**TSG-SA Working Group 1 (Services) meeting #3**
**Hampton Court, Surrey, UK 10th-12th May 1999**

*TSGS1#3(99)291*
**Agenda: 7.1**

# TS 23.27 V0.1.0 (1999-02)

*Technical Specification*

# Universal Mobile Telecommunications System (UMTS): Virtual Home Environment; Open Service Architecture (UMTS 23.27 version 0.1.0)

UMTS

Universal Mobile Telecommunications System

ETSI

Reference
<Workitem> (<Shortfilename>.PDF)

Keywords
<keyword[, keyword]>

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# Contents

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# Foreword

This Technical Specification (TS) has been produced by ETSI Project <long techbody> (<short techbody>){|, and is now submitted for the {ETSI standards {Membership Approval Procedure|One-step Approval Procedure|<approval phase> phase of the ETSI standards Two-step Approval Procedure}}}.

# 1 Scope

This ETSI Technical Specification (TS) describes the Open Service Architecture for the Universal Mobile Telecommunications System (UMTS).

The goal of standardisation in UMTS with respect to Virtual Home Environment (VHE) services is to provide a framework within which services can be created based on standardised service features. The Open Service Architecture described in thes document provides this framework for implementing services based on service features, which in turn are based on service capabilities. As an advanced option it is possible to implement services directly based on service capabilities.

# 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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[x] GSM 01.04 (ETR 350): ”Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms”

[x] UMTS 22.01: ”Universal Mobile Telecommunications System (UMTS): Service Aspects; Service Principles”.

[x] UMTS 22.05: “Universal Mobile Telecommunications System (UMTS); Services and Service Capabilities”.

[x] UMTS 22.xx: “Universal Mobile Telecommunications System (UMTS); Virtual Home Environment”.

[x] Other UMTS specs ??

[x] GSM 02.57: ”Digital cellular telecommunication system (Phase 2+); Mobile Station Application Execution Environment (MExE); Service description”

[x] GSM 02.78 Release 1999: ”Digital cellular telecommunication system (Phase 2+); Customised Applications for Mobile network Enhanced Logic (CAMEL); Service definition - Stage 1”

[x] GSM 11.14: ”Digital cellular telecommunication system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment; (SIM - ME) interface”

[x] GSM 02.60: "Digital cellular telecommunication system (Phase 2+); General Packet Radio Service (GPRS); Service Description Stage 1".

[x] GSM 02.90 Release 1997: "Digital cellular telecommunication system (Phase 2+); "Stage 1 Decision of Unstructured Supplementary Service Data (USSD)".

[x] GSM 02.03 (ETS 300 905): "Digital cellular telecommunication system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".

# 3 Definitions and abbreviations

## 3.1 Definitions

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

**Open Service Architecture:** Concept for introducing a vendor independent means for introduction of new services.

**Service Capabilities:** Bearers defined by QoS parameters and mechanisms needed to realise services.

**Service Capability Feature:** Functionality offered by a service capability accessible via open standardised interfaces.

**Service Capability Server:** Network functionality providing open interfaces towards the functionality offered by UMTS service capabilities.

**Service Feature:** Functionality that a UMTS system shall offer to enable provision of services. Services, are made up of different service features.

## 3.2 Abbreviations

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

| | |
|---|---|
| CAMEL | Customized Application for Mobile Enhanced Logic |
| MExE | Mobile equipment Execution Environment |
| OSA | Open Service Architecture |
| SAT | SIM Application Toolkit |
| SMS | Short Message Service |
| USSD | Unstructured Supplementary Service Data |
| VHE | Virtual Home Environment |

# 4 General

Virtual Home Environment (VHE) is defined as a concept for personalised service portability across network boundaries and between terminals. The concept of the VHE is such that users are consistently presented with the same personalised features, User Interface personalisation and services in whatever network and whatever terminal (within the capabilities of the terminal), where ever the user may be located.

For UMTS phase 1 VHE consists of (see figure 1):

- GSM services and roaming principles;
- Service capabilities

UMTS phase 1 service capabilities are:

- Bearers:
  - GSM CS and PS data;
  - UMTS bearers for circuit and packet;
  - SMS & USSD.
- Mechanisms:
  - CAMEL;
  - MExE;

- SIM Application Toolkit (SAT).

