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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

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

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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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, service provider, and network operator/service provider interwork with each other for service provisioning and service assurance. In either service provisioning or service assurance process, it may be necessary to access the customer's premises, locked engineering or other facilities, or for joint testing between two enterprises. So there are some processes for managing the establishment of a mutual acceptable appointment between two parties which may be service customer to service provider or network operator/service provider to service provider. This Recommendation includes the requirements and analysis for all of these processes for the exchange of appointment management 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. B2B/C2B interface is a synonymous term to X Interface.

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/SP's contract and consequently are considered out of scope for this Recommendation.

2   References

None.

3   Definitions

3.1   Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1   administrative domain [b-ITU-T G.805]: For the purposes of this Recommendation, an administrative domain represents the extent of resources which belong to a single player such as a network operator, a service provider or an end-user. Administrative domains of different players do not overlap amongst themselves.

3.1.2   interface [b-ITU-T M.3010]: An architectural concept that provides interconnection between physical blocks at reference points.

3.1.3   network operator [b-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   next generation network (NGN) [b-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.

3.1.5   service customer [b-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. [b-ITU-T M.3320] defines this term simply as "customer".

3.1.6   service provider [b-ITU-T M.3208.1]: A general reference to an entity who provides telecommunications services to Customers and other users either on a tariff or contract basis. A SP may or may not operate a network. A SP may or may not be a Customer of another SP.

3.1.7   X interface [b-ITU-T M.3010]: An interface applied at x reference points.

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 SP and 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   B2B/C2B interface: The B2B/C2B interface in this Recommendation is used to interconnect two administrative domains or to interconnect a compliant environment with other networks or systems which accommodate a compliant interface, across which appointment management information can be exchanged.

3.2.3   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 Network

SC   Service Customer

SP   Service Provider

TMN   Telecommunications Management Network

5   Conventions

In this Recommendation, mandatory requirements are indicated by the use of the word "shall". Optional requirements are indicated by the use of the word "should" or "may" or "can". And the following abbreviations are applied:

–   M: Mandatory;

–   O: Optional.

In this Recommendation, when specifying managed entities and their management operations, the following abbreviations are applied to indicate the support qualifier of attributes, notifications or operation parameters:

–   M: Mandatory;

–   O: Optional;

–   C: Conditional;

–   –: Not Supported.

The following abbreviations are applied to indicate the read Qualifier and write Qualifier of the attributes:

–   R+: must-be-readable;

–   R: optional-readable;

–   R-: non-readable;
–   W+: must-be-writeable;
–   W: optional-writeable;
–   W-: non-writeable;
–   C+: must-be-write-on-creatable;
–   C: optional-write-on-creatable;
–   C-: non-write-on-creatable.

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 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 service provisioning or service assurance process.

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 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 cooperation of other service providers or transport providers. The SP providing telecommunication services to the end-user acts as a SC role, while other service providers or transport providers act as 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 role) and the service provider (acting as SC role). 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 be the SC role, while the other will be 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., central office, to another service provider. In co-location, the roles of SC and SP are reversed. The requirements to support the needs of appointment scheduling for co-location can be met by reversing the roles.

7 Requirements

7.1 Business level requirements

7.1.1 Requirements

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

Each appointment must have its own unique appointment ID.

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   The SC shall be able to schedule an appointment for the SP to gain access to the SC's premises, e.g., to install 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 SP, the final determination of the actual appointment time slot is determined by the customer.

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 – 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.

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 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.

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 do not enable the SP to fulfil their 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.

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.

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 a 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 timestamps).

7.1.2 Actor roles

The capabilities described in this Recommendation are available to 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 Telecommunications resources

