Meeting #20, Hämeenlinna, Finland
09-12 June 2003

Source: **TSG SA WG2**
Title: **CRs on 23.002**
Agenda Item: **7.2.3**

The following Change Requests (CRs) have been approved by TSG SA WG2 and are requested to be approved by TSG SA plenary #20.
Note: the source of all these CRs is now S2, even if the name of the originating company(ies) is still reflected on the cover page of all the attached CRs.

Tdoc #	Title	Spec	CR #	cat	Version in	REL	WI	S2 meeting
S2-031974	Removal of Mh interface from the reference model	23.002	130	F	4.7.0	4	TEI4	S2-32
S2-032100	Architecture corrections	23.002	131r1	F	5.10.0	5	TEI5	S2-32
S2-032101	Architecture corrections	23.002	132r1	A	6.0.1	6	TEI5	S2-32
S2-031392	Gd Interface	23.002	124	F	6.0.1	6	TEI6	S2-31
S2-031546	Ge reference point	23.002	128r1	F	6.0.1	6	TEI6	S2-31
S2-032144	Management interface	23.002	129r2	F	6.0.1	6	IMS2	S2-32
S2-031554	SLF on Sh interface	23.002	127r2	B	6.0.1	6	IMS2	S2-31

CR-Form-v7

CHANGE REQUEST

| ⌘ | **23.002** CR **124** | ⌘**rev** | **-** | ⌘ | Current version: | **6.0.1** | ⌘ |

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title: ⌘	Gd Interface	
Source: ⌘	Siemens	
Work item code:⌘	TEI-6	***Date:*** ⌘ 02/04/2003
Category: ⌘	**F**	***Release:*** ⌘ Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change: ⌘	The Reference Point between SGSN and SMS-GMSC/SMS-IWMSC is known as Gd reference point in the GPRS stage 2 specification TS 23.060. This reference point is missing in the network architecture specification 23.002.
Summary of change:⌘	Add a reference figure and a reference point description for the Gd interface.
Consequences if not approved: ⌘	Specification remains incomplete.

Clauses affected: ⌘	4.1.1.6, 5.1, 6.4.3.3 (new clause)

	Y	N		
Other specs affected: ⌘		X	Other core specifications ⌘	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	Error already exists in specifications for R99, Rel-4 and Rel-5.

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

*** FIRST CHANGE ***

4.1.1.5 SMS Gateway MSC (SMS-GMSC)

The SMS Gateway MSC (SMS-GMSC) acts as an interface between a Short Message Service Centre and the PLMN, to allow short messages to be delivered to mobile stations from the Service Centre (SC).

The choice of which MSCs can act as SMS Gateway MSCs is a network operator matter (e.g. all MSCs or some designated MSCs).

4.1.1.6 SMS Interworking MSC (SMS-IWMSC)

The SMS Interworking MSC acts as an interface between the PLMN and a Short Message Service Centre (SC) to allow short messages to be submitted from Mobile Stations to the SC.

The choice of which MSCs can act as SMS Interworking MSCs is a network operator matter (e.g. all MSCs or some designated MSCs).
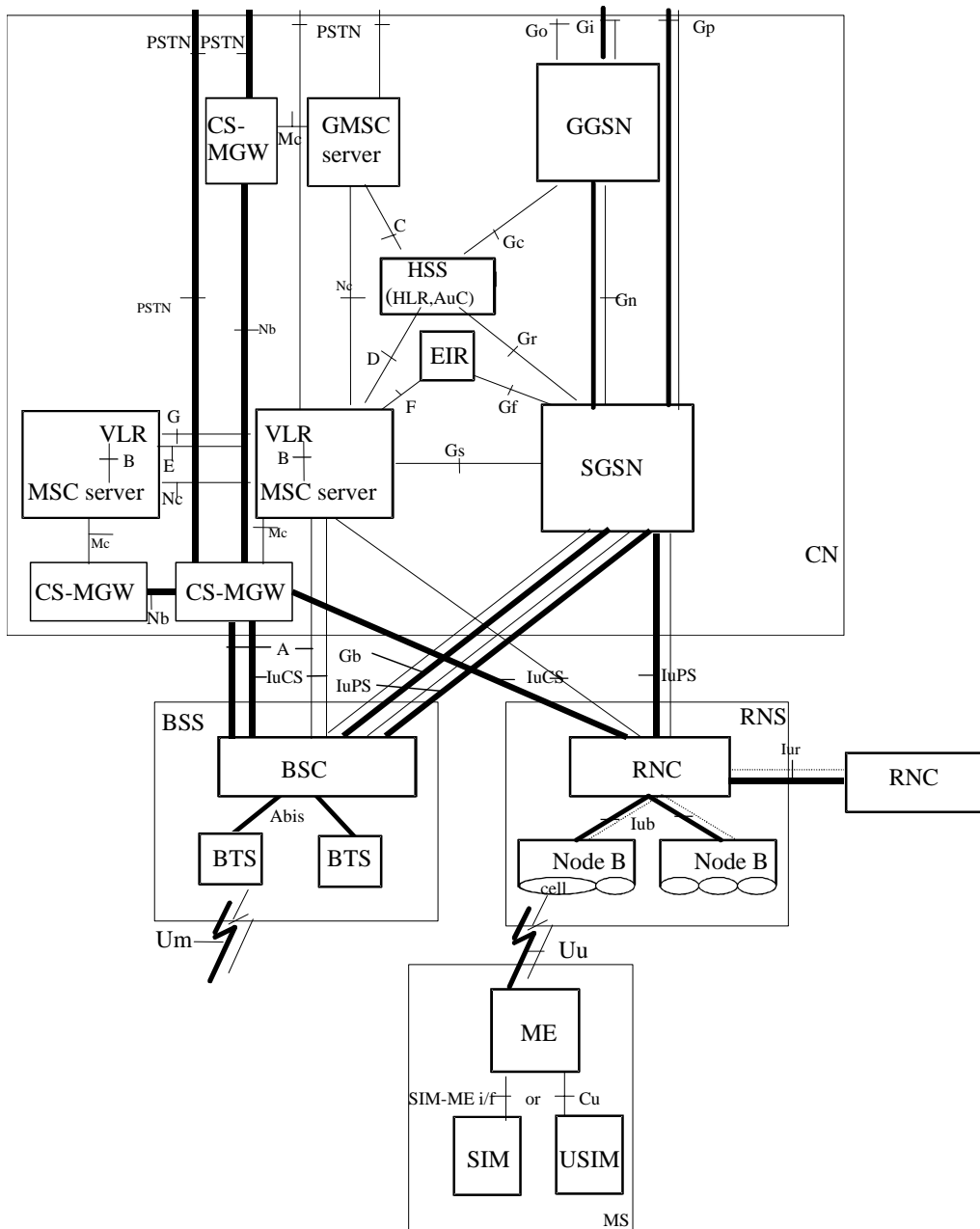
*** NEXT CHANGE ***

