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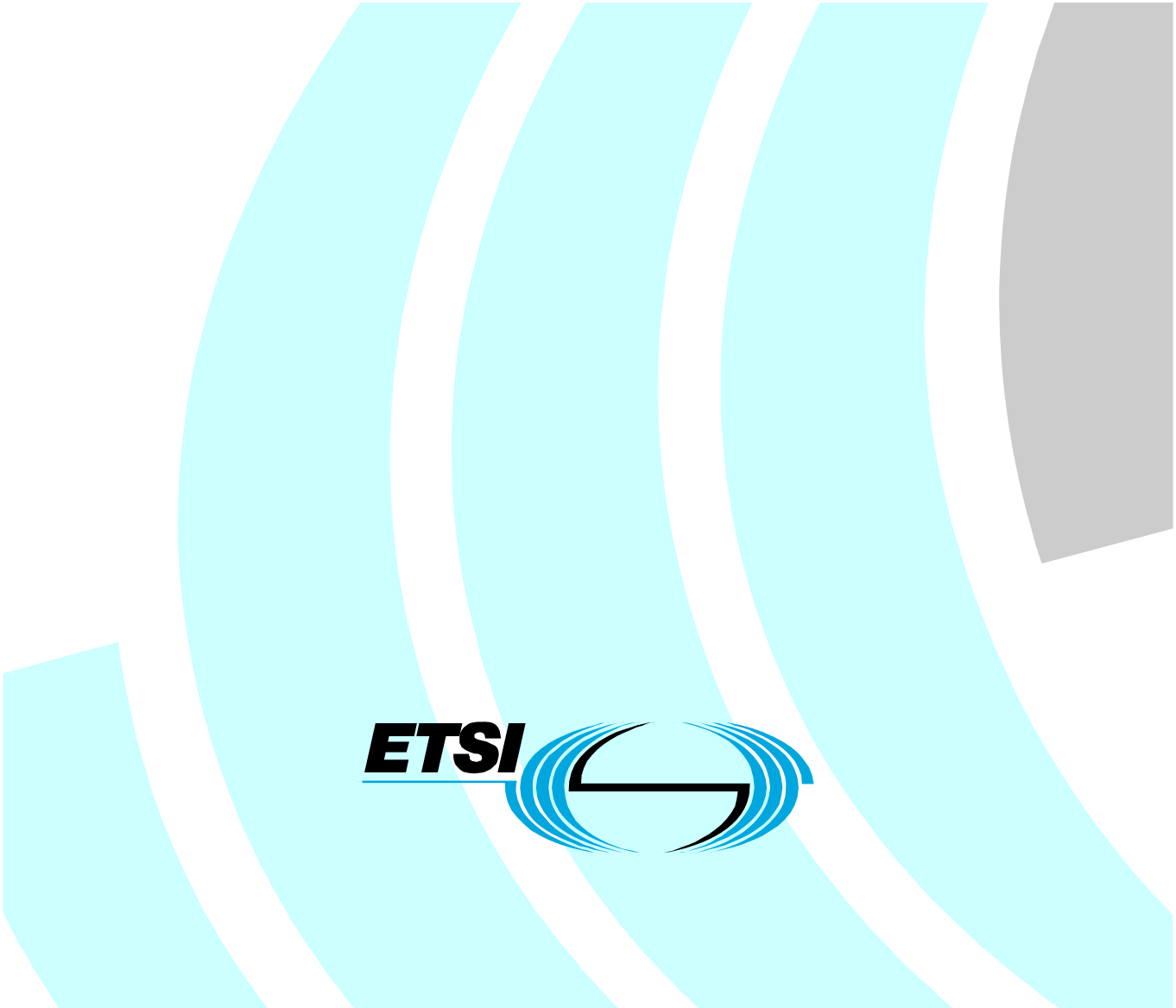
Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Subscription Management; Part 1: Requirements



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Contents

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

Introduction

The focus of the present document is on Subscription Management (SuM) which is necessary to allow Service Providers and Operators to offer and deliver NGN services to their subscribers.

SuM is a key feature that allows service providers and operators to provision their TISPAN NGN network entities with the data necessary for delivering services for a specific subscriber. Moreover, it also allows subscribers to configure their services when they have these capabilities.

For the services, business aspects such as duration of a subscription, number of times accessing the service, or pricing/payment are not of concern for SuM as specified in the present document, and SuM covers management of services irrespectively of such aspects.

SuM aligns with a subset of the eTOM fulfilment process. SuM is concerned with the definition of all the mechanisms and information needed to efficiently and flexibly configure the TISPAN NGN network with the appropriate data needed for a specific subscriber.

SuM is a telecommunications management framework that allows the service providers to leverage their network resources to:

- Validate (register, authenticate and authorize) a request for service from a user.
- Collect, store, update and distribute the Service Profile information for the user.
- Select the trusted network resources to manage access, distribution and control of the profile data information for the user.
- Direct the network resources to promptly deliver the service requested to the user according to said profile information.

Subscription Management (SuM) fulfils the following essential TISPAN NGN requirements:

- The **"User equipment Diversity"** allows the users to access their TISPAN NGN services by a variety of UEs.
- The **"Service Diversity"** allows the users to access TISPAN NGN services provided by service providers or third party application server providers.
- The "**Access Diversity**" allows the users to access their TISPAN NGN services over a wide variety of network access such as xDSL, WLAN, GPRS, etc.
- **Nomadism:** allows the users to access their TISPAN NGN services in multiple nomadism scenarios.

1 Scope

The purpose of the present document is the definition of the necessary requirements for the Subscription Management (SuM) which is paramount for the NGN service delivery within TISPAN NGN.

The present document contains the specification of the requirements for the following:

- An end-to-end information model to cover all the mandatory/optional information related to Subscription Management (SuM) that shall be provisioned on the NGN Network.
- A Subscription Management (SuM) functional architecture which hides the complexity of the different functional entities to be configured including the CPE and the AS.

The requirements described in the present document including the defined information model are done according to the specifications of TISPAN R2.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
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  - for informative references.

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NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

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

[1] ETSI TS 123 008: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Organization of subscriber data (3GPP TS 23.008 version 8.6.0 Release 8)".

[2] ETSI TS 129 228: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents (3GPP TS 29.228 version 8.5.0 Release 8)".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area**.** For non-specific references, the latest version of the referenced document (including any amendments) applies.

[i.1] TMF GB921: "Enhanced Telecom Operations MapTM (eTOM), The Business Process Framework for the Information and Communications Services Industry".

