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Part 1

COMMISSION STAFF WORKING PAPER

IMPACT ASSESSMENT

Accompanying the document

COMMISSION RECOMMENDATION

on suppor for an EU-wide eCall service in electronic communication networks for the transmission of in-vehicle emergency calls based on 112 ('eCalls')

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BACKGROUND

1.1.   General context

This Impact Assessment aims to find the most appropriate solutions to the implementation of the pan-European in-vehicle emergency call (eCall).

Road Safety is one of the major policy subjects within the Transport Policy of the European Union. In 2009 around 35,000 people were killed and more than 1.5 million injured in about 1.15 million traffic accidents on roads in the European Union. This represents approximately 160 billion EUR of cost for society[1].
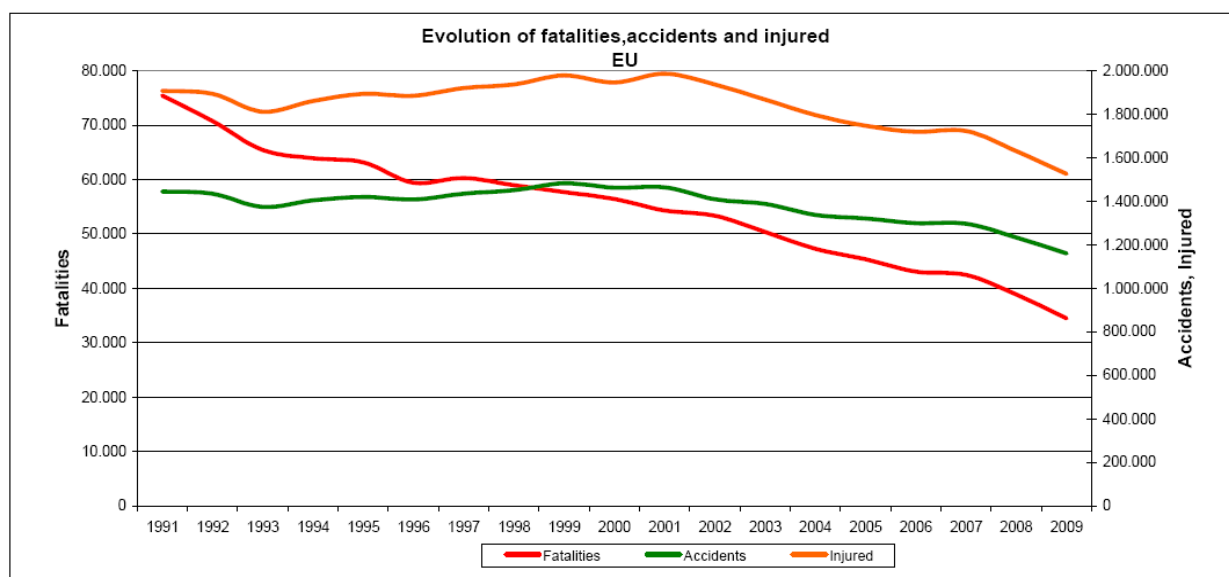
Figure 1: Road safety evolution in the EU (*source: CARE database*)

The EU is highly committed to reducing the number of road accidents (accident prevention or *active safety*), but also in mitigating their consequences when they occur (*passive safety*), and by improving the efficiency of the emergency services and the effectiveness of post-accident medical care (*tertiary safety*). eCall can significantly contribute to the reduction of road fatalities and alleviation of severity of road injuries.

The Commission has proposed, as priority action to mitigate the consequences of the road accidents, the introduction in all vehicles in Europe of an eCall service based on 112[2] and on common pan-European standards developed by the European Standardisation Organisations, ETSI and CEN, to ensure an affordable service that will work seamlessly and in an interoperable way across Europe, thus maximising its benefits.

On 21st August 2009 the Commission adopted the Communication[3] 'eCall: Time for Deployment', in which the status of the initiative to introduce eCall in Europe was explained, and a series of measures to support the voluntary introduction of the eCall service in all new road vehicles in Europe was proposed.

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[1] COM(2001) 370 – 'White Paper on European transport policy for 2010: time to decide'
[2] 112: Single European Emergency Number
[3] COM (2009) 434: eCall: time for deployment

The Communication indicated that if significant progress had not been made by the end of 2009, both in the availability of the eCall device in vehicles, and the necessary investment in the Public Safety Answering Points (PSAP) infrastructure, the Commission would plan to take the following regulatory measures in 2010:

A Recommendation to the Member States (MSs) targeting Mobile Network Operators (MNOs) to support the transmission of the eCalls, including the Minimum Set of Data (MSD) from the in-vehicle systems to the PSAPs

A proposal for a Regulation under the vehicle type-approval legislation for the mandatory introduction of the in-vehicle part of the eCall service in new type-approved vehicles in Europe

The assessment of a potential regulatory measure for the necessary upgrading of the PSAP infrastructure required for proper receipt and handling of eCalls

The deployment of a pan-European eCall service available in all vehicles and in all countries was one of the high priorities identified by the Working Group of experts on Road Safety at the end of 2002. The Commission included the deployment of a harmonised pan-European eCall service as one of the priorities of the eSafety initiative[4], and supported the creation of an eCall Driving Group with participation of representatives of all the stakeholders, to define the requirements of such service. The Commission also funded research projects to proof the concept of a pan-European eCall services and studies to analyse the possible impact of its introduction.

