Audio For Hearing Impaired		X		X	X
	Visual Information		X		X	X
	Displays Information for Visually Impaired	X			X	X
	Tactile Platform Edges	X			X	
	Tactile Guiding Strips	X			X	
	Large Print Timetables					
PT Info Facility	*Timetable Poster*	X				
	Fare Information	X			X	
	Line Network Plan	X			X	X
	Line Timetable	X			X	X
	Stop Timetable	X	X		X	
	Journey Planning		X		X	
	Interactive Kiosk/Display	X				
Customer Services	*Lost Property*		X			
	Complaints		X			
	Information Desk					
Passenger Communicationss	*Public Wifi*		X		X	X
	Free Wifi					

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Type	Feature	Fixed Equipment	Service	Area	Specific Personal Device	On Board
	Telephone	X			X	X
	Internet	X			X	X
	Mobile Coverage		X	X X		X X
	Power Supply		X	X		X
	Audio Entertainment		X		X	X
	Video Entertainment		X		X	X
	Post Box	X				X
	Post Office		X			
	Business Services		X			X
Refreshment	*Restaurant*		X			X
	Snacks		X			X
	Refreshment Trolley		X			X
	Bar	X	X			X
	Minibar					X
	Bistro	X	X			X
	Beverage Vending Machine	X	X			X
	Food Vending Machine	X	X			X
	Food Not Available		X			X
	Beverage Not Available		X			X
Sanitary	*Toilet*	X				X
	Wheelchair Access Toilet	X				X
	Shower	X				X
	Baby Change	X				X
	Wheelchair Baby Change	X				X
Luggage	*Bicycle Carriage*		X			X

Type	Feature	Fixed Equipment	Service	Area	Specific Personal Device	On Board
	Baggage Storage	X	X			X
	Left Luggage	X	X			
	Porterage		X			
	Left Luggage Lockers	X	X			
	Baggage Trolleys	X				
Access Space	*Concourse*			X		
	Booking Hall			X		
	Forecourt			X		
	Passage			X		
	Passage Section			X		
	Gallery			X		
	Garage			X		
	shop			X		
	Waiting Room			X		
	ALREADY IN REFRESHMENT			X		
Reserved Space	*Lounge*			X		
	Hall			X		
	Meeting point			X		
	Group Point		X	X		
	Reception		X	X		
	Shelter			X		
	Seats			X		
Access Feature	*Lift*	X				
	Freight Elevator	X				
	Escalator	X				

Type	Feature	Fixed Equipment	Service	Area	Specific Personal Device	On Board
	Travelator	X				
	Ramp – Step Free access	X				
	Stairs	X				
	Series of Stairs	X				
	Shuttle		X			
	Barrier	X				
	Narrow Entrance	X				
	Confined Space	X		X		
	Queue Management	X		X		
	Set Down Area	X		X		
Parking Group	*Private Vehicle*			X		
	Disabled Parking		X	X		
	Motorcycle park		X	X		
	Cycle Park		X	X		
	Coach					
Accessibility Service	*Boarding Assistance*		X			X
	On Board Assistance		X			X
	Porterage		X			
	Unaccompanied Minor Assistance		X			X
	Foreign Language		X		X	X
	Sign Language Translation		X			
	Local Host		X			
	Valet Parking		X			
Emergency	*Police*		X			X

Type	Feature	Fixed Equipment	Service	Area	Specific Personal Device	On Board
	First Aid		X			X
	SOS Point	X	X			X
	CCTV	X	X	X		X
	Passenger Assistance		X			X
Hire	*Car Hire*		X			X
	Motor Cycle Hire		X			
	Cycle Hire		X			
	Recreation Device Hire		X			X
Vehicle Modes	*Air*		X			
	Rail		X			
	Suburban Rail		X			
	Urban Rail		X			
	Metro		X			
	Tram		X			
	Bus		X			
	Trolleybus		X			
	Coach		X			
	Ferry		X			
	Water		X			
	Telecabin		X			
	Funicular		X			
	Taxi		X			
	Self drive		X			
Accommodation	*Sleeper*			X		X
	Couchette			X		X

Type	Feature	Fixed Equipment	Service	Area	Specific Personal Device	On Board
	Special Seating	X		X		X
	Free Seating	X		X		X
	Reclining Seats	X		X		X
	Baby Compartment	X		X		X
	Family Carriage	X		X		X
	Panorama Coach			X		X
	DisabilityAccomodation			X		X
Accommodation Sharing	*Single*					X
	Special					X
	Double					X
	Two-bed					X
	Three-bed					X
	Four-Bed					X
	Five-Bed					X
	Six-Bed					X
	Wheelchair -bed					
Retail	*Food*		X			X
	Newspaper – Tobacco		X			X
	Recreation - Travel		X			X
	Health Hygiene Beauty		X			X
	Fashion - Accessories		X			
	Tourism		X			
	Photo Booth	X	X			
Money Service	*Cash Machine*	X	X			X
	Bank	X	X			

Type	Feature	Fixed Equipment	Service	Area	Specific Personal Device	On Board
Meeting	*Bureau de change*	X	X			X
	Insurance		X			X
	Meeting Point	X		X		X
	Group Meeting Point	X		X		X

Table 1 — Some Recommended Facility Feature Values

7 Communication Infrastructure

The Facility Monitoring Service makes changes to the standard SIRI communication infrastructure.

7.1.1 SIRI Service Request table

The Facility Monitoring Service adds elements as follows to SIRI as per “Table 7 — SIRI Request and Delivery Types”, in Part 2 of the SIRI document set, prCEN/TS 00278181-2:

	SIRI Functional Service	**Request**	**Subscription Request**	**Delivery**	**Capability Request**
	Container	***ServiceRequest***	***SubscriptionRequest***	**ServiceDelivery**	
Timetable	Production	***ProductionTimetableRequest***	***ProductionTimetable-SubscriptionRequest***	**ProductionTimetable-Delivery**	**ProductionTimetable-CapabilityRequest~**
	Real-time	***EstimatedTimetableRequest***	***EstimatedTimetable-SubscriptionRequest***	**EstimatedTimetable-Delivery**	**EstimatedTimetable-CapabilityRequest**
Progress	Stop Timetable	***StopTimetableRequest***	***StopTimetable-SubscriptionRequest***	**StopTimetableDelivery**	**StopTimetable-CapabilityRequest**
	Stop Monitoring	***StopMonitoringRequest***	***StopMonitoring-SubscriptionRequest***	**StopMonitoringDelivery**	**StopMonitoring-CapabilityRequest**
	Vehicle Monitoring	***VehicleMonitoringRequest***	***VehicleMonitoring-SubscriptionRequest***	**VehicleMonitoringDelivery**	**VehicleMonitoring-CapabilityRequest**
Interchange	Connection Timetable	***ConnectionTimetableRequest***	***ConnectionTimetable-SubscriptionRequest***	**ConnectionTimetable-Delivery**	**ConnectionTimetable-CapabilityRequest**
	Connection Monitoring	***ConnectionMonitoring-Request***	***ConnectionMonitoring-SubscriptionRequest***	**ConnectionMonitoring-FeederDelivery**	**ConnectionMonitoring-Feeder-CapabilityRequest**
				ConnectionMonitoring-DistributorDelivery	**ConnectionMonitoring-Distributor-CapabilityRequest**
Info	General Message	***GeneralMessageRequest***	**GeneralMessage SubscriptionRequest**	**GeneralMessage Delivery**	**GeneralMessage CapabilityRequest**
Facilities	Facility Monitoring	***FacilityMonitoringRequest***	***FacilityMonitoring-SubscriptionRequest***	**FacilityMonitoringDelivery**	**FacilityMonitoring CapabilityRequest**
Situations	Situation Exchange	***SituationExchangeRequest***	***SituationExchange-SubscriptionRequest***	**SituationExchangeDelivery**	**SituationExchange CapabilityRequest**