[i.2] TMF GB921D: "Enhanced Telecom Operations MapTM (eTOM), The Business Process Framework for the Information and Communications Services Industry, Addendum D".

[i.3] ETSI TS 132 172: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Telecommunication management; Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS) (3GPP TS 32.172 version 8.0.0 Release 8)".

[i.4] ITU-T Recommendation M.3020: "Management interface specification methodology".

[i.5] 3GPP TR 32.803: "Telecommunication management; Process guide; Use cases in Unified Modelling Language (UML)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

offered service: service offered by the Service Provider to the market

service profile: collection of service and user related data as defined in TS 129 228 [2]

service provider: entity that offers services to subscribers

NOTE: The exact terms, their definition and use within the present document may be modified as a result of the development of the SuM information model and SuM functional architecture.

static data: data that is not modifiable during a NGN session

subscribed service: service subscribed by the subscriber

subscriber: entity (associated with one or more users) that is engaged in a subscription with a service provider

NOTE: The subscriber is allowed to subscribe and unsubscribe services, to register a user or a list of users authorized to use these services and also to set the limits relative to the use that associated users make of these services.

subscription: describes the commercial relationship between the subscriber and the service provider

NOTE: The usage of the word "subscription" in the SuM set of specifications covers traditional subscribed services but also access to services with limitations in such as duration of access, or number of times accessing the service. It includes paid services, pre-paid services and free services.

user: entity that consumes the services subscribed by the subscriber

user "activated and customized" service: service activated and customized by the user

user assigned service: service configured by the subscriber and assigned to the user

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AS	Application Server
CLF	Connectivity session Location and repository Function
CPE	Customer Premises equipment
CRBT	Color Ring Back Tone.
CRM	Customer Relationship Management
DSL	Digital Subscriber Line
eTOM	enhanced Telecom Operation Map

FE	Functional Entity
GPRS	General Packet Radio Service
HSS	Home Subscriber Server
IFC	Initial Filter Criteria
IMS	IP Multimedia Subsystem
IP	Internet Protocol
IT	Information Technology
NACF	Network Access Configuration Function
NASS	Network Attachment Subsystem
NGN	Next Generation Network
NOSI	NGN OSS Service Interface
NRM	Network Resource Model
OSS	Operation and Suport System
P-CSCF	Proxy Call Session Control Function
PDBF	Profile Data Base Function
PSTN	Public Switched Telephony Network
RM&O	Resource Management and Operations
RP	Resource Provisioning
S/P	Supplier/Partner
SCA	Service Configuration and Activation
S-CSCF	Serving Call Session Control Function
SID	Shared Information/Data model
SIP	Session Initiation Protocol
SM&O	Service Management and Operations
SP	Service Provider
SuM	Subscription Management
TMF	TeleManagement Forum
UAAF	User Access Authorization Function
UE	User Equipment
UML	Unified Modelling Language
UPSF	User Profile Server Function
VOD	Video On Demand
VoIP	Voice over IP
WLAN	Wireless Local Area Networks
xDSL	all the Digital Subscribers Loof technologies

4 Subscription Management (SuM) description

4.1 SuM overview

Allowing service providers to deliver, control, monitor and bill services to their subscribers in a timely and correct manner, require the translation of each specific subscription into necessary/optional network data and their provisioning on the appropriate network functionalities such as UPSF, AS, CPE, etc. Subscription Management (SuM) is the feature that realizes the above translation and provisioning artefacts. Moreover, Subscription Management (SuM) must provide means that allow subscribers to configure their services when they have configuration access rights.

Subscription Management (SuM) can be summarized as the framework that offer service providers means for efficient management of all the data related to a specific subscription. This framework is part of the service delivery "processes" used by the service provider to deliver services for subscribers.

The SuM framework is responsible of handling only the data related to the service delivery of a specific subscription. Moreover, as depicted in figure 1, data provisioned thanks to the Subscription Management (SuM) framework can also be used in other processes such as monitoring, billing, etc.

Subscription Management (SuM) framework, as shown in figure 1, involves the following entities:

- Service provider: offers a set of services.

- Subscriber: may subscribe to one ore more services. The service provide will have then to manage the corresponding subscription by provisioning the necessary data and giving the following rights to the subscriber:
  - To become a user by using the services.
  - Give rights to its users, who will be then linked (or associated) to this subscription.
- User: use the authorized services.
- Services

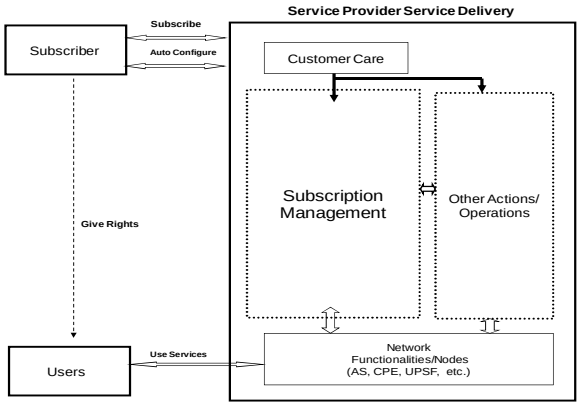

Figure 1: Subscription Management Overview

Subscription Management (SuM) aligns with subset of the eTOM fulfilment process, in particular the customer relationship management process, the service management and operations process and the resource management and operation process.

4.2 SuM and eTOM fulfilment process

Subscription Management (SuM) can be viewed as part of the eTOM fulfilment process described in TMF GB921 [i.1].

The eTOM fulfilment process is defined as a vertical end-end process grouping responsible for providing customers with their requested products in a timely and correct manner. It translates the customer's business or personal need into a solution, which can be delivered using the specific products in the enterprise's portfolio. This process informs the customers of the status of their purchase order, ensures completion on time, as well as ensuring a delighted customer.

As shown in figure 2, eTOM fulfilment process is composed of the following process:

- **Selling, marketing fulfilment response and order handling:** these processes are located within the customer relationship management process grouping which is responsible of functionalities necessary for the acquisition, enhancement and retention of a relationship with a customer. The order handling process is responsible for accepting and issuing orders.
- **Service configuration and activation:** this process is part of the service management and operations processes grouping which provide all the functionalities necessary for the management and operations of communications and information services required by or proposed to customer. The focus of the service management and operations is on service delivery and management as opposed to the management of the underlying network information technology. The service configuration and activation process encompasses the installation and configuration of the service for customers, and support the reconfiguration of the service (either due to customer demand or problem resolution).