The eCall Driving Group produced a Memorandum of Understanding towards the elaboration of a pan-European interoperable eCall service in Europe (eCall MoU[5]) in 2004, and proposed a roadmap aiming at starting the voluntary introduction of eCall as standard option in all vehicles in Europe by the end of 2009[6]. The eCall Driving Group issued their final recommendations, endorsed by the eSafety Forum in 2006[7], and the Commission requested the European Standardisation Organisations (ETSI, CEN) the elaboration of the necessary common European standards. The Commission also held consultations with representatives of all stakeholders associations involved in the eCall value chain and with the Member States, organising technical and high level meetings.

The European Parliament has expressed on two occasions its support to the introduction of a pan-European eCall service[8] by overwhelming majority, asking Member States to sign the Memorandum of Understanding and the Commission to adopt necessary regulatory measures.

In agreement with the European Parliament, the Council adopted the Directive 2010/40/EU for the deployment of Intelligent Transport Systems, which includes "*the harmonised provision for an interoperable EU-wide eCall*" among the priority actions.

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[4] Commission Communication 2003 (542) on Information and Communications Technologies for Safe and Intelligent Vehicle -1st eSafety Communication-

[5] http://ec.europa.eu/information_society/activities/esafety/ecall/index_en.htm#Memorandum_of_Understanding

[6] EC Communication The 2nd eSafety Communication Bringing eCall to Citizens, COM(2005) 431

[7] See http://www.esafetysupport.org/en/ecall_toolbox/driving_group_ecall/index.html

[8] European Parliament: Titley report 2005/2211(INI) and Gurmai report 2007/2259(INI)

eCall is also a measure included in the Road Safety Action Programme 2011-2020[9], as a way to improve road safety. eCall will also contribute to the new target introduced in the Road Safety Action Programme of reducing the number of injuries in Europe.

20 Member States (Austria, Belgium, Czech Republic, Denmark, Germany, Greece, Spain, Estonia, Italy, Cyprus, Lithuania, Luxembourg, Malta, The Netherlands, Portugal, Romania, Slovenia, Slovak Republic, Finland and Sweden) and 4 Associated States (Switzerland, Croatia, Iceland and Norway) have signed the MoU. Other 4 Member States have expressed their support to eCall and their intention to sign the MoU as well (Latvia, Hungary, Bulgaria and Poland). Ireland has sent a letter to the Commission supporting the mandatory introduction of eCall. Interest to eCall was also declared by Russia and Croatia. United Kingdom has not signed the MoU due to cost-benefit considerations. France supports the private eCall as opposed to regulatory measures (further details in section 5.2.3).

However eCall implementation has been delayed from the initial target date of 2009[10], and risks to suffer additional delays.

Major stakeholders affected by the introduction of eCall (Mobile Networks Operators, Automotive Original Equipment Manufacturers and Public Safety Answering Points) have expressed their acceptance and support to eCall, with the condition that the implementation is undertaken by the three parts in a parallel way and that lead time is allowed.

Consultation and expertise

This impact assessment is based on the extensive contributions by all affected stakeholders, constantly involved in several fora such as the European eCall Implementation Platform (EeIP)[11], the eCall PSAPs expert Group[12] and the eCall Driving Group[13] within the eSafety Forum.

Since 2002, when the group of high level experts on intelligent vehicle safety systems identified eCall as one of the highest priorities to deploy eSafety systems, all types of relevant stakeholders and experts (i.a.: Member States representatives, consumer associations, Public Safety Answering Points representatives, automotive industry, road operators, insurance companies, mobile network operators, standardisation organisations, telecom industry, emergency services) have been providing major inputs to the eCall initiative, and agreed on recommendations for its deployment.

