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SERIES M: TELECOMMUNICATION MANAGEMENT, INCLUDING TMN AND NETWORK MAINTENANCE

Telecommunications management network

Requirements and analysis for NGN appointment management across the business-to-business and customer-to-business interfaces

Recommendation ITU-T M.3344

ITU-T M-SERIES RECOMMENDATIONS

TELECOMMUNICATION MANAGEMENT, INCLUDING TMN AND NETWORK MAINTENANCE

Introduction and general principles of maintenance and maintenance organization	M.10–M.299
International transmission systems	M.300–M.559
International telephone circuits	M.560–M.759
Common channel signalling systems	M.760–M.799
International telegraph systems and phototelegraph transmission	M.800–M.899
International leased group and supergroup links	M.900–M.999
International leased circuits	M.1000–M.1099
Mobile telecommunication systems and services	M.1100–M.1199
International public telephone network	M.1200–M.1299
International data transmission systems	M.1300–M.1399
Designations and information exchange	M.1400–M.1999
International transport network	M.2000–M.2999
Telecommunications management network	**M.3000–M.3599**
Integrated services digital networks	M.3600–M.3999
Common channel signalling systems	M.4000–M.4999

For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T M.3344

Requirements and analysis for NGN appointment management across the business-to-business and customer-to-business interfaces

Summary

Recommendation ITU-T M.3344 contains the requirements and analysis for appointment management for the business-to-business and customer-to-business interfaces in support of NGN. Appointment management covers appointment processes for managing the establishment of a mutually acceptable appointment time between the service provider (SP) and the service customer (SC). Appointment management is needed for handling visits to shared facilities or customer facilities: for example, to access customer premises, locked engineering or other facilities, or for joint testing between two enterprises. Appointment management can be used in either the service provisioning or the service assurance process.

The requirements and analysis are provided using the management interface specification methodology described in Recommendation ITU-T M.3020.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T M.3344	2008-02-06	4
2.0	ITU-T M.3344	2011-01-13	2

Keywords

Analysis, appointment, appointment management, NGN, requirement, service customer, service provider.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

Table of Contents

Introduction

This Recommendation contains the requirements and analysis for the appointment management across the business-to-business (B2B) and customer-to-business (C2B) interfaces.

In a NGN service supply chain, the service customer, the service provider, and the network operator/service provider interwork with each other for service provisioning and service assurance. In both the service provisioning and the service assurance processes, it may be necessary to access the customer premises, locked engineering or other facilities, or to carry out joint testing between two enterprises. So, there are some processes for managing the establishment of a mutually acceptable appointment between two parties which may be service customer and service provider, or network operator/service provider and service provider. This Recommendation includes the requirements and analysis for all of these processes for the exchange of appointment management information across B2B and C2B interfaces in support of NGN.

Recommendation ITU-T M.3344

Requirements and analysis for NGN appointment management across the business-to-business and customer-to-business interfaces

1 Scope

This Recommendation contains the requirements and analysis for the business-to-business (B2B) and customer-to-business (C2B) interfaces of appointment management for NGN. It assumes a multi-service provider environment and is aimed at appointment management to support the deployment of NGN and includes both the B2B and C2B interfaces.

Appointment management consists of some processes which include scheduling an appointment, confirming an appointment, updating or modifying an appointment, cancelling an appointment, reporting appointment(s), tracking the history of an appointment and retrieving an appointment. For regulatory oversight, it is assumed that detailed record-keeping will be maintained within the service provider (SP) to support the service level agreement (SLA) or regulatory statute.

Third-party request/response operations are dependent upon the privacy business rules defined in the SC's/SP's contract and consequently are considered out of scope for this Recommendation.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T M.3020]   Recommendation ITU-T M.3020 (2010), *Management interface specification methodology*.

[ITU-T M.3060]   Recommendation ITU-T M.3060/Y.2401 (2006), *Principles for the Management of Next Generation Networks*.

[ITU-T M.3320]   Recommendation ITU-T M.3320 (1997), *Management requirements framework for the TMN X-Interface*.

[ITU-T M.3340]   Recommendation ITU-T M.3340 (2009), *Framework for NGN service fulfilment and assurance management across the business to business and customer to business interfaces*.

[ITU-T M.3343]   Recommendation ITU-T M.3343 (2007), *Requirements and analysis for NGN trouble administration across B2B and C2B interfaces*.

[ITU-T Y.2001]   Recommendation ITU-T Y.2001 (2004), *General overview of NGN*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 B2B/C2B interface [ITU-T M.3060]: Synonymous to X interface.

3.1.2   next generation network (NGN) [ITU-T Y.2001]: A packet-based network able to provide telecommunication services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.

3.1.3   network operator [ITU-T M.3343]: An organization that operates a NGN transport stratum. A network operator may offer both transport stratum and service stratum. A NGN network operator may or may not provide NGN service stratum services.

3.1.4   service customer [ITU-T M.3320]: The Customer is an organization which has a business relationship with a Service Provider for the provision of network services. A Customer may encompass one or more end users of telecommunications services. [ITU-T M.3320] defines this term simply as "customer".

3.1.5   service provider [ITU-T M.3320]: A general reference to an entity who provides telecommunication services to customers and other users either on a tariff or contract basis. A service provider may or may not operate a network. A service provider may or may not be a customer of another service provider.

NOTE – SP and SC used in this Recommendation mean SP role and SC role.

3.2   Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1   appointment: An arrangement between the service provider (SP) and the service customer (SC) which allows the SP to access the SC premises to carry out activities (e.g., install facilities, repair activities, test, etc.) at a particular time and place.

3.2.2   time limit: The time at which the activity is targeted for completion.

4   Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

B2B   Business-to-business

C2B   Customer-to-business

NGN   Next Generation Networks

NNI   Network Node Interface

SC   Service Customer

SDP   Service Delivery Point

SLA   Service Level Agreement

SP   Service Provider

UML   Unified Modelling Language

UNI   User Network Interface

5   Conventions

This Recommendation follows the conventions defined in [ITU-T M.3020].

6   Concepts and background

Appointment management covers appointment processes for managing the establishment of a mutually acceptable appointment time between the SP and SC. Appointment management is needed for handling visits to shared facilities or customer facilities: for example, to access customer premises, locked engineering or other facilities, or for joint testing between two enterprises. Appointment management can be used in either the service provisioning or the service assurance process. Appointment management is part of service fulfilment or service assurance as defined in [ITU-T M.3340].

There are two types of business context as to B2B/C2B interfaces. One is that the SC role is taken by an end-user entity. Another is that the SC role is taken by another service provider organization in the overall supply chain.

In the first business context, the service provider needs to access customer premises. The appointment management interface is used to schedule appointments.

In the second business context, it is possible that a service provider provides a service to the end-user with the co-operation of other service providers or transport providers. The SP providing telecommunication services to the end-user plays a SC role, while other service providers or transport providers play the SP role. The B2B/C2B interface is used to convey appointment management information between the other service providers or transport providers (acting as SP) and the service provider (acting as SC). In the overall supply chain, the SC and SP roles may change depending on the circumstances. However, in any particular situation, even when the SP and the SC are in a peer-to-peer relationship, one entity will play the SC role, while the other will play the SP role.

It is the responsibility of the SP to perform activities in accordance with the performance limits defined by SLAs or by a regulatory mandate.

When a regulator defines the time-frame for the SP to perform an activity, the SP may negotiate the time with the SC only within the bounds of the regulatory-defined performance time. In the case of a national provider of services, the SP and SC roles may be performed by the same organization. In that case, the regulator may define, on behalf of the "public" the maximum time allowed for the SP to perform the activity.

The initial offered time slot by the SP shall be such that the activity must be performed within the SLA or the maximum time allowed by regulatory mandate.

Co-location is a practice where a service provider will lease space in one of its facilities, e.g., a central office, to another service provider. In co-location, the roles of the SC and SP are reversed. The requirements to support the needs of appointment scheduling for co-location can be met by reversing the roles.

Figure 1 describes the procedure of the appointment management. This figure provides two columns, the left side shows the activities performed by the SP, and the right side shows the activities performed by the SC. If needed, both the SP and the SC can request an appointment to each other. Before all the time slots for the appointment are provided, the state of appointment is "unscheduled". Here, both the SP and the SC can offer their convenient time slots for the appointment, and they also can accept or deny the time slots offered by the other side. After all the time slots for the appointment are provided and accepted, the SP needs to request the SC to confirm the appointment. If the SC confirms it, the state of appointment changes to "confirmed", and the SP can perform his or her work according to the appointment. Otherwise, the SP and SC must renegotiate until the appointment can be confirmed by the SC.
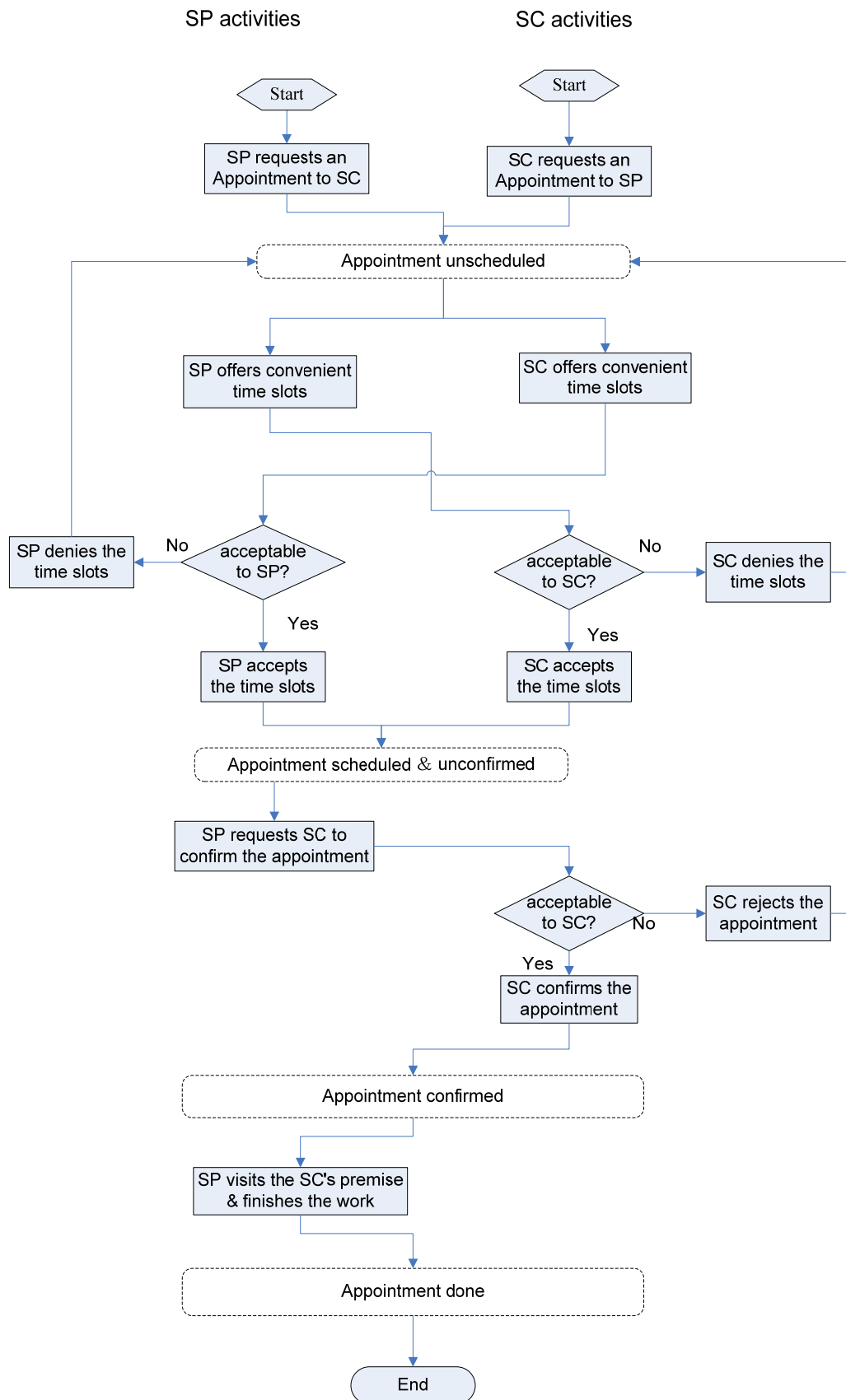
Figure 1 – Procedure of appointment management

7 Requirements

7.1 Business level requirements

7.1.1 Requirements

The appointment management processes between the SP and the SC is part of a business relationship between their organizations. The appointment management processes are concerned with the establishment of mutually acceptable appointment time slots between the SP and the SC.

7.1.1.1 Appointment scheduling

Appointment scheduling is a process prior to the appointment confirmation process. The negotiation procedure in the scheduling process between the SP and SC is iterative.

REQ-AM-FUN-101   Appointment management is appropriate for service ordering (pre-ordering), repairing, and service decommissioning (service termination).

      The SC shall be able to schedule an appointment for the SP to gain access to the SC's premises, and the SP shall be able to schedule an appointment to gain access to the SC's premises, e.g., to install/remove equipment, or where the results of service tests/diagnostics indicate that a site visit is required.

      The SP may be able to offer the SC the convenient time slots for carrying out activities at the SC's premises.

      The SC may be able to offer convenient time slots for the SP to visit the SC's premises.

      Although the time slot(s) is to be negotiated between the SC and the SP, the final determination of the actual appointment time slot is determined by the customer.

      The information of an appointment, when it can be established, contains the following:

– location to be visited (address, including the premises);

– SDP (service delivery point) (which is a physical entity aware to the SP, maybe UNI, NNI, equipment, etc.);

– time slots for the appointment;

– duration of the appointment.

      When all the above information is agreed by both the SP and the SC, an appointment can be established.

      If the SC requests an appointment beyond the SLA time-scale, despite the SP offering time slots which fall within the SLA, the SP shall not be held responsible for the SLA violation due to SC's choice of a later appointment.

      NOTE 1 – It may be necessary for the SP to request from the SC several time slots to carry out an activity at each SC's location.

      NOTE 2 – Time slot reservation is outside the scope of this interface.

REQ-AM-FUN-102   The SC shall be able to accept or decline the time slots offered by the SP.

      The SP shall offer available time slot(s) within the SLA time-scale for the service.

The SC should be able to offer the available access time slot(s) from the SC's point of view for each specified location by request.

REQ-AM-FUN-103	The SP shall be able to accept or decline the access time slot(s) offered by the SC.

When the SC offers less time than is actually required for the SP to perform the activity, the SP must, in this case, be able to negotiate additional time slot(s) from the SC in order to perform the activity. In this situation, the SP may offer time slots which the SC may select or the SP may request additional time slots from the SC, which the SP will select, and the SC will confirm.

Although the time slot(s) is to be negotiated between the SC and the SP, the final determination of the actual appointment time slot(s) is determined by the customer.

