ETSI TR 122 967 V8.0.0 (2009-01)

Technical Report

Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
LTE;
Transferring of emergency call data
(3GPP TR 22.967 version 8.0.0 Release 8)

Reference

RTR/TSGS-0122967v800

Keywords

GSM, LTE, UMTS

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00   Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:
http://www.etsi.org

The present document may be made available in more than one electronic version or in print. In any case of existing or
perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF).
In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive
within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.
Information on the current status of this and other ETSI documents is available at
http://portal.etsi.org/tb/status/status.asp

If you find errors in the present document, please send your comment to one of the following services:
http://portal.etsi.org/chaircor/ETSI_support.asp

Copyright Notification

ETSI

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://webapp.etsi.org/IPR/home.asp).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Technical Report (TR) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under http://webapp.etsi.org/key/queryform.asp.

Contents

Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x   the first digit:

1   presented to TSG for information;

2   presented to TSG for approval;

3   or greater indicates TSG approved document under change control.

y   the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z   the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

During 2004 a number of discussions were held between the Commission for the European Communities (CEC), the automotive industry, the telecommunication industry and ETSI standards groups regarding the provisioning of in-vehicle emergency calls. This initiative was called *eSafety*. As part of this initiative, *eCall* was defined as a specific item in the scope of the eSafety initiative. *eCall* is intended to extend the current E112 capabilities to enable the Transferring of eCall data between the Vehicle and the Public Safety Answering Points (PSAPs).

1 Scope

The present document examines the issues associated with the transmission of Emergency Call Data from a vehicle to a Public Service Access Point (PSAP).

Issues associated with the content of the Emergency Call Data or the triggers of the Emergency Calls are outside the scope of this document.

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]   3GPP TS 22.105: "Services and service capabilities".

[2]   3GPP TS 23.048: "Security mechanisms for the (U)SIM application toolkit; Stage 2".

[3]   Overview of available studies on proven or assessed benefits of e-Call
        http://www.escope.info/download/socio_economic_studies/papersocioeconomicstudy.pdf

[4]   A Pan European Automatic Emergency Call (eCall):
        http://www.escope.info/download/related_projects/A_Pan_European_eCall__v1_1.pdf

[5]   COMMISSION RECOMMENDATION of 25 July 2003 on the processing of caller location information in electronic communication networks for the purpose of location-enhanced emergency call services; http://www.escope.info/download/ecall_toolbox/Location_enhanced.pdf

[6]   GSME Position Paper on eCall, 18 November 2005
        http://www.gsmworld.com/gsmeurope/documents/positions/2005/GSME%20Position%20paper%20on%20eCall_181105.pdf :

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and 3GPP TR 21.905 [1] apply.

3.2 Abbreviations

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

ACEA	European Automobile Manufacturers Association
CEC	Commission of the European Communities
CEPT	Conference of European Telecommunications Administrations
DG	Directorate-General
GSME	GSM Europe
EC	European Commission

ECC	Electronic Communications Committee
eCall	Emergency Call defined under the eSafety initiative
eCall function	The functionality supporting the generation of the emergency call with MSD
ERO	European Radiocommunications Office
ERTICO-ITS	A multi-sector, public/private partnership pursuing the development and deployment of Intelligent Transport Systems and Services (ITS).
ETSI	European Telecommunications Standards Institute
GSM	Global System for Mobile communications
HMI	Human-Machine Interface
ITS	Intelligent Transport Systems and Services
IVS	In Vehicle System
MSD	Minimum Set of incident Data
MSG	(ETSI TC) Mobile Standards Group
PSAP	Public Service Answering Point
SA1	Working Group 1 ("Services") of 3GPP Technical Specification Group "Services and System Aspects;"
SIM	Subscriber Identity Module
TC	Technical Committee
UICC	Universal Integrated Circuit Card
USIM	Universal Subscriber Identity Module
VIN	Vehicle Identity Number

Further abbreviations are given in 3GPP TR 21.905 [1].

4 Background

4.1 European region

During 2004 a number of discussions were held between the Commission for the European Communities (CEC), the automotive industry, the telecommunication industry and ETSI standards groups regarding the provisioning of in-vehicle emergency calls. Based on initial discussions, a joint initiative of the CEC (DG Enterp and DG InfoSoc), industry and other stakeholders was defined which aims to accelerate the development, deployment and use of Intelligent Integrated Safety Systems that use information and communication technologies in intelligent solutions, in order to increase road safety and reduce the number of accidents on Europe's roads. This initiative was called *eSafety*.

As part of this initiative, *eCall* was defined as a specific item in the scope of the eSafety initiative. It is intended to extend the current E112 capabilities to enable the Transferring of eCall data between the Vehicle and the Public Safety Answering Points (PSAPs) (see ref [4] for details). This should rely on existing GSM/UMTS infrastructure.

As a result, the CEC has published Commission Recommendation on the processing of caller location information for the purpose of location-enhanced emergency call services (adopted by the Commission in June 2003, ref [5]). This recommendation includes a reference (paragraph 8) the evolution of the E112 service to include the functionality provided by eCall. At this time, there is no directive, but this has not been ruled out.

4.1.1 Agencies and initiatives within Europe

The European Automobile Manufacturers Association (ACEA), represents the 13 major car, truck and bus manufacturers in the EU.

The Electronic Communications Committee (ECC) develops a common European position and policies on Communications matters. ECC reports to CEPT on progress. It also maintains close cooperation and consultation with relevant European bodies, in particular the European Commission and the European Free Trade Association.

The European Radiocommunications Office (ERO) is the focal point for new possibilities in the radio- and telecommunications fields and advisor to the ECC.

The ERTICO-ITS is a multi-sector, public/private partnership pursuing the development and deployment of Intelligent Transport Systems and Services (ITS).

eSafety is a European initiative to accelerate the use of Intelligent Integrated Safety Systems to reduce the number of accidents on European roads

eCall is an emergency call defined under the eSafety initiative and it extends the E112 capabilities to transfer of data between vehicle and PSAP.

