Source:	**SA WG3**
Title:	**3 SA WG3 LI Group Rel-6 CRs to TS 33.107 (Rel-6) which were agreed by SA WG3 by e-mail (30/11/2004)**
Document for:	**Approval**
Agenda Item:	**7.3.3**

The following CRs were agreed by SA WG3 by e-mail on 30 November 2004 and are presented to TSG SA for approval.

SA WG3 Doc number	Spec	CR	Rev	Phase	Subject	Cat	Version-Current	LI Group Doc number	Work item
S3-030913	33.107	048	-	Rel-6	Lawful Interception for WLAN Interworking	B	6.3.0	S3LI04_162r2	SEC1-LI
S3-030913	33.107	049	-	Rel-6	33.107 Cleanup	F	6.3.0	S3LI04_181r4	SEC1-LI
S3-030913	33.107	050	-	Rel-6	Clarification on MMS interception	B	6.3.0	S3LI04_182	SEC1-LI

CR-Form-v7.1

CHANGE REQUEST

⌘   **33.107 CR 048**   ⌘**rev**   **-**   ⌘   Current version: **6.3.0**   ⌘

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:	⌘	Lawful Interception for WLAN Interworking
Source:	⌘	SA3-LI
Work item code:⌘	SEC1-LI	**Date:** ⌘ 13/10/2004

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:
   Ph2 (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)
   Rel-7 (Release 7)

Reason for change:	⌘	Add feature for LI of WLAN Interworking
Summary of change:⌘		For Interception of WLAN Interworking, add changes to interception architecture, activation/deactivation/interrogation of LI and a new Clause describing the interception events for WLAN Interworking.
Consequences if not approved:	⌘	Incomplete WLAN implementations.

Clauses affected: ⌘   2, 3, 4, 5, 5.1.1, 5.2.1, 5.2.2, 5.2.3, 5.3.1, 5.3.2, New Clause 9

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

Other comments: ⌘

*** **FIRST CHANGE** ********

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1]   ETSI TS 101 331: "Telecommunications security; Lawful Interception (LI); Requirements of Law Enforcement Agencies".

[2]   ETSI ES 201 158: "Lawful Interception; Requirements for network functions".

[3]   ETSI ES 201 671: "Handover Interface for the lawful interception of telecommunications traffic".

[4]   GSM 01.33: "Lawful Interception requirements for GSM".

[5]   GSM 02.33: "Lawful Interception - stage 1".

[6]   GSM 03.33: "Lawful Interception - stage 2".

[7]   3GPP TS 33.106: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Lawful Interception Requirements".

[8]   ANSI J-STD-025-A: "Lawfully Authorised Electronic Surveillance".

[9]   IETF RFC 2806: "URLs for Telephone Calls ".

[10]   3GPP TS 23.060: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; General Packet Radio Service (GPRS); Service description".

[11]   3GPP TS 33.108: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Handover interface for Lawful Interception".

[12]   IETF RFC 3261: "SIP: Session Initiation Protocol".

[13]   3GPP TS 21.905: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Vocabulary for 3GPP Specifications".

[14]   3GPP TS 23.234: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3GPP system to Wireless Local Area Network (WLAN) Interworking; System Description".

*** **NEXT CHANGE** ********

3   Definitions, symbols and abbreviations

3.1   Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [13] and the following terms and definitions apply.

Network Based Interception: Interception that is invoked at a network access point regardless of Target Identity.

Subject Based Interception: Interception that is invoked using a specific Target Identity.

Target Identity: A technical identity that uniquely identifies a target of interception. One target may have one or several identities.

Interception Area: is a subset of the network service area comprised of a set of cells which defines a geographical zone.

Interworking WLAN: WLAN that interworks with a 3GPP system.

Location Dependent Interception: is interception of a target mobile within a network service area that is restricted to one or several Interception Areas (IA).

3.2   Abbreviations

For the purposes of the present document, the following abbreviations given in 3GPP TR 21.905 [13] and the following apply:

3GPP MS	3rd Generation Mobile Communication System
3G GGSN	3rd Generation Gateway GPRS Support Node
3G GSN	3rd Generation GPRS Support Node (GGSN/SGSN)
3G MSC	3rd Generation Mobile Switching Center
3G SGSN	3rd Generation Serving GPRS Support Node
3G UMSC	3rd Generation Unified Mobile Switching Centre
AAA	Authentication, Authorization, and Accounting
ADMF	Administration Function
CC	Content of Communication
DF	Delivery Function
ECT	Explicit Call Transfer
GPRS	General Packet Radio Service
HI	Handover Interface
IA	Interception Area
ICEs	Intercepting Control Elements (3G MSC Server, 3G GMSC Server, P-CSCF, S-CSCF, SGSN, GGSN, HLR, AAA Server, PDG)
IMS	IP Multimedia Core Network Subsystem
INEs	Intercepting Network Elements (3G MSC Server, 3G GMSC Server, P-CSCF, S-CSCF, SGSN, GGSN, MGW, HLR, AAA Server, PDG)
IP	Internet Protocol
IRI	Intercept Related Information
I-WLAN	Interworking WLAN
LDI	Location Dependent Interception
LEA	Law Enforcement Agency
LEMF	Law Enforcement Monitoring Facility
PDG	Packet Data Gateway
RA	Routing Area
RAI	Routing Area Identitiy
SAI	Service Area Identity
TEL URL	"tel" URL, as defined in [9]
URI	Universal Resource Identifier
URL	Universal Resource Locator

4 Functional architecture

The following figures contain the reference configuration for the lawful interception. The circuit-switched configuration is shown in figure 1a. The packet-switched configuration is shown in figure 1b. Intercept configurations for HLR and IMS are shown in figures 1c and 1d. The WLAN interworking configuration is shown in figure 1e. The various entities and interfaces are described in more detail in the succeeding subclauses.
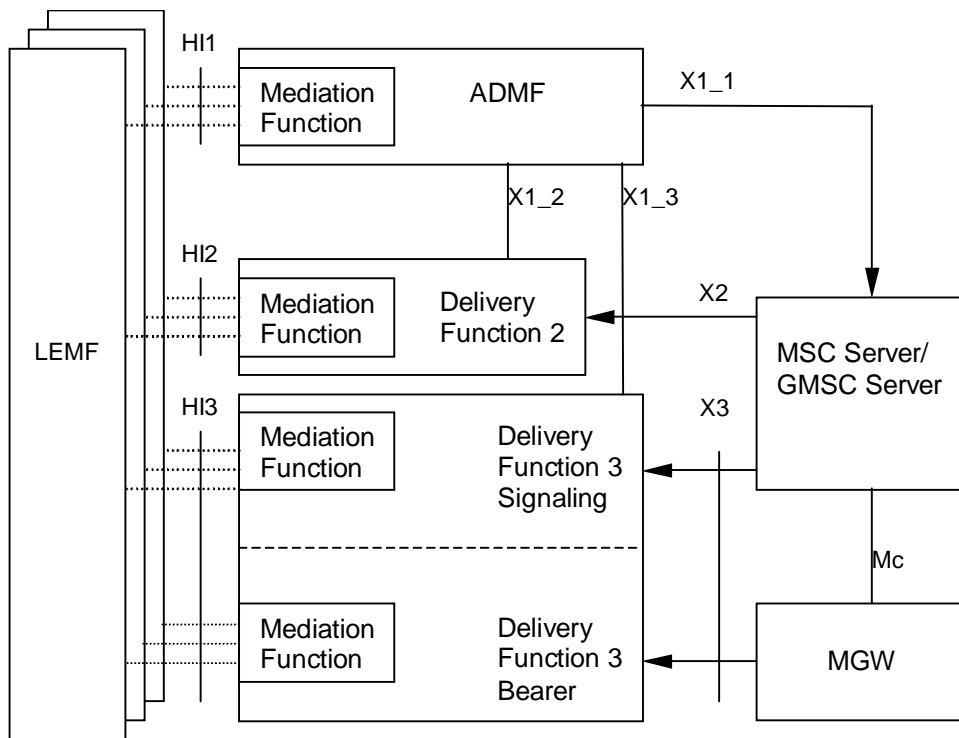
Figure 1a: Circuit switched intercept configuration
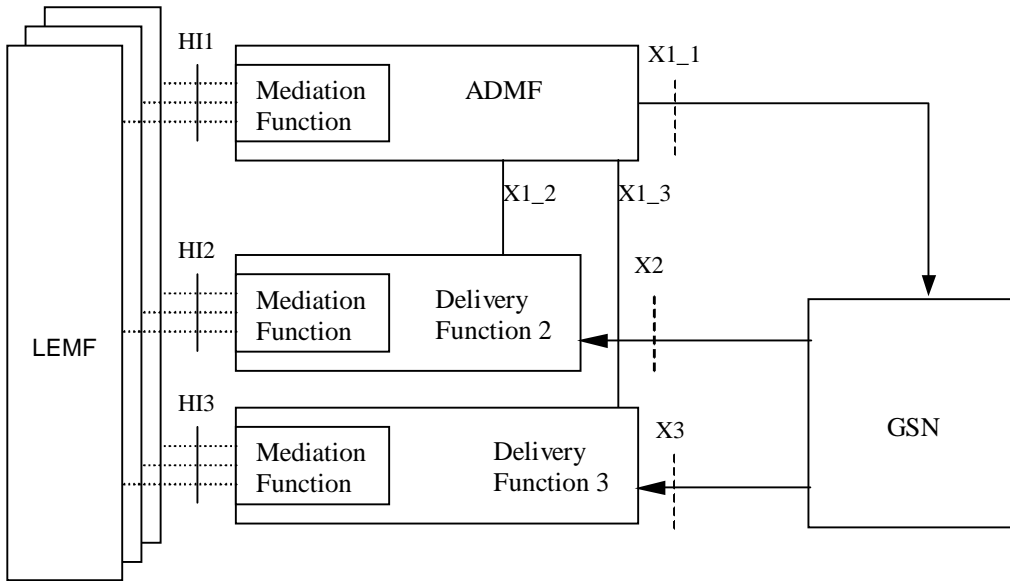
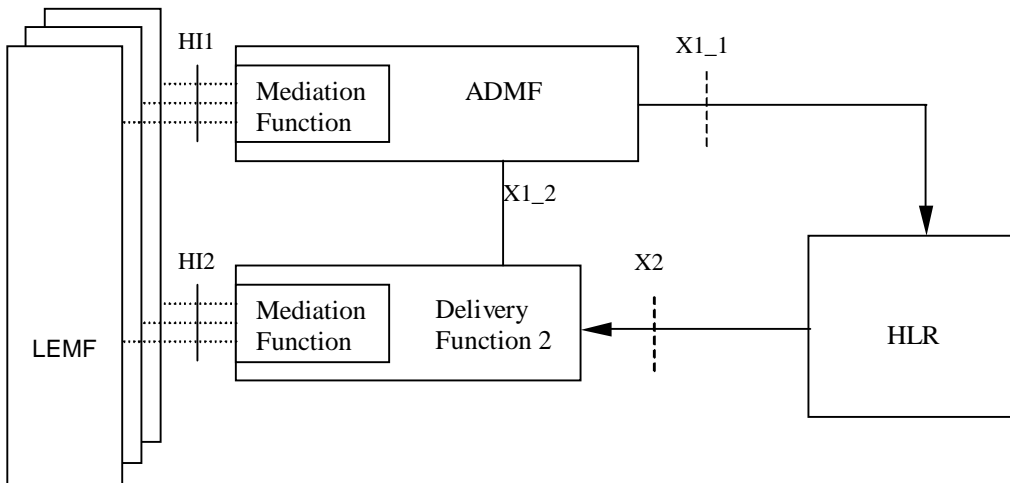**Figure 1b: Packet Switched Intercept configuration**

