

25 - 28 February 2002

Bristol, UK

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3GPP TSG-SA5 (Telecom Management)  
Meeting #25, Sophia Antipolis, France 14 - 18 January 2002

S5-020016

**Title:** Comments on UP-010141 and relationship of GUP to Subscription Management  
**Source:** SA5  
**To:** GUP joint Ad-Hoc, SA1, SA1 GUP, T2, SA2, T2 GUP ad hoc  
**Cc:** SA3, SA4, T3, CN4, CN5  
**Response to:** UP-10129 - Liaison Statement on 3GPP Generic User Profile Stage 1 Release of In-Process Stage 1 Specification to SA1 for Review and Continuing Development

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**Attachments:** 32.140 (v0.5.4) Subscription Management Requirements

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SA5 have reviewed UP-010141 (23.240, v0.3.0, SA2 stage2) with the objective of understanding the progress that has been made at the Cancun meeting and its relationship to the work on Telecom Management, especially User Equipment Management and Subscription Management.

SA5 have been developing a related work item -Subscription Management – and have restructured the documentation subsequent to the Cancun meeting and produced a high level Subscription Management Requirements document TS 32.140 v0.5.4 which is attached.

TS 32.140 v0.5.4 sets out the rationale for Subscription Management and the high level requirements. It has some areas of common requirements with GUP, particularly data components, security and synchronisation.

In the attached document SA5 have addressed the relationships, as SA5 understand them, between GUP and Subscription Management. SA5 would appreciate your feedback on this interpretation.

Specific observations related to SA5's review of the GUP joint Ad-Hoc liaison and TS 23.240, v0.3.0:

1. Subscription Management (SuM) Profile components (SuPC). Many of these components are identical to GUP components but some are unique to SuM. The distinction is that SuM looks at the operations view and access (control) requirements of Subscription Management Profile Components whereas GUP looks at the user view and access control of the GUP components. For those components common to both GUP and SuM, the access control requirements of SuM and GUP are often different.
2. The text in clause 4.4 is unclear as to whether a component may consist solely of a list /set of data-types or may contain a set of objects and attributes. This is important because GUP, despite its name is not just about data, but also about the functions that can be performed on them. For major sub-systems like IMS our expectation is that SuM Profile component will be defined as a set of objects with relationships.
3. Identifying components that are common to GUP and SuM will be a priority as they are the entities that are needed by both users and operators and require common agreement whereas those that are unique to GUP or SuM are entities that can be developed separately by SA5 and the GUP ad-hoc team.
4. Can you clarify the abbreviation CC/PP in clause 4.2 ?

5. The concept of a common data definition framework seems sensible and it would be sensible for SuM to adopt a similar or identical framework to GUP.
6. The proposed principles for classification / structuring of GUP components could also be applied to Subscription Profile Components.

**2. Actions:**

**To** GUP joint Ad-Hoc, SA1, SA1 GUP, T2, SA2, T2 GUP ad hoc

**ACTION:** SA5 ask the above groups to review and comment on TS 32.140 V0.5.4, preferably by 24 Feb 2002.

**ACTION:** SA5 ask the GUP joint Ad-Hoc to consider SA5's comments on TS 23.240 v0.3.0.

**3. Date of Next SA5 Meetings:**

Meeting	Date	Location	Host
SA5#26	25 Feb - 1 Mar 2002	Miami, FL / USA (T1M1/TMF)	NA Friends
SA5#27	2-5 Apr 2002	Cork, IRELAND	Motorola
SA5#28	20-24 May 2002	Sophia Antipolis, FRANCE	ETSI
SA5#29	24-28 Jun 2002	Beijing, CHINA	Nortel Networks
SA5#30	19-23 Aug 2002	TBD	TBD
SA5#31	7-11 Oct 2002	Phoenix, AZ, USA	NA Friends
SA5#32	18-22 Nov 2002	TBD (note 2)	TBD



**3rd Generation Partnership Project;  
Technical Specification Group Services and System  
Aspects;  
Services Operations Management  
Subscription Management;  
Requirements  
(Release 5)**

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Keywords

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UMTS, service, Telecomm Management

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## Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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## Introduction

Subscription Management is a feature that permits Service Providers, Value Added Service Providers, and Mobile Operators to provision services for a specific subscriber. The feature is necessary to allow service providers and operators to provision, control, monitor and bill the configuration of services that they offer to their subscribers. Subscription Management focuses on the OAM processes to manage subscription information. These correspond to the 'Fulfilment' Process areas of the TeleManagement Forum Telecom Operations Map [3]

Subscription Management is an area of Service Operation Management that sets a complex challenge for service providers and operators in their support of new or existing subscribers during their every day network operation.

In 2G solutions the main repository of the subscription information is in the Home Locations Register (HLR). However the management and administration interfaces for controlling this information is proprietary to each vendor. The use of proprietary interfaces is inconvenient for those operators using multiple vendors' equipment since their provisioning systems have to accommodate multiple proprietary interfaces, which perform essentially identical functions. Moreover, it makes it more difficult to generate customer self care applications that allow subscriber to the provisioning, and amendment of subscription data.

The 3G environment requires more complex service delivery mechanisms than in 2G and subscription management is no longer simply an internal matter for a single operator but a capability that is achieved by linking together features across multiple operators' Operations Support Systems. Historically, the services provided by operators have been defined within standards groups such as ETSI or 3GPP. With the advent of Open Services Access (OSA) being adopted by 3GPP the end user Service Definitions will be replaced by Service Capabilities traded amongst network operators. This will allow operators and Service Providers to define customised service environments that roam with users as they move amongst networks – this is the Virtual Home Environment TS 22.121 [9]. This customised service environment means that subscription information is held in a number of locations including the Home Network, the Visited Network, the User Equipment, Application VASP equipment (e.g. servers accessed by the subscriber for content and information based services) and the operations systems of the service providers, and operators supporting the subscriber's service subscription.