7.2 Communications Bandwidth

As with other SIRI functional services, the. SIRI-FM service is intended primarily for server to server communication over broadband IP between back end control systems and distribution hubs. It uses a XML structure that is relatively verbose and includes both a rich structured content and textual descriptions. It is not optimised for over the air real-time communication with vehicles or fixed equipment using communication over a constrained bandwidth. It should however be straightforward to make a one-way transform of SIRI-FM messages (or a subset of their content) into a more concise format suitable for such transmission if required.

8 Facilities Monitoring Service [FM]

8.1 Purpose

The Facility Monitoring Service provides information about the availability of a facility (or a group of facilities) and the effect on accessibility. In order for data to be created, the facility will have been monitored in some way; either automatically using a sensor system, or manually, through regular control visits. The Facility Monitoring Service can be used to monitor the status of facilities to secure the journeys for mobility restricted people; to inform travellers about the available facilities available during their journey; or to identify which relevant facilities are currently available when a specific need is pointed out. The facilities may be located on any place along the journey: at the Stop Point (or Stop Place), in the Vehicle, on the Connection Links, etc.

The Facility Monitoring Service comprises the ***FacilityMonitoringRequest*** message used to specify the contents of request or subscription messages, and the ***FacilityMonitoringDelivery*** message used to deliver the response. The ***FacilityMonitoringSubscription*** message allows a subscriber to request asynchronous updates for the service: it contains an embedded ***FacilityMonitoringRequest,*** along with further parameters controlling the asynchronous delivery.

FacilityMonitoringRequest has topic parameters to filter the information by vehicle, line, and ***StopPoint***, etc, and policy parameters to control the amount of data returned.

The ***FacilityMonitoringDelivery*** returns information about one or more facilities and their associated status. For each facility, it provides:

- A **Facility Condition** linking the facility to its status and some timing information, monitoring condition information and remedy information.

- A description of the **Facility** itself: this description is a generic description for a facility, suitable for any kind of facility, and not a detailed description including all the information related to specific facility types. It provides a Facility Reference to link this description to an external more detailed Facility object.

- A **Facility Location** describing where the facility is located: this location is provided as a reference to a Transmodel object (Stop Point, Line, Vehicle, etc.) or to an IFOPT object.

- A **Facility Status** (*unknown, available, not available*, etc.) with a special focus on Specific Needs.

8.2 UML Diagrams of Request & Response

8.2.1 SIRI-FM Request - Summary

Figure 5 shows an UML diagram of the main elements of a ***FacilityMonitoringRequest.***

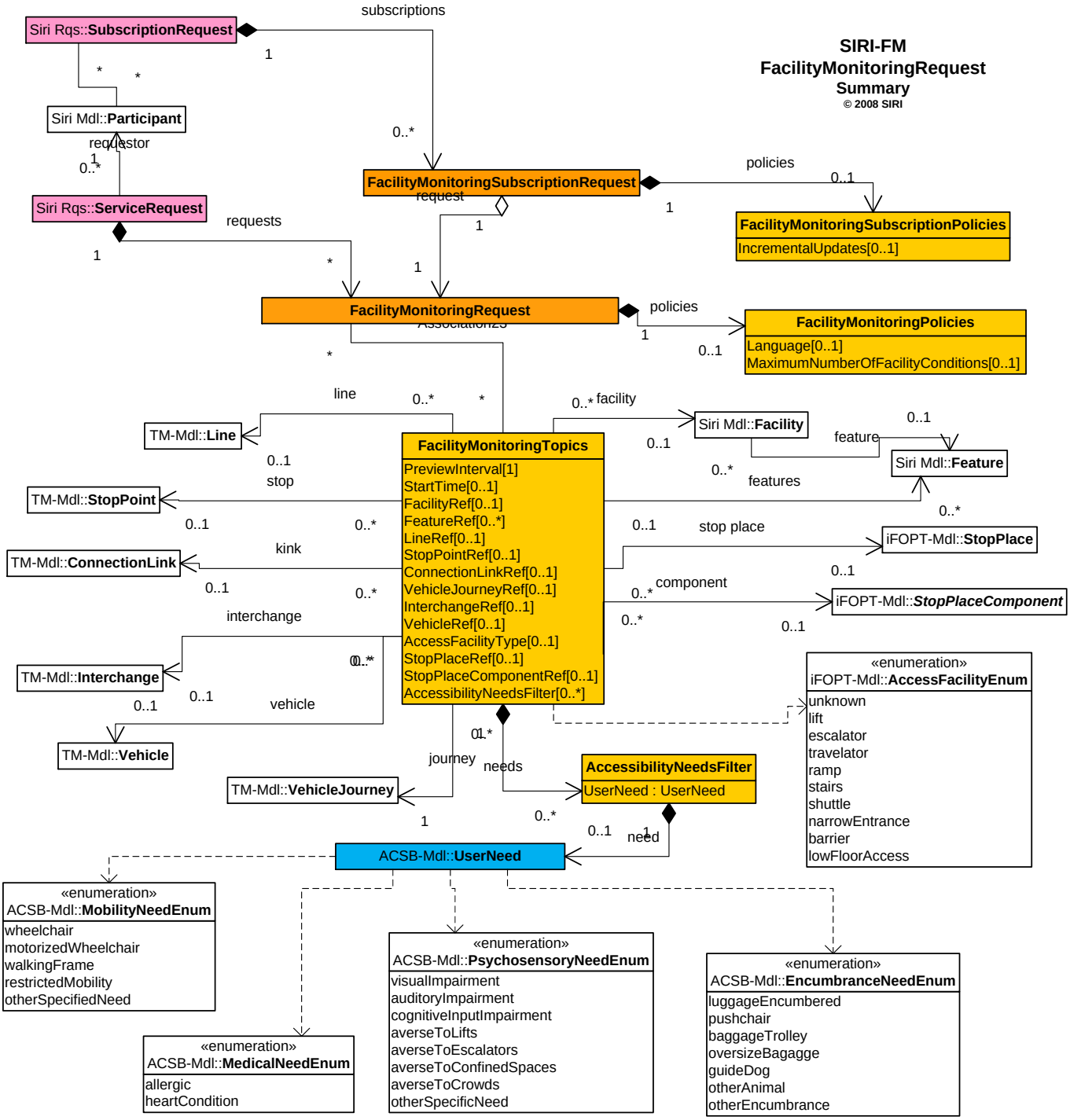

Figure 5 UML Diagram of SIRI-FM Request Summary

Document type: Technical Specification
Document subtype:
Document stage: Formal Vote
Document language: E

