SLOVENSKI STANDARD
SIST-TS CEN/TS 15531-4:2022

01-februar-2022

Nadomešča:
SIST-TS CEN/TS 15531-4:2011

Javni prevoz - Vmesnik za storitev informiranja v realnem času za potrebe delovanja javnega prevoza - 4. del: Vmesniki funkcijske storitve - Nadzorovanje storitev in opreme

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

Öffentlicher Verkehr - Servicescnittstelle für Echtzeitinformation bezogen auf Operationen in öffentlichen Verkehr - Teil 4: Funktionale Dienst-Schnittstellen: Anlagenüberwachung

Transport public - Interface de service pour les informations en temps réel relatives aux opérations de transport public - Partie 4: Interfaces de service fonctionnel: Supervision des services et des équipements

Ta slovenski standard je istoveten z: **CEN/TS 15531-4:2021**

ICS:

35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport

SIST-TS CEN/TS 15531-4:2022 **en,fr,de**

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 15531-4

December 2021

ICS 35.240.60

Supersedes CEN/TS 15531-4:2011

English Version

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

Transport public - Interface de service pour les informations en temps réel relatives aux opérations de transport public - Partie 4: Interfaces de service fonctionnel: Supervision des services et des équipements

Öffentlicher Verkehr - Servicescnittstelle für Echtzeitinformation bezogen auf Operationen in öffentlichen Verkehr - Teil 4: Funktionale Dienst-Schnittstellen: Anlagenüberwachung

This Technical Specification (CEN/TS) was approved by CEN on 22 November 2021 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. CEN/TS 15531-4:2021 E

Contents

Page

European foreword 4

Introduction 5

1 Scope 7

2 Normative references 7

3 Terms and definitions 7

4 Symbols and abbreviations 7

5 Business Context 7
5.1 General 7
5.2 Overview of service function 7
5.3 Examples of Service Function 8
5.4 Use Cases 9
5.5 Use Cases: Capture and Origination of Facility Condition 10
5.5.1 General 10
5.5.2 CAPT#01 Facility Condition entered manually by operator staff 10
5.5.3 CAPT#02 Facility Condition updated manually by operator staff 10
5.5.4 CAPT#03 Facility Condition arising from automatic Facility Monitoring device (e.g. lift failure) 10
5.5.5 CAPT#04 Facility Condition being generated automatically from a situation 10
5.5.6 CAPT#05 Workflow for verification, validation and editorial correction 10
5.5.7 CAPT#06 Providing of collective guidance of passengers 10
5.5.8 CAPT#07 Audit trails, retrospectives and process views 11
5.6 Use Cases: Relating Facility Conditions to other SIRI services 11
5.6.1 General 11
5.6.2 XREF#01 Problem affecting a specific vehicle journey 11
5.6.3 XREF#02 Problem at a stop place affecting some or all journeys for some or all modes 11
5.6.4 XREF#03 Problems affecting an interchange 11
5.6.5 XREF#04 Problems affecting particular classes of users, e.g. impaired mobility 11
5.7 Use Cases: Onwards Distribution to other systems (e.g. in TPEG and Datex2) 11
5.7.1 General 11
5.7.2 DIST#01 Distribution of Facility Condition to displays 12
5.7.3 DIST#02 Distribution of Facility Condition to staff 12
5.7.4 DIST#03 Distribution of Facility Condition to external Systems 12
5.7.5 DIST#04 Distribution of Facility Condition to journey planners 12
5.7.6 DIST#04 Distribution of Facility Condition for recording Facility Failures 12
5.7.7 DIST#05 Distribution of Facility Condition to other systems 12
5.8 Use Cases: New Modes and Counting 12
5.8.1 General 12
5.8.2 NM#01 Provision of information about available vehicles and devices 12
5.8.3 NM#02 Provision of information about available spaces to bring a vehicle or a device back 13
5.8.4 NM#03 Provision of information about the updated location of a facility 13

6 Modelling Facilities in SIRI 13

6.1 General ... 13
6.2 Facility Model Overview ... 13
6.3 Facility Model Details ... 14
6.4 Facility Model Elements ... 16
6.4.1 General ... 16
6.4.2 Facility Condition ... 16
6.4.3 Facility ... 16
6.4.4 Facility Status ... 17
6.4.5 Remedy ... 18
6.4.6 Monitoring Info ... 18
6.4.7 Facility Monitored Counting ... 18
6.4.8 Facility Updated Position ... 19
6.4.9 Facility Types ... 19