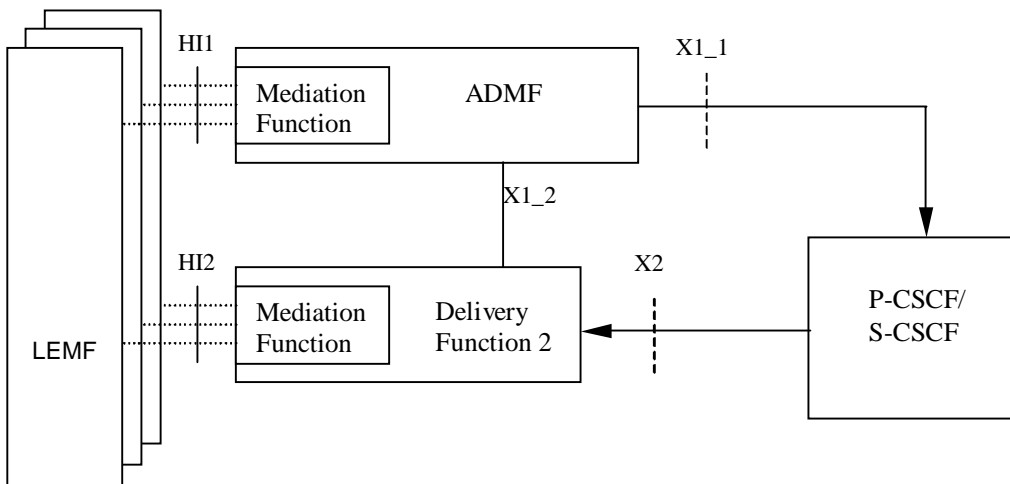**Figure 1c: HLR Intercept configuration**

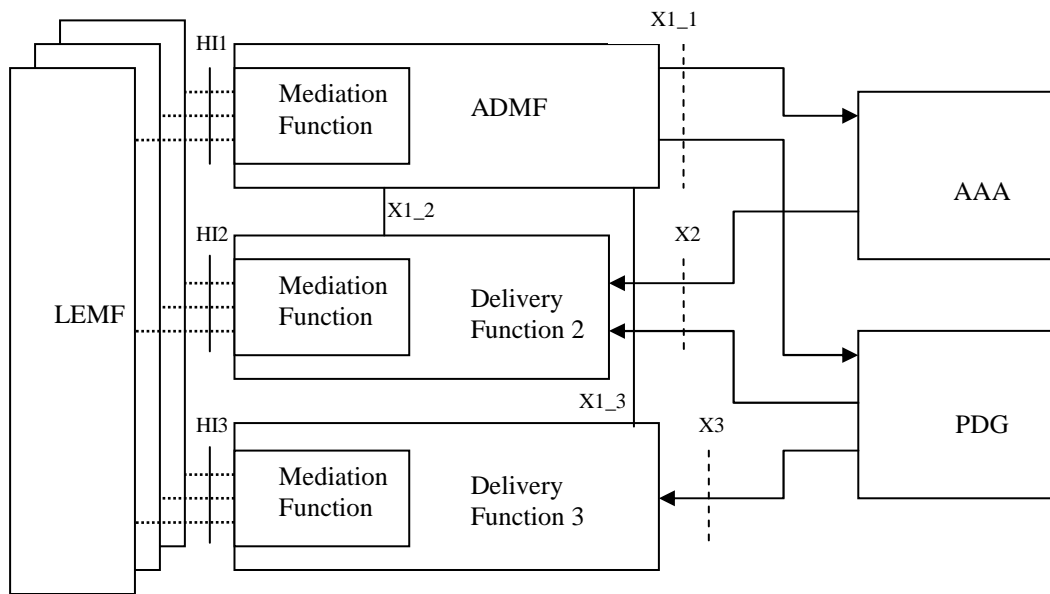**Figure 1d: IMS-CSCF Intercept configuration**

Figure 1e: WLAN Interworking Intercept configuration

The reference configuration is only a logical representation of the entities involved in lawful interception and does not mandate separate physical entities. This allows for higher levels of integration.

Regional Mediation Functions, which may be transparent or part of the administration and delivery functions, are used to convert information on the HI1, HI2 and HI3 interfaces in the format described in various national or regional specifications. For example, if ES 201 671 or J-STD-25 is used, then the adaptation to HI1, HI2 and HI3 will be as defined in those specifications.

There is one Administration Function (ADMF) in the network. Together with the delivery functions it is used to hide from the 3G ICEs that there might be multiple activations by different Law Enforcement Agencies (LEAs) on the same target. The administration function may be partitioned to ensure separation of the provisioning data from different agencies.

See the remaining sections of this document for definitions of the X1_1, X1_2, X1_3, X2 and X3 interfaces.

Interception at the Gateways is a national option.

For In figure 1a, DF3 is responsible for two primary functions:

- Call Control (Signalling) for the Content of Communication (CC); and

- Bearer Transport for the CC.

HI3 is the interface towards the LEMF. It must be able to handle the signalling and the bearer transport for CC. LEMF can be located within the 3G network or can be in any other network.

For In figures 1a, and 1b, and 1e, the HI2 and HI3-interfaces represent the interfaces between the LEA and two delivery functions. The delivery functions are used:

- to distribute the Intercept Related Information (IRI) to the relevant LEA(s) via HI2 (based on IAs, if defined);

- to distribute the Content of Communication (CC) to the relevant LEA(s) via HI3 (based on IAs, if defined).

For In figures 1c and 1d the HI2 interface represents the interface between the LEA and the delivery function. The delivery function is used to distribute the Intercept Related Information (IRI) to the relevant LEA(s) via HI2.

NOTE 1: With reference to figure 1c, CC interception does not apply to HLR.

NOTE 2: For IMS, figure 1d relates to the provision of IRI for SIP messages handled by the CSCF. Interception of CC for this case can be done at the GSN under a separate activation and invocation, according to the architecture in Figure 1b (see also section 7.A.1).

*** NEXT CHANGE ********

5 Activation, deactivation and interrogation

Figure 2 is an extraction from the reference intercept configuration shown in figures 1a through 1e which is relevant for activation, deactivation and interrogation of the lawful interception.
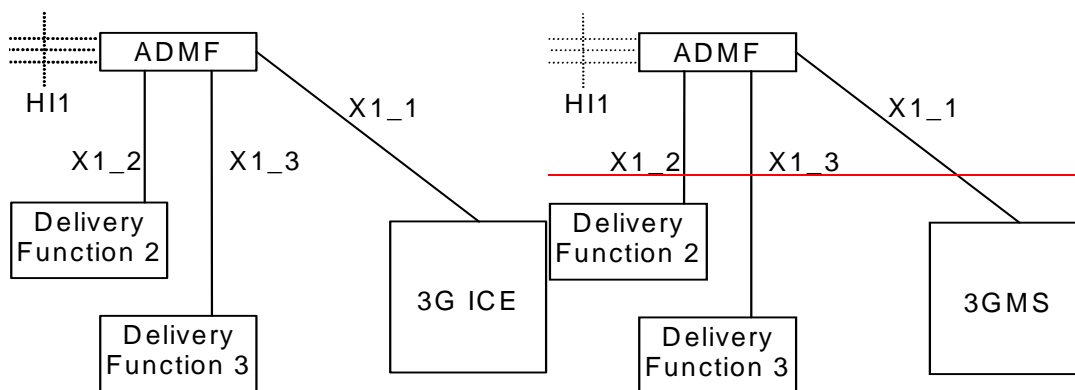
Figure 2: Functional model for Lawful Interception activation, deactivation and interrogation

In addition to the typical 3G ICEs functional entities, a new functional entity is introduced - the ADMF - the Lawful Interception administration function. The ADMF:

- interfaces with all the LEAs that may require interception in the intercepting network;

- keeps the intercept activities of individual LEAs separate;

- interfaces to the intercepting network.