8.2.2 SIRI-FM Request - Detail

Figure 6 shows an UML diagram of the detailed attributes of a ***FacilityMonitoringRequest***

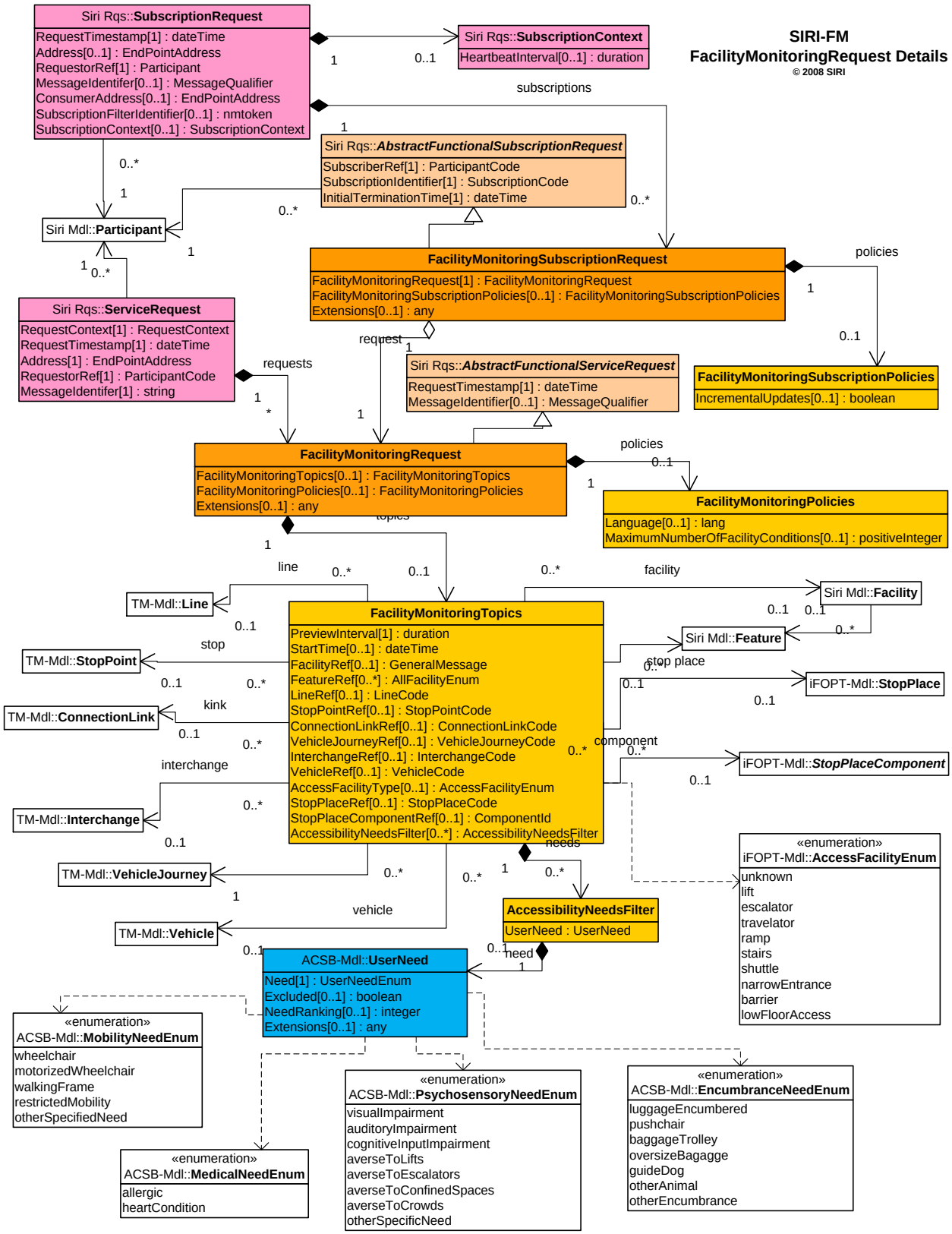

Figure 6 UML Diagram of SIRI-FM Request - Details

Document type: Technical Specification
Document subtype:
Document stage: Formal Vote
Document language: E

C:\Projects\PtStandards\PtStandardsPublic\siri\schema\1.3\doc\wip\CEN TS_00278181-4-FM-FacilityMonitoring-v0.95.doc STD Version 1.3

