

***Emergency Call (eCall) Services
based on approved E-112
regulations and infrastructures:***

***An applied policy for improving
security and release of road help***

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Thematic Context

*An overview of the proposed
separate sessions...*

1. Introductory Framework – General Remarks - Challenges for the development of Emergency Call (eCall) solutions,
2. eCall Services – Target & Main Operation
3. eCall Implementation in Vehicles
4. Enhanced security through the location-enhanced single European emergency number (112)
5. Proposed technological solutions – General Approach
6. Current European Standardisation Initiatives
7. eCall – Creating Potential in the Market Sector
8. Legal Challenges for realising the eCall
9. Overview and Conclusions.

- ★ **Great penetration of advanced information and communication technologies (ICT) in a variety of mobile, fixed and vehicular applications.**
- ★ **Convergence-based effects and innovative services “penetrate” various sectors, offering major opportunities for growth...**
- ★ **New technologies offer significant perspectives for market synergies, in a liberalized and competitive environment !**
- ★ **Road safety and vehicle security constitute high priority issues for the recent European policies & applied practices.**

- ★ **An overview for EU15: 375 million road users, 200 million vehicles, 4 million km of roads...**
- ★ **Europe's annual road toll is still extremely serious and unacceptable:**
 - 1,3 million of accidents *per year***
 - 40,000 fatalities**
 - 1,700,000 injuries**
 - A total cost of $\approx 2\%$ of the GDP of Europe**
- **High necessity to reduce losses of human lives, injuries, material damages, economic and environmental damages ...**
- **EU Roads and vehicles need to be equipped with the beneficial use of new technologies and innovative electronic facilities**

- Current EU initiatives & measures intend to:
- improve road safety
- reduce the number of serious accidents (fatalities, injuries, material damages and environmental damages)
- speed up rescue times
- provide an efficient and a fully “harmonized” European emergency call (eCall) service

“Emergency Call” Services – The Target

“eCall” is an area where EU-wide consensus can help remove technological and commercial barriers to the take-up of life-saving road safety systems.

Rapid delivery of appropriate emergency services and “post-impact” care can be the difference between life and death for a road accident victim...

eCall tackles a real problem with significant potential socio- economic benefits!

“Emergency Call” Services – The Target...(2)

European authorities have a multifaceted role to play, in various areas, by:

- **facilitating a wide consensus on priorities, initiatives and activities,**
- **supporting the relevant R&D processes,**
- **ensuring that appropriate regulations & standards support road traffic safety**
- **helping to remove any other relevant obstacles...**

"Emergency Call" Services – The Target...(3)

Current European initiatives under the Commission's support:

- Activation of the eCall action plan (a pan-European joint public/private partnership), as part of the EU eSafety initiative
- Development of sophisticated systems to improve chances of avoiding and surviving accidents

Time frame for action:

- End of 2005: Agreement on standardization
- Year 2006: Full-scale field tests
- Year 2009: Automatic technology introduction in new vehicles

First stage:

- In the event of an accident, an emergency call is initiated automatically (based e.g. on airbag release or deceleration information), or manually.

Second stage:

- Call routing to an "appropriate" physical location known as "*Public Service Answering Point*" (PSAP) operated under the responsibility of a public emergency authority (EA) or a telecommunications operator.

Service Features-Aims

- Provision of exact location information.
- Significant reduce of emergency response time.
- Correct response and Immediate aftercare in case of accidents involving hazardous goods...

Prerequisite for effective deployment, suitable introduction and fast market adoption:

Establishment of proper location-enhanced emergency services!

Three fundamental priorities:

- ⇒ Promotion of enhanced call-routing mechanisms.
- ⇒ Reception/treatment of faster and improved information for dispatching existing relevant resources
- ⇒ Development of appropriate data sets and systems/solutions to locate the caller as soon as possible.