Every physical 3G ICE is linked by its own X1_1-interface to the ADMF. Consequently, every single 3G ICE performs interception (activation, deactivation, interrogation as well as invocation) independently from other 3G ICEs. The HI1-interface represents the interface between the requester of the lawful interception and the Lawful administration function; it is included for completeness, but is beyond the scope of standardisation in this document.

The target identities for 3GPP MS CS and PS interception at the SGSN, GGSN, 3G MSC Server and 3G GMSC Server can be at least one of the following: IMSI, MSISDN or IMEI.

NOTE 1: Some communication content during a mobility procedure may not be intercepted when interception is based on MSISDN (only PS interception) or IMEI. The use of the IMSI does not have this limitation. For the availability of the target identities IMSI, MSISDN and IMEI (PS interception), refer to [10].

The target identities for multi-media at the CSCF can be one or more of the following: SIP URI or TEL URL. Other identities are for further study.

The target identities for 3GPP WLAN Interworking interception can be IMSI or NAI.

NOTE 2: The NAI may be a temporary ID, therefore the use of IMSI is recommended.

NOTE 3: The MSISDN may be used, however, in many cases it will not be available.

In the case of location dependent interception the following network/national options exist:

- target location versus Interception Areas (IAs) check in the 3G ICEs and Delivery Functions (DFs);

- target location versus IAs check in the DFs (physical collocation of the DFs to the 3G ICEs may be required by national law).

NOTE 24: The IA is previously defined by a set of cells. From the location of the target this set of cells permits to find the relevant IA.

NOTE 35: It is not required that the 3G GMSC or the 3G GGSN are used for interception when Location Dependent Interception is invoked and the location of the target is not available.

Editors' note: Location dependent intercept at the CSCF is for further study.

Editors' note: Location dependent intercept for the 3G MSC Server and SSGN is for further study.

The ADMF shall be able to provision P-CSCFs independently from S-CSCFs. If both P-CSCFs and S-CSCFs are administered within the network for intercept, redundant multi-media IRI may be presented to the agency as a result.

5.1   Activation

Figures 3, 4 and 5 show the information flow for the activation of Lawful Interception.

5.1.1   X1_1-interface

The messages sent from the ADMF to the 3G ICEs (X1_1-interface) contain the:

- target identities (MSISDN, IMSI, IMEI, SIP URI or TEL URL, NAI) (see notes 4, and 5, 6, and 7);

- information whether the Content of Communication (CC) shall be provided (see note 1);

- address of Delivery Function 2 (DF2) for the intercept related information (see note 2);

- address of Delivery Function 3 (DF3) for the intercepted content of communications (see note 3);

- IA in the case of location dependent interception.

NOTE 1:   As an option, the filtering whether intercept product and/or intercept related information has to be provided can be part of the delivery functions. (Note that intercept product options do not apply at the CSCF, HLR, and AAA server). If the option is used, the corresponding information can be omitted on the X1_1-interface, while "information not present" means "intercept product and related information has to be provided" for the ICE. Furthermore the delivery function which is not requested has to be "pseudo-activated", in order to prevent error cases at invocation.

NOTE 2:   As an option, only a single DF2 is used by and known to every 3G ICE. In this case the address of DF2 can be omitted.

NOTE 3:   As an option, only a single DF3 is used by and known to every 3G ICE (except at the CSCFs, HLR, and AAA server). In this case the address of DF3 can be omitted.

NOTE 4:   Since the IMEI is not available, interception based on IMEI is not applicable at the 3G Gateway. Moreover, in case the IMEI is not available, interception based on IMEI is not applicable at 3G ICEs.

NOTE 5:   Interception at the CSCFs is based upon either SIP URI or TEL URL. SIP URI and TEL URL as target identities are not supported by the other ICEs.

NOTE 6:   Interception based on NAI is only applicable at AAA server and PDG.

NOTE 7:   In case MSISDN is not available, interception based on the MSISDN is not applicable at the AAA server and the PDG.

If after activation subsequently Content of Communications (CC) or Intercept Related Information (IRI) has to be activated (or deactivated) an "activation change request" with the same identity of the target is to be sent.
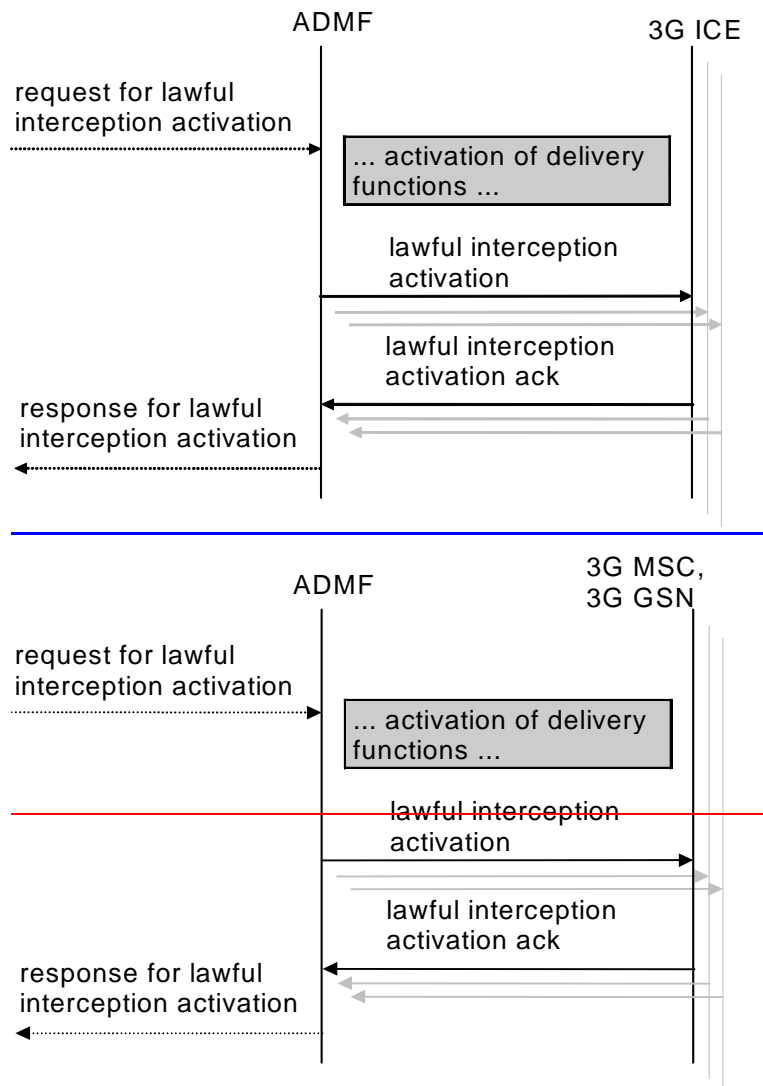

Figure 3: Information flow on X1_1-interface for Lawful Interception activation

Interception of a target can be activated on request from different LEAs and each LEA may request interception via a different identity. In this case, each target identity on which to intercept will need to be sent via separate activation messages from ADMF to the 3G ICEs on the X1_1-interface. Each activation can be for IRI only, or both CC and IRI.

When several LEAs request activation on the same identity then the ADMF determines that there are existing activations on the identity. In this case, the ADMF may (as an implementation option) send an additional activation message to the 3G ICEs. When the activation needs to change from IRI only to CC and IRI an activation change message will be sent to the 3G ICEs.

In the case of a secondary interception activation only the relevant LEAs will get the relevant IRIs.

5.1.2   X1_2-interface (IRI)

For the activation of IRI the message sent from the ADMF to the DF contains:

-    the target identity;

-    the address for delivery of IRI (= LEMF address);

-    which subset of information shall be delivered;

- a DF2 activation identity, which uniquely identifies the activation for DF2 and is used for further interrogation or deactivation, respectively;

- the IA in case of location dependent interception;

- the warrant reference number if required by national option.