8.2.3 SIRI-FM Delivery - Summary

Figure 7 shows an overview UML diagram of a ***FacilityMonitoringDelivery.***

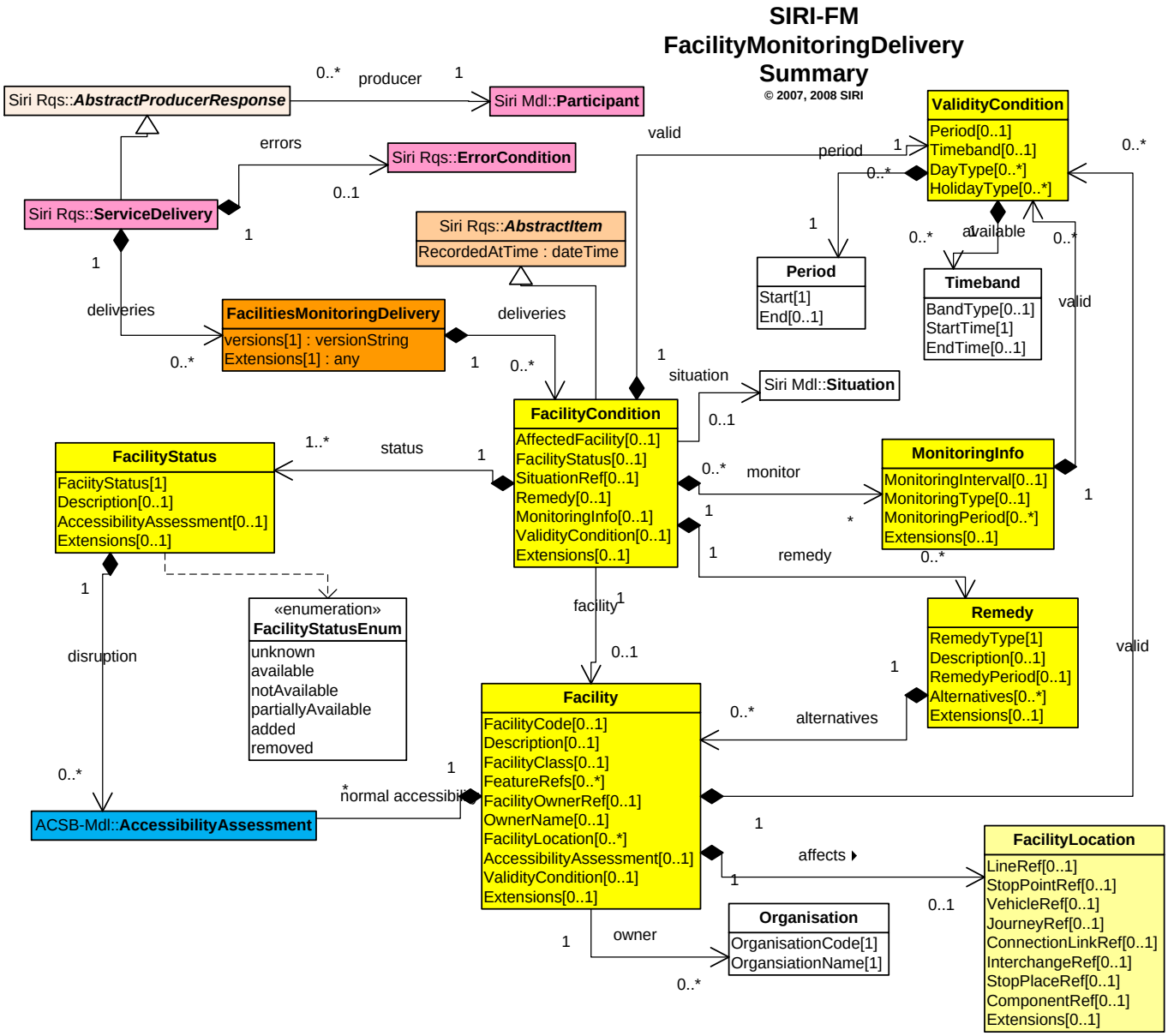

Figure 7 UML Diagram of SIRI-FM Delivery - Summary

8.2.4 SIRI-FM Delivery - Detail

Figure 7 shows an overview UML diagram of a ***FacilityMonitoringDelivery.***

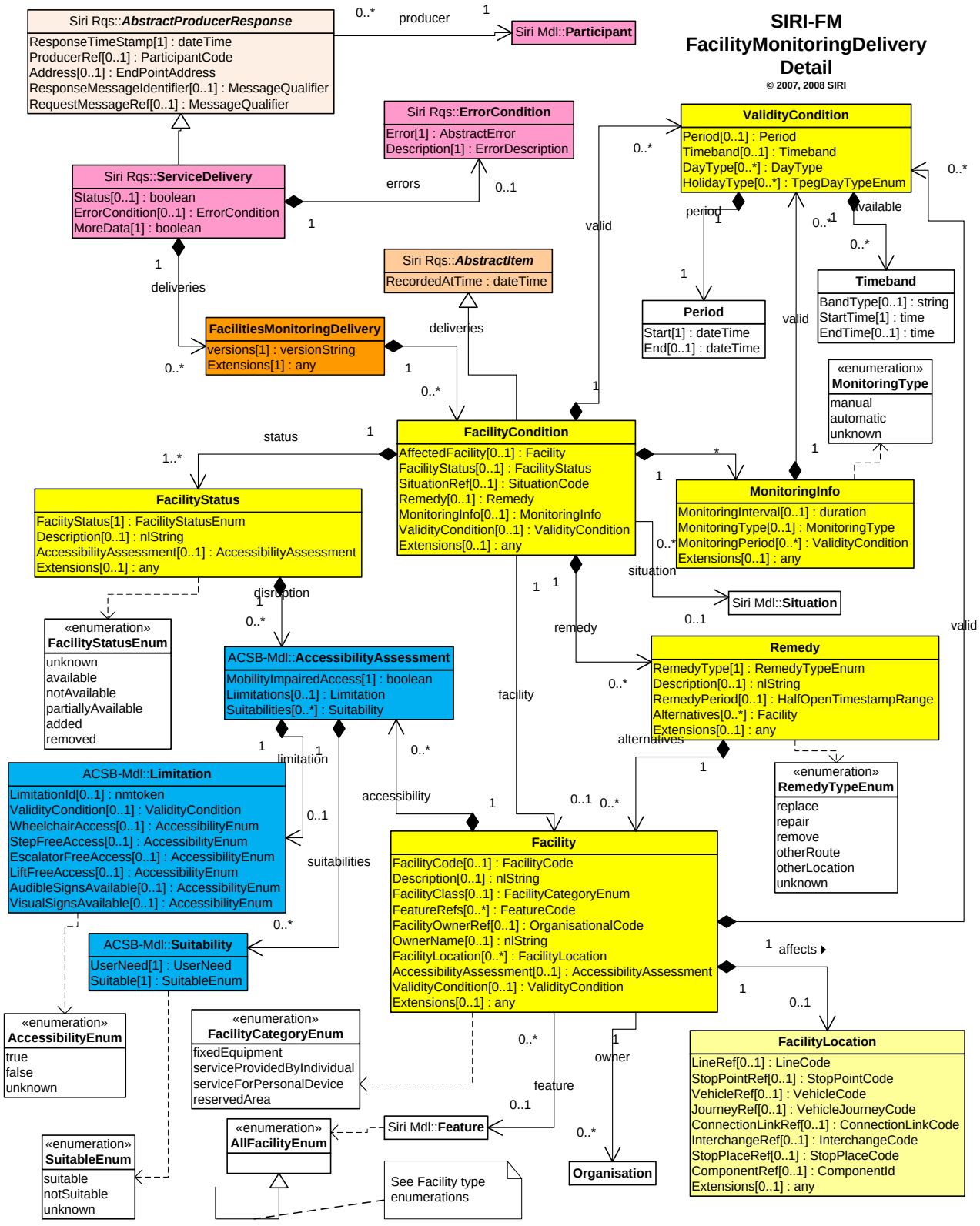

Figure 8 UML Diagram of SIRI-FM Delivery - Details

Document type: Technical Specification
Document subtype:
Document stage: Formal Vote
Document language: E

C:\Projects\PtStandards\PtStandardsPublic\siri\schema\1.3\doc\wip\CEN TS_00278181-4-FM-FacilityMonitoring-v0.95.doc STD Version 1.3

8.3 Reference Data

The ***FacilityMonitoringRequest*** requires the participants to have agreed data reference models for (i) Facilities (ii) Lines, Stop Points, Vehicle Journeys, Connection Links, Interchanges and Vehicles for filtering.

8.4 Capability and Permission Matrices

8.4.1 Capability Matrix

The following set of required and optional capabilities is defined for the Facility Monitoring service. If the service supports Capability Discovery the ***FacilityMonitoringCapabilitiesRequest*** / ***FacilityMonitoringCapabilities-Response*** message pair can be used to determine the implementation's capabilities.

