3GPP TSG CN Plenary Meeting #21 **NP-030384**
17th – 19th September 2003 Frankfurt, GERMANY.

Source: TSG CN WG4

Title: Corrections on Sh-interface

Agenda item: 8.1

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.328	032	2	N4-031000	Rel-5	Correction of message flow	F	5.4.0
29.328	035	2	N4-031002	Rel-5	Mistakes in the XML schema	F	5.4.0
29.328	033	2	N4-031067	Rel-5	Correction of Sh data definition in Annex C and D	F	5.4.0

3GPP TSG CN WG4 Meeting #20 **N4-031000**
Sophia Antipolis, FRANCE, 25th – 29th August 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.328** **CR** **032** ⌘**rev** **2** ⌘ Current version: **5.4.0** ⌘

*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 ☒

Title:	⌘	Correction of message flow
Source:	⌘	CN4
Work item code:	⌘	IMS
Date:	⌘	29/07/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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:	⌘	Critical correction: There is an inconsistency between the message flow in TS 29.328 §B.1.1 and the procedure description in TS 24.229.
Summary of change:	⌘	The 200 OK message is sent after the profile downloading. The procedure to download the profile is SAR/SAA
Consequences if not approved:	⌘	Misleading message flow.

Clauses affected:	⌘	B.1.1

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			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.

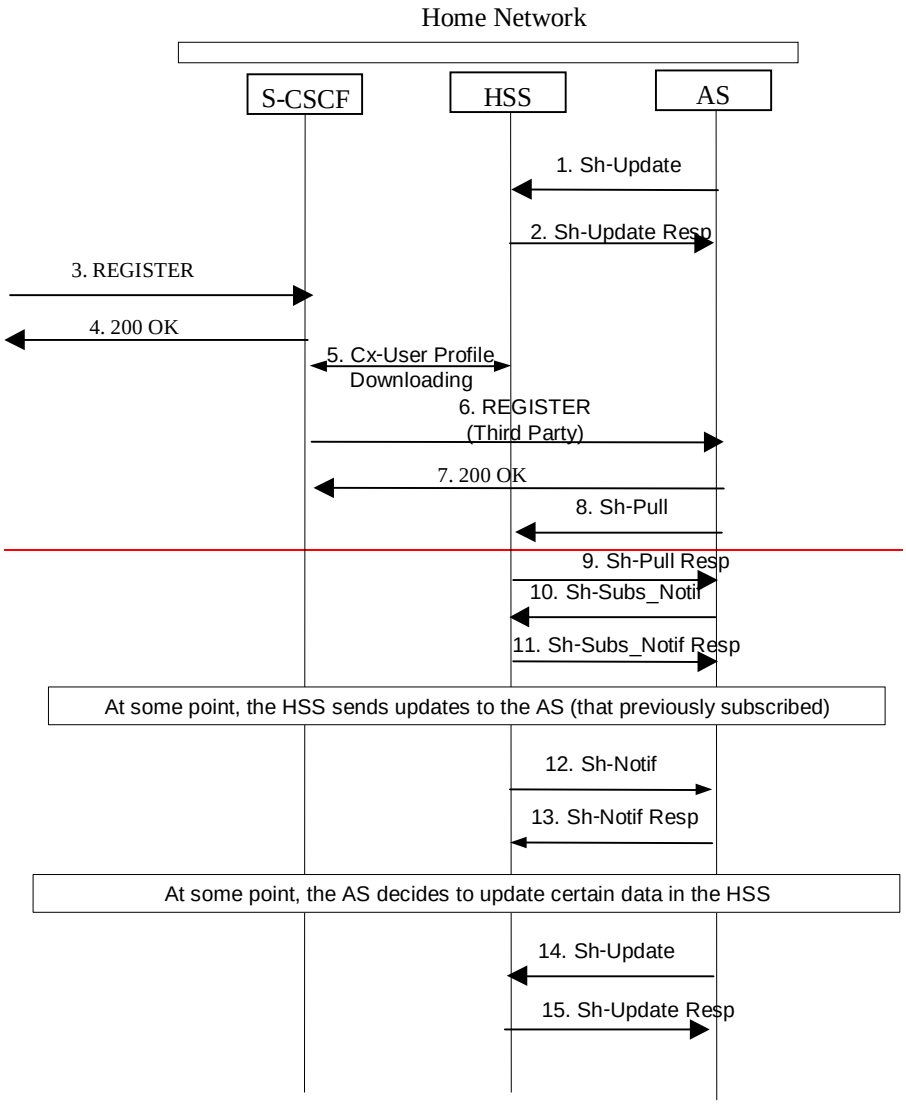
********** MODIFICATION **********

Annex B (informative): Message flow

B.1 Message flows

The following message flows give examples regarding which Diameter messages shall be sent in scenarios described in 3GPP TS 23.218 [4].