If a target is intercepted for several LEAs and/or several identities simultaneously, a single activation of delivery is necessary for each combination of LEA and identity.
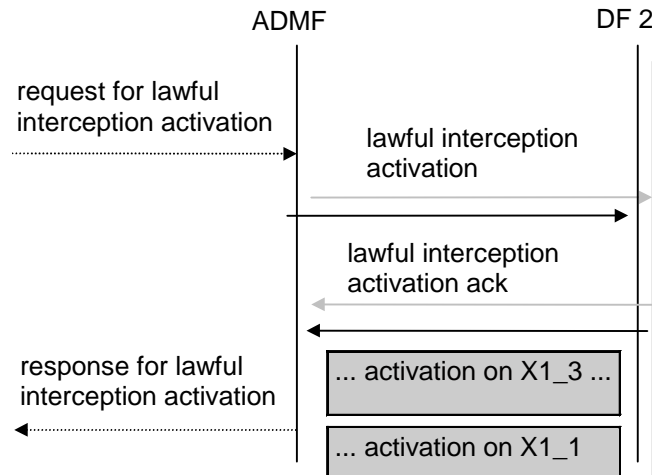

Figure 4: Information flow on X1_2-interface for Lawful Interception activation

5.1.3   X1_3-interface (CC)

For the activation of intercepted Content of Communications the message sent from the ADMF to the Delivery Function contains:

- the target identity;

- the address of delivery for CC (= LEMF address);

- a DF3 activation identity, which uniquely identifies the activation for DF3 and is used for further interrogation or deactivation, respectively;

- the IA in case of location dependent interception;

- the warrant reference number if required by national option.

If a target is intercepted by several LEAs and/or several identities simultaneously, a single activation of delivery is necessary for each combination of LEA and identity.
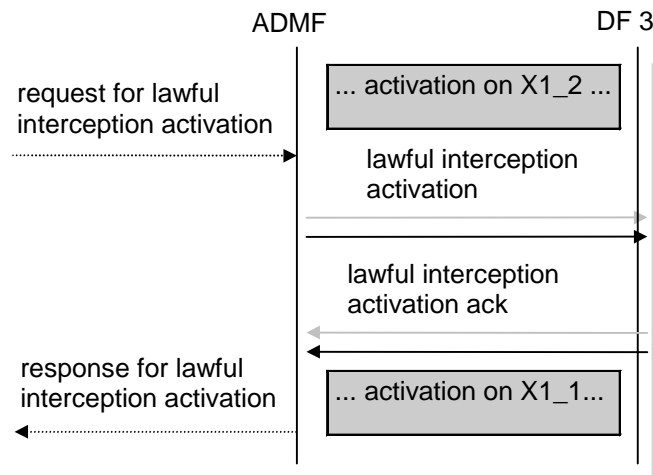
Figure 5: Information flow on X1_3-interface for Lawful Interception activation

5.2 Deactivation

Figures 6, 7, and 8 show the information flow for the deactivation of the Lawful interception.

5.2.1 X1_1-interface

The messages sent from the ADMF to the 3G ICEs for deactivation contain:

- the target identity;

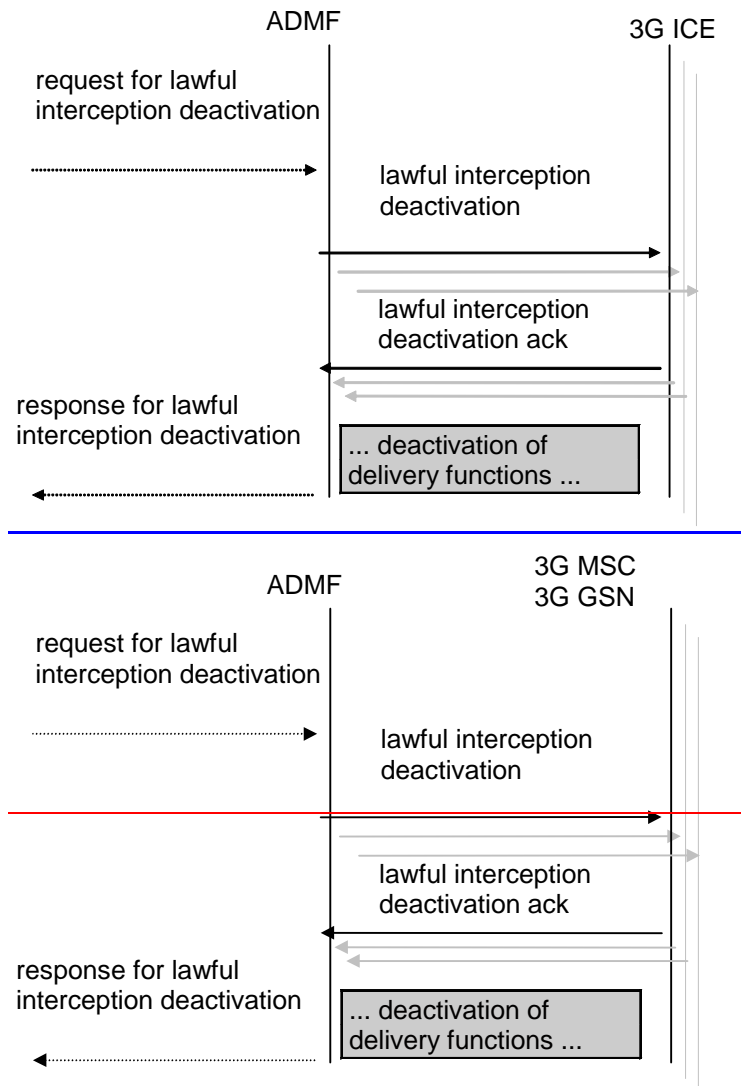- the possible relevant IAs in case of location dependent interception.

Figure 6: Information flow on X1_1-interface for Lawful Interception deactivation

If interception of a target has been activated via different identities then a separate deactivation message will need to be sent from the ADMF to the 3G ICEs for each identity.

When several LEAs requested activation on the same identity and subsequently request deactivation then the ADMF determines that there are remaining activations on the identity. In this case, the ADMF will not send a deactivation message to the 3G ICEs except when the activation needs to change from CC and IRI to IRI only. In that case an activation change message will be sent to the 3G ICEs.

5.2.2   X1_2-interface (IRI)

The messages sent from the ADMF to Delivery Function 2 for the deactivation of the Intercept Related Information contain:

-    a DF2 activation idID, which uniquely identifies the activation to be deactivated for DF2.

If a target is intercepted by several LEAs and/or several identities simultaneously, a single deactivation is necessary for each combination of LEA and identity.
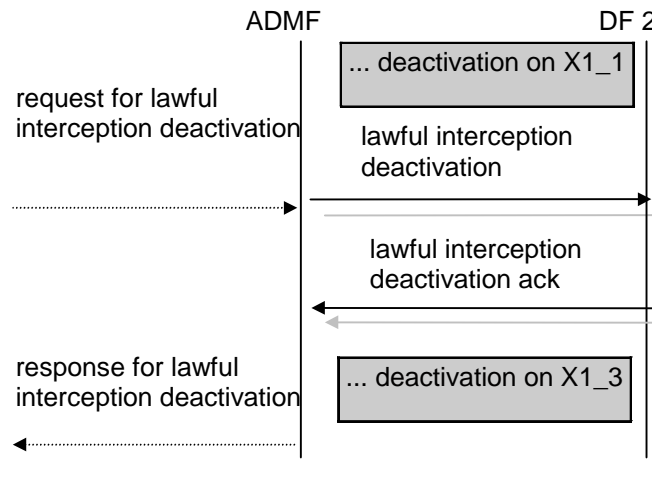
Figure 7: Information flow on X1_2-interface for Lawful Interception deactivation

5.2.3   X1_3-interface (CC)

For the deactivating the delivery of the CC the messages from the ADMF to DF3 contain:

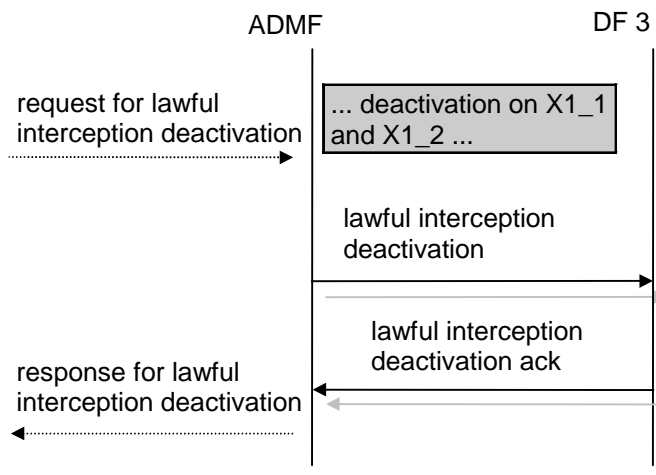- a DF3 activation ~~id~~ID, which uniquely identifies the activation to be deactivated for DF3.

Figure 8: Information flow on X1_3-interface for Lawful Interception deactivation

5.3   Interrogation

Interrogation provides the current status of the interception activation in the system. Interrogation of all activations for a given LEA is an ADMF function.

5.3.1   Interrogation of the 3G ICEs

Figure 9 shows the information flow for the interrogation of the Lawful Interception. It shall be possible to interrogate:

- a specific activation at each relevant 3G ICEs;

- all activations at each relevant 3G ICEs.

