3GPP TSG-T2 #14                                              *T2-010856*
Edinburgh, Scotland
3-7 September 2001

| | |
|---|---|
| **Title:** | **LS Response to SA5 on Multiple Aspects of Device Management** |
| **Source:** | **T2** |
| **To:** | **SA5** |
| **Cc:** | **SA1, SA2, SA3, SA4, T3, CN4, CN5** |
| **Attachment(s):** | **Background information is in the following tdocs T2-010595, T2-010596, T2-010597, T2-010598, T2-010602** |
| **Contact Person:** | **Name: Rob Lockhart, Motorola E-mail Address: rob.lockhart@motorola.com** |

_____

T2 would like to thank SA5 for these liaisons concerning multiple aspects of device management (e.g., Mobile Device Management, User Profiles, Subscription Management, User Equipment Management (UEM)) and for acknowledgement of T2's proposal for the use of the SyncML initiative's SyncML technology to manage these aspects.

T2 accepts SA5's proposal that T2 manage the process of linking to external technology initiatives to ensure the successful implementation of 3GPP's requirements in these areas. T2's initial external links will continue with existing paths to both the SyncML initiative's working groups developing such management specifications and the WAP Forum's WPG Client Provisioning Drafting Committee (Client Provisioning) . To this end, T2 has generated an LS request to the SyncML initiative for a status update on the SyncML initiative's DevMan activities. Future links to external fora will be added as required.

T2 will lead the terminal aspects area with emphasis on the SyncML initiative's DevMan activities covering each of these topics.

T2 would be willing to participate in a joint ad hoc meeting if deemed necessary to progress the work by any of the other associated groups.

T2 thanks SA5 for SA5's continued attention to these device management needs and looks forward to continued fruitful activities with SA5 and SA1, SA2, SA3, SA4, T3, CN4, and CN5 on these issues.

**Agenda Item:**        **6, AR 9.1**

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TSG-SA WG 1 (Services) meeting #12          TSG S1 (01) 591
Helsinki, Finland, 7-11 May 2001             Agenda Item:

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| | |
|---|---|
| **Title:** | **LS regarding User Profile** |
| **Source:** | **SA1** |
| **To:** | **T2, SA2, SA3** |
| **Cc:** | **SA, SA4, SA5** |
| **Attachments:** | **S1-010435, Discussion Paper on User Profile** |

S1-010435.doc

**Contact Person:**
     **Name:**                 Linda Werneman
     **E-mail Address:**     linda.werneman@ericsson.com
     **Tel. Number:**       +46 46 231646

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The trend of introducing several domains within the 3GPP mobile system (i.e. Circuit-Switched, Packet-Switched, IP Multimedia Subsystem and the Service/Application domains) introduces also a wide distribution of data associated to the user. This data is called the User Profile. Already, several 3GPP WGs specify some parts of the User Profile in their own descriptive methods.
The variety of description methods will increase the probability for overlap and inconsistency to occur. Therefore, one single description method would be preferred.


SA1 see a need to co-ordinate the definition of the User Profile within 3GPP.
SA1 would therefore suggest to start a cross WG ad-hoc to solve the problems of defining User Profile.
In order to be productive, SA1 suggests that interested companies co-ordinate internally and send their experts within the User Profile area to keep the attendance to a fairly low number.
SA1 will take the responsibility of this ad-hoc group.
SA1 suggests that a first meeting will take place in June.

SA1 is looking forward to interesting and efficient work with T2, SA2 and SA3 regarding User Profile.

| | |
|---|---|
| **Title:** | Proposal for WID on **User Equipment (UE) Management (Feature)** |
| **Source:** | SA5 |
| **Agenda item:** | AR |
| **Document for:** | Decision (SA5 agreement for submission to SA for approval) |

## Work Item Description

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**Title:** **User Equipment (UE) Management**

UE Management is a collection of functions and applications, which allows the Operator/Service Provider to remotely manage User Equipment.

## 1    3GPP Work Area

| | |
|---|---|
| | Radio Access |
| | Core Network |
| **X** | Services (SA1, SA5, SA3) |
| **X** | Terminal (T2, T3) |

## 2    Linked work items

- MExE enhancements: 22.057 (SA1) and 23.057 (T2)
- (U)SIM Toolkit enhancements (T3)
- Security issues (SA3) (To be identified)
- Charging and OAM&P  (SA5 Feature)

## 3    Justification

The deployment of higher bandwidth GPRS and 3G coincides with emerging, internet driven content provisioning, transport and presentation technologies. Furthermore, the capabilities of the user equipment are becoming and will continue to become ever more sophisticated and integrated (high definition colour screens, faster processors, built in cameras, integrated media players etc.).

These sophisticated capabilities will require a flexible management infrastructure supporting end customers, service providers, network operators and manufacturers.

UE Management could be used by the network operator and manufacturer to extend service and network management, fault isolation and resolution to the remote User Equipment.

**Network Operators/Service Providers Benefits**

Service Providers will be a major beneficiary of this project.  The ability to manage the customers' equipment will deliver the following benefits:

- The ability to upgrade customers' equipment to add new functionality and to fix problems without the costly need to recall the equipment to a service facility.

- Remotely diagnose problems and therefore reduce the need for equipment replacement

- Assist the customer in understanding how to use their terminals

- Extract performance information in order to gain an understanding of the quality of service that a customer is experiencing at the service access point.

**Manufacturers' Benefits**

- Network Equipment Providers will benefit from:

- Problem analysis at source and problem correction.

- Improved understanding of the customer environment and customer behaviour

- Faster time to market for new terminal devices with lower financial risks

- The ability to deploy new functionality on existing devices.

- Future proof.

## 4    Objective

**Management Functions and Applications**

For Release 5 UE management will provide the user and network/service operator with the ability to:

- Terminal Status Query

- Terminal Diagnostics

- Terminal Configuration

In the future other functions that will be considered are:

- Terminal Patch Download

- Terminal Image Download

## 5    Service Aspects

The User Equipment Management capabilities will ultimately support  Service Providers , End Customers, Network Operators, Manufacturers.

## 6    MMI-Aspects

Potentially , to be co-ordinated with Terminal groups

## 7    Charging Aspects

Potentially, to be investigated within SA5

## 8    Security Aspects

To be co-ordinated with SA3

## 9    Impacts

| Affects: | USIM | ME | AN | CN | Others |
|----------|------|-----|-----|-----|--------|
| **Yes** | X | X | | X | |
| **No** | | | X | | |
| **Don't know** | | | | | |

**10          Expected Output and Time scale (to be updated at each plenary)**

| New specifications | | | | | | |
|---|---|---|---|---|---|---|
| Spec No. | Title | Prime resp. WG | 2ndary resp. WG(s) | Presented for information at plenary# | Approved at plenary# | Comments |
| 32.xyz | | SA5 | | TSG#14 (12/01) | TSG#16 (06/02) | Release 5 |
| | | | | | | |

| Affected existing specifications | | | | |
|---|---|---|---|---|
| Spec No. | CR | Subject | Approved at plenary# | Comments |
| 32.101 | | | TSG#16 (06/02) | Release 5 |
| 32.102 | | | TSG#16 (06/02) | Release 5 |
| MExE,SyncML USIM Security | | To be identified by TSG-T To be identified by T3 To be identified by SA3 | | |

**11          Work item rapporteurs**

**John MUDGE (Vodafone Group) [john.mudge@vf.vodafone.co.uk].**

**12          Work item leadership**

SA5

**13          Supporting Companies**

Vodafone Group, Motorola, VoiceStream, Telia, France Telecom, BT, Mannesmann MobilFunk, Sonera, Bouygues Telecom, Hutchison 3G, Samsung Electronics.

**14          Classification of the WI (if known)**

| X | Feature (go to 14a) |
|---|---|
| | Building Block (go to 14b) |
| | Work Task (go to 14c) |

14a      The WI is a **Feature**: List of **Building Blocks** under this **Feature**

- **OAM-AR** Principles, high level Requirements and Architecture – (SA5) (WT: UE Management Framework)

- **MExE** (To be identified by T2)

- **Security**  (To be identified by SA3)

- **USIM**  (To be identified by T3)

- **Management Protocol aspects** (To be identified by SA5)

# 3GPP TS 32.140 V0.1.3 (2001-05)

*Technical Specification*

**3rd Generation Partnership Project;
Technical Specification Group <TSG SA5>;
<Service Operations Management;
Subscription Management Requirements & Model
(Release 5)**

*Select keywords from list provided in specs database.*

Keywords

<keyword[, keyword]>

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# Contents

# Foreword

This Technical Specification has been produced by the 3rd 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.

# Introduction

The general area of Service Operations Management (SOM), of which Subscription Management is a part, was a significant operational burden for GSM network operators. Operators participating in the 3G standardisation work are motivated to reduce this burden by appropriate standardisation early in the definition of 3G systems.

# 1 Scope

Subscription Management permits operators to provision services for a specific customer subscription.

This document defines the requirements, and a model for a management interface(s) that allows an operator's provisioning application, their staff (and possibly the Subscriber via an application) to create, amend, and delete subscriber subscription data held in:

- The Home Subscriber Server (HSS);

- The Mobile User Equipment ( via User Equipment Management);

- Servers accessed by the subscriber for content and information based services.

The capability is necessary to allow operators to provision, control, monitor and bill the configuration of services that they offer to their customers.

Subscription Management is a subset of the TMN Management Service "Customer Administration" (M.3200).

*Editors Note: Release 5 focus will be on HSS interface and the B2B trading partner interfaces, other interfaces are FFS.*

# 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.

This specification may contain references to pre-Release-4 GSM specifications.  These references shall be taken to refer to the Release 5 version where that version exists. Conversion from the pre-Release-4 number to the Release 4 (onwards) number is given in subclause 6.1 of 3GPP TR 41.001.

| | |
|---|---|
| [1] | 3GPP TS 23.228: (V1.7.0): " IP Multimedia (IM) Subsystem - Stage 2 ". |
| [2] | 3GPP TS 23 008 (V3.1.0): "Technical Specification Group Core network: Organisation of subscriber data". |
| [3] | 3GPP TS 43 020 (V4.0.0): "Technical Specification Group Services and system aspects; Security related network functions (release 4) |
| [4] | ebXML Transport Routing and Packaging Overview and Requirements 26th May 2000 v0-96 |
| [5] | 3GPP TS 23.002: Network Architecture. ??? Check this is correct spec no. for Rel5 ???? |
| [6] | MWIF MTR-002/AnnexA |
| [7] | 3GPP TS 32.101 "3G Telecom Management: Principles and high level requirements" |
| [8] | 3GPP TS 22.121 "The Virtual Home Environment" |

# 3 Definitions, symbols and abbreviations

*Delete from the above heading those words which are not applicable.*

## 3.1 Definitions

For the purposes of the present document, the [following] terms and definitions [given in ... and the following] apply.

**Actor:** An organisation playing one or more Roles.

**Core Network Operator (Actor)**

**Customer –** a Customer is an entity, which receives services offered by a Service Provider based on a contractual relationship. It may include the role of a network user (ITU-T Rec. M.3010).

**End User –** An end user is in the domain of the customer. An end user is interested in using communications and data services, e.g., Telecom, Internet/Intranet, Mobile/Wireless, etc.

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

**PLMN Operator (Actor):** a specific organisation that perform the roles of Access Network Provider, Core Network Provider - a traditional mobile operator.

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

**Reseller Service Provider**

**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) and Application Service Providers (ASPs) and another organization that provides services, e.g. internal IT organizations that need or have SLA capabilities or requirements.

**Service Integrator (Actor):** 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 QoS to the Customer.

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

**User Equipment Supplier (Actor):** An organisation that supplies User equipment to Service Customers.

**USIM Supplier (Actor):** An organisation that supplies USIM that are used in Mobile Equipment

**Role:** An activity performed by an Actor. Each Actor can play many Roles. A Role is defined by a set of properties or attributes that describe the capabilities of an entity that can be performed on behalf of other Role(s).

**Agent (Role):** The role that takes a request from a Service Customer and determines how to satisfy that request. It then has responsibility to ensure that it is provided using dialogue and requests to other roles such as Service Providers.

**End Use (or Service Use) (Role):** The role that makes use of the service.

**Internet Service Provision (Role)**

**Integrating Service Provision (Role)**

**Customer Service Negotiation (Role):** The role that is responsible for determining the Customer's requirements for Services. The role is distinct from the end use role in that this role requests and pays for the services as distinct from the user of an instance of the service.

**Service Retailing (Role):** A role that supports the retail service interface to a Service Customer and acts an agent for the wholesale services of a Service Provider. The Retailer role may be a separate from the Service Provider Role

**Service Provision (Role): (or Service Supply)** A role that has defined a Service and can supply the Service to a Service Customer directly or through an intermediary such as an agent, or other Service Provider.

**Service Use or End Use  (Role):** The role that makes use of the service.

**USIM Configuration Role (Role):** A role that sets the initial configuration of a USIM or modifies it in a controlled and audited manner.

**Value Added Service Provision (Role)**:  A Service Provider role that  provides a service other than transport or connectivity.

**Business Role (Role):** A set of properties or attributes that describe the capabilities that can be performed on behalf of another Business Role(s).

**Process Role (Role):** Within a business role there is a set of management process areas that are supported. The Process roles are a distinct process area that can be modelled. In the TMF TOM the process roles can be either things such as Customer Care, Service Management, Network Management, Fulfilment, Assurance, billing or some smaller component such as Problem Handling.

**User Equipment Supply (Role):** The act of supplying User equipment to Service Customers.

**USIM Supply (Role):** The supply of the USIMs that are used in Mobile Equipment

**Validation Authority (Role):** The role that takes a Service Customer mandate for an order and communicates (using a transaction that cannot be repudiated) that the customer did in fact originate a request for a specific CPS Option, or set of options.

**Interface:** An interface is a physical interconnection between two systems. For this study these are systems operated by distinct organisations. TMN Interfaces are interfaces between TMN systems.

**Service –** a telecommunication service is a set of independent functions that are an integral part of one or more business processes. This functional set consists of the hardware and software components as well as the underlying communications medium. The Customer sees all of these components as an amalgamated unit (TMF 701 modified).

**TP-IRP**: Trading Partner IRP, an IRP that exists between two Trading Partners and extends the IRP Framework to include role based business model.

# 3.2     Abbreviations

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

CMIP

CORBA

HLR    Home Location Register

HSS    Home Subscriber Server

SOM    Service Operation Management

ODBC

OSA    Open Services Architecture

SNMP

TP-IRP

UICC   Universal Integrated Circuit Card

USIM   Universal Subscriber Identity Module

XML

# 4 Subscription Management Overview

## 4.1 Introduction

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

In GSM 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.

In GPRS networks the HLR has been extended to form the Home Subscriber Server (HSS) who also holds information about the customer's data subscription. Again the management and administration interfaces are proprietary.

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 customer to the provisioning, and amendment of subscription data.

The 3G environment requires more complex service delivery mechanisms than in GSM 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. The parallel trend in GSM toward Virtual Network Operators is accentuating this need.

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

The objective of this document is to:

- Provide an overview of the concept of Subscription Management

- Document the operators' requirements for Subscription Management

- Document a model for a suitable set of management interfaces.

There is a relationship between Subscription Management and the Open Services Architecture (OSA) which is addressed later in the document.

## 4.2 Service definitions, controls and management

Historically, the services provided by operators have been defined within standards groups such as ETSI or 3GPP SA1. With the advent of Open Services Architecture the end customer Service Definitions will be replaced by Service Capabilities traded amongst network operators.

The Network Operator delivers through its network operations various forms of services to subscribers. The development and specification of the Service Definitions is performed by expert groups (such as SA1).

The operation of such services requires a sophisticated network control capability. This dynamically adjusts the manner and the extent of the service delivery based on many parameters and variables pertinent to both network and the subscriber; For example, the subscriber's static subscription profile parameters, the subscriber's service-time request, network's temporal resource availability, etc..