B.1.1 Data Update, Registration, Notification Subscription.



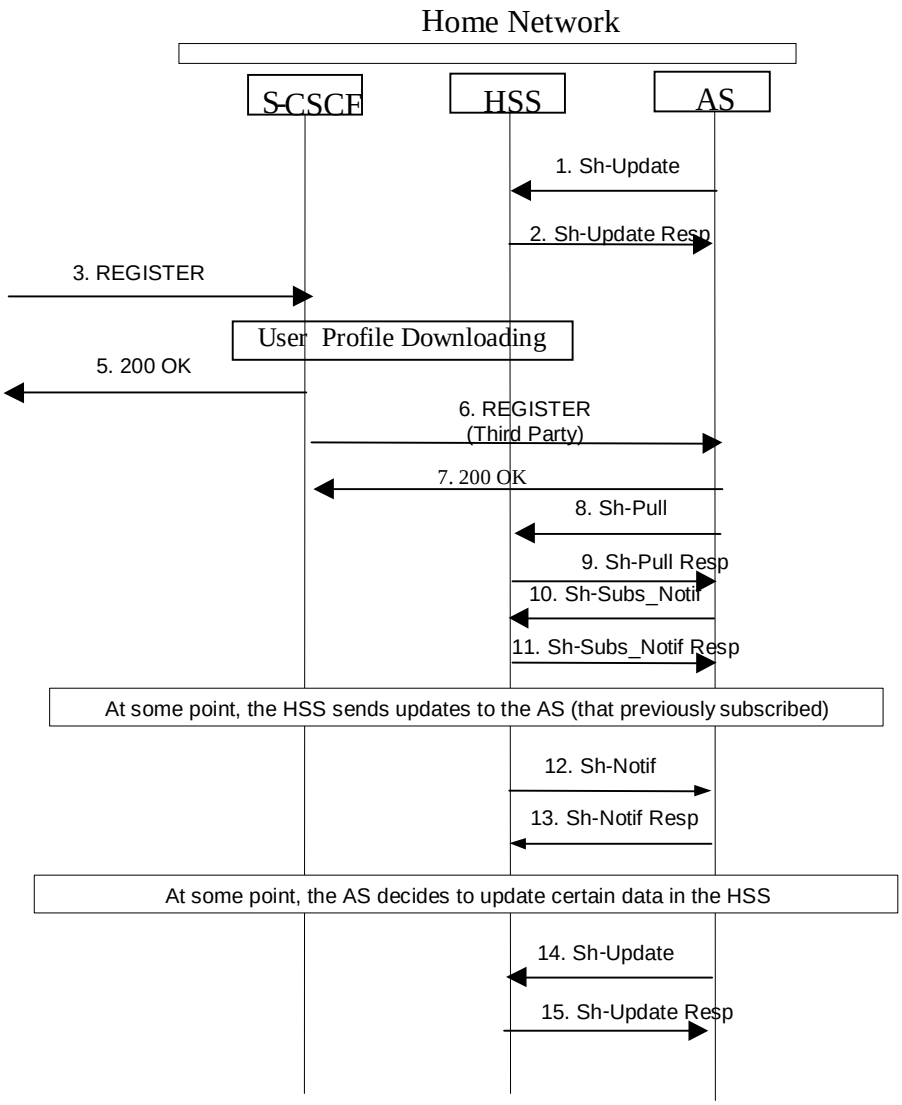


Figure B.1.1: Data Update, Registration, Notification Subscription

1. A user subscribes to a new service. The operator provisions the service in an AS. The AS stores some service data for a user in the HSS, Sh-Update (user identity, updated data) e.g. repository data.
2. HSS confirms the data is updated
3. Some time later, user registers with the network

~~4. 200 OK~~

4~~5~~. S-CSCF downloads the data from the HSS (during the procedure S-CSCF Registration Notification on Cx interface). Filter criteria specify that the AS wants to be notified that the end user is registered.

5. 200 OK

6. S-CSCF sends third party registration message to the application server to notify that user is registered.
7. 200 OK
8. The AS downloads data needed for providing service from HSS, by means of Sh-Pull (user identity, requested data, and service information).
9. HSS sends data to AS

10. The AS subscribes to notifications from the HSS of changes in data, by means of Sh-Subs-Notif (user identity, requested data, and/or service information).

11. The HSS confirms the subscription request.

12. At some moment, user data is updated in the HSS. As the AS subscribed to notifications (step 10), the HSS sends to the AS the requested updates, by means of Sh-Notif (user identity, updated data).