Service delivery and support across multiple vendors' solutions and organisations is a feature of other industries, and the solutions are adopted as secure supply chain solutions based upon mainstream e-commerce principles, methods and technologies.

There is a relationship between this feature, the PS Domain, CS Domain, IP Multimedia Subsystem (IMS), Authentication Centre, Open Services Architecture (OSA) and Generic User Profile(GUP) documented in other 3GPP specifications.

Integration Reference Points are specified in separate documents.

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## 1 Scope

This Technical specification defines the service requirements and high level architecture for Subscription Management. These are the set of requirements which shall be supported by the Subscription Management feature that allows a network operator's, service provider's or VASP's provisioning application, their staff (and possibly the subscriber via an application) to securely create, amend and delete subscriber information held in all managed locations. It also ensures that this information is consistent and accurately replicated across a number of network components and operations systems.

The objective of this document is to:

- Provide an overview of the concept of Subscription Management;
- Document the operators' requirements for Subscription Management.
- Describe the high level architecture for subscription management and the relationship between Subscription feature and other features (e.g. Generic User Profile).

This TS includes information applicable to network operators, content providers, and terminal and network manufacturers.

This TS contains the core requirements for Subscription Management, which are sufficient to provide management services.

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## 2 References

The following documents contain provisions, which through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

This specification may contain references to pre-Release-5 specifications. These references shall be taken to refer to the Release 5 version where that version exists.

- |     |  |
|-----|--|
| [1] | 3GPP TS 21.905: 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Vocabulary for 3GPP Specifications. |
| [2] | 3GPP TS 23.002 : 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects: Network Architecture (Release 5).  |
| [3] | e-Business Telecommunication Operations Map v 2.5 TeleManagement Forum.  |
| [4] | MWIF MTR-002/Annex A   |

- [5] ebXML Transport Routing and Packaging Overview and Requirements 26<sup>th</sup> May 2000 v0-96
- [6] 3GPP TS 32.101 “3G Telecom Management: Principles and high level requirements”
- [7] 3GPP TS 23.008 “Technical Specification Group Core Network: Organisation of subscriber data”.
- [8] 3GPP TS 23.228: “ IP Multimedia (IM) Subsystem – Stage 2 “.
- [9] 3GPP TS 22.121 “The Virtual Home Environment”
- [10] TS 29.198-03 “OSA API Framework”
- [11] 3GPP TS 22.240 Technical Support Group Service and Systems Aspects; Service aspects; Stage 1 Service requirement for the 3GPP Generic User Profile (GUP)
- [12] 3GPP 23.240 Technical Support Group Service and Systems Aspects; 3GPP Generic User Profile-Architecture; Stage2
- [13] 3GPP 23.241 Technical Support Group Service and Systems Aspects; 3GPP Data Description Framework; Stage2
- [14] 3GPP 24.241 Technical Support Group Service and Systems Aspects; 3GPP Generic User Profile Common Objects; Stage3
- [15] 3GPP TS 22.041 Operator Determined Barring (ODB)
- [16] 3GPP TS 23.015 Technical realization of Operator Determined Barring (ODB)

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## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions from 3GPP TR 21.905 [1] apply.

**User:** See 3GPP TR 21.905 [1].

**Network Operator:** See 3GPP TR 21.905 [1]

**Organisation:** A 'legal entity' that may perform one or more 'business roles' when interacting with other Organisations.

**PLMN Operator:** See 3GPP TR 21.905 [1]

**Retailer** An organisation that sells 3GPP User Equipment and Services to retail customers.

**Reseller Service Provider:** an Actor that resells Services provided and defined technically by another service provider. The reseller may re-brand the Service or offer a modified tariff package to its customers.

**Service Provider (SP):** a company or organization that provides telecommunication services as a business. SPs may operate networks, or they may simply integrate the services of other providers (who operate networks) in order to deliver a total service to their Customers. Providing telecommunication service to any one end Customer may involve multiple SPs, where one provider may “sub-contract” with other providers to fulfill the Customer’s needs (TMF 701).

Note that the term Service Provider is now being used generically and may include Telecom Service Providers (TSPs), Internet Service Providers (ISPs), Mobile Service Providers, and Application Service Providers (ASPs) and another organization that provides services, e.g. internal IT organizations that need or have SLA capabilities or requirements.

**Editor’s Note:** Do we need the additional text or would the definition in 21.905 suffice? “A Service Provider is either a network operator or an other entity that provides services to a subscriber (e.g. a MVNO)”



**Service Integrator** : An organisation that takes a set of services from other providers and derives an end-to-end set of services. It has responsibility for the end to end service QoS to the Customer.

**Subscription** See 3GPP TR 21.905 [1]

**Subscription Management** A set of capabilities that allow operators, service providers, and indirectly subscribers, to provision, control, monitor the Subscription Profile.

**Subscription Profile** The collection of data managed and stored by network domains and subsystems for the operation and execution of the services provided to subscribers.

**Subscription Profile Component** A discrete subset of the Subscription Profile that may be stored or managed separately from other subsets. For example components that may be stored in different domains, subsystems or replicated using different synchronisation rules.

**Trusted Third Party** An organisation that performs an agreed role on behalf of two or more other roles (e.g. authentication, trust, market place services etc.)