Within the European Commission, the Steering Group for the eCall Impact Assessment (IASG) was set up in March 2010. It included representatives from the following Directorates General: ECHO, ENTR, INFSO, JUST, MOVE, SG and SJ (MARKT, ENV and SANCO were also invited, but they considered the topic not relevant to their competences). The IASG

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[9] COM(2010)389: Towards a European road safety area: policy orientations on road safety 2011-2020
[10] COM(2005) 431: Bringing eCall to Citizens
[11] The European eCall Implementation Platform (EeIP) is the coordination body bringing together representatives of the relevant stakeholders associations and of the National Platforms supporting the implementation of a pan-European in-vehicle emergency call in Europe. Support to the EeIP is one of the measures of the ITS Action Plan. http://www.icarsupport.org/ecall/european-ecall-implementation-platform-eeip/?menu=2
[12] The eCall PSAPs expert Group is a subgroup of Public Safety experts mandated by the Expert Group on Emergency Access (EGEA) to deal with eCall related issues.
[13] The eCall Driving Group is a Working Group within the eSafety Forum composed by representatives of all relevant stakeholders to agree on common requirements for the service. http://www.esafetysupport.org/en/ecall_toolbox/driving_group_ecall/index.html

liaised also with DG COMP. The IASG, mostly attended by ENTR, INFSO and MOVE, met 5 times[14] and provided both valuable contributions from the relevant policy areas and a scrutiny of the draft IA.

The IA is also based on numerous studies on the introduction of eCall that had already been conducted, notably SEiSS[15], STROM[16], E-MERGE[17], AINO[18], eIMPACT[19] and the "Study on the impact of the introduction of eCall in Europe"[20] coordinated by TRL, carried out in 2009. All studies took into due account the involved stakeholders' repercussions and opinions.

1.1.1. *Public consultation*

The public consultation on the implementation of eCall was open from the 19th July to the 19th September 2010.

The public consultation was conducted via the on-line Inter-active Policy Making (IPM) survey, published on the dedicated web-site "Your Voice in Europe". Information on the public consultation were extensively disseminated through stakeholders and also advertised in major websites. The English version of the questionnaire is available in Annex I.

More than 80% of respondents to the public consultation find the eCall system useful and they would like their vehicle to be equipped with eCall. 68% are in favour of the mandatory introduction of eCall and 58% prefer eCall to be handled by public authorities.

These results coincide in the major conclusions with previous consultations such as the Eurobarometer survey on the "Use of Intelligent Systems in Vehicles", in which 70% of the respondents –sample of 25,000 citizens from 25 Member States- found it useful and wanted it to have it on their next car, or the survey among more than 7,600 automobile clubs members from 12 European countries within EUROTEST consortium on different vehicle intelligent safety technologies: eCall was considered the most useful system in the nearby future, more than 92% found it useful and 96% want to have it in their car. 64% of the respondent preferred the service to work under public infrastructure[21] (See Annex X).

Out of total 450 responses to the public consultation, 130 answers have been received on behalf of organisation and 14 on behalf of public authorities. The public consultation also triggered a number of extensive position papers provided by the most relevant parties, which were also integrated in the qualitative analysis.

All respondents on behalf of organisations agree on the usefulness of eCall, which is considered a valuable safety system for the reduction of road fatalities and a potential contributor to the uptake of telematics in the EU. The majority of contributors are in favour of the mandatory implementation of eCall (including MNOs, Users' and Road Safety organisation and suppliers); however other major stakeholders (i.a.: ACEA, the European

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[14] 19th March, 18th June, 22nd July, 8th October, 15th November 2010
[15] Socio-Economic impact of intelligent Safety Systems, 2005
[16] Stuttgart Transport Operation by Regional Management, 1991
[17] Pan-European Harmonisation of Vehicle Emergency Call Service Chain - Final Report, June 2004
[18] Aino Study on the impact of the introduction of eCall in Finland. See www.aino.fi
[19] Socio-economic IA of Stand-alone and Co-operative Intelligent Vehicle Safety Systems in Europe, 2008
[20] "*Impact assessment on the introduction of the eCall service in all new type-approved vehicles in Europe, including liability/legal issues*". TRL and others
[21] Special Eurobarometer 267

Automotive Manufacturers Association) have not taken any position on that because of issues that are not yet clear to them (i.e.: parallel commitment of all relevant parties, costs of the in-vehicle system -IVS-, etc.). Automotive Manufacturers suggest to leave the deployment of eCall to the private initiative. Independently from the policy option, most of the replies stress the importance to ensure coexistence between public and private eCall (currently in the market). It was also emphasized by some stakeholders (i.e. insurance companies) that consumer choice and free competition should be guaranteed, as none of the involved stakeholders should have a market dominant position.

Detailed report and analysis of the public consultation results are available in Annex II. Links to the position papers provided by major stakeholders are also available in Annex V.

PROBLEM DEFINITION AND RATIONALE FOR INTERVENTION

1.1. Problem statement

There are too many road fatalities and severe injuries on European roads. eCall has the potential to reduce the time needed for rescue emergency services to arrive at the place of the accident, and therefore to reduce the risk of deaths and the severity of the injuries.