13. The AS acknowledges the notification.

14. At some moment, the AS decides to update user's service data e.g. repository data in the HSS, by means of Cx-Update (user identity, updated data).

15. The HSS confirms the service data is updated.

******************* END OF MODIFICATION ****************

3GPP TSG CN WG4 Meeting #20 **N4-031067**
Sophia Antipolis, FRANCE, 25th – 29th August 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.328** **CR** **33** ⌘ **rev** **2** ⌘ Current version: **5.4.0** ⌘

*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 ☒

Title:	⌘	Correction of Sh data definition in Annex C and D.
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	29/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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:	⌘	Sh data information provided in UML model in Annex C, Table D.1/D.2 in Annex D, and Sh datatype XSD are not consistent. Critical correction
Summary of change:	⌘	(1) Modified Sh-Data to correspond to Sh XSD and Figure C.1.1, (2) Modified Sh-IMS-Data and Figure C.3.1 to correspond to Sh XSD, and (3) Set CellGlobalID to use tCellGlobalID corresponding to Sh XSD.
Consequences if not approved:	⌘	Sh data information in 29.328 will be inconsistent. This may lead to incompatible implementations.

Clauses affected:	⌘	Annex C.3, Table D.1 and D.2, attached .xsd file

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

Other comments:	⌘	

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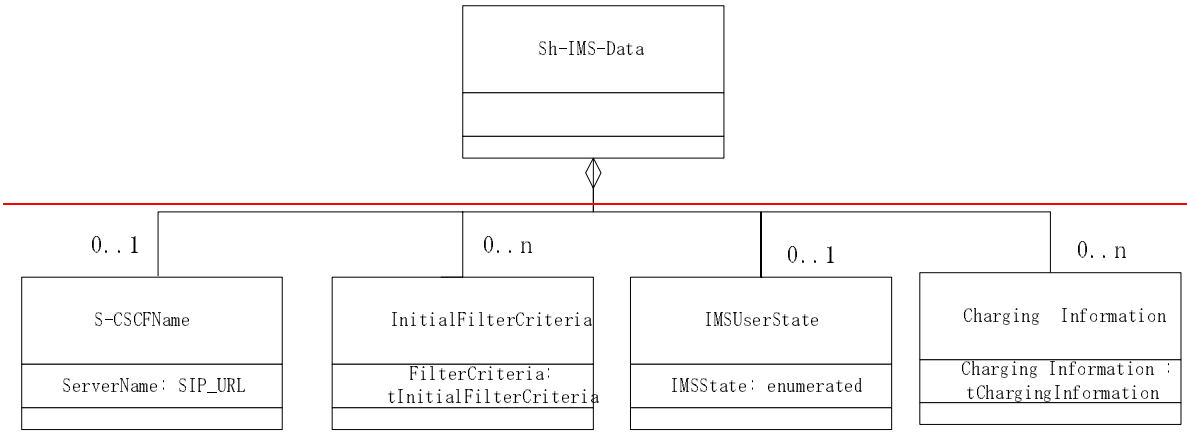
****** First modified section ******

C.3 Sh-IMS-Data

The following picture details the UML model of the class Sh-IMS-Data.