If the SP is not allowed sufficient time by the SC to perform an activity, such that an objective within the SLA (or a regulatory statute) will be missed, then the SP shall not be held responsible for the SLA violation due to the SC's inability to provide an acceptable appointment. This may occur when the SP is performing chargeable work, where the cost authorized by the SC is insufficient to cover the required work.

REQ-AM-FUN-104	When the SP is waiting for the response from the SC, the SLA violation clock should stop so that the SP will not be punished as violating the SLA when an appointment cannot be arranged due to the SC's reason.

7.1.1.2   Appointment confirmation

REQ-AM-FUN-201	Confirmation of the appointment slot(s) agreement/reservation by the SC shall form a bilateral agreement.
REQ-AM-FUN-202	If the appointments/access time offered by the SC does not enable the SP to fulfil its contractual obligations, the SP shall be able to reject the appointments. The rejection reason must be recorded as being caused by the SC. For example, the access times are outside the SLA working hours.
REQ-AM-FUN-203	If the appointment is denied by the SC, the SP shall be able to request other appointment time slots until the appointment is mutually accepted.

7.1.1.3   Appointment change

REQ-AM-FUN-301	Prior to the appointment time, and subject to the terms specified in the contract, the SP or SC can modify the information related to the appointment, such as additional information, contact change, etc. This information may be attributes of the appointment derived from the order or trouble ticket which is made available to the SP field engineer.
REQ-AM-FUN-302	Prior to the appointment time, and subject to the terms specified in the contract, the SP or SC may request to reschedule an agreed appointment (time, location). The reason why the SP or SC wishes to reschedule the appointment shall be given. The SC shall not arbitrarily reschedule an appointment so as to cause the SP to miss the SLA or a regulatory statute.
REQ-AM-FUN-303	Either the SP or the SC shall be able to accept or decline the appointment change request. If the change request is denied, the SP or SC shall reschedule the appointment until the appointment is mutually agreed.

REQ-AM-FUN-304   The SP or the SC shall be able to request additional time slots during the period when an appointment is being performed.

7.1.1.4 Appointment cancellation

REQ-AM-FUN-401   Prior to the appointment time, and subject to the terms specified in the contract, the SP or the SC may request the cancellation of an agreed appointment. The reason why the SP or SC cancels the appointment shall be given. The SC shall not arbitrarily cancel an appointment so as to cause the SP to miss the SLA or a regulatory statute.

REQ-AM-FUN-402   On receipt of the appointment cancellation request, the receiving party shall acknowledge and accept or reject the request.

 The SP or the SC accepting the cancellation shall provide a tracking mechanism to assure against repudiation and non-repudiation.

REQ-AM-FUN-403   The SP may only cancel an appointment it sets up.

7.1.1.5 Appointment report

REQ-AM-FUN-501   The SP or SC may be able to notify each other of the failures to keep the appointment.

REQ-AM-FUN-502   The SP may, at its option, periodically provide an appointment report to the SC.

REQ-AM-FUN-503   The SP shall provide, at the request of the SC, a report of the activities performed by the SP at the SC's location(s) as specified in the SLA.

7.1.1.6 Appointment information retrieval

REQ-AM-FUN-601   The SCs shall be able to query the complete description of a specific set of their current or historical appointments. The period of the retention of these records, by the SP, shall be subject to the SLA or regulatory statute.

 The filters to be applied to the information can be any relevant parameter exchanged as part of the interaction operations during scheduling an appointment, confirming an appointment, updating or modifying an appointment, or cancelling an appointment.

REQ-AM-FUN-602   The SC shall be able to obtain detailed tracking information about the status transitions of an appointment (including time-stamps).

7.1.2 Actor roles

The capabilities described in this Recommendation are available to the relevant service provider and service customer.

Service provider: The entity performing the service provider role.

Service customer: The entity performing the service customer role.

7.1.3 Telecommunication resources

The SC's facilities are viewed as relevant telecommunication resources in this Recommendation.

7.1.4 High-level use case diagrams

This clause contains a high-level use case diagram that summarizes the functionality and interfaces of the appointment management as shown in Figure 2.
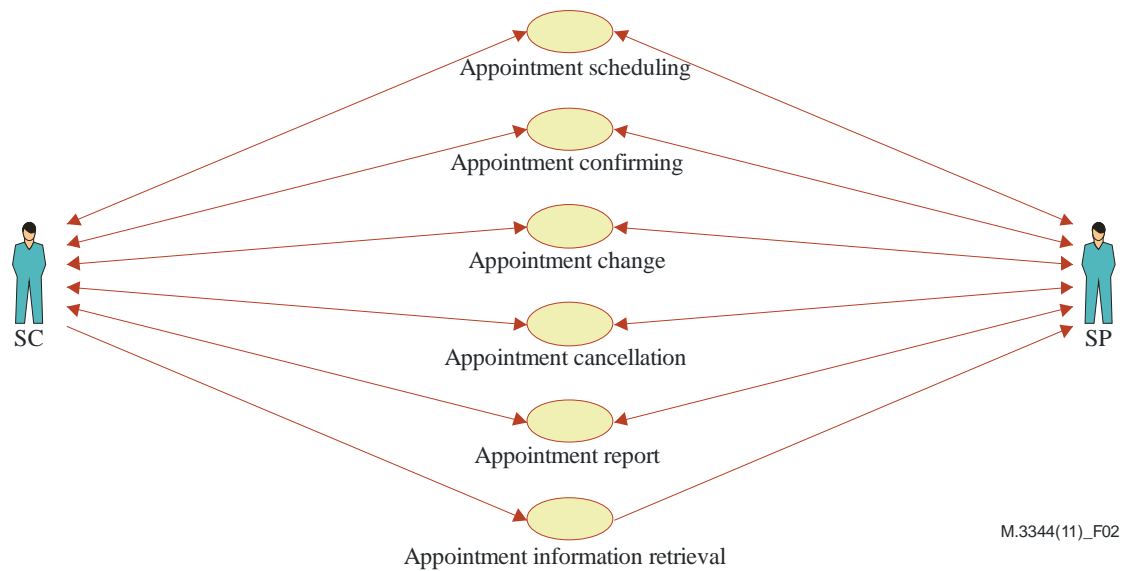
Figure 2 – High-level use case diagram

7.2 Specification level requirements

7.2.1 Specification level use case diagram

Figures 3 and 4 give the specification-level use-case diagrams. Use cases initiated by the SP are shown in Figure 3 first followed by use cases initiated by the SC in Figure 4. Use case descriptions are provided in clause 7.2.2 for every use case pictured in these diagrams.
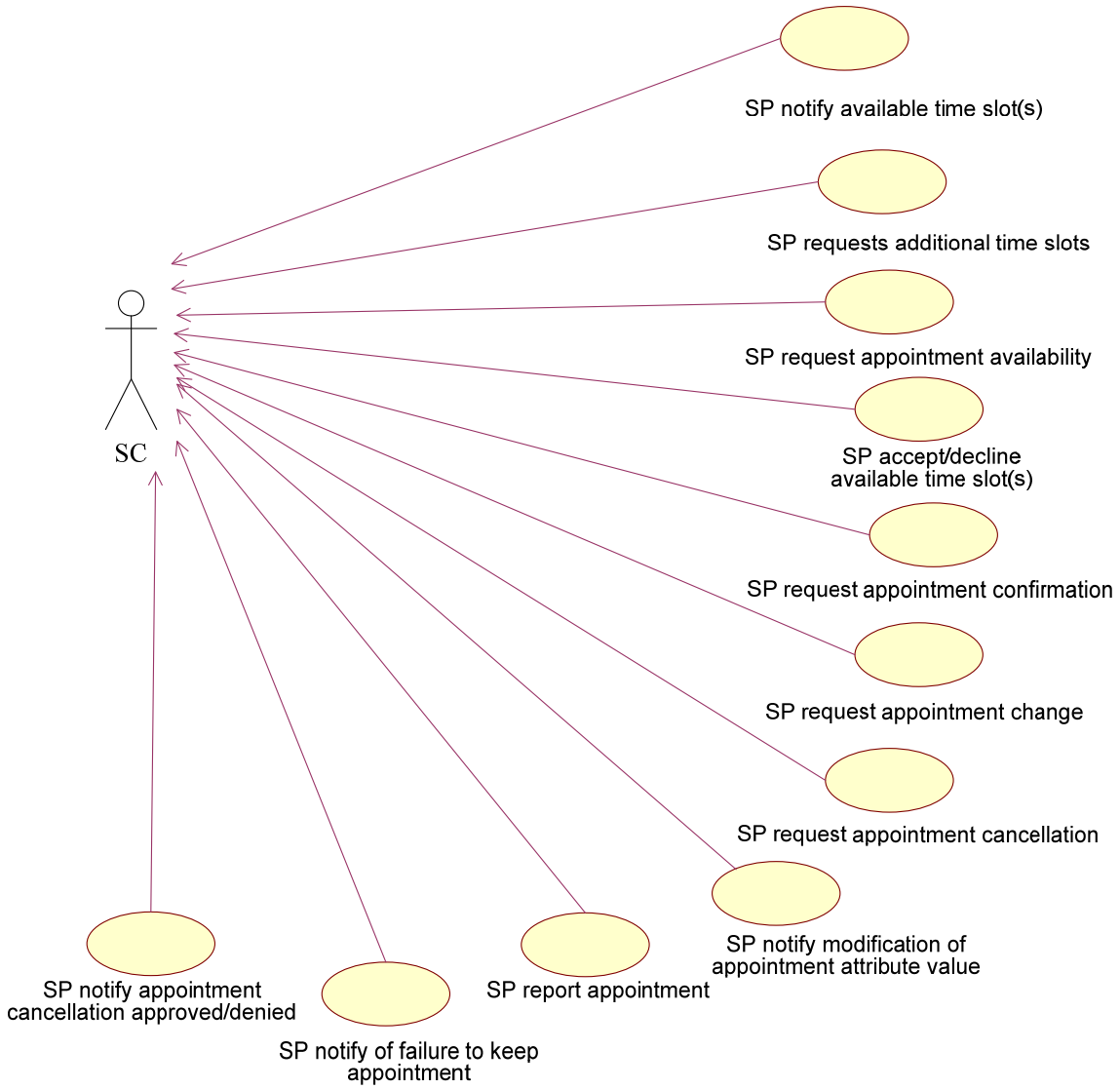
Figure 3 – SP initiated use cases
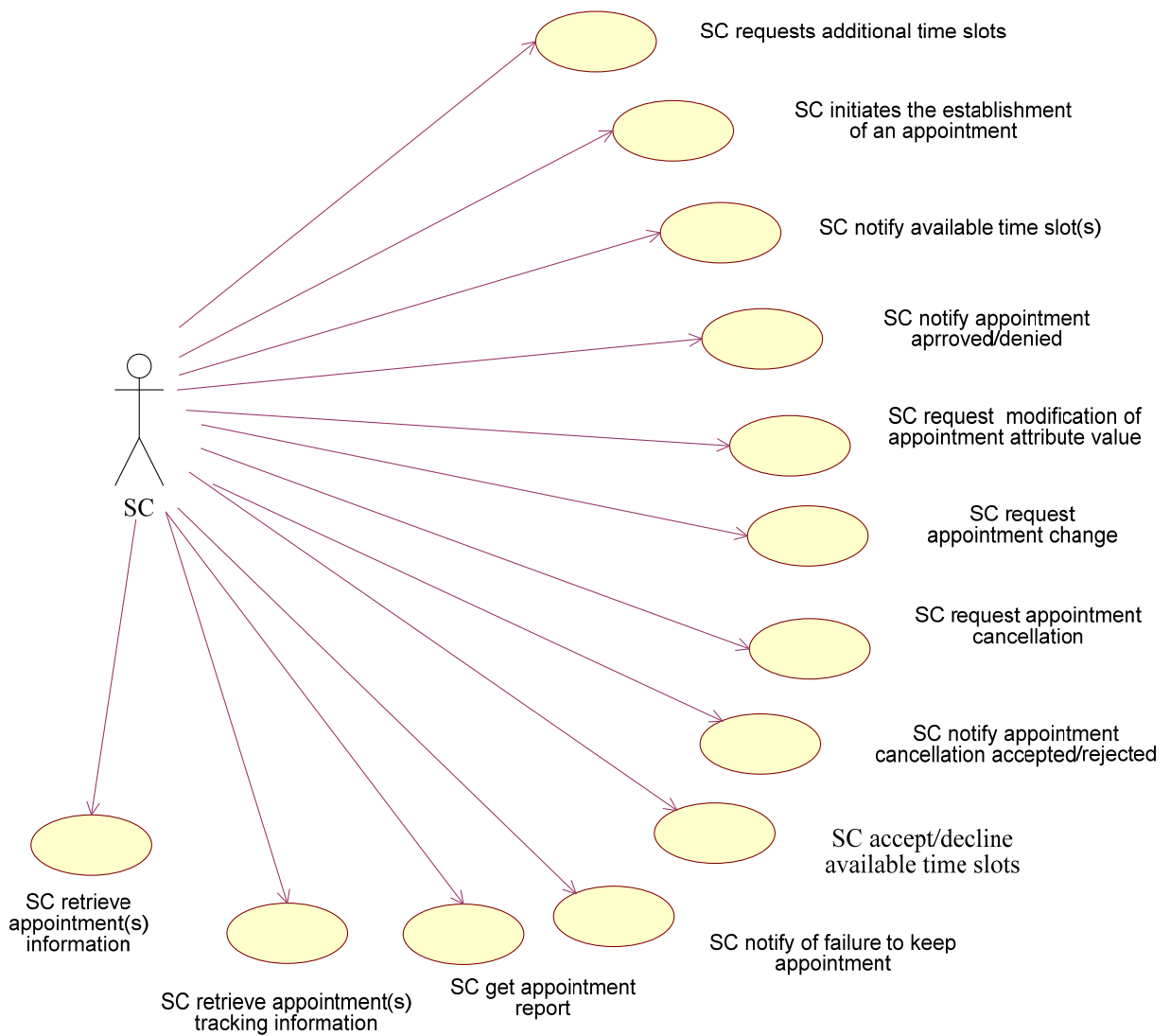
Figure 4 – SC initiated use cases

7.2.2 Use cases

7.2.2.1 SC Initiate the establishment of an appointment

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	When the SC initiates ordering (pre-ordering), repairing, and service decommissioning, and it is necessary for the SP to access the SC's premises; the SC shall provide an appointment request to the SC.	
Actors and roles	The SP is the consumer of the request from the SC.	
Telecom resources	Any SC's facility.	
Assumptions	The SC needs the SP to access the SC's premises.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system. An SLA or contract exists between the SC and the SP, a regulatory statute may exist which specifies additional requirements.	
Begins when	The SC needs to schedule or reschedule an appointment.	
Step 1 (M)	1) (M) The SC initiates a request to the SP for appointment establishment. The SC shall specify certain parameters as part of the request, including the type of the request (ordering, pre-ordering, repairing, and service decommissioning). When it is for pre-ordering (ordering), service ID, SAP (physical address, CLLI code), service priority, and service customer information should be included. When it is for repairing, service ID, customer name, other information ([ITU-T M.3343] mandatory information) should be included. When it is for service decommissioning, service ID, customer name, reason code (optional), and service termination date should be included. 2) (O) The SC may offer his or her available time slot(s) in the request for negotiation purposes.	
Ends when	The request is emitted by the SC.	
Exceptions	– A network problem exists. – Missing or incorrect parameter values. – The SP is unable to respond to the request.	
Post-conditions	The SP receives the request.	
Traceability	REQ-AM-FUN-101	

7.2.2.2 SP Request appointment availability

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	When it is necessary for the SP to access the SC's premises, the SP shall provide an appointment request to the SC. During the scheduling or rescheduling process, the SP shall enquire about the SC's available time slots for locations where the SP needs to have access.	
Actors and roles	The SC is the consumer of the request from the SP.	