5 Configuration of a Public Land Mobile Network

5.1 Basic configuration

The basic configuration of a Public Land Mobile Network (PLMN) supporting GPRS and the interconnection to the PSTN/ISDN and PDN is presented in figure 1 and figure 1a. This configuration presents signalling and user traffic interfaces which can be found in a PLMN. Implementations may be different: some particular functions may be gathered in the same equipment and then some interfaces may become internal interfaces.

In the basic configuration presented in figure 1, all the functions are considered implemented in different equipments. Therefore, all the interfaces within PLMN are external. Interfaces A and Abis are defined in the 48-series ofTechnical Specifications. Interfaces Iu, Iur and Iub are defined in the 25.4xx-series of Technical Specifications. Interfaces B, C, D, E, F and G need the support of the Mobile Application Part of the signalling system No. 7 to exchange the data necessary to provide the mobile service. No protocols for the H-interface and for the I-interface are standardized. All the GPRS-specific interfaces (G- series) are defined in the 23-series and 24-series of Technical Specifications. Interfaces Mc, Nb, and Nc are defined in TS 23.205 [43] and in the 29-series of Technical Specifications.

From this configuration, all the possible PLMN organisations can be deduced. In the case when some functions are contained in the same equipment, the relevant interfaces become internal to that equipment.

Legend:
Bold lines:	interfaces supporting user traffic;
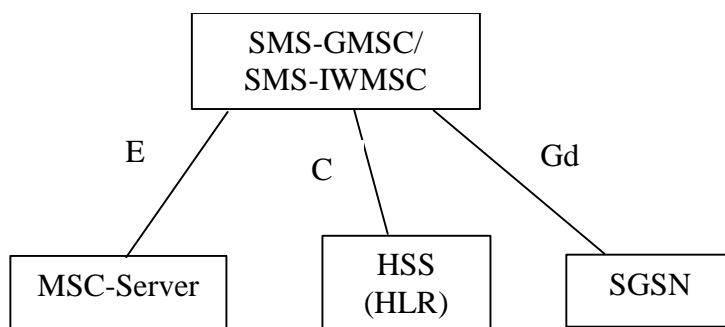Dashed lines:	interfaces supporting signalling.
NOTE 1:	The figure shows direct interconnections between the entities. The actual links may be provided by an underlying network (e.g. SS7 or IP): this needs further studies.
NOTE 2:	When the MSC and the SGSN are integrated in a single physical entity, this entity is called UMTS MSC (UMSC).
NOTE 3: A (G)MSC server and associated CS-MGW can be implemented as a single node: the (G)MSC.
NOTE 4: The Gn interface (between two SGSNs) is also part of the reference architecture, but is not shown for layout purposes only.

Figure 1: Basic Configuration of a PLMN supporting CS and PS services and interfaces

Figure 1a: Configuration for Short Message Service

*** NEXT CHANGE ***

6.4.3　Interfaces used by CS and PS domains

6.4.3.1　Interface between MSC/VLR and SGSN (Gs-interface)

The SGSN may send location information to the MSC/VLR via the optional Gs interface. The SGSN may receive paging requests from the MSC/VLR via the Gs interface. The MSC/VLR may indicate to an SGSN, via the Gs interface, that an MS is engaged in a service handled by the MSC.

Signalling on this interface uses connectionless SCCP (without TCAP). SCCP Global Title (GT) is used for addressing. The Gs-interface is defined in TS 29.016 [48] and 29.018 [49].

6.4.3.2　Interface between HLR and AuC (H-Interface)

When an HLR receives a request for authentication and ciphering data for a Mobile Subscriber and it does not hold the requested data, the HLR requests the data from the AuC. The protocol used to transfer the data over this interface is not standardised.

6.4.3.3　Interface between SGSN and SMS-GMSC/SMS-IWMSC (Gd-Interface)

This interface is used to transfer short messages between SGSN and SMS-GMSC or SMS-IWMSC over GPRS. Signalling on this interface uses the Mobile Application Part (MAP) (see TS 29.002 [26]).

		CR-Form-v7

CHANGE REQUEST

⌘	**23.002** CR **129**	⌘ **rev** **2** ⌘	Current version:	**6.0.1**	⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME **X** Radio Access Network ☐ Core Network **X**

Title:	⌘	Management interface

Source:	⌘	Ericsson, Vodafone, Siemens, mmO2

Work item code:	⌘	IMS2	**Date:** ⌘	16/05/2003

Category:	⌘	**F**		**Release:** ⌘	Rel-6

Use one of the following categories:
   F *(correction)*
   A *(corresponds to a correction in an earlier release)*
   B *(addition of feature),*
   C *(functional modification of feature)*
   D *(editorial modification)*
Detailed explanations of the above categories can
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Use one of the following releases:
2	(GSM Phase 2)
R96	(Release 1996)
R97	(Release 1997)
R98	(Release 1998)
R99	(Release 1999)
Rel-4	(Release 4)
Rel-5	(Release 5)
Rel-6	(Release 6)

Reason for change:	⌘	The Si interface is used to provide access to data from HSS towards CAMEL AS in case of providing existing services via CAMEL. It is not expected that the Si interface will be updated to transfer data between HSS & CAMEL AS for new services or impact existing CAMEL services. Interfaces and configuration of these existing services via new Mt interface is not foreseen for existing CAMEL specifications which will use Si reference point. Existing procedures will be used as today, otherwise operators will have to provide multiple alternatives towards the users since both IMS based (Mt) and existing mechanism will have to remain in use. So the FFS related to this is removed from the specs as well as Si reference point.
		The document SP-030115 (S2-030915) introduced a new reference point using the identifier "Mt".This has led to some confusion, considering the existing 3GPP abbreviation "MT".