- **Resource Provisioning:** this process is part of the resource management and operations process grouping which is responsible of managing all the resources (networks, IT systems, servers, routers, etc.) and delivering services required by or proposed to customers. The focus of the resource management and operations is to ensure that the network and information technologies infrastructure supports the end to end delivery of the required services. The Resource Provisioning process encompasses allocation and configuration of resources to individual customer service instances in order to meet the service requirements.

- **S/P requisition management:** this process is part of the Supplier/Partner (S/P) relationship management process grouping which enable the direct interface with the appropriate lifecycle, end-to-end customer operations or functional processes with supplier and/or partners. The S/P requisition management process manage requisitions with partners/suppliers to ensure on-time and correct delivery of the S/P product or service requested by the enterprise.

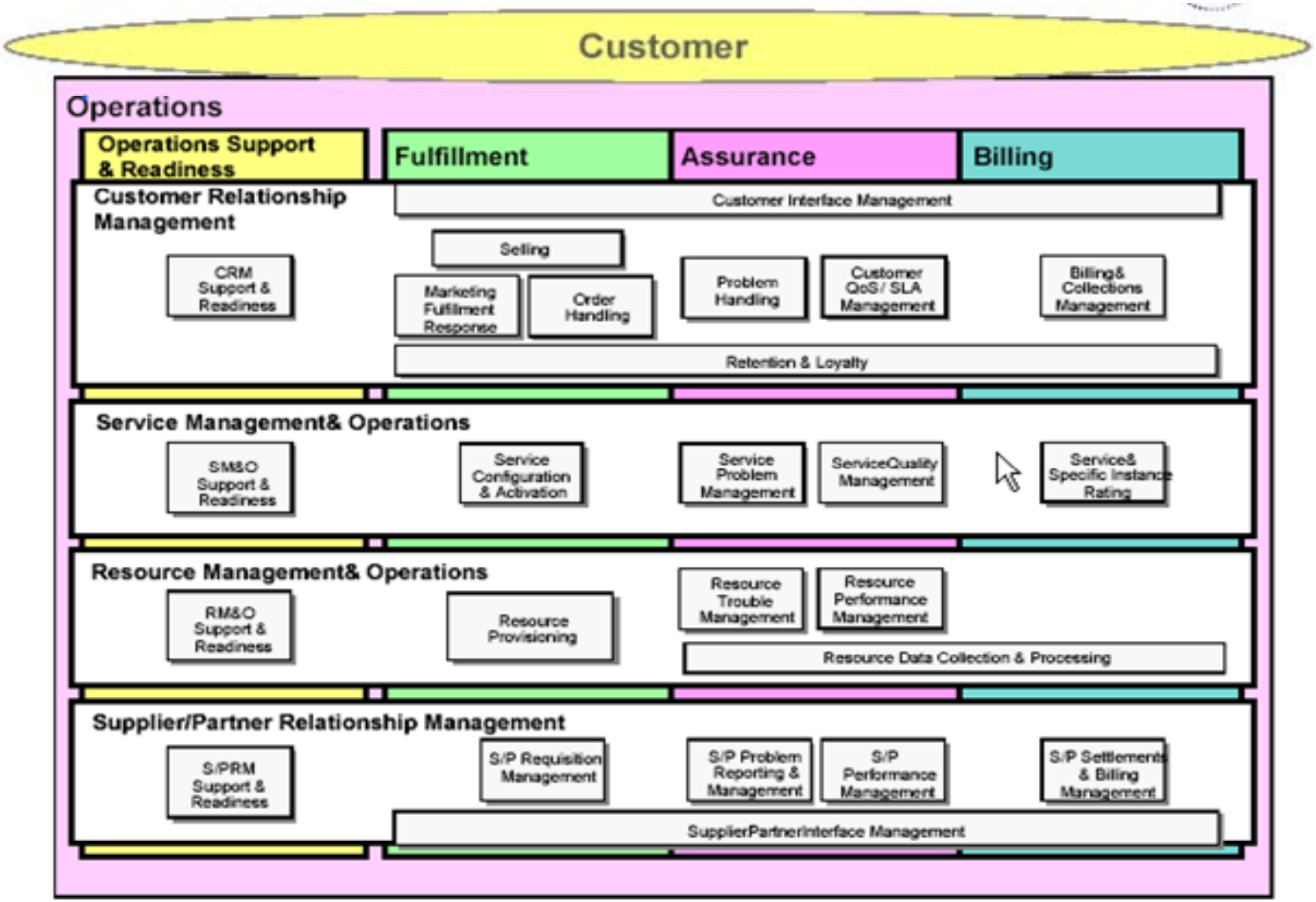

Figure 2: eTOM Operations Processes

SuM feature is the part of the fulfilment process which is responsible of handling and installing the data related to specific subscription.

Within the eTOM fulfilment process, SuM addresses the following eTOM processes:

- Service configuration and activation.
- Resource provisioning.

The service configuration and activation part of SuM ensures the translation of the subscription into network information that are independent from the underlying network technology.

The Resource Provisioning part of SuM ensures the configuration of the network information received from the service configuration and activation. This configuration is done by mapping the network information into the appropriate network data according to the deployed network technology.

The following table shows the relationship between eTOM fulfilment process and Subscription Management (SuM), in particular the eTOM level 3 processes applicable to this SuM release.

Table 1: Subscription management in ETOM fulfilment processes

eTOM fulfilment Processes	**eTOM level 2 processes** (TMFGB921D [i.2] Process identifier)	**Applicable to SuM**	**eTOM level 3 processes applicable to this SuM release** (TMF GB921D [i.2] Process identifier)
CRM Fulfilment	Order handling	**No**	
	Marketing fulfilment response	**No**	
	Selling	**No**	
SM&O	Service configuration and activation (1.F.2.2)	**Yes**	Implement, configure and activate service (1.F.2.2.4)
RM&O	Resource Provisioning (1.F.3.2)	**Yes**	Configure and activate resource (1.F.3.2.2)
S/P relationship management	S/P requisition management	**No**	

As a result of table 1, the eTOM fulfilment processes involved in Subscription Management (SuM) can be shown as follows.