The SC's facilities are viewed as relevant telecommunications 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 1.
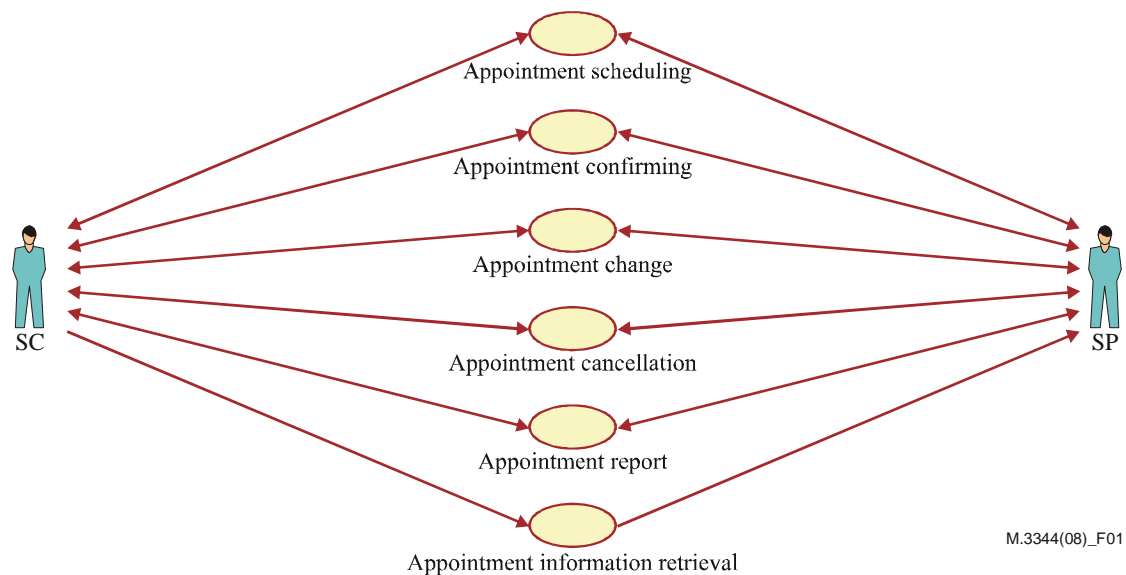
Figure 1 – High-level use case diagram