~~**Figure C.3.1: Sh-IMS-Data**~~

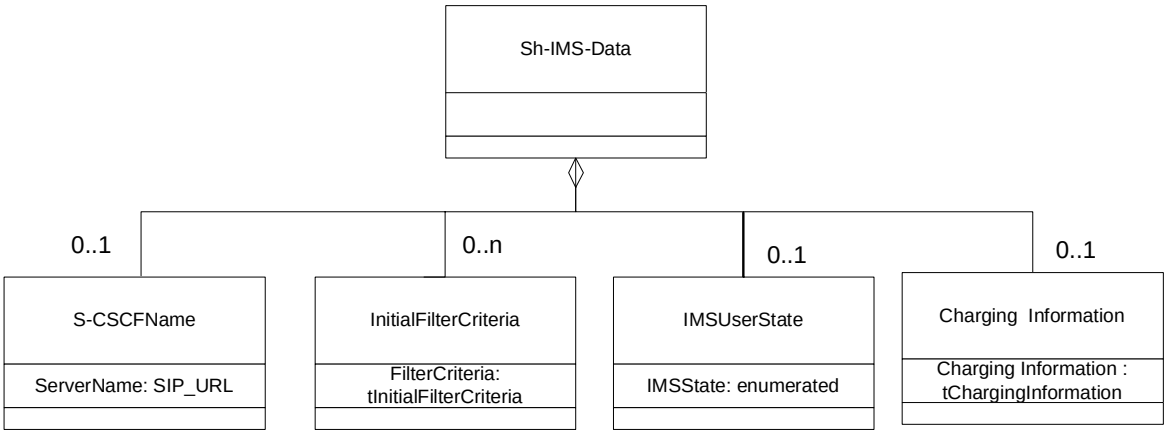


Figure C.3.1: Sh-IMS-Data

Each instance of the class Sh-IMS-Data contains 0 or 1 instance of the class S-CSCFName, 0 to n instances of the class InitialFilterCriteria, ~~and/or~~ 0 or 1 instance ~~or~~ of the class IMSUserState ~~class~~, and/or 0 or 1 instance of the class ChargingInformation.

Class S-CSCFName contains the SIP URL of the S-CSCF where the multimedia public identity that the AS included in the request is registered.

Class InitialFilterCriteria is defined in 3GPP TS 29.228 [6] and contains the initial filter criteria of the multimedia public identity that the AS included in the request.

Class IMSUserState contains the registration state of the identity given by the attribute of class Sh-IMS-Data. See chapter 7.6 for possible values.

Class Charging Information contains the online and offline charging function addresses. See chapter 7.6 for possible values.

****** Next modified section ******

Table D.1: XML schema for Sh interface: simple data types

Data type	Tag	Base type	Comments
tPriority	Priority	integer	>= 0
tGroupID	Group	integer	>= 0
tDefaultHandling	DefaultHandling	enumerated	Possible values: 0 (SESSION_CONTINUED) 1 (SESSION_TERMINATED)
tDirectionOfRequest	SessionCase	enumerated	Possible values: 0 (ORIGINATING_SESSION) 1 TERMINATING_SESSION 2 (TERMINATING_UNREGISTERED)
tIMSUserState	IMSUserState	Enumerated	Possible values: 0 (NOT_REGISTERED) 1 (REGISTERED) 2 (REGISTERED_UNREG_SERVICES) 3 (AUTHENTICATION_PENDING)
tCSUserState	CSUserState	Enumerated	Possible values (as defined in 3GPP TS 23.078 [14]): 0 (CAMELBusy) 1 (NetworkDeterminedNotReachable) 2 (AssumedIdle) 3 (NotProvidedfromVLR)
tPSUserState	PSUserState	Enumerated	Possible values (as defined in 3GPP TS 23.078 [14]): 0 (Detached) 1 (AttachedNotReachableForPaging) 2 (AttachedReachableForPaging) 3 (ConnectedNotReachableForPaging) 4 (ConnectedReachableForPaging) 5 (NotProvidedFromSGSN)

tLocationNumber	LocationNumber	string	Syntax described in ITU-T Q.763 [9] (Base64 encoded according to RFC 2045 [15]). Lenght >=4 and <=16 (multiples of 4).
tCellGlobalId ~~tGlobalCellId~~	CellGlobalId ~~GlobalCellId~~	string	Syntax described in 3GPP TS 29.002 [13] (Base64 encoded according to RFC 2045 [15]). Length = 12.
tServiceAreaId	ServiceAreaId	string	Syntax described in 3GPP TS 29.002 [13] (Base64 encoded according to RFC 2045 [15]). Length = 12.
tLocationAreaId	LocationAreaId	string	Syntax described in 3GPP TS 29.002 [13] (Base64 encoded according to RFC 2045 [15]). Length = 8.
tRoutingAreaId	RoutingAreaId	string	Syntax described in 3GPP TS 29.002 [13] (Base64 encoded according to RFC 2045 [15]). Length = 8.
tGeographicalInformation	GeographicalInformation	string	Syntax described in 3GPP TS 29.002 (base 64 encoded according to RFC 2045). Length = 12.
tGeodeticInformation	GeodeticInformation	string	Syntax described in 3GPP TS 29.002 [13] (Base64 encoded according to RFC 2045 [15]). Length = 16.
tAgeOfLocationInformation	AgeOfLocationInformation	integer	>=0, <=32767
tAddressString	AddressString	string	Syntax described in 3GPP TS 29.002 [13] (Base64 encoded according to RFC 2045 [15]). Length >= 4 and <=28 (multiples of 4).
tMSISDN	MSISDN	string	Syntax described in 3GPP TS 23.003 [11].
tSIP_URL	PublicIdentity	anyURI	Syntax described in RFC 3261 [16]
tTEL_URL	PublicIdentity	anyURI	Syntax described in RFC 2806 [17]
tDiameterURI	DiameterURI	string	Syntax of a Diameter URI as described in [8]
tIMSPublicIdentity	IMSPublicIdentity	(union)	Union of tSIP_URL and tTEL_URL
tServiceInfo	ServiceInfo	string	

tString	RequestURI, Method, Header, Content, Line	string	
tBool	ConditionTypeCNF, ConditionNegated	boolean	Possible values: 0 (false) 1 (true)
tSequenceNumber	SequenceNumber	integer	>=0, <=65535