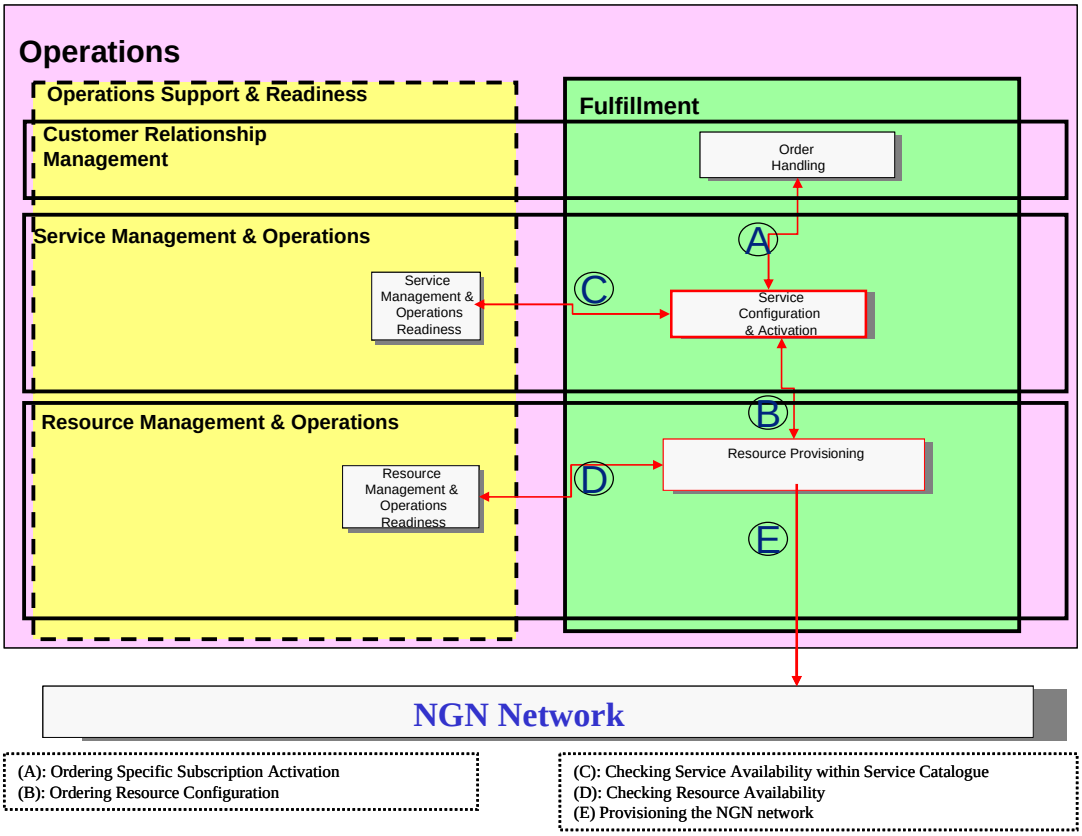

Figure 3: eTOM Processes involved in SuM

5 SuM value chain model

5.1 Introduction

The Subscription Management (SuM) value chain model concerns the definition of high level use case in the context of Subscription Management (SuM), which allows the development of a broad overview. The high level use case is depicted in figure 4.

It is required to have a description for each use case within the present document. Such descriptions will utilize the "use case" templates described in 3GPP TR 32.803 [i.5].

Additionally, some example scenarios of TISPAN Subscription Management (SuM) are given in annex A.

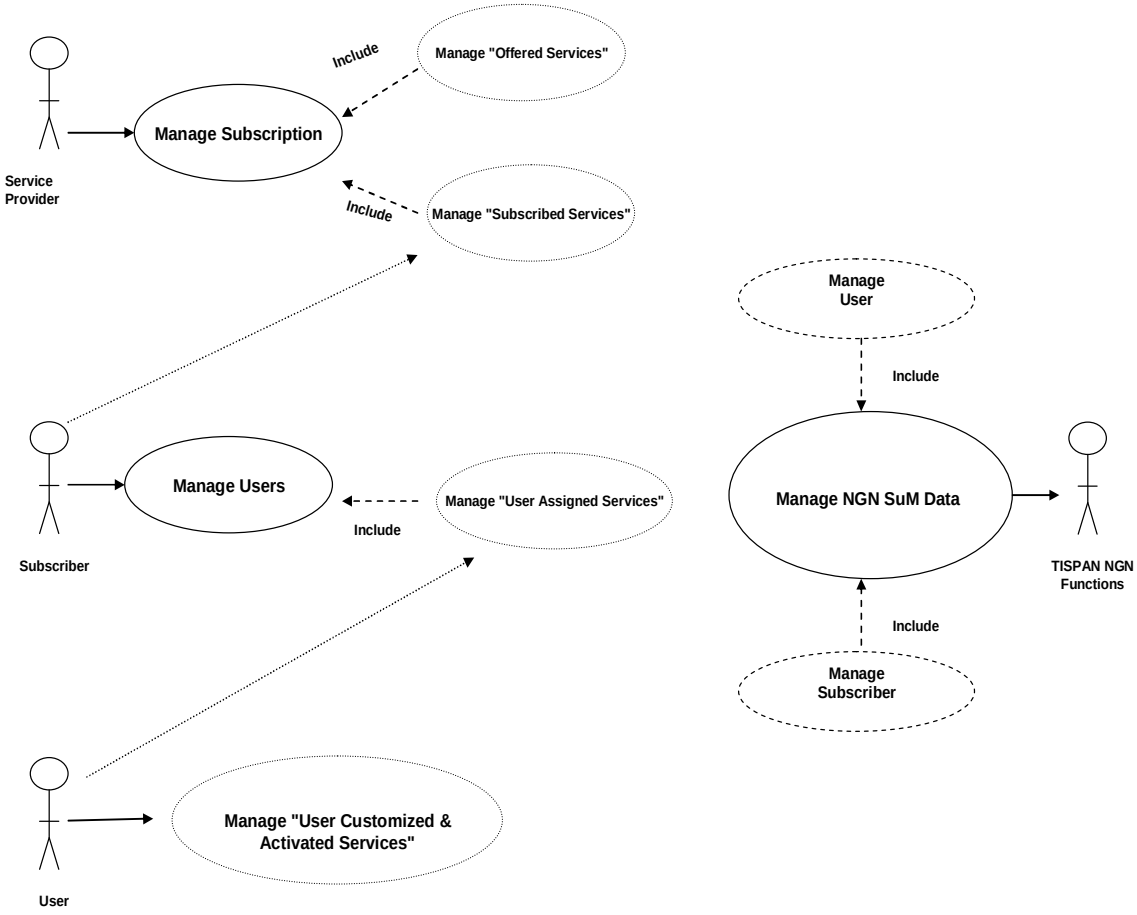

Figure 4: High level use case diagram

The high level use case diagram comprises the following use cases:

- **Manage subscription:** this use case is related to the management of a subscription of a specific subscriber. This use case includes the management of the "offered services" and of the "subscribed services" use cases. This two uses cases can be defined as follows:
  - **Manage offered services:** refers to the management of the services offered by the service provider to the market and is part of the manage subscription use case. The management of the offered services by the service provider is out of the scope of the current release of Subscription Management (SuM).
  - **Manage subscribed services:** refers to the management of the services subscribed by a subscriber within a subscription and is part of the manage subscription use case.
- **Manage user:** concerns the management of the users associated to a subscriber. This use case includes the use cases related to the management of the services assigned by the subscriber to its users.
  - **Manage user assigned services:** refers to the management of the services that are assigned by a subscriber to a given user and is part of the manage users use case. This consists in the assignment and the association of specific rights (e.g. activation/deactivation, customization, etc.) of some or all of the subscribed services to the user.
- **Manage user customized and activated services:** referes to the management of the services that are assigned to the user by activating them or not and customizing them or not according to the rights given by the subscriber. This use case is part of the "manage its assigned services" use case.
- **Manage NGN SuM data:** this use case refers to the management of the subscribers and their users' data within the NGN functional entities.

Within the high level use case diagram, four kinds of services are highlighted. The transition from one service to another is depicted in figure 5.

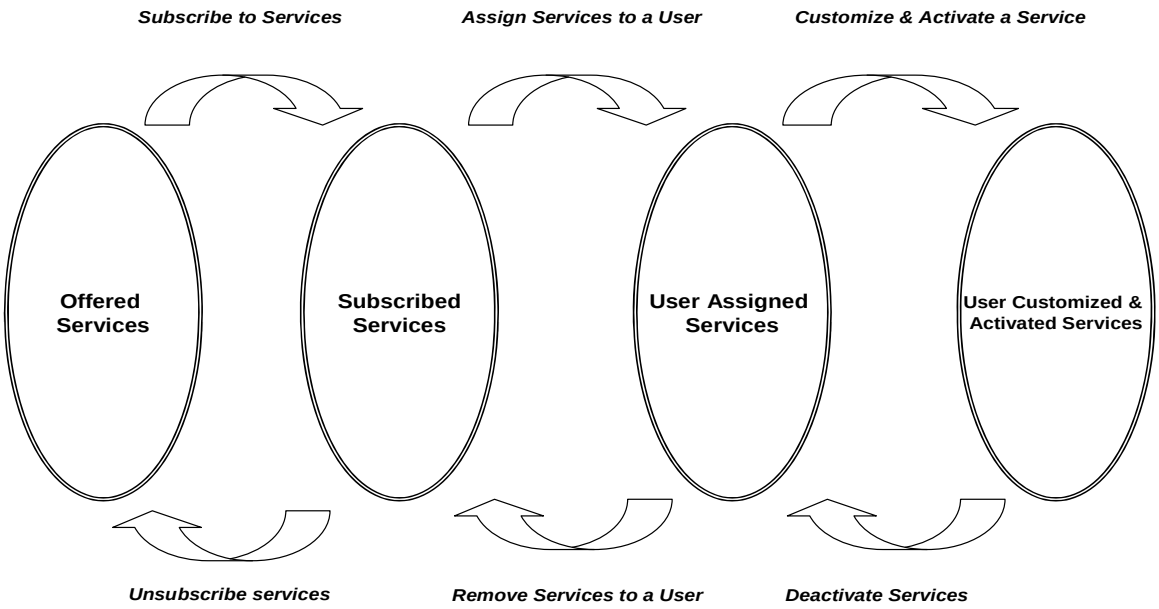

Figure 5: Services State Transition

5.2 Manage subscription use cases

The manage subscription use case is an abstract use case. It includes all more concrete use cases listed below:

- **Create subscription:** this use case allows the service provider to create a new subscription.
- **Delete subscription:** this use case allows the service provider to delete an existing subscription.
- **Update subscription:** this use case allows the service provider or the subscriber to modify subscription (e.g. add new services). Some of the information can be updated only by the service provider.
- **Read subscription:** this use case allows the service provider or subscriber to get all information related to a/his specific subscription.

In addition to the precedent use cases, the "manage subscription" includes also abstract "manage subscribed services" which contain the following concrete use cases:

- **Add service:** this use case allows the service provider to add a new service to a specific subscription. Once this service is added, it is part of the subscribed services.
- **Subscribe to service:** this use case allows a subscriber to subscribe to a new service offered by the service provider.
- **Unsubscribe a service:** this use case allows a subscriber to unsubscribe a subscribed service.
- **Configure subscribed service:** this use case allows the service provider or a subscriber to configure or reconfigure a subscribed service. Part of the information is only modifiable by the service provider only.
- **Remove subscribed service:** this use case allows the service provider to remove a subscribed service from a subscription.
- **Read subscribed service:** this use case allows the service provider or the subscriber to get all information related to a/his subscribed service.

5.3 Manage users use cases

The manage users use case is an abstract use case. It includes the following concrete use cases:

- **Create user:** allows the subscriber to add a new user to his subscription.
- **Delete user:** allows the subscriber to delete a user from his subscription.
- **Update user:** allows the subscriber to (re)configure a user. It may also allows the user to (re)configure itself. Part of the configuration information is only modifiable by the subscriber.
- **Read user:** this use case allows the subscriber or user to get all information related to a/his user.

In addition to the precedent use cases, the "manage users" use case includes also abstract "manage user assigned services" which contain the following concrete use cases:

- **Assign service:** allows the subscriber to assign a service to a user and to specify the associated rights (e.g. customization, activation/deactivation, etc.)
- **Update service:** this use case allows the subscriber to (re)configure an assigned service.
- **Delete assigned service:** allows the subscriber to delete an assigned service from a user.
- **Read service:** allows the subscriber or user to get information on a specific service (e.g. active or no).

5.4 Manage "user customized and activated services" use cases

The "manage user customized and activated services" is an abstract use case which includes the following concrete use case:

- **Activate service:** allows the user to activate a specific service.
- **Update service:** allows the user to (re)configure an activated service (e.g. set the phone number for the call forwarding service).
- **Deactivate a service:** allows the user to deactivate a service.

5.5 "Manage NGN SuM data" use cases

The "manage NGN SuM data" is an abstract use case which includes the following concrete use case:

- **Install subscriber:** allows the installation of a new subscriber.
- **Update subscriber:** allows the (re)configuration of a subscriber.
- **Delete subscriber:** delete a subscriber.
- **Read subscriber:** get the information related to a subscriber.
- **Install user:** allows the installation of a user with its associated services.
- **Update user:** allows the (re)configuration of a user.
- **Delete user:** allows deleting a user.
- **Read user:** get the information related to a service of a user.