Use case stage	Evolution/Specification	<<Uses>> Related use
Telecom resources	Any SC's facility.	
Assumptions	The SP needs to access the SC's premises.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system. An SLA or contract exists between the SC and the SP; a regulatory statute may exist which specifies additional requirements.	
Begins when	The SP needs to schedule or reschedule an appointment.	
Step 1 (M)	1) (M) The SP initiates a request to the SC for available time slots for each location where the SP needs to have access. The SP shall specify certain parameters as part of the request (e.g., ID, activities to be performed, location(s) to be accessed, time limit, severity, estimated duration, contact person, etc.). 2) (O) The SP may offer his or her available time slot(s) in the request for negotiation purposes. 3) (O) If a time slot has already been agreed by the SP and SC, that time slot should be indicated in the request.	
Ends when	The request is emitted by the SP.	
Exceptions	– A network problem exists. – Missing or incorrect parameter values. – The SC is unable to respond to the request.	
Post-conditions	The SC receives the request.	
Traceability	REQ-AM-FUN-101, REQ-AM-FUN-202, REQ-AM-FUN-203	

7.2.2.3 SP Notify available time slot(s)

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	The SP offers the available time slots for the specific location(s) associated with an appointment.	
Actors and roles	The SC is the consumer of the notification from the SP.	
Telecom resources	Any SC's facility.	
Assumptions	The SP had received a Request appointment availability from the SC.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SP offers available time slots.	
Step 1 (M)	The SP offers a set of available time slots for the specific location(s) associated with the appointment. The parameters (e.g., appointment ID, location(s), available time slot(s), etc.) should be specified.	
Ends when	The notification is emitted by the SP.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values.	

Use case stage	Evolution/Specification	<<Uses>> Related use
Post-conditions	The SC is informed of the SP available time slot(s).	
Traceability	REQ-AM-FUN-101	

7.2.2.4 SC Notify available time slot(s)

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	The SC offers the available time slots for the specific location(s) associated with an appointment by a request to the SP.	
Actors and roles	The SP is the consumer of the notification from the SC.	
Telecom resources	Any SC's facility.	
Assumptions	The SC had received a Request appointment availability from the SP.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SC offers available time slots.	
Step 1 (M)	The SC offers a set of available time slots for the specific location(s) associated with the appointment. The parameters (e.g., appointment ID, location(s), available time slot(s), etc.) should be specified.	
Ends when	The notification is emitted by the SC.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values.	
Post-conditions	The SP is informed of the SC available time slot(s).	
Traceability	REQ-AM-FUN-102	

7.2.2.5 SP Accept/decline available time slot(s)

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	The SP accepts or declines the time slots offered by the SC in the notification of available time slots, or in the request for additional time slots.	
Actors and roles	The SC is the consumer of the notification from the SP.	
Telecom resources	Any SC's facility.	
Assumptions	The SP had received a notification of the available time slots from the SC.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SP accepts or declines the offered time slots.	
Step 1 (M)	The SP accepts or declines the time slots offered by the SC in the notification of available time slots.	Request appointment availability
Ends when	The notification is emitted by the SP.	

Use case stage	Evolution/Specification	<<Uses>> Related use
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values.	
Post-conditions	The SC is informed of the notification from the SP. The SC received a Request apppointment availability if the SP had sent a Request apppointment availability to the SC.	
Traceability	REQ-AM-FUN-103	

7.2.2.6 SC Accept/decline available time slot(s)

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	The SC accepts or declines the time slots offered by the SP in the notification of available time slots, or in the request for additional time slots.	
Actors and roles	The SP is the consumer of the notification from the SC.	
Telecom resources	Any SC's facility.	
Assumptions	The SC had received a notification of available time slots from the SP.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SC accepts or declines the offered time slots.	
Step 1 (M)	The SC accepts or declines the time slots offered by the SP in the notification of available time slots, or in the request for additional time slots.	
Ends when	The notification is emitted by the SC.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values.	
Post-conditions	The SP is informed of the notification from the SC.	
Traceability	REQ-AM-FUN-102	

7.2.2.7 SP Request appointment confirmation

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	The SP asks the SC to confirm all the time slots and locations related to an appointment.	
Actors and roles	The SC is the consumer of the request from the SP.	
Telecom resources	Any SC's facility.	
Assumptions	The SP can select the appropriate time slots which can satisfy both the SP and SC through negotiation.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	

Use case stage	Evolution/Specification	<<Uses>> Related use
Begins when	The SP selects the appropriate time slots.	
Step 1 (M)	The SP initiates a request to the SC for appointment confirmation. All the appointment time slots should be indicated in the request.	
Ends when	The request is emitted by the SP.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values.	
Post-conditions	The request is received by the SC.	
Traceability	REQ-AM-FUN-201	

7.2.2.8 SC Notify appointment approved/denied

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	Upon receiving a request confirming an appointment or receiving a request changing an appointment, the SC notifies the SP of either approving or denying the time slots indicated in the request.	
Actors and roles	The SP is the consumer of the notification from the SC.	
Telecom resources	Any SC's facility.	
Assumptions	The SC had received a request confirming an appointment or changing an appointment from the SP.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SC approves or denies the appointment.	
Step 1 (M)	The SC accepts or denies each time slot indicated in the request.	
Ends when	The notification is emitted by the SC. NOTE – If all the time slots are accepted by the SC, then the appointment is mutually accepted. If the appointment is denied by the SC, the SP can reject the appointment and the rejection reason must be recorded as being caused by the SC. Then the SP can invoke the use case "SP Request appointment availability" to request other appointment time slots until the appointment is mutually accepted.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values.	
Post-conditions	The SP is informed of the result.	
Traceability	REQ-AM-FUN-201, REQ-AM-FUN-202, REQ-AM-FUN-303	

7.2.2.9 SC Request modification of appointment attribute value

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	Prior to the appointment time, the SC can modify the information related to the appointment, e.g., additional information, contact change, etc. NOTE – This use case cannot be used to modify such parameters as locations and times.	
Actors and roles	The SP is the consumer of the request from the SC and the SP modifies the parameters of the request.	
Telecom resources	Any SC's facility.	
Assumptions	The appointment to be modified is confirmed.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SC modifies some parameters associated with an appointment.	
Step 1 (M)	The SC shall specify certain parameters as part of the request (e.g., ID of the appointment for which parameters are to be modified, and new values for the parameters to be modified, etc.). This information may be attributes of the appointment derived from the order or trouble ticket which is made available to the SP field engineer.	
Ends when	The SP returns the result to the SC that the new parameter value(s) are being changed.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values. – Requested appointment is not permitted to be modified now according to the predefined contract.	
Post-conditions	The parameter value(s) of the appointment for which the modification was requested is(are) updated.	
Traceability	REQ-AM-FUN-301	

7.2.2.10 SP Notify modification of appointment attribute value

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	Prior to the appointment time, the SP can modify the information related to the appointment, e.g., additional information, contact change, etc. NOTE – This use case cannot be used to modify such parameters as locations and times.	
Actors and roles	The SC is the consumer of the notification from the SP.	
Telecom resources	Any SC's facility.	
Assumptions	The appointment to be modified is confirmed.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SP modifies some parameters associated with an appointment.	

Use case stage	Evolution/Specification	<<Uses>> Related use
Step 1 (M)	The SP shall specify certain parameters as part of the notification (e.g., ID of the appointment for which parameters are to be modified, new values for the parameters to be modified, etc.). This information may be attributes of the appointment derived from the order or trouble ticket which is made available to the SP field engineer.	
Ends when	The notification is emitted by the SP.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values. – Requested appointment is not permitted to be modified now according to the predefined contract.	
Post-conditions	The SC is informed of the new parameter values.	
Traceability	REQ-AM-FUN-301	

7.2.2.11 SP Request appointment change

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	Prior to the appointment time, the SP may request changing times or locations associated with an appointment. This use case is valid until the time interval before the appointment, specified in the SLA or by a regulatory statute.	
Actors and roles	The SC is the consumer of the request from the SP.	
Telecom resources	Any SC's facility.	
Assumptions	The appointment to be changed is confirmed.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system. A predefined contract about the appointment service has been established, and the interval prior to the appointment has been specified.	
Begins when	The SP initiates a change of an appointment.	
Step 1 (M)	1) (M) The SP specifies certain parameters as part of the request (e.g., ID of the appointment, the time slot(s) and location(s) to be modified, etc.) in the request. The reason why the SP changes the appointment shall be specified. 2) (O) The SP can invoke the use case "SP Request appointment availability" to reschedule the appointment.	Request appointment availability
Ends when	The request is emitted by the SP.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values. – Requested appointment is not permitted to be changed now according to the predefined contract.	
Post-conditions	The request is received by the SC.	
Traceability	REQ-AM-FUN-302	

7.2.2.12 SC Request appointment change

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	Prior to the appointment time, the SC may request changing times or locations associated with an appointment.	
Actors and roles	The SP is the consumer of the request from the SC.	
Telecom resources	Any SC's facility.	
Assumptions	The appointment to be changed is confirmed.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system. A predefined contract about the appointment service has been established, and the interval prior to the appointment has been specified.	
Begins when	The SC initiates a change of an appointment.	
Step 1 (M)	The SC specifies certain parameters as part of the request (e.g., ID of the appointment, the time slot(s) and/or location(s) to be modified, etc.) in the request. The reason why the SC changes the appointment shall be specified.	
Ends when	The request is emitted by the SC.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values. – Requested appointment is not permitted to be changed now according to the predefined contract.	
Post-conditions	The request is received by the SP.	
Traceability	REQ-AM-FUN-302	

7.2.2.13 SP Request appointment cancellation

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	Prior to the appointment time, the SP initiates a request for cancelling an appointment.	
Actors and roles	The SC is the consumer of the request.	
Telecom resources	Any SC's facility.	
Assumptions	The appointment to be cancelled exists.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system. A predefined contract about the appointment service has been established, and the interval prior to the appointment has been specified.	
Begins when	The SP initiates a request for cancelling an appointment.	
Step 1 (M)	The SP shall specify certain parameters as part of the request (e.g., ID of the appointment, the reason why the SP cancels the appointment, etc.).	

Use case stage	Evolution/Specification	<<Uses>> Related use
Ends when	The request is emitted by the SP.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Contract violation of time interval to cancel an appointment.	
Post-conditions	The SC should return a response to the SP indicating acknowledgement.	
Traceability	REQ-AM-FUN-401	

7.2.2.14 SC Request appointment cancellation

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	Prior to the appointment time, the SC initiates a request cancelling an appointment.	
Actors and roles	The SP is the consumer of the request from the SC.	
Telecom resources	Any SC's facility.	
Assumptions	The appointment to be cancelled exists.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system. A predefined contract about the appointment service has been established, and the interval prior to the appointment has been specified.	
Begins when	The SC initiates a request for cancelling an appointment.	
Step 1 (M)	The SC shall specify certain parameters as part of the request (e.g., ID of the appointment, the reason why the SC cancels the appointment, etc.).	
Ends when	The request is emitted by the SC.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Failure due to contract violation of interval.	
Post-conditions	The SP should return a response to the SC indicating acknowledgement.	
Traceability	REQ-AM-FUN-401	

7.2.2.15 SC Notify appointment cancellation accepted/rejected

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	After receiving a request for cancelling an appointment initiated by the SP, the SC may accept or reject the request.	
Actors and roles	The SP is the consumer of the notification.	
Telecom resources	Any SC's facility.	
Assumptions	The SC had received a request for cancelling an appointment from the SP.	

Use case stage	Evolution/Specification	<<Uses>> Related use
Pre-conditions	There is an open communication channel between the SP management system and the SC management system. A predefined contract about the appointment service has been established, and the interval prior to the appointment has been specified.	
Begins when	The SC accepts or denies the request.	
Step 1 (M)	The SC accepts or rejects the request for cancelling an appointment. The appointment ID should be specified in the notification.	
Ends when	The notification is emitted by the SC.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Invalid reject reason code.	
Post-conditions	The SP is informed of the result.	
Traceability	REQ-AM-FUN-402	

7.2.2.16 SP Notify appointment cancellation accepted/rejected

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	After receiving a request cancelling an appointment initiated by the SC, the SP shall accept or reject the request.	
Actors and roles	The SC is the consumer of the notification.	
Telecom resources	Any SC's facility.	
Assumptions	The SP had received the request for cancelling an appointment from the SC.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system. A predefined contract about the appointment service has been established, and the interval prior to the appointment has been specified.	
Begins when	The SP accepts or denies the request for cancelling an appointment.	
Step 1 (M)	The SP accepts or rejects the request cancelling an appointment. The appointment ID should be specified in the notification.	
Ends when	The notification is emitted by the SP.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Invalid reject reason code.	
Post-conditions	The SC receives the notification.	
Traceability	REQ-AM-FUN-402	

7.2.2.17 SC Notify failure to keep appointment

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	If the SP fails to keep an agreed appointment, the SC should notify the SP of the failure.	
Actors and roles	The SP is the consumer of the notification.	
Telecom resources	Any SC's facility.	
Assumptions	The SP failed to keep an appointment.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SC notifies the SP of the failure to keep an appointment.	
Step 1 (M)	The SC shall specify certain parameters as part of the notification (e.g., ID of the appointment, locations, times, etc.).	
Ends when	The notification is emitted by the SC.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Incorrect parameters.	
Post-conditions	The SP is informed of the failure.	
Traceability	REQ-AM-FUN-501	

7.2.2.18 SP Notify failure to keep appointment

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	If the SC fails to keep an agreed appointment, the SP should notify the SC of the failure.	
Actors and roles	The SC is the consumer of the notification.	
Telecom resources	Any SC's facility.	
Assumptions	The SC failed to keep the appointment.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SP notifies the SC of the failure to keep an appointment.	
Step 1 (M)	The SP shall specify certain parameters as part of the notification (e.g., ID of the appointment, locations, times, etc.).	
Ends when	The notification is emitted by the SP.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Incorrect parameters.	
Post-conditions	The SC is informed of the failure.	
Traceability	REQ-AM-FUN-501	