****** Next modified section ******

Table D.2: XML schema for Sh interface: complex data types

Data type	Tag	Compound of		
		Tag	Type	Cardinality
tSh-Data	Sh-Data	PublicIdentifiers	tPublicIdentity	0 to 1
		RepositoryData	tTransparentData	0 to 1
		Sh-IMS-Data	tShIMSData	0 to 1
		~~LocationInformation~~	~~tLocationInformation~~	~~0 to 1~~
		CSLocationInformation	tCSLocationInformation	0 to 1
		PSLocationInformation	tPSLocationInformation	0 to 1
		CSUserState	tCSUserState	0 to 1
		PSUserState	tPSUserState	0 to 1
tTransparentData	RepositoryData	ServiceIndication	string	1
		SequenceNumber	tSequenceNumber	1
		ServiceData	anonymous complex type~~string~~	0 to 1
tShIMSData	Sh-IMS-Data	SCSCFName	tSIP_URL	0 to ~~n~~1
		InitialFilterCriteria	tInitialFilterCriteria	0 to ~~10~~n
		IMSUserState	tIMSUserState	0 to 1
		ChargingInformation	tChargingInformation	0 to 1
tCSLocationInformation	CSLocationInformation	LocationNumber	tLocationNumber	0 to 1
		CellGlobalId	tCellGlobalId ~~tGlobalCellId~~	0 to 1
		ServiceAreaId	tServiceAreaId	0 to 1
		LocationAreaId	tLocationAreaId	0 to 1

		GeographicalInformation	tGeographicalInformation	0 to 1
		GeodeticInformation	tGeodeticInformation	0 to 1
		VLRNumber	tISDNAddress	0 to 1
		MSCNumber	tISDNAddress	0 to 1
		CurrentLocationRetrieved	tBool	0 to 1
		AgeOfLocationInformation	tAgeOfLocationInformation	0 to 1
tPSLocationInformation	PSLocationInformation	CellGlobalId	tCellGlobalId ~~tGlobalCellId~~	0 to 1
		ServiceAreaId	tServiceAreaId	0 to 1
		LocationAreaId	tLocationAreaId	0 to 1
		RoutingAreaId	tRoutingAreaId	0 to 1
		GeographicalInformation	tGeographicalInformation	0 to 1
		GeodeticInformation	tGeodeticInformation	0 to 1
		SGSNNumber	tISDNAddress	0 to 1
		CurrentLocationRetrieved	tBool	0 to 1
		AgeOfLocationInformation	tAgeOfLocationInformation	0 to 1
tPublicIdentity	PublicIdentity	IMSPublicIdentity	tIMSPublicIdentity	0 to n
		MSISDN	tMSISDN	0 to n

tInitialFilterCriteria	InitialFilterCriteria	Priority		tPriority	1
		TriggerPoint		tTrigger	0 to 1
		ApplicationServer		tApplicationServer	1
tTrigger	TriggerPoint	ConditionTypeCNF		tBool	1
		SPT		tSePoTri	0 to n
tSePoTri	SPT	ConditionNegated		tBool	0 to 1
		Group		tGroupID	1 to n
		Choice of	RequestURI	tString	1
			Method	tString	1
			SIPHeader	tHeader	1
			SessionCase	tDirectionOfRequest	1
			SessionDescription	tSessionDescription	1
tHeader	SIPHeader	Header		tString	1
		Content		tString	0 to 1
tSessionDescription	SessionDescription	Line		tString	1
		Content		tString	0 to 1
tApplicationServer	ApplicationServer	ServerName		tSIP_URL	1
		DefaultHandling		tDefaultHandling	0 to 1
		ServiceInfo		tServiceInfo	0 to 1
tChargingInformation	ChargingInformation	PrimaryEventChargingFunctionName		tDiameterURI	0 to 1
		SecondaryEventChargingFunctionName		tDiameterURI	0 to 1
		PrimaryChargingCollectionFunctionName		tDiameterURI	0 to 1

			SecondaryCharging CollectionFunctionName	tDiameterURI	0 to 1
NOTE: “n” shall be interpreted as non-bounded.					