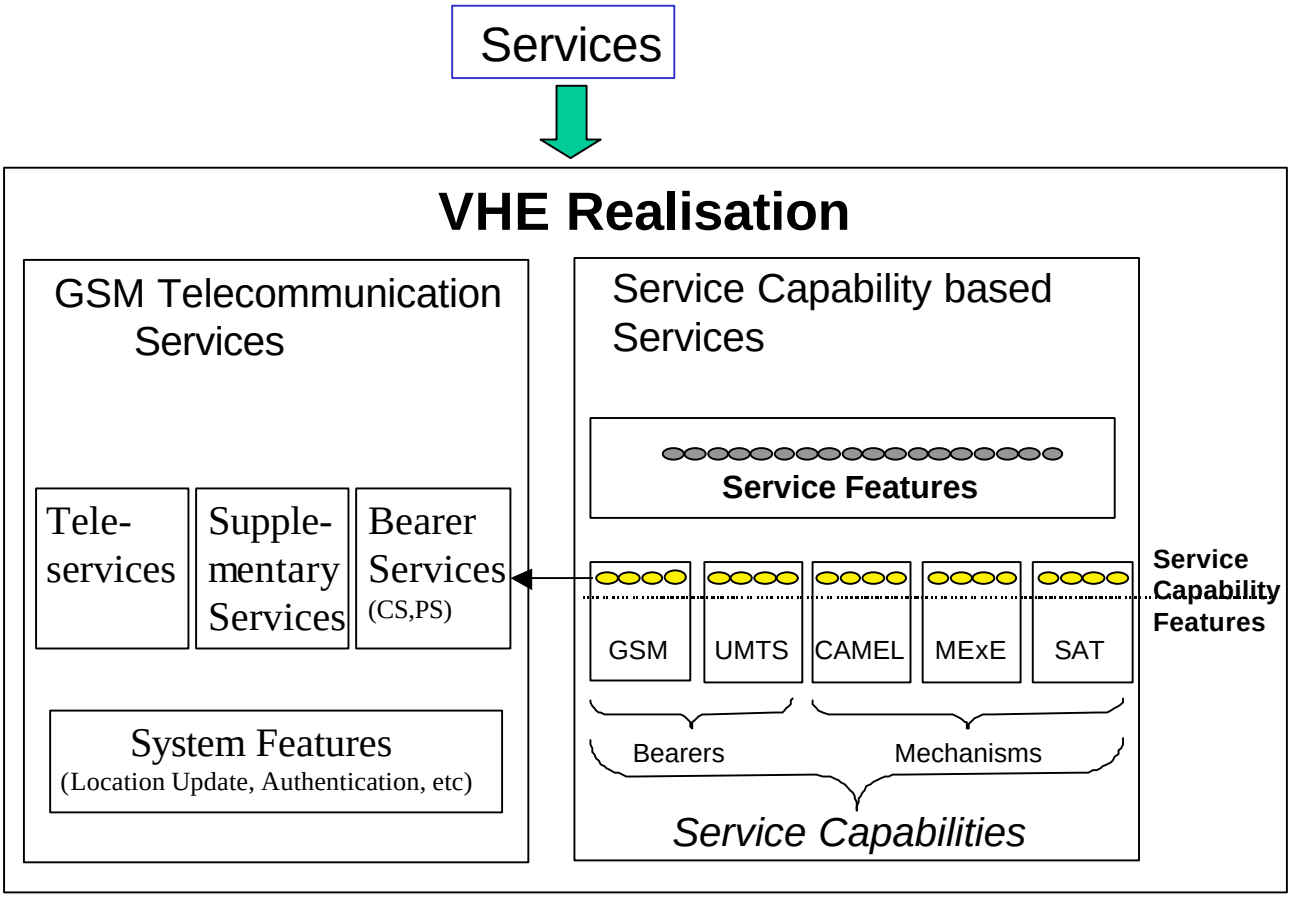


Fig. 1 VHE realisation

Service may be built from service features or service capabilities directly. The service features provide an abstraction layer for the service designer. A service feature is not specific to a service capability. Service capability features specifies the functionality of service capabilities. Service features may be built from service capability features. Standardised interfaces exist between each layer as shown in figure 2. The standardised interfaces between the service capabilities and the network will be the protocols as defined for GSM and UMTS (for example CAP, MAP).