However, despite its potential, the take-up of the eCall service offered by private companies has been slow, due to the following problems and market failures[22]:

There is a lack of coordination, or collective action, between the major stakeholder groups (mobile networks operators, vehicle manufacturers and public authorities/Public Safety Answering Points). Despite general agreement, each group is waiting for the others to act first.

This results in a lack of upgraded public emergency response infrastructure to handle eCalls, i.e. an insufficient supply of public goods.

In view of these difficulties, private eCall schemes (relying on parallel infrastructures such as private call centres) have so far been very expensive. Market prices currently do not reflect the real costs and potential benefits to society.

Missing markets (service offered only in Member States with clear business case)

A summary of the main problems addressed by eCall and the respective drivers are shown in the table below:

PROBLEMS[23]	DRIVERS
High number of road fatalities and severe injuries	Long response time by emergency services (inter alia)
Delays in alerting emergency services	Manual notification by the vehicle occupants or third parties
Delays in reaching the accident scene	Emergency services can rely only on the indications provided by phone, accurate location of the incident is difficult to establish
Long rescue time at the accident scene	Emergency services are not aware of the vehicle type and other essential details on the accident
Secondary accidents and traffic congestions	Traffic management centres/Road operators not promptly notified

Table 1: Major problems and respective drivers that eCall can improve

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[22] See also section 5.2.1

[23] For scale of the problems and drivers, cf. figures 2, 5 and 8

So far, the take-up of the eCall service offered by private companies has been slow, due to the following market failures:

Market prices for do not reflect the real costs and benefits to society;

Insufficiency upgrade of public emergency response infrastructure.

Missing markets (service offered only in Member States with clear business case)

eCall in brief

In case of a severe crash, an eCall-equipped vehicle will automatically trigger an emergency call. Even if no passenger is able to speak, e.g. due to injuries, a minimum set of data with relevant information about the incident is sent automatically, which includes, *inter alia*, the exact location of the crash site. eCall can also be activated manually. In brief, eCall:

Is triggered automatically by the in-vehicle system[24] in case of serious accident or manually by vehicle occupants

Creates a voice/audio link to the most appropriate PSAP (Public Safety Answering Point) and sends data message (so called Minimum Set of Data – MSD)

The MSD includes the minimum information needed to handle the emergency situation[25], such as time stamp, accurate location (GNSS based) and direction of driving, vehicle identification (VIN), and other information essential to the rescue services.

The German study "STORM" (Stuttgart Transport Operation by Regional Management), showed almost 50% rescue time improvement in rural area, with a net gain of around 10 minutes. Rescue time in urban area would be improved by 40%.
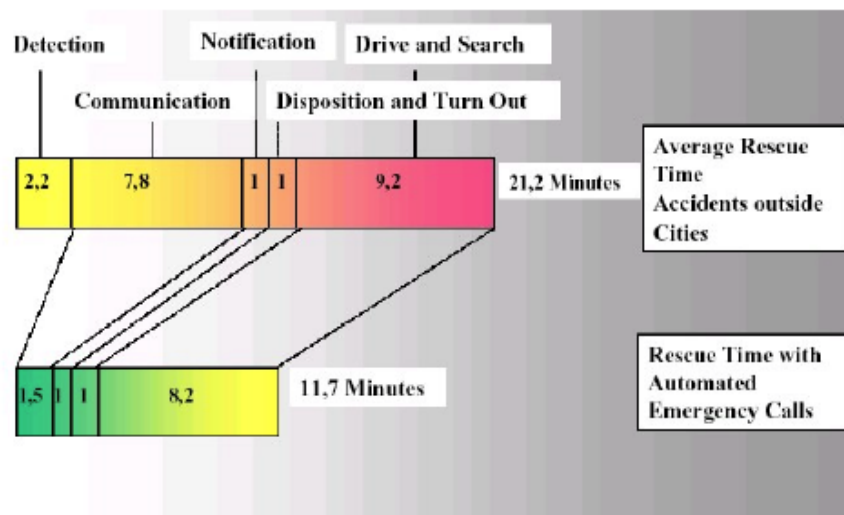
Figure 2: average rescue time (minutes) outside urban areas with and without eCall

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[24] Activation e.g. by the vehicle sensors in a similar way to the airbag.
[25] Complying to the personal data protection principle of proportionality

The PSAPs expert Group within the eCall Driving Group confirmed that the gain in time could go up to 17 minutes[26] in interurban areas.

The deployment of the eCall service requires the following actions from the relevant stakeholders:

Vehicle/equipment manufacturers should include an in-vehicle system capable of triggering the eCalls and gathering and bundling the Minimum Set of Data.

Mobile Network Operators should transmit the eCalls (voice and data) to the emergency call response centres

Member States should upgrade their Public Safety Answering Points in order to handle the eCalls (voice and data)

The full benefits of the eCall service will be achieved when the service will work in all vehicles across Europe in a seamless way.