The service control mechanisms are studied and specified by the system architecture experts (such as SA2) so that the system will be able to efficiently deliver the services to the end users. Nevertheless, it is clear that the subscriber's static subscription parameters are one of the most crucial factors that determine the network's service control mechanisms.

Service providers require automated provisioning of services which requires more than automated call control, and includes the ability for operator's OA&M systems to manage modify, audit the information held in the network

There are two specific areas of operator's operational involvement, which both fall in the scope of Service Operation Management:

- operator's management of the network service control mechanism;

- operator's management of the subscriber's service Subscription Profile/capabilities.

It is important that a network operator has the means to adequately manage both areas so as to operate a network to its customers' satisfaction.

The focus of this document is on the management of the Subscriber's Subscription Profile.

# 4.3 Subscription Management

The design of the management of the network service control mechanism is very closely coupled with the architecture of the network service control mechanism (such as, e.g., VHE/OSA), and subscription management is complementary to those mechanisms.

The specification of the management of the subscribers' static subscription profile (service parameters, options and limitations) is relatively far less dependent on the general system architecture.

By providing a well-thought-out standardised management procedures for subscription management, the cost of operators' network deployment and operation will be enormously reduced because of the streamlined customer care activities.

As illustrated in the diagram below, the purpose of Subscription Management is to provide specifications that define the interfaces and the procedures that interconnect the three points of the subscription management triangle: network operation centre (usually realised as Customer Care Centre), the Customers and the network wherever the subscription profile resides (such as HLR/HSS, USIM, etc.).
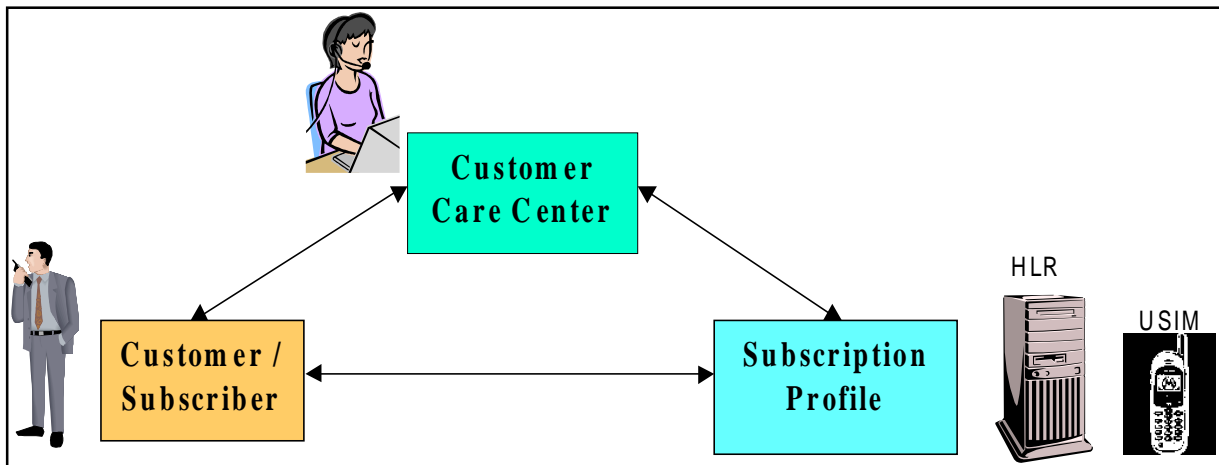
**Figure 1 High level view of Subscription Management**

Subscription Management is concerned with the provisioning the Subscription Profile whereas the service control mechanisms determine the dynamic behaviour of the service experienced by the Customer.
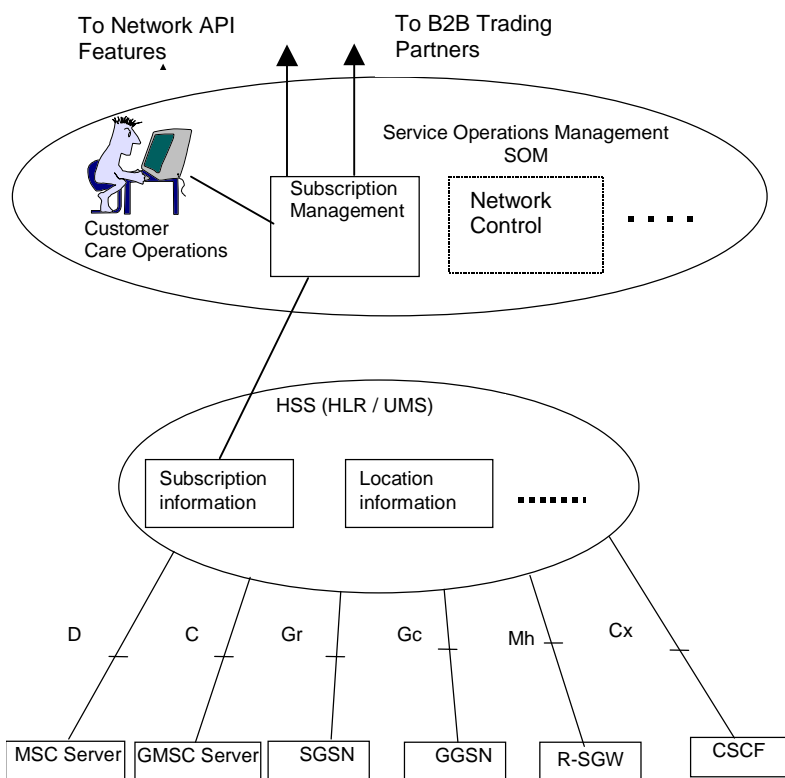


**Figure 2 Subscription Management relationship with Network Control**

The above diagram shows the relationship between the Release 5 architecture [5] and Subscription Management defined in this document.

Within Service Operations Management two features have been identified above

- Subscription Management

- Network Control Management

Subscription Management provides as a minimum:

- The management of the Subscription Profile in the HSS;

- The capabilities required by the Customer Care Operations for the control and modification of Customer Subscriptions;

- 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.
*Note: it is not clear if the requirements for network APIs differ from those for B2B trading Partners*

Where the service provided to the customer is a combination of:

User Equipment features;

Core Network capabilities;

Application services.

The interfaces that are needed for Subscription Management are shown in Figure 3 below:

**Figure 3 Subscription Management relationship to User Equipment Profile and Application Services**
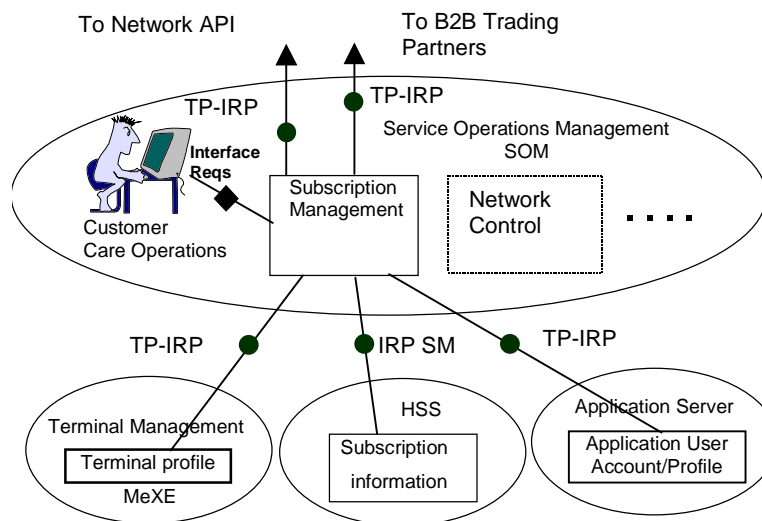


The figure above introduces a set of management interfaces (Interface Reference Points IRP) associated with the operation of the Subscription Management:

- IRP SM is the interface between Subscription

Management and the Home Service Server (HSS)

- TP-IRP is the interfaces between Service Management and a Trading Partner

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

*The need for an interface to the Authentication Centre AuC is for further study. It is assumed that the necessary information can be obtained and controlled via the HSS.*

# 5 Subscription Management Assumptions

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

**Editor's Note:**

**These assumptions will need to be checked and validated as the document is developed.**

## 5.1 Business Model assumptions

The provider of the service package to the customer may be different from either the Mobile Service Provider or the Mobile Network Provider.

The model shall allow for retailers and distributors that are independent of the Mobile Service Provider and the Mobile Network Provider.

The business model shall satisfy the subscription management requirements expressed in for example the MWIF business model [6] shown below, this business model 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.

### 5.1.1 Example Business Model
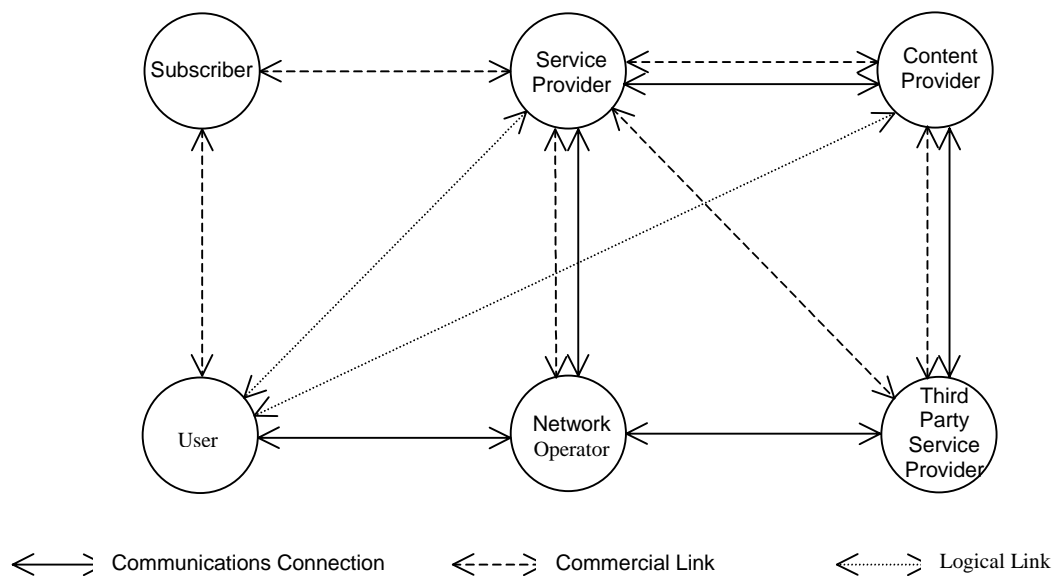


**Figure 4: Example Business Model**

In this business model, from Mobile Wireless Internet Forum (MWIF), 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. There is no commercial relationship between the User and the SP that prevents Users directly requesting additional or modified services. Approval must be gained from the Subscriber who subsequently authorizes the SP to provide the service.

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 Users, Subscribers, etc are roles, and that one entity may adopt more than one role. For instance an individual may adopt the roles of both User and Subscriber. 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.

## 5.2 Network and Control assumptions

The invocation of service feature in real time shall be the responsibility of the network and any associated control

The Open Service Access mechanisms shall be supported by the network and Subscription Management features, provided by Operations Systems responsible for OAM&P. (Details FFS with OSA and S1/S2 groups)

## 5.3 Terminals and Mobile equipment assumptions

The Mobile Equipment (ME) may contain one or more UICCs.

Each UICC (Universal Integrated Circuit Card) may host a USIM application (USIM is the 3G version of the GSM SIM) and may also contain other applications owned by 3rd party service providers as part of an authentication process (PKI, digital signature processing etc).

Customer secure information may be held on the UICC as opposed to the ME.

UICC may be issued by an organisation other than the Mobile Service Provider.

UICC may contain applications owned by third party Service Providers.

# 6 Subscription Management Requirements

## 6.1 Subscription Management High Level requirements.

In the GSM 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 customer. The involvement of multiple operators has been limited to customer roaming where the customer's services or some subset of them are supported.

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

- Services are not standardised but are replaced by a set of service capabilities that can be combined in arbitrary ways to deliver competitive end services to customers

- The services provided include more diverse data and information services, many supplied by third parties

- 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.

- Complex business models are emerging for mobile service provision including virtual Mobile Service Providers, and arrangement where multiple organisations work together provide the customer's services.

## 6.2 Process requirements

A process shall be defined to support a customer wish to check their Subscription Configuration.

Authentication of a customer shall be provided to prevent anyone other than the customer or an authorised person from gaining access their subscription configuration.

Customer service centre representatives shall be able to view and modify Subscription information.

Processes shall be defined access to Subscription Profiles by Trading Partners and Network APIs.

## 6.3 Technology requirements

Interfaces supporting Interface reference points shall use main stream e-commerce technology methods.

For TP-IRP interfaces preference shall be given to the use of ebXML based e-commerce solutions.

## *6.4 Business Aspects and Integration*

# 7 Approach to defining TP-IRP Interfaces

The purpose of this document is to define a set of management interfaces to support Subscription Management. The specification of Trading Partner IRP interfaces is complex because it has to combine a number of perspectives:

1. Business roles; (New requirement for Trading Partner IRPs)

2. Process, and functions; (As described in IRP Information Service)

3. Services, Networks and other Resource Models (As described in IRP Resource Models)

4. Implementation matters. (As described in IRP Solution Sets)

Earlier work on IRPs has been mainly focused on interfaces within a single organisation, For interfaces between Trading Partners it is important to model the business roles that each partner performs, this is the additional element of TP-IRPs.

Mainstream e-commerce work in the ebXML (www.ebxml.org)and RosettaNet groups have introduced the concepts of multiple views of interfaces:

- A Business Operational View (corresponding to 1. above)

- A Functional Service View (corresponding to 2. above)

- And an Implementation View (corresponding to 4. above)

Historically the importance of business roles has not been apparent because the telecommunication business model has been static and highly regulated. With the growth a competitive market the importance of business roles is rising since TP-IRP interfaces between organisation are now much more dynamic.

Each of the T-IRP interfaces identified in Section 0 Figure 3 may support different business roles depending on the Business model being supported.

Editor's Note: A number of general modelling assumption about Service Operation Management are required in order to produce the specific models and interfaces for Subscription Management. In this document this material is held in a non normative Appendix A.

.

# 7.1 Role based Business Model to support TP-IRPs

## 7.1.1 Introduction

The Business Model described here is based upon the definition of Roles.

The reason that a role based model is utilised is that it allows the definition of the essential capabilities that are traded between organisations whilst at the same time allowing any reasonable structure of organisations to be adopted by the industry. Specific organisations may perform one or more of the roles developed in this document.

The role based model is divided into a number of perspectives in order to simplify its presentation:

- The retail model. the view as seen by the retail customer

- The wholesale model. The view seen amongst the Service Providers that are co-operating to provide service capabilities or components of the service. For example, the suppliers of the voice service, the WAP portal and the unified voice messaging might be different.

The following sections introduce the high level Retail Model, the Wholesale Models and then a discussion of how these basic models are extended to give a mobile specific role model. Finally some examples are explored to show the relevance of this business model approach.

## 7.1.2 Customer retail model

In a retail model the emphasis is on a Service provided to a Customer.

The first element of the Retail part of the model is to distinguish between:

- The End Use Role , which is the entity that uses the service and requests instances of service, such a establishing calls, modifying call features such as diverts.

- The Customer Service Negotiation Role, that pays for the retail service and has the legal responsibility to pay for the service requested by the End User Role.