FacilityMonitoringCapabilities			*+Structure*	Capabilities describing implementation of Facility Monitoring service.
inherit	***:::***	*0:1*	*See xxx-Capability-Response*	See SIRI Part 2-12.4 for Common Capability attributes.
Topic	***TopicFiltering***	0:1	*+Structure*	Which optional filtering features are supported.
	FilterByFacilityRef	**1:1**	*xsd:boolean*	Whether results can be filtered by location. Fixed as true.
	DefaultPreviewInterval	**1:1**	*xsd:boolean*	Default preview interval. Default is 60 minutes.
	FilterByLocationRef	**1:1**	*xsd:boolean*	Whether results can be filtered by Monitoring point. Required Facility: Fixed as true.
	FilterByVehicleRef	0:1	*xsd:boolean*	Whether results can be filtered by Vehicle. Default is false.
	FilterByLineRef	0:1	*xsd:boolean*	Whether results can be filtered by Line. Default is true
	FilterByStopPointRef	0:1	*xsd:boolean*	Whether results can be filtered by Stop Point. Default is true.
	FilterByVehicle-JourneyRef	0:1	*xsd:boolean*	Whether results can be filtered by VehicleJourney. Default is false.
	FilterByConnection-LinkRef	0:1	*xsd:boolean*	Whether results can be filtered by Connection link. Default is true.
	FilterByInterchangeRef	0:1	*xsd:boolean*	Whether results can be filtered by Interchange. Default is false.
	FilterBySpecificNeed	0:1	*xsd:boolean*	Whether results can be filtered by Specific Needs. Default is true.
Request Policy	***RequestPolicy***	0:1	*+Structure*	Which features of ***RequestPolicy*** are supported by service?
	Language	**1:***	*xsd:language*	National languages used by service.
	GmlCoordinateFormat	**1:1**	*SrsNameType*	Default coordinate format is given by a GML value.
	WgsDecimalDegrees		*EmptyType*	Default coordinate data system is WGS 84 latitude and longitude.
	HasMaximumFacility-Status	0:1	*xsd:boolean*	Whether *DetailLevel* filtering is supported. Default *false*. Whether a maximum number of Facility Status to include can be specified.

					Default is false.
Subscription-Policy	***SubscriptionPolicy***		0:1	*+Structure*	Which features of ***SubscriptionPolicy*** are supported by service?
		HasIncremental-Updates	0:1	*xsd:boolean*	Whether incremental updates can be specified for updates Default is *true*.
		HasChangeSensitivity	0:1	*xsd:boolean*	Whether change threshold can be specified for updates. Default is *true*.
Access Control	***AccessControl***		0:1	*+Structure*	Which optional Access Control features are supported by service?
		RequestChecking	**1:1**	*xsd:boolean*	Whether access control of requests is supported. Default is *false*.
		CheckOperatorRef	0:1	*xsd:boolean*	If access control is supported, whether access control by Operator is supported. Default is *true*.
		CheckLineRef	0:1	*xsd:boolean*	If access control is supported, whether access control by Line is supported. Default is true.
Response	***ResponseFeatures***		0:1	*+Structure*	Which features of Response data are supported by service?
		HasFacilityLocation	0:1	*xsd:boolean*	Whether result supports facility location information Default is true
any	***Extensions***		0:1	*any*	Placeholder for user extensions.

Table 2 — FacilityMonitoringCapabilities Matrix

8.4.2 Permission Matrix

If the implementation supports both Capability Discovery and Access Controls, then the ***FacilityMonitoring-CapabilitiesResponse*** response (Table 3) can include the access permissions for the requestor participant to access data.

FacilityMonitoringPermission			*+Structure*	Permissions to use implementation of Facility Monitoring service.
Inherit	***:::***	**1:1**	*xxxService-Permissions*	See SIRI Part 2-12.5 for Common Permission elements.
Topic	***OperatorPermissions***	0:1	*+Structure*	Operator permissions for participant. See Part 2.
	LinePermissions	0:1	*+Structure*	Line permissions for participant. See Part 2.

Table 3 — FacilityMonitoring Service Permissions

8.5 FacilityMonitoringRequest

8.5.1 FacilityMonitoringRequest Definition

The ***FacilityMonitoringRequest*** (Table 4) can be used in both a direct request, and for a subscription. If used for a subscription, additional Subscription Policy parameters apply.

Facilities can be requested by location (line, stop point, etc), by specific need or a combination of both. It is also possible to request the status for a given facility (or several given facilities at the same time).

Any Topic filter element values will be Logically ANDed together. For example if both a ***StopPointRef*** and ***LineRef*** are specified, then only facilities for the stop and line will be incuded. Where a list of values can be

specified for an element, the list values will be logically ORed together. For example, if there are two different ***AccessibilityNeeds***, these will both be included.

FacilityMonitoringRequest			*+Structure*	Request for information about facilities status
Attrib-utes	***Version***	**1:1**	*VersionString*	Version Identifier of Stop Monitoring Service, e.g. '1.0c'.
End-point Proper-ties	***Request-Timestamp***	**1:1**	*xsd:dateTime*	See SIRI Part 2 Common properties of SIRI Functional Service Requests.
	Message-Identifier	0:1	*Message-Qualifier*	
Topic	***Preview-Interval***	0:1	*Positive-DurationType*	Forward duration for which Facility information should be included, that is, only Facilities or Facility conditions with a validity period that falls within the specified interval will be included.
	StartTime	0:1	*xsd:dateTime*	Initial start time for ***PreviewInterval***. If absent, then current time is assumed. Must be within data Horizon.
	FacilityRef	0:1	*→FacilityCode*	The Facility for which status will be returned.
	FeatureRef	0:*	*allFacilitiesEn*	Filter the results to include only facilities with the given feature type
	StopPointRef	0:1	*→StopPoint-Code*	All the status of facilities located on this Stop Point or Stop Area will be returned.
	LineRef	0:1	*→LineCode*	Filter the results to include only facilities for the given line.
	Vehicle-JourneyRef	0:1	*→Vehicle-JourneyCode*	Filter the results to include only facilities for the given Vehicle Journey.
	Connection-LinkRef	0:1	*→Connection-LinkCode*	Filter the results to include only facilities located on the given Connection Link
	VehicleRef	0:1	*→Vehicle-Code*	Filter the results to include only facilities located in the given Vehicle
	Interchange-Ref	0:1	*→Inter-changeCode*	Filter the results to include only facilities for the given Interchange.
	Accessibility NeedsFilter	0:*	*Auditory* | *wheelChair* | *motorized-WheelChair* | *mobility* | *visual* | *cognitive* | *psychiatric* | *incapaciting_ Disease* | *young-Passenger* | *luggage-Encumbered* | *stroller* | *elderly* | *otherSpecific-Need*	All the status of facilities located concerning this specific need will be returned (both available or not available information). See Table 14 later below.
Request Policy	***Language***	0:1	*xml:lang*	Preferred language in which to return text values. Optional SIRI capability: *NationalLanguage.*
	Maximum-FacilityStatus	0:1	*xsd:positive-Integer*	The maximum number of facility status in a given delivery. The most recent n Events within the look ahead window are included.

any	***Extensions***	0:1	any	Placeholder for user extensions.