## 3.2 Abbreviations

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

2G	Second Generation Mobile
3G	Third Generation Mobile
API	Application Programme Interface
ASP	Application Service Provider
AuC	Authentication Centre
B2B	Business to Business
CS	Circuit Switch
EIR	Equipment Identity Register
GTT	Global Text Telephony
GUP	Generic User Profile
HLR	Home Location Register
HSS	Home Subscriber Server
IMS	IP Multimedia Subsystem
IRP	Integration Reference Point
ISP	Internet Service Provider
MWIF	Mobile Wireless Internet Forum
NPDB	Number Portability Data base
PS	Packet Switch
SLA	Service Level Agreement
SOM	Service Operation Management
SP	Service Provider
SuM	Subscription Management
TMN	Telecommunication Management Network
OSA	Open Services Access
OSS	Operations Support System
TR-IRP	Trading Partner IRP
TS	Technical Specification
UICC	Universal Integrated Circuit Card
USIM	Universal Subscriber Identity Module
VASP	Value Added Service Provider
VHE	Virtual Home Environment

## 4 General description

### 4.1 Subscription Management Concept

The 3G environment requires more complex service delivery mechanisms than in 2G. The following drivers are leading to a need to standardise Subscription Management Interfaces:

- Use of different vendor's equipment for 2G/ 2.5G and 3G.
- The trend in 2/2.5G toward the support of Virtual Network Operators and Content Providers requiring standardised interfaces amongst them.

Service delivery and support across multiple vendors' solutions and organisations is a feature of other industries, and the solutions are adopted are secure supply chain solutions based upon mainstream e-commerce principles, methods and technologies.

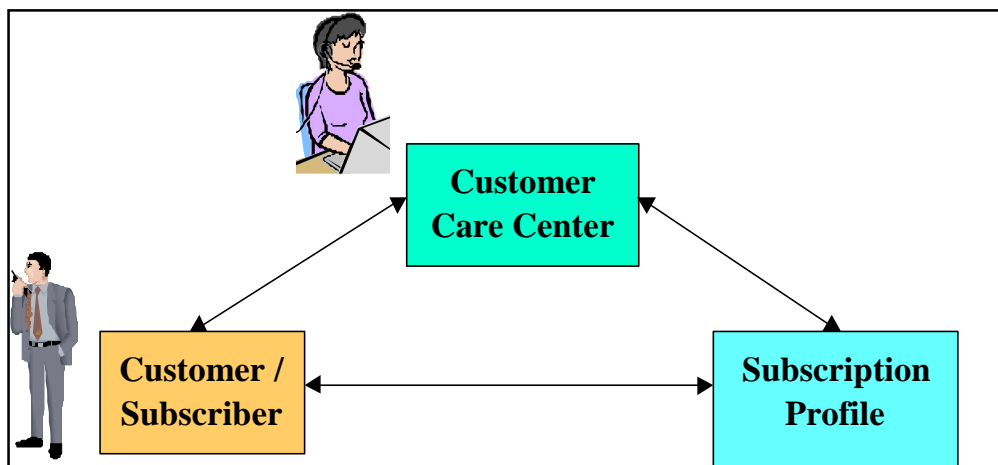
Subscription Management is an area of Service Operation Management that permits service providers and operators to provision services for a specific customer service subscription.

Specific 3G areas that subscription management requirements must address are:

- Subscription information is distributed across in a number of locations including the Home Network, the Visited Network, the User Equipment, Application VASP equipment (e.g. servers accessed by the subscriber for content and information based services).
- Subscription management will allow service providers and operators to provision, control and monitor the subscription information.
- Subscription Management is not simply an internal matter for a single operator but a capability that is achieved by linking together features across multiple operators' Operations Support Systems.
- Subscription Management will need to manage subscription information in e.g. the OSSs, HSS, UEM, OSA, AuC, and IMS subsystems.

The common components between the Generic User Profile and the Subscription Profile.

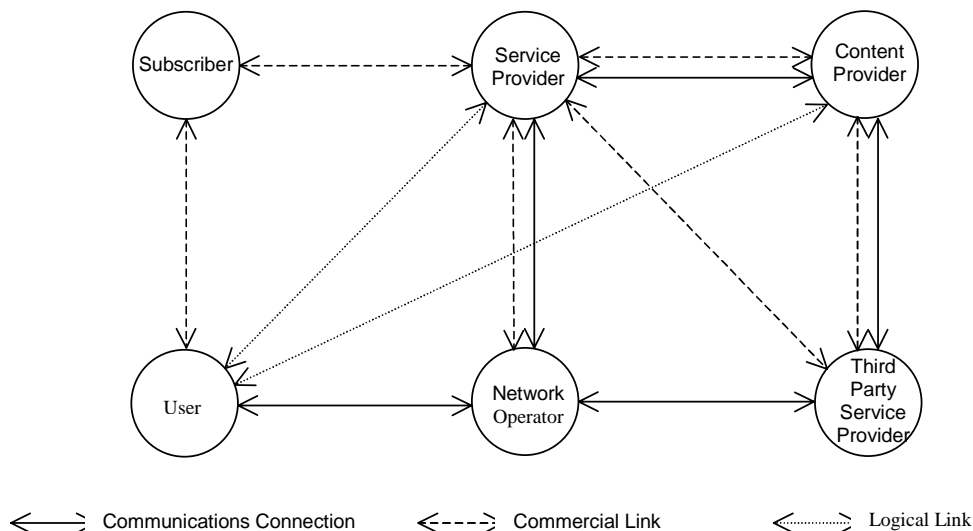
The conceptual model for Subscription Management is illustrated below:



**Figure 1 High level view of Subscription Management**

## 4.2 Business Model

The MWIF business model MTR-002 [4] shows an organisational model for Trading partners co-operating to provide wireless mobile services, the terms used in this example may not coincide exactly with those used in other parts of this document, e.g. Subscriber and Customer are believed to be equivalent.