The cost of road casualties and injuries

Road casualties are often not recognised as a public health problem. However eCall would allow saving of public resources (social security, public health) by reducing the severity of injuries, rehabilitation needs and hospital admission/permanence.

A road accident has a global cost for society, beside the human distress and related issues. This economic impact is a shared burden, including for example emergency operation costs, insurance costs, health costs and lost workplace / productivity costs.

This impact assessment has used for the consideration of the monetary value of road casualties and injuries the recommendations given by the European Road Safety Observatory[27] on the monetary valuation of road accident consequences. More details can be found in Annex IV.

With eCall, emergency services' response time would be reduced by 50% in rural areas and 40% in urban areas, leading to a reduction of fatalities estimated to be between 2% and 10%, and reduction of severity of injuries between 2% and 15%[28], depending on the country considered[29].

Road accidents lead also to congestion. Due to a shorter rescue time, eCall will also reduce the congestion time, because on one side the faster arrival of rescue teams, police and towing firms enables the accident scene to be cleared more quickly, and on the other side, the quickest reporting of the incident to the traffic management centre. This would allow quicker information to other road users so that they can also take the necessary actions to avoid the incidents scene if possible.

Recent studies[28,30] have carried out focused investigations into the possible effects of the introduction of the eCall system in the congestion reduction. The study coordinated by TRL

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[26] See http://www.esafetysupport.org/download/ecall_toolbox/Reports/Appendix_8.pdf

[27] http://erso.swov.nl/knowledge/content/08_measures/monetary_valuation_of_road_safety.htm

[28] "*Impact assessment on the introduction of the eCall service in all new type-approved vehicles in Europe, including liability/ legal issues*", TRL, SMART 2008/55

[29] See studies available on www.esafetysupport.info/en/ecall_toolbox/related_studies/.

[30] E-call en Verkeersveiligheidskansen

has identified a possible reduction in congestion costs in case of accidents, depending on the country, in the range from 3% -UK, 10% -Finland, 17% -The Netherlands, Hungary.

Therefore eCall would be more beneficial in remote areas and during night-time for the safety of road users, whereas in busy roads (during daytime) it would produce more benefits in terms of improving incident management and reducing road congestion and secondary accidents.

Justification for EU intervention – Subsidiarity and EU added value

Road safety is a major concern across the whole of the European Union and all its inhabitants: in the 27 Member States, 500 million citizens use more than 230 million vehicles on over 5 million km of roads.[31]

The pan-European eCall initiative aims at introducing in all vehicles in Europe the minimum functionalities needed to ensure an adequate handling of the emergency calls by the emergency response services. Road journeys across different Member States are currently more than 100 millions annually and they are increasing due to the consolidation of the European Union (free movements of goods, people and services). Action at EU level is needed in order to guarantee interoperability and continuity of the service throughout Europe, which cannot be satisfactorily achieved by single Member States.

Private services exist now that cover several Member States, none of them ensures full EU-wide coverage of the eCall service[32], so that when vehicles travel into countries where the service is not provided by the private party, the service is discontinued. Furthermore, there is not a common solution Europe and wide and the take-up of the service has been slow. After more than ten years since the first introduction of the eCall private service, the market penetration is still below 0.4% of the vehicle fleet. Furthermore some of the services introduced were dismantled due to market failures, leaving the user without in-vehicle emergency call service during the lifetime of the vehicle. See section 5.2.1 for further details.

Moreover, undertaking the action at EU level using common European eCall standards approved by the European Standardisation Organisations (CEN and ETSI), will ensure the efficient provision of the emergency response service across Europe, e.g., for vehicles travelling abroad as well as avoiding market fragmentation (which may happen due to proliferation of national and/or proprietary private solutions implemented in different ways).

The EU-wide eCall, in line with the 112 and E112 deployment, has been conceived in a way to minimise the impact on all the stakeholders in the value chain and distribute it in a fair way (automotive industry, mobile network operators, Member States - PSAPs). Financial and administrative costs for national/regional authorities are foreseen to be minor and commensurate with the objectives to be achieved.

A substantial part of the implementation (organisation of PSAPs) is left to national decisions. The upgrade of the PSAPs infrastructure will be done by the Member States in the way best suited to their national/local architecture, thus respecting the specificities and circumstances applying in each Member State.

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[31] "*EU energy and transport in figures – Statistical Pocketbook 2009*", European Commission
[32] The eCall service is normally offered only in high-end vehicles, bundled with other services and in those countries where the market provide enough business opportunities.

eCall initiative does not exceed the competences attributed to the EU by the "Treaty on the Functioning of the European Union", stated as follows:

art. 91.1 (a) "common rules applicable to international transport to or from the territory of a Member State or passing across the territory of one or more Member States";

art. 91.1 (c) "measures to improve transport safety";

art. 168.1 "Union action […] shall be directed towards improving public health […] obviating sources of danger to physical and mental health";

art. 168.2 "The Union shall […] in particular encourage cooperation between the Member States to improve the complementarity of their health services in cross-border areas";

The proposed legislative instruments have been chosen after consultation with the different services, and taking into account the opinions of the European Parliament and Council.