## 7.2 Specification level requirements

7.2.1 Specification level use case diagram

Figures 2 and 3 give the specification level use case diagrams. Use cases initiated by the SP are shown in Figure 2 first followed by use cases initiated by the SC in Figure 3. Use case descriptions are provided in clause 7.2.2 for every use case pictured in these diagrams.
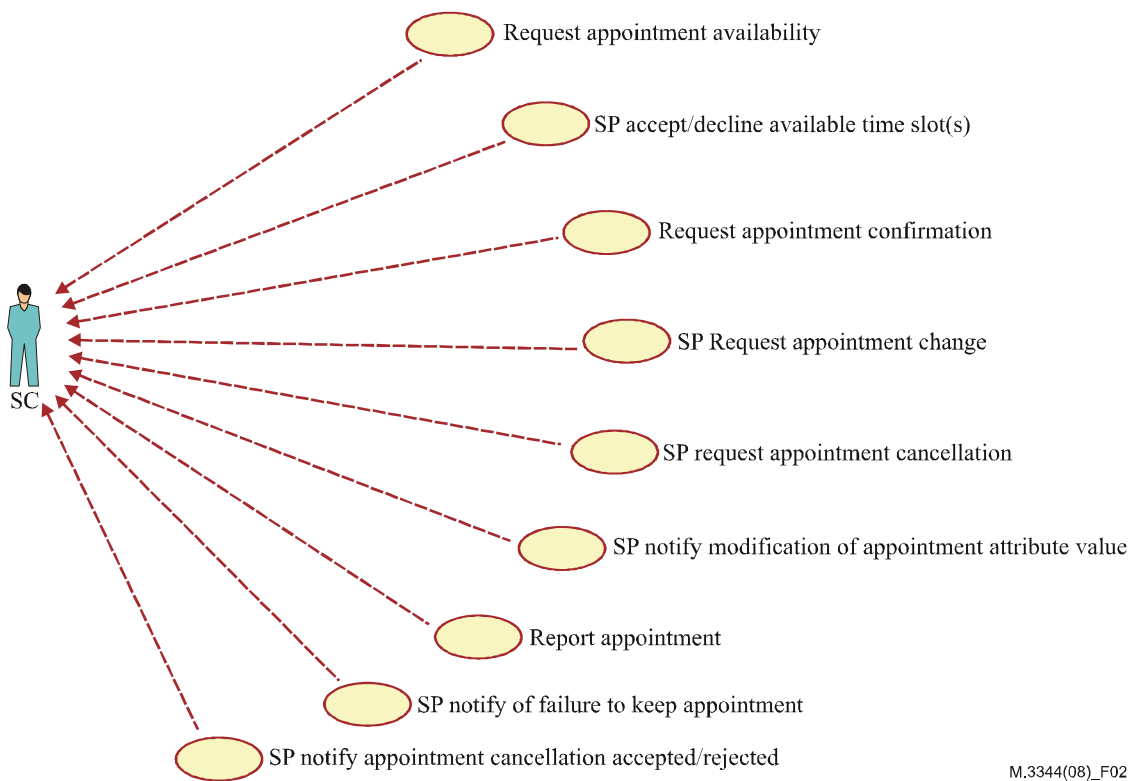
Figure 2 – SP initiated use cases
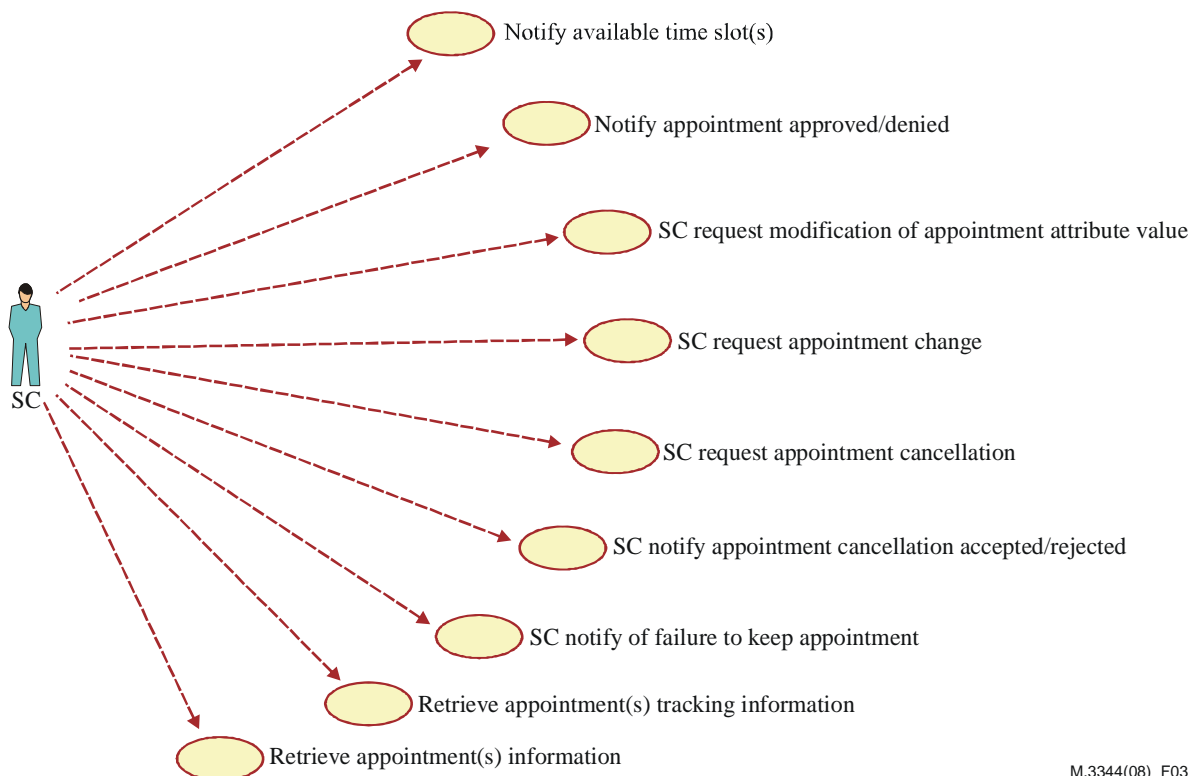
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Figure 3 – SC initiated use cases

7.2.2 Use cases

7.2.2.1 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 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.	
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 customers; a regulatory statute may exist which specifies additional requirements.	
Begins when	The SP needs to schedule or reschedule an appointment.	