6 SuM high level requirements

6.1 Introduction

As described before, Subscription Management (SuM) is related to all the artefacts needed by service providers to provision their network with the data related to a specific subscription. Furthermore, these artefacts must allow subscribers to configure their services if they have configuration access rights.

Subscription Management (SuM) must define the following:

- An end-to-end information model to cover all the mandatory/optional information related to Subscription Management (SuM) that must be provisioned in the NGN Network.
- A Subscription Management (SuM) functional architecture which hides the complexity of the different functional entities to be configured including the CPE and the AS.

For the end-to-end information model, the objectives are to describe the concepts (data, attributes and relations) necessary for the provisioning of services for a specific subscriber. The provisioned data can be either static or dynamic, but only static data are covered within the present document. Static data are permanent or semi-permanent data. Typically static data are provisioned during the process of service and network resources configuration and are non modifiable during a NGN session. Dynamic data are characterized by frequent changes. For example, the IP address allocated to an equipment in the access network is a dynamic data because it is allocated for a given lifetime.

Regarding the Subscription Management (SuM) functional architecture, the focus will be on designing a functional architecture that offers service providers and operators means for a simple, flexible and efficient subscription data repartition in the TISPAN NGN network entities.

6.2 Requirements on information model

The purposes of specifying a SuM information model is to capture all the information needed for the management of a specific subscription. This information concerns network access identification and credential, user/subscriber identification, service identifications and credentials.

Within the current release of the document, SuM shall handle the following information parts:

- Information that need to be provisioned by Resource Provisioning process on the NGN functional entities;
- Information exchanged between service configuration and activation and Resource Provisioning process.

Other information is out of the scope of the current release.

R1) The SuM information model shall be flexible in way that adding new information can be achieved easily and without modifications to the existing information and relationships.

R2) The SuM information model terminology shall be in line with all the IMS information model terminology and SuM model relationships must be in line with IMS model relationships defined by (TS 123 008 [1].

R3) The SuM Information Model shall be connected to an existing "model infrastructure".

NOTE: Examples of "model infrastructure" are, but not limited to, the TMF shared information/data model (SID), UML, etc.

R4) The SuM information model shall model the ability to grant different configuration rights for service usage to different users.

R5) All key concepts and entities must be referred by a use case.

R6) The 3GPP SuM NRM model in TS 132 172 [i.3] should be re-used as much as possible.

R7) The SuM information model shall represent/model all the management entities justified either by the existence of a use case or a specific technical analysis.

R8) For each management entity of the Subscription Management (SuM) information model, a clear definition must exist.

R9) Relationships and cardinality between the SuM information model management entities must be well justified based on the TISPAN specifications (stage 1, stage 2 and stage 3 standards).

R10) The provider of the NGN Services (e.g. 3rd party service provider) can be different from the provider of the NGN service resources and NGN transport resources.

R11) The provider of the NGN service resources can be different from the provider of the NGN transport resources.

R12) In the SuM information model, it should be allowed to define shared data common to a large set of users or subscribers (a justification of this requirement is given in clause C.1).

R13) The SuM info model, when defining the relations between information entities, should take into account that information entities could belong to different systems or domains (e.g. a provisioning domain and a business domain) and should accordingly use appropriate relationships between information object classes and appropriate naming of objects.

6.3 Requirements on functional architecture

The purpose of the SuM functional architecture is the design of the NOSIs needed for management of a specific subscriber, user, service profile and user services.

The SuM functional architecture shall deliver the necessary NOSIs for the Resource Provisioning and service activation processes.

R1) The SuM functional architecture shall hide the complexity of the different functional entities to be configured including the CPE and the AS.

R2) The SuM functional architecture shall allow management of necessary/optional data, operations and notifications related to Subscription Management (SuM).

R3) The SuM functional architecture shall be easily extensible for the support of new operations, data and notifications.

R4) The SuM functional architecture shall define the NGN OSS service interfaces for the realization of the following processes:

- SM&O service configuration and activation process.
- RM&O Resource Provisioning process.

R5) The NOSIs related to service configuration and activation shall be network technology agnostic without any knowledge of the NGN functional entities that are involved.

R6) The NOSIs related to Resource Provisioning are responsible of NGN functional entities (including CPE and AS) management and shall hide the complexity of the different NGN functional entities to the NOSIs related to service configuration and activation.

R7) The NOSIs related to service configuration and activation shall manage the configuration of new subscription and support of the reconfiguration of installed subscription (either due to customer demand or problem resolution).

R8) The SuM functional architecture shall comply with the eTOM operation regarding fulfilment as described in clause 4.2 with the following processes:

- Order handling.
- Service configuration and activation.
- Resource provisioning.

R9) The SuM functional architecture should consider reuse as much as possible of 3GPP existing standards.

R10) The NOSIs, in their operations on subscription data for a user or a subscriber, should be able to refer to shared data common to a large set of users or subscribers (a justification of this requirement is given in clause C.1).

6.4 Requirements on TISPAN NGN functional entities

The master NGN functional entities where subscription data are stored are the following:

- UPSF: holds service-level user related information.
- AS: contains SuM relevant data for value-added services.
- CLF: contain user accesses network information.
- NACF.
- PDBF: contains user authentication data (user identity, list of supported authentication methods, key materials, etc.) and information related to the required network access configuration: these data are called "user network profile".
- CPE.

The SuM framework shall allow the creation, read, update and deletion of subscription data within the above entities.

Within the SuM functional architecture, specific management entities may be defined for the purpose of efficient management of the TISPAN NGN.

NOTE: Other NGN functional entities may, for performance or other issues, receive/retrieve some data related to user subscriptions from the above mentioned "master" functional entities and cache them locally.

6.5 Security requirements

R1) The SuM solution shall comply with specific local, national and regional security regulations.

R2) Subscription data shall be safeguarded against unapproved disclosure or usage.

R3) Access to SuM data shall only be permitted in an authorized and secure manner.

R4) Secure mechanisms shall be available for the transfer of SuM data to, from or between authorized entities. The secure mechanisms to be applied shall be appropriate to the level of confidentiality of the data, the endpoints of the transfer and the routes that are available for the transfer of the data.

R5) Audit records should be maintained for all SuM transactions to facilitate resolution of security violations.