7.2.2.19 SP Report appointment

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	The SP should give an appointment report to the SC periodically or non-periodically.	
Actors and roles	The SC is the consumer of the report.	
Telecom resources	Any SC's facility.	
Assumptions	The appointment is created.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SP submits an appointment report.	
Step 1 (M)	The SP reports the appointment information (e.g., activities carried out, actual duration, keep or fail, etc.).	
Ends when	The report is emitted by the SP.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Invalid parameters.	
Post-conditions	The SC is informed of the report.	
Traceability	REQ-AM-FUN-502, REQ-AM-FUN-503	

7.2.2.20 SC Get appointment report

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	The SC can request a report for activities performed by the SP at the SC's location(s) for a certain period, as specified in the SLA.	
Actors and roles	The SP is the consumer of the request.	
Telecom resources	Any SC's facility.	
Assumptions	The appointment is created, and the SC has signed a SLA which has the terms about the appointment report with the SP.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SC sends a request to get a report of the specified appointment.	
Step 1 (M)	1) (M) The SC sends a request to the SP to get the appointment report, and the following parameters should be provided in the request: – appointment ID, – start time, – stop time, etc. 2) The SP will return the appointment report when receiving the request from the SC.	
Ends when	The SP returns the report of the requested appointment.	
Exceptions	– A network problem exists. – Invalid appointment ID.	
Post-conditions	The SC receives the complete report of the requested appointments.	
Traceability	REQ-AM-FUN-503	

7.2.2.21 SC Retrieve appointment(s) tracking information

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	The SC can query the complete tracking information of one or more current or historical appointments.	
Actors and roles	The SP is the consumer of the request.	
Telecom resources	Any SC's facility.	
Assumptions	Appointments were created.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SC sends a query request to receive detailed tracking information of the specific appointments.	
Step 1 (M)	1) (M) The SC specifies certain parameters as part of the request (i.e., filter definition for the specific appointment set, etc.). 2) The request is emitted by the SC.	
Ends when	The SP returns the detailed tracking information of the requested appointments.	
Exceptions	– A network problem exists. – Incorrect filter definition. – Invalid parameters. – Invalid appointment ID.	
Post-conditions	The SC receives the complete information list of the requested appointments.	
Traceability	REQ-AM-FUN-602	

7.2.2.22 SC Retrieve appointment(s) information

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	The SC can query the complete description of one or more current or historical appointments.	
Actors and roles	The SP is the consumer of the request.	
Telecom resources	Any SC's facility.	
Assumptions	Appointments were created.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system.	
Begins when	The SC sends a query request to receive information of the specific appointments.	
Step 1 (M)	1) (M) The SC specifies certain parameters as part of the request (i.e., filter definition for the specific appointment set, etc.). 2) The request is emitted by the SC.	
Ends when	The SP returns the list of appointments to complete the information.	

Use case stage	Evolution/Specification	<<Uses>> Related use
Exceptions	– A network problem exists. – Incorrect filter definition. – Invalid parameters.	
Post-conditions	The SC receives the complete information list of the requested appointments.	
Traceability	REQ-AM-FUN-601	

7.2.2.23　SP Request additional time slots

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	During the period when an appointment is being performed, the SP can request additional time slots.	
Actors and roles	The SC is the consumer of the request from the SP.	
Telecom resources	Any SC's facility.	
Assumptions	The confirmed time slots for the appointment are insufficient to finish the work.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system, and the appointment is being performed.	
Begins when	The SP initiates a request for additional time slots.	
Step 1 (M)	The SP offers a set of additional time slots for the specific location(s) associated with the appointment. The parameters (e.g., appointment ID, location(s), additional time slot(s), etc.) should be specified.	
Ends when	The request is emitted by the SP.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values.	
Post-conditions	The request is received by the SC.	
Traceability	REQ-AM-FUN-304	

7.2.2.24　SC Request additional time slots

Use case stage	Evolution/Specification	<<Uses>> Related use
Goal	During the period when an appointment is being performed, the SC can request additional time slots.	
Actors and roles	The SP is the consumer of the request from the SC.	
Telecom resources	Any SC's facility.	
Assumptions	The confirmed time slots for the appointment are insufficient to finish the work.	
Pre-conditions	There is an open communication channel between the SP management system and the SC management system, and the appointment is being performed.	

Use case stage	Evolution/Specification	<<Uses>> Related use
Begins when	The SC initiates request for additional time slots.	
Step 1 (M)	The SC offers a set of additional time slots for the specific location(s) associated with the appointment. The parameters (e.g., appointment ID, location(s), additional time slot(s), etc.) should be specified.	
Ends when	The request is emitted by the SC.	
Exceptions	– A network problem exists. – Invalid appointment ID. – Missing or incorrect parameter values.	
Post-conditions	The request is received by the SP.	
Traceability	REQ-AM-FUN-304	

8   Analysis

8.1   Information object classes

8.1.1   Imported information entities and local labels

There are no imported information entities here.

8.1.2   Class diagram

This clause provides the overview of all support object classes in UML. Subsequent clauses provide more detailed specification of the various aspects of these support object classes.

8.1.2.1 Attributes and relationships
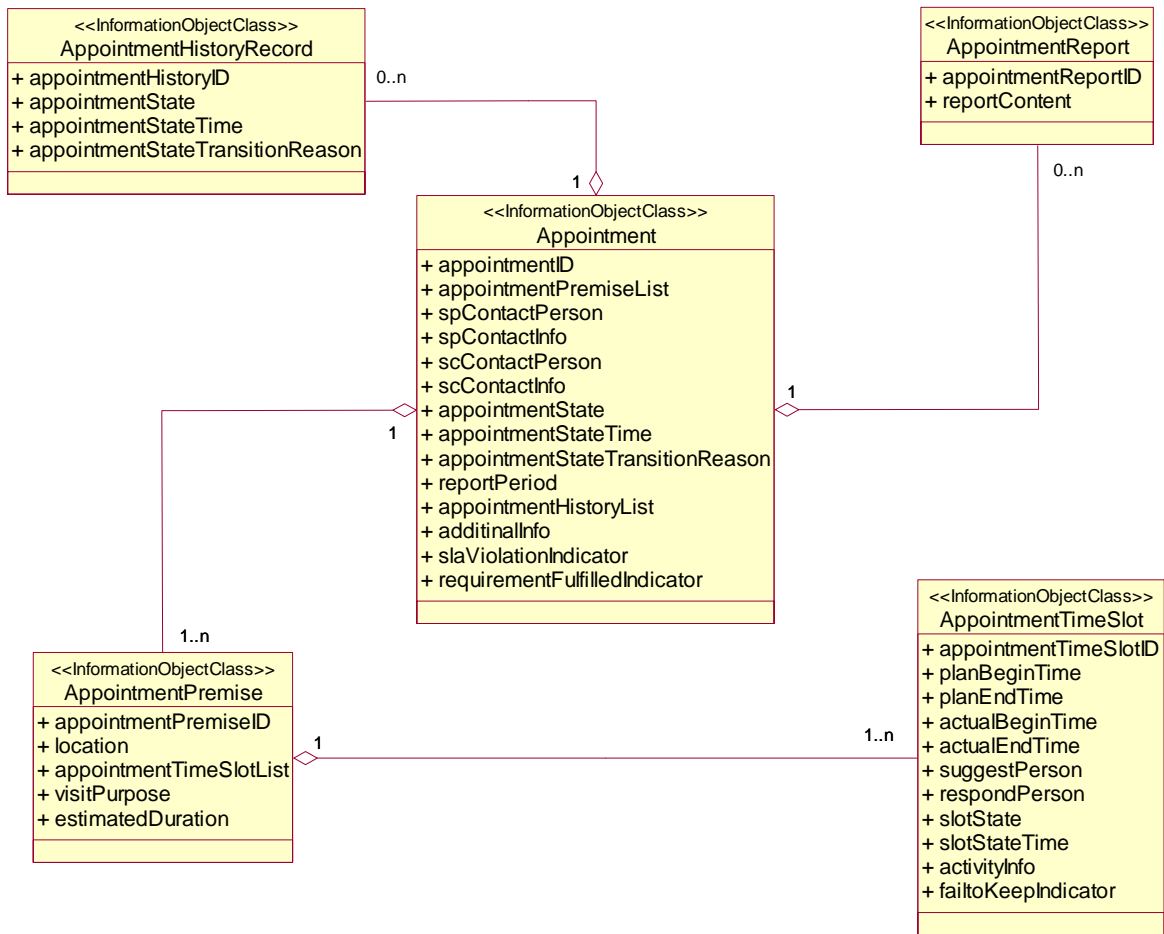
Figure 5 – Appointment management information object classes

8.1.2.2 Inheritance
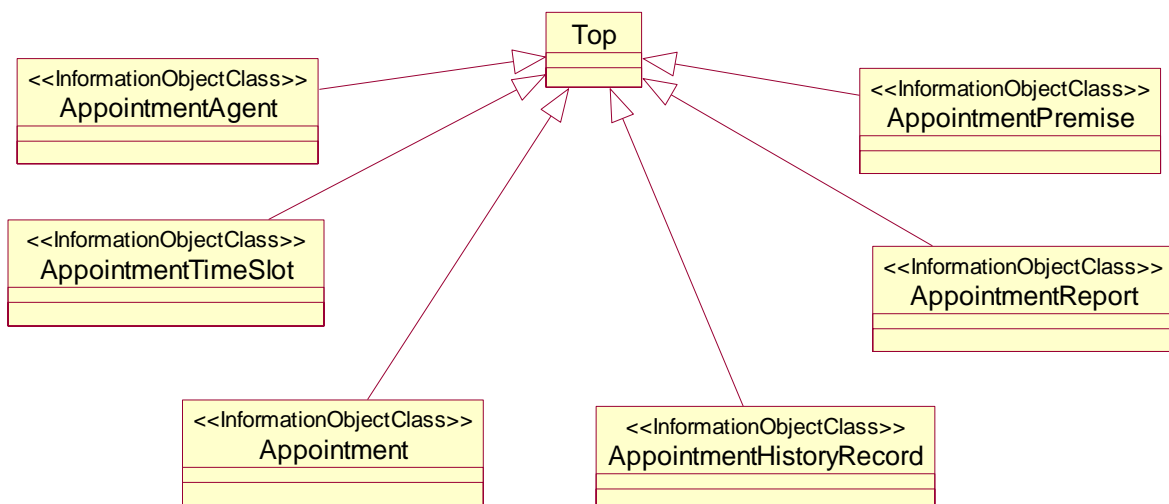
Figure 6 – Appointment management IOC inheritance

8.1.3 Information object class definitions

Class name	Qualifier	Requirement IDs
Appointment	M	REQ-AM-FUN-101, REQ-AM-FUN-102, REQ-AM-FUN-103, REQ-AM-FUN-201, REQ-AM-FUN-301, REQ-AM-FUN-303, REQ-AM-FUN-401, REQ-AM-FUN-402, REQ-AM-FUN-501, REQ-AM-FUN-602
AppointmentPremise	M	REQ-AM-FUN-101, REQ-AM-FUN-102, REQ-AM-FUN-103
AppointmentTimeSlot	M	REQ-AM-FUN-101, REQ-AM-FUN-102, REQ-AM-FUN-103, REQ-AM-FUN-501, REQ-AM-FUN-503
AppointmentReport	M	REQ-AM-FUN-502, REQ-AM-FUN-503
AppointmentHistoryRecord	M	REQ-AM-FUN-601, REQ-AM-FUN-602

8.1.3.1 Appointment

8.1.3.1.1 Definition

Appointment contains the basic attributes (such as appointmentID, contact person, appointmentState, appointmentStateTransitionReason, etc.) of an appointment. It is created when the SP or the SC wants to make an appointment with the other side.

8.1.3.1.2 Attributes

Attribute name	Support qualifier	Read qualifier	Write qualifier	Requirement IDs
appointmentID	M	–	–	REQ-AM-FUN-101
appointmentPremiseList	M	–	–	REQ-AM-FUN-101
spContactPerson	O	–	–	REQ-AM-FUN-301
spContactInfo	O	–	–	REQ-AM-FUN-301
scContactPerson	O	–	–	REQ-AM-FUN-301
scContactInfo	O	–	–	REQ-AM-FUN-301
appointmentState	M	–	–	REQ-AM-FUN-101, REQ-AM-FUN-102, REQ-AM-FUN-103, REQ-AM-FUN-201, REQ-AM-FUN-401, REQ-AM-FUN-402, REQ-AM-FUN-501, REQ-AM-FUN-602
appointmentStateTime	M	–	–	REQ-AM-FUN-602
appointmentStateTransitionReason	M	–	–	REQ-AM-FUN-202 REQ-AM-FUN-302 REQ-AM-FUN-401
reportPeriod	O	–	–	REQ-AM-FUN-502
appointmentHistoryList	M	–	–	REQ-AM-FUN-602

Attribute name	Support qualifier	Read qualifier	Write qualifier	Requirement IDs
additionalInfo	O	–	–	REQ-AM-FUN-301
slaViolationIndicator	M	–	–	REQ-AM-FUN-104
requirementFulfilledIndicator	M	–	–	REQ-AM-FUN-101

8.1.3.1.3 State diagram

The appointment state is described in Figure 7:

Figure 7 – Appointment state diagram

8.1.3.2 AppointmentPremise

8.1.3.2.1 Definition

The AppointmentPremise class contains information describing the locations which the SP needs to visit, and the reasons for visiting these locations. For each location to visit, an AppointmentPremise object is created.

8.1.3.2.2 Attributes

Attribute name	Support qualifier	Read qualifier	Write qualifier	Requirement IDs
appointmentPremiseID	M	–	–	REQ-AM-FUN-101, REQ-AM-FUN-102
location	M	–	–	REQ-AM-FUN-101, REQ-AM-FUN-102
appointmentTimeSlotList	M	–	–	REQ-AM-FUN-102, REQ-AM-FUN-103
visitPurpose	M	–	–	REQ-AM-FUN-101
estimatedDuration	O	–	–	REQ-AM-FUN-101

8.1.3.2.3 State diagram

There is no state for this class.

8.1.3.3 AppointmentTimeSlot

8.1.3.3.1 Definition

The AppointmentTimeSlot class contains information describing the time when the SP wants to visit the SC's premises, and the visit actually takes place. The SP may want to visit the premises more than one time, so for each premises to be visited, there may be more than one time slot.