Table 4 — FacilityMonitoringRequest Elements

8.5.2 FacilityMonitoringRequest Example

The following is an example of a ***FacilityMonitoringRequest*** (requests all the facilities status concerning Wheel Chair on a specific Stop Point)

```
<ServiceRequest">
    <!--======ENDPOINT REFERENCES================================-->
    <RequestorRef>NADER</RequestorRef>
    <RequestTimestamp>2004-12-17T09:30:47-05:00</RequestTimestamp>
    <FacilityMonitoringRequest version="1.1">
        <RequestTimestamp>2004-12-17T09:30:47-05:00</RequestTimestamp>
        <!--=======TOPIC ==================================== -->
        <StopPointRef>SPR55</StopPointRef>
            <AccessibilityNeedsFilter>
                <UserNeed>wheelChair</UserNeed>
            </AccessibilityNeedsFilter>
    </FacilityMonitoringRequest>
</ServiceRequest>
```

8.6 FacilityMonitoringSubscriptionRequest

8.6.1 FacilityMonitoringSubscriptionRequest Definition

The ***FacilityMonitoringSubscriptionRequest*** (Table 5) requests the asynchronous delivery of the information described by a ***FacilityMonitoringRequest***. The ***FacilityMonitoringSubscriptionRequestPolicy*** parameters control the processing of the subscription.

VehicleMonitoring-SubscriptionRequest			*+Structure*	Request for a subscription to the Vehicle Monitoring Service.
Identity	***SubscriberRef***	0:1	*→Participant-Code*	See SIRI Part 2 Common ***SubscriptionRequest*** parameters.
	Subscription-Identifier	**1:1**	*Subscription-Qualifier*	
Lease	***InitialTermination-Time***	**1:1**	*xsd:dateTIme*	
Request	***FacilityMonitoring-Request***	**1:1**	*+Structure*	See ***FacilityMonitoringRequest***.
Policy	***Incremental-Updates***	0:1	*xsd:boolean*	Whether the producer should only provide updates to the last data returned, i.e. additions, modifications and deletions, or always return the complete set of current data, Default is true, i.e. once the initial transmission has been made, return only incremental updates. If *false* each subscription response will contain the full information as specified in this request. Optional SIRI capability: *IncrementalUpdates.*

Table 5 — FacilityMonitoringSubscriptionRequest Parameters

8.6.2 FacilityMonitoringSubscriptionRequest Example

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

```
<SubscriptionRequest>
    <!--======ENDPOINT REFERENCES================================-->
    <RequestorRef>NADER</RequestorRef>
    <RequestTimestamp>2004-12-17T09:30:47-05:00</RequestTimestamp>
    <!-- Subscription 1 for SPR55 -->
    <FacilityMonitoringSubscriptionRequest>
        <SubscriptionIdentifier>00000456</SubscriptionIdentifier>
        <InitialTerminationTime>2004-12-17T09:30:47-05:00</InitialTerminationTime>
        <!-- ====== ENDPOINT REFERENCE ====================-->
        < FacilityMonitoringRequest version="1.1">
            <RequestTimestamp>2004-12-17T09:30:47-05:00</RequestTimestamp>
            <!--=======TOPIC ==================================== -->
            <StopPointRef>SPR55</StopPointRef>
                <AccessibilityNeedsFilter>
                <UserNeed>wheelChair</UserNeed>
            </AccessibilityNeedsFilter>
        </FacilityMonitoringRequest>
    </FacilityMonitoringSubscriptionRequest>
    <!-- Subscription 2 for SPR56 -->
    <FacilityMonitoringSubscriptionRequest>
        <SubscriptionIdentifier>00000456</SubscriptionIdentifier>
        <InitialTerminationTime>2004-12-17T09:30:47-05:00</InitialTerminationTime>
        <!-- ====== ENDPOINT REFERENCE ====================-->
        < FacilityMonitoringRequest version="1.1">
            <RequestTimestamp>2004-12-17T09:30:47-05:00</RequestTimestamp>
            <!--=======TOPIC ==================================== -->
            <StopPointRef>SPR56</StopPointRef>
            <AccessibilityNeedsFilter>
                <UserNeed>wheelChair</UserNeed>
            </AccessibilityNeedsFilter>
        </FacilityMonitoringRequest>
    </FacilityMonitoringSubscriptionRequest>
</SubscriptionRequest>
```

8.7 FacilityMonitoringDelivery

The ***FacilityMonitoringDelivery*** returns the status of a facility or group of facilities.

8.7.1 ServiceDelivery with a FacilityMonitoringDelivery

One or more ***FacilityMonitoringDelivery*** elements may be returned as part of a SIRI ***ServiceDelivery***, with a common ***ResponseTimestamp***. (see Table 6).

ServiceDelivery			*+Structure*	See SIRI Part 2-7.2.1 ***ServiceDelivery***
HEADER	***:::***	**1:1**	See ServiceDelivery	
Payload	***FacilityMonitoringDelivery***	**1:***	*+Structure*	See Facility*MonitoringDelivery* element.

Table 6 — ServiceDelivery / FacilityMonitoringDelivery Elements

8.7.2 FacilityMonitoringDelivery Element

A ***FacilityMonitoringDelivery*** is made up of zero, one or many ***FacilityCondition*** elements, each representing a facility and indicating its status (See Table 7).

Each ***FacilityCondition*** included in the response has its own identifier, issued by the producer: this can be used to reference previously issued ***FacilityCondition*** instances when sending incremental updates.

FacilityMonitoringDelivery			*+Structure*	Describes the status of facilities.
Attributes	***version***	**1:1**	*VersionString*	Version Identifier of Vehicle Monitoring Service. Fixed, e.g. '1.1a'.
LEADER	***:::***	**1:1**	xxx*ServiceDelivery*	See SIRI Part 2-7.2.1.1 xxx***ServiceDelivery***.
Payload	***FacilityCondition***	0:*	*+Structure*	Describes the status of a facility.
any	***Extensions***	0:1	any	Placeholder for user extensions.

Table 7 — FacilityMonitoringDelivery Elements

8.7.3 FacilityCondition Element

Each ***FacilityCondition*** describes the status a monitored facility. See Table 8 below.

FacilityCondition			*+Structure*	Describes the status of a facility
Facility	***AffectedFacility***	1:1	*+Structure*	Generic description of a facility (see **Facility**).
Status	***FacilityStatus***	1:1	*+Structure*	Describes the status of the facility (see **FacilityStatus**).
Remedy	***Remedy***	0:1	*+Structure*	Describes the remedy associated with the facility status (see **Remedy**).
Monitor-ing	***MonitoringInfo***	0:1	*+Structure*	Describes monitoring condition of the facility status (see **MonitoringInformation**)
Situation	***SituationRef***	0:1	*→SituationCode*	Reference to a Situation associated with the facility status.
Timing - informatio n	***ValidityCondition***	0:*1	*+Structure*	Validity period (start & duration) of the condition and day type on which it applies. See ***ValidityCondition.***
any	***Extensions***	0:1	any	Placeholder for user extensions.

Table 8 — FacilityCondition Elements

8.7.3.1 Facility Element

The ***Facility*** element (Table 9) provides a description of the facility. The proposed information fields are common to any kind of Facility: for a detailed description of the facility, a reference to an external description is provided.