GSM Europe, an interest group representing 147 mobile operators in 50 countries/areas across Europe, has published a paper setting out GSM Europe's position on the European Commission's eCall initiative. See Ref [6].

4.1.2   Requirements received from European bodies

The following requirements are identified in a Liaison Statement received from ETSI MSG.

- To send a fixed data block (MSD, Minimum Set of Data), which will not exceed 140 bytes, from the vehicle to the PSAP, at the same time that the emergency call is placed.

- The data needs to be acknowledged, hence there shall be return channel.

- The voice call need not be active during the transmission of the data

- The MSD shall be delivered to the interface to the PSAP within a maximum of 4 seconds from when the MSD is available in the terminal.

- The acknowledgement shall be done at the transport layers and not the application layers, so that the system is compatible with a PSAP that has not yet implemented the eCall functionality.

- The terminal shall be dual mode GSM/GPRS and UMTS (WCDMA) in order to ensure full European coverage during the lifetime of the car.

- The solution shall seek minimal impact on all nodes involved in the transfer of information, that is, in the mobile network and the fixed network possibly used between the mobile network and the PSAP node.

- 3GPP should aim at including any required specification changes within the 3GPP Release 7 set of specifications.

- The solution shall work on all European 3GPP networks (pan European solution, full roaming capability)

- SIM/USIM shall be present owing to the fact that the SIM/USIM presence is already mandatory is several EU countries for Emergency Calls.

- The eCall MSD is to be provided to the PSAP in addition to the location and other information associated with an E112 call as currently specified in 3GPP Technical Specifications.

- Normal E112 functionality shall be available in the event of failure of the eCall function.

- Supported by IP Multimedia Subsystem and UMTS Terrestrial Radio Access Network and Evolved UMTS Terrestrial Radio Access Network

- Solution should require minimal changes to 3GPP Technical Specifications for a satisfactory design

- Include facility to disable MS ISDN and/or SIM/USIM when vehicle is deregistered or destroyed

As an additional Clarification the source of the information in the MSD will be the vehicle, the content and the method for obtaining this information is outside of the scope of this study. The mobile network will simply provide means of transferring the data. Other aspects of Emergency calls are not expected to be modified.

4.2   Emergency Call Data requirements from other regions

No requirements for standardisation of similar emergency call data generation have been identified from regions outside of Europe.

It is noted that a commercial system that provides a similar service to eCall is already operational in the USA.

5 Security considerations

The data transferred from the vehicle to the PSAP should be secured using 3GPP TS 23.048 [2] security structure.

6 Discussion of requirements identified

The following section discusses issues arising from the requirements that SA1 has identified.

6.1 Issues arising from requirements from ETSI TC MSG

6.1.1 Response time of eCall

ETSI MSG requires that the MSD shall be available for the PSAP operator within a maximum of 4 seconds from sending the MSD from the IVS.

Issue:

The start and end point of the 4second requirement requires further definition.

An end to end response time is defined. The response time of the mobile communication system, for which 3GPP is responsible, within the overall time is not defined and therefore for further study.

Does the 4 seconds start before or after the eCall mobile has performed a scan for the strongest channel? Typically this scan exceeds 4 seconds by a significant margin. If the 4 seconds starts at the point the vehicle detects a crash then a special mode of operation needs to be defined. Is the 4 seconds a target or a hard limit imposed by requirements elsewhere in the system?

Resolution:

The time is measured from the time when transmission of the MSD from the vehicle commences to the time when the MSD delivery to the PSAP is complete. The 4 seconds should be regarded as a target time.

6.1.2 Compatibility with older PSAPs

ETSI MSG requires that the acknowledgement shall be done at the transport layers and not the application layers, so that the system is compatible with a PSAP that has not yet implemented the eCall functionality.

Deduction:

This implies that eCall should be based on Circuit Switched rather than Packet Switched calls.

6.1.3 Full European coverage for lifetime of cars

ETSI MSG requires that the terminal shall be dual mode GSM/GPRS and UMTS (WCDMA) in order to ensure full European coverage during the lifetime of the car.

Deduction:

There is currently no definition for PS emergency call. Circuit switch call advisable.

6.1.4 Completion timescale

ETSI MSG requires that 3GPP should aim at finishing the specification by December 2005.

Issue:

3GPP work groups are structured around a 3 monthly cycle. Release 6 and earlier standards sets are frozen for new requirements. Release 7 requirements are about to be frozen.

Deduction:

eCall must be designed to require no changes to existing 3GPP standards.

Resolution:

LS M05-056 from ETSI TC MSG clarified that MSG requests "Minimal changes to 3GPP Technical Specifications for a satisfactory design" and any required changes to be included in 3GPP Release 7 Specifications.

6.1.5 Roaming

ETSI MSG requires that the solution shall work on all European GSM/3G networks (pan European solution, full roaming capability)

Issue:

Currently, Europe is the only region requiring this functionality. How should an eCall mobile behave when roaming in an operator that does not support eCall?

Resolution:

In the event that an eCall fails then the mobile should fall back to a normal Enhanced Emergency Call (e.g. E112).

6.1.6 SIM / USIM requirement

ETSI MSG require that SIM/USIM shall be present owing to the fact that the SIM/USIM presence is already mandatory is several EU countries for Emergency Calls.

Comment:

3GPP have standardised protocols that enable emergency calls to be made with and without a SIM/USIM. Whether or not a SIM/USIM is required for emergency calls (and the associated commercial issues) is a matter for local legislation/agreement.

ETSI MSG requires the ability to disable the MS ISDN and/or SIM/USIM when the vehicle is deregistered or destroyed.

6.1.7 Network loading

The eCall mobile cannot be allowed to generate traffic on the network until an emergency situation is detected.

6.1.8 Other considerations

6.1.8.1 Choice of how to send the data

UUS, USSD, SMS, in band modem etc, are services that have been suggested for eCall. Note that supplementary services do not currently apply to emergency calls.

SA1 is not the appropriate forum to select the most appropriate channel for the eCall data.