Current policy trends:

- ⇒ Developing the in-vehicle eCall application, based on the existing public-sector E-112 infrastructures and standards!
- ⇒ **Providing opportunities to assure more accurate location information and additional relevant data**
- ⇒ **Upgrading PSAPs to process eCall location reports at the latest in 2007**
- ⇒ **Defining minimum standards on location accuracy**
- ⇒ **Setting requirements for networks, databases and PSAPs**
- ⇒ **Evaluating possible financing and cost analysis for market deployment**

Enhanced security through the location-enhanced single European emergency number (112)



Fundamental "Core" Definitions:

"E-112" service:

an emergency communications service using the single European emergency call number, 112, which is enhanced with location information of the calling user

"Location information":

In a mobile network: data indicating the geographic position of a user's mobile terminal.

In a public fixed network: data about the physical address of the termination point.

Enhanced security through the location-enhanced single European emergency number (112)... (2)



- **The use of the commonly accepted and already approved E-112 regulations and infrastructures:**
 - Provides legal assurance & guarantee for extended applicability in the entire EU framework
 - Serves the majority of the European users
 - Under suitable terms/conditions, it can become a standardised and fully operable solution
 - Ensures pan-European roaming and interoperability
 - Provides opportunities for market exploitation, through interactivity options.

- Technologies for realizing eCalls exist, in various sectors...
- However, vehicle emergency calls differ from the general emergency calls (especially when referred to input, handling and output of data)
- For the EU market, development is based on the "*harmonised*" E-112 emergency services according to the context suggested by CGALIES (Coordination Group on Access to Location Information by Emergency Services)
- Current implementation efforts intend to provide more accurate location information and additional safety information.

- The perspective:

An eCall can be transferred by using many different ways and existing networks/infrastructures...

- Basic Requirements

Each originating network should:

- recognise emergency calls by means of the 'E-112' (and or any other national) number
- generate emergency information and transmit it (properly) to the PSAP
- also transmit the calling line number of the access (CLI)

- *Information should be:*

- (i) forwarded immediately
- (ii) available for retrieval during the call (mainly for "user "location")
- (iii) accessible as long as the emergency lasts.

- The Target:
 1. Development of specifications and of call-routing and handling procedures to allow for wider Pan-European interoperability
 2. Information should be accessed by the PSAPs and the emergency response vehicles, via appropriately designed and secure interfaces, flexible for upgrade.
 3. Promotion of location technologies and applications, especially within mobile cellular networks and satellite location systems

Development of Location Technologies in the Mobile Sector

The currently available network-based solutions:

- ⇒ satisfy a significant proportion of user requirements
- ⇒ are compatible with a great variety of terminal handsets.

- The viewpoint for mobile, location-related services is brightening up significantly...

- Options for higher bandwidths and permanent on-line connectivity extend the range of the services offered...

- Caller location systems in mobile communication networks are expected to become widespread in the coming years...

- ★ **Recent efforts aim to avoid diversity of legal and operational conditions for the public emergency services across Europe**
- ★ **Support of commonly accepted architectures/ infrastructures of neutral & flexible character**
- ★ **Definition of appropriate “open interfaces” between commercial service centers and publicly operated PSAPs:**
 - **to solve reliability and responsibility issues**
 - **to guarantee security and accessibility**
- ★ **Promotion, approval and endorsement of norms & technical regulations**

➤ **Present work is performed in the framework of ETSI/EMTEL (Emergency Telecommunications) to integrate specific solutions into officially recognised telecommunications standards**

➤ **This addresses a broad “spectrum” related to the provisioning of telecommunications services in emergency situations**

It covers specific needs of dedicated resources in order to ensure public safety, for:

- fire fighting units,
- ambulance services
- other health and medical services,
- Law enforcement services
- civil defence & technical disaster teams

Standardization work needs to be performed to adapt the relevant terms to the specificities of an automated call, within the scope of current and expected changes in markets, services and technologies.

The activity brings together a great variety of market players:

- network operators (to ensure call transport),
- emergency authorities (to develop call listening and emergency operation capabilities, especially within PSAPs),
- service providers (to assure the necessary assistance and/or other optional telematics services)
- automotive industry (to promote call initiation capability through in-vehicle equipment of reasonable cost)
- equipment suppliers (to provide appropriate equipment),
- users, etc...