8.1.3.3.2 Attributes

Attribute name	Support qualifier	Read qualifier	Write qualifier	Requirement IDs
appointmentTimeSlotID	M	–	–	REQ-AM-FUN-101, REQ-AM-FUN-102, REQ-AM-FUN-103
planBeginTime	M	–	–	REQ-AM-FUN-101, REQ-AM-FUN-102, REQ-AM-FUN-103
planEndTime	M	–	–	REQ-AM-FUN-101, REQ-AM-FUN-102, REQ-AM-FUN-103
actualBeginTime	M	–	–	REQ-AM-FUN-501, REQ-AM-FUN-503
actualEndTime	M	–	–	REQ-AM-FUN-501, REQ-AM-FUN-503
suggestPerson	M	–	–	REQ-AM-FUN-101, REQ-AM-FUN-102, REQ-AM-FUN-103
respondPerson	M	–	–	REQ-AM-FUN-102, REQ-AM-FUN-103
slotState	M	–	–	REQ-AM-FUN-102, REQ-AM-FUN-103, REQ-AM-FUN-501
slotStateTime	M	–	–	REQ-AM-FUN-102, REQ-AM-FUN-103
activityInfo	M	–	–	REQ-AM-FUN-503
failtoKeepIndicator	M	–	–	REQ-AM-FUN-501

8.1.3.3.3 State diagram

The AppointmentTimeSlot state is described, as shown in Figure 8:
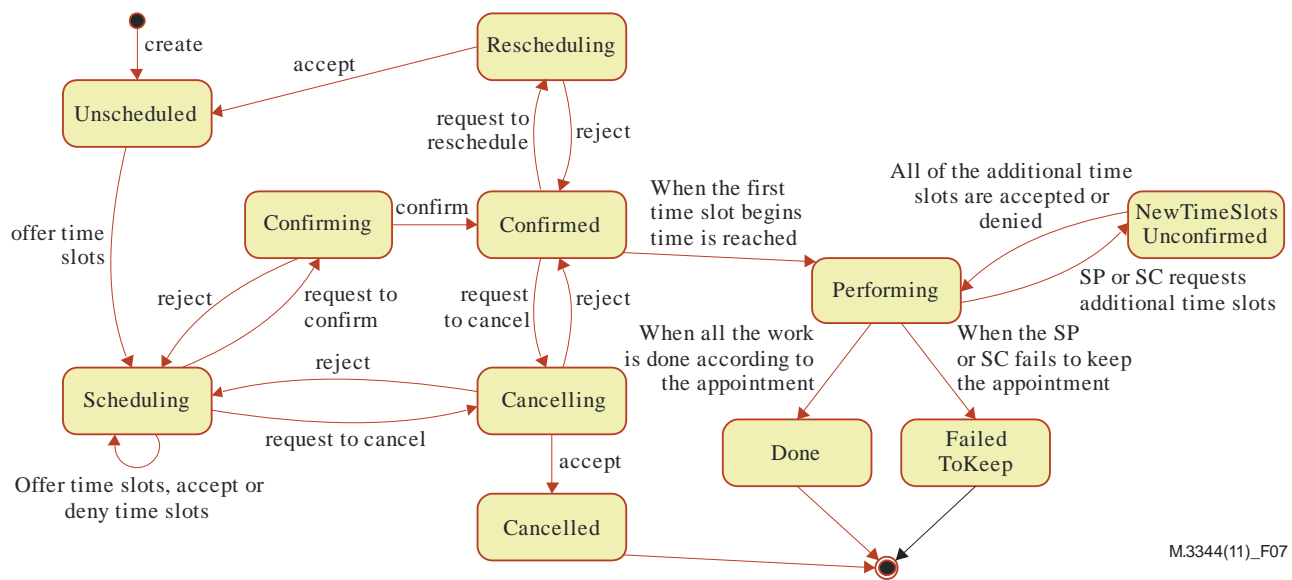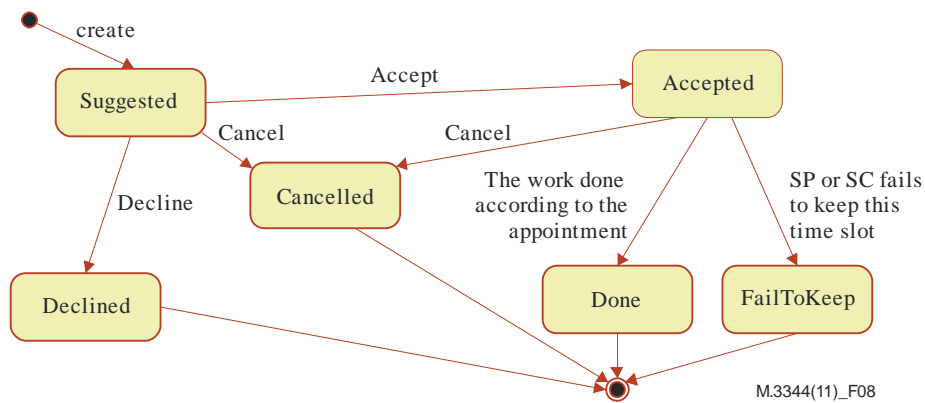

Figure 8 – AppointmentTimeSlot state diagram

8.1.3.4 AppointmentReport

8.1.3.4.1 Definition

The AppointmentReport class contains information describing the report which the SP needs to provide to SC. For one appointment, the SP may provide many reports to the SC.

8.1.3.4.2 Attributes

Attribute name	Support qualifier	Read qualifier	Write qualifier	Requirement IDs
appointmentReportID	M	–	–	REQ-AM-FUN-502, REQ-AM-FUN-503
reportContent	M	–	–	REQ-AM-FUN-503

8.1.3.4.3 State diagram

There is no state for this class.

8.1.3.5 AppointmentHistoryRecord

8.1.3.5.1 Definition

The AppointmentHistoryRecord class contains detailed tracking information about the state transitions of an appointment (including time-stamps and state transition reasons). When there is any change in the appointment state, an AppointmentHistoryRecord object must be created.

8.1.3.5.2 Attributes

Attribute name	Support qualifier	Read qualifier	Write qualifier	Requirement IDs
appointmentHistoryID	M	–	–	REQ-AM-FUN-601 REQ-AM-FUN-602
appointmentState	M	–	–	REQ-AM-FUN-602
appointmentStateTime	M	–	–	REQ-AM-FUN-602
appointmentStateTransition Reason	M	–	–	REQ-AM-FUN-601, REQ-AM-FUN-602

8.1.3.5.3 State diagram

There is no state for this class.

8.1.4 Information relationship definitions

Relationship	Support qualifier	Requirement IDs
relation-Appointment-AppointmentPremise	M	REQ-AM-FUN-101, REQ-AM-FUN-102
relation-AppointmentPremise-AppointmentTimeSlot	M	REQ-AM-FUN-101, REQ-AM_FUN-102, REQ-AM-FUN-103
relation-Appointment-AppointmentReport	O	REQ-AM-FUN-502, REQ-AM-FUN-503
relation-Appointment-AppointmentHistory	M	REQ-AM-FUN-601, REQ-AM-FUN-602

8.1.4.1 relation-Appointment-AppointmentPremise (M)

8.1.4.1.1 Definition

This represents the containment relationship between Appointment and AppointmentPremise.

8.1.4.1.2 Roles

Name	Definition
identifyAppointment	It represents the appointment.
identifyAppointmentpremise	It represents the premises to be visited in the appointment.

8.1.4.1.3 Constraints

There is no constraint for this relationship.

8.1.4.2 relation-AppointmentPremise-AppointmentTimeSlot (M)

8.1.4.2.1 Definition

This represents the containment relationship between AppointmentPremise and AppointmentTimeSlot.

8.1.4.2.2 Roles

Name	Definition
identifyAppointmentPremise	It represents the premises to be visited in the appointment.
identifyAppointmentTimeSlot	It represents the time slots for each premises.

8.1.4.2.3 Constraints

There is no constraint for this relationship.

8.1.4.3 relation-Appointment-AppointmentReport (O)

8.1.4.3.1 Definition

This represents the containment relationship between Appointment and AppointmentReport.

8.1.4.3.2 Roles

Name	Definition
identifyAppointment	It represents the appointment.
identifyAppointmentReport	It represents the reports about the appointment.

8.1.4.3.3 Constraints

There is no constraint for this relationship.

8.1.4.4 relation-Appointment-AppointmentHistory (M)

8.1.4.4.1 Definition

This represents the containment relationship between appointment and AppointmentHistoryRecord.

8.1.4.4.2 Roles

Name	Definition
identifyAppointment	It represents the appointment.
identifyAppointmentHistory	It represents the history of the appointment.

8.1.4.4.3 Constraints

There is no constraint for this relationship.

8.1.5 Information attribute definitions

8.1.5.1 Definition and legal values

Attribute name	Definition	Information type/ Legal values
appointmentID	It is the identifier of the appointment.	String
appointmentPremiseList	It indicates the premises where the SP needs to visit.	SET OF String
spContactPerson	It indicates the SP's contact person for the appointment.	String
spContactInfo	It indicates the SP's contact person's contact information.	ContactInfoType ::= SEQUENCE { tel String, fax String, mobile String, email String }
scContactPerson	It indicates the SC's contact person for the appointment.	String
scContactInfo	It indicates the SC's contact person's contact information.	ContactInfoType
appointmentState	It indicates the state of the appointment. An appointment may have the following states: "Unscheduled": An appointment is created without any time slot	AppointmentStateType ::= ENUMERATED { Unscheduled, Scheduling, Confirming, Confirmed, Rescheduling, Cancelling,

Attribute name	Definition	Information type/ Legal values
	provided; "Scheduling": one or more time slots for the appointment have been provided, but the appointment has not been confirmed by the SC; "Confirming": the SP has requested the SC to confirm the appointment, and the SC has not responded yet; "Confirmed": the appointment has been confirmed by the SC; "Rescheduling": after the appointment has been confirmed, the SP or the SC has requested to reschedule it, and the other side has not responded yet; "Cancelling": after the appointment has been confirmed, the SP or the SC has requested to cancel it, and the other side has not responded yet; "Cancelled": the appointment has been cancelled; "Performing": the appointment is being performed; "NewTimeSlotsUnconfirmed": When the appointment is being performed, the SP or the SC has requested additional time slots, and not all of these time slots have been accepted or denied; "Done": all the work for the appointment has been finished; "FailedToKeep": the SP or the SC fails to keep the appointment. The transition among these states can be found in clause 8.1.3.1.3.	Cancelled, Performing, NewTimeSlotsUnconfirmed, Done, FailedToKeep }
appointmentStateTime	It indicates the state time of the appointment.	GeneralizedTime
appointmentStateTransitionReason	It indicates the reason of why an appointment state has changed.	String
reportPeriod	It indicates the report period of the appointment.	INTEGER (Units: day)
appointmentHistoryList	It indicates the state transition history of the appointment.	SET OF String
additionalInfo	Additional appointment information.	String
appointmentPremiseID	It is the identifier of the AppointmentPremise.	String
location	It indicates the location of the premises.	String

Attribute name	Definition	Information type/ Legal values
appointmentTimeSlotList	It indicates the related time slots of the AppointmentPremise.	SET OF String
visitPurpose	It indicates the work to be done at the premises.	String
estimatedDuration	It indicates the estimated duration at the premises.	INTEGER (Units: hour)
appointmentTimeSlotID	It is the identifier of the AppointmentTimeSlot.	String
planBeginTime	It indicates the plan begin time of the time slot.	GeneralizedTime
planEndTime	It indicates the plan end time of the time slot.	GeneralizedTime
actualBeginTime	It indicates the actual begin time of the time slot.	GeneralizedTime
actualEndTime	It indicates the actual end time of the time slot.	GeneralizedTime
suggestPerson	It indicates the person who suggests this time slot.	String
respondPerson	It indicates the person who responds to this time slot.	String
slotState	It indicates the state of the time slot. Time slot may have the following states: "Suggested": the time slot has been suggested by the SP or the SC, but has not been accepted or declined by the other side; "Accepted": the time slot has been accepted; "Declined": the time slot has been declined; "Cancelled": the time slot has been cancelled; "Done": the work for this time slot has been finished according to the appointment; "FailToKeep": the SP or the SC fails to keep this time slot. The transition among these states can be found in clause 8.1.3.3.3.	SlotStateType ::= ENUMERATED { Suggested, Accepted, Declined, Cancelled, Done, FailToKeep}
slotStateTime	It indicates the state time of the time slot.	GeneralizedTime
activityInfo	It indicates the activity information performed in this time slot.	ActivityInfoType::= SEQUENCE { staffID: String, workDone: String}
appointmentReportID	It is the identifier of the AppointmentReport.	String

Attribute name	Definition	Information type/ Legal values
reportContentList	It indicates the premises and activities in this report.	SET OF ReportContentType ReportContentType::= SEQUENCE { premiseLocation: String, beginTime: GeneralizedTime, endTime: GeneralizedTime, activityInfo: ActivityInfoType }
appointmentHistoryID	It is the identifier of the AppointmentHistoryRecord.	String
slaViolationIndicator	It indicates whether there is a SLA violation. This attribute may have the following states: "None": There is no SLA violation; "SPViolated": the SP has violated the SLA; "SCViolated": the SC has violated the SLA.	SlaViolationIndicatorType ::= ENUMERATED { None, SPViolated, SCViolated}
requirementFulfilledIndicator	It indicates whether the SC's requirement has been fulfilled.	RequirementFulfilledIndicatorType ::= ENUMERATED { Yes, No}
failtoKeepIndicator	It indicates who has failed to keep the time slot. This attribute may have the following states: "None": No one has failed to keep this time slot; "SPFailtoKeep": the SP has failed to keep this time slot; "SCFailtoKeep": the SC has failed to keep this time slot.	FailtoKeepIndicatorType ::= ENUMERATED { None, SPFailtoKeep, SCFailtoKeep}

8.1.5.2   Constraints

Name	Affected attribute(s)	Definition
inv_appointmentID	appointmentID	appointmentIDs shall be unique across all appointments.
inv_appointmentPremiseID	appointmentPremiseID	appointmentPremiseIDs shall be unique across all premises of a particular appointment.
inv_appointmentTimeSlotID	appointmentTimeSlotID	appointmentTimeSlotIDs shall be unique across all premises of a particular AppointmentPremise.
inv_planEndTime	planEndTime	The planEndTime shall be later than the planBeginTime of the same time slot.

Name	Affected attribute(s)	Definition
inv_actualEndTime	actualEndTime	The actualEndTime shall be later than the actualBeginTime of the same time slot.
inv_appointmentReportID	appointmentReportID	appointmentReportIDs shall be unique across all reports of a particular appointment.
inv_appointmentHistoryID	appointmentHistoryID	appointmentHistoryIDs shall be unique across all history records of a particular appointment.