The proposed actions are coherent with the pan-European nature of the objectives.

Protection of personal data

eCall requirements comply with the Directives 95/46/EC on the protection of personal data and 2002/58 on privacy and electronic communications. It also follows the opinions of the Article 29 Data Protection Working Party[33]. Unless an accident happens or an occupant presses the manual button, the in-vehicle device will be dormant. Thus, eCall will not allow a vehicle to be remotely located unless there is an accident. The call will be directed to Public Safety Answering Points (PSAPs)[34], which will ensure respect of protection of personal data, as it is currently the case for emergency calls. Minimisation of data has been applied when designing the contents of the Minimum Set of Data to be transmitted.

In case the eCall in-vehicle platform is used to provide added value services other than the emergency call (optional choice by the consumer if available), these should be covered by the appropriate contract between the user and the service provider, as it happens today for telematic services offered in the market.

OBJECTIVES

1.1.   General objective

In line with the European Road Safety Action Programme, the initiative aims at reducing the number of road fatalities in the EU and the severity of injuries caused by road accidents.

Nota Bene: Although the immediate beneficiaries of the eCall implementation would be the EU Member States, the benefits of the eCall service are very likely to be extended to neighbour countries (e.g., Norway, Iceland, Switzerland, Croatia, Russia) as some of them have expressed their interest in eCall and in adopting the same standards to guarantee interoperable systems.

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[33] Art. 29 WP Working document on data protection and privacy implications in eCall initiative. 26.09.2006

[34] PSAP is the physical location where emergency calls are first received under the responsibility of a public authority or a private organisation recognised by the government. The most appropriate PSAP is the one defined beforehand by authorities to cover emergency calls from a certain area or for emergency calls of a certain type (i.e. eCalls).

Specific objectives

eCall has been identified as a service that can contribute to the reduction of fatalities in the EU and the severity of injuries, thanks i.a. to the reduction of response time by emergency services. This general objective will be achieved through the following specific objectives:

Improvement of the operation of the emergency services in the accident scene due to the information received

Improvement of incident/road management and therefore

Reduction of secondary accidents

Reduction of congestion and subsequent pollution from road transports

Contribution to the Deployment of Intelligent Transport System (ITS) services and applications applied to road transports, namely in-vehicle telematics applications and services, which could share the common technical resources with eCall.

Operational objectives

The achievements of the specific objectives will be enabled by the following **operational objectives:**

100% of vehicles (M1 and N1 categories)[35] in the EU equipped with an eCall system by 2034

Upgrade of the Public Safety Answering Points with the technical and human resources necessary to handle eCalls in the 27 EU Member States

Support of the eCalls by the telecommunication Mobile Network Operators

These objectives are realistic and achievable.

Consistency with other EU policies and objectives

The deployment of a harmonized EU-wide eCall service is one of the 6 priority actions of the Directive for the deployment of Intelligent Transport Systems in the field of road transport (2010/40/EU).

The deployment of a pan-European eCall system was one of the priorities identified by the eSafety Working Group on Road Safety[36]. eCall objectives are part of the Intelligent Car Initiative[37]. They are included in the European Union Transport policy, namely in relation to the European Road Safety Action Programmes and to the deployment and use of Intelligent Transport Systems (ITS Action Plan) [38]. The objectives are also reflected in the Communication "Towards a European road safety area: policy orientations on road safety

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[35] eCall will be introduced first in passenger cars and light commercial vehicles (categories M1 and N1) for which an appropriate triggering mechanism exists, and later it may be introduced in other vehicle categories, such as motorcycles and heavy duty vehicles

[36] http://ec.europa.eu/information_society/activities/esafety/doc/wg/esafety_wg_final_report_nov02_final.pdf

[37] COM(2006) 59 – 'Raising Awareness of ICT for Smarter, Safer and Cleaner Vehicles'

[38] COM(2008) 886 – 'Action Plan for the Deployment of Intelligent Transport Systems in Europe'

2011-2020"[39], which states: *ITS should contribute decisively to improving the effectiveness and speed of rescue, and in particular the adoption of the pan-European emergency call service fitted to vehicles, eCall".*

According to the Directive 2010/40/EU on the deployment of ITS applications and services – including eCall – shall comply with the following **principles**: be effective, cost-efficient, proportionate, support continuity of services, deliver interoperability, support backward compatibility, respect existing national infrastructure and network characteristics, promote equality of access, support maturity, deliver quality of timing and positioning, facilitate inter-modality, respect coherence.[40] Further details on the eCall compliance with such principles are included in section 5.6.