The same or different individuals may perform these roles. The authentication of these roles,  is essential to be able to control which subscription management services can be invoked or modified. The model also introduces the concept of Service Retailing role. This Role is a specific form of reseller and acts as a link between the Customer Service Negotiation and the Service Provision role. The service as seen by the Customer Service Negotiation role is defined by the Service Provision role and not the Service Retailer. When purchasing the Service the Customer Service Negotiation role is clear the product is from the Service Provider. This is usually achieved by branding the service.
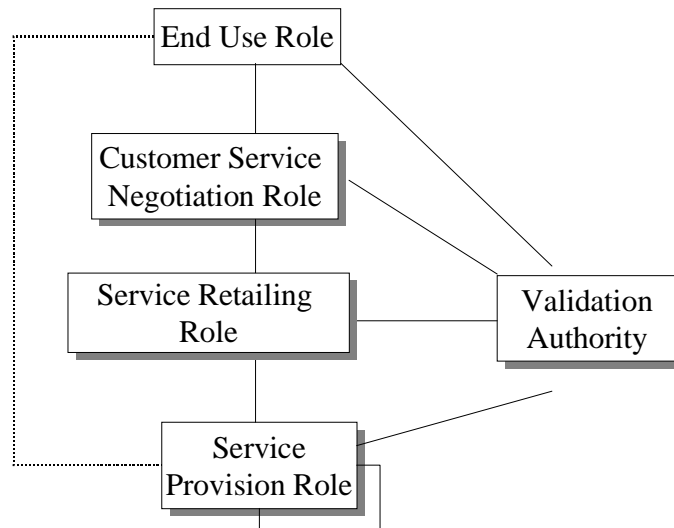
**Figure 5 General Retail Model**

Service Provision roles are responsible for the provision of communications Services to intermediaries for sale to other parties, which may include Service Retailers and other Service Providers.

Service Retailing roles may perform some of the following:

sales and promotion – retailing roles carry out this activity on behalf of the Service Provider, by using either their the Service Provider /manufacturer's brand or in conjunction with their own brand.

bulk breaking – retailing roles can make margins because of discounts obtained through purchasing in bulk when selling smaller quantities of a product to end customers

warehousing – retailing roles may hold inventories of a product on behalf of a producer or end customers

transportation – retailing roles are usually located closer to end users than the manufacturer and can reduce transportation times and costs

assortment building – retailing roles can aggregate products and services from different suppliers for delivery as a package to the final user.

Note: This model assumes that the User Equipment has been supplied by the Retailer or Service Provision role, and the USIM(s) by the Service Provision role. This is achieved in a in a way that their supply mechanism is invisible to the customer.

The end use role may for customer self care or pre-payment interact directly with the Service Provision role after the initial sale or set-up up of their Service. This is within the contractual parameter agreed between the Customer Service Negotiation role and the Service Retailing role.

## 7.1.3    Wholesale model

The wholesale model is about Service Providers and other intermediaries establishing a supply chain between them that is based upon volume sale arrangements

```
                        ┌──────────────┐
                        │   End Use     │
                        └──────────────┘
                 ┌──────────────────┐
                 │  Resale Service  │
                 │    Provision     │
                 └──────────────────┘
                                        ┌──────────────┐
                                        │  Validation  │
                                        │  Authority   │
                 ┌──────────────────┐   └──────────────┘
                 │ Integrating Service │
                 │    Provision     │
                 └──────────────────┘
 ┌──────────────┐   ┌──────────────┐      ┌──────────────┐
 │  Manufacture │   │Mobile  Service│     │   Service    │
 │              │   │   Provision   │     │  Provision   │
 └──────────────┘   └──────────────┘      └──────────────┘
                    ┌──────────────┐
                    │Mobile Network│
                    │   Provision  │
                    └──────────────┘
```
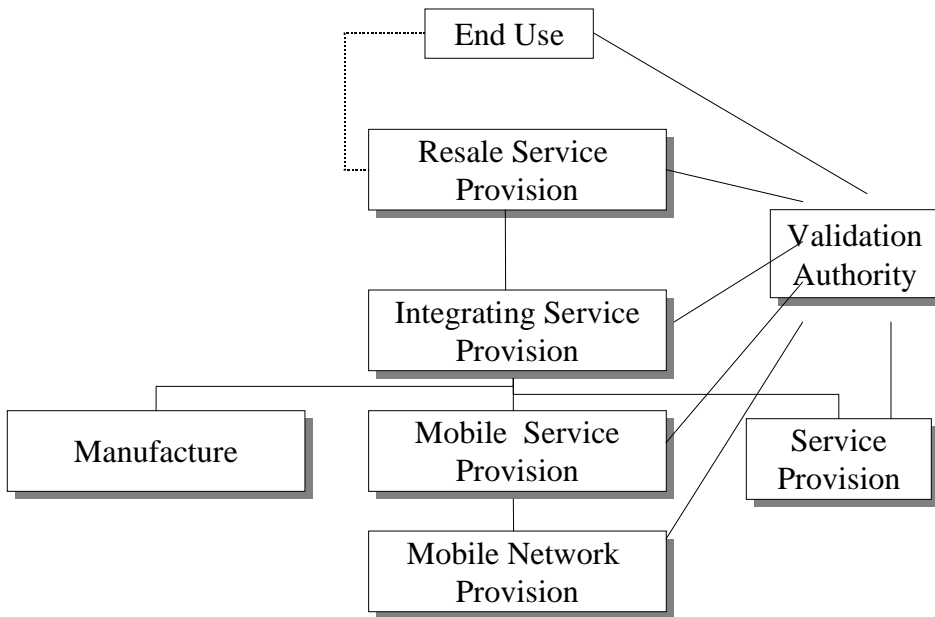
**Figure 6 General Wholesale Model**

The roles that have been identified in this model are:

Reseller Service provision is the role that simply re-brands a service obtained from another Service Provider This is the simplest form of wholesale reseller.

Integrating Service Provision is the role that take several products and services from others and bundles them into a single service and product package.

Mobile Service Provision is the role of a service provider that supplies mobile network based services e.g. telephony services, roaming services, mobile data services: GPRS, SMS, Voice Mail, etc.

Mobile Network Provision is a role that is facilities based and provides mobile service capabilities ( traditional and OSA based to Mobile Service Providers)

Other Service Provision roles such as value added Service Provision may all be involved in the wholesale supply chain.

Manufacture roles are involved in the supply of handsets and UICC/USIMs.

Example and scenario
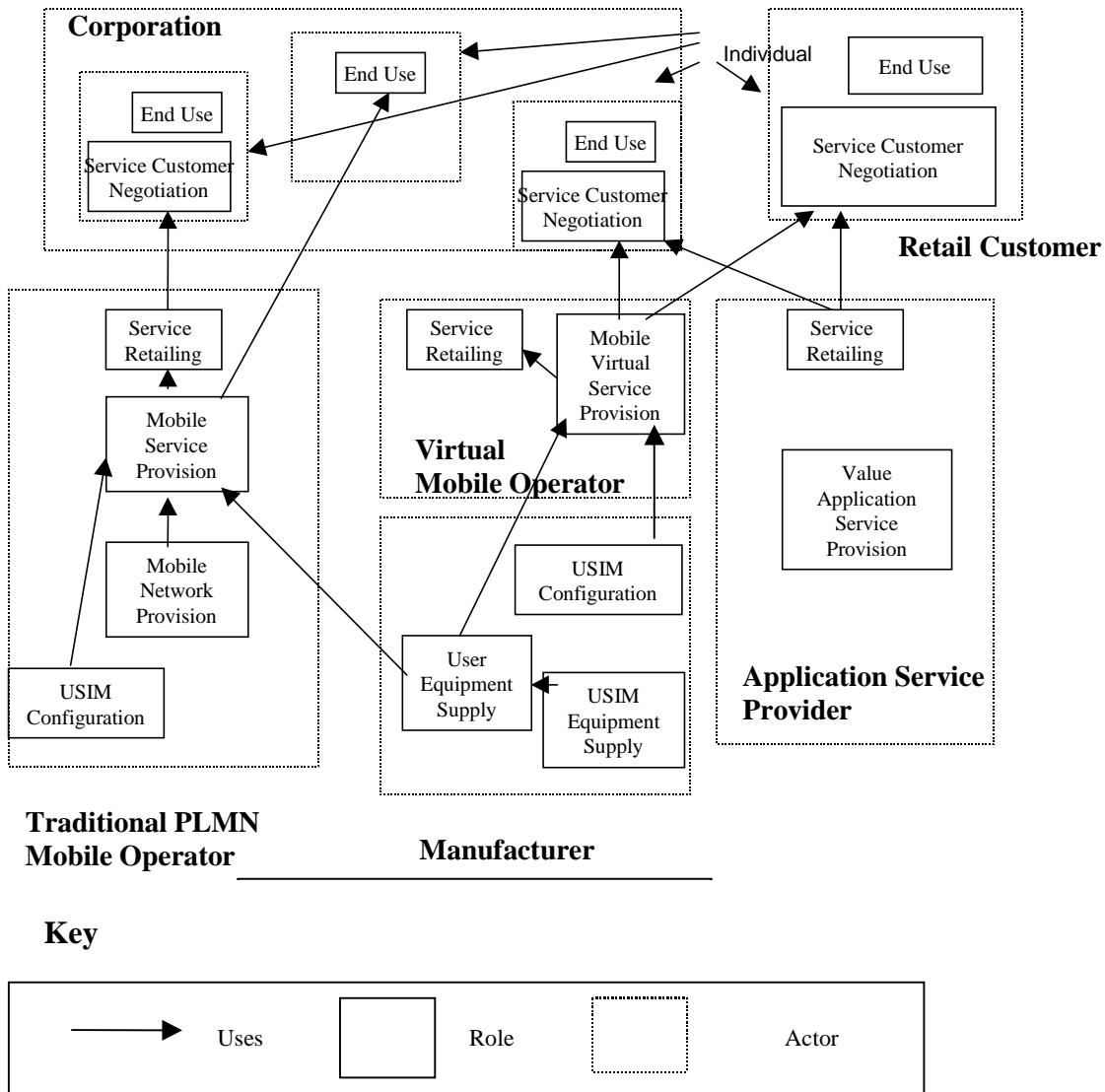
**Figure 7 Example of Roles and organisations**

This diagram shows an example of the roles combined in a specific way across organisations to deliver service subscriptions to a Service Customer.

# 8 The Subscription Profile parameters

## 8.1 User Equipment Profile

A reference will be made here to the parts of Use Equipment Management that support the configuration of the User Equipment profile.

## 8.2 Subscriber Profile

### 8.2.1 Subscription Management Data Structure and Functions

Below is an example of how Subscription/Customer information could be structured for use within SA5:

1-Subscriber contains multiple users:

1.1-Subscriber/Customer Profile/Contract

   1.2-User 1:

      1.2.1-User Profile

      1.2.2-Subscription to Service x

         1.2.2.1-Service Profile a

         1.2.2.1-Service Profile b

      1.2.3-Subscription to Service y

         1.2.3.1-Service Profile c

         1.2.3.1-Service Profile d

   1.3-User 2:…

This specification will define which part of this information is subject to the Network Manager only, and which subject to the Network Manager-HSS Interface /other Network Elements, and which is subject the HSS/Network Elements/Feature Server only<FFS>.

In accordance with [8], the minimal set of Management/Provisioning functions that shall be supported for the management of the User Profile are:

1) Create one or more User Profiles.
2) Request information contained in a User Profile.
3) Delete a User Profile.
4) Modify a User Profile.
5) Define the default User Profile.
6) Define the criteria for automatically selecting User Profiles.

## 8.2.2  Subscriber Profile Data

The information in this section is a summary of the Subscriber Profile information held in the HSS. The normative version of this information is in Organisation of Subscriber data [2] , (see appendix 1 for an extract).

*It maybe that later in the development of this document that this material should be removed or summarised in some way.*

It shall be possible to retrieve or store subscriber data concerning a specific MS from the HLR by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);

- Mobile Station ISDN Number (MSISDN)

It shall be possible to retrieve or store subscriber data concerning a specific MS from the VLR by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);

- Temporary Mobile Subscriber Identity (TMSI).

It shall be possible to retrieve or store subscriber data concerning a specific MS from the SGSN by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);

    Packet Temporary Mobile Subscriber identity (P-TMSI).

It shall be possible to retrieve or store subscriber data concerning a specific MS from the GGSN by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);

See clause 3 for explanation of M, C, T and P in table 1 and table 2.

Editors Note: This section might be better presented in a table

# 9 SM<sub>H</sub> IRP High-level Architecture Overview

*This section identifies the high level Architecture and Interfaces involved in the management of the HSS component of the Subscription profile.*
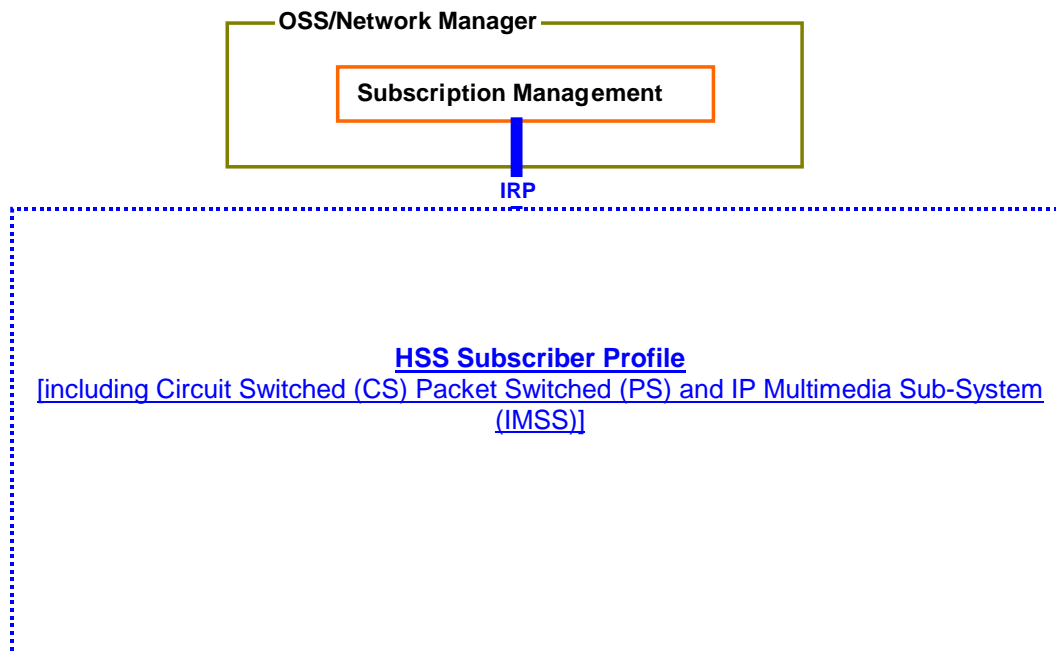
*Figure 8: High Level Management Architecture*

## 9.1 SM<sub>H</sub> IRP Subscription Management Functions

See 8.2 (Subscriber Profile) above.