3GPP TSG CN WG4 Meeting #20 **N4-031002**
Sophia Antipolis, FRANCE, 25th – 29th August 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.328** **CR** **35** ⌘ **rev** **2** ⌘ Current version: **5.4.0** ⌘

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

Title:	⌘	Mistakes in the XML schema
Source:	⌘	CN4
Work item code:	⌘	IMS
Date:	⌘	12/08/2003
Category:	⌘	**F**
Release:	⌘	5

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R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	Critical correction In the XML Schema: ShDataType.xsd a mistake is related to the definition of some *complex* types. Complex types may contain a line such as: <xs:any namespace="##Other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>. But according to http://www.w3.org/TR/xmlschema-0/ in table4, the value of the namespace cannot be "##Other" but has to be "##other"(with a lower case 'o'). This is not going to make the program crash, but it triggers some warnings when checking the validity of the schema (using xsv XML Schema checker for instance)
Summary of change:	⌘	Replace all occurrences of "##Other" by "##other".
Consequences if not approved:	⌘	Invalide XML Schema, can't be used by standard XML checker.

Clauses affected:	⌘	ShDataType.xsd

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

Other comments:	⌘	

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********** MODIFICATION **********

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
attributeFormDefault="unqualified">
    <xs:simpleType name="tSIP_URL" final="list restriction">
        <xs:restriction base="xs:anyURI"/>
    </xs:simpleType>
    <xs:simpleType name="tTEL_URL" final="list restriction">
        <xs:restriction base="xs:anyURI"/>
    </xs:simpleType>
    <xs:simpleType name="tDiameterURI" final="list restriction">
        <xs:restriction base="xs:anyURI"/>
    </xs:simpleType>
    <xs:simpleType name="tIMSPublicIdentity" final="#all">
        <xs:union memberTypes="tSIP_URL tTEL_URL"/>
    </xs:simpleType>
    <xs:simpleType name="tServiceInfo" final="list restriction">
        <xs:restriction base="xs:string">
            <xs:minLength value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tString" final="list restriction">
        <xs:restriction base="xs:string">
            <xs:minLength value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tMSISDN" final="list restriction">
        <xs:restriction base="xs:string">
            <xs:minLength value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tIMSUserState" final="list restriction">
        <xs:restriction base="xs:unsignedByte">
            <xs:maxInclusive value="3"/>
            <xs:enumeration value="0">
```

```
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">NOT_REGISTERED</label>
                    <definition xml:lang="en">Not registered</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="1">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">REGISTERED</label>
                    <definition xml:lang="en">Registered</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="2">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">REGISTERED_UNREG_SERVICES</label>
                    <definition xml:lang="en">Registered, with services for unregistered</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="3">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">AUTHENTICATION_PENDING </label>
                    <definition xml:lang="en">Pending of authentication</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tCSUserState" final="list restriction">
    <xs:restriction base="xs:unsignedByte">
```

```
            <xs:maxInclusive value="3"/>
            <xs:enumeration value="0">
                <xs:annotation>
                    <xs:documentation>
                        <label xml:lang="en">CAMELBusy</label>
                    </xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="1">
                <xs:annotation>
                    <xs:documentation>
                        <label xml:lang="en">NetworkDeterminedNotReachable</label>
                    </xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="2">
                <xs:annotation>
                    <xs:documentation>
                        <label xml:lang="en">AssumedIdle</label>
                    </xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="3">
                <xs:annotation>
                    <xs:documentation>
                        <label xml:lang="en">NotProvidedFromVLR</label>
                    </xs:documentation>
                </xs:annotation>
            </xs:enumeration>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tPSUserState" final="list restriction">
        <xs:restriction base="xs:unsignedByte">
            <xs:maxInclusive value="5"/>
            <xs:enumeration value="0">
```

```
        <xs:annotation>
            <xs:documentation>
                <label xml:lang="en">Detached </label>
            </xs:documentation>
        </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="1">
        <xs:annotation>
            <xs:documentation>
                <label xml:lang="en">AttachedNotReachableForPaging</label>
            </xs:documentation>
        </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="2">
        <xs:annotation>
            <xs:documentation>
                <label xml:lang="en">AttachedReachableForPaging</label>
            </xs:documentation>
        </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="3">
        <xs:annotation>
            <xs:documentation>
                <label xml:lang="en">ConnectedNotReachableForPaging</label>
            </xs:documentation>
        </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="4">
        <xs:annotation>
            <xs:documentation>
                <label xml:lang="en">ConnectedReachableForPaging</label>
            </xs:documentation>
        </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="5">
```