8.2 Interface definition

8.2.1 Class diagram representing interfaces
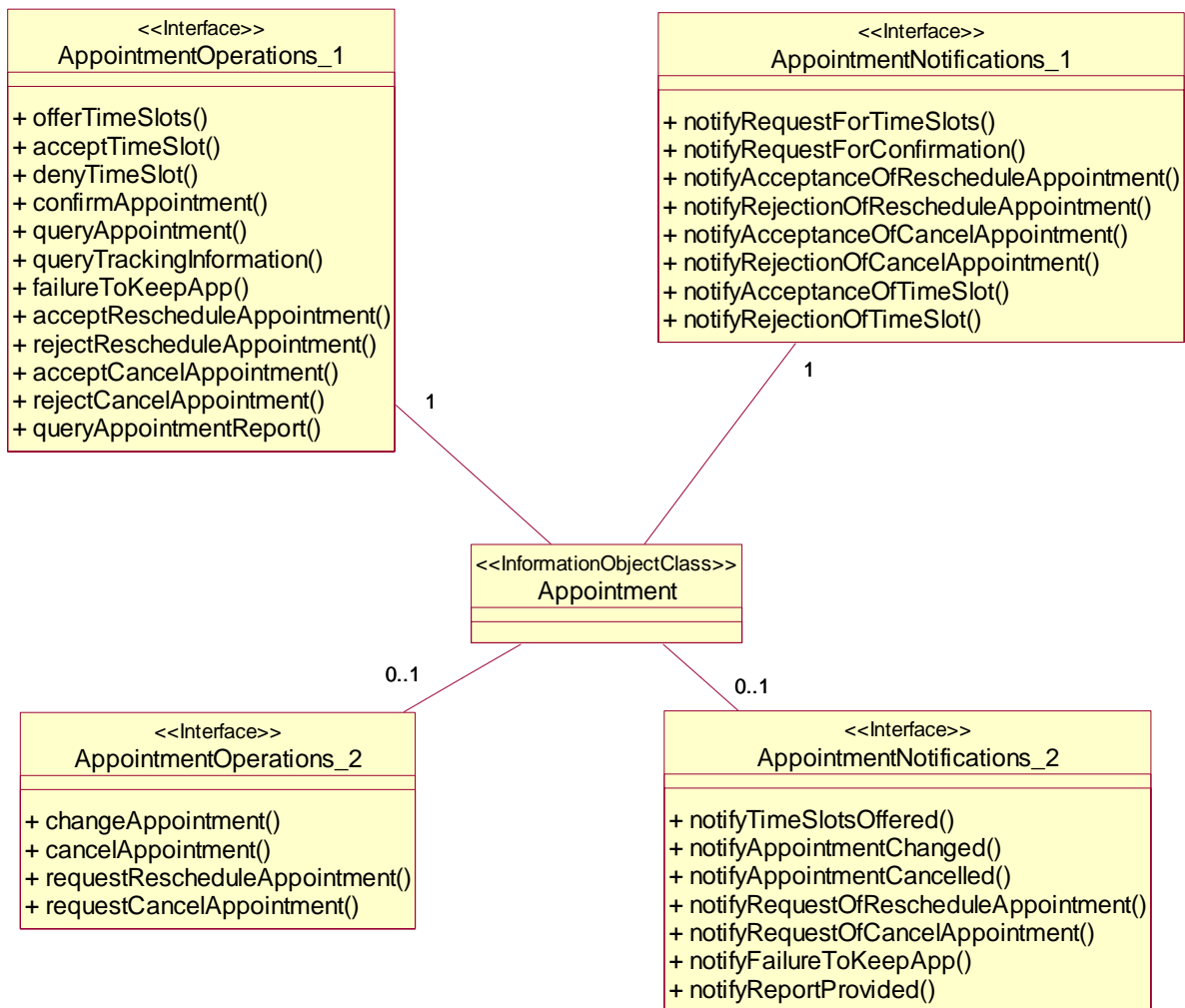
Figure 9 – Appointment management class diagram

8.2.2 Generic rules

Rule 1: Each operation with at least one input parameter supports a pre-condition valid_input_parameter which indicates that all input parameters shall be valid with regard to their information type. Additionally, each such operation supports an exception operation_failed_invalid_input_parameter which is raised when pre-condition valid_input_parameter is false. The exception has the same entry and exit state.

Rule 2: Each operation with at least one optional input parameter supports a set of pre-conditions supported_optional_input_parameter_xxx, where "xxx" is the name of the optional input parameter, and the pre-condition indicates that the operation supports the named optional input parameter. Additionally, each such operation supports an exception operation_failed_unsupported_optional_input_parameter_xxx which is raised when:

a)   the pre-condition supported_optional_input_parameter_xxx is false; and

b)   the named optional input parameter is carrying information.

The exception has the same entry and exit state.

Rule 3: Each operation shall support a generic exception operation_failed_internal_problem that is raised when an internal problem occurs, and that the operation cannot be completed. The exception has the same entry and exit state.

8.2.3   Interface AppointmentOperations_1(M)

Operation name	Qualifier	Requirement IDs
offerTimeSlots	M	REQ-AM-FUN-101, REQ-AM-FUN-102, REQ-AM-FUN-103
acceptTimeSlot	M	REQ-AM-FUN-102, REQ-AM-FUN-103
denyTimeSlot	M	REQ-AM-FUN-102, REQ-AM-FUN-103
confirmAppointment	M	REQ-AM-FUN-201
queryAppointment	M	REQ-AM-FUN-601
queryTrackingInformation	M	REQ-AM-FUN-602
failureToKeepApp	M	REQ-AM-FUN-501, REQ-AM-FUN-103
acceptRescheduleAppointment	M	REQ-AM-FUN-303
rejectRescheduleAppointment	M	REQ-AM-FUN-303
acceptCancelAppointment	M	REQ-AM-FUN-402
rejectCancelAppointment	M	REQ-AM-FUN-402
queryAppointmentReport	M	REQ-AM-FUN-503

8.2.3.1   Operation offerTimeSlots(M)

8.2.3.1.1   Definition

Before the appointment has been confirmed, the SC can invoke this operation to offer time slots for the premises. During the period when an appointment is being performed, the SC can invoke this operation to request additional time slots.

8.2.3.1.2   Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate which appointment to be scheduled.
appointmentPremiseID	M	String	To indicate the premises to be visited.
appointmentTimeSlotList	M	SET OF String	To indicate a set of time slots when to visit the premises.

8.2.3.1.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType::= ENUMERATED {OperationSucceeded, OperationFailed, OperationPartiallySuccee ded}	It indicates if the operation succeeded or failed.
appointment TimeSlotID List	M	SET OF AppointmentTimeSlot.ap pointmentTimeSlotID	It indicates the list of IDs of the created AppointmentTimeSlot objects.

8.2.3.1.4 Pre-condition

anOpenChannel

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.

8.2.3.1.5 Post-condition

TimeSlotsSet

Assertion name	Definition
TimeSlotsSet	All the time slots are set as requested.

8.2.3.1.6 Exceptions

8.2.3.1.6.1   operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	Condition	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.2   Operation acceptTimeSlot(M)

8.2.3.2.1 Definition

The SC invokes this operation to accept specific time slots for the premises offered by the SP.

8.2.3.2.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate which appointment to be accepted.
appointmentPremiseID	M	String	To indicate which appointment premises time slot to be accepted.
appointmentTimeSlotIDs	M	SET OF String	To indicate the time slots to be accepted.

8.2.3.2.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.3.2.4 Pre-condition

anOpenChannel

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
offeredBySP	The time slots to be accepted are offered by the SP.

8.2.3.2.5 Post-condition

TimeSlotsStateChanged.

Assertion name	Definition
TimeSlotsStateChanged	The related time slots slotState are set to be accepted.

8.2.3.2.6 Exceptions

8.2.3.2.6.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	Condition	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.2.6.2 inappropriate_invoking

Exception name	Definition	
inappropriate_invoking	Condition	The time slots to be accepted are offered by the SC.
	Return info	InappropriateInvoking
	Exit state	Entry state

8.2.3.3 Operation denyTimeSlot(M)

8.2.3.3.1 Definition

The SC invokes this operation to deny specific time slots for the premises.

8.2.3.3.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate which appointment to be denied.
appointmentPremiseID	M	String	To indicate which appointment premises time slot to be denied.
appointmentTimeSlotIDs	M	SET OF String	To indicate the time slots to be denied.

8.2.3.3.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.3.3.4 Pre-condition

anOpenChannel

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
offeredBySP	The time slots to be denied are offered by the SP.

8.2.3.3.5 Post-condition

TimeSlotsStateChanged.

Assertion name	Definition
TimeSlotsStateChanged	The related time slots slotState are set to be declined.

8.2.3.3.6 Exceptions

8.2.3.3.6.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.3.6.2 inappropriate_invoking

Exception name	Definition	
inappropriate_invoking	**Condition**	The time slots to be denied are offered by the SC.
	Return info	InappropriateInvoking
	Exit state	Entry state

8.2.3.4 Operation confirmAppointment(M)

8.2.3.4.1 Definition

The SC invokes this operation to confirm the appointment. This means the negotiation is completed.

8.2.3.4.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate the appointment to be confirmed.

8.2.3.4.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.3.4.4 Pre-condition

anOpenChannel AND timeSlotState.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
timeSlotState	The selected time slots can satisfy both the SP and the SC, and their states are set to be accepted.

8.2.3.4.5 Post-condition

AppointmentStateChanged.

Assertion name	Definition
AppointmentStateChanged	The appointment state is set to be confirmed.

8.2.3.4.6 Exceptions

8.2.3.4.6.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.5 Operation queryAppointment(M)

8.2.3.5.1 Definition

The SC can invoke this operation to query the complete descriptions of a specific set of current or historical appointments.

8.2.3.5.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate the appointmentID of the queried appointment
spContactPerson	O	String	To indicate the spContactPerson of the queried appointment
spContactInfo	O	ContactInfoType	To indicate the spContactInfo of the queried appointment
scContactPerson	O	String	To indicate the scContactPerson of the queried appointment
scContactInfo	O	ContactInfoType	To indicate the scContactInfo of the queried appointment
appointmentState	O	AppointmentStateType	To indicate the appointmentState of the queried appointment
location	O	String	To indicate the location of the queried appointment premises
planBeginTime	O	GeneralizedTime	To indicate the planBeginTime of the queried appointment
planEndTime	O	GeneralizedTime	To indicate the planEndTime of the queried appointment time
actualBeginTime	O	GeneralizedTime	To indicate the actualBeginTime of the queried appointment time
actualEndTime	O	GeneralizedTime	To indicate the actualEndTime of the queried appointment time
suggestPerson	O	String	To indicate the suggestPerson of the queried appointment time
respondPerson	O	String	To indicate the respondPerson of the queried appointment time
slotState	O	SlotStateType	To indicate the slotState of the queried appointment time

8.2.3.5.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.
AppointmentList	M	SET OF Name	The query results.

8.2.3.5.4 Pre-condition

anOpenChannel.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.

8.2.3.5.5 Exceptions

8.2.3.5.5.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.6 Operation queryTrackingInformation(M)

8.2.3.6.1 Definition

The SC can invoke this operation to query detailed tracking information about the state transitions of an appointment (including time-stamps).

8.2.3.6.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate the appointmentID of the queried appointment

8.2.3.6.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.
AppointmentHistoryRecordList	M	SET OF Name	The query results.

8.2.3.6.4 Pre-condition

anOpenChannel.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.

8.2.3.6.5 Exceptions

8.2.3.6.5.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.6.5.2 invalid_appointmentID

Exception name	Definition	
invalid_appointmentID	**Condition**	The input appointmentID is invalid.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.7 Operation failureToKeepApp(M)

8.2.3.7.1 Definition

The SC can invoke this operation to set the appointment and time slot state to clarify the failure to keep the appointment.

8.2.3.7.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate the failure appointment appointmentID.
appointmentPremiseID	O	String	To indicate which premises time slot failure to keep.
appointmentTimeSlotList	O	SET OF String	To indicate which time slot failure to keep.
appointmentState	O	AppointmentStateType	To indicate the appointment state to be set.
slotState	O	SlotStateType	To indicate the time slot state to be set.

8.2.3.7.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.3.7.4 Pre-condition

anOpenChannel.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.

8.2.3.7.5 Post-condition

AppointmentStateChanged.

Assertion name	Definition
AppointmentStateChanged	The appointment state or the AppointmentTimeSlots slotState is set to be the specified state.

8.2.3.7.6 Exceptions

8.2.3.7.6.1   operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.7.6.2   invalid_appointmentID

Exception name	Definition	
invalid_appointmentID	**Condition**	The input appointmentID is invalid.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.8   Operation acceptRescheduleAppointment(M)

8.2.3.8.1 Definition

The SC can invoke this operation to accept the request to reschedule an agreed appointment.

8.2.3.8.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate which appointment to be accepted to be rescheduled.

8.2.3.8.3 Output parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.3.8.4 Pre-condition

anOpenChannel.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
requestedBySP	The reschedule request to be accepted is offered by the SP.

8.2.3.8.5 Post-condition

AppointmentStateChanged.

Assertion name	Definition
AppointmentStateChanged	The appointment state is changed to unscheduled.

8.2.3.8.6 Exceptions

8.2.3.8.6.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.8.6.2 invalid_appointmentID

Exception name	Definition	
invalid_appointmentID	**Condition**	The input appointmentID is invalid.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.8.6.3 inappropriate_invoking

Exception name	Definition	
inappropriate_invoking	**Condition**	The reschedule request to be accepted is offered by the SC.
	Return info	InappropriateInvoking
	Exit state	Entry state

8.2.3.9 Operation rejectRescheduleAppointment(M)

8.2.3.9.1 Definition

The SC can invoke this operation to reject the request to reschedule an agreed appointment.

8.2.3.9.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate which appointment to be rejected to be rescheduled

8.2.3.9.3 Output parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.3.9.4 Pre-condition

anOpenChannel.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
requestedBySP	The reschedule request to be rejected is offered by the SP.

8.2.3.9.5 Post-condition

AppointmentStateChanged.

Assertion name	Definition
AppointmentStateChanged	The appointment state is changed to confirmed.

8.2.3.9.6 Exceptions

8.2.3.9.6.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.9.6.2   invalid_appointmentID

Exception name	Definition	
invalid_appointmentID	**Condition**	The input appointmentID is invalid.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.9.6.3   inappropriate_invoking

Exception name	Definition	
inappropriate_invoking	**Condition**	The reschedule request to be rejected is offered by the SC.
	Return info	InappropriateInvoking
	Exit state	Entry state

8.2.3.10   Operation acceptCancelAppointment(M)

8.2.3.10.1   Definition

SC can invoke this operation to accept the request to cancel an agreed appointment.

8.2.3.10.2   Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate which appointment to be accepted to be cancelled

8.2.3.10.3   Output parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.3.10.4   Pre-condition

anOpenChannel.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
requestedBySP	The cancel request to be accepted is offered by the SP.

8.2.3.10.5   Post-condition

AppointmentStateChanged.

Assertion name	Definition
AppointmentStateChanged	The appointment state is changed to cancelled.

8.2.3.10.6 Exceptions

8.2.3.10.6.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.10.6.2 invalid_appointmentID

Exception name	Definition	
invalid_appointmentID	**Condition**	The input appointmentID is invalid.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.10.6.3 inappropriate_invoking

Exception name	Definition	
inappropriate_invoking	**Condition**	The cancel request to be accepted is offered by the SC.
	Return info	InappropriateInvoking
	Exit state	Entry state

8.2.3.11 Operation rejectCancelAppointment(M)

8.2.3.11.1 Definition

The SC can invoke this operation to reject the request to cancel an agreed appointment.

8.2.3.11.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate which appointment to be rejected to be cancelled.

8.2.3.11.3 Output Parameters

Parameter name	Support qualifier	Matching information/ Information type/Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.3.11.4 Pre-condition

anOpenChannel.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
requestedBySP	The cancel request to be rejected is offered by the SP.