## 9.2 SM<sub>H</sub> IRP Interface Architecture

This section identifies the Interface Architecture involved in the management of the HSS component of the Subscription profile.
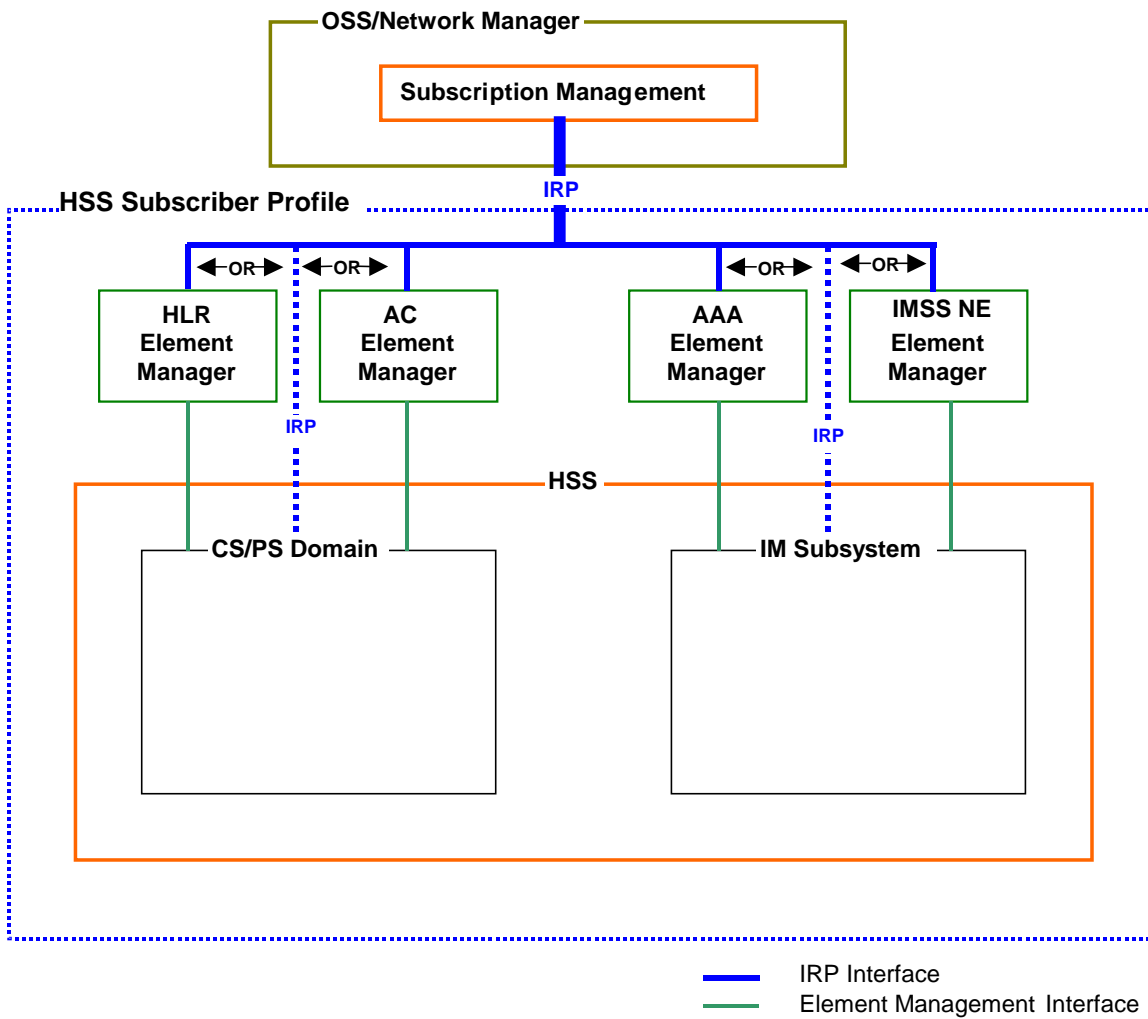
*Figure 9: Example Management Interface Architecture*

Inside the broken line box some possible interface implementations are identified, however these are not required for compliance. The interface that shall be standardized and shall be required for compliance is between the Network Manager and the HSS Subscriber Profile. It should be noted that management of subscription information in USIM/UE is not subject of the initial phase of subscription management, but should be considered during a following phase, probably in the context of and in combination with "UE/User Equipment Management".

## 9.3 Subscription Management IRP Solution Sets

Below possible Solution Sets for Subscription Management are presented. The variety is related to alignment with current solutions sets (CORBA, CMIP) but is also addressing IM and IP technologies. It should be noted that a Solution Set based on database replication is taking advantages of ODBC into account.
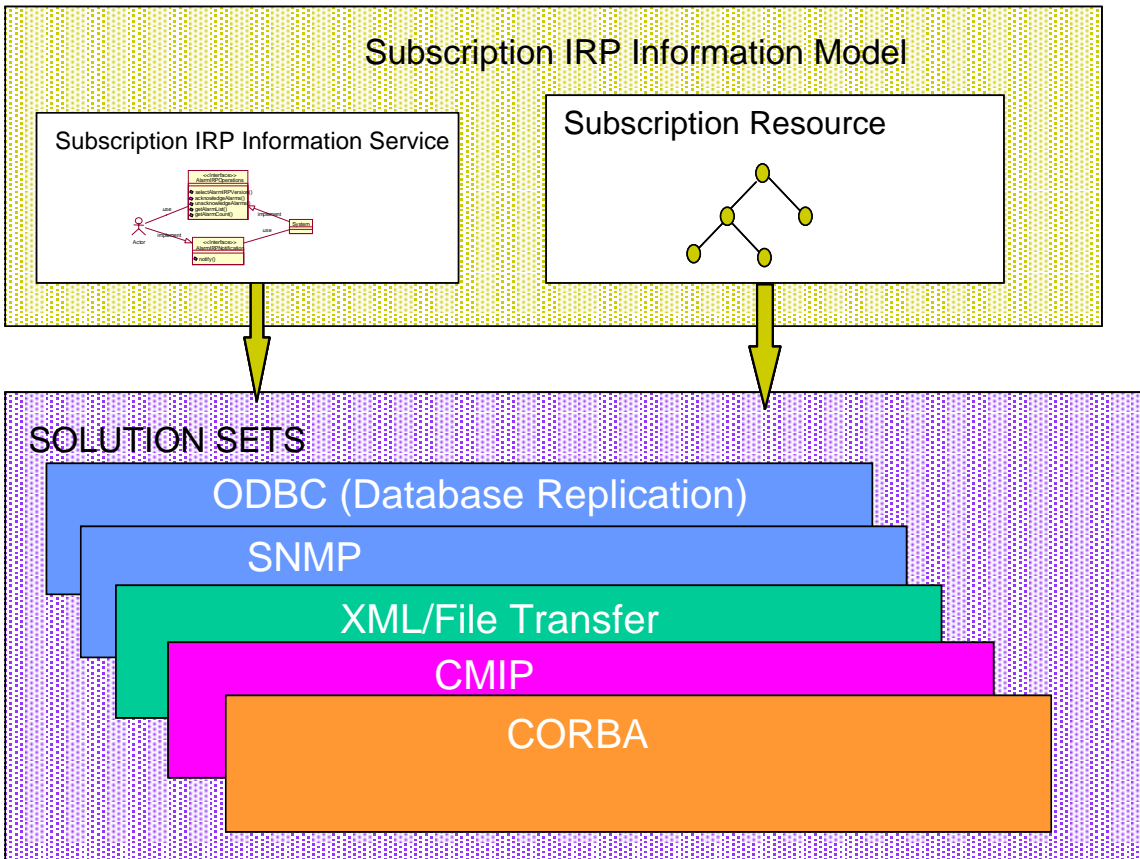
**Figure 10: Subscription Management Interface Solution Sets**

# 10 Security

Tba

This section will need to address the relationship with the security mechanisms used in the Network since subscription management will need to bridge between the 3GPP network security functions [3] and the security used in main stream e-commerce solutions such as those in ebXML [4] .

# 11 Relationship to Open Service Architecture

Tba

# Annex A (Informative):
## UML Trading Partner Information models

The following diagrams show the UML Information model that describes the logical relationship between entities described in this document

## Retail Model
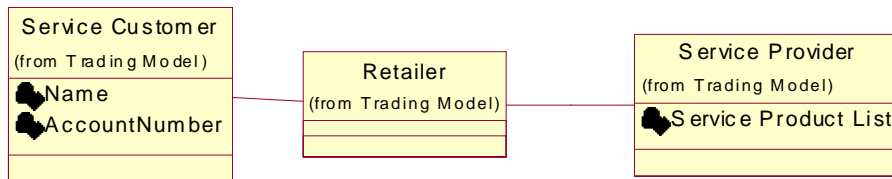


**Figure 11 Retail UML Model**

*Descriptive text to be added*

# Trading Model
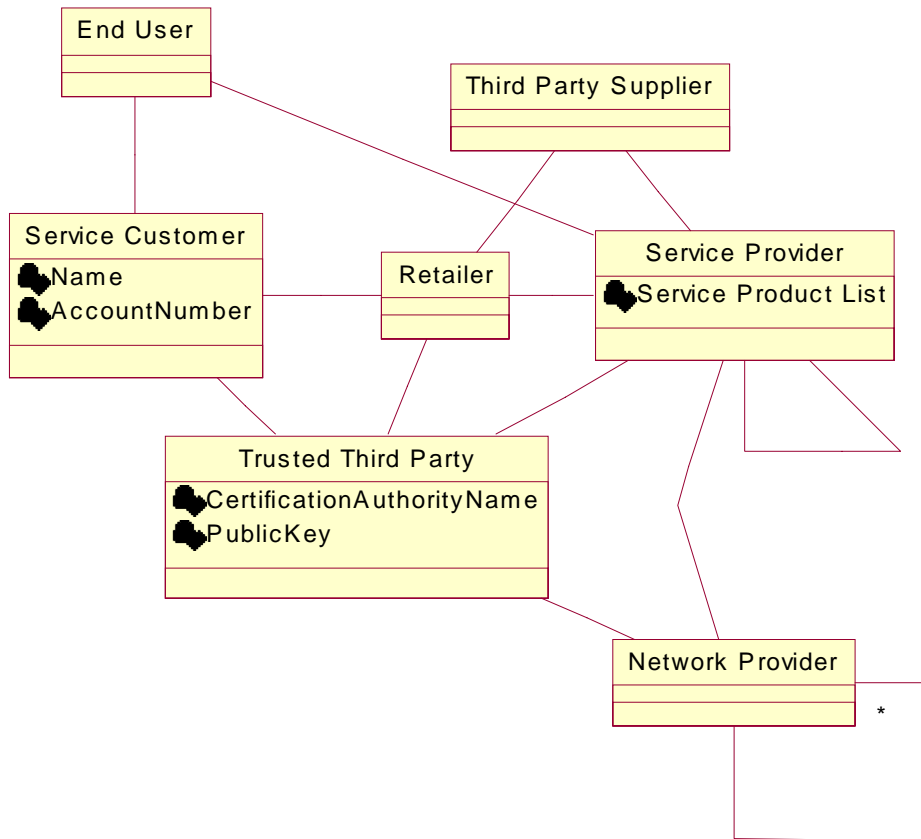


**Figure 12 Trading Model UML Model**

*Descriptive text to be added*

*Descriptive text to be added*

# Annex B (Informative)

*(Note: This Annex needs to be updated)*

# Mobile Business Model
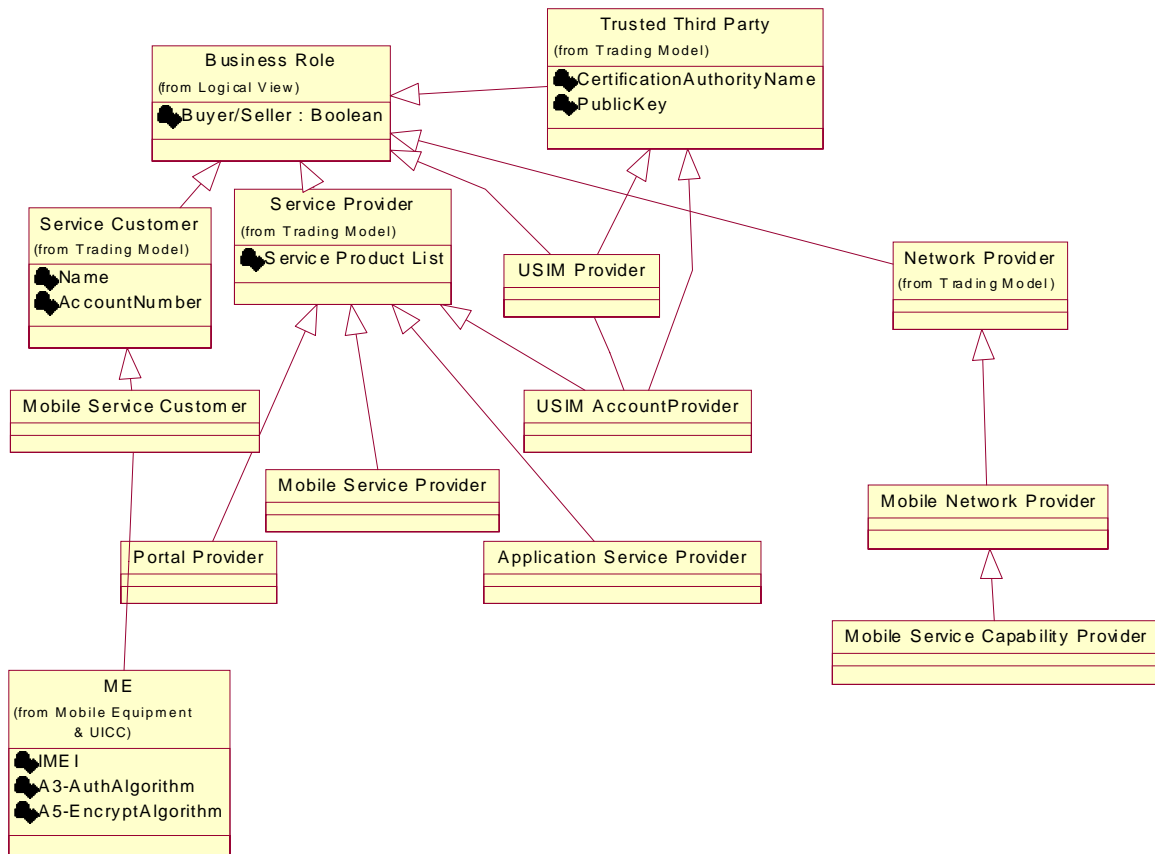


**Figure 13 Mobile Business UML Model**

*Descriptive text to be added*

Trading Agreements
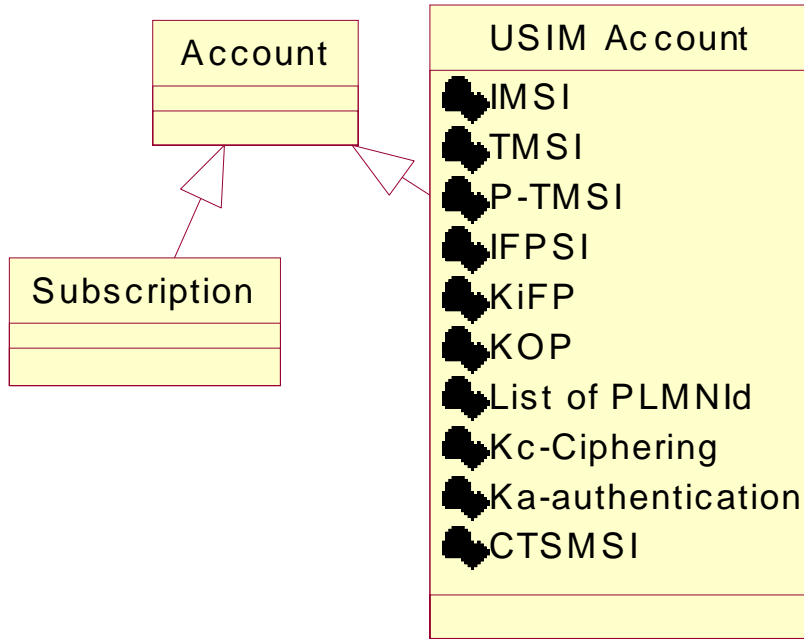
**Figure 14 Trading Agreements UML Model**

Mobile Equipment and UICC
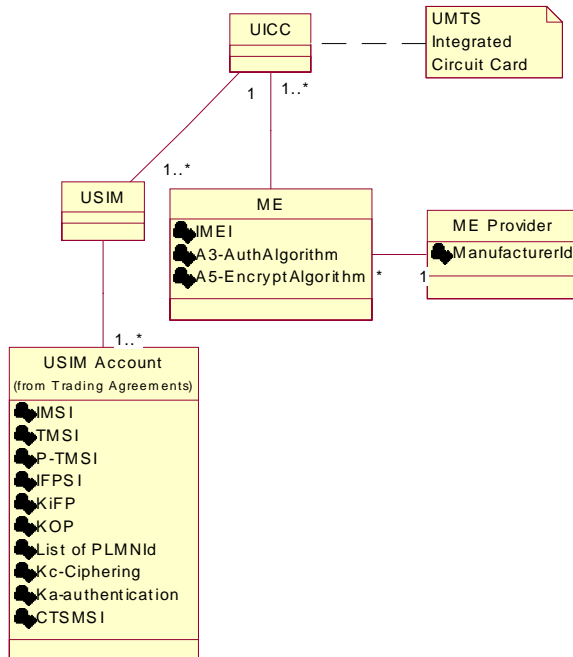


**Figure 15 Mobile Equipment and UICC UML Model**

*Descriptive text to be added*

Business View

*Descriptive text to be added*

Functional Service View

*Descriptive text to be added*

Implementation View

*Descriptive text to be added*

# Annex C (informative):

# TMN and e-commerce interface models

There are a number of concepts used to describe the capabilities of interfaces.