Summary of change:	⌘	Remove Si and note from the spec in relation to Mt reference point.
		Replace the identifier "Mt" with "Ut".

Consequences if not approved:	⌘	Additional FFS and misleading CN WG expectation of work.
		Confusion across the 3GPP project about the difference between MT and Mt.

Clauses affected:	⌘	5.5 and 6a.7.18		

		Y	**N**		
Other specs **affected:**	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	This CR merges the CR126 rev3 and the CR129 rev1. Work in progress on SA3 & CN1 specifications may be affected – this CR (content from CR129 rev1) needs to be communicated to those groups so that any documents or CRs in the pipeline from them can be corrected. In addition some CRs from SA2#31 need to be aligned.

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.
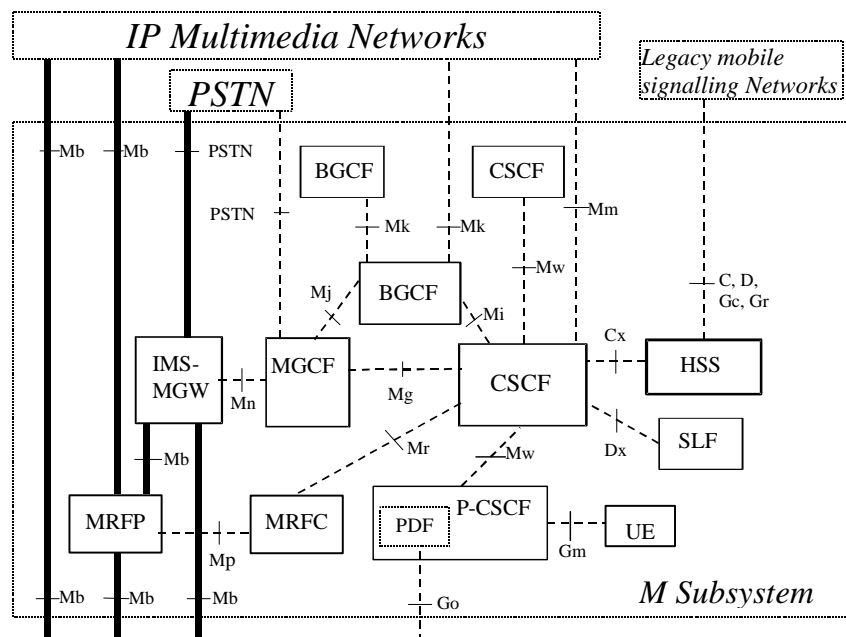
*** FIRST MODIFIED SECTION ***

5.5 Configuration of IM CN Subsystem entities

The configuration of IM CN Subsystem entities is presented in figure 6. In the figure, all the functions are considered implemented in different logical nodes. If two logical nodes are implemented in the same physical equipment, the relevant interfaces may become internal to that equipment.
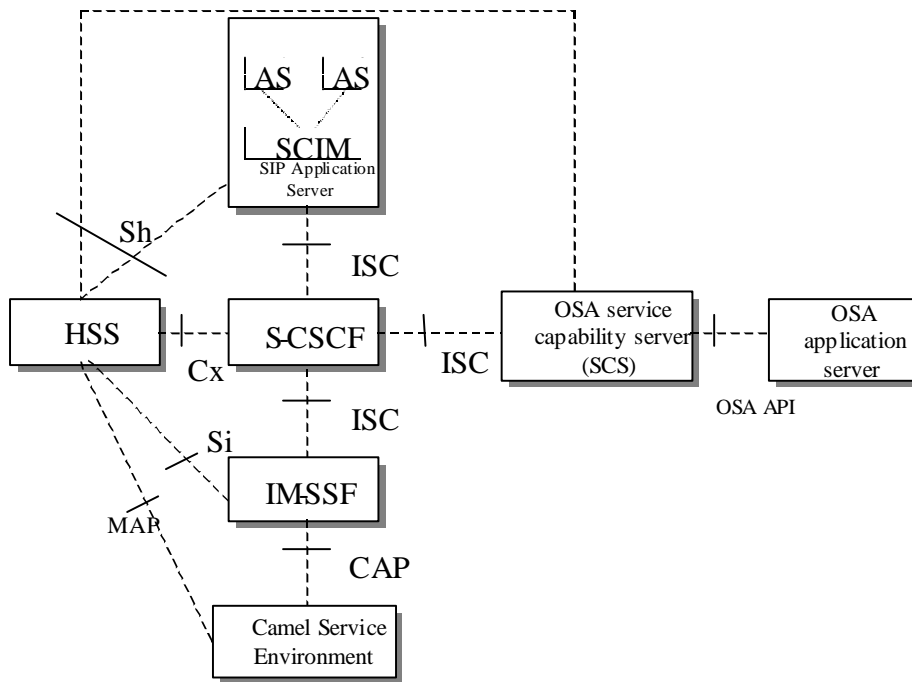
Only the interfaces specifically linked to the IM subsystem are shown, i.e. all the SGSN, GGSN and HSS interfaces depicted in figure 1 are still supported by these entities even if not shown.

Figure 6: Configuration of IM Subsystem entities

Legend:
Bold lines: interfaces supporting user traffic;
Dashed lines: interfaces supporting only signalling.

The figure below depicts an overall view of the functional architecture for services.

Figure 6a: Functional architecture for the provision of service in the IMS

The purpose of the IM SSF is to host the CAMEL network features (i.e. trigger detection points, CAMEL Service Switching Finite State Machine, etc) and to interwork with CAP.

The IM SSF and the CAP interface support legacy services only.

The application server may contain "service capability interaction manager" (SCIM) functionality and other application servers. The SCIM functionality is an application which performs the role of interaction management. The internal components are represented by the "dotted boxes" inside the SIP application server. The internal structure of the application server is outside the standards. The Sh interface shall have sufficient functionality to enable this scenario.