6.1.8.2 Location information

Issue;

SA1 understand that the eCall data is intended to supplement a normal E112 emergency call. Increasingly, Operators are required to deliver location information when delivering emergency calls. It is understood that the eCall system will deliver location information generated by in-car systems. Does that mean that the operator is exempt from the requirement to deliver Location Information for eCall E112 emergency calls?

Clarification;

ETSI MSG have clarified that eCall MSD is to be delivered in addition to the Location Information required to accompany an E112 emergency call. In the event of failure of an eCall, full E112 functionality is to be provided.

6.1.8.3 Call release

Deduction:

Once an eCall is established it can only be released by the PSAP operator.

6.1.8.4 Test eCall

The requirement to easily ascertain that a vehicle eCall system is working correctly by including the ability to initiate a test eCall to a Test PSAP has been requested. This could be manually or automatically initiated. See use case 7.6

Comment;

Requires the definition of appropriate eCall test number.

This may be difficult to achieve without a USIM present. USIM less test calls cannot be made other than to an emergency number. Might be resolved with a dedicated test box at every test station.

7 Use cases

7.1 Automatic eCall, the driver is able to speak

Within this use case the driver does not have a subscription to a SP and can thus not obtain the benefits from making the additional data available for the PSAPs together with the possibility for establishing language support.

7.1.1 Initialisation

The service starts with:

A vehicle crash occurs and a minimum of 2 critical sensors is activated which causes the IVS unit to begin automatic an emergency sequence.

7.1.2   Sequence overview
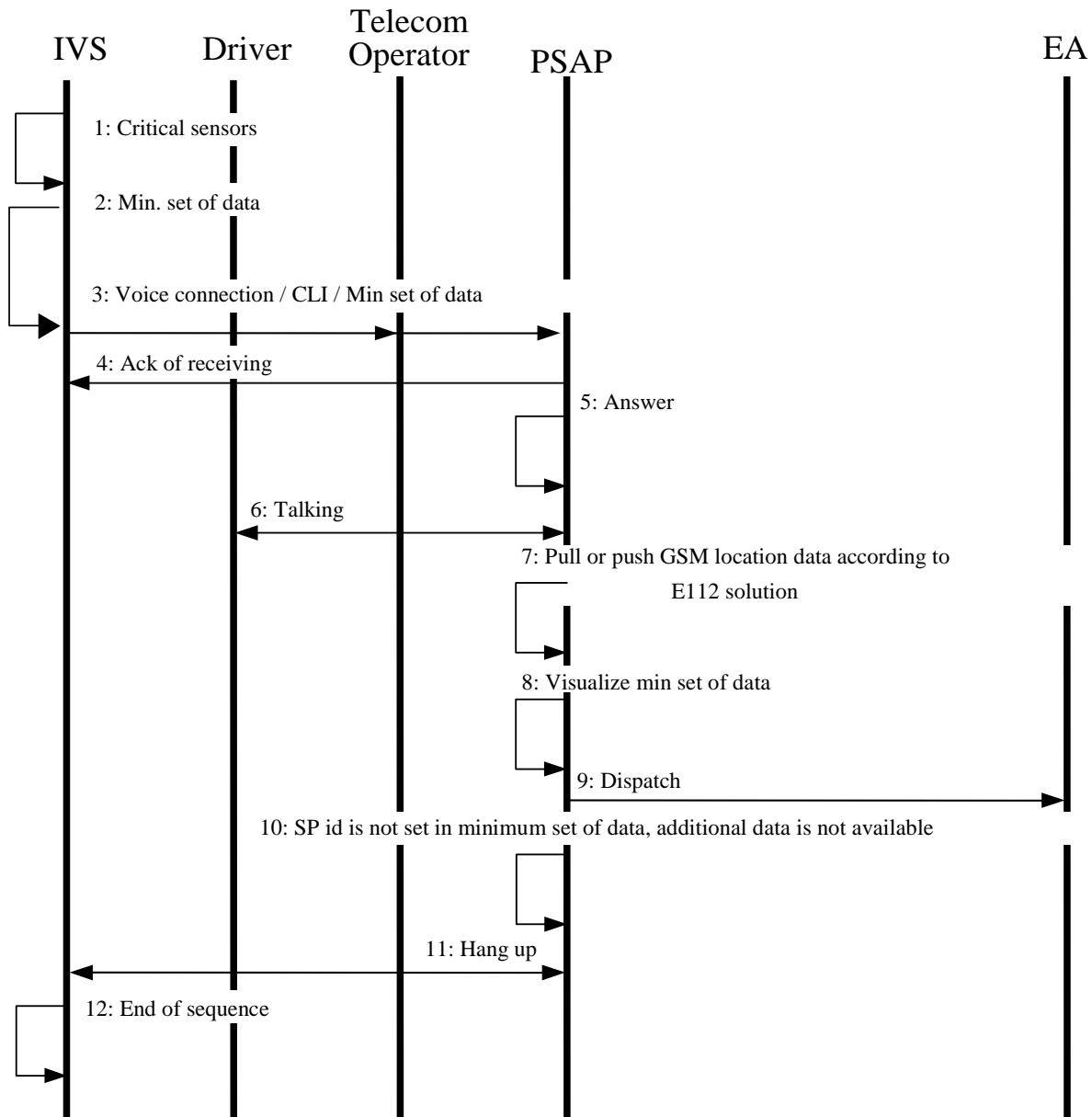
7.1.3   Sequence of events

1)   Emergency service sequence initiated automatically via a minimum of 2 critical sensors. (E.g. airbag and roll over).
2)   Minimum set of data is sent via the Telecom operator to the PSAP.
3)   A voice call is established between the vehicle and the PSAP.
4)   An acknowledgement for receipt of the minimum set of data is sent to the vehicle via the Telecom operator from the PSAP system.
5)   The PSAP answers the voice call.
6)   The PSAP communicates with the vehicle driver.
7)   The PSAP get the minimum set of data (could be before 5).
8)   The PSAP visualises the minimum set of data.
9)   The PSAP dispatches Emergency Assistance.
10) SP ID is not given in the minimum set of data (SP ID not given in the MSD as no subscription to a SP exists). No additional data is available.