Annex A (informative): Example scenarios of TISPAN SuM

This informative annex contains example scenarios of TISPAN Subscription Management (SuM).

A.1 Example 1

The following figure gives a view of the relationship between the service provider, subscriber and users, according to the definitions in clause 3.1.

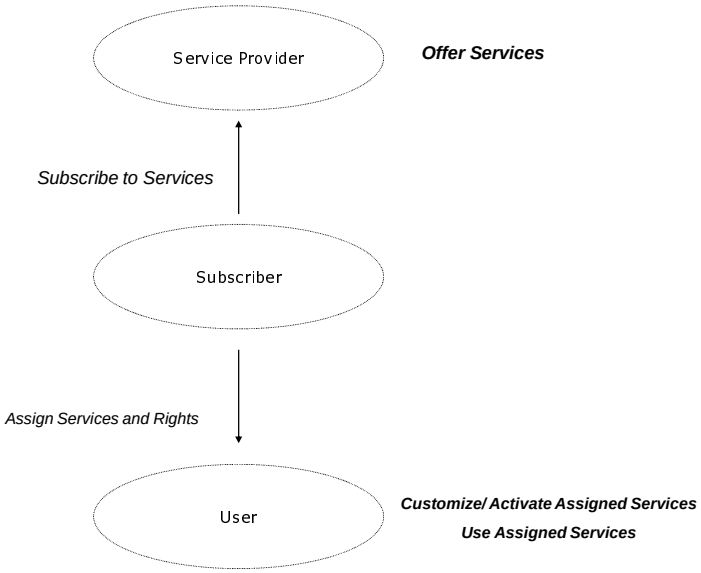

Figure A.1: Relation between services and subscriber/user/service provider

The following example gives a concrete scenario depicting the relationship between a service provider, subscriber and users.

A Service Provider (SP) offers the following network accesses:

- xDSL.
- GPRS.
- WLAN.

SP offers the following services which can be used over the above network accesses:

- Voice.
- TV.
- Internet access.
- Video On Demand.

In addition to these services, service provider "A" provides the following supplementary services for the voice service:

- Call forwarding.
- CRBT (Color Ring Back Tone).

The Subscriber David, subscribe to the following:

- XDSL and GPRS network accesses.
- Voice with call forwarding and CRBT supplementary services.

David creates the following 3 users with their assigned services and associated right:

- David: Voice with CRBT and call forwarding.
  - This service can be used in the subscribed network accesses.
- David Wife: Voice with CRBT and call forwarding.
  - Call forwarding can not be activated towards mobile phone.
  - Service can be used only in xDSL access.
- David Son: Voice with no supplementary services.
  - Service can be used only on xDSL access.

A.2 Example 2

The following examples are related to the users diversity within TISPAN NGN, depicts some scenarios that are possible within TISPAN NGN and thus supported by TISPAN SUM:

- One subscriber, having only one user. This user has one fixed terminal (SIP phone) connected on a DSL access.
- One subscriber having only one user. This user has several fixed terminals on a DSL access: as an example 2 Pots connected behind a residential gateway plus a SIP Visio Phone on his personal computer.
- The family case with a head of family as subscriber, with several users that are anonymous, with several Pots connected behind a residential gateway, all used in a shared way.
- The family case with a head of family as subscriber, with several users, with several Phone sets behind the same residential gateway with two in a shared way (e.g. in the living room and in the kitchen), with one dedicated to the teenager in its room and one dedicated to parents in their bedroom. There is a family phone number and also a personal number for each family member.

Annex B (informative): Description of TISPAN SuM Use Cases

B.1 Use Case Assign Service within ManageUserAssignedServices

This use case is referenced in clause 5.3. It refers to another use case describing Resource Provisioning of services (clause B.2). It covers the process of assigning service to user.

NOTE: the template used is the one recommended by 3GPP and ITU-T Recommendation M.3020 [i.4].

Table B.1: Use case Assign Service

Use case stage	Evolution/Specification	<<Uses>> related use
Goal	A subscriber wants to assign a subscribed service to a user. The subscriber also allocates certain service options (within the perimeter of the subscribed service) to this user including certain rights. When use case ended, the user can use the service. An example of such a use case is a VoIP IMS based service subscribed by a residential subscriber (head of a family) to one user of the family (e.g. a child). The subscriber use a self care system (web portal) to express its choice. NOTE: Use case currently limited to one user.	
Actors and roles	The actor is the subscriber. NOTE: Service provider administrator or User are not actors of this use case.	
Telecom resources	Service configuration process resource.	
Assumptions	The subscribed service exists (e.g. VoIP) (it is handled by another use case ManageSubscribedServices). The user exists. The access part (NASS) has already been configured (it is handled by another usecase).	
Pre conditions	The subscribed service has not been yet assigned to the user (e.g. the child).	
Begins when	The subscriber decides to assign a service to a user (e.g. via a selfcare).	
Step 1	The subscriber selects a subscribed service and a user.	
Step 2	There is a check that the maximum number of users for the subscribed service is not reached. NOTE: This step is given as an example of the check that could be done before assigning a Service to a user, but it is optional.	
Step 3	The subscriber selects options of the service allocated to the user (e.g. international calls barred, plus call forwarding) and validates his choice. NOTE 1: 1) The forwarded destination is left to the user choice (cf. user preference use case), here is only decided that the user can use the call forwarding. 2) If no selection, default options can be used. NOTE 2: Step 3 can be merged with step 1.	

Use case stage	Evolution/Specification	<<Uses>> related use
Step 4	The concerned SCA process invokes a use case describing Resource Provisioning of services. From subscribed service and user info and selections chosen by the subscriber, the SCA process supplies the relevant service information as inputs to the Resource Provisioning use case.	A use case describing Resource provisioning of services (see clause B.2)
Step 5	The Resource Provisioning use case acknowledges the proper execution to the SCA process.	
Ends when	The SCA process acknowledges the proper execution to the subscriber (e.g. via selfcare). The user can now use the service.	
Exceptions	To be completed.	
Post conditions	The different user Service Profiles have been provisioned in the concerned NGN FEs.	
Traceability	To be defined.	

B.2 Use Case Resource Provisioning of Services

This use case describes the Resource provisioning of services to a user. This use case refers to another use case for user data provisioning in the NGN FE (identified as Managed Data use case in SuM requirements specification).