8.2.3.11.5   Post-condition

AppointmentStateChanged.

Assertion name	Definition
AppointmentStateChanged	The appointment state is changed to the entry state.

8.2.3.11.6   Exceptions

8.2.3.11.6.1   operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.11.6.2   invalid_appointmentID

Exception name	Definition	
invalid_appointmentID	**Condition**	The input appointmentID is invalid.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.11.6.3   inappropriate_invoking

Exception name	Definition	
inappropriate_invoking	**Condition**	The cancel request to be rejected is offered by the SC.
	Return info	InappropriateInvoking
	Exit state	Entry state

8.2.3.12   Operation queryAppointmentReport(M)

8.2.3.12.1   Definition

The SC can invoke this operation to retrieve the appointment report on request.

8.2.3.12.2   Input parameters

Parameter name	Support qualifier	Matching information type/ Legal values	Comment
appointmentID	M	String	To indicate the report of which appointment to be read.

8.2.3.12.3   Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.
reportContent	M	AppointmentReport.rep ortContent	It indicates the content of the report.

8.2.3.12.4   Pre-condition

anOpenChannel.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.

8.2.3.12.5   Post-condition

SCgotAppointmentReport.

Assertion name	Definition
SCgotAppointmentReport	The SC receives the complete report of the requested appointments.

8.2.3.12.6   Exceptions

8.2.3.12.6.1   operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	Condition	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.3.12.6.2   invalid_appointmentID

Exception name	Definition	
invalid_appointmentID	Condition	The input appointmentID is invalid.
	Return info	OperationFailed
	Exit state	Entry state

8.2.4   Interface AppointmentOperations_2(O)

Operation name	qualifier	Requirement IDs
changeAppointment	O	REQ-AM-FUN-301
cancelAppointment	O	REQ-AM-FUN-401
requestRescheduleAppointment	O	REQ-AM-FUN-302
requestCancelAppointment	O	REQ-AM-FUN-401

8.2.4.1 Operation changeAppointment(O)

8.2.4.1.1 Definition

Prior to the appointment time, the SC can invoke this operation to modify the information related to the appointment, e.g., additional information, contact change, etc.

8.2.4.1.2 Input Parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate which appointment to be changed.
spContactPerson	O	String	The new spContactPerson.
spContactInfo	O	ContactInfoType	The new spContactInfo.
scContactPerson	O	String	The new scContactPerson.
scContactInfo	O	ContactInfoType	The new scContactInfo.
reportPeriod	O	INTEGER	The new reportPeriod.
additionalInfo	O	String	The new additionalInfo.

8.2.4.1.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.4.1.4 Pre-condition

anOpenChannel AND timeLimited.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
timeLimited	This operation only can be done before the appointment time.

8.2.4.1.5 Post-condition

AppointmentInformationChanged.

Assertion name	Definition
AppointmentInformationChanged	The appointment information is changed.

8.2.4.1.6 Exceptions

8.2.4.1.6.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.4.2   Operation cancelAppointment(O)

8.2.4.2.1 Definition

After the cancel request is accepted, the SC can invoke this operation to cancel an appointment.

8.2.4.2.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate which appointment to be cancelled.

8.2.4.2.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.4.2.4 Pre-condition

anOpenChannel.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.

8.2.4.2.5 Post-condition

AppointmentStateChanged.

Assertion name	Definition
AppointmentStateChanged	The appointment state is set to be cancelled.

8.2.4.2.6 Exceptions

8.2.4.2.6.1   operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.4.3   Operation requestRescheduleAppointment(O)

8.2.4.3.1 Definition

Prior to an appointment time, and subject to the terms specified in the contract, the SC may invoke this operation to request to reschedule an agreed appointment (time, location). The reason why the SC reschedules the appointment shall be given.

8.2.4.3.2   Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate the appointmentID to be rescheduled.
rescheduleReason	M	String	To indicate the reason of the reschedule request.

8.2.4.3.3   Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.4.3.4   Pre-condition

anOpenChannel AND appointmentConfirmed.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
appointmentConfirmed	The appointment state should be Confirmed.

8.2.4.3.5   Post-condition

AppointmentStateChanged.

Assertion name	Definition
AppointmentStateChanged	The appointment state is changed to Rescheduling.

8.2.4.3.6   Exceptions

8.2.4.3.6.1   operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	**Condition**	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.4.3.6.2   invalid_appointmentID

Exception name	Definition	
invalid_appointmentID	**Condition**	The input appointmentID is invalid.
	Return info	OperationFailed
	Exit state	Entry state

8.2.4.4 Operation requestCancelAppointment(O)

8.2.4.4.1 Definition

Prior to an appointment time, and subject to the terms specified in the contract, the SC may invoke this operation to request to cancel an agreed appointment. The reason why the SC cancels the appointment shall be given.

8.2.4.4.2 Input parameters

Parameter name	Support qualifier	Matching information type/Legal values	Comment
appointmentID	M	String	To indicate the appointmentID to be cancelled.
cancelReason	M	String	To indicate the reason of the cancel request.

8.2.4.4.3 Output parameters

Parameter name	Support qualifier	Matching information/ Information type/ Legal values	Comment
status	M	OperationStatusType	It indicates if the operation succeeded or failed.

8.2.4.4.4 Pre-condition

anOpenChannel and appointmentConfirmed.

Assertion name	Definition
anOpenChannel	There is an open communication channel between the SP management system and the SC management system.
appointmentConfirmed	The appointment state should be Confirmed.

8.2.4.4.5 Post-condition

AppointmentStateChanged.

Assertion name	Definition
AppointmentStateChanged	The appointment state is changed to Cancelling.

8.2.4.4.6 Exceptions

8.2.4.4.6.1 operation_failed_network_fault

Exception name	Definition	
operation_failed_network_fault	Condition	There is a fault in the network, so the operation cannot be completed.
	Return info	OperationFailed
	Exit state	Entry state

8.2.4.4.6.2 invalid_appointmentID

Exception name	Definition	
invalid_appointmentID	**Condition**	The input appointmentID is invalid.
	Return info	OperationFailed
	Exit state	Entry state

8.2.5 Interface AppointmentNotifications_1(M)

Notification name	Qualifier	Requirement IDs
notifyRequestForTimeSlots	M	REQ-AM-FUN-101, REQ-AM-FUN-203
notifyRequestForConfirmation	M	REQ-AM-FUN-101, REQ-AM-FUN-103
notifyAcceptanceOfRescheduleAppointment	M	REQ-AM-FUN-303
notifyRejectionOfRescheduleAppointment	M	REQ-AM-FUN-303
notifyAcceptanceOfCancelAppointment	M	REQ-AM-FUN-402
notifyRejectionOfCancelAppointment	M	REQ-AM-FUN-402
notifyAcceptanceOfTimeSlot	M	REQ-AM-FUN-103
notifyRejectionOfTimeSlot	M	REQ-AM-FUN-103

8.2.5.1 Notification notifyRequestForTimeSlots(M)

8.2.5.1.1 Definition

When there are no times slots offered, or when the SP thinks the time slots offered are not enough to complete the work, the SP notifies the SC to offer some time slots.

8.2.5.1.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the appointment.
appointmentPremiseID	O, Y	AppointmentPremise.appointmentPremiseID	To indicate the premises request for the time slots.

8.2.5.1.3 Triggering event

8.2.5.1.3.1 From state

Unscheduled OR Scheduling.

Assertion name	Definition
Unscheduled	There is no time slot for the appointment.
Scheduling	There are some time slots but these time slots offered are not enough to complete the work.

8.2.5.1.3.2   To state

WaitingForTimeSlots.

Assertion name	Definition
WaitingForTimeSlots	Waiting for the SC to offer some time slots.

8.2.5.2   Notification notifyRequestForConfirmation(M)

8.2.5.2.1   Definition

When the SP thinks the accepted time slots of the appointment are enough to do the work, the SP notifies the SC to confirm the appointment.

8.2.5.2.2   Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointment to be confirmed.

8.2.5.2.3   Triggering event

8.2.5.2.3.1   From state

TimeSlotAcceptedEnough.

Assertion name	Definition
TimeSlotAcceptedEnough	The SP thinks the accepted time slots of the appointment are enough to do the work.

8.2.5.2.3.2   To state

WaitingForSCConfirm.

Assertion name	Definition
WaitingForSCConfirm	Waiting for the SC to confirm the appointment.

8.2.5.3   Notification notifyAcceptanceOfRescheduleAppointment(M)

8.2.5.3.1   Definition

When the SP wants to accept the SC's request of rescheduling an appointment, the SP notifies the SC of the acceptance.

8.2.5.3.2   Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the rescheduled appointment.

8.2.5.3.3 Triggering event

8.2.5.3.3.1 From state

Rescheduling.

Assertion name	Definition
Rescheduling	Waiting for the SP to accept or decline the request.

8.2.5.3.3.2 To state

Unscheduled.

Assertion name	Definition
Unscheduled	Waiting for the SC to reschedule the appointment.

8.2.5.4 Notification notifyRejectionOfRescheduleAppointment(M)

8.2.5.4.1 Definition

When the SP wants to reject the SC's request of rescheduling an appointment, the SP notifies the SC of the rejection.

8.2.5.4.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the rescheduled appointment.

8.2.5.4.3 Triggering event

8.2.5.4.3.1 From state

Rescheduling.

Assertion name	Definition
Rescheduling	Waiting for the SP to accept or decline the request.

8.2.5.4.3.2 To state

Confirmed.

Assertion name	Definition
Confirmed	The SP rejects the SC's request to reschedule the appointment, so the state of the appointment is still Confirmed.

8.2.5.5 Notification notifyAcceptanceOfCancelAppointment(M)

8.2.5.5.1 Definition

When the SP wants to accept the SC's request to cancel an appointment, the SP notifies the SC of the acceptance.

8.2.5.5.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the cancelled appointment.

8.2.5.5.3 Triggering event

8.2.5.5.3.1 From state

Cancelling.

Assertion name	Definition
Cancelling	Waiting for the SP to accept or decline the request.

8.2.5.5.3.2 To state

Cancelled.

Assertion name	Definition
Cancelled	The appointment is cancelled.

8.2.5.6 Notification notifyRejectionOfCancelAppointment(M)

8.2.5.6.1 Definition

When the SP wants to reject the SC's request to cancel an appointment, the SP notifies the SC of the rejection.

8.2.5.6.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the cancelled appointment.

8.2.5.6.3 Triggering event

8.2.5.6.3.1 From state

Cancelling.

Assertion name	Definition
Cancelling	Waiting for the SP to accept or decline the request.

8.2.5.6.3.2 To state

TheEntryState.

Assertion name	Definition
TheEntryState	The SP rejects the SC's request to cancel the appointment, so the state of the appointment is to return to the original state before the cancel request.

8.2.5.7 Notification notifyAcceptanceOfTimeSlot(M)

8.2.5.7.1 Definition

When the SP wants to accept the time slots offered by the SC, the SP notifies the SC of the acceptance.

8.2.5.7.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the accepted appointment.
appointmentPremiseID	M, N	AppointmentPremise.appointmentPremiseID	To indicate the appointmentPremiseID of the accepted premises.
appointmentTimeSlotList	M, N	SET OF AppointmentTimeSlot.appointmentTimeSlotID	To indicate the appointmentTimeSlotID of the accepted time slots.

8.2.5.7.3 Triggering event

8.2.5.7.3.1 From state

WaitingForSPAcceptTimeSlots.

Assertion name	Definition
WaitingForSPAcceptTimeSlots	Waiting for the SP to accept or decline the time slots offered by the SC.

8.2.5.7.3.2 To state

SCAcknowledgedAcceptance.

Assertion name	Definition
SCAcknowledgedAcceptance	The SC acknowledges the SP's acceptance to the time slots.

8.2.5.8 Notification notifyRejectionOfTimeSlot(M)

8.2.5.8.1 Definition

When the SP wants to reject the time slots offered by the SC, the SP notifies the SC of the rejection.

8.2.5.8.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the rejected appointment.
appointmentPremiseID	M, N	AppointmentPremise.appointmentPremiseID	To indicate the appointmentPremiseID of the rejected premise.
appointmentTimeSlotList	M, N	SET OF AppointmentTimeSlot.appointmentTimeSlotID	To indicate the appointmentTimeSlotID of the rejected time slots.

8.2.5.8.3 Triggering event

8.2.5.8.3.1 From state

WaitingForSPAcceptTimeSlots.

Assertion name	Definition
WaitingForSPAcceptTimeSlots	Waiting for the SP to accept or decline the time slots offered by the SC.

8.2.5.8.3.2 To state

SCAcknowledgedRejection.

Assertion name	Definition
SCAcknowledgedRejection	The SC acknowledges the SP's rejection to the time slots.

8.2.6 Interface AppointmentNotifications_2(O)

Notification name	Qualifier	Requirement IDs
notifyTimeSlotsOffered	O	REQ-AM-FUN-101, REQ-AM-FUN-103
notifyAppointmentChanged	O	REQ-AM-FUN-301
notifyAppointmentCancelled	O	REQ-AM-FUN-401
notifyRequestOfRescheduleAppointment	O	REQ-AM-FUN-302, REQ-AM-FUN-303
notifyRequestOfCancelAppointment	O	REQ-AM-FUN-401, REQ-AM-FUN-402
notifyFailureToKeepApp	O	REQ-AM-FUN-501
notifyReportProvided	O	REQ-AM-FUN-502

8.2.6.1 Notification notifyTimeSlotsOffered(O)

8.2.6.1.1 Definition

When the SP offers some time slots for the appointment, the SP notifies the SC to confirm them.

Before the appointment has been confirmed, the SP offers some time slots for the appointment, and notifies the SC to accept them. During the period when the appointment is being performed, the SP can use this notification to request additional time slots.

8.2.6.1.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M,N	Appointment.appointmentID	To indicate the appointmentID of the offered appointment.
appointmentPremiseID	M,N	AppointmentPremise.appointment PremiseID	To indicate the appointment PremiseID of the offered premises.
appointmentTimeSlotList	M,N	SET OF AppointmentTimeSlot.appointment TimeSlotID	To indicate the appointmentTime SlotID of the offered time slots.

8.2.6.1.3 Triggering event

8.2.6.1.3.1 From state

Unscheduled AND Scheduling.

Assertion name	Definition
Unscheduled	There is no time slot for the appointment; the SP wants to offer the SC some convenient time slots for carrying out activities at the SC's premises.
Scheduling	There are some time slots but these time slots offered are not enough to complete the work, and the SP wants to offer the SC some convenient time slots for carrying out the activities at the SC's premises.

8.2.6.1.3.2 To state

WaitingForConfirmation.

Assertion name	Definition
WaitingForConfirmation	Waiting for the SC to confirm the offered time slots.

8.2.6.2 Notification notifyAppointmentChanged(O)

8.2.6.2.1 Definition

After the attributes of the appointment have been changed, the SP notifies the SC of the changed values.