```
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">notProvidedFromSGSN</label>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tLocationNumber" final="list restriction">
    <xs:restriction base="xs:string">
        <xs:minLength value="4"/>
        <xs:maxLength value="16"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tCellGlobalId" final="list restriction">
    <xs:restriction base="xs:string">
        <xs:length value="12"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tServiceAreaId" final="list restriction">
    <xs:restriction base="xs:string">
        <xs:length value="12"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tLocationAreaId" final="list restriction">
    <xs:restriction base="xs:string">
        <xs:length value="8"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tRoutingAreaId" final="list restriction">
    <xs:restriction base="xs:string">
        <xs:length value="8"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tGeographicalInformation" final="list restriction">
```

```
    <xs:restriction base="xs:string">
        <xs:length value="12"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tGeodeticInformation" final="list restriction">
    <xs:restriction base="xs:string">
        <xs:length value="16"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tAddressString" final="list restriction">
    <xs:restriction base="xs:string">
        <xs:minLength value="4"/>
        <xs:maxLength value="28"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tSelectedLSAIdentity" final="list restriction">
    <xs:restriction base="xs:string">
        <xs:length value="4"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tPriority" final="list restriction">
    <xs:restriction base="xs:int">
        <xs:minInclusive value="0"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tGroupID" final="list restriction">
    <xs:restriction base="xs:int">
        <xs:minInclusive value="0"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tID" final="list restriction">
    <xs:restriction base="xs:int">
        <xs:minInclusive value="0"/>
    </xs:restriction>
</xs:simpleType>
```

```
<xs:simpleType name="tDirectionOfRequest" final="list restriction">
    <xs:restriction base="xs:unsignedByte">
        <xs:maxInclusive value="3"/>
        <xs:enumeration value="0">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">ORIGINATING_SESSION</label>
                    <definition xml:lang="en">Originating Session</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="1">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">TERMINATING_SESSION</label>
                    <definition xml:lang="en">Terminating Session</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="2">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">TERMINATING_UNREGISTERED</label>
                    <definition xml:lang="en">Terminating Session for unregistered user</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tDefaultHandling" final="list restriction">
    <xs:restriction base="xs:unsignedByte">
        <xs:maxInclusive value="1"/>
        <xs:enumeration value="0">
            <xs:annotation>
                <xs:documentation>
```

```
                    <label xml:lang="en">SESSION_CONTINUED</label>
                    <definition xml:lang="en">Session Continued</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="1">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">SESSION_TERMINATED</label>
                    <definition xml:lang="en">Session Terminated</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tAgeOfLocationInformation" final="list restriction">
    <xs:restriction base="xs:int">
        <xs:minInclusive value="0"/>
        <xs:maxInclusive value="32767"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tBool">
    <xs:restriction base="xs:boolean"/>
</xs:simpleType>
<xs:simpleType name="tSequenceNumber" final="list restriction">
    <xs:restriction base="xs:int">
        <xs:minInclusive value="0"/>
        <xs:maxInclusive value="65535"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="tSh-Data">
    <xs:sequence>
        <xs:element name="PublicIdentifiers" type="tPublicIdentity" minOccurs="0"/>
        <xs:element name="RepositoryData" type="tTransparentData" minOccurs="0"/>
        <xs:element name="Sh-IMS-Data" type="tShIMSData" minOccurs="0"/>
```

```
            <xs:element name="CSLocationInformation" type="tCSLocationInformation" minOccurs="0"/>
            <xs:element name="PSLocationInformation" type="tPSLocationInformation" minOccurs="0"/>
            <xs:element name="CSUserState" type="tCSUserState" minOccurs="0"/>
            <xs:element name="PSUserState" type="tPSUserState" minOccurs="0"/>
            <xs:any namespace="##oOther" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tTransparentData">
        <xs:sequence>
            <xs:element name="ServiceIndication" type="tString"/>
            <xs:element name="SequenceNumber" type="tSequenceNumber"/>
            <xs:element name="ServiceData">
                <xs:complexType>
                    <xs:sequence>
                        <xs:any namespace="##oOther" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
                    </xs:sequence>
                </xs:complexType>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tShIMSData">
        <xs:sequence>
            <xs:element name="SCSCFName" type="tSIP_URL" minOccurs="0"/>
            <xs:element name="InitialFilterCriteria" type="tInitialFilterCriteria" minOccurs="0"
maxOccurs="unbounded"/>
            <xs:element name="IMSUserState" type="tIMSUserState" minOccurs="0"/>
            <xs:element name="ChargingInformation" type="tChargingInformation" minOccurs="0"/>
            <xs:any namespace="##oOther" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tCSLocationInformation">
        <xs:sequence>
            <xs:element name="LocationNumber" type="tLocationNumber" minOccurs="0"/>
            <xs:choice>
                <xs:element name="CellGlobalId" type="tCellGlobalId" minOccurs="0"/>
```