11)   The PSAP hangs up the voice call.

12)   The IVS ends the emergency service sequence.

7.2   Automatic eCall, silent call.
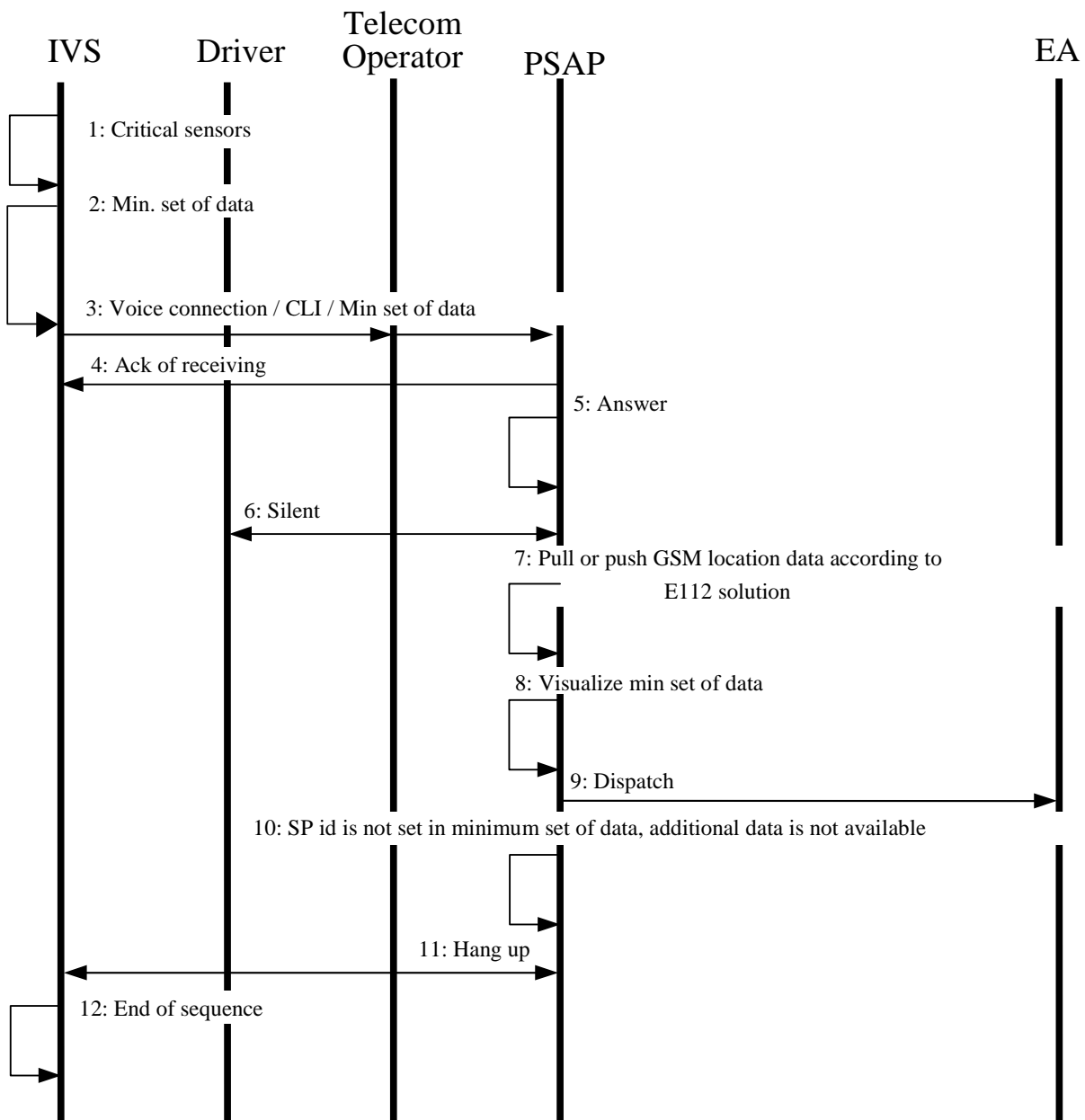
In this case the PSAP operator cannot get in voice contact with the vehicle driver. The nature of the emergency has to be determined based on the minimum set of data.

7.2.1   Initialisation

The service starts with:

A vehicle crash occurs and a minimum of 2 critical sensors is activated which causes the IVS unit to begin an automatic emergency sequence.

7.2.2   Sequence overview

7.2.3   Sequence of events

1)   Emergency service sequence initiated automatically via a minimum of 2 critical sensors. (E.g. airbag and roll over).

2)   Minimum set of data is sent via the Telecom operator to the PSAP.

3)   A voice call is established between the vehicle and the PSAP.

4)   An acknowledgement for the receiving of the minimum set of data is sent to the vehicle via the Telecom operator from the PSAP.

5)   The PSAP answers the voice call.

6)   The PSAP cannot hear the driver (silent call).

7)   The PSAP pull or get the minimum set of GSM location data from the telecom operator location database.

8)   The PSAP visualises the minimum set of data.

9)   The PSAP dispatches Emergency Assistance, based only on the minimum set of data. The PSAP or EA may decide that there is no emergency.

10)   SP ID is not given in the minimum set of data (SP ID not given in the MSD as no subscription to a SP exists). No additional data is available.

11)   The PSAP hangs up the voice call.

12)   The IVS ends the emergency service sequence.

7.3   Manual eCall, driver is able to speak

The service is activated by manually pressing the SOS button. The IVS unit formulates a minimum set of data message to the PSAP. A voice call is established to the PSAP allowing the PSAP representative to communicate with the driver of the vehicle. The nature of the emergency is determined and the PSAP representative contacts the appropriate Emergency Authority to request timely assistance for the driver of the vehicle. The emergency service is time and mission critical.

7.3.1   Initialisation

The service starts with:

The vehicle driver presses the SOS button, which causes the IVS unit to begin an automatic emergency sequence.