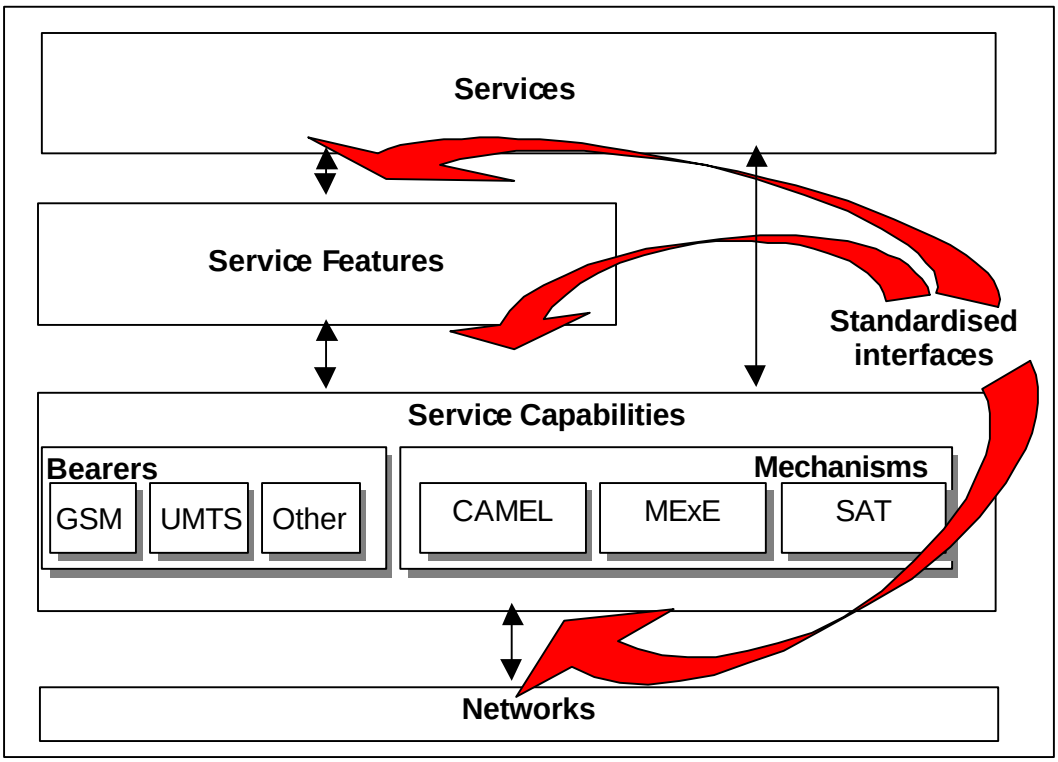


Fig. 2 Standardised interfaces

## 4.1 Service Capbility Servers

The Service Capability Servers reflect the service capabilities in UMTS phase1, i.e. access to bearers, CAMEL, MExE and SIM-Toolkit. The functionality of these can further be subdivided into server components dedicated to specific tasks.