POLICY OPTIONS

In order to reach the above listed objectives, three policy options have been considered. They are briefly described below, then assessed in details and finally compared.

1.1. Option 1: No EU action

This option assumes no action is undertaken by the EU, thus leaving the initiative to the market, meaning to proprietary in-vehicle emergency/assistance call services (not based on the 112 emergency number). "Private eCall" services were introduced more than 12 years ago, and have shown their effectiveness[41], but their penetration remains below 0.4% of the car fleet. Such services are mainly restricted to high-end cars and are not available in all EU Member States. This will be considered the *baseline scenario* currently in place

Option 2: Voluntary approach

A second policy option consists in supporting the development of common European standards, conducting eCall awareness campaigns and waiting for the Member States and relevant stakeholders to implement eCall voluntarily, relying on the eCall Memorandum of Understanding (MoU)[42] and the common specifications to be approved within the Directive 2010/40/EU. This is the policy so far undertaken by the Commission. .

This bottom-up approach, supported by the Commission since 2003, has not provided significant progress so far and the progress towards eCall implementation remains limited.

Option 3: Regulatory measures

The regulatory approach would make eCall a standard factory equipment installed in all vehicles in Europe, starting by certain categories[43] as well as setting up the framework for

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[39] COM(2010) 389 – 'Towards a European road safety area: policy orientations on road safety 2011-2020'

[40] Directive 2010/40/EU on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport, Annex II

[41] BMW, Peugeot and Citröen have received in October 2010 the EuroNCAP special award for their eCall services

[42] Memorandum of Understanding for the realisation of an interoperable in-vehicle emergency call system in Europe, released on 2005 and signed to date by 20 Member States, 3 other States and more than 100 organisations

[43] Initially eCall could be mandated into passenger cars and light commercial vehicles (below 3.5t) for which appropriate triggering mechanism exit. Later its mandatory introduction may be extended to other categories.

handling eCalls in the telecommunication networks and PSAPs. This approach would make eCall available to all citizens in Europe as an EU-wide service, accelerate the take-up and encompass the full potential of eCall to save lives and mitigate the severity of injuries.

ANALYSIS OF POTENTIAL IMPACTS AND COMPARISON OF POLICY OPTIONS

1.1. What eCall can improve

eCall does not prevent accidents from happening, but improves the efficiency and effectiveness of rescue emergency services.

When emergency services are promptly notified of an accident and they know the exact location of the crash site, they can provide assistance within the "*golden hour*"[44] and therefore reduce the risk of deaths and the severity of the injuries.

The first minutes are the most critical for recovery and severity of injuries. Earlier studies [45] show that approximately 50% of fatalities occur within minutes, 30% within a couple of hours and 20% during the following days and weeks.
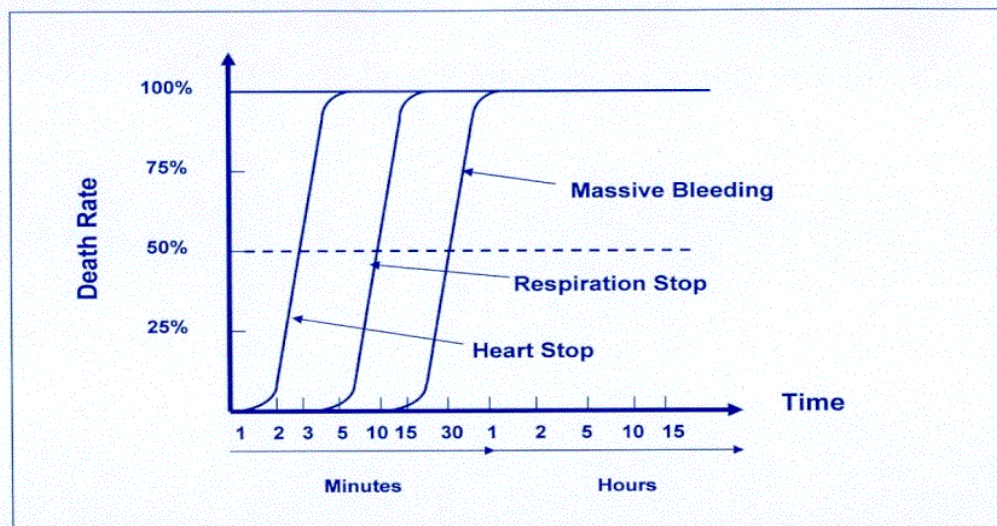
Figure 3: The "Golden Hour" principle[46]

However, emergency services are currently alerted by the people involved in the accident or by third parties that happen to know about the accident. This method often causes unacceptable delays in emergency services notifications. Although the Universal Service Directive[47] requires telephone network operators to make the best possible caller location information available to emergency authorities, severe delays are still encountered because:

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[44] "In emergency medicine, the golden hour refers to a time period lasting from a few minutes to several hours following traumatic injury being sustained by a casualty, during which there is the highest likelihood that prompt medical treatment will prevent death". [*American College of Surgeons (2008)*]
[45] Akella M, Bang C, Beutner R, Delmelle E, Batta R, Blatt A, Rogerson P, Wilson G (2003) Evaluating the reliability of automated collision notification systems. 35:349–360
[46] Source: Dr. Maurice Cara, 1981
[47] See Directive 2009/136/EC amending Directive 2002/22/EC

Long time might elapse from the crash until somebody makes a phone call to the emergency rescue services.