The figure below depicts an overall view of the functional architecture for enabling the management of the user's service related information via the ~~Mt~~ Ut interface.
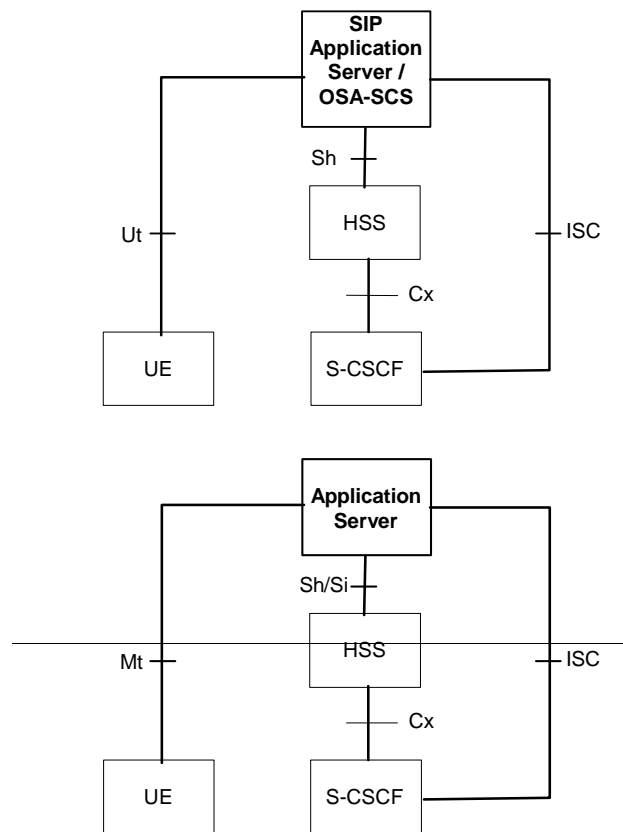
Figure 6b: Functional architecture for the management of the user's service related information

Note: The Application Server in this figure depicts the SIP Application Server, the IM-SSF, and the OSA-SCS. It is for further study if the Mt interface will have any impacts on Si interface between IM-SSF and HSS.

6a.7.18 Reference Point UE – AS (~~Mt~~ Ut Reference Point)

The ~~Mt~~ Ut interface resides between the UE and the Application Server (i.e. the SIP Application Server, OSA-SCS~~, IM SSF~~).

The ~~Mt~~ Ut interface enables the user to manage information related to his services. Such as creation and assignment of Public Service Identities, management of authorization policies that are used e.g. by Presence service, conference policy management, etc.

The AS may need to exhibit security related functions for the ~~Mt~~ Ut interface, the details of these security functions are described in 3G TS 3x.yzw [??].

For the protocol at the ~~Mt~~ Ut reference point HTTP shall be supported.

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CHANGE REQUEST

⌘　　　**23.002 CR 132**　　⌘**rev 1**　⌘　Current version: **6.0.1**　⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects:　　UICC apps⌘ ☐　　　ME ☐　Radio Access Network ☐　Core Network **X**

Title:	⌘	Architecture corrections	
Source:	⌘	Nokia	
Work item code: ⌘		TEI5	**Date:** ⌘　13/05/2003
Category:	⌘	**A**	**Release:** ⌘　Rel-6

Use <u>one</u> of the following categories:
 F (correction)
 A (corresponds to a correction in an earlier release)
 B (addition of feature),
 C (functional modification of feature)
 D (editorial modification)
Detailed explanations of the above categories can
be found in 3GPP <u>TR 21.900</u>.

Use <u>one</u> of the following releases:
 2　　(GSM Phase 2)
 R96　(Release 1996)
 R97　(Release 1997)
 R98　(Release 1998)
 R99　(Release 1999)
 Rel-4　(Release 4)
 Rel-5　(Release 5)
 Rel-6　(Release 6)

Reason for change:	⌘	Subclause 6a.7.3 defines the Mn reference point between MGCF and IMS-MGW. Subclause 6.4.1.7 still states that the Mc reference point describes the interfaces between the MGCF and IMS-MGW.
Summary of change:	⌘	A misleading sentence in subclause 6.4.1.7 is deleted.
Consequences if not approved:	⌘	Misalignment and wrong functional role of a reference point for IMS-CS interworking.

Clauses affected:	⌘	6.4.1.7

Other specs affected:	⌘	Y	N		⌘	
			X	Other core specifications	⌘	
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

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6.4.1.7   Reference point (G)MSC server – CS-MGW (Mc Reference Point)

The Mc reference point describes the interfaces ~~between the MGCF and IMS-MGW,~~ between the MSC Server and CS-MGW, and between the GMSC Server and CS-MGW. It has the following properties:

- full compliance with the H.248 standard [52], baseline work of which is currently carried out in ITU-T Study Group 16, in conjunction with IETF MEGACO WG.

- flexible connection handling which allows support of different call models and different media processing purposes not restricted to H.323 usage [54].

- open architecture where extensions/Packages definition work on the interface may be carried out.

- dynamic sharing of MGW physical node resources. A physical MGW can be partitioned into logically separate virtual MGWs/domains consisting of a set of statically allocated Terminations.

- dynamic sharing of transmission resources between the domains as the MGW controls bearers and manage resources according to the H.248 protocols [52].

The functionality across the Mc reference point will need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current H.248/IETF Megaco standard [52] mechanisms can be applied to enable this.

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CHANGE REQUEST

⌘ **23.002 CR 131** ⌘ **rev 1** ⌘ Current version: **5.10.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title: ⌘	Architecture corrections	
Source: ⌘	Nokia	
Work item code: ⌘	TEI5	**Date:** ⌘ 13/05/2003
Category: ⌘ **F**		**Release:** ⌘ Rel-5

Use <u>one</u> of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
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be found in 3GPP <u>TR 21.900</u>.

Use <u>one</u> of the following releases:
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R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘	Subclause 6a.7.3 defines the Mn reference point between MGCF and IMS-MGW. Subclause 6.4.1.7 still states that the Mc reference point describes the interfaces between the MGCF and IMS-MGW.
Summary of change: ⌘	A misleading sentence in subclause 6.4.1.7 is deleted.
Consequences if not approved: ⌘	Misalignment and wrong functional role of a reference point for IMS-CS interworking.