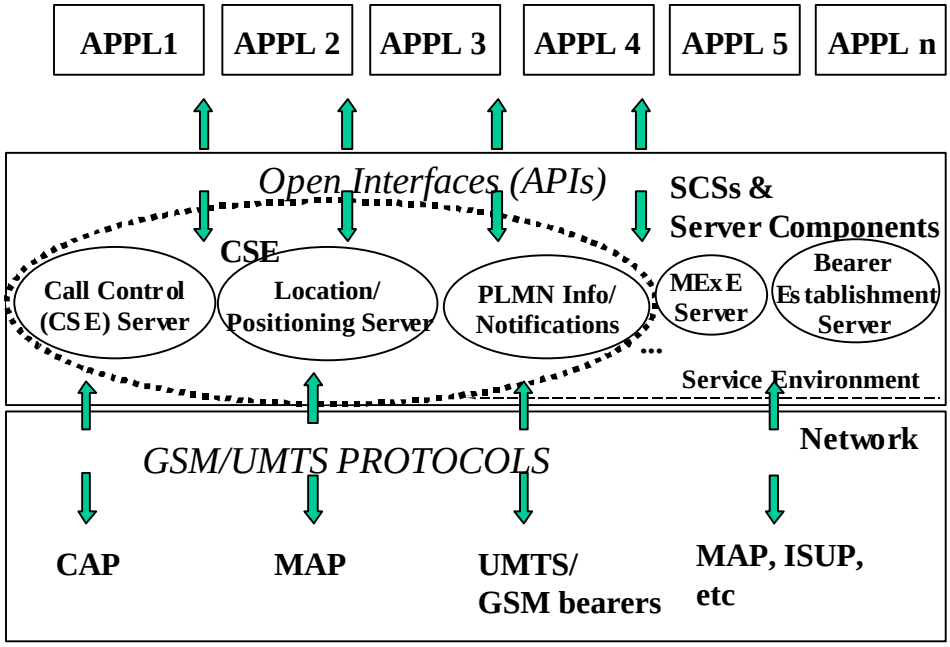


Fig. 3 UMTS standardised service capabilities

A service capability server consists of one or several server components. Taking CAMEL Services as an example, the server components could be Call Control, Location/Positioning, PLMN Information & Notifications. Each of these server components offers its services via defined open interfaces, and implements these by using GSM/UMTS protocols. The functionality offered by a server components is expressed as a set of service capability features. Each service capability feature offer its services via standardised interfaces and implements these using GSM/UMTS protocols.

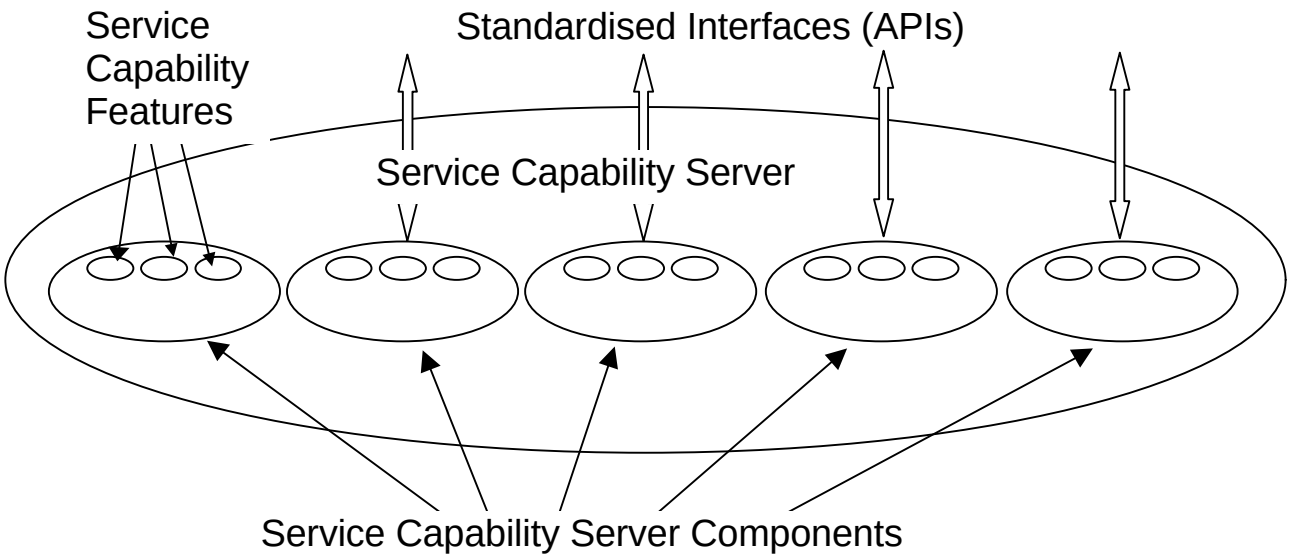


Fig. 4 Service capability features

Each server component can exist and work alone. It communicates with applications/service features and other server components via its standardised interfaces.