8.2.6.2.2 Input parameters

Parameter name	Qualifiers	Matching Information/ Information Type/ Legal Values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the appointment to be changed.
spContactPerson	O, Y	Appointment.spContactPerson	The new spContactPerson.
spContactInfo	O, Y	Appointment.spContactInfo	The new spContactInfo.
scContactPerson	O, Y	Appointment.scContactPerson	The new scContactPerson.
scContactInfo	O, Y	Appointment.scContactInfo	The new scContactInfo.
reportPeriod	O, Y	Appointment.reportPeriod	The new reportPeriod.
additionalInfo	O, Y	Appointment.additionalInfo	The new additionalInfo.

8.2.6.2.3 Triggering event

8.2.6.2.3.1 From state

AppointmentAttrChangedBySP.

Assertion name	Definition
AppointmentAttrChangedBySP	The attributes of the appointment have been changed by the SP.

8.2.6.2.3.2 To state

ChangeAcknowledgedBySC.

Assertion name	Definition
ChangeAcknowledgedBySC	The changed attributes are acknowledged by the SC.

8.2.6.3 Notification notifyAppointmentCancelled(O)

8.2.6.3.1 Definition

After the appointment has been cancelled, the SP notifies the SC.

8.2.6.3.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the appointment to be cancelled.

8.2.6.3.3 Triggering event

8.2.6.3.3.1 From state

AppointmentCancelled.

Assertion name	Definition
AppointmentCancelled	The appointment has been cancelled.

8.2.6.3.3.2 To state

CancellationAcknowledgedBySC.

Assertion name	Definition
CancellationAcknowledgedBySC	The cancellation of the appointment is acknowledged by the SC.

8.2.6.4 Notification notifyRequestOfRescheduleAppointment(O)

8.2.6.4.1 Definition

When the SP wants to reschedule an appointment, the SP notifies the SC of the request.

8.2.6.4.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the appointment to be rescheduled.
rescheduleReason	M, N	Appointment.reschedule Reason	To indicate the reschedule reason.
appointmentPremiseList	O, Y	SET OF AppointmentPremise. appointmentPremiseID	To indicate the appointment of the premises to be rescheduled.

8.2.6.4.3 Triggering event

8.2.6.4.3.1 From state

Confirmed&PriorToAppTime.

Assertion name	Definition
Confirmed&PriorToAppTime	The appointment state is confirmed, and it is prior to the appointment time.

8.2.6.4.3.2 To state

Rescheduling.

Assertion name	Definition
Rescheduling	Waiting for the SC to accept or decline the request.

8.2.6.5 Notification notifyRequestOfCancelAppointment(O)

8.2.6.5.1 Definition

When the SP wants to cancel an appointment, the SP notifies the SC of the request.

8.2.6.5.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the appointment to be cancelled.
cancelReason	M, N	Appointment.rescheduleReason	To indicate the cancel reason.

8.2.6.5.3 Triggering event

8.2.6.5.3.1 From state

PriorToAppTime.

Assertion name	Definition
PriorToAppTime	It is prior to the appointment time.

8.2.6.5.3.2 To state

Cancelling.

Assertion name	Definition
Cancelling	Waiting for the SC to accept or decline the request.

8.2.6.6 Notification notifyFailureToKeepApp(O)

8.2.6.6.1 Definition

When the SP wants to notify the failures to keep an appointment to the SC, the SP notifies the SC.

8.2.6.6.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
appointmentID	M, N	Appointment.appointmentID	To indicate the appointmentID of the failure appointment.
appointmentPremiseID	O, Y	AppointmentPremise.appointment PremiseID	To indicate the appointmentPremiseID of the failure premises.
appointmentTimeSlotList	O, Y	SET OF AppointmentTimeSlot. appointment TimeSlotID	To indicate the appointmentTimeSlotID of the failure time slots.

8.2.6.6.3 Triggering event

8.2.6.6.3.1 From state

SPFailureToKeepAppointment.

Assertion name	Definition
SPFailureToKeepAppointment	The SP has changed the appointment and AppointmentTimeSlot state to FailureTokeep, but the SC has not acknowledged this information.

8.2.6.6.3.2 To state

SCAcknowledgedRejection.

Assertion name	Definition
SCAcknowledgedRejection	The SC acknowledges the SP's failure to keep the appointment.

8.2.6.7 Notification notifyReportProvided (O)

8.2.6.7.1 Definition

When the SP wants to provide an appointment report to the SC, the SP can use this notification to notify the SC.

8.2.6.7.2 Input parameters

Parameter name	Qualifiers	Matching information/ Information type/ Legal values	Comment
reportContent	M	AppointmentReport.reportContent	It indicates the content of the report.

8.2.6.7.3 Triggering event

8.2.6.7.3.1 From state

ReportOfAppointmentGenerated.

Assertion name	Definition
ReportOfAppointmentGenerated	The SP has generated an appointment report.

8.2.6.7.3.2 To state

ReportSentToSC.

Assertion name	Definition
ReportSentToSC	The report is sent to SC.

8.2.7 Scenario

8.2.7.1 Appointment scheduling

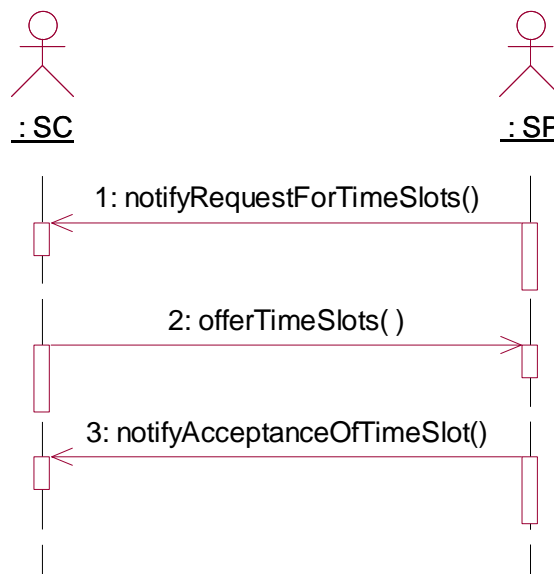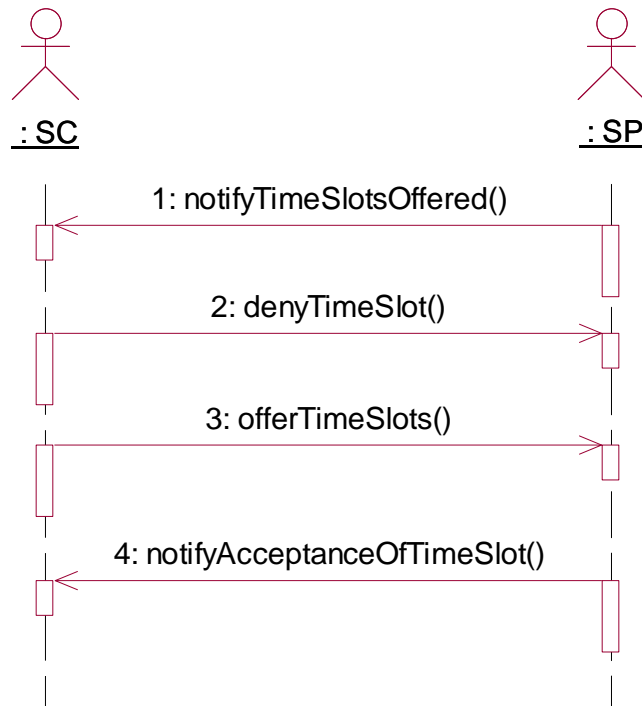#### 8.2.7.1.1 SP requests SC to offer time slots and SP accepts them

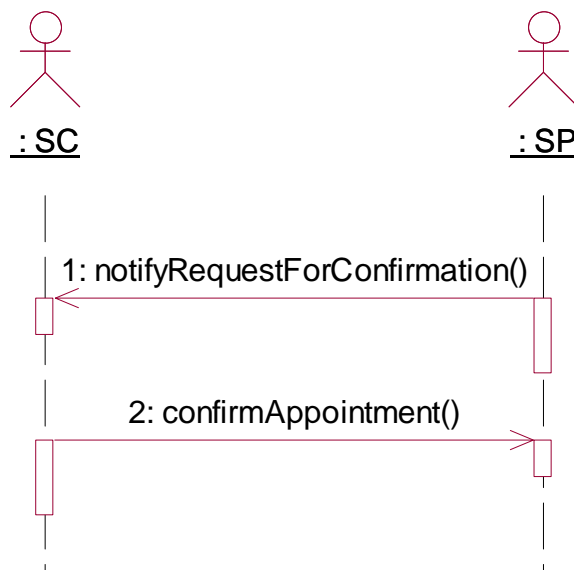**Figure 10 – Sequence diagram of appointment scheduling scenario 1**

8.2.7.1.2 SP offers time slots, SC declines them and offers some new time slots, SP accepts them

Figure 11 – Sequence diagram of appointment scheduling scenario 2

8.2.7.2   Appointment confirmation

Figure 12 – Sequence diagram of appointment confirmation scenario

8.2.7.3 Appointment change

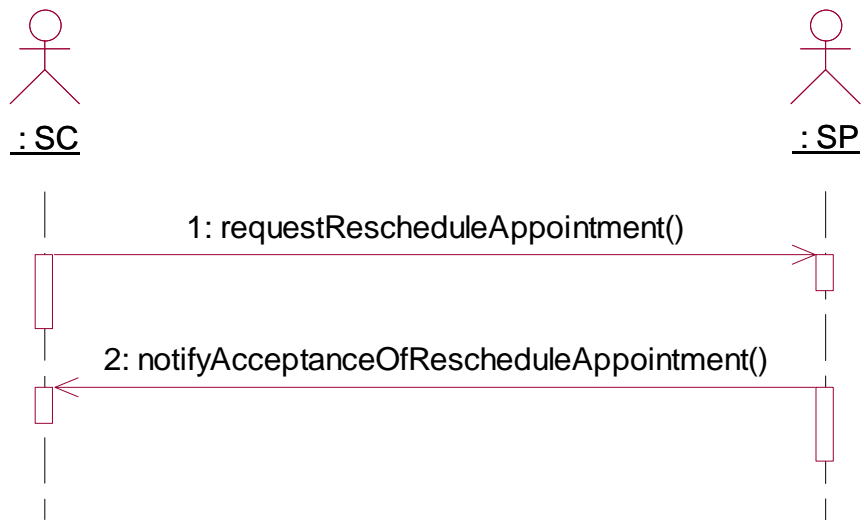### 8.2.7.3.1 SC requests to reschedule appointment and SP accepts it

Figure 13 – Sequence diagram of appointment change scenario 1

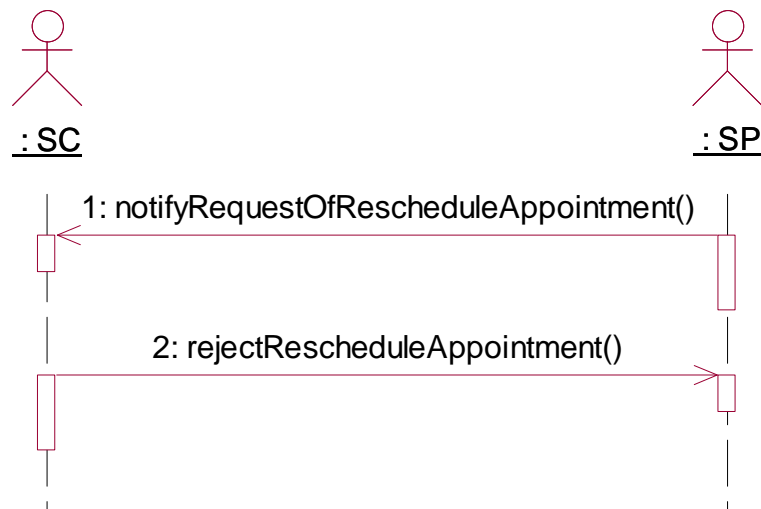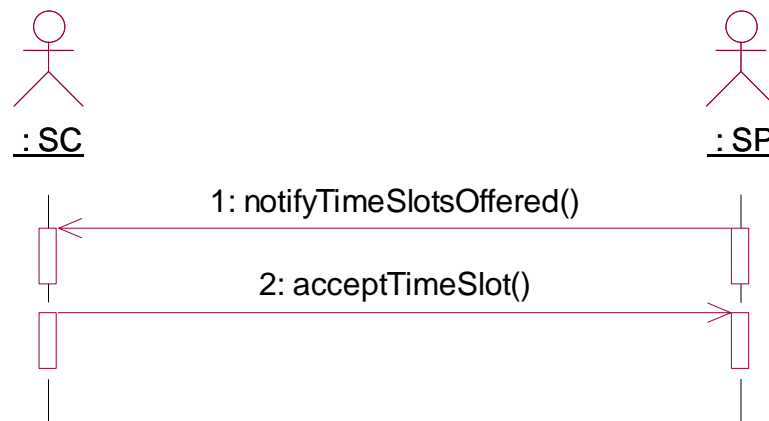### 8.2.7.3.2 SP requests to reschedule appointment and SC rejects it

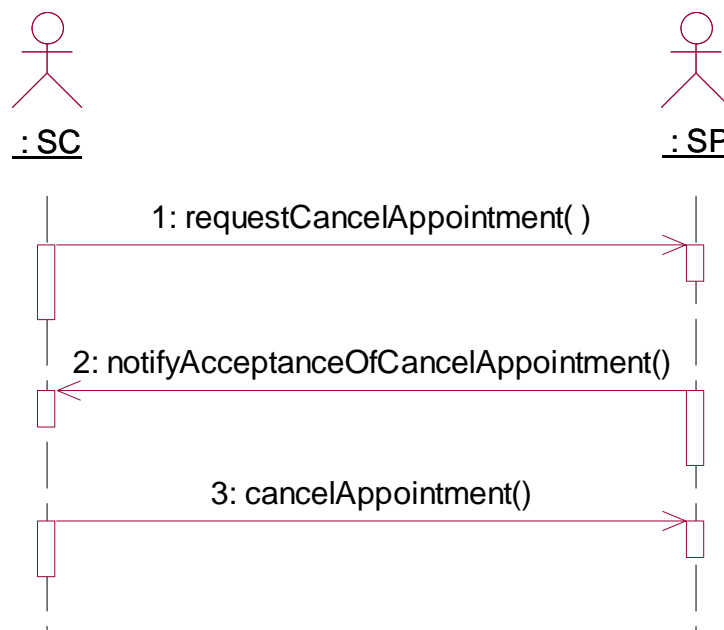**Figure 14 – Sequence diagram of appointment change scenario 2**

8.2.7.3.3 SP requests additional time slots when appointment is being performed and SC accepts them

Figure 15 – Sequence diagram of appointment change scenario 3

8.2.7.4 Appointment cancellation

8.2.7.4.1 SC requests to cancel appointment and SP accepts it

Figure 16 – Sequence diagram of appointment cancellation scenario

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