Table B.2: Use case Resource Provisioning of Services

Use Case Stage	Evolution/Specification	<<Uses>> Related use
Goal	An actor wants to provision service data attached to a user in the network and address a Resource Provisioning process to do it. The actor will supply service level information. The Resource Provisioning process will identify the concerned network entities to provision, add other relevant resource information and execute the provisioning.	
Actors and roles	The actor is generally a service configuration and activation process acting on behalf of the subscriber.	
Telecom resources	Resource provisioning process resource, concerned NGN FES (e.g. UPSF and an AS).	
Assumptions	Subscriber, subscription with subscribed services, user exist.	
Pre conditions	The service has not been yet assigned/configured to the user.	
Begins when	The subscriber or the actor representing him has decided to assign the service to a user (e.g. via a selfcare) and has defined the necessary service information.	
Step 1	The subscriber or the actor representing him supplies the user identity, the relevant service information to a Resource Provisioning process.	

Use Case Stage	Evolution/Specification	<<Uses>> Related use
Step 2	The Resource Provisioning (RP) process identifies the user profiles to be provisioned. In the example chosen, the Resource Provisioning process will: create a IMS Service profile for this user (e.g. for a VoIP Service); create additional application Service Profiles (e.g. for supplementary phone services). NOTE 1: Here is described a RP use case grouping creation of several Service Profiles, but another approach would be to have 2 separate similar RP use case: - one to create a IMS Service Profile; - one to create an Application Service Profile. NOTE 2: When assigning a new service over IMS to a user, it may happen that the user already has a IMS Service Profile (for other IMS services), so the RP process will have to update (and not) create the IMS Service Profile (e.g. to add new IFCs) and to create an application profile associated to the service.	
Step 5	From the Service level information received and its own resource knowledge, the RP Process defines the data content of the user profiles. To note that some Service level info can be transferred without change into the provisioned user profiles. The RP process identifies the concerned NGN FEs instances to be populated with the user Service Profiles.	
Step 6	The RP process supplies the concerned NGN FEs (e.g. UPSF and an AS) with the relevant user Service Profiles (e.g. IMS Service Profiles and AS Service Profiles). In doing so, the RP process takes care if it is a creation of new Service Profiles or update of existing Service Profiles.	Use case Managed data
Step 8	The different NGN FES acknowledge the proper execution of user Service Profile provisioning to the RP process.	
Step 9	The RP process performs data population in all concerned NGN FEs. If an exception occurs, it ensures information integrity.	
Ends when	The RP process acknowledges the proper execution to the Subscriber or the Actor representing him.	
Exceptions	To be completed.	
Post conditions	The different user Service Profiles have been provisioned in the concerned NGN FEs. The user can now use the service.	
Traceability	To be defined.	

Annex C (informative): Requirement justifications

This annex presents additional justification of a certain number of requirements listed in clause 6.

C.1 Requirement justification for Shared data common to a large set of users or subscribers

This clause brings a justification of clause 6.2, bullet R12 requirement and clause 6.3, bullet R10 requirement concerning shared data common to a large set of users/subscribers.

User profiles contain data that are specific to a user (e.g. its identity) are individually provisioned, but many of these data are in fact common to large sets of users. An optimization of the user data management is to group such data in shared information entities and to use references to these entities in the user profiles.

Following examples illustrate the interest of this requirement:

EXAMPLE 1: Charging information

In the IMS Service Profile, several attributes define Charging addresses. In practical there are the same for thousands and thousands users. So only a few sets of charging addresses can be defined and only a reference to a shared data entity grouping this charging information is used in the provisioning related to a user. An important interest is if one of the attribute values (e.g. an IP address) is modified, only the shared data entity needs to be modified without requiring to issue thousands requests to individually update each user.

EXAMPLE 2: Service Characteristics

At Service Configuration level, many technical characteristics needed when configuring a service to a user do not need to be listed in detail at a NOSI interface for each user. A reference to a particular shared data entity containing relevant attributes and values is sufficient. For a given service, we may have several instances of shared data (of same set or different sets of attributes/classes): one can define shared data for a basic usage and other shared data for an enhanced usage. In addition to the interest described in example 1 for common updates, this approach also allows to mask certain attributes to the Service layer process that only deals with service characteristics, allowing him to choose the right shared data.

EXAMPLE 3: Visited Networks

It concerns the list of Visited networks that is described in TS 132 172 [i.3] as a list of attributes in the IMSServiceProfile IOC.

In practice operator defines roaming zones, each containing a list of authorized visited networks. The Subscriber subscribe to one or more roaming zones. This information about visited networks is transmitted through the SCA NOSI then to the RP NOSI and finally through the NGN FE NOSI to the HSS/UPSF.

If no shared data are used, it would mean that at each NOSI level (SCA, RP, NGN FE), the whole list of Visited networks (e.g. those for Asia) should be given in the NOSI data ! Using only a reference to the Asia list is more simple. The evolution of the list of visited networks constitutes an important issue when there is no shared data. For example, when the operator has negotiated a new roaming agreement with an Asian operator, it will then only have to update the Asian Visited networks shared data and not all the individual concerned user profiles.

These examples justifies the clause 6.2, bullet R12 requirement and clause 6.3, bullet R10 requirement, as this functionality may concern the information model and the functional architecture.

Annex D (informative): Bibliography

- ETSI TR 182 005: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Organization of user data".
- ETSI TR 121 905: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Vocabulary for 3GPP Specifications (3GPP TR 21.905; Release 7)".
- ETSI TR 180 000 (V1.1.1): "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); NGN Terminology".
- ETSI TS 132 140: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Telecommunication management; Subscription Management (SuM) requirements (3GPP TS 32.140; 8.0.0 Release 8)".
- ETSI TS 188 001: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); NGN management; Operations Support Systems Architecture".

Annex E (informative): Change history

Change history							
Date	**WG Doc.**	**CR**	**Rev**	**CAT**	**Title/Comment**	**Current Version**	**New Version**
July 2008	18WTD092r2	1	-	B	Requirement for SuM shared data common to a large set of users	2.0.0	3.0.1
July 2008	18WTD093r2	2	-	B	Use case : Assign Service to User	2.0.0	3.0.1
July 2008	18WTD314r1	3	-	D	Removal of MIM reference in SuM requirements spec	2.0.0	3.0.1
Sept 2008	18bTD203r2	4	-	B	Loose coupling associations in SuM infomodel	3.0.1	3.0.2
Sept 2008	18bTD205r1	5	-	B	eTOM processes covered in SuM	3.0.1	3.0.2
Sept 2008	18bTD332r1	6	-	F	Clarification of subscription	3.0.1	3.0.2
					Publication	3.0.2	3.1.1

History

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