All commercial links are potential Trading Partner Interfaces.

**Figure 2: Assumed Business Model**

In this business model the Subscriber is a customer of the Service Provider (SP).

Commercial agreements are set up and maintained between them for the provision of services from the SP to the User via the Network Operator.

The Subscriber may have contracts with multiple SPs and maintains these on behalf of one or more users.

The Subscriber informs the SP which services each user should have access to and may choose to set limits on how much a User can use a particular service. For instance the Subscriber may authorize \$x a day of video calls with a high QoS and unlimited video calls with a lower QoS.

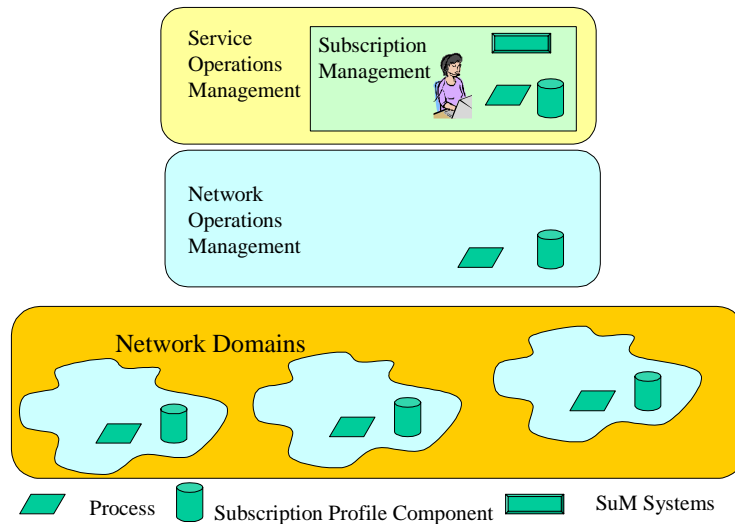
The SP must enter into contract(s) with one or more Network Operators in order to deliver services to Users. Other companies may wish to sell services without having a contract with a Network Operator. This can be achieved by adopting the role of Third Party Service Provider and selling service via the SP. Other Companies may wish to sell just content. This is made possible by developing a commercial relationship with either a SP or a Third Party Service Provider.

It is important to note that Service Use, Customer Service Negotiation, etc are roles, and that one Actor may adopt more than one role. For instance an individual may adopt the roles of both Service Use and Customer Service Negotiation. A Company may adopt the roles of Network Operator, SP and Content Provider.

A user initiates a service by requesting it from the Service Provider, not the Network Operator. On receipt of a service request the Service Provider uses Network Operators and Third Party Service Providers to service the request in the best way possible. In the example of the video call the Service Provider may choose to use different Network Operators for high and low QoS calls.

## 4.3 Subscription Management: Operations Viewpoint

The following diagram positions Subscription Management from the viewpoint of operations management.



**Figure 2 Subscription Management context within Operations Management**

Subscription Management manages Subscriptions in the form of Subscription Profiles. The Components of the Subscription Profile may be distributed across Network Operations Management and Network domains.

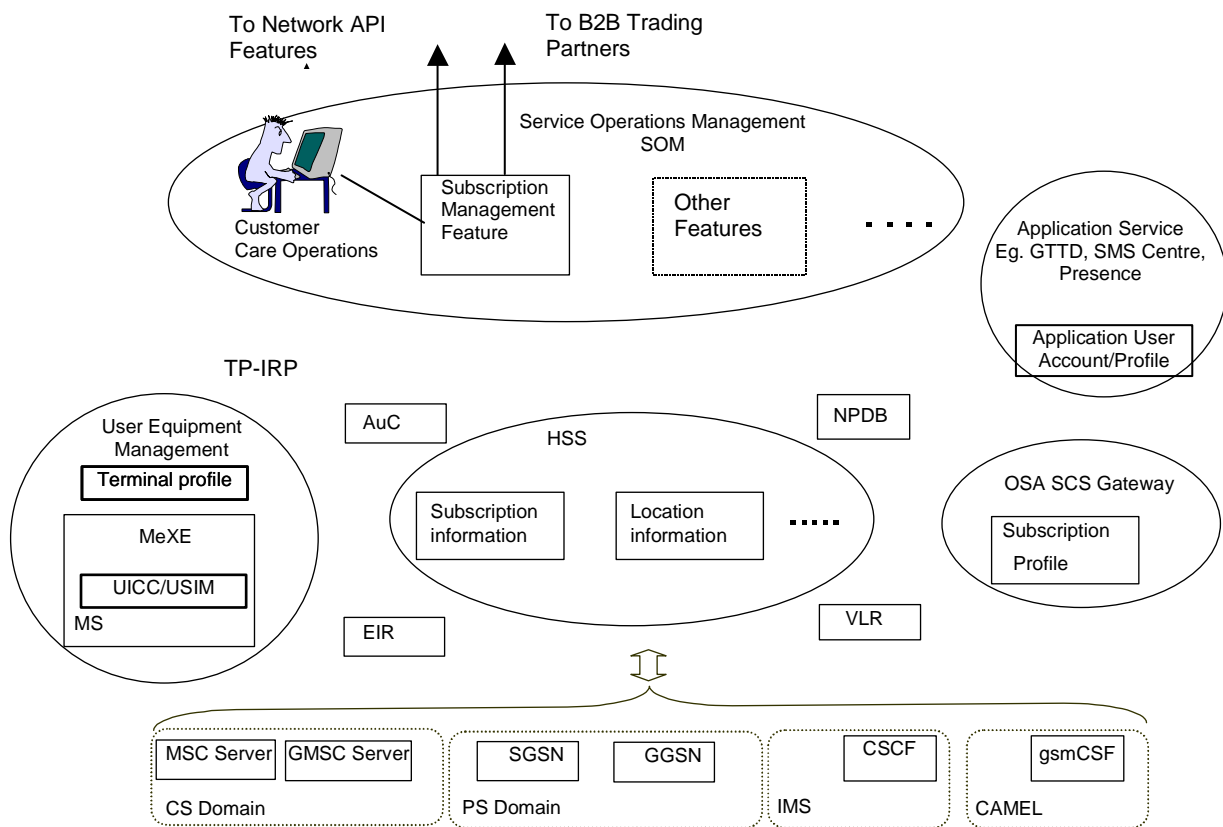
The Subscription Management feature address the needs for managing Subscriber information that covers processes, Subscription Profile Components including contained data; and the operational requirements of operations people at the Service Operation level and their requirements on realisation of Subscription Management systems.