Facility			*+Structure*	Describes the status of a facility
Identify	***FacilityCode***	**0:1**	*→FacilityCode*	The Facility for which status is returned.
Description	***Description***	0:1	*nLString*	Description of the facility.
Class	***FacilityClass***	0:1	*unknown* | *fixedEquipment* | *service* | *personalDevice* | *reservedArea*| *onBoard*	Category (type) of the facility. See Table 10.
	FeatureRef	0-*	*enumeration*	Classification of facility. See earlier Table 1.
Owner	***FacilityOwnerRef***	0-1	*OrganisationCode*	Identifier of Owner of facility. May be an Operator. Authority or other party.
	OwnerName	0-1	*nLString*	Name Owner of facility.
Location	***FacilityLocation***	0:1	*+Structure*	Features of the facility (several features may be associated ti a single facility). See **Siri Part 1 - Facility features** for a detailed proposed list of facilities.
	StopPointRef	0:1	*→StopPointCode*	Reference to the Stop Point (or Stop Area) where the facility is located (**TRANSMODEL)**
	LineRef	0:1	*→LineCode*	Reference to the Line where the facility is located
	ConnectionLinkRef	0:1	*→Connection-LinkCode*	Reference to the Connection Link where the facility is located (**TRANSMODEL).**
	InterchangeRef	0:1	*→InterchangeCode*	Reference to the Interchange where the facility is located (**TRANSMODEL).**
	VehicleJourneyRef	0:1	*→Vehicle-JourneyCode*	Reference to the Vehicle Journey where the facility is located (**TRANSMODEL).**
	VehicleRef	0:1	*→VehicleCode*	Reference to the Vehicle where the facility is located (**TRANSMODEL)**
	StopPlaceRef	0:1	*→StopPlaceCode*	Reference to the Stop Place where the facility is located (**IFOPT**).
	ComponentRef	0:1	*→ComponentId*	Reference to the Stop place Component where the facility is located (**IFOPT**).
Specific-Need	***Accessibility-Assessment***	0:n	*+Structure*	Describes the status for accessibility fro different types of special need.
Temporal	***ValidityCondition***	0:*1	*+Structure*	Validity period (start & duration) of the facility.
any	***Extensions***	0:1	any	Placeholder for user extensions.

Table 9 — Facility Elements

SIRI-FM	Description
unknown	Facility type is unknown
fixedEquipment	Facility is fixed equipment
service	Facility is a service provided at a point
onBoard	Facility is onboard equipment

reservedArea	Facility is an area
personalDevice	Facility is individual device used by passenger

Table 10 – Allowed values for Facility Class

8.7.3.1.1 AccessibilityAssessment Element

The ***AccessibilityAssessment*** element (Table 11) groups information about the nature of the disruption to accessibility caused by thee ***FacilityCondition.***

AccessibilityAssessment			*+Structure*	Assessment of accessibility
Operators	***MobilityImpaired-Access***	0:1	*boolean*	Summary indication of whether stop or service is accessible overall to mobility impaired users. This may be further qualified by one ore more Limitation & Suitability instances to specify which types of access are available
Limitation	***Limitation***	0:1	*+Structure*	Limitation of entity
	Wheelchair-Access		*true* | *false* | *unknown*	Whether a Place is wheelchair accessible.
	StepFreeAccess		*true* | *false* | *unknown*	Whether a Place has step free access.
	EscalatorAccess		*true* | *false* | *unknown*	Whether a Place has escalator free access.
	LiftFreeAccess		*true* | *false* | *unknown*	Whether a Place has lift free access.
	AudibleSigns-Available		*true* | *false* | *unknown*	Whether a Place has Audible signals for the visually impaired.
	VisualSigns-Available		*true* | *false* | *unknown*	Whether a Place has visual signals for the hearing impaired.
Suitability	***Suitabilities***	0:*	*+Structure*	Suitabilities of facility for specific passenger needs
	Suitability	0:1	*+Structure*	Suitability of facility for a specific passenger need. See earlier
any	***Extensions***	0:1	*any*	Placeholder for user extensions.

Table 11 — AccessibilityDisruption Elements

8.7.3.1.2 Suitability Element

Suitability (Table 12) describes the consequence of the Facility Condition for accessibility and user special needs. The data type is the same as used in prCEN IFOPT.

An ***AccessibilityAssessment*** can have multiple ***Suitability*** instances, each of which specifies whether the effect of the Consequence is a change that makes accessibility suitable or unsuitable for a specific ***UserNeed***

Accessibility status is specified by the ***Suitable*** value – see Table 13.

User needs are specified by the ***UserNeed*** – see Table 14 for allowed values.

Note that:

- The normal ***Suitability*** *value*s and ***Limitation*** *value*s can be specified by the ***Facility*** element using the ***AccessibilityAssessment*** element.

- Changes to ***Suitability*** *value*s and ***Limitation*** *value*s can be specified by the ***FacilityCondition*** element using the ***AccessibilityAssessment*** element.

Suitability				*+Structure*	Suitability for accessibility need.
Identity	***Suitable***		1:1	*suitable* | *notSuitable* | *unknown*	Whether suitable for need or not. See Table 13.
	UserNeed		1:1	*choice*	Description of a need.
		Excluded	0:1	*boolean*	Whether need is excluded (true) or included (false). Included is default.
		NeedRanking	0:1	*integer*	Relative ranking to be given to need when multiple needs are specified.
		Need	1:1	*enum*	Specific User need see Table 14.
		a ***MobilityNeed***	1:1	*enum*	Specific User need see Table 14.
		b ***MedicalNeed***	1:1	*enum*	Specific User need see Table 14.
		c ***PsychoSensory-Need***	1:1	*enum*	Specific User need see Table 14.
		d ***Encumbrance-Need***	1:1	*enum*	Specific User need see Table 14.

Table 12 – Suitability Element

SIRI-SX	Description
suitable	Suitable for specified user need
notSuitable	Not suitable for specified user need
unknown	Suitability is unknown

Table 13 – Allowed values for Suitable

Need Group	SIRI-SX	Description
MobilityNeed	*wheelchair*	User needs wheelchair
	motorizedWheelchair	User needs motorized wheelchair
	walkingFrame	User needs walking frame
	restrictedMobility	User has limited mobility
	otherSpecificNeed	User has other need
MedicalNeed	*allergic*	User has severe allergies
	heartCondition	User has heart condition
Psychosensory-Need	*visualImpairment*	User has visual impairment
	auditoryImpairment	User has Auditory impairment
	cognitiveImpairment	User has cognitive impairment
	averseToLifts	Use is averse to lifts
	averseToEscalators	User is averse to Escalators
	averseToConfinedSpaces	User dislikes confined spaces
	averseToCrowds	User dislikes Crowds
	otherSensoryNeed	User has other need
EncumbranceNeed	*luggageEncumbered*	User has luggage encumbered
	pushchair	User has pushchair
	baggageTrolley	User has Baggage trolley
	oversizeBaggage	User has Oversize baggage
	guideDog	User has Guide dog

	otherAnimal	User has Other animal
	otherEncumbrance	User has Other encumbrance

Table 14 – Allowed values for User Need

8.7.3.2 FacilityStatus Element

The ***FacilityStatus*** element (Table 15) provides a detailed description of the current status of a facility. It provides some information concerning the accessibility that can be used by journey planners and other system to judge the availability of the facility should manage this status.