7 Communication Infrastructure ... 24
7.1 General ... 24
7.2 SIRI Service Request table ... 24
7.3 Communications Bandwidth ... 26

8 Facilities Monitoring Service [FM] ... 26
8.1 Purpose ... 26
8.2 UML Diagrams of Request and Response ... 27
8.2.1 SIRI-FM Request – Summary ... 27
8.2.2 SIRI-FM Request – Detail ... 28
8.2.3 SIRI-FM Delivery – Summary ... 30
8.2.4 SIRI-FM Delivery – Detail ... 31
8.3 Reference Data ... 31
8.4 Capability and Permission Matrices ... 32
8.4.1 Capability Matrix ... 32
8.4.2 Permission Matrix ... 33
8.5 FacilityMonitoringRequest ... 33
8.5.1 FacilityMonitoringRequest Definition ... 33
8.5.2 FacilityMonitoringRequest Example ... 36
8.6 FacilityMonitoringSubscriptionRequest ... 36
8.6.1 FacilityMonitoringSubscriptionRequest Definition ... 36
8.6.2 FacilityMonitoringSubscriptionRequest Example ... 37
8.7 FacilityMonitoringDelivery ... 38
8.7.1 General ... 38
8.7.2 ServiceDelivery with a FacilityMonitoringDelivery ... 38
8.7.3 FacilityMonitoringDelivery Element ... 38
8.7.4 FacilityCondition Element ... 39
8.7.5 FacilityMonitoringDelivery Example ... 56

Bibliography ... 58

European foreword

This document (CEN/TS 15531-4:2021) has been prepared by Technical Committee CEN/TC 278 “Road transport and traffic telematics”, the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/TS 15531-4:2011.

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

The SIRI Facility Monitoring service (SIRI-FM) is an additional service, part 4, 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.

The SIRI European Standard is presented in three parts:

— context and framework, including background, scope and role, normative references, terms and definitions, symbols and abbreviations, business context and use cases (Part 1),

— the mechanisms to be adopted for data exchange communications links (Part 2),

— data structures for a series of individual application interface modules PT, ET, ST, SM, VM, CT, CM, GM (Part 3).

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

— additional data structures for additional application interface module FM (Part 4),

— additional data structures for additional application interface module SX (Part 5).

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

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

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

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

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

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

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

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

— Interoperability – the European Standard will facilitate interoperability between information processing systems of the transport operators by: (i) introducing common architectures for message exchange; (ii) introducing a modular set of compatible information services for real-time vehicle information; (iii) using common data models and schemas for the messages exchanged for each service; and (iv) introducing a consistent approach to data management.

— Improved operations management – the European Standard will assist in better vehicle management by (i) allowing the precise tracking of both local and roaming vehicles; (ii) providing data that can be used to improve performance, such as the measurement of schedule adherence; and (iii) allowing the distribution of schedule updates and other messages in real-time.

— Delivery of real-time information to end-users – the European Standard will assist the economic provision of improved data by; (i) enabling the gathering and exchange of real-time data between AVMS systems; (ii) providing standardized, well defined interfaces that can be used to deliver data to a wide variety of distribution channels. Version 2.0 of SIRI includes a new Simple Web Service designed to support the widespread, massively scalable use of mobile devices and web browsers and other applications to display public transport data directly to users.

Technical advantages include the following:

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

History

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

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

SIRI includes a Simple Web Services "SIRI-LITE" as an additional transport method and a WSDL document literal version and a WSDL2 version.

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

The changes in SIRI version 2.1 include:

— remove the direct relationship with TPEG and other standards to enable support as the other standards change;

— support for new modes in line with TRANSMODEL and NeTEx;

— support for the Reason / Effect / Advice structure for disruptions in SIRI SX;

— increased granularity for occupancy data and Vehicle structures;

— improved subscription renewal options and filtering options;

— additional options and flexibility for STOP POINTS and relationships between journeys;

— migration of XSD to Github to improve access and change control processes.

Compatibility with previous versions

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

The SIRI **Facility Monitoring (SIRI-FM)** service defined in this document 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. Initially released in 2007, was enhanced in 2011 and has been again in 2021 the latest update providing generic counting information to fulfil, amongst other services, the needs of new modes of transport (vehicle sharing, vehicle pooling, etc.).