Clauses affected: ⌘	6.4.1.7

	Y	N		
Other specs ⌘		X	Other core specifications ⌘	
affected:		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

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6.4.1.7   Reference point (G)MSC server – CS-MGW (Mc Reference Point)

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CR-Form-v7

CHANGE REQUEST

⌘ **23.002** CR **130** ⌘**rev** **-** ⌘ Current version: **4.7.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title: ⌘	Removal of Mh interface from the reference model
Source: ⌘	Nokia
Work item code: ⌘ TEI4	***Date:*** ⌘ 07/05/2003

Category: ⌘ **F**   ***Release:*** ⌘ Rel-4

Use *one* of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
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R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘	This CR corrects a left over. 23.002 CR061 (S2-011478) removed R-SGW and Mh interface between HSS and R-SGW from the reference model. However, the CR was not properly implemented into TS, because the reference model still contains the Mh interface.
Summary of change: ⌘	Mh interface is removed from figure 1 in chapter 5.1.
Consequences if not approved: ⌘	Misalignment between specifications.

Clauses affected: ⌘	

	Y	N			
Other specs ⌘		X	Other core specifications	⌘	
affected:		X	Test specifications		
		X	O&M Specifications		

Other comments: ⌘	

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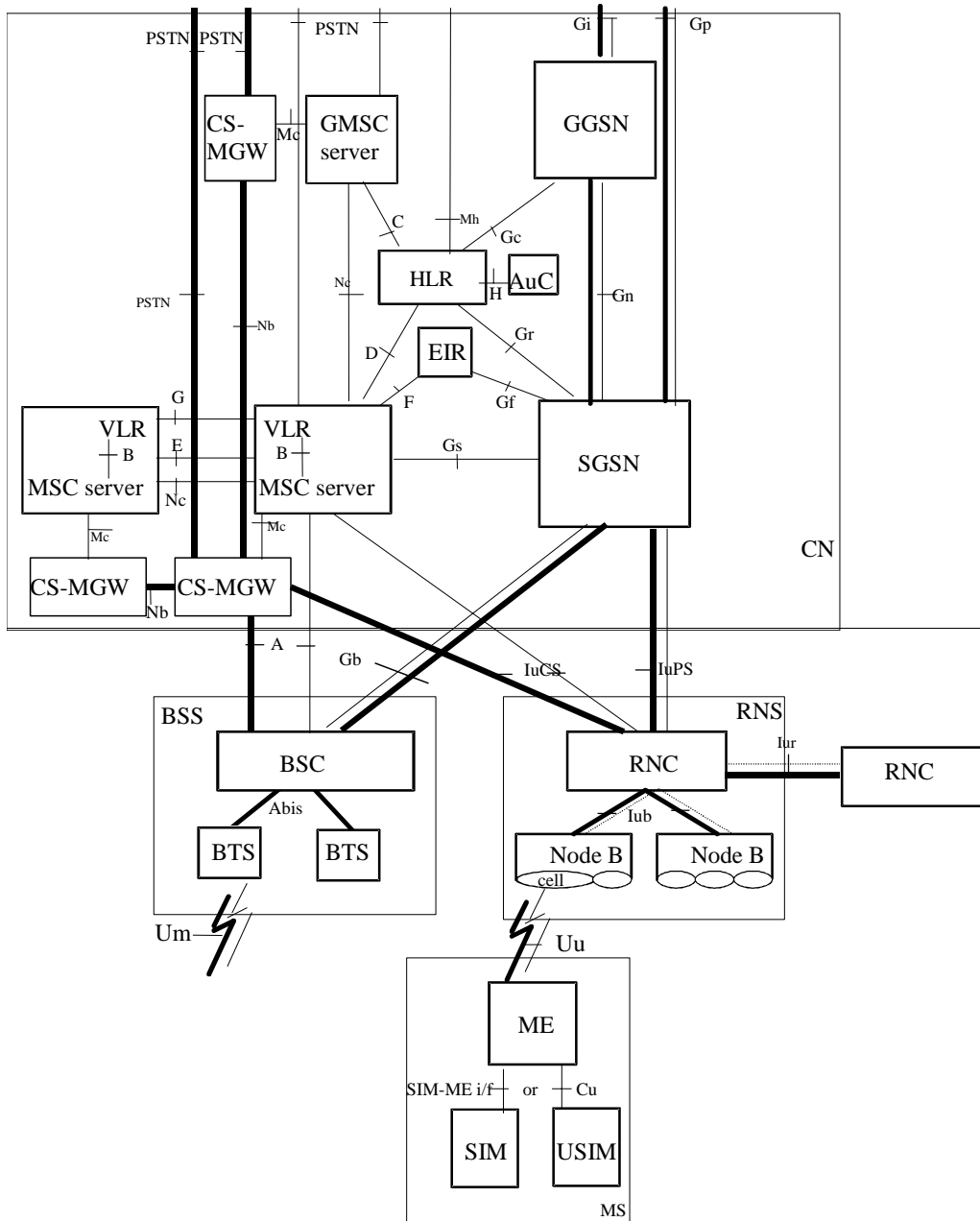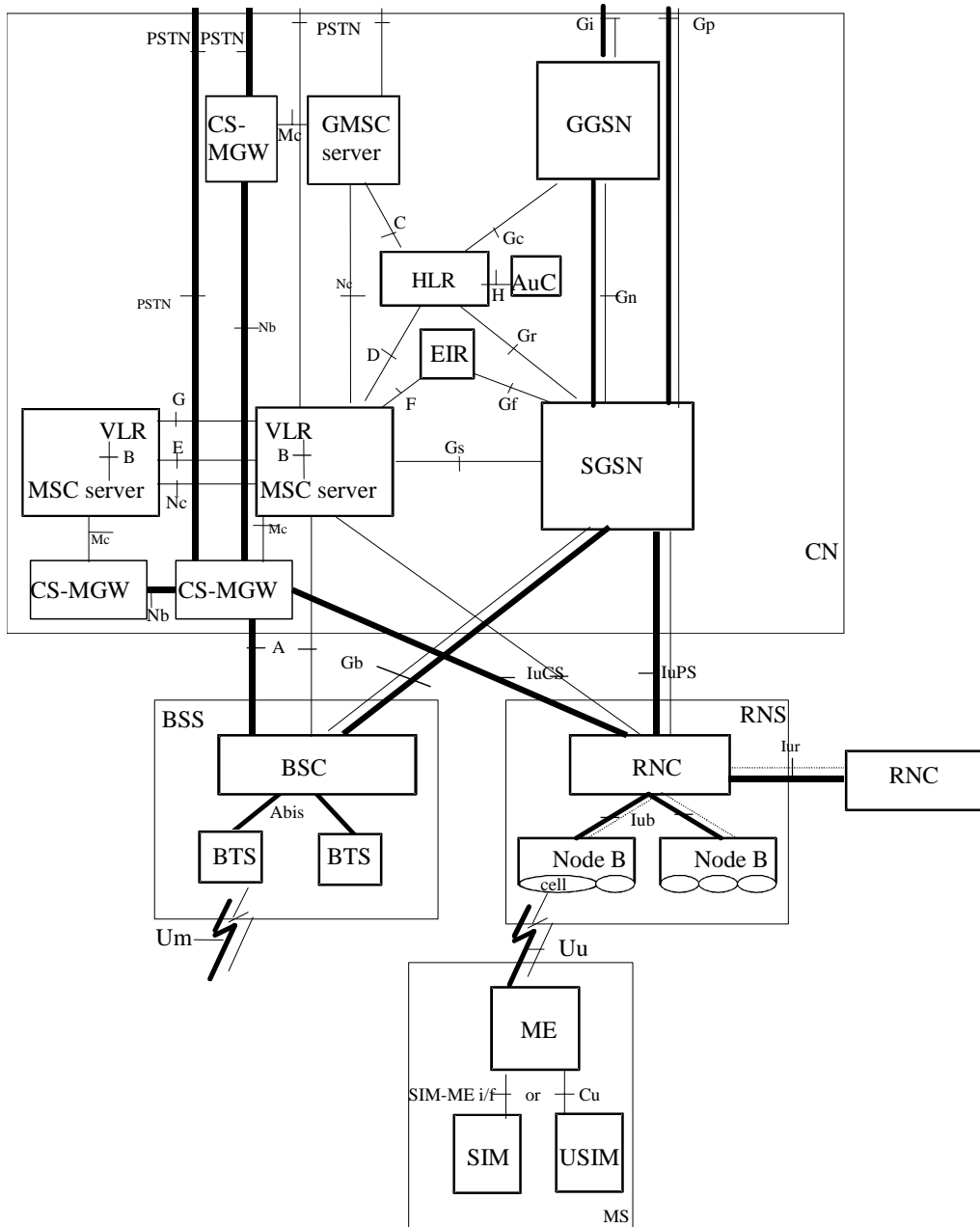
5 Configuration of a Public Land Mobile Network