7.3.2 Sequence overview
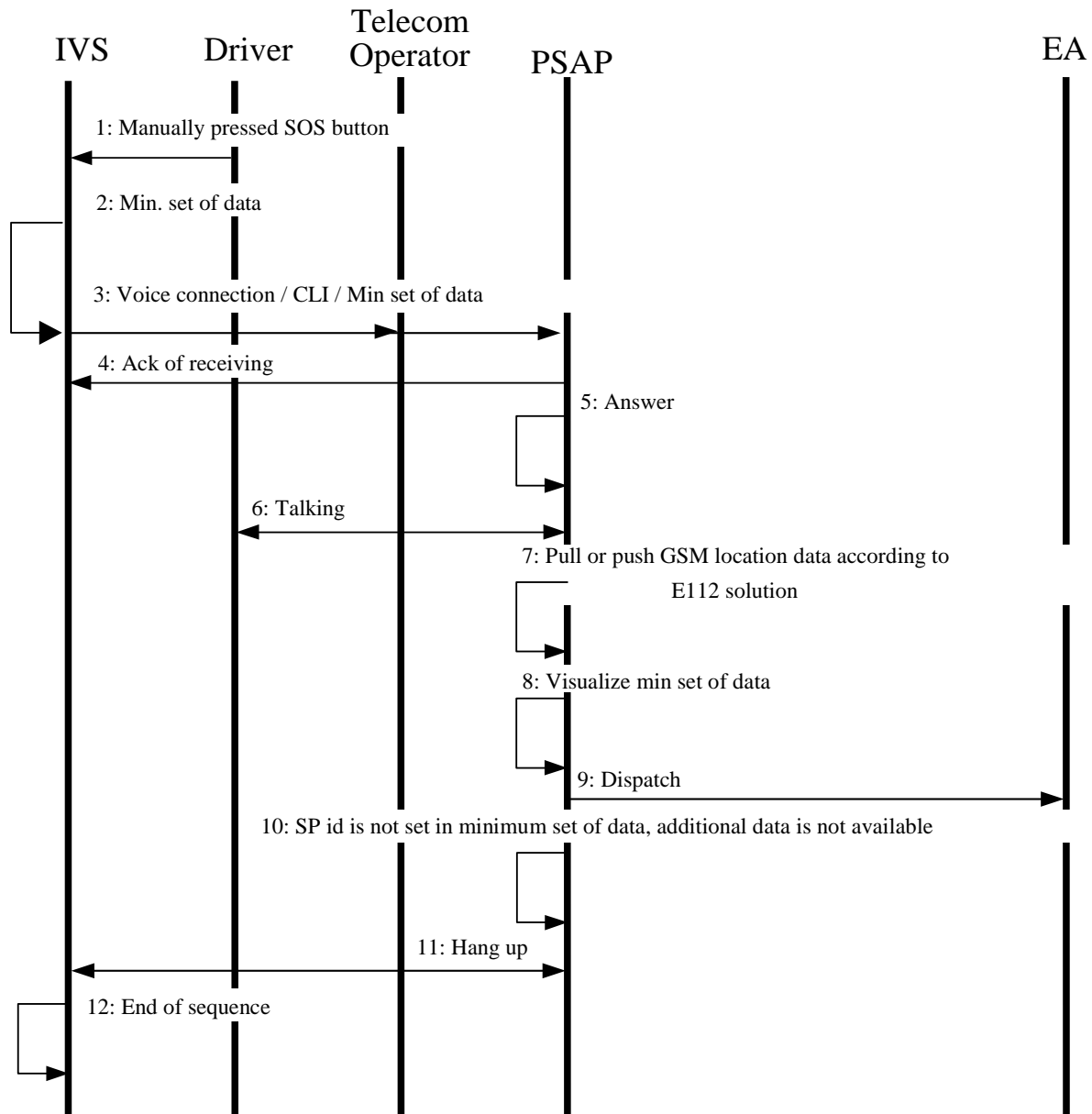
7.3.3 Sequence of events

1) Emergency service initiated by the vehicle driver manually pressing the SOS button.
2) Minimum set of data is sent via the Telecom operator in the voice channel to the PSAP.
3) A voice call is established between the vehicle and the PSAP.
4) An acknowledgement for the receiving of the minimum set of data is sent to the vehicle via the Telecom operator from the PSAP.
5) The PSAP answers the voice call.
6) The PSAP communicates with the vehicle driver.
7) The PSAP pull or get the minimum set of GSM location data from the telecom location database.
8) The PSAP visualises the minimum set of data.
9) The PSAP dispatches Emergency Assistance.
10) SP ID is not given in the minimum set of data (SP ID not given in the MSD as no subscription to a SP exists). No additional data is available.
11) The PSAP hangs up the voice call.