## 4.4 Subscription Management: relationship to Network Entities and Other Subsystems

### 4.4.1 General

The Subscription Management Feature provides management functions for subsystems, domains and components some of which are defined in the 3GPP Network Architecture 3GPP TS 23.002 [2]. However the Network Architecture does not address the Mobile Equipment or the Open Services Architecture nor non 3GPP defined subsystems. Which are described in the next section.

The following diagram shows this relationship with the Network Architecture, which is mainly related to the Home Subscriber Server (HSS).



**Figure 3 Subscription Management relationships with Network Architecture**

The diagram above is based upon entities identified in the 3GPP Network Architecture 3GPP TS 23.002 [2].

The Network Architecture identifies a number of entities that use Subscription Profile information for their operation. The Subscription Management feature provisions and audits the Subscription Profile information (either directly, or indirectly, via the HSS):

- Core Network entities:
  - Home Subscriber Server (HSS) including HLR, and VLR;
  - Authentication Centre (AuC);
  - Equipment Identity Register (EIR);
  - SMS Centre.
- Circuit Switched Domain:
  - MSC Server;
  - Gateway MSC (GMSC).
- Mobile Station (not comprehensively developed in 3GPP TS 23.002 [2]).
- Specific entities of the Mobile System:
  - CAMEL Entities;
  - Number Portability Database (NPDB);
  - IP Multimedia System (IMS);

- Global Text Telephony (GTT) entities.

Subscription Management also provides capabilities to network APIs such as those being developed by OSA and also to support B2B trading interfaces to other trading partners: VASP, Virtual mobile Operators etc.

Figure 3 also shows a set of interfaces from Subscription Management to:

- User Equipment Management that is assumed to configure and provision all aspects of the User Equipment and Terminals, including the possibility of configuring UICC/USIM profile information, using MeXe where appropriate.
- OSA Subsystem mainly the Framework (admin) aspects of the OSA Gateway specifications;
- And Application Service provided by third parties including trusted third parties that may configure some USIM via network interfaces, for example banks and other financial institutions.

These interfaces may be the traditional Integration Reference Points (IRP) defined in 3GPP TS 32.101 [6] or in some cases where these interfaces are between different organisations they are designated Trading Integration Reference Points (TR-IRP) adapted to use e-commerce solutions such as those from ebXML and Rosettanet

In any specific implementation only a sub set of these interfaces may be needed for example the Subscription Management Feature may physically be implemented in the same environment as the HSS and supplied by a network equipment supplier.

#### 4.4.2 Relationship to Generic User Profile (GUP)

- The concept of a Generic User Profile is defined in 3GPP TS 22.240 [11].

The main focus is on the definition of:

- A User profile constructed from one or more User Profile Components
- Each User Profile Component that comprises one or more data types with formal definition

The emphasis is on defining data types especially those that have to be held or replicated in User Equipment

GUP assumes that User Profile Components may be distributed and replicated across a number of network domains and systems. Subscription Management is a feature that allows Subscription Profile Components to be distributed across Systems and Network Domains. Some Subscription Profile Components and some Generic User Profile components are common. These common components affect the user experience and hence are part of the GUP. Subscription Management Processes are supported by processes and functions provided in both the Network Operations and Network Domains.

Subscription Management provides the management means to create, read, modify and delete data. It also provides for the management of the integrity of the Subscription Profile Components – and implicitly those common with GUP – by providing the mechanisms for their distribution and synchronisation across Systems and Network Domains.