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Legend:
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NOTE 1:   The figure shows direct interconnections between the entities. The actual links may be provided by an underlying network (e.g. SS7 or IP): this needs further studies.
NOTE 2:   When the MSC and the SGSN are integrated in a single physical entity, this entity is called UMTS MSC (UMSC).
NOTE 3:   A (G)MSC server and associated CS-MGW can be implemented as a single node: the (G)MSC.
NOTE 4: The Gn interface (between two SGSNs) is also part of the reference architecture, but is not shown for layout purposes only.

Figure 1: Basic Configuration of a PLMN supporting CS and PS services and interfaces

3GPP TSG-SA WG2 Meeting #31   **Tdoc S2-031554**
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CR-Form-v7

CHANGE REQUEST

⌘ **23.002** CR **127** ⌘**rev** **2** ⌘ Current version: **6.0.1** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐   ME ☐ Radio Access Network ☐ Core Network **X**

Title: ⌘	SLF on Sh interface
Source: ⌘	Nokia
Work item code:⌘ IMS2	***Date:*** ⌘ 08/04/2003
Category: ⌘ **B**	***Release:*** ⌘ Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
2   *(GSM Phase 2)*
R96   *(Release 1996)*
R97   *(Release 1997)*
R98   *(Release 1998)*
R99   *(Release 1999)*
Rel-4   *(Release 4)*
Rel-5   *(Release 5)*
Rel-6   *(Release 6)*

Reason for change: ⌘	There does not exist a solution for user identity-HSS resolution on Sh interface.
Summary of change:⌘	A new Dh interface is proposed to be added between AS and SLF to resolve the public user identity – HSS name mapping.
Consequences if not approved: ⌘	There is no standard mechanism to resolve the HSS name on the Sh interface.

Clauses affected: ⌘	4a.7.5, 5.5, and 6a.7.x

	Y	N		
Other specs affected: ⌘	X		Other core specifications ⌘	TS 23.228
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

----------------------First modified section---------------------

4a.7.5   Subscription Locator Function (SLF)

The SLF:

-    Is queried by the I-CSCF during the Registration and Session Setup to get the name of the HSS containing the required subscriber specific data. Furthermore the SLF is also queried by the S-CSCF during the Registration.

-    Is queried by the AS in conjunction with the Sh interface operation to get the name of the HSS containing the required subscriber specific data.

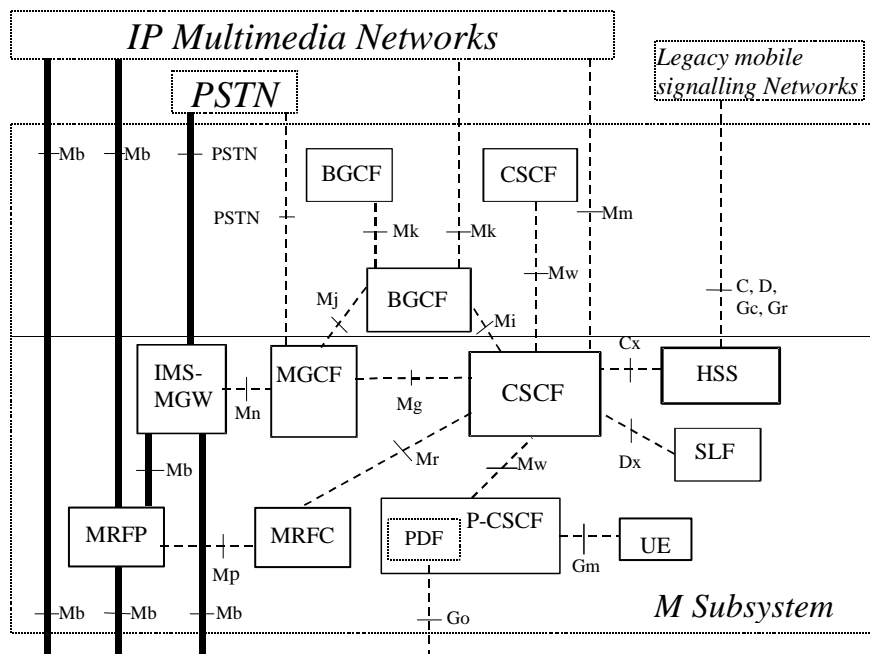-   Is accessed via the Dx interface by the CSCF and via the Dh interface by the AS

The SLF is not required in a single HSS environment. An example for a single HSS environment is a server farm architecture. Use of SLF is not required when AS are configured/managed to use pre-defined HSS.