Use Case Stage	Evolution/Specification	<<Uses>> Related use
Step 1 (*) (M|O)	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 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 received the request.	
Traceability (*)	REQ-AM-FUN-101, REQ-AM-FUN-202, REQ-AM-FUN-203	

7.2.2.2 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 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|O)	1) (M) The SC accepts or declines the time slot(s) offered by the SP. 2) (O) 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.	
Step n (M|O)		
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	

7.2.2.3 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.	
Actors and Roles (*)	The SC is the consumer of the notification from the SP.	
Telecom resources	Any SC's facility.	
Assumptions	The SP 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|O)	1) (M) The SP accepts or declines the time slots offered by the SC in the notification of available time slots. 2) (O) When the SC offers less time than is actually required for the SP to perform the activity, the SP can invoke the use case "request Appointment availability" to negotiate other time slot(s).	Request Appointment availability
Step n (M|O)		
Ends when (*)	The notification is emitted by the SP.	
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 Appointment availability if the SP sent a request Appointment availability to the SC.	
Traceability (*)	REQ-AM-FUN-103	

7.2.2.4 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.	
Begins when	The SP selects the appropriate time slots.	
Step 1 (*) (M|O)	1) (M) The SP initiates a request to the SC for appointment confirmation. All the Appointment time slots should be indicated in the request.	

Use Case Stage	Evolution/Specification	<<Uses>> Related use
Step n (M|O)		
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	

7.2.2.5 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 the approving of or denying of 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 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|O)	(M) The SC accepts or denies each time slot indicated in the request.	
Step n (M|O)		
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 "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	

7.2.2.6 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|O)	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.	
Step n (M|O)		
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	

7.2.2.7 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.	

Use Case Stage	Evolution/Specification	<<Uses>> Related use
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.	
Step 1 (*) (M|O)	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.	
Step n (M|O)		
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	

7.2.2.8　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|O)	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 "request Appointment availability" to reschedule the appointment.	Request Appointment availability
Step n (M|O)		

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. – 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	

7.2.2.9 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|O)	(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.	
Step n (M|O)		
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	

7.2.2.10 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|O)	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.).	
Step n (M|O)		
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	

7.2.2.11 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.	

Use Case Stage	Evolution/Specification	<<Uses>> Related use
Step 1 (*) (M|O)	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.).	
Step n (M|O)		
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	

7.2.2.12 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 received a request for cancelling an appointment from the SP.	
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|O)	1) (M) The SC accepts or rejects the request for cancelling an appointment. The Appointment ID should be specified in the notification.	
Step n (M|O)		
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	

7.2.2.13 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 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|O)	1) (M) The SP accepts or rejects the request cancelling an appointment. The Appointment ID should be specified in the notification.	
Step n (M|O)		
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 received the notification.	
Traceability (*)	REQ-AM-FUN-402	

7.2.2.14 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|O)	1) (M) The SC shall specify certain parameters as part of the notification (e.g., ID of the appointment, locations, times, etc.).	
Step n (M|O)		

Use Case Stage	Evolution/Specification	<<Uses>> Related use
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	

7.2.2.15 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|O)	1) (M) The SP shall specify certain parameters as part of the notification (e.g., ID of the appointment, locations, times, etc.).	
Step n (M|O)		
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	

7.2.2.16 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.	

Use Case Stage	Evolution/Specification	<<Uses>> Related use
Begins when	The SP submits an appointment report.	
Step 1 (*) (M|O)	1) (M) The SP reports appointment information (e.g., activities carried out, actual duration, keep or fail, etc.).	
Step n (M|O)		
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	

7.2.2.17 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		
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 get detailed tracking information of the specific appointments.	
Step 1 (*) (M|O)	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.	
Step n (M|O)		
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 received the complete information list of the requested appointments.	
Traceability (*)	REQ-AM-FUN-602	

7.2.2.18 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		
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 get information of the specific appointments.	
Step 1 (*) (M|O)	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.	Reference to a used use case.
Step n (M|O)		
Ends when (*)	The SP returns the list of appointments to complete the information.	
Exceptions	– A network problem exists. – Incorrect filter definition. – Invalid parameters.	
Post-conditions	The SC received the complete information list of the requested appointments.	
Traceability (*)	REQ-AM-FUN-601	

8 Analysis

For further study.

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