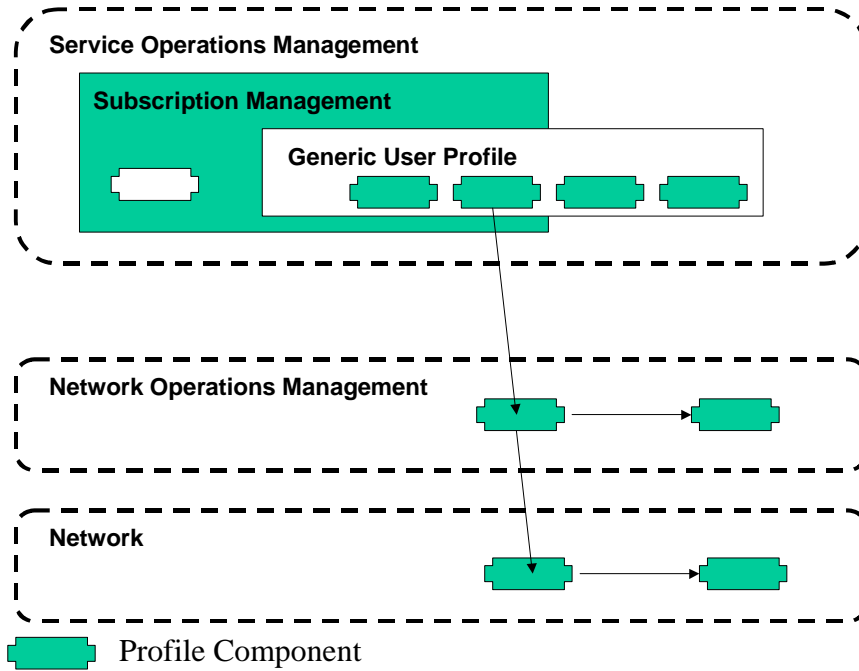


Figure 4 Relationship between Subscription Management and Generic User Profiles

### 4.4.3 Relationship to Open Service Architecture

The relationship between OSA TS 29.198-03 [10] and Subscription Management is illustrated below. In order to support OSA, some Service Level Agreements must exist between the Service Provision, Network Operation and the Value Add Service Provision functions. These could be established over trading Partner Interfaces (TP-IRP).

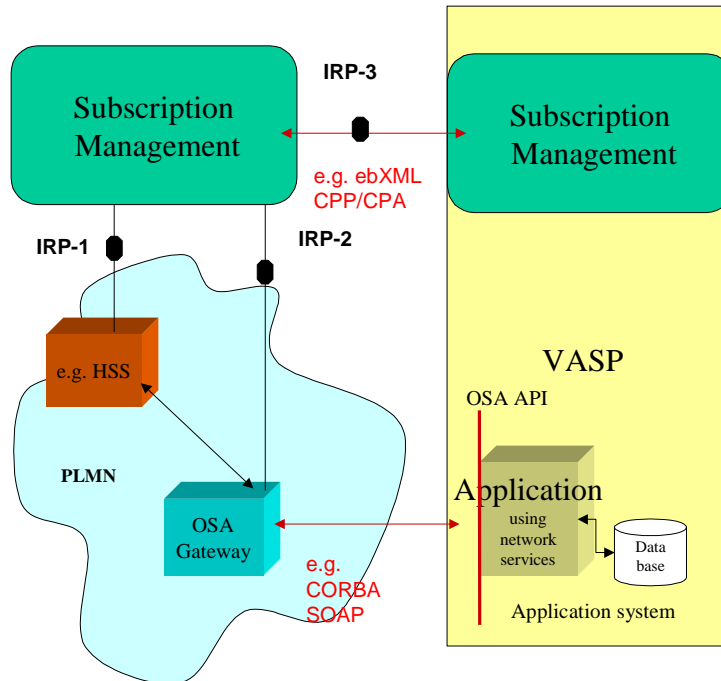


Figure 5 How OSA fits into the Subscription Management Architecture

**Editor's Note:** There is a need to determine where the SCF for the SuM OSA APIs may reside. This relates to the need to consider how the interactions between changes made by the SuM system and changes made to the same Subscription Profile Components via OSA.

In addition to the interactions over the management interface between Trading Partners (TP-IRP), the OSA interface is capable of limited management activity. This information will be transported through the 3GPP network to the HSS where it will be available for Subscription Management.

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## 5 Subscription Management Assumptions

The following assumptions are made in developing the Subscription Management requirements:

### 5.1 Business model assumptions

1. The provider of the service package to the subscriber may be different from either the Mobile Service Provider or the Mobile Network Provider.
2. The model shall allow for retailers, distributors and third parties that are independent of the Mobile Service Provider and the Mobile Network Provider

### 5.2 Network and control assumptions

1. The invocation of service feature in real time shall be the responsibility of the network and any associated control.
2. The Open Service Access mechanisms shall be supported by the network, and the Subscription Management features provided by Operations Systems responsible for OAM&P.

### 5.3 User Equipment assumptions

In the 2G and 3G Release 99 the main focus has been the provision by a single operator of a set of standardised services (mainly voice) to a subscriber. The involvement of multiple operators has been limited to subscriber roaming where the subscriber's services or some subset of them are supported.

The move to 3G has introduced a number of significant changes.

- The introduction of UICC/USIM allows for multiple subscriptions to be present within a single Mobile Equipment
  - There may be multiple UICC/USIMs in a single Mobile Equipment.
  - UICC/USIM may be issued by parties other than the Mobile Service Provider.
1. The User Equipment (UE) may contain one or more UICCs.
  2. Each UICC (Universal Integrated Circuit Card) may host one or more USIM applications and may also contain other applications owned by 3rd party service providers as part of an authentication process (PKI, digital signature processing etc).
  3. Subscriber secure information may be held on the UICC as opposed to the ME.
  4. UICC may be issued by an organisation other than the Mobile Service Provider.
  5. UICC may contain applications owned by third party Service Providers.



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## 6 High level requirements

**Editor's note:** The following comment was made and not resolved. A definition of "provided service" is missing. The provided service is a configured, i.e. tailored, version of a service. A provided service could be represented by a characteristic selection, i.e. the tariff (the tariff selection and the associated Service give the particular configuration, including rating of the service offered).