The ITU-T has recently defined its terminology more precisely, and new work in the field of e-commerce by groups such as RosettaNet and ebXML has introduced new terms.

This annex provides an analysis of these alternative approaches and relates them to the terminology used in this document.

# TMN Approach

The original work on TMN in the early 1990s did not address the definition of terms at all since M.3010 was a discursive document rather than a normative document.

This problem has been recognised and the most recent TMN documents M.3010 and M.3013 have now introduced definitions for all the TMN terms.

These are reproduced below:

**management application function:**

a function that represents (part of) the functionality of one or more management services.

**management function:**

the smallest part of a management service as perceived by the user of the service.

**management function set:**

TMN management function set is a grouping of TMN management functions that contextually belong together, i.e. they are related to a specific management capability (e.g. alarm reporting functions, traffic management control). The TMN management function set is the smallest reusable item of functional specification. The TMN management function set must be considered as a whole. It is similar to the requirements part of the OSI SMF (system management function)

**management service:**

a management service is an offering fulfilling specific telecommunications management needs.

This is a significant improvement on earlier work but still suffers from the lack of a information metamodel (based upon UML) that relates these concepts together.

# RosettaNet Approach

The RosettaNet consortium has developed a business to business e-commerce framework called the Rosettanet Implementation Framework v 2 [RNIF].

## Partner Interchange Processes (PIPs)

It has developed a concept of Partner Interface Processes (PIP™) that form the atomic level of process interoperability.

These PIPs capture three aspects of an interoperability problem.

- **Business Operational View (BOV).** Captures the semantics of business data entities and their flow of exchange between roles as they perform business activities.

- **Functional Service View (FSV).** Specifies the network component services and agents and the interactions necessary to execute PIPs. The FSV includes all of the transaction dialogs in a PIP Protocol. The purpose of the FSV is to specify a PIP Protocol that is systematically derived from the BOV.

- **Implementation Framework View (IFV).** Specifies the network protocol message formats and communications requirements between peer-protocols supported by network components in the RosettaNet Implementation Framework.

The PIP Functional Service View corresponds to the TMN equivalent term MF.

## Clusters and Segments

Rosettanet has a hierarchical classification scheme for PIPs which is purely for convenience. Clusters are comprised of Segments and segments are comprised of PIPs.

## Requirements

In all of these models there are a few common requirements emerging, albeit not clearly delineated in any of the frameworks.

- **Taxonomy.** A general need exists to break down the whole problem domain into smaller pieces that can be defined more or less autonomously of one another. The purpose of this is to allow cataloguing and classification.

- **Setting the limit of analysis.** Since the purpose of interoperability is to specify sufficiently the behaviour of an application but not to completely define the application there has to be an 'atomic level' to the analysis.

- **Separation of logical description from physical realisation.** The TMN concept of functions and reference points is intended to separate the logical and physical realisation.

- **Relating the concepts.** Given that the problem is broken into a number of perspective, business, functional and implementation /realisation there needs to be a way of clear y relating these perspective to one another.

The Rosettanet PIP combines, at the atomic level, these three perspectives and the relationship amongst them. For TMN the binding of the reference points to an interface performs an equivalent function, although the relationship to the Business view is often unclear

## Semantic Model

The following is a model, in UML that captures the relationships amongst the concepts in used in the TMN. It also captures the relationship to the terms used in this document.

The key aspects are:

- The modelling entities are divided between the ebXML / Rosettanet Business Operational view, the Functional Service View and the Implementation View.

- Two entities act as the bridge between the three views, namely Management Function Sets and Reference Points.

The diagrams in the following sections help delineate the concepts and to show the relationships amongst the entities modelled by these terms.

## Business Operational View
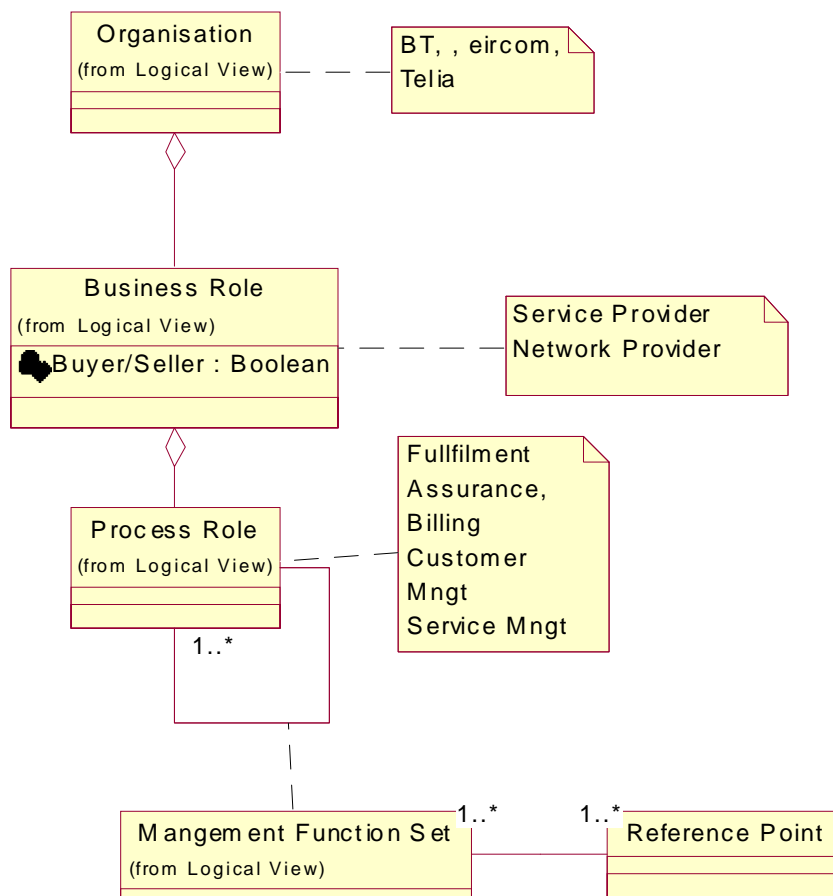


**Figure 16 Business View UML Model**

This view models the relationship between organisations and the business roles that they perform.

In this view Business Roles are high level roles such as IPND A, T and Z. i.e. business roles that would be needed to describe a business level scenario. All business roles are assumed to support both a Buyer Role and a separate Seller Role. Examples of Business Roles for IP QoS are SP, IPND A, IPND T, etc…

Process Roles are used to describe the high level processes that the Business role is expected to support. Examples are shown based upon the TMF Telecoms Operations Map high level process areas.

All these entities are objects on which the functions (verbs) operate.

Two components: Management Function Set and Reference Points, act as a bridge to the other views. This is explained later in more detail.

Functional Service View

In TMN the emphasis has been on the description of a containment hierarchy such as Management Functions contained within a Management Function Set that is related to a Management Service. Management Services are arbitrary

collections of functionality to meet some specific management needs. It does not imply a containment relationship containment.

Management Function Sets model the 'relationship' between two Process Roles that are interacting: i.e. it is the 'verb' that describes what is done to the Process Roles that are the 'objects'. Examples from the IP QoS model are shown in the diagram.

Management Function Sets are arbitrarily decomposed into Management Functions (MF). This is simply a taxonomy convenience and allows for reuse of specifications.

MFs are equivalent to the Functional Service view of a Partner Interchange Process (PIP).
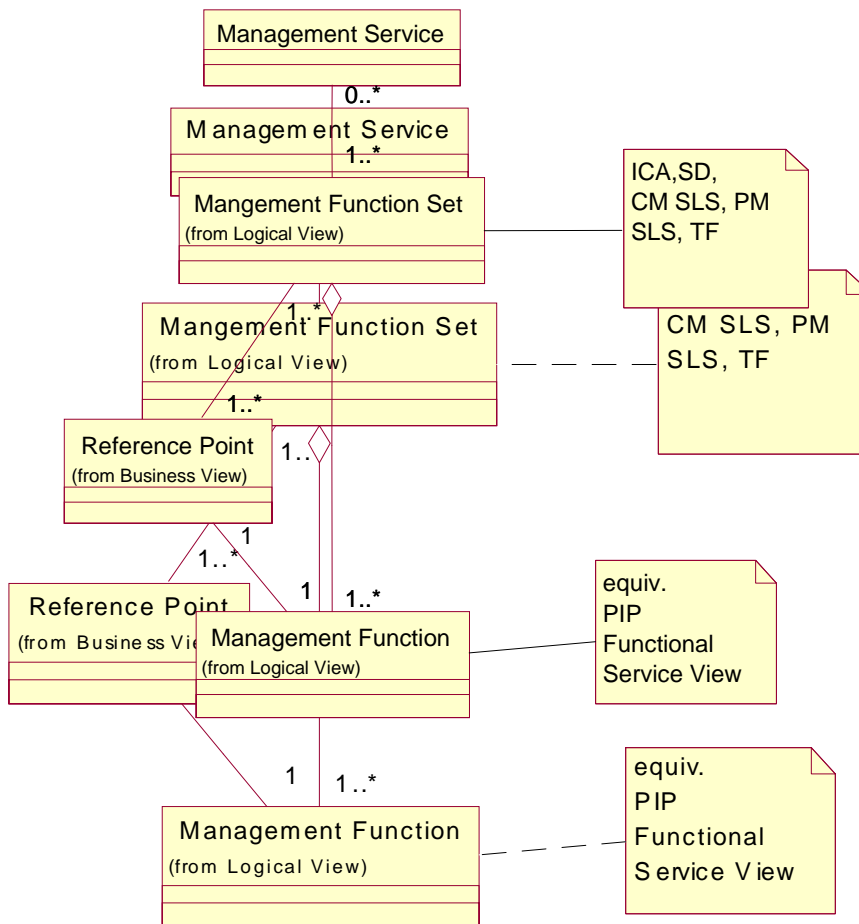
**Figure 17 Functional View UML Model**

TMN Management Services are simply arbitrary, but useful collections, of Management Function Sets.

Issue: Currently not clear that relationship between reference point and management function is 1:1 and text taken from TMN documents below may help clarify this.

-----------------------------------------------------------------------------------

*Some quotes from M.3010*

*7.4 TMN Reference Points*

*A TMN reference point delineates one of several external views of functionality of a function block; it defines that function block's service boundary. This external view of functionality is captured in the set of TMN Management functions that will have visibility from the function block.*

*Reference points have meaning in functional specifications leading to an implementation. A reference point can represent the interactions between a particular pair of function blocks. Table 1/M.3010 shows the relationships between the function blocks in terms of the reference points between them. The reference point concept is important because it represents the aggregate of all of the abilities that a particular function block seeks from another particular function block, or equivalent function blocks. It also represents the aggregate of all of the operations and/or notifications (as defined in ITU-T*

*Recommendation X.703) that a function block can provide to a requesting function block.*

*7.5 TMN Logical Layered Architecture Within the TMN Functional Architecture*

*To deal with the complexity of telecommunications management, management functionality may be considered to be partitioned into logical layers. The Logical Layered Architecture (LLA) is a concept for the structuring of management functionality which organizes the functions into groupings called "logical layers" and describes the relationship between layers. A logical layer reflects particular aspects of management arranged by different levels of abstraction.*

*8.7 TMN Logical Layered Architecture Within the TMN Information Architecture*

*As introduced in Section 7 the Logical Layered Architecture (LLA) is a concept for the structuring of management functionality which organizes the functions into groupings called "logical layers" and describes the relationship between layers.*

## Bridging Components

The Reference Point is a relationship between two Process Roles and is bound on a one to one basis with a Management Function since this is the 'atomic' level of the model. However there is a N:M relationship between a Reference Point and the Management Function Sets (MFS). This allows a Reference Point to be used by one or more Management Function Sets (for specification convenience and economy), and for a Management Function Set to be a collection of Reference Points.

## Information Model Implementation View

The following UML diagram shows the relationships between Reference Points and the implementation of an interface.
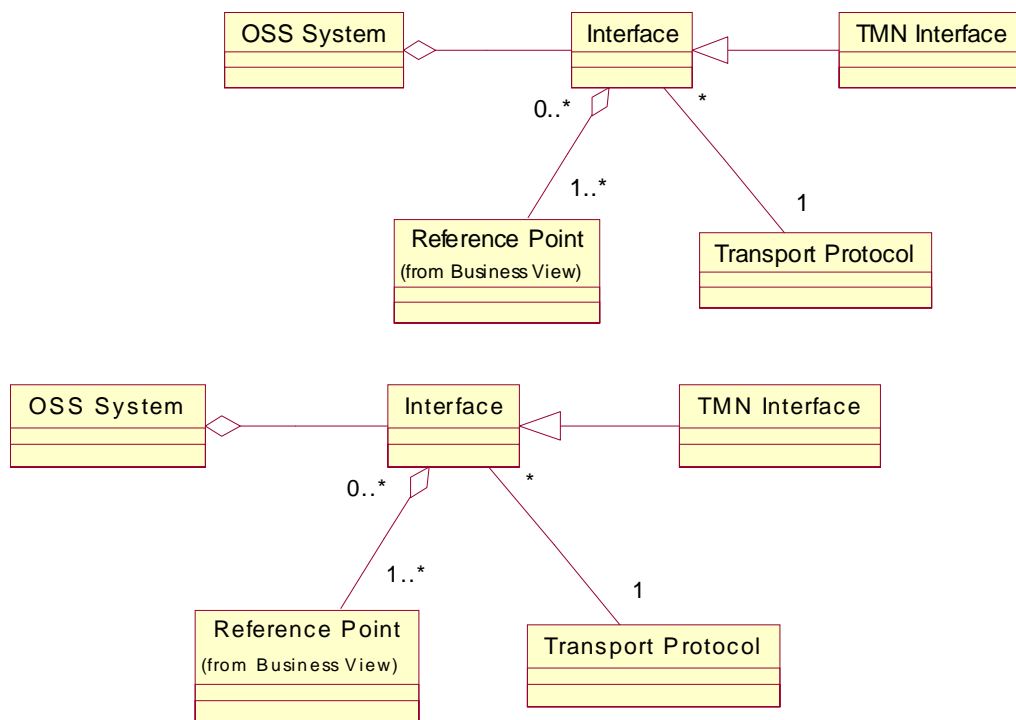
**Figure 18 Implementation View UML Model**

An interface is a physical interface between two Systems (TMN Systems). It supports a set of Reference Points and has associated with it one Transport protocol.

In traditional TMN terminology, sets of Reference Points link to Management Services(EU) that link Process Roles. Each Reference Point is bound to one Management Function.

This means that an TMN Operations Systems Function is effectively a equivalent to one of more Process Roles.