----------------------Second modified section------------------

5.5   Configuration of IM CN Subsystem entities

The configuration of IM CN Subsystem entities is presented in figure 6. In the figure, all the functions are considered implemented in different logical nodes. If two logical nodes are implemented in the same physical equipment, the relevant interfaces may become internal to that equipment.

Only the interfaces specifically linked to the IM subsystem are shown, i.e. all the SGSN, GGSN and HSS interfaces depicted in figure 1 are still supported by these entities even if not shown.
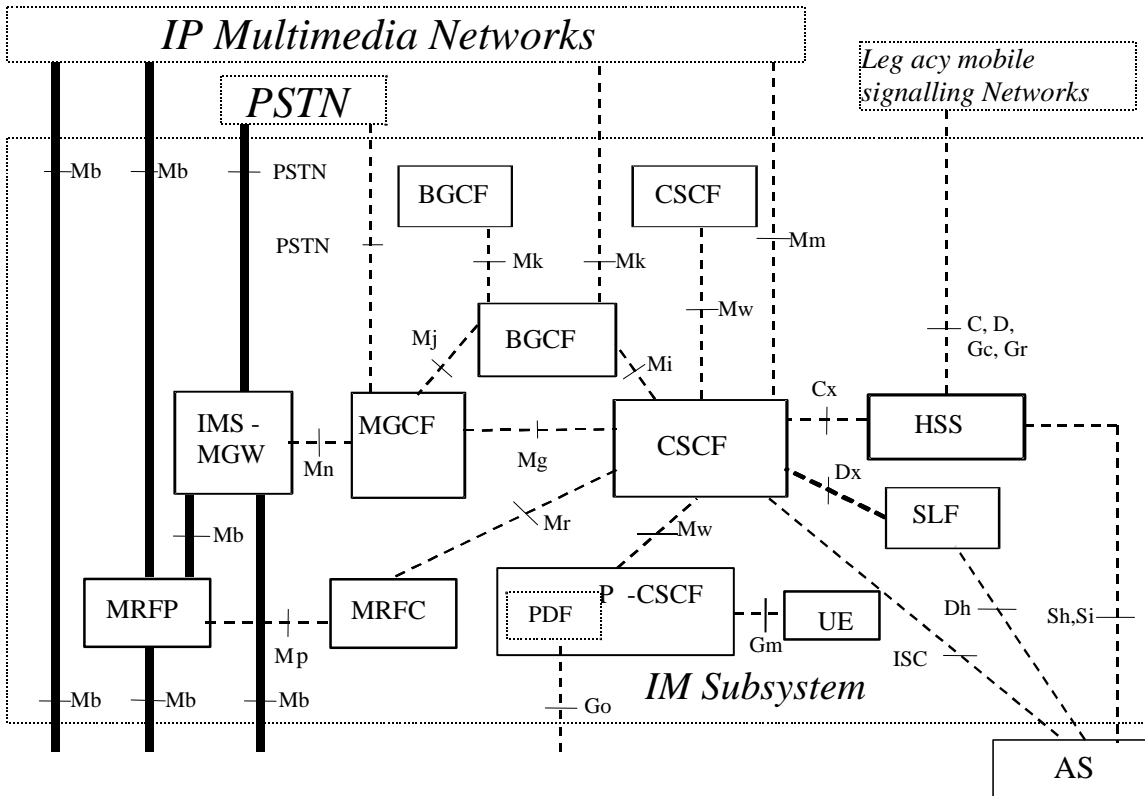
IP Multimedia Networks

PSTN

Leg acy mobile signalling Networks

IM Subsystem

Figure 6: Configuration of IM Subsystem entities

Legend:
Bold lines: interfaces supporting user traffic;
Dashed lines: interfaces supporting only signalling.

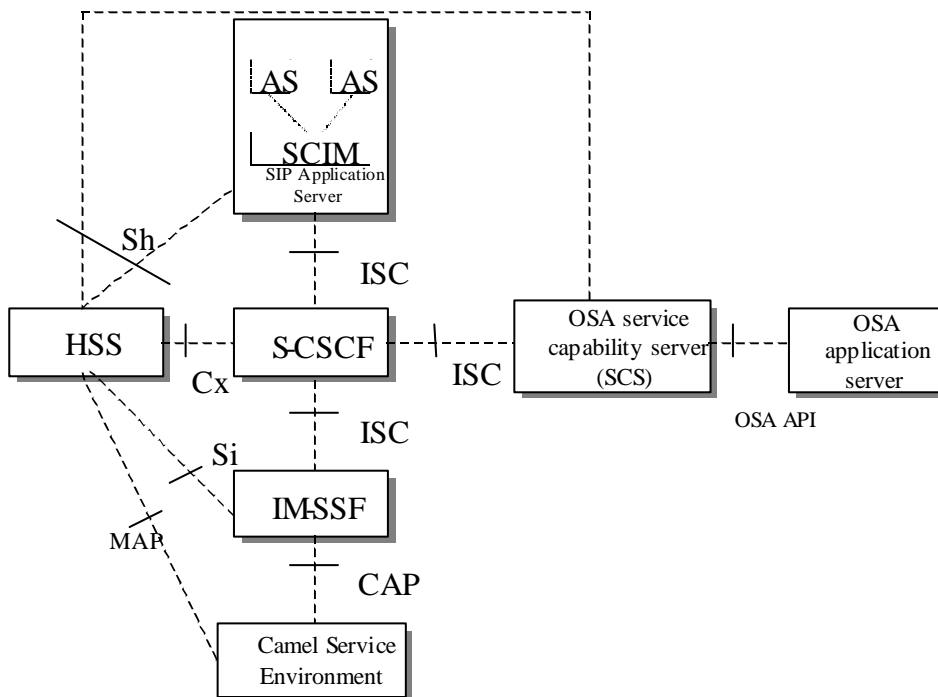The figure below depicts an overall view of the functional architecture for services.