### 6.1 General

Subscription Management shall provide:

1. The management of the Subscription Profile Components in the PLMN NPDB, and VASP systems.
  2. Subscription Management shall support the replication and distribution of Subscription Profile Components across administrative, network and systems domains.
  3. Subscription Management shall be able to control the synchronisation and distribution of Subscription Profile Components across administrative, network and systems domains
- The capabilities required by the Customer Care Operations for the control and modification of Subscription Profile information;
  - The capabilities that need to be offered to Business to Business (B2B) Trading Partners, such as Virtual Mobile Operators;
  - The capabilities that need to be offered to 'Network APIs' such as those required by OSA. Where the service provided to the subscriber is a combination of:
    - Terminal features;
    - Core Network capabilities;
    - Application services.

### 6.2 Business Model requirements

1. Subscription Management feature shall support the distribution of Subscription Management components across several organisations and administrative domains to support industry business model comprising, VASP, SP, NO, Retailers, Reseller, Service Integrator, etc. For example, the business models being defined by Raddichio and MWIF MTR-002[4].
2. Subscription Management shall allow for the optional use of third parties to facilitate trading relationship between organisations. This requirement is needed for trusted third parties but not limited to trusted third parties.

### 6.3 Requirements on Subscription Data

#### 6.3.1 Requirements on HSS/HLR Subscription Data

The primary area where Subscription Profile Components are stored is in the HSS/HLR, which is used by the network for distribution and replication of this data in other subsystems such as the PS Domain, CAMEL, ...

1. Subscription Management shall allow for the creating, reading, updating and deleting of Subscription Profile data in the HSS /HLR.
2. Subscription Management shall support the data structures and organisation described in TS 23.008 [7].

### 6.3.2 Requirements for support of Generic User Profile (GUP)

NOTE: Some components of the Subscription Profile and the GUP are common, TS 22.240 [11], TS 23.240 [12], TS 23.241 [13], TS 24.241 [14].

1. The interaction between the Subscription Management processes and other process acting on common Components of the GUP and the Subscription Profile shall be defined.
2. Subscription Management shall support GUP requirements, including GUP constraints on the common Components. E.g. a single logical User Profile per user.
3. Subscription Management shall not place restrictions on the allocation of ownership /stewardship of Components of the GUP that are not common with the Subscription Profile.
4. Subscription Management shall be able to control the ownership of Components common to the GUP and the Subscription Profile.

### 6.3.3 Requirements on Packet Domain

1. Subscription Management shall manage Subscription Profile Components within the PS Domain.
2. Subscription Management may manage this data via the HSS/HLR.

### 6.3.4 Requirements on Circuit Switch Domain

1. Subscription Management shall manage Subscription Profile Components within the CS Domain.
2. Subscription Management may manage this data via the HSS/HLR.

### 6.3.5 Requirements on User Equipment

1. Subscription Management shall support multiple UICC/USIM subscriptions present within a single Mobile Equipment.
2. Subscription Management shall support UICC/USIM issued by parties other than the Mobile Service Provider.

### 6.3.6 Requirements on IMS

**Editor's Note:** Need to identify if there are Subscription Profile Components in the IMS that are not handled in the HSS

1. Subscription Management shall manage Subscription Profile Components within the IMS defined in reference 3GPP TS 23.228 [8].
2. Subscription Profile Components will be needed for:
  - a) Data related to subscription identification and numbering. E.g. Private Identity, Public Identity, Registration Status, s-SCCF name.
  - b) Data related to Roaming
  - c) Data related to Authentication and ciphering
  - d) Data related to S-CSCF selection information
  - e) Data related to Applications and Service Triggers

### 6.3.7 Requirements on Authentication Centre (AuC)

1. Subscription Management shall be able to create, read, modify and delete Subscription Profile Data about a Subscriber in the Authentication Centre.

*Editor's Note: Is Subscriber the correct term here? If so, then we need another requirement to do the same for users per subscriber.*

### 6.3.8 Requirements on Equipment Identity Register (EIR)

1. Subscription Management shall be able to create, delete and interrogate entries about IMEI in the white, black and grey list within in the EIR.
2. Subscription Management shall support a bulk Transfer mechanism to the black white and grey lists in the EIR.
3. Subscription management shall support Subscription Data defined in reference 3GPP TS 22.041 [15], 3GPP TS 23.015 [16].

### 6.3.9 Requirements on Open Services Access Domain

1. Subscription Management shall manage Subscription Profile Components within the OSA domain
2. Subscription Management shall provide facilities for changes to the Subscription Profile Components to be received via the OSA APIs.
3. Subscription management shall support Subscription Profile Components required in reference TS 29.198-03 [10].

## 6.4 User related requirements

*Editors Note: Further study is required to determine if Subscription Management has requirements with UEM to support recovery of UE based services. E.g. download of service/subscription data on replacement of a lost/damaged terminal.*

## 6.5 Process requirements

- 1 Modifications by the Subscription Management to Subscription Profile Components shall be recorded in an historical log.
- 2 Subscription Management shall provide a process to support a subscriber wishing to check their Subscription Configuration.
- 3 Authentication of a subscriber shall be provided to prevent anyone other than the subscriber or an authorised person from gaining access to their Subscription Profile.
- 4 It shall be possible to replicate and distribute the Subscription Profile Components following rules established and defined by Subscription Management Feature.