Options and possibilities for:

- Development of sustainable business models
- Exploitation of feasible commercial cases
- Acceleration of wide market implementation
- Reduction of market risks
- Ensuring common specifications and reference design, shared costs and benefits,
- Strengthening targeted finance and investments, incentives,
- Promoting agreements on best practices, etc.

Development of a modern and “optimized” emergency networked infrastructure with:

- **Defined interrelationships between partners,**
- **lowest possible investments,**
- **suitable co-funding schemes,**
- **highest productivity,**
- **tailored pricing scheme dependent on the nature of application/service**
- **and shorter time-frame for implementation...**

GENERAL REMARKS:

- ❑ All related activities are linked to the **New European Telecommunications Framework for e-Communications**.
- ❑ **Interoperability and interfacing** of services and systems are of paramount importance in emergency telecommunications.
- ❑ Transmission lines over which emergency telephone services are connected, should be available without restrictions.
- ❑ **Accuracy, integrity and continuity of communications to and from PSAPs and EAs** would be preserved at the highest possible level, for network security and recovery reasons.
- ❑ *High-quality services should be guaranteed!*
- ❑ Particular "**priority treatment**" should be offered over normal traffic to overpass network congestion situations

Specific requirements for location information:

- Location information should be provided under "*proportionate*" terms regarding all potential users, without any "*discrimination*" as for the quality of the service offered.
- Location information data should be accompanied by a proper "*identification*" of the network on which the call originates, while accurate and up-to-date sources should be kept.
- Fixed public network operators are strictly obliged to make available the installation address of the line from which an emergency call has been made.

The increased level of safety and security must not compromise the principles of privacy.

Rights for life and health protection take precedence over privacy rights.

- The information given in the context of E-112 (i.e. the voice call accompanied by location information) **is not within the generalized "data protection" restrictions** under the European law (Directive 95/46/EC)
- Providers of public communications networks and services may "override" the elimination of the presentation of calling line identification and the temporary denial or absence of consent of a subscriber for the processing of location data, *on a per-line basis*, for entities/organizations dealing with emergency calls (Directive 2002/58/EC)

Availability of service and acknowledgment of information

"Public telephone network operators should make caller location information available to authorities handling emergencies, to the extent technically feasible, for all calls made to the single European emergency call number 112, free of charge". (Universal Service Directive (2002/22/EC))

Adequate information should be provided to the citizens about the existence, use and benefits of E-112 services,

- including details about the way in which their location data will be forwarded to certain PSAPs in the EU
- and how the fair processing of their personal data should be preserved.

Other probable issues:

- Ensuring liability of market players involved...
- Establishing new regulations on protection issues
- Drawing-up specific and detailed rules for the effective handling of emergencies


- ✓ Emergency telecommunications services have been enhanced by the provision of caller location information for the purpose of eCall, based on the use of the European emergency "112" number
- ✓ Relevant perspectives relate to critical network infrastructures, like "public telephone systems"
- ✓ eCall benefits are expected to reduce fatality and injury level, with strong impact in health, insurance and emergency services' costs


Users can encompass a great variety of sectors:

- ✓ security services
- ✓ medical services
- ✓ law enforcement
- ✓ firefighting and rescue
- ✓ civil defense and disaster response

Various requirements have to be taken into account during implementation efforts:

- ✓ "Shared" resources to reduce network congestion
- ✓ Subscriber authentication/identification issues
- ✓ Network interworking & interoperability
- ✓ Priority "treatment" over normal traffic
- ✓ Security and Recovery issues
- ✓ User friendliness for equipment functionality
- ✓ Availability of equipment / low prices

 eCall effort constitutes a good example of what the public and private industry can achieve by working together, in a fully “synchronised” way, to promote their strategy, tactical and operational goals.

 It is a remarkable case of what can be achieved by combining regulation and voluntary measures within an “open”, fully liberalized and competitive market.

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