*Note the relationship to security mechanisms needs to be explored further.*

# Annex D (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 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

# Annex E (Informative): Document History

| Document history | | |
|---|---|---|
| V0.0.0 | 2001-02 | Document created |
| V0.1.0 | 2001-03 | Output of  SA5#18 |
| V0.1.1 | 2001-04 | Input to SA5#19 |
| V0.1.2 | 2001-04 | Output of SA5#19 |
| V0.2.0 | | |
| V0.3.0 | | |
| V0.4.0 | | |
| V0.5.0 | | |
| V0.6.0 | | |
| V1.0.0 | | |
| V1.0.1 | | |
| | | |
| Editor for 3GPP SA5 TS 32.140 is:  Geoff Caryer (BT) geoff.caryer@btinternet.com | | |
| | | |
| This document is written in Microsoft Word version 7/97. | | |

# Appendix A:

***(Note provided for completeness only, this Appendix will not form part of the published specification)***

Table 1 Overview of data stored for non-GPRS Network Access Mode

| PARAMETER | SUBCLAUSE | HLR | VLR | TYPE | |
|---|---|---|---|---|---|
| IMSI | 2.1.1.1 | M | M | P | Note |
| Network Access Mode | 2.1.1.2 | M | - | P | Note |
| International MS ISDN number | 2.1.2 | M | M | P | |
| multinumbering MSISDNs | 2.1.3 | C | - | P | Note |
| Basic MSISDN indicator | 2.1.3.1 | C | - | P | |
| MSISDN-Alert indicator | 2.1.3.2 | C | - | P | |
| TMSI | 2.1.4 | - | C | T | |
| LMSI | 2.1.8 | C | C | T | Note |
| Mobile Station Category | 2.2.1 | M | M | P | |
| RAND, SRES and Kc | 2.3.1 | M | M | T | |
| Ciphering Key Sequence Number | 2.3.2 | - | M | T | |
| MSRN | 2.4.1 | - | C | T | Note |
| Location Area Identity | 2.4.2 | - | M | T | |
| VLR number | 2.4.5 | M | - | T | Note |
| MSC number | 2.4.6 | M | C | T | |
| HLR number | 2.4.7 | - | C | T | |
| Subscription restriction | 2.4.9 | C | - | P | |
| RSZI lists | 2.4.10.1 | C | - | P | |
| Zone Code List | 2.4.10.2 | - | C | P | |
| MSC area restricted flag | 2.4.11 | M | - | T | |
| LA not allowed flag | 2.4.12 | - | M | T | |
| ODB-induced barring data | 2.4.15.1 | C | - | T | |
| Roaming restriction due to unsupported feature | 2.4.15.2 | M | M | T | |
| Cell ID | 2.4.16 | - | C | T | |
| LSA Identity | 2.4.X.1 | C | C | P | |
| LSA Priority | 2.4.X.2 | C | C | P | |
| LSA Only Access Indicator | 2.4.X.3 | C | C | P | |
| LSA Active Mode Indicator | 2.4.X.4 | C | C | P | |

| | | | | |
|---|---|---|---|---|
| VPLMN Identifier | 2.4.X.5 | C | - | P |
| Provision of bearer service | 2.5.1 | M | M | P |
| Provision of teleservice | 2.5.2 | M | M | P |
| BC allocation | 2.5.3 | C | C | P |
| IMSI detached flag | 2.7.1 | - | C | T |
| Confirmed by Radio Contact indicator | 2.7.4.1 | - | M | T |
| Subscriber Data Confirmed by HLR indicator | 2.7.4.2 | - | M | T |
| Location Information Confirmed in HLR indicator | 2.7.4.3 | - | M | T |
| Check SS indicator | 2.7.4.4 | M | - | T |
| MS purged for non-GPRS flag | 2.7.5 | M | - | T |
| MNRR | 2.7.7 | C | - | T |
| Subscriber status | 2.8.1 | C | C | P |
| Barring of outgoing calls | 2.8.2.1 | C | C | P |
| Barring of incoming calls | 2.8.2.2 | C | - | P |
| Barring of roaming | 2.8.2.3 | C | - | P |
| Barring of premium rate calls | 2.8.2.4 | C | C | P |
| Barring of supplementary service management | 2.8.2.5 | C | C | P |
| Barring of registration of call forwarding | 2.8.2.6 | C | - | P |
| Barring of invocation of call transfer | 2.8.2.7 | C | C | P |
| Operator determined barring PLMN-specific data | 2.8.3 | C | C | P |
| Handover Number | 2.9.1 | - | C | T |
| Messages Waiting Data | 2.10.1 | C | - | T |
| Mobile Station Not Reachable Flag | 2.10.2 | C | M | T |
| Memory Capacity Exceeded Flag | 2.10.3 | C | - | T |

(continued)

Table 1 (concluded): Overview of data stored for non-GPRS Network Access Mode

| PARAMETER | SUBCLAUSE | HLR | VLR | TYPE | |
|---|---|---|---|---|---|
| Trace Reference | 2.11.1 | C | C | P | |
| Trace Type | 2.11.2 | C | C | P | |
| Operations Systems Identity | 2.11.3 | C | C | P | |
| HLR Trace Type | 2.11.4 | C | - | P | |
| MAP Error On Trace | 2.11.5 | C | - | T | |
| Trace Activated in VLR | 2.11.6 | C | C | T | |
| Foreign Subscriber Registered in VLR | 2.11.7 | - | C | P | Note |
| VGCS Group Membership List | 2.12.1 | C | C | P | |
| VBS Group Membership List | 2.12.2 | C | C | P | |
| Broadcast Call Initiation Allowed List | 2.12.2.1 | C | C | P | |
| Originating CAMEL Subscription Information | 2.14.1.1 | C | C | P | |
| Terminating CAMEL Subscription Information | 2.14.1.2 | C | - | P | |
| Location Information/Subscriber state Information | 2.14.1.3 | C | - | P | |
| USSD CAMEL subscription information(U-CSI) | 2.14.1.4 | C | - | P | |
| SS invocation notification (SS-CSI) | 2.14.1.5/3.2 | C | C | P | |
| FTN translation information flag(TIF-CSI) | 2.14.1.6 | C | - | P | |
| USSD General CAMEL service information (UG-CSI) | 2.14.2 | C | - | P | |
| Negotiated CAMEL Capability Handling | 2.14.2 | C | - | T | |
| IST Alert Timer | 2.16.1 | C | C | P | |

Table 2: Overview of data used for GPRS Network Access Mode

| PARAMETER | Subclause | HLR | VLR | SGSN | GGSN | TYPE | |
|---|---|---|---|---|---|---|---|
| IMSI | 2.1.1.1 | M | M | M | M | P | Note |
| Network Access Mode | 2.1.1.2 | M | - | C (a) | - | P | Note |
| International MS ISDN number | 2.1.2 | M | M | M | - | T | |
| multinumbering MSISDNs | 2.1.3 | C | - | - | - | T | Note |
| Basic MSISDN indicator | 2.1.3.1 | C | - | - | - | T | . |
| MSISDN-Alert indicator | 2.1.3.2 | C | - | - | - | T | |
| P-TMSI | 2.1.5 | - | - | C | - | T | Note |
| TLLI | 2.1.6 | - | - | C | - | T | |
| Random TLLI | 2.1.7 | - | - | C | - | T | Note |
| IMEI | 2.1.9 | - | - | C | - | T | |

| RAND/SRES and Kc | 2.3.1 | M | - | M | - | T | |
|---|---|---|---|---|---|---|---|
| Ciphering Key Sequence Number | 2.3.2 | - | - | M | - | T | |
| Selected Ciphering Algorithm | 2.3.3 | - | - | M | - | T | |
| Current Kc | 2.3.4 | - | - | M | - | T | |
| P-TMSI Signature | 2.3.5 | - | - | C | - | T | |
| Routing Area Identity | 2.4.3 | - | - | M | - | T | |
| Cell Global Identification | 2.4.4 | - | - | C | - | T | |
| SGSN Number | 2.4.8.1 | M | C (Gs) | - | - | T | Note |
| GGSN Number | 2.4.8.2 | © | - | - | - | P | Note |
| VLR Number | 2.4.5 | M | - | C (Gs) | - | T | |
| RSZI Lists | 2.4.10.1 | C | - | - | - | P | |
| Zone Code List | 2.4.10.2 | - | - | C | - | P | |
| LA not allowed flag | 2.4.12 | - | - | M | - | T | |
| SGSN area restricted flag | 2.4.13 | M | - | - | - | T | |
| Roaming Restriction in the SGSN .. | 2.4.15.2 | M | - | M | - | T | |
| Cell ID | 2.4.16 | - | - | C | - | T | |
| LSA Identity | 2.4.X.1 | C | C | C | - | P | |
| LSA Priority | 2.4.X.2 | C | C | C | - | P | |
| LSA Only Access Indicator | 2.4.X.3 | C | C | C | - | P | |
| LSA Active Mode Indicator | 2.4.X.4 | C | C | C | - | P | |
| VPLMN Identifier | 2.4.X.5 | C | - | - | - | P | |
| Provision of teleservice | 2.5.2 | C | - | C | - | P | |
| Transfer of SM option | 2.5.4 | M | - | - | - | P | |
| Subscriber Status | 2.8.1 | C | - | C | - | P | |
| Barring of outgoing calls | 2.8.2.1 | C | - | C | - | P | |
| Barring of roaming | 2.8.2.3 | C | - | C | - | P | |
| ODB PLMN-specific data | 2.8.3 | C | - | C | - | P | |
| MM State | 2.7.3 | - | - | M | - | T | |
| Subscriber Data Confirmed by HLR Indicator | 2.7.4.2 | - | - | M | - | T | |
| Location Info Confirmed by HLR Indicator | 2.7.4.3 | - | - | M | - | T | |
| MS purged for GPRS flag | 2.7.6 | M | - | - | - | T | |
| MNRG | 2.7.2 | M | - | M | M | T | |
| MNRR | 2.7.7 | C | - | - | - | T | |
| Trace Activated in SGSN | 2.11.7 | C | - | C | - | P | |

| | | | | | | |
|---|---|---|---|---|---|---|
| PDP Type | 2.13.1 | C | - | C | M | P |
| PDP Address | 2.13.2 | C | - | C | M | P |
| NSAPI | 2.13.3 | - | - | C | C | T |
| PDP State | 2.13.4 | - | - | C | - | T |
| New SGSN Address | 2.13.5 | - | - | C | - | T |
| Access Point Name | 2.13.6 | C | - | C | C | P/T Note |
| GGSN Address in Use | 2.13.7 | - | - | C | - | T |
| VPLMN Address Allowed | 2.13.8 | C | - | C | - | P |
| Dynamic Address | 2.13.9 | - | - | - | C | T |
| SGSN Address | 2.13.10 | - | - | - | M | T |
| GGSN-list | 2.13.11 | M | - | - | - | T |

(continued)

**Table 2 (concluded): Overview of data used for GPRS Network Access Mode**

| PARAMETER | Subclause | HLR | VLR | SGSN | GGSN | TYPE | |
|---|---|---|---|---|---|---|---|
| Quality of Service Subscribed | 2.13.12 | C | - | C | - | P | |
| Quality of Service Requested | 2.13.13 | - | - | C | - | T | |
| Quality of Service Negotiated | 2.13.14 | - | - | C | M | T | |
| SND | 2.13.15 | - | - | C | C | T | |
| SNU | 2.13.16 | - | - | C | C | T | |
| DRX Parameters | 2.13.17 | - | - | M | - | T | |
| Compression | 2.13.18 | - | - | C | - | T | |
| NGAF | 2.13.19 | - | - | C (Gs) | - | T | |
| Classmark | 2.13.20 | - | - | M | - | T | |
| TID | 2.13.21 | - | - | C | C | T | |
| Radio Priority | 2.13.22 | - | - | C | - | T | |
| Radio Priority SMS | 2.13.23 | - | - | C | - | T | |

NOTE: The HLR column indicates only GPRS related use, i.e. if the HLR uses a parameter in non-GPRS Network Access Mode but not in GPRS Network Access Mode, it is not mentioned in this table 2. (Gs): The VLR column is applicable if Gs interface is installed. It only indicates GPRS related data to be stored and is only relevant to GPRS subscribers registered in VLR.

a): This parameter is relevant in the SGSN only when the Gs interface is installed.

NOTE: For special condition of storage see in the clauses 2.x.y referred-to. See clause 3 for explanation of M,C,T and P in table 2.

ISSUES from Customer Retail Model

Issue 1 - Do we need a separate model for pre pay? I.e. the top up cards may be sold by a different intermediary organisation. There may be no direct or indirect contractual relationship between the Service Customer and the Service provider

Issue 2 – Does the customer have a direct relationship with the Service Provider role or is it always via a service retailer.

Issue 3 – What role(s) does the Customer Care Centre Play (e.g. service retailer, service provider, PLMN network

# Appendix B: Extracts from EN 300 291-1 Customer Administration

***(Note provided for completeness only, this Appendix will not form part of the published specification)***

**EN 300 291-1**
**TMN;**
**Functional specification of Customer Administration on the Operations System/Network Element (OS/NE)
interface Part 1: Single line configurations**

**ETSI customer profile**

| | |
|---|---|
| CustomerType | specifies whether the customer profile is for a single line or for a multi-line customer. |
| CustomerCategory | The customer category attribute identifies the customer as being for instance: |
| | a standard customer; |
| | a coin box; |
| | a mobile customer; |
| | a test equipment; |
| | an operator, etc. |
| AdministrativeState | is defined in CCITT Recommendation X.721 It indicates the current administrative state of the customer profile. |
| OriginForRouteing | groups customer profiles for call routeing purposes as defined in EN 300 292 |
| OriginForCharging | groups customer profiles for charging and/or tariffing purposes. |
| OriginForAnalysis | groups customer profiles for digit analysis purposes within the call routeing context as defined in EN 300 292 |

**ETSI directory number E.164**

| | |
|---|---|
| etsiE164DirectoryNumber | represents the ISDN number according to the ISDN numbering plan defined in CCITT Recommendation E.164 It is composed of two fields: |
| | country code (optional); |
| | national significant number. |
| | The national significant number is itself composed of two fields: |
| | national destination code (optional); |
| | customer number. |
| interceptTreatmentTerm | specifies the treatment (e.g. announcement) to be provided for an unconnected directory number. |
| meteringCounter | gives the current value of the metering counter for charging. |

| routeingInformation | gives the directory number porting information. If this attribute is empty string, the directory number is not ported. If it has NULL value, the routeing information is to be retrieved from another server (e.g. IN SCP). In all other cases, the information relevant for routeing is given. |
|---|---|

Bearer service fragment

| PrimaryInterexchangeCarrier | gives the primary inter exchange carrier. |
|---|---|

Circuit mode 3,1 kHz audio

| networkProvidedTone | indicates that tones and/or announcements are to be provided by the network to indicate the progress or otherwise the status of a call. |
|---|---|
| maxNumOfInfoChannels | gives the maximum number of information channels. |
| maxNumOfTotalCalls | gives the maximum number of total calls. |

Circuit mode 64 kbit/s unrestricted

| maxNumOfInfoChannels | gives the maximum number of information channels. |
|---|---|
| maxNumOfTotalCalls | gives the maximum number of total calls. |

ETSI packet B channel

| notificationClass | indicates whether the packet mode bearer service is with "noNotificationClass" or "conditionalNotification" respectively. |
|---|---|
| layer2InfoEntityPtr, layer3InfoEntityPtr | point to the appropriate "ITU-T Recommendation Q.824.0 (1996)":layerEntity subclass instance. |
| maxNumOfInfoChannels | gives the maximum number of information channels. |

ETSI packet D channel

| notificationClass | indicates whether the packet mode bearer service is with "noNotificationClass" or "conditionalNotification" respectively. |
|---|---|
| layer2InfoEntityPtr, layer3InfoEntityPtr | point to the appropriate "ITU-T Recommendation Q.824.0 (1996)":layerEntity subclass instance. |

Layer entity

| maxNumOfInfoChannels | gives the maximum number of information channels. |
|---|---|

Speech

| networkProvidedTone | indicates that tones and/or announcements are to be provided by the network to indicate the progress or otherwise the status of a call. |
|---|---|

| maxNumOfInfoChannels | gives the maximum number of information channels. |
|---|---|
| maxNumOfTotalCalls | gives the maximum number of total calls. |

Unrestricted digital info with tones/announcements (7 kHz audio)

| networkProvidedTone | indicates that tones and/or announcements are to be provided by the network to indicate the progress or otherwise the status of a call. |
|---|---|
| maxNumOfInfoChannels | gives the maximum number of information channels. |
| maxNumOfTotalCalls | gives the maximum number of total calls. |

Teleservice fragment

Telefax group 4

| telefaxClass | gives the assigned telefax class |
|---|---|

Telephony 3,1 kHz

| maxNumOfInfoChannels | gives the maximum number of information channels. |
|---|---|
| maxNumOfTotalCalls | gives the maximum number of total calls. |

Telephony 7 kHz

| maxNumOfInfoChannels | gives the maximum number of information channels. |
|---|---|
| maxNumOfTotalCalls | gives the maximum number of total calls. |

Videotelephony

| maxNumOfInfoChannels | gives the maximum number of information channels. |
|---|---|
| maxNumOfTotalCalls | gives the maximum number of total calls. |