As a result of the interrogation the activation status and data are returned.
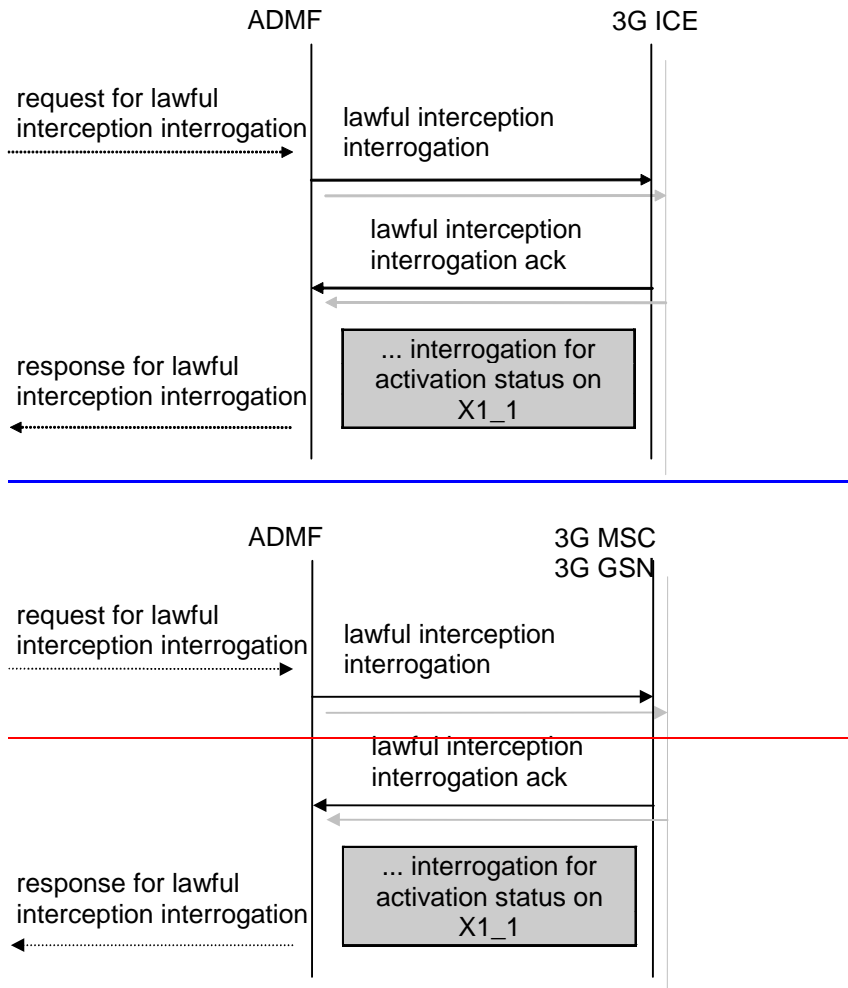
Figure 9: Interrogation of the Lawful Interception (3G ICEs)

5.3.2   Interrogation of Delivery Functions

Figure 10 shows the information flow for the interrogation of the Lawful Interception. It shall be possible to interrogate:

-   a specific activation at a DF;

-   all activations at a DF for a given target identity;

-   all activations at a DF.

As a result of the interrogation the activation status and data are returned.
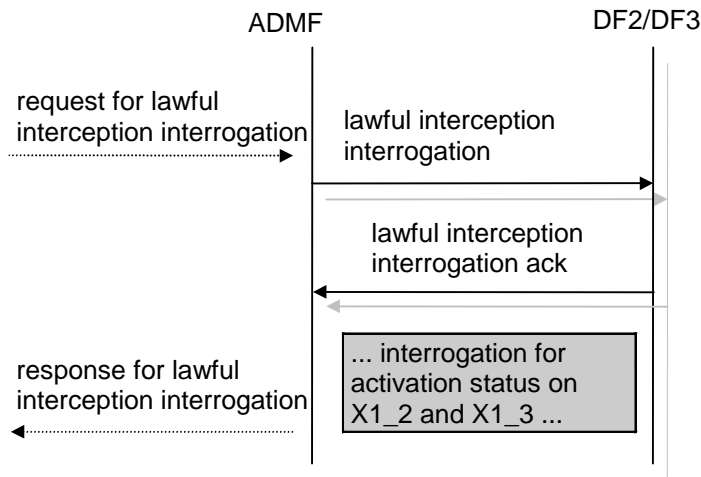
Figure 10: Interrogation of the Lawful Interception (Delivery Functions)

*** NEXT CHANGE *******

9 Invocation of Lawful Interception for 3GPP WLAN Interworking Services

Figure 23 shows the extract from the reference configuration which is relevant for the invocation of the Lawful Interception of the packet data 3GPP WLAN Interworking network.
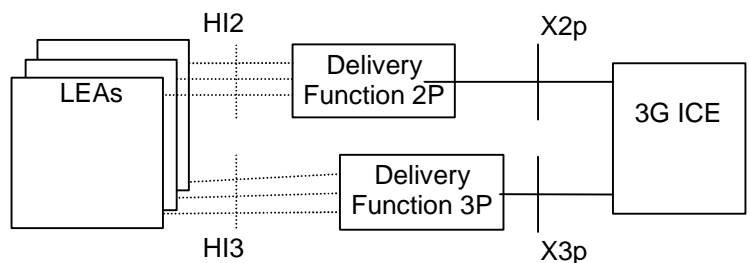

Figure 23: Functional model for invocation of Lawful Interception for 3GPP WLAN Interworking Services

The HI2 and HI3 interfaces represent the interfaces between the LEA and two delivery functions. Both interfaces are subject to national requirements. They are included for completeness, but are beyond the scope of this specification.

The delivery functions are used:

- to convert the information on the X2-interface to the corresponding information on the HI2 interface;

- to distribute the intercept related information to the relevant LEA(s);

- to distribute the intercept product to the relevant LEA(s).

9.1   Provision of Intercept Product - Short Message Service

LI for SMS in the 3GPP-WLAN Interworking case is not defined in this release. However, SMS may be available at the PDG as part of the CC.

9.2   Provision of Intercepted Content of Communications ñ 3GPP WLAN Interworking services

The access method for the delivering of 3GPP WLAN Interworking Intercept Product is based on duplication of packets without modification at the PDG. The duplicated packets with additional information in the header, as described in the following sections, are sent to DF3 for further delivery.
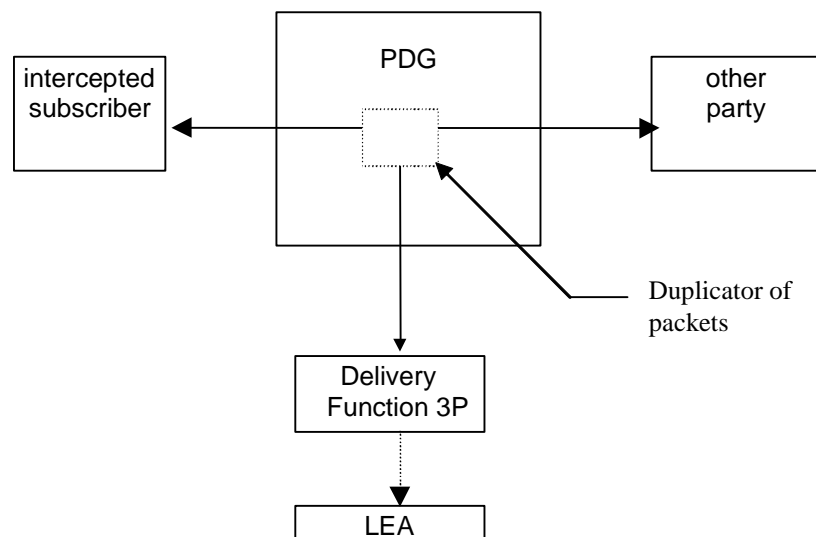
Figure 24: Configuration for interception of 3GPP WLAN Interworking product data

9.2.1   X3-interface

In addition to the intercepted content of communications, the following information needs to be transferred from the PDG to the DF3 in order to allow the DF3 to perform its functionality:

- target identity;

- correlation number;

- time stamp - optional;

- direction (indicates whether T-PDU is MO or MT) - optional;

- the target location (if available in the intercepting node).

9.3 Provision of Intercept Related Information

Figure 25 shows the transfer of intercept related information to the DF2. If an event for / from a mobile subscriber occurs, the PDG, or the AAA Server sends the relevant data to the DF2.
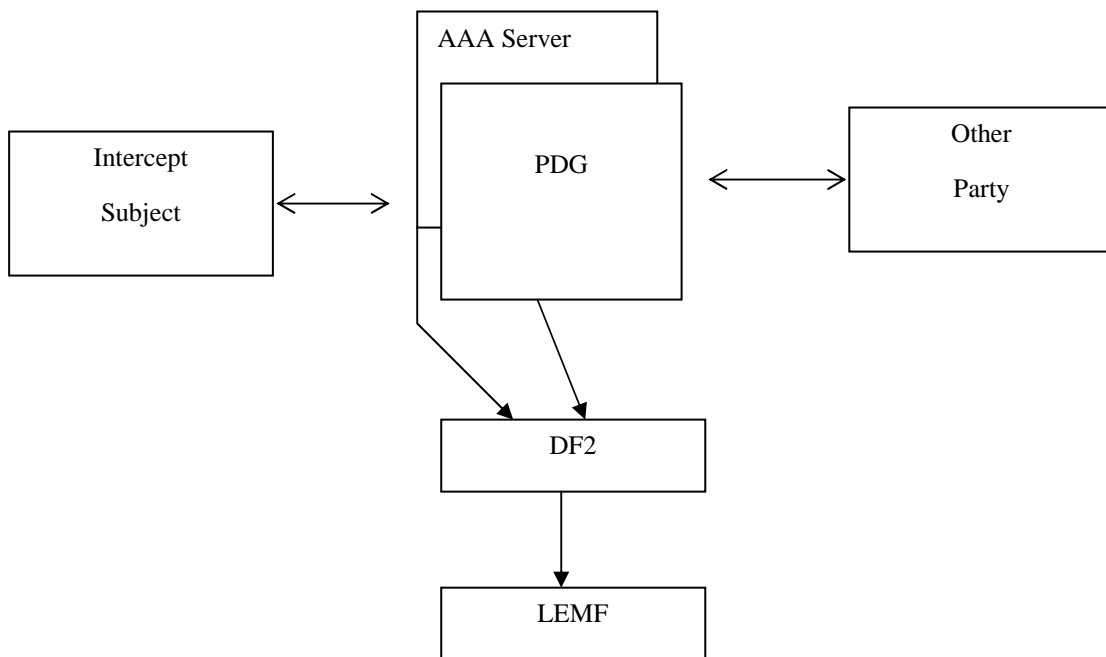