12) The IVS ends the emergency service sequence.
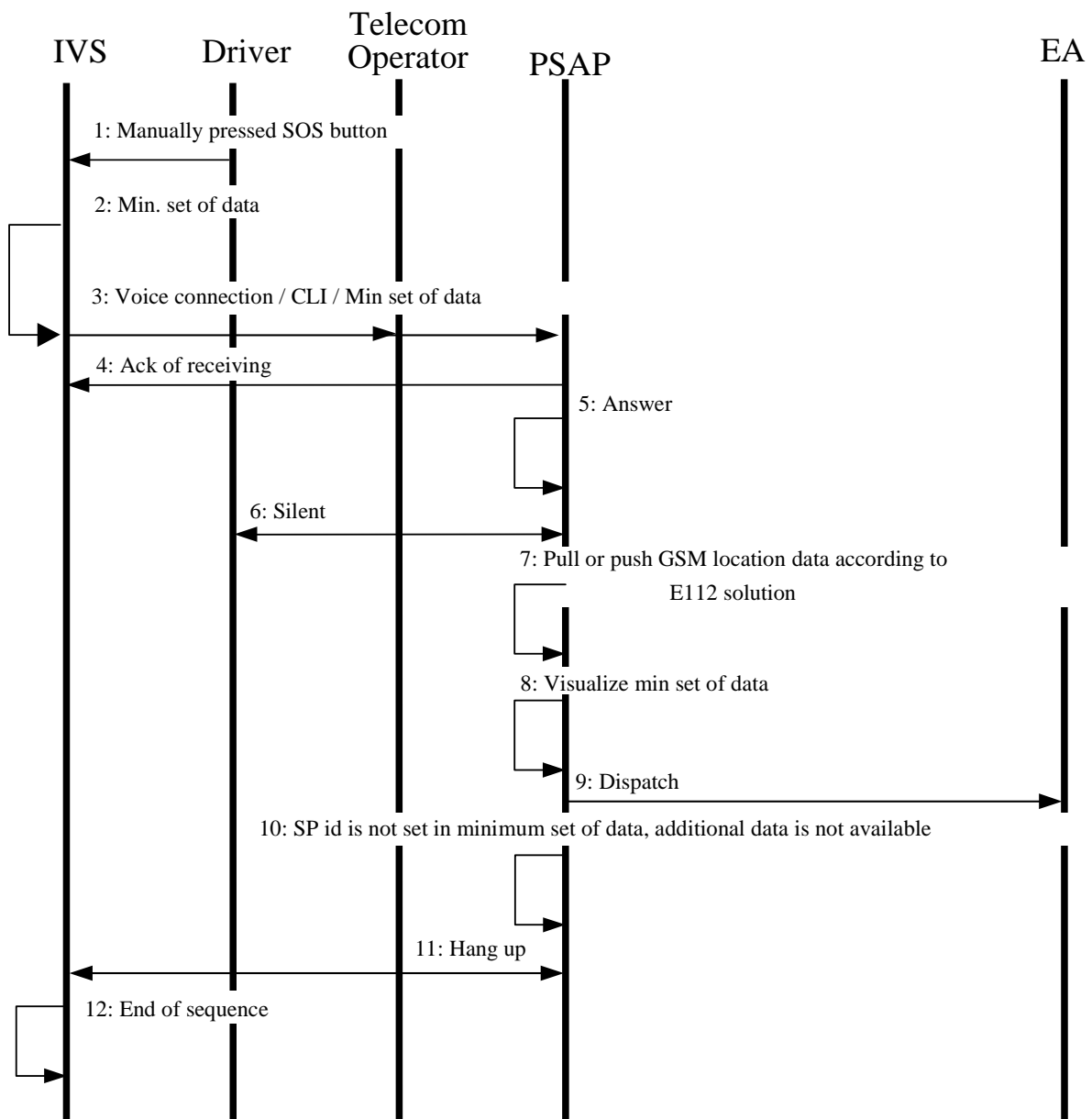
7.4 Manual eCall, silent call

In this case the PSAP operator cannot get in voice contact with the Vehicle driver. The nature of the emergency has to be determined based on the minimum set of data.

7.4.1 Initialisation

The service starts with:

The vehicle driver presses the SOS button, which causes the IVS unit to begin an automatic emergency sequence.

7.4.2 Sequence overview

7.4.3 Sequence of events

1) Emergency service initiated by the vehicle driver manually pressing the SOS button.
2) Minimum set of data is sent via the Telecom operator in the voice channel to the PSAP.
3) A voice call is established between the vehicle and the PSAP.
4) An acknowledgement for the receiving of the minimum set of data is sent to the vehicle via the Telecom operator, from the PSAP.
5) The PSAP answers the voice call.
6) The PSAP cannot hear the driver (silent call).
7) The PSAP pull or get the minimum set of GSM location data from the telecom operator location database.
8) The PSAP visualises the minimum set of data.
9) The PSAP dispatches Emergency Assistance, based only on the minimum set of data. The PSAP or EA may decide that there is no emergency.
10) SP ID is not given in the minimum set of data (SP ID not given in the MSD as no subscription to a SP exists). No additional data is available.
11) The PSAP hangs up the voice call.
12) The IVS ends the emergency service sequence.

7.5 False eCall

This use case deals with the internal malfunction of the IVS, which triggers an eCall where no emergency situation exists.

Malfunctions that lead to a false call is not necessarily only based on an IVS unit malfunctioning but in addition on the possibility of a deliberate or accidental false activation of the IVS unit by a person within the vehicle.

Note: Operators, in consultation with their national regulatory authorities, should develop their own protocols to allow the PSAP to disconnect the call if they are convinced that there is no emergency situation. Accidental activation could be minimised by the utilization of effective HMI for the location of the in-vehicle push button.

7.5.1 Initialisation

Critical sensors on a Vehicle create a false activation, which causes a request to the IVS unit to begin an automatic emergency sequence.