Videotex

| MaxNumOfInfoChannels | gives the maximum number of information channels. |
|---|---|
| MaxNumOfTotalCalls | gives the maximum number of total calls. |

Service dependent supplementary service fragment

Customized supplementary service

| customizedResourcePtrList | is a set-valued attribute whose value(s) points to the associated customizedResource object instances |
|---|---|

Absent customer operator position

| forwardImmediately | indicates call forward immediately (TRUE) or call forward on no reply (FALSE). |
|---|---|

Absent customer predetermined announcement

| announcementNumber | gives the announcement number (INTEGER). Which announcement corresponds with an announcement number is a matter of local implementation. |
|---|---|

Advice of charge: charging information at call set-up time

| adviceOfChargeActivation | is a flag indicating whether the service is available for all calls automatically or on a per call basis |
|---|---|

Advice of charge: charging information at the end of the call

| adviceOfChargeActivation | is a flag indicating whether the service is available for all calls automatically or on a per call basis |
|---|---|

Advice of charge: charging information during the call

| adviceOfChargeActivation | is a flag indicating whether the service is available for all calls automatically or on a per call basis |
|---|---|

Alarm call

| timeOfDay | gives the time of day (hours and minutes) for the execution of the alarm call. |
|---|---|
| date | gives the date (year, month, and day) for the (first) execution of the alarm call. |
| kindOfAlarmCall | gives the kind of alarm call (manual, automatic, semi automatic). |
| alarmCallType | gives the type of alarm call (casual, regular consecutive days, regular specified days) and the related program if the type is not casual. |

Blocking

| adminBlocking | gives the blocking direction for administrative blocking (none, incoming, outgoing, bothways) |
|---|---|
| maintBlocking | gives the blocking direction for maintenance blocking (none, incoming, outgoing, bothways) |
| accountSuspension | gives the blocking direction for blocking (none, incoming, outgoing, bothways) due to non-payment |
| catastrophe | indicates the preference category of the access during catastrophe |

Call deflection

| DeflectingNumberDelivery | is a Boolean attribute indicating the subscription option of allowing whether the a serviced user is permitted to release his directory number to the deflected-to terminal (TRUE) or not (FALSE) |
|---|---|
| EtsiDeflectingNumberNotification | indicates the subscription option of whether a calling user receives notification that his call has been deflected (1) or not (0). In the case the use is to be notified, the deflected to number may be sent to the originator of the call (2) |

Call forwarding busy

| etsiE164DirectoryNumber | represents the ISDN number according to the ISDN numbering plan defined in CCITT Recommendation E. It is composed of two fields: |
|---|---|
| | country code (optional); |
| | national significant number. |
| | The national significant number is itself composed of two fields: |
| | national destination code (optional); |
| | customer number. |
| callForwardActiveNotification | is a flag indicating whether the served user is to be notified that call forwarding is active |
| callForwardCallingNotification | is a flag indicating whether the calling user is to be notified that his call has been forwarded |
| callForwardReleaseNotification | is a flag indicating whether served user releases number information to forwarded-to user |
| callForwardServedNotification | is a flag indicating whether served user receives notification that a call has been forwarded |

Call forwarding unconditional

| etsiE164DirectoryNumber | represents the ISDN number according to the ISDN numbering plan defined in CCITT Recommendation E.164 It is composed of two fields: |
|---|---|
| | country code (optional); |
| | national significant number. |
| | The national significant number is itself composed of two fields: |
| | national destination code (optional); |
| | customer number. |
| callForwardActiveNotification | is a flag indicating whether the served user is to be notified that call forwarding is active |
| callForwardCallingNotification | is a flag indicating whether the calling user is to be notified that his call has been forwarded |
| callForwardReleaseNotification | is a flag indicating whether served user releases number information to forwarded-to user |
| callForwardServedNotification | is a flag indicating whether served user receives notification that a call has been forwarded |

Call forwarding no reply

| etsiE164DirectoryNumber | represents the ISDN number according to the ISDN numbering plan defined in CCITT Recommendation E.164 It is composed of two fields: |
| --- | --- |
| | country code (optional); |
| | national significant number. |
| | The national significant number is itself composed of two fields: |
| | national destination code (optional); |
| | customer number. |
| callForwardActiveNotification | is a flag indicating whether the served user is to be notified that call forwarding is active |
| callForwardCallingNotification | is a flag indicating whether the calling user is to be notified that his call has been forwarded |
| callForwardReleaseNotification | is a flag indicating whether served user releases number information to forwarded-to user |
| callForwardServedNotification | is a flag indicating whether served user receives notification that a call has been forwarded |

Call hold

No specific attributes were identified.

Call waiting

| callWaitingCallingNotification | is a flag indicating whether the calling user is to be notified that his call is waiting. |
| --- | --- |
| maxNumberOfWaitingCalls | gives the maximum number of calls that can be waiting. |

Calling line identification presentation

| callIdRestrictionOptions | gives the options for the calling line identification restriction. |
| --- | --- |

Closed user group subscription option

| preferredCUGIndex | is used to identify the required CUG in the absence of a CUG index being included in the outgoing call request. |
| --- | --- |
| interCUGAccess | indicates the inter-CUG access of per service subscription option in ETS 300 136 The values are none, outgoingAccess, incomingAccess and outgoingAndIncomingAccess. |
| assocCUGList | is a set-valued attribute indicating for which cUGIndex the subscription option applies |

Completion of calls to busy subscriber

| CallCompletionBusyRecallMode | is a flag indicating whether a completion of calls to busy subscribers recall is offered to the termination which activated the service or to all compatible terminations. |
|---|---|

Completion of call on no reply

| callCompletionNoReply-RecallMode | is a flag indicating whether a completion of calls on no replying customer recall is offered to the termination which activated the service or to all compatible terminations. |
|---|---|

Connected line identification restriction

| callIdRestrictionOptions | gives the options for the calling line identification restriction. TRUE: presentation restricted |
|---|---|
| | FALSE: presentation not restricted |

Cordless terminal mobility

| ctmId | provides the relevant data for the search of DECT terminals being part of a CTM configuration. |
|---|---|
| permittedMobileArea | gives the area of the network in which the DECT terminal can make and receive calls. |

Detailed billing

| detailClass | defines the detail class for the detailed billing service. This detail can be limited e.g. to international calls, national long distance calls, special service calls, successful calls. |
|---|---|

Fixed destination call

| variant | identifies whether the call is forwarded to the fixed destination immediately (TRUE) or after time out (FALSE). |
|---|---|
| fixedDestinationNumber | gives the directory number to which the call shall be forwarded. Its value NULL means that calls are not to be forwarded to a fixed destination unless the OS or the customer by remote control changes its value to a directory number. |

Incoming call barring

| DoNotDisturb | indicates whether the do-not-disturb announcement is activated (TRUE) or not (FALSE). |
|---|---|

Interception of calls

| interceptionReason | gives the reason for the interception |
|---|---|
| interceptTreatmentTerm | specifies the treatment (e.g. announcement) to be provided. |

Malicious call identification

| | |
|---|---|
| automaticInvocation | controls the activation of Malicious Call Identification so that calls that are not answered will be traced automatically. |

Outgoing call barring

| | |
|---|---|
| fixedProgram | gives the assigned fixed barring program. |
| userControlledProgram | gives the barring program assigned by user control. |
| activated | is set TRUE if the user has activated his program. If both program attributes have NULL value, the program common for all the exchange is activated. |

Remote control of supplementary service

| | |
|---|---|
| remotelyControlledService | indicates which supplementary services the served user has subscribed for remote control. |
| callDiversionRestrictions | indicates whether the forwarded-to number specified at remote activation shall have some restrictions (choice within a specified geographical area or belonging to a list of predetermined forwarded-to numbers) or not. |

User to user signalling

| | |
|---|---|
| uusService1Implicit | indicates whether the service is available (TRUE) or not (FALSE) during origination and termination of calls by means of an implicit request. |
| uusService1Explicit | indicates whether the service is available (TRUE) or not (FALSE) during origination and termination of calls by means of an implicit request. |
| uusService2 | is a flag indicating whether the service is available (TRUE) or not (FALSE) after the calling user has received an indication that the called user is being informed of the call and prior to the establishment of the connection. |
| uusService3 | is a flag indicating whether the service is available (TRUE) or not (FALSE) only during the connection is established. |

Voice messaging busy

| | |
|---|---|
| voiceMessagingNumber | gives the routeing information (directory number) to the voice messaging box in the voice messaging system. |
| mwiReceiverPointer | gives the associated mwiReceiver instance. |

Voice messaging no reply

| | |
|---|---|
| voiceMessagingNumber | gives the routeing information (directory number) to the voice messaging box in the voice messaging system. |
| mwiReceiverPointer | gives the associated mwiReceiver instance. |

Voice messaging unconditional

| voiceMessagingNumber | gives the routeing information (directory number) to the voice messaging box in the voice messaging system. |
|---|---|
| mwiReceiverPointer | gives the associated mwiReceiver instance. |

Service independent supplementary service fragment

ETSI supplementary service service independent

| customizedResourcePtrList | is a set-valued attribute whose value(s) points to the associated customizedResource object instances |
|---|---|

Abbreviated dialling

| maxNumberOfEntries | gives the maximum number of entries for abbreviated dialling |
|---|---|
| diallingList | is a pointer to an object instance of abbreviatedDialling representing a shared list, or it gives an individual list. |
| masterProperty | indicates the authorisation to modify a shared list (TRUE). |

Closed user group

| cUGIndex | gives the index of the closed user group. It is used by the calling user to select a particular CUG when originating a call |
|---|---|
| cUGInterlockCode | gives the interlock code of the closed user group. The attribute is a means of identifying a CUG membership within the network. |
| cUGDataNetworkIdentification | is the information signalled during set-up of a CUG call and serves (in conjunction with the cugInterlockCode) to uniquely identify the CUG in the international network. It can be thought of as the area code of the CUG. |
| cUGBarring | maintains the Intra-CUG restriction of the general subscription option in ETS 300 136 It may have one of the following values: none, incomingCallsBarred or outgoingCallsBarred. |

Customer observation

| observationMode | distinguishes between e.g. charging observation, expensive call monitoring, and quality of service verification, or between observation of incoming calls and/or outgoing calls, etc. Which observation mode corresponds with the value of this attribute number is a matter of local implementation. |
|---|---|

Different ringing

| primaryDN | defines whether the line is a primary (TRUE) or secondary (FALSE) line of the customer. |
|---|---|
| ringingSequence | defines the characteristics of the ringing signal to be sent. |

Direct dialling in

| numOfDigitsNotToTransmit | gives the number of digits not to be transmitted to a PABX. |
|---|---|

Message waiting indication receiver

| mwiInvocationMode | Indicates when the service is to be invoked either when the receiving user makes an outgoing call or on activation of the service (by the controlling user). |
|---|---|
| messageWaitingIndicator | Indicates if one or more messages are waiting for the receiving user. |
| mwiControllingUser | Gives the controlling user number. |

Multiple subscriber number

| assocDefaultDN | gives the default directory number for an MSN configuration. |
|---|---|
| screenOriginatingDN | indicates whether the originating directory number is to be screened. |
| numOfDigitsForCallId | gives the number of digits for call identification. |

PIN

| pin | contains the PIN. The initial value and the default value of this attribute is determined by the network element resource on its own. |
|---|---|
| pinProfileRef | identifies the PIN controlled customized services assigned to a customer configuration for which the PIN given in the pin attribute is valid. It is a choice between an INTEGER representing pre-defined profiles on exchange level and a SET OF ObjectClass representing supplementary service object classes. |

### General services

General ISDN service container

| serviceContainerId | gives the RDN |
|---|---|
| generalServiceList | lists the services having no configurable attributes which are available generally for the respective customer configurations. |

General PSTN service container

| serviceContainerId | gives the RDN |
|---|---|
| generalServiceList | lists the services having no configurable attributes which are available generally for the respective customer configurations. |

Non ISDN service

| nonIsdnServiceId | gives the RDN. |
|---|---|
| administrativeState | is defined in CCITT Recommendation X.721. It indicates the current administrative state of the non ISDN service. |
| customizedResourcePtrList | is a set-valued attribute whose value(s) points to the associated customizedResource object instances |

**3GPP TSG-SA5 (Telecom Management)**                              **S5-010314**
**Meeting #20, Brighton, UK, 28 May - 1 June 2001**

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| | |
|---|---|
| **Category:** | Liaison |
| **From:** | SA5 |
| **To:** | WAP Forum's WPG Client Provisioning Drafting Committee |
| **Cc:** | T2, S1, 3GPP2 TSG-S (via Hung TSANG - Motorola) |
| **Title:** | LS in reply to WAP Forum message titled "Exploratory LS concerning Mobile Device Management" |
| Our Reference: | S5-010304 |
| Your Reference: | WAP Forum Ltd.; Dated 26 April 2001 |
| **SA5 Contact:** | Hung TSANG<br>Tel. +1847 523-5437<br>Email: hung.tsang@motorola.com |
| **SA5 Chairman:** | Albert YUHAN<br>Email: albert.yuhan@voicestream.com |

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SA5 thanks the WPG Client Provisioning Drafting Committee (Client Provisioning) on their exploratory LS concerning Mobile Device Management.

SA5 is examining the mobile device management topic and currently has a draft Release 5 Feature-level Work Item Description (WID) on User Equipment (UE) Management (Terminal Management).  SA5 is submitting the draft WID to the SA Plenary in June 2001 for approval. The WI has a targeted date of December 2001 for the draft specification and June 2002 for approval.

SA5 believes that T2 may wish to collaborate with certain external fora (like WPG, SyncML, etc.) in realizing the UE Management requirements and management network architecture to be specified by SA5.

SA5 is currently co-ordinating with relevant groups within 3GPP to define the scope of the UE Management feature.  It is expected that T2 will take the role of co-ordinating 3GPP's interactions with relevant external fora regarding terminal-specific technical issues on UE Management.

**3GPP TSG-SA5 (Telecom Management)**                                        **S5-010312**
**Meeting #20, Brighton, UK, 28 May - 1 June 2001**

| | |
|---|---|
| **Category:** | Liaison |
| **From:** | SA5 |
| **To:** | SA1 |
| **Cc:** | SA, SA2, SA3, SA4, T2, T3, CN4, CN5 |
| **Title:** | LS reply to SA1 LS "regarding User Profile" |
| Your Reference: | TSG S1 (01) 591 |
| Our Reference: | S5-010308 |
| Work Item: | SA5's Rel-5 Feature: Subscription Management (SM) - ID 2062 |
| **SA5 Contact:** | Geoffrey CARYER, Subscription Management Feature Rapporteur<br>Tel. +44 (-1473) -738108<br>Email: Geoff.Caryer@BTINTERNET.COM |
| **SA5 Chairman:** | Albert YUHAN<br>Email: albert.yuhan@voicestream.com |

SA5 would like to thank SA1 for its liaison "regarding User Profile".

SA5 are currently developing TS 32.140 "Subscription Management" in which we identify the management of the User Profile(s) as a key element.  We attach the latest draft of 32.140 and draw your attention to Clause 8 (Subscription Profile parameters) and Appendix B (Extracts from EN 300 291-1 Customer Administration).

We support S1's proposal to establish a cross WG ad-hoc to solve the problems of defining User Profile(s), and propose that SA5 be added to the joint group.

However, sa5 do not believe that the proposed date of June is practical. Therefore, to avoid any undue delay in the establishment of the proposed group, we would suggest that a teleconference be set-up, in the July time frame. The teleconference would have the aim of; agreeing the terms of reference of the ad-hoc group, establishing a work-plan and agreeing dates of any further teleconference/meetings.