Figure 25: Provision of Intercept Related Information

9.3.1 X2-interface

The following information needs to be transferred from the PDG or the AAA server to the DF2 in order to allow a DF2 to perform its functionality:

- target identity (IMSI, NAI, or MSISDN, if available);

- events and associated parameters as defined in section 9.3.2 may be provided;

- the target location (if available);

- Correlation number; (for PDG only)

- Quality of Service (QoS) identifier (if available).

The IRI should be sent to DF2 using a reliable transport mechanism.

9.3.2 3GPP WLAN Interworking LI Events and Event Information

The following events are applicable to AAA Server:

- I-WLAN Access Initiation;

- I-WLAN Access Termination;

- I-WLAN Tunnel Establishment;

- I-WLAN Tunnel Disconnect;

- Start of Intercept with I-WLAN Communication Active;

The following events are applicable to the PDG:

- I-WLAN Tunnel Establishment;

- I-WLAN Tunnel Disconnect;

- Start of Intercept with I-WLAN Communication Active.

- I-WLAN Tunnel Disconnect;

- Start of Intercept with I-WLAN Communication Active;

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **33.107** CR **049** | ⌘**rev** | **-** | ⌘ | Current version: | **6.3.0** | ⌘ |

*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:	⌘	33.107 Cleanup
Source:	⌘	SA3 LI

Work item code: ⌘	SEC1-LI	**Date:** ⌘	12/10/2004

Category:	⌘	**F**		**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:
Ph2 (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)
Rel-7 (Release 7)

Reason for change: ⌘	Ambiguous statements were clarified
Summary of change: ⌘	It was clarified that the IEs in Table 1 and Table 2 may be conditional.
Consequences if not approved: ⌘	Possible wrong implementations

Clauses affected:	⌘	5; 6; 6.3.2; 6.4.2; 7; 7.3; 7A.3; C.4; C.5; C.6.

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

Other comments:	⌘	

5   Activation, deactivation and interrogation

Figure 2 is an extraction from the reference intercept configuration shown in figure 1which is relevant for activation, deactivation and interrogation of the lawful interception.
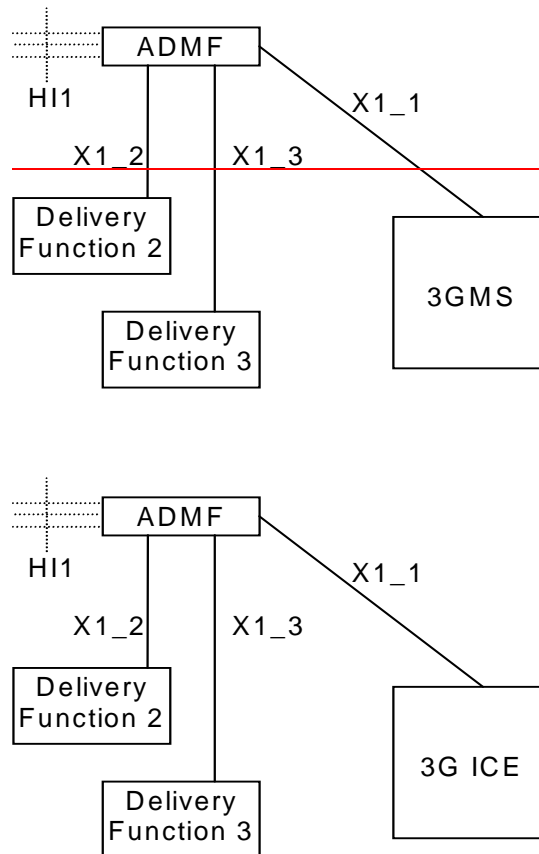

Figure 2: Functional model for Lawful Interception activation, deactivation and interrogation

In addition to the typical 3G ICEs functional entities, a new functional entity is introduced - the ADMF - the Lawful Interception administration function. The ADMF:

-    interfaces with all the LEAs that may require interception in the intercepting network;

-    keeps the intercept activities of individual LEAs separate;

-    interfaces to the intercepting network.

Every physical 3G ICE is linked by its own X1_1-interface to the ADMF. Consequently, every single 3G ICE performs interception (activation, deactivation, interrogation as well as invocation) independently from other 3G ICEs. The HI1-interface represents the interface between the requester of the lawful interception and the Lawful administration function; it is included for completeness, but is beyond the scope of standardisation in this document.

The target identities for 3GPP MS CS and PS interception at the SGSN, GGSN, 3G MSC Server and 3G GMSC Server can be at least one of the following: IMSI, MSISDN or IMEI.

NOTE 1:   Some communication content during a mobility procedure may not be intercepted when interception is based on MSISDN (only PS interception) or IMEI. The use of the IMSI does not have this limitation. For the availability of the target identities IMSI, MSISDN and IMEI (PS interception), refer to [10].

The target identities for multi-media at the CSCF can be one or more of the following: SIP URI or TEL URL. Other identities are for further studynot defined in this release.

In case of location dependent interception the following network/national options exist:

- target location versus Interception Areas (IAs) check in the 3G ICEs and Delivery Functions (DFs);

- target location versus IAs check in the DFs (physical collocation of the DFs to the 3G ICEs may be required by national law);

- location dependent interception is not applicable to CSCF.

NOTE 2: The IA is previously defined by a set of cells. From the location of the target this set of cells permits to find the relevant IA.

NOTE 3: It is not required that the 3G GMSC or the 3G GGSN are used for interception when Location Dependent Interception is invoked and the location of the target is not available.

Editors' note: Location dependent intercept at the CSCF is for further study.

Editors' note: Location dependent intercept for the 3G MSC Server and SSGN is for further studynot defined for this release.

The ADMF shall be able to provision P-CSCFs independently from S-CSCFs. If both P-CSCFs and S-CSCFs are administered within the network for intercept, redundant multi-media IRI may be presented to the agency as a result.

*** Next Modification ***

6   Invocation of Lawful Interception for Circuit Switched Services

Figure 11 shows an extraction from the reference configuration in figure 1which is relevant for the invocation of the lawful interception.
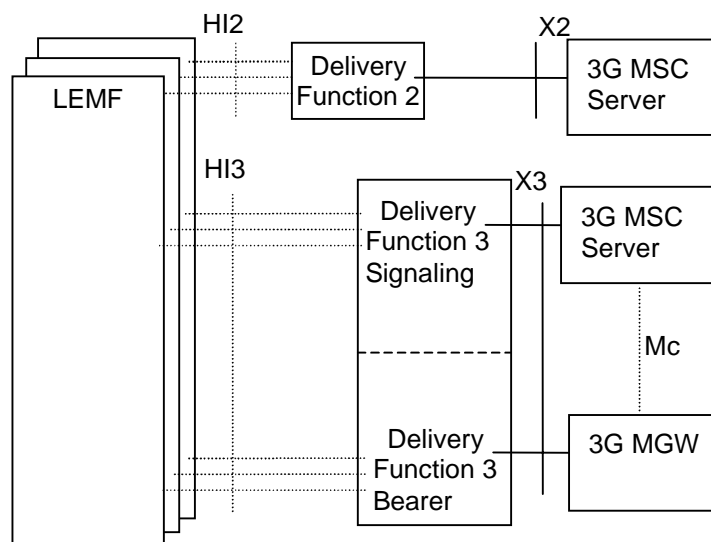
Figure 11: Functional model for Lawful Interception invocation

The HI2 and HI3 interfaces represent the interfaces between the LEMF and two delivery functions. Both interfaces are subject to national requirements. They are included for completeness, but are beyond the scope of standardization in this document. The delivery functions are used:

- to convert the information on the X2-interface to the corresponding information on the HI2-interface;

- to convert the information on the X3-interface to the corresponding information on the HI3-interface;

- to distribute the intercept related information to the relevant LEA(s) (based on IAs, if defined);

- to distribute the intercept product to the relevant LEA(s) (based on IAs, if defined).

~~In case a call is selected based on several identities (MSISDN, IMSI, IMEI) of the same target, the 3G MSC will deliver CC and IRI only once to the DF2 and DF3. DF2 and DF3 will then distribute the information to the relevant LEA that requested interception on a particular target identity.~~

For the delivery of the CC and IRI, the 3G MSC Server provides a correlation number and target identity to the DF2 and DF3 which is used there in order to select the different LEAs to which the product shall be delivered.

NOTE: If interception has been activated for both parties of the call both CC and IRI will be delivered for each party as separate intercept activity.