**Characteristics of SCS Components and its associated service capability features:**

- building blocks used by service/application developers.
- accessible via their published programmable interfaces (standardised interfaces)..
- can be used by applications/service features and other SCSs.
- can use functionality offered by other SCSs.
- not complete applications but can be combined with other SCS components and application logic to form service features and applications.
- useable in many combinations to fulfil service feature and application requirements.

SCS components interact with other SCS components, service features and applications over address spaces, programming languages, operating systems and networks.

SCSs can be used to design services/applications for both circuit and packet switched accesses.

# 5 Service Capabilities

Editor's note: Currently only a proposed structure of this chapter is shown. More text to be provided.

## 5.1 CAMEL

### 5.1.1 Call Control

It shall be possible for the application to request the set-up of a new call.

It shall be possible for the network to request the application for call set-up instructions. These instructions shall include:

- The possibility to release the call at any time
- The possibility to continue with the current call
- The possibility to continue the call with modified call information
- The possibility to add additional call parties to an established call
- The possibility to remove call parties from an established call.
- The possibilities to put call parties on hold
- The possibility to resume the call with the call parties previously on hold

### 5.1.2 Charging

It shall be possible for the application to:

- Add application specific charging information in network generated CDRs
- Provide AoC information to the subscriber

The network shall have the possibility to request the application for real-time charging information. The application shall have the possibility:

- To indicate the allowed call/session time
- Release the call/session
- Provide the subscriber with a warning that the call shall be released

### 5.1.3 User Interaction

The application shall have the possibility to request the network to:

- Play a message to a call party
- Receive information from a call party

### 5.1.4 Subscriber profile management

The application shall have the possibility to change a subscriber’s data in the network.

The network shall have the possibility to notify the application about changes in the subscribers profile stored in the network.

### 5.1.5 Subscriber Location management

The application shall have the possibility to request the location and status of a subscriber.

The network shall have the possibility to send the current location and status of a subscrbiber to the application.

## 5.2 MExE

### 5.2.1 WAP component

It shall be possible for the application to send information to the subscriber. This information may result in the mobile station request remote invocation of applications.

It shall be possible for the subscriber to request information from an application without a corresponding previous event issued by the application.

## 5.3 SIM Application Toolkit (SAT)

Editor's note: This is for further study, but is include for sake of completeness

### 5.3.x SAT service capability server components

#### 5.3.x.y Service Capability Features

## 5.4 Bearers

The service capability server is intended for the establishment of a communication link between the application in the mobile station and the application in a server in order to transfer data between application and MS.

### 5.4.1 USSD component

It shall be possible to receive an incoming USSD request. Upon reception of the request the application shall have the possibility to respond to the request, either be returning information or by requesting more information from the subscriber. It is the responsibility of the application to indicate the end of the request handling.

The application shall have the possibility to either send information to the subscriber or request information from the subscriber. It is the responsibility of the application to indicate the end of the information exchange.

### 5.4.2 SMS Component

It shall be possible for the application to transfer information to the subscriber (MT SMS).

It shall be possible for the subscriber to transfer information to the application (MO SMS).

There shall be support for :

- Notification
- Receipt notification
- Alerting notification

### 5.3.3 GPRS session

It shall be possible for the application to transfer information to the subscriber.

It shall be possible for the subscriber to transfer information to the application.

# 6 Service Features

Editor's note: pending, to be defined in VHE stage1

# 7 Interface implementation

The interfaces (open APIs) shall be based on distributed object techniques like CORBA. For this purpose an object model with corresponding use case shall be defined.

# 8 Security

It shall be possible to:

Authorise use of the interfaces

# History

| Document history | | |
|---|---|---|
| V0.0.0 | November 1998 | First draft of Document |
| V0.1.0 | February 1998 | Included the following contributions:<br>SMG12 Tdoc 99C320, Tdoc 99C321, Tdoc 99C322, Tdoc 99C323 |
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