1 Scope

This document specifies an additional SIRI functional service to exchange information about changes to availability of 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. As for Transmodel, public transport modes include new modes of transport (vehicle sharing, vehicle pooling, etc.).

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.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

3 Terms and definitions

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

4 Symbols and abbreviations

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

5 Business Context

5.1 General

This section is a complement to the Annex B “Business Context”, in Part 1 of the SIRI document set.

5.2 Overview of service function

The facility monitoring service allows the rapid real-time exchange of equipment and services (facilities) status data.

[1] Under preparation. Stage at the time of publication: prEN 15531-1.

The status data needed for Facility Monitoring is provided by collecting the status of the facilities on the network. 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 are 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, sites, 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 in Table 1 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:

a) passenger information displays;

b) system providing information for the staff (on board, on stations, on call centres, etc.);

c) passenger information system, possibly including a journey planner, and providing information through:

   1) web access;

   2) mobile phone access;

   3) specific devices for mobility restricted people;

   4) etc.

5.3 Examples of Service Function

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

a) 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;

b) 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 website access/ mobile phone access, etc.;

c) 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);

d) provide information to the staff informing people of the availability of facilities:

   1) inside a station, and on the related CONNECTION LINKs;

   2) for a LINE;

   3) for a whole network;

e) passengers with specific accessibility needs, because of disability, luggage, etc., can check the availability of facility:

   1) at a SCHEDULED STOP POINT;

   2) on a VEHICLE;

   3) on a VEHICLE JOURNEY;

   4) on a CONNECTION LINK;

f) real-time information about the status of facilities is also useful for operational purposes, for example:

   1) to ask for repair when manual monitoring is performed;

   2) to report the state of facilities when manual monitoring is performed;

   3) to ask for the time when the facility will be available (repaired);

   4) etc.

5.4 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 organized under the following headings:

— Capture/Origination of Facility Conditions;

— Relating Facility Conditions to other SIRI services;

— Onwards distribution to other systems;

— New modes and counting.

5.5 Use Cases: Capture and Origination of Facility Condition

5.5.1 General

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

5.5.2 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 a 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.

5.5.3 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.

5.5.4 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.

5.5.5 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.

5.5.6 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.

5.5.7 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.

5.5.8 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.

5.6 Use Cases: Relating Facility Conditions to other SIRI services

5.6.1 General

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.

5.6.2 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.

5.6.3 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, localized by area or mode or route (e.g. in the SIRI-SX results).

5.6.4 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.

5.6.5 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.

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

5.7.1 General

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

5.7.2 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 on-board 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 be distributed automatically.

5.7.3 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.

5.7.4 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, websites, 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.

5.7.5 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 from a specific journey.

5.7.6 DIST#04 Distribution of Facility Condition for 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.

5.7.7 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.

5.8 Use Cases: New Modes and Counting

5.8.1 General

The following Use Cases describe the distribution of Facility Conditions for new modes (vehicle and space availability and position update).

5.8.2 NM#01 Provision of information about available vehicles and devices

The Facility Condition may provide information about the available vehicles and devices at a specific location. This is mainly to provide information about available vehicles (bike, car, scooter, etc.) at a vehicle sharing station but also in any other place (rental service, etc.). Furthermore, it may provide information about any available devices provided by a specific service: for example, available lockers in

a left-luggage area, available audio guides for an audio guide service, etc. Available vehicles (devices) should be differentiated from present but reserved vehicles.

5.8.3 NM#02 Provision of information about available spaces to bring a vehicle or a device back

The Facility Condition may provide information about the available spaces to bring back a vehicle (or any device) at a specific location. The main expectation is to know if a vehicle (or device) can be brought back to a specific location, of left for some time is a location (for example if there are available places in a parking). Available spaces should be differentiated from free but reserved spaces.

5.8.4 NM#03 Provision of information about the updated location of a facility

The Facility Condition may provide information about the updated location of a facility: this is typically the position of a vehicle, but can also be the position of any service of facility (assistance service, mobile ticketing service, etc.). The intention is not to follow the vehicle or service, but to be able to know where a free-floating available vehicle is located, or where the closest assistance service is located, etc.

6 Modelling Facilities in SIRI

6.1 General

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 levels of an 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, Transmodel 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 service.

6.2 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 ASSESSMENT 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 ASSESSMENT.

— The FACILITY related counting information (number of available vehicles, spaces or devices) complement the STATUS (in value or percentage from the maximum available).