The Mc interface between the 3G MSC Server and MGW is used to establish intercept and deliver the bearer to DF3.

For Location Dependent Interception, the location dependency check occurs at the establishment of each call. Subsequent dependency checks for simultaneous calls are not required, but can be a national option.

If a target is marked using an IA in the 3G MSC Server, the 3G MSC Server shall perform a location dependency check at call set-up. Only if the target's location matches the IA then the call is intercepted.

If a target is marked using an IA in the DF2, the DF2 shall perform a location dependency check at reception of the first IRI for the call. Only if the targetís location matches the IA for certain LEAs is IRI the relayed to these LEAs. All subsequent IRIs for the call are sent to the same LEAs.

If a target is marked using an IA in the DF3, the DF3 signalling function shall perform a location dependency check at reception of the CC. Only if the targetís location matches the IA for certain LEAs is the CC relayed to these LEAs.

*** Next Modification ***

6.3.2 Structure of the events

The information sent to DF2 is triggered by up to eight different call related and non-call related events. Details are described in following clause. The events for interception are configurable (if they are sent to DF2) in the 3G MSC Server and can be suppressed in the DF2. The events are listed as follows:

Call Related Events:

- Call Establishment

- Answer

- Supplementary Service

- Handover

- Release

Non Call Related Events:

- SMS

- Location Update

- Subscriber Controlled Input

Table 1 below shows the set of information that ~~is~~ can be associated with~~used to generate~~ the events. The events trigger the transmi~~ssion~~t of the information from the 3G MSC Server to DF2. Available IEs from ~~T~~this set of information can be extended in the 3G MSC Server, if this is necessary in a specific country. DF2 can extend ~~this~~ available information if this is necessary in a specific country e.g. a unique number for each surveillance warrant.

Table 1: Information Elements for Circuit Event records

Observed MSISDN
Target Identifier with the MSISDN of the target subscriber (monitored subscriber).
Observed IMSI
Target Identifier with the IMSI of the target subscriber (monitored subscriber).
Observed IMEI
Target Identifier with the IMEI of the target subscriber (monitored subscriber),
It shall be checked for each call over the radio interface
event type
Description which type of event is delivered: Establishment, Answer, Supplementary service,
Handover, Release, SMS, Location update, Subscriber controlled input
event date
Date of the event generation in the 3G MSC Server
event time
Time of the event generation in the 3G MSC Server
dialled number
Dialled phone number before digit modification, IN-modification etc.
Connected number
Number of the answering party
other party address
Directory number of the other party for MOC
Calling party for MTC
call direction
Information if the monitored subscriber is calling or called e.g. MOC/MTC or originating/ terminating
In or/out
Correlation number
Unique number for each call sent to the DF, to help the LEA, to have a correlation between each
Call and the IRI
Network Element Identifier
Unique identifier for the element reporting the ICE.
Location Information
Location information is the service area identity and/or location area identity that is present at the 3G MSC Server
at the time of event record production
basic service
Information about Tele service or bearer service.
Supplementary service
Supplementary services used by the target e.g. CF, CW, ECT
Forwarded to number
Forwarded to number at CF
call release reason
Call release reason of the target call
SMS initiator
SMS indicator whether the SMS is MO, MT, or undefined
SMS Message
The SMS content with header which is sent with the SMS-service
Redirecting number
The number which invokes the call forwarding towards the target. This is provided if available.
SCI
Non call related Subscriber Controlled Input (SCI) which the 3G MSC Server receives from the ME

*** Next Modification ***

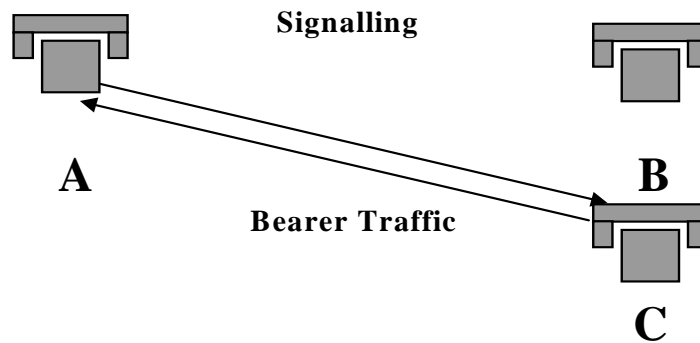## 6.4.2   Interception for Call Forwarding / Call Deflection / ECT

Figure 17: Interception for Call Forwarding / Deflection / ECT

The interception of party B once the supplementary service is invoked is a national option.

For Intercept Related Information it depends who is monitored:

- If subscriber A is monitored the number of A and B are mandatory in the event information and the number of C if available.

- If subscriber B is monitored the number of B and C are mandatory in the event information and the number of A if available.

- If subscriber C is monitored the number of C is mandatory in the event information and the number of A and B if available.

Intercept requirements for CS multi-media is for further study not defined in this release.

*** Next Modification ***

7   Invocation of Lawful Interception for GSN Packet Data services

Figure 18 shows the extract from the reference configuration which is relevant for the invocation of the Lawful Interception of the packet data GSN network.
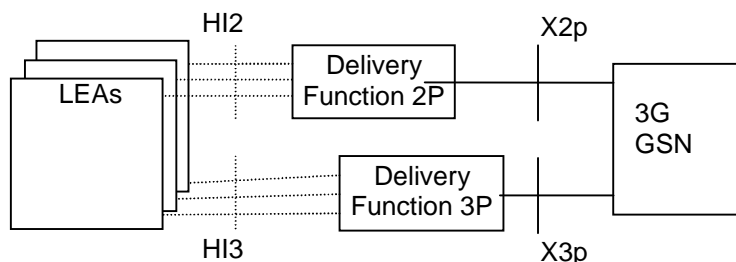

Figure 18: Functional model for Packet Data GSN Network Lawful Interception invocation

The HI2 and HI3 interfaces represent the interfaces between the LEA and two delivery functions. Both interfaces are subject to national requirements. They are included for completeness, but are beyond the scope of this specification. The delivery functions are used:

- to convert the information on the X2-interface to the corresponding information on the HI2 interface;

- to distribute the intercept related information to the relevant LEA(s);

- to distribute the intercept product to the relevant LEA(s).

~~In case a Packet Data communication is selected based on several identities (MSISDN, IMSI, IMEI,) of the same target, the 3G SGSN and/or, per national option 3G GGSN will deliver CC and IRI only once to the DF2 and DF3. DF2 and DF3 will then distribute the information to the relevant LEAs.~~

For the delivery of the CC and IRI the 3G SGSN and/or, per national option 3G GGSN provides correlation number and target identity to the DF2 and DF3 which is used there in order to select the different LEAs where the product shall be delivered.

The correlation number is unique in the whole PLMN and is used to correlate CC with IRI and the different IRI's of one PDP context.

The correlation number shall be generated by using existing parameters related to the PDP context.

NOTE: If interception has been activated for both parties of the Packet Data communication both CC and IRI will be delivered for each party as separate intercept activity.

In case of location dependent interception:

- for each target, the location dependency check occurs at each Packet Data session establishment or release and at each Routing Area (RA) update to determine permanently the relevant IAs (and deduce, the possible LEAs within these IAs);

- concerning the IRI:

    - when an IA is left, a Mobile Station Detach event is sent when changing servicing 3 G GSNs or a RA update event is sent when changing IAs inside the same servicing 3G SGSN to DF2;

    - when a new IA is entered a RA update event is sent to DF2 and, optionally, a "Start of interception with PDP context active" event for each PDP context;

- concerning the CC, when crossing IAs, the CC is not sent anymore to the DF3 of the old IA but sent to the DF3 of the new IA.

Both in case of location dependent and location independent interception:

"Start of interception with PDP context active" event is sent by the new SGSN if an Inter-SGSN RA update procedure ,which involves different PLMNs, takes place for a target, which has at least one active PDP context.

NOTE: An SGSN can differentiate "Inter PLMN" type of Inter-SGSN RA update procedure from "Intra PLMN" type of Inter-SGSN RA update procedure by inspecting the old RAI parameter, which is being received by the SGSN as part of the procedure (see 3GPP TS 23.060 [10], clause 6.9.1.2.2 and 3GPP TS 23.003, clause 4.2).

Optionally, it is possible to send "Start of interception with PDP context active" for all cases of inter- SGSN RA update when at least one PDP context is active.

*** Next Modification ***

7.3   Provision of Intercept Related Information

Intercept Related Information (Events) are necessary at the Mobile Station Attach, Mobile Station Detach, PDP Context Activation, Start of intercept with PDP context active, PDP Context Deactivation, RA update, Serving System and SMS events.

Serving System event reporting is a national option.

Figure 21 shows the transfer of intercept related information to the DF2. If an event for / from a mobile subscriber occurs, the 3G GSN or the Home Location Register (HLR) sends the relevant data to the DF2.