*Editor's Note: May want to consolidate these into section 6.1*

## 6.6 Technology requirements

*Editor's Note: Remove this text once it has been moved 32.101 and 32.102*

## 6.6.1 Interfaces

1. Interfaces supporting Interface Reference Points between organisations – TP-IRP- shall use mainstream e-commerce technology methods.
2. For TP-IRP interfaces preference shall be given to the use of ebXML based e-commerce solutions.

## 6.7 Business Aspects and Integration

*Editor's Note: Remove this text once it has been moved 32.101 and 32.102*

1. Interfaces between trading partners shall meet the commercial and legal standards required for the business to business transactions.
2. Interfaces between Subscription Management components within an organisation shall not exclude the use of OSS though Java solutions.
3. It shall be possible to use syncXML as a solution for the synchronisation of distributed Subscription and User Profile Components.

## 6.8 Security

1. Secure mechanisms shall be available for the transfer of Subscription Profile Components to, from or between authorised entities.
2. Access to Subscription Profile Component shall only be permitted in an authorised and secure manner.
3. 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. The owner of the data, normally the body storing the master copy of the data, shall be responsible for applying the appropriate level of security to the transfer of the data.
4. The secure mechanisms available to Subscription Management shall include the following:
  - a) Before any transfer takes place, it shall be possible for the sender of the data to verify the identity of the recipient.
  - b) It shall be possible for the recipient of data to identify the sender.
  - c) It is permissible for either the sender or recipient of data to employ the services of a third party, known to, and trusted by, both in order to provide authentication of identity.
  - d) The validity of an authentication of identity shall, if required, be subject to a maximum time limit.
  - e) It shall be possible for the sender of data to render the data to be unreadable by any party not authorised to receive it.
  - f) It shall be possible for the recipient of data to detect whether the sender has made any change to the data subsequent to its transmission.
  - g) The security mechanisms shall provide verification that the data has been sent by the sender and received by the recipient (non-repudiation).
  - h) It shall be possible for the sender and/or the recipient to create an audit log of all data transfer transactions of a specified type, provided that this requirement is made known before any transfer takes place.
  - i) Transaction security for the change of data should be available in order to ensure the consistent change of data at different locations.
5. Subscription management shall support the situation where the UICC/USIM may be issued by parties other than a Mobile Service Provider, and the issuer may wish to control access to the information contained

within the UICC/USIM and impose access control constraints. It may also require that information is transfer securely.

Subscription management feature will need to bridge between the 3GPP network security functions and the security used in mainstream e-commerce solutions such as those in ebXML [5].

## 6.9 Privacy

Subscription Management shall fulfill local privacy regulations.

## 7 OSA Subscription Management Requirements

*Editor's Note: Move to the "Stage 2"*

The following table represents an initial analysis of TS 29.198-3 "OSA API Framework" and identifies interactions where subscription management activity is generated or where prior Management activity is assumed (e.g. Service level Agreement (SLA))

Title	TS 29.198-3 Section	Management Interactions	Management Interface
<b>Framework Access Session API</b>	<b>6</b>		
Trust and Security Management	6.1.1	Prior Agreement (SLA) required Subscription Management needs to be informed	Trading Partner Interface
Initial Access for trusted parties	6.1.1.1	Prior Agreement (SLA) required Subscription Management needs to be informed	Trading Partner Interface
<b>Framework-to-Application API</b>	<b>7</b>		
Service Discovery	7.1.3.1	Service Operations Management	HSS to OSS
Service Agreement Management	7.1.4	Service Operations Management	Trading Partner Interface HSS to OSS
<b>Framework-to-Service API</b>	<b>8</b>		
Service Discovery	8.1.1	Service Operations Management	HSS to OSS
Service Registration	8.1.2	Service Operations Management	HSS to OSS
Sign Service Agreement	8.1.3.1	SLA required	Trading Partner Interface HSS to OSS
Load Management: Service callback registration and load control	8.1.4.1	Service Operations management	HSS to OSS
Load Management: Client and Service	8.1.4.2	Service Operations management	HSS to OSS

Title	TS 29.1 98-3 Section	Management Interactions	Management Interface
Load Balancing			
<i>Service Properties</i>	9		
Service Property Types	9.1	Service Operations management	HSS to OSS
General Service Properties	9.2	Service Operations management	HSS to OSS

In addition to the interactions over the management interface between Trading Partners (If TP), the OSA interface is capable of limited management activity. This information will be transported through the 3GPP network to the HSS where it will be available for Subscription Management.

## Annex A (informative): Change history

*It is usual to include an annex (usually the final annex of the document) for specifications under TSG change control which details the change history of the specification using a table as follows:*

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
July 2001							
July 2001							

Change history											
TSG SA#	SA Doc.	SA5 Doc	Spec	CR	Rev	Rel	Cat	Subject/Comment	Old	New	WI
			32.140					Creation of TS		0.0.0	
			32.140					Updated with additional text supporting Business models and UML relationship models	0.0.0	0.1.0	
			32.140					Output of SA5 #21	0.1.0	0.2.1	
			32.140					Updated to remove Service Operations management text tutorial – input to SA5 #22	0.2.1	0.2.2	
			32.140					Output of SA5 #22	0.2.2	0.3.0	
			32.140					Input to SA5 #23	0.3.0	0.3.1	
			32.140					Output from SA5 #23	0.3.1	0.4.0	
			32.140					Input to SA5 #24	0.4.0	0.5.0	
								Restructured to be focussed solely on Stage 1 requirements	0.5.0	0.5.1	
								Restructured to be focussed solely on Stage 1 requirements	0.5.1	0.5.2	
								Updates from drafting session at SA5#25	0.5.2	0.5.3	
								MCC editorial clean-up	0.5.3	0.5.4	