7.5.2   Sequence overview
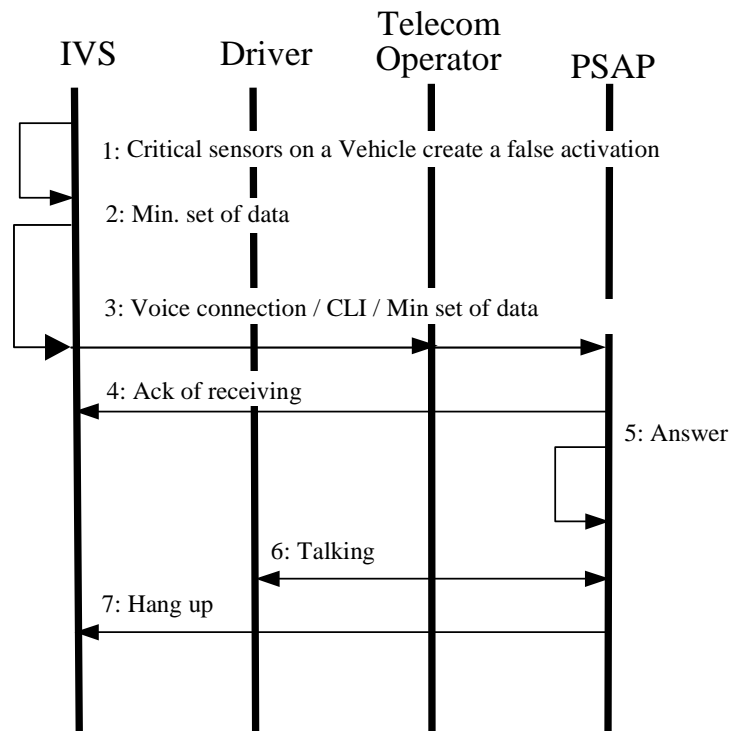
7.5.3   Sequence of events

1) Critical sensors in a Vehicle create a false activation, which causes a request to the IVS unit to begin an emergency sequence.
2) Minimum set of data is sent via the Telecom operator in the voice channel to the PSAP.
3) A voice call is established between the vehicle and the PSAP.
4) An acknowledgement for the receiving of the minimum set of data is sent to the vehicle via the Telecom operator, from the PSAP.
5) The PSAP answers the voice call.
6) The PSAP communicates with the vehicle driver.
7) No incident, the PSAP hangs up the voice call.

7.6   Test eCall

This use case deals with the testing of an eCall IVS to ensure that it is capable of making an eCall.

A test eCall may be initiated by a vehicle tester designated under national legislation or other competent person as required. A test eCall must always be made to the designated Test PSAP. The purpose of the test is to confirm that the IVS is capable of correctly sending the MSD to the Test PSAP and then, according to the capability of the IVS, providing a voice circuit to enable the test PSAP to talk to the Tester.

Note: It is assumed that a regional standard number will be established for the purpose of testing eCall equipment.

7.6.1   Initialisation

Tester initiates a Test Call.

7.6.2 Sequence overview
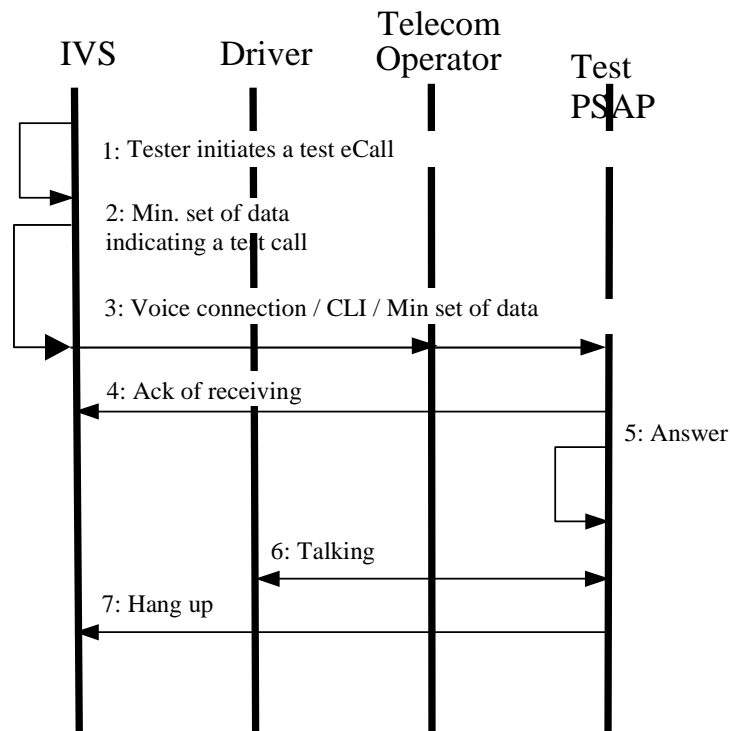
7.6.3 Sequence of events

1) Tester initiates a Test eCall, which causes a request to the IVS unit to begin a test call sequence.
2) Minimum set of data (indicating it is a test) is sent via the Telecom operator in the voice channel to the Test PSAP.
3) A voice call is established between the vehicle and the Test PSAP.
4) An acknowledgement for the receiving of the minimum set of data is sent to the vehicle via the Telecom operator, from the Test PSAP.
5) The Test PSAP answers the voice call.
6) The Test PSAP communicates with the tester.
7) Test complete, the Test PSAP hangs up the voice call.

8 Recommendations

8.1 Service definition

eCall is Teleservice 12 (E112) enhanced with a means to transmit data generated by an In Vehicle System (IVS) to the PSAP terminating the post crash emergency call.

The length of the minimum data set to be delivered, referred to as the MSD, will not exceed 140 bytes.

Optionally, the Full Set of Data (FSD) may be conveyed, length of the FSD is currently undefined.

8. 2 Data transmission method

The following needs to be taken into account when choosing how to transmit the data.

- Delay limitation.

- Minimize impact on network

- Minimise additional equipment needed in vehicle

- Minimise additional equipment needed in PSAP

- Ensure robustness of channel (low message error rate)

- MSD delivery should be acknowledged to the IVS

- Appropriate error handling should be provided

- If the MSD is lost or otherwise undelivered, the emergency call should still connect

- Synchronisation of the MSD with the voice call

- Delivery of the MSD to the same PSAP as the voice call

- Avoid interruption of the voice call when sending data

- Support the required MSD size (140 bytes) efficiently

Note: GSME are currently analysing which method should be used to send the data from the vehicle to the PSAP. Work on any necessary standardisation should not be commenced until GSME have reported on the outcome of this work.

8.3 Data transmission time

The target time for delivery of the MSD is 4 seconds. This time is measured from the time when transmission of the MSD from the vehicle commences to the time when the MSD delivery to the PSAP is complete.

8.4 Network control traffic

The eCall function may not access the network for any reason, including registration, location update, etc., unless the IVS initiates an emergency call for a valid reason (automatically initiated or manually initiated). The expectation is that the IVS will be powered up and continuously monitor the radio environment but will not connect to the network until the emergency call is initiated.

8.4 USIM requirement

The Teleservice 12 requirement to make the call with or without the USIM present applies equally to eCall.

8.4.1 PSAP to call back

Need to enable a PSAP to return the call to an IVS that made a USIM-less eCall.