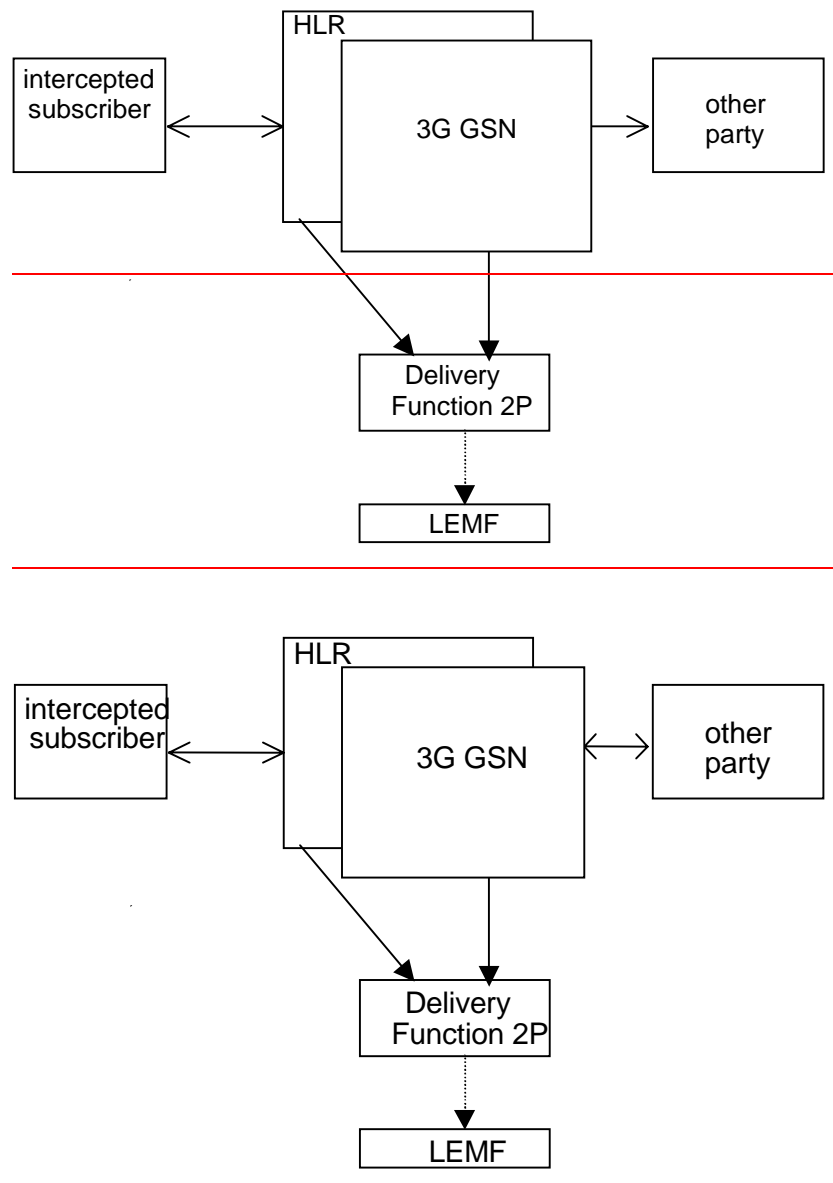See clause 7A for multi-media Intercept Related Information produced at the CSCF.

Figure 21: Provision of Intercept Related Information

7.3.1   X2-interface

The following information needs to be transferred from the 3G GSN or the HLR to the DF2 in order to allow a DF2 to perform its functionality:

- target identity (MSISDN, IMSI, IMEI);

- events and associated parameters as defined in clauses 7.3.2 and 7.4 may be provided;

- the target location (if available) or the IAs in case of location dependent interception;

- Correlation number;

- Quality of Service (QoS) identifier;

- Encryption parameters (keys and associated parameters for decrypting CC), if available and necessary.

The IRI should be sent to DF2 using a reliable transport mechanism.

7.3.2   Structure of the events

There are eight different events in which the information is sent to the DF2 if this is required. Details are described in the following clause. The events for interception are configurable (if they are sent to DF2) in the 3G GSN or the HLR and can be suppressed in the DF2.

The following events are applicable to 3G SGSN:

- Mobile Station Attach;

- Mobile Station Detach;

- PDP context activation;

- Start of intercept with PDP context active;

- PDP context modification;

- PDP context deactivation;

- RA update;

- SMS.

    NOTE: 3G GGSN interception is a national option. Location information may not be available in this case.

The following events are applicable to the 3G GGSN:

- PDP context activation;

- PDP context modification;

- PDP context deactivation;

- Start of interception with PDP context active.

The following events are applicable to the HLR:

- Serving System.

A set of fields as shown below can be associated with is used to generate the events. The events trigger the transmission of the information from 3G GSN or HLR to DF2. Available IEs from tThis set of fields as shown below can be extended in the 3G GSN or HLR, if this is necessary as a national option. DF2 can extend available this information if this is necessary as a national option e.g. a unique number for each surveillance warrant.

Table 2: Information Events for Packet Data Event Records

Observed MSISDN MSISDN of the target subscriber (monitored subscriber).
Observed IMSI IMSI of the target subscriber (monitored subscriber).
Observed IMEI IMEI of the target subscriber (monitored subscriber),it shall be checked for each activation over the radio interface.
Event type Description which type of event is delivered: MS attach, MS detach, PDP context activation, Start of intercept with PDP context active, PDP context deactivation, SMS, Serving System, Cell and/or RA update.
Event date Date of the event generation in the 3G GSN or the HLR.
Event time Time of the event generation in the 3G GSN or the HLR. Timestamp shall be generated relative to GSN or HLR internal clock.
PDP address The PDP address of the target subscriber. Note that this address might be dynamic.
Access Point Name The APN of the access point. (Typically the GGSN of the other party).
Location Information Location Information is the Service Area Identity (SAI), RAI and/or location area identity that is present at the GSN at the time of event record production.
Old Location Information Location Information of the subscriber before Routing Area Update
PDP Type The used PDP type.
Correlation Number The correlation number is used to correlate CC and IRI.
SMS The SMS content with header which is sent with the SMS-service. The header also includes the SMS-Centre address.
Network Element Identifier Unique identifier for the element reporting the ICE.
Failed attach reason Reason for failed attach of the target subscriber.
Failed context activation reason Reason for failed context activation of the target subscriber.
IAs The observed Interception Areas.
Initiator The initiator of the PDP context activation, deactivation or modification request either the network or the 3G MS.
SMS Initiator SMS indicator whether the SMS is MO or MT.
Deactivation / termination cause The termination cause of the PDP context.
QoS This field indicates the Quality of Service associated with the PDP Context procedure.
Serving System Address Information about the serving system (e.g. serving SGSN number or serving SGSN address).

*** Next Modification ***

7A.3   Multi-media events

- All SIP messages to or from a targeted subscriber, and all SIP messages executed on behalf of a targeted subscriber for multi-media session control are intercepted by the P CSCF and S CSCF and sent to DF2. The target identifier used to trigger the intercept will also be sent with the SIP message. P CSCF event reports may be redundant with S CSCF event reports when the P CSCF and S CSCF reside in the same network, however, this standard does not require nor prohibit redundant information from being reported to DF2.

- The IRI should be sent to DF2 with a reliable transport mechanism.

- The reporting of location information for the sake of location dependent intercept is for further study.

- The use of a correlation ID for SIP to bearer correlation is ~~a topic for further study~~not defined in this release.

- An intercepted SIP event sent to DF2 is shown below:

    - Observed SIP URI

    - Observed TEL URL

    - Event Time and Date

    - Network element identifier

    - SIP Message Header

- SIP Message Payload

<p align="center">*** Next Modification ***</p>

C.4 Multimedia with Supplementary Service ñ Call Forwarding

~~For further study~~Not defined in this release.

C.5 Multimedia with Supplementary Service ñ Explicit Call Transfer

~~For further study~~Not defined in this release.

C.6 Multimedia with Supplementary Service ñ Subscriber Controlled input

~~For further study~~Not defined in this release.

CR-Form-v7.1

CHANGE REQUEST

⌘ **33.107 CR 050** ⌘**rev** **-** ⌘ Current version: **6.3.0** ⌘

*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: ⌘	Clarification on MMS interception	
Source: ⌘	SA3-LI	
Work item code:⌘	SEC1-LI	**Date:** ⌘ 12/10/04
Category: ⌘ **B**		**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 TR 21.900.

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)
   Rel-7 (Release 7)

Reason for change: ⌘	33.107 does not specifically address the interception of the Multimedia Messaging Service (MMS).
Summary of change:⌘	33.107 provides detailed requirements on SMS interception but does not specifically mention MMS. This CR adds a new sub-section 7.6, in order to clarify how MMS interception is performed.
Consequences if not approved: ⌘	It may be unclear to LEAs how MMS interception is performed within 3GPP networks and in what form MMS will be delivered.

Clauses affected: ⌘	7

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

Other comments: ⌘	

****** FIRST Change ******

7.6   Interception of the Multimedia Messaging Service (MMS)

The Multimedia Messaging Service (MMS) is a service running over the 3GPP PS-domain. Both mobile originating and mobile terminating MMS messages must pass through PS domain GSN nodes en route to or from Multimedia Message Service Centres (MMSCs). Therefore, interception of MMS messages shall be performed at the GSN in exactly the same way as for other PS-domain bearer services.

The GSN is not responsible for recovering individual MMS messages from the user PDP context IP stream.

No MMS specific HI2 records are defined to be delivered to the LEMF over the DF2 other than those listed in section 7.4 of this specification. CC records shall be sent to the LEMF over the DF3 as specified in section 7.3.

Interception of a user PDP context IP stream will occur as described in section 7.2. Such a stream may or may not contain MMS messages.

****************END OF CHANGES**************