Figure 6a: Functional architecture for the provision of service in the IMS

The purpose of the IM SSF is to host the CAMEL network features (i.e. trigger detection points, CAMEL Service Switching Finite State Machine, etc) and to interwork with CAP.

The IM SSF and the CAP interface support legacy services only.

The application server may contain "service capability interaction manager" (SCIM) functionality and other application servers. The SCIM functionality is an application which performs the role of interaction management. The internal components are represented by the "dotted boxes" inside the SIP application server. The internal structure of the application server is outside the standards. The Sh interface shall have sufficient functionality to enable this scenario.

The figure below depicts an overall view of the functional architecture for enabling the management of the user's service related information via the Mt interface.
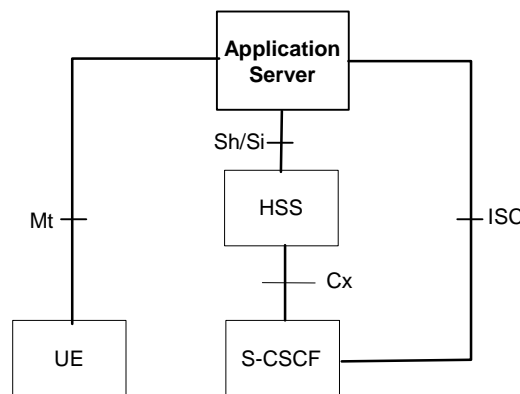
Figure 6b: Functional architecture for the management of the user's service related information

Note: The Application Server in this figure depicts the SIP Application Server, the IM-SSF, and the OSA-SCS. It is for further study if the Mt interface will have any impacts on Si interface between IM-SSF and HSS.

----------------------Third modified section------------------

6a.7.x   Reference Point AS- SLF (Dh Reference Point)

This interface between AS and SLF is used to retrieve the address of the HSS which holds the subscription for a given user.

This interface is not required in a single HSS environment. An example for a single HSS environment is a server farm architecture.

Details are described in 23.228 [34], subclause 5.8.1.

FIRST CHANGE

5.3 Configuration of CAMEL entities

The following figure shows the interconnection of the CAMEL-specific entities with the rest of the network. Only the interfaces specificly involved in CAMEL provisionning are shown, i.e. all the GMSC, MSC, SGSN and HLR interfaces depicted in figure 1 are still supported by these entities even if not shown.

NOTE: Most CAMEL-specific interfaces have no particular name. They are designated by the name of the two entities they link together, e.g. "the gsmSSF-gsmSCF interface".
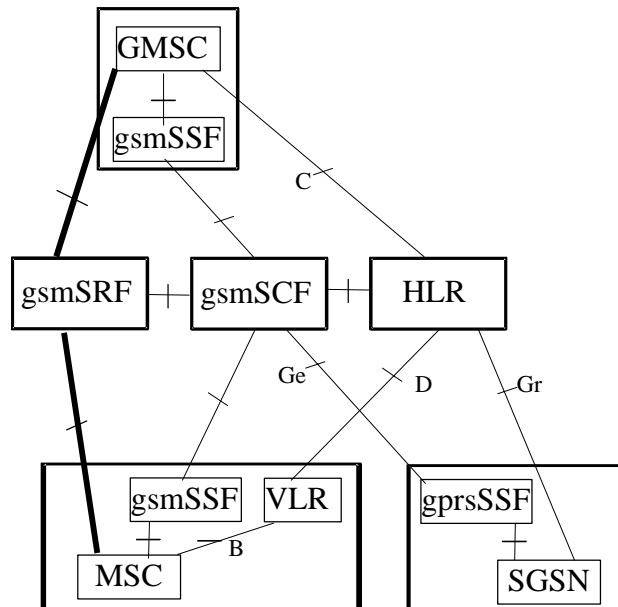
Figure 4: configuration of CAMEL entities

The bold lines are used for interfaces supporting user data only, the dashed lines are used for interfaces supporting signalling only.

NEXT CHANGE

6a.4 CAMEL-specific interfaces

The CAMEL-specific interfaces are detailed in 23.078 [10c]. These interfaces are.

6a.4.1 GMSC - gsmSSF interface

This is an internal interface. The interface is described in the specification to make it easier to understand the handling of Detection Points (arming/disarming of DPs, DP processing etc.).

6a.4.2 gsmSSF - gsmSCF interface

This interface is used by the gsmSCF to control a call in a certain gsmSSF and to request the gsmSSF to establish a connection with a gsmSRF. Relationships on this interface are opened as a result of the gsmSSF sending a request for instructions to the gsmSCF.

6a.4.3 MSC - gsmSSF interface

This is an internal interface. The interface is described in the specification to make it easier to understand the handling of DPs (arming/disarming of DPs, DP processing etc.).

6a.4.4 gsmSCF - HLR interface

This interface is used by the gsmSCF to request information from the HLR. As a network operator option the HLR may refuse to provide the information requested by the gsmSCF.

This interface is also used for USSD operations, both for gsmSCF-initiated dialogues and MS-initiated dialogues (relayed via HLR). It is a network operator option whether to support or not USSD operations on this interface.

6a.4.5 gsmSCF - gsmSRF interface

This interface is used by the gsmSCF to instruct the gsmSRF to play tones/announcements to the users.

6a.4.6 MSC - gsmSCF interface

This interface is used by the MSC to send supplementary service invocation notifications to the gsmSCF.

6a.4.7 SGSN - gprsSSF interface

This is an internal interface. The interface is described in the specification to make it easier to understand the handling of DPs (arming/disarming of DPs, DP processing etc.).

6a.4.8 gprsSSF - gsmSCF interface (Ge Reference Point)

This interface is used by the gsmSCF to control a GPRS session or individual PDP Context in a certain gprsSSF. Relationships between the gprsSSF and the gsmSCF (GPRS dialogues) on this interface are opened as a result of the gprsSSF sending a request for instructions to the gsmSCF. This interface is also known as Ge reference point [9a].