9 Considerations

9.1 USIM / No USIM

SA1 has chosen to standardise eCall based on Teleservice 12 which supports emergency calls with and without a USIM present. Whether eCall should, or should not require a USIM card is an issue that should be resolved at a regional or national level. Issues that should be considered when determining whether a USIM should, or should not, be required for an eCall are detailed in this section.

9.1.1   No USIM

Teleservice 12 is standardised to allow an emergency call to be made without a USIM present. If a means to transmit the MSD is provided with Teleservice 12 then an eCall can be made without a USIM present.

9.1.1.1   MSD/VIN Authenticates User

The In Vehicle System is aware of the VIN which is included as part of the MSD. The VIN might be used to uniquely identify the origin of the eCall.

9.1.1.2   Roaming Issues

eCalls will only be supported where emergency USIM-less calls are supported.

9.1.2   UICC

The eCall UICC installed in the vehicle must meet automotive specifications.

Further consideration may be given to a semi-permanently installed eCall UICC for the new emergency voice/data service because

- there is no requirement for the UICC to be transferable between vehicles.

- The origin of the call could be uniquely identified by the PSAP using the VIN information contained in the MSD

- It is desirable for the UICC to be difficult to be removed or replaced by unauthorised personnel

9.1.2.1   Disposal/Cancellation when vehicle is disposed of.

Appropriate arrangements need to be put in place to enable the operator to be informed when a vehicle containing an eCall IVS is disposed of so that the subscription can be cancelled.

9.2   Implementation factors

The new emergency voice/data service will be direct from vehicle to PSAP confirmed (i.e. no intermediate service provider or agency).

The equipment and transceiver for the new emergency voice/data service is expected to be "embedded" in the vehicle. A "nomadic" solution, whereby a vehicle occupant's UE is connected via a short range communication link such as Bluetooth to the IVS, will not be sufficiently reliable because

- It relies on an occupant of the vehicle having a Bluetooth enabled UE switched on and paired to the IVS

- The UE may be outside Bluetooth range of the vehicle after an accident

- Vehicle mounted antennae will provide better coverage in rural areas where the new emergency voice/data service is most effective at saving lives.

- Bluetooth provides an opportunity to spread viruses

9.3   eCall test call

The realisation of the use case given in section 7.6 represents a dilemma. By definition, Teleservice 12 only generates emergency calls to specific, PSAP destinations. Test calls using the emergency call procedures can only be made to the designated emergency numbers. An eCall to a number other than the designated emergency numbers will require a USIM and cannot use Teleservice 12. Services other than Teleservice 12 will have no method to convey the data with the voice call defined.

In order to provide a representative test mechanism, either PSAPs must accept some sort of eCall test sequence, otherwise the test centre must use some form of test equipment that avoids the eCall IVS making a live call. Such decisions are outside the scope of 3GPP.

9.4 National border issues

As a result of normal radio propagation effects eCall may not be routed to the correct PSAP.

Use Case:

> In a national boundary area between country A and country B there will be areas in country A where the strongest signal received will be generated by operators of country B. This will cause eCall mobiles in this area to contact the PSAP in country B rather than the correct PSAP in country A.

This effect must be allowed for when the emergency services are being planned.

The roaming issue identified in the paragraph below may apply to this cross border issue as well.

9.5 Roaming issue

The issue of USIM/No USIM is resolved on a national or regional basis

Use Case

> Country A does not require a USIM for an eCall while the authorities in Country B mandate that a USIM must be present for eCall. If a vehicle from Country A drives into Country B and has an accident, an eCall will not be accepted owing to the lack of a USIM.

Non 3GPP European Networks

> It is noted that there are some CDMA public telecommunication networks within Europe. These are outside the scope of 3GPP.

10 Conclusion

Following approval of this TR, and the availability of the report from GSME on the Operators' preferred method of implementation, Work Items can be established in the appropriate working groups to complete any standardisation work required.

Annex A:
CRs and LSs associated with the eCall investigation

A.1 Change Requests associated with this TR

Date	TSG Doc.	CR	Rev	Subject/Comment

A.2 Liaison Statements associated with this eCall investigation

Date	From/To	Doc.Ref	Subject/Comment
2005-07	ETSI TC MSG	S1-050786	Liaison Statement on eCall requirements
2005-11	ETSI TC MSG	S1-060018	Clarifications on eCall Requirements (M05-056)

Annex B:
Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2005-07	SA1#29	S1-050607			Baseline Original	-	0.0.0
2005	SA1#29	S1-050860			Result of SA1#29 Working Group	0.0.0	0.0.1
2005-10	SA1#30	S1-051031			Input document to SA1#30 containing results of email discussion	0.0.1	0.0.2
2005-10	SA1#30	S1-051155			Raised to Version 1.0.0 after presentation at SA1#30, for presentation to SA#30	0.0.2	1.0.0
2005-10	SA#30	SP-050741			Raised to Version 1.1.0 with clean-up after presentation at SA1#30, for presentation to SA#30	1.0.0	1.1.0
2006-01					Incorporated improved requirements from ETSI MSG and posted to SA1 e-mail discussion 3/Jan/06	1.1.0	1.2.0
2006-01					Incorporated comments from e-mail discussion, posted to SA1 e-mail discussion 9/Jan/06	1.2.0	1.2.1
2006-02	SA1#31	S1-060017			Result of e-mail discussion plus some minor editorial corrections, baseline for SA1#31	1.2.1	1.2.2
2006-02	SA1#31	S1-060280			Result first drafting session	1.2.2	1.2.3
2006-02	SA1#31	S1-060281			Result of sub working group drafting	1.2.3	1.3.0
2006-02	SA1#31	S1-060337			Raised to version 2.0.0, with clean-up, after presentation at SA1#31, for presentation to SA#31	1.3.0	2.0.0
2006-03	SP-31	SP-060025	-	-	Approved at SA #31	2.0.0	7.0.0
SP-42	-	-			Updated from Rel-7 to Rel-8	7.0.0	8.0.0

History

Document history		
V8.0.0	January 2009	Publication