FacilityStatus			*+Structure*	Describes the status of a Facility
Status	***Status***	**1:1**	*unknown* | *available* | *notAvailable* | *partiallyAvailable* | *added* | *removed*	Specific status of the facility. See Table 16.
Description	***Description***	0:1	*nlString*	Literal description of the status.
Special Needs	***Accessibility-Assessment***	0:n	*+Structure*	Describes the status for accessibility for different types of special need.
any	***Extensions***	0:1	*any*	Placeholder for user extensions.

Table 15 – FacilityStatus Elements

SIRI-FM	Description
unknown	Facility status is unknown.
available	Facility is available.
notAvailable	Facility is not available.
partiallyAvailable	Facility is partially available.
added	Facility is permanently added.
removed	Facility is permanently removed.

Table 16 – Allowed values for Facility Status

8.7.3.3 Remedy Element

The ***Remedy*** element (Table 17) provides a description of the potential action/alternative proposed to remedy the unavailability of a facility.

Remedy			*+Structure*	Describes a remedy to a facility unavailability
Remedy	***RemedyType***	0:1	*Unknown* | *replace*| *repair* | *remove otherLocation otherRoute*	Describes the type of remedy. See Table 18.
Description	***Description***	0:1	*nLString*	Literal description of the remedy
Advice	***RemedyPeriod***	0:1	*halfOpenTime-stampRange*	Period within which remedy applies.
any	***Extensions***	0:1	*any*	Placeholder for user extensions.

Table 17 – Remedy Elements

SIRI-FM	Description

unknown	Remedy is unknown.
replace	Remedy is to replace equipment.
repair	Remedy is to replace equipment.
removed	Remedy is to remove equipment.
useOtherLocation	Remedy is to use another location.
useOtherRoute	Remedy is to use another route.

Table 18 – Allowed values for Remedy Type

8.7.3.4 MonitoringInformation Element

The ***MonitoringInformation*** element (Table 19) provides a description of the monitoring conditions. It describes the conditions and circumstances of monitoring: manual/automatic, frequency of measurement, etc. This may be useful to indicate that, for example, an escalator status is checked manually everyday at eight o'clock (this mean that the status provided is not the current status, be the one measured at eight o'clock). See Table 19 below.

MonitoringInformation			*+Structure*	Describes the monitoring conditions
Description	***MonitoringInterval***	0:1	*xsd:duration*	Mean time interval between two measurements
Remedy	***MonitoringType***	0:1	*unknown* | *manual* | *automatic*	What kind of monitoring is it: automatic, manual, etc..
Temporal	***MonitoringPeriod***	0:*1	*+ValidityCondition*	Validity period (start & duration) of the facility.
any	***Extensions***	0:1	*any*	Placeholder for user extensions.

Table 19 – MonitoringInformation Elements

8.7.3.5 ValidityCondition Element

The ***ValidityCondition*** element (Table 20) specifies the temporal span of a condition as either a day type, day type and time band, or period between a start and end time. All values are logically ANDed together. Thus for example a period and day type would indicate that the condition only applied on the day types within the period.

ValidityCondition			*+Structure*	Describes the validity condition.
Description	***FromDateTime***	0:1	*xsd:dateTime*	Start of validity.
Remedy	***ToDateTime***	0:1	*xsd:dateTime*	End of validity.
Day types	***DayType***	0:*	*DayTypeEnumeration*	Day type on which validity applies. See Table 21
	HolidayType	0:*	*HolidayTypeEnumeration*	HolidDay type on which validity applies
Timeband	***TimeBand***	0:*	*+Structure*	Start and end times within which condition applies
	StartTime	11	*xsd:time*	Start time of timeband.
	Endime	0:1	*xsd:time*	End time of timeband.
any	***Extensions***	0:1	any	Placeholder for user extensions.

Table 20 – ValidityCondition Elements

SIRI-FM	Description
unknown	Unknown
monday	Monday
tuesday	Tuesday
wednesday	Wednesday
thursday	Thursday
friday	Friday
saturday	Saturday
sunday	Sunday

weekend	Weekend
weekdays	Weekdays
mondayToFriday	*Monday To Friday*
mondayToSaturday	*Monday To Saturday*

Table 21 – Allowed values for Day Type

SIRI-FM	Description
unknown	Unknown
publicHoliday	*Public Holiday*
schoolDays	*School Days*
everyDay	*Every Day*
workingDay	*Working Day*
dayBeforePublicHoliday	*Day Before Public Holiday*

Table 22 – Allowed values for HolidayDay Type

8.7.4 FacilityMonitoringDelivery Example

The following is an example of a ***FacilityMonitoringDelivery***. It shows a single facility status.

```
    <ServiceDelivery>
        <!--=======ENDPOINT ================================== -->
        <RequestorRef>NADER</RequestorRef>
        <RequestRef>2004-12-17T09:30:47</RequestRef>
        <!--=======FIRST SUBSCRIPTION======================== -->


<FacilityMonitoringDelivery version="1.1">
    <ResponseTimestamp>2004-12-17T09:30:47</ResponseTimestamp>
            <SubscriberRef> NADER </SubscriberRef>
            <Status>true</Status>
    <MoreData>false</MoreData>
            <!--=======PAYLOAD ==================================== -->
    <FacilityCondition>
                <!--======= FACILITY ==================================== -->
        <Facility>
            <FacilityRef>FLCT23</FacilityRef>
            <Description xml:lang="en">Escalator to access the station on St Giles Passage</Decription>
            <FacilityClass>fixedEquipment</FacilityClass>
            <Feature>
                <AccessFacility>escalator</AccessFacility>
            </Feature>
            <FacilityLocation>
                <StopPointRef>STOPPOINT567</StopPointRef>
```

```
            </FacilityLocation>
        </Facility>
         <!--======= FACILITY STATUS ================================== -->
        <FacilityStatus>
            <Status>unavailable</Status>
            <Description xml:lang="en">Escalator  Breakdown due to vandalism</Description>
            <AccessibilityImpact>
                <MobilityImpaired>true</MobilityImpaired>
                <Suitabilities>
                    <Suitability>
                        <UserNeed>
                            <Need>wheelChair</ Need >
                        <UserNeed>
                        <Suitable>false</ Suitable>
                    </Suitability>
                    <Suitability>
                        <UserNeed>
                            <Need>stepFreeAccess</ Need >
                        <UserNeed>
                        <Suitable>false</ Suitable>
                    </Suitability>
                <Suitabilities>
            <AccessibilityImpact>
        </FacilityStatus>
        <MonitoringInfo>
            <MonitoringInterval>P1D</MonitoringInterval>
            <MontitoringType>manual</MontitoringType>
        </MonitoringInfo>
                <!--======= VALIDITY PERIOD ================================== -->
        <ValidityCondition>
            <FromDateTime>2004-12-15T08:00:00</StartTime>
            <RoDateTime>2004-12-18T09:30:00</EndTime>
        </ ValidityCondition >
                <!--======= REMEDY ================================== -->
                <!--======= MONITORING DESCRIPTION ================================== -->
    </FacilityCondition>
</FacilityMonitoringDelivery>


    </ServiceDelivery>
```