```
            <xs:element name="ServiceAreaId" type="tServiceAreaId" minOccurs="0"/>
            <xs:element name="LocationAreaId" type="tLocationAreaId" minOccurs="0"/>
        </xs:choice>
        <xs:element name="GeographicalInformation" type="tGeographicalInformation" minOccurs="0"/>
        <xs:element name="GeodeticInformation" type="tGeodeticInformation" minOccurs="0"/>
        <xs:element name="VLRNumber" type="tISDNAddress" minOccurs="0"/>
        <xs:element name="MSCNumber" type="tISDNAddress" minOccurs="0"/>
        <xs:element name="CurrentLocationRetrieved" type="tBool" minOccurs="0"/>
        <xs:element name="AgeOfLocationInformation" type="tAgeOfLocationInformation" minOccurs="0"/>
        <xs:any namespace="##oOther" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="tPSLocationInformation">
    <xs:sequence>
        <xs:choice>
            <xs:element name="CellGlobalId" type="tCellGlobalId" minOccurs="0"/>
            <xs:element name="ServiceAreaId" type="tServiceAreaId" minOccurs="0"/>
            <xs:element name="LocationAreaId" type="tLocationAreaId" minOccurs="0"/>
        </xs:choice>
        <xs:element name="RoutingAreaId" type="tRoutingAreaId" minOccurs="0"/>
        <xs:element name="GeographicalInformation" type="tGeographicalInformation" minOccurs="0"/>
        <xs:element name="GeodeticInformation" type="tGeodeticInformation" minOccurs="0"/>
        <xs:element name="SGSNNumber" type="tISDNAddress" minOccurs="0"/>
        <xs:element name="CurrentLocationRetrieved" type="tBool" minOccurs="0"/>
        <xs:element name="AgeOfLocationInformation" type="tAgeOfLocationInformation" minOccurs="0"/>
        <xs:any namespace="##oOther" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="tISDNAddress">
    <xs:sequence>
        <xs:element name="Address" type="tAddressString" maxOccurs="9"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="tPublicIdentity">
    <xs:sequence>
```

```
            <xs:element name="IMSPublicIdentity" type="tIMSPublicIdentity" minOccurs="0"
maxOccurs="unbounded"/>
            <xs:element name="MSISDN" type="tMSISDN" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tInitialFilterCriteria">
        <xs:sequence>
            <xs:element name="Priority" type="tPriority"/>
            <xs:element name="TriggerPoint" type="tTrigger" minOccurs="0"/>
            <xs:element name="ApplicationServer" type="tApplicationServer"/>
            <xs:any namespace="##oOther" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tTrigger">
        <xs:sequence>
            <xs:element name="ConditionTypeCNF" type="tBool"/>
            <xs:element name="SPT" type="tSePoTri" minOccurs="0" maxOccurs="unbounded"/>
            <xs:any namespace="##oOther" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tSePoTri">
        <xs:sequence>
            <xs:element name="ConditionNegated" type="tBool" minOccurs="0"/>
            <xs:element name="Group" type="tGroupID" maxOccurs="unbounded"/>
            <xs:choice>
                <xs:element name="RequestURI" type="tString"/>
                <xs:element name="Method" type="tString"/>
                <xs:element name="SIPHeader" type="tHeader"/>
                <xs:element name="SessionCase" type="tDirectionOfRequest"/>
                <xs:element name="SessionDescription" type="tSessionDescription"/>
            </xs:choice>
            <xs:any namespace="##oOther" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tSessionDescription">
```

```
        <xs:sequence>
            <xs:element name="Line" type="tString"/>
            <xs:element name="Content" type="tString" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tHeader">
        <xs:sequence>
            <xs:element name="Header" type="tString"/>
            <xs:element name="Content" type="tString" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tApplicationServer">
        <xs:sequence>
            <xs:element name="ServerName" type="tSIP_URL"/>
            <xs:element name="DefaultHandling" type="tDefaultHandling" minOccurs="0"/>
            <xs:element name="ServiceInfo" type="tServiceInfo" minOccurs="0"/>
            <xs:any namespace="##oOther" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tChargingInformation">
        <xs:sequence>
            <xs:element name="PrimaryEventChargingFunctionName" type="tDiameterURI"/>
            <xs:element name="SecondaryEventChargingFunctionName" type="tDiameterURI"/>
            <xs:element name="PrimaryChargingCollectionFunctionName" type="tDiameterURI"/>
            <xs:element name="SecondaryChargingCollectionFunctionName" type="tDiameterURI"/>
        </xs:sequence>
    </xs:complexType>
    <xs:element name="Sh-Data" type="tSh-Data"/>
</xs:schema>
```

********** END OF MODIFICATION **********