**Attachments:**

| S5A010133 | Draft TS 32.140 v013 | 32.140 Rapporteur (Geoffrey CARYER - BT) |
|---|---|---|

| | |
|---|---|
| Our Reference: | S5-010308 |

| S5_20 | S5-010308 | 6<br>AR 9.1 | LS in | LS from SA1 to T2, SA2, SA3 (cc: SA, SA4, SA5) regarding User Profile (S1-010591) | SA1 (Linda WERNEMAN - Ericsson) | Sent 16 May. SA5 mail#047 |
|---|---|---|---|---|---|---|

**3GPP TSG-SA5 (Telecom Management)**                                    **S5-010313**
**Meeting #20, Brighton, UK, 28 May - 1 June 2001**

| | |
|---|---|
| **Category:** | Liaison |
| **From:** | SA5 |
| **To:** | T2, T3, SA1, SA3 |
| Cc: | TSG SA, TMF Mobile Market Centre (via John MUDGE - Vodafone) |
| **Title:** | LS in reply to three related User Equipment Management liaisons |
| **SA5 Contact:** | John MUDGE, UEM Feature Rapporteur<br>Tel.   +44 (0) 1635 673587<br>Email: john.mudge@vf.vodafone.co.uk |
| **SA5 Chairman:** | Albert YUHAN<br>Email: albert.yuhan@voicestream.com |

**Attachments:**

S5-000318        Proposal for WID on User Equipment (UE) Management (Feature)
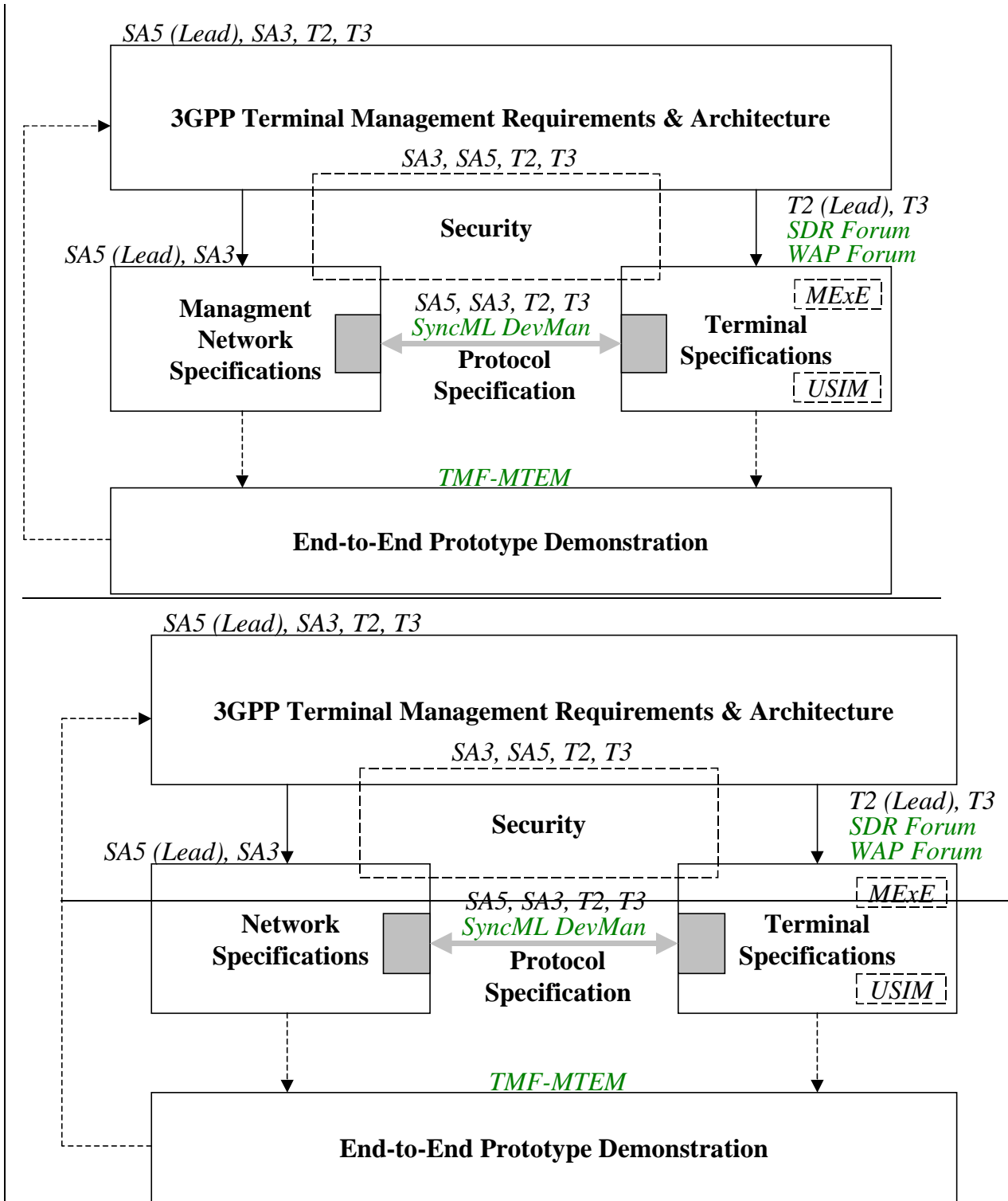
SA5 is grateful to have received a number of liaisons on User Equipment (UE) Management (Terminal Management) from other 3GPP groups. There is clearly considerable interest in this area both within 3GPP and external fora. This liaison is intended to respond to the following three liaisons:

1.    S5-010366: "LS Reply to S5 on MExE and User Equipment Management (T2-000756)" from T2. Ref. T2-010320 (S5-010114);

2.   S5-010360, "Reply to LS on Terminal Capabilities (Tdoc  SP-000651  =  TSG S1 (01) 010  =  Vhe ad (00) 105)" from SA1;

3.   S5-010362, Response to LS S5-010114 (T3-010271) on MExE and User Equipment Management from T3 (Ref. T3-010446).

| S5_20 | S5-010360 | 6<br>**AR 9.1** | LS in | LS from SA1 to T2, SA2, SA (cc: SA5, SA1 OSA Adhoc) Reply to T2's LS (SP-000651) on Terminal Capabilities (S1-010539) | SA1 (Jörg SWETINA - Siemens) | Sent 16 May SA5 mail#047 |
| S5_20 | S5-010362 | 6<br>**AR 9.1** | LS in | Response to LS S5-010114 by T3 to SA5 (cc: SA1) on MExE and User Equipment Management (T3-010446) | T3 (Jeremy NORRIS - Vodafone) | Sent 21 May SA5 mail#049 |
| S5_20 | S5-010366 | 6<br>**AR 9.1** | LS in | LS Reply from T2 to SA5 (S5-010114) on MExE and User Equipment Management (T2-010433) | T2 (Rob LOCKHART - Motorola) | Sent 23 May |

SA5 has been considering how best to coordinate this feature and came to propose the following work co-ordination structure.

**Proposed Structure of the User Equipment Management (UEM) work**

*SA5 (Lead), SA3, T2, T3*

**3GPP Terminal Management Requirements & Architecture**

*SA3, SA5, T2, T3*

**Security**

*T2 (Lead), T3*
*SDR Forum*
*WAP Forum*

*SA5 (Lead), SA3*

**Managment Network Specifications**

*SA5, SA3, T2, T3*
*SyncML DevMan*

**Protocol Specification**

**Terminal Specifications**

*MExE*

*USIM*

*TMF-MTEM*

**End-to-End Prototype Demonstration**

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*SA5 (Lead), SA3, T2, T3*

**3GPP Terminal Management Requirements & Architecture**

*SA3, SA5, T2, T3*

**Security**

*T2 (Lead), T3*
*SDR Forum*
*WAP Forum*

*SA5 (Lead), SA3*

*MExE*

**Network Specifications**

*SA5, SA3, T2, T3*
*SyncML DevMan*

**Protocol Specification**

**Terminal Specifications**

*USIM*

*TMF-MTEM*

**End-to-End Prototype Demonstration**

3GPP Terminal Management Requirements & Architecture – SA5 to lead the requirements definition and architecture development (stage 1) with the assistance of SA3, T2, T3.

Security – SA3's assistance will be invaluable in identifying security implications (e.g. enhancing access control and authentication, etc.) and assisting with their resolution. Security is very important for User Equipment Management; SA3, SA5, T2 and T3 need to work together to ensure security issues are properly addressed.

Management Network Specifications – SA5 to lead the Network Specifications area with assistance from SA3.

Terminal Specifications – T2 to lead Terminal Specifications area with assistance from T3 as needed. Additionally SA5 would like to suggest that T2 takes the lead in coordinating the relevant external fora (e.g., SDR Forum, WAP Forum, etc.). SA5 will ensure that T2 will be kept informed of any direct communication occurs with such fora by SA5 e.g. for requirement definition.

Protocol Specifications – SA5, SA3, T2 and T3 to work jointly to define a protocol specification that supports the User Equipment Management client server relationship. The SyncML Device Management group is actively working in this area (see http://www.syncml.org) and SA5 believes T2's timely coordination with  this group is essential to expedite the  completion of the UEM feature.

End-to-End Prototype Demonstration and feedback – Along the lines of the TMF (TeleManagement Forum) MCC/SA5 collaboration agreement, TMF MTEM (Mobile Terminal Equipment Management) group is willing to implement a prototype demonstration (catalyst project) of the 3GPP UEM feature specifications and feedback the findings to 3GPP. TMF catalyst projects have previously proved very beneficial in demonstrating new systems/functionality. For more information on the TMF see http://www.tmforum.org. [Reference TMF-MTEM Project Proposal.]


**SA5 User Equipment Management WID**
SA5 is submitting the attached UEM WID to the SA Plenary in June 2001 for approval. The Work Item has a targeted date of December 2001 for the draft specification and June 2002 for approval.

| S5_20 | S5-010318 | AR 9.1 | WID | Draft Release 5 UE Management WI | AR-PR | Approved |

**3GPP TSG-SA5 (Telecom Management)**                                      **S5-010317**
**Meeting #20, Brighton, UK, 28 May - 1 June 2001**

| | |
|---|---|
| **Category:** | Liaison |
| **From:** | SA5 |
| **To:** | T2, WAP Forum's "SyncML Initiative" (via Hung TSANG - Motorola) |
| **Cc:** | |
| **Title:** | Reply to T2 message titled "LS Reply to SyncML initiative Concerning Leveraging SyncML for Mobile Device Management" |
| **T2 Reference:** | T2-010435 |
| **Our Reference:** | S5-010368 |
| **SA5 Contact:** | Hung TSANG<br>Tel.  +1847 523-5437<br>Email: hung.tsang@motorola.com |
| **SA5 Chairman:** | Albert YUHAN<br>Email: albert.yuhan@voicestream.com |

SA5 thanks T2 for copying SA5 on its "LS Reply to SyncML initiative Concerning Leveraging SyncML for Mobile Device Management". SA5 is examining the mobile device management topic and currently has a draft Work Item Description (WID) on User Equipment Management (Terminal Management).  SA5 is submitting the draft WID to the SA Plenary in June 2001 for approval.  The WI has a targeted date of December 2001 for the draft specification and June 2002 for approval.

SA5 thanks the SyncML initiative for providing a Device Management (DevMan) Overview presentation and DevMan Technical Overview. There are areas of commonality that have been explored by SA5 that should be considered as part of this cross-SDO discussion on User Equipment Management.  Those areas include requirements and network management architecture.

SA5 believes that T2 may wish to collaborate with SyncML in realizing the User Equipment Management requirements and management network architecture to be specified by SA5. SA5 is currently coordinating with relevant groups within 3GPP to define the scope of the User Equipment Management feature.  It is expected that T2 will take the role of coordinating 3GPP's interactions with relevant external fora regarding terminal specific technical issues on User Equipment Management.

Technical Specification Group Services and System Aspects *TSGS#12(01)0286*
Meeting #12, Stockholm, Sweden, 18-21 June 2001

| | |
|---|---|
| **Source:** | **SA5 Chairman** |
| **Title:** | **Proposed WID for "User Equipment (UE) Management (Feature) Feasibility Study" (revision of SP-010234)** |
| **Document for:** | **Approval** |
| **Agenda Item:** | |

## Work Item Description

**Title:** **User Equipment (UE) Management Feasibility Study**

UE Management is a capability which will allows the Operator, Service Provider and/or UE Manufacturer to remotely manage User Equipment.

**1        3GPP Work Area**

| | |
|---|---|
| | Radio Access |
| | Core Network |
| **X** | Services (SA1, SA5, SA3) |
| **X** | Terminal (T2, T3) |

**2        Linked work items**

The WIs listed below bear certain relevance with the proposed UEM. However, the UEM WI being just a feasibility study in Release 5, there will be no factual impact of UEM to these WIs.

- MExE enhancements: 22.057 (SA1) and 23.057 (T2)
- (U)SIM Toolkit enhancements (T3)
- Security issues (SA3)
- Services requirements (SA1)
- User Profile (SA?) (WI to be proposed)

**3        Justification**

The capabilities of the user equipment in 3G are becoming and will continue to become ever more sophisticated and integrated (high definition colour screens, faster processors, built in cameras, integrated media players etc.). The sophisticated capabilities of 3G User Equipment will require a flexible means to support management of the UE satisfying the end-customers, service providers, network operators and UE manufacturers' need. To progress this new management capability in an efficient manner, a feasibility study is proposed.

**4        Objective**

In order to facilitate a timely introduction of new User Equipment Management feature to the post-Rel5 UMTS, SA5 (the primary lead) and T2 (the secondary lead) will lead a feasibility study of UE management. Listed below are examples of possible UEM capabilities that may be included in the feasibility study.

- Terminal Status Query
- Terminal Diagnostics
- Terminal Configuration
- Terminal Patch Download
- Terminal Image Download

As a part of this feasibility study, certain UEM capabilities utilising already existing available Rel5 capabilities may actually be included in Rel5 delivery provided fitting the Release 5 time frame.

Under this WI, a Rel5 Technical Report will be generated by SA5 with T2's assistance in which a comprehensive work plan for UEM as a post-Rel5 feature will be presented. To conduct this task, the lead groups (SA5 and T2) will consolidate inputs on relevant subject matters from the respective expert groups such as SA1, SA3, SA5, T2, and T3 in any effective manners (e.g., through joint meetings, etc.).

## 5 Service Aspects

Will be studied and clarified in the TR.

## 6 MMI-Aspects

Will be studied and clarified in the TR.

## 7 Charging Aspects

Will be studied and clarified in the TR.

## 8 Security Aspects

Will be studied and clarified in the TR.

## 9 Impacts

| Affects: | USIM | ME | AN | CN | Others |
|---|---|---|---|---|---|
| **Yes** | (X) | (X) | | (X) | |
| **No** | | | X | | |
| **Don't know** | | | | | |

## 10 Expected Output and Time scale (to be updated at each plenary)

| New specifications | | | | | | |
|---|---|---|---|---|---|---|
| Spec No. | Title | Prime resp. WG | 2ndary resp. WG(s) | Presented for information at plenary# | Approved at plenary# | Comments |
| 32.xyz (TR) | TBD | SA5 | T2 | TSG#14 (12/01) | TSG#15 (03/02) | Release 5 |
| | | | | | | |

| Affected existing specifications | | | | |
|---|---|---|---|---|
| Spec No. | CR | Subject | Approved at plenary# | Comments |
| 32.101 | | | TSG#15 (03/02) | If applicable |
| 32.102 | | | TSG#15 (03/02) | If applicable |
| | | | | |

## 11 Work item rapporteurs

**John MUDGE (Vodafone Group) [john.mudge@vf.vodafone.co.uk]**

## 12 Work item leadership

SA5 (primary), T2 (secondary)

## 13 Supporting Companies

Vodafone Group, Motorola, VoiceStream, Telia, France Telecom, BT, Mannesmann MobilFunk, Sonera, Bouygues Telecom, Hutchison 3G, Samsung Electronics, <mark>Materna GmbH.</mark>.

## 14 Classification of the WI (if known)

| X | Feature (go to 14a) |
|---|---|
|   | Building Block (go to 14b) |
|   | Work Task (go to 14c) |

14a    The WI is a <mark>**Feature**</mark>: List of **Building Blocks** under this <mark>**Feature**</mark>

- **OAM-AR** Principles, high level Requirements and Architecture – (SA5) (WT: UE Management Feasibility Analysis)