The "best possible caller location" is not always automatically provided to the PSAPs in case of mobile phone calls, but needs to be requested for each emergency call ("pull" method). Furthermore, the "best possible caller location" is not accurate enough in several Member States (e.g.: in France it is the postal code of the Base Transmission Station receiving the call and the PSAP operator is able to get the information within around 10 minutes during working hours and within 30 minutes during night and holidays).[48]

The emergency rescue services are alerted with severe delays especially if:

people involved in the accident are unconscious, in state of shock or unable to contact emergency services. This is particularly relevant in case of accidents involving Powered Two Wheelers (PTW)

the accident occurs in rural or lowly populated areas (56% of fatalities occurred on rural roads in 2008)[49]

the accident involves only one vehicle (ex.: in Belgium 40% of road fatalities are caused by single-vehicle accidents[50])

people contacting the emergency services are unable to provide information on the accident location (especially on inter-urban roads and when travelling abroad)

the accident occurs during night time

Statistics about the above described scenarios are available in Annex VI.

An additional significant figure for accidents occurring at night is the one showing the "Saturday night fever" effect, which repeats in all Member States.
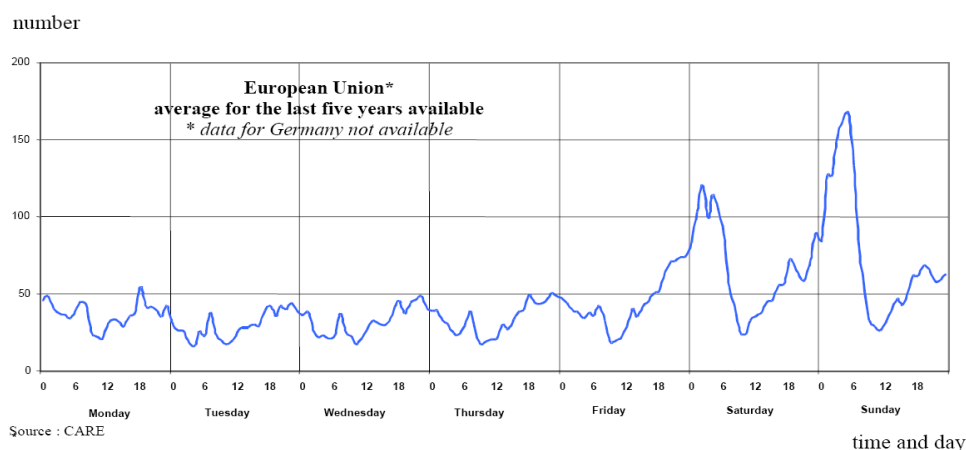
Figure 4: Number of people between 18 and 25 killed in road accidents by time and day - annual average[51]

Such emergency situations become even more critical for those travelling abroad, as most people do not know which number to call in case of emergency or their exact location, as shown in the figure below.

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[48] Results of the COCOM 2008 questionnaire
[49] COM(2010) 389 – 'Towards a European road safety area: policy orientations on road safety 2011-2020'
[50] "Statistiques de sécurité routière 2008", IBSR, Observatoire pour la securite routiere, Bruxelles, 2010
[51] CARE database

■ Always/quite often   □ Sometimes

How frequently can a caller not locate the accident site sufficiently? (N=181) — 53% (95), 37% (67)

How frequently does a caller mislocate the accident? (N=181) — 7% (13), 59% (106)

How frequently do the rescue units request additional location information while driving to the scene of accident? (N=181) — 56% (101), 36% (65)

How frequently do the rescue units get lost because of insuffient or incorrect location information? (N=180) — 2% (3), 21% (37)

How frequently are there delays in arrival at the accident site because of insuffient or incorrect location information? (N=179) — 4% (7), 30% (54)

Figure 5: Assessment by PSAP operators of the received location information[52]

In 53% of the cases the caller cannot locate the accident site sufficiently, and in some 56% of the accidents this results into need or request of additional information. In exceptional cases this may lead into sending the units to wrong locations. All this results into additional delays for the emergency services to arrive to the incident scene that could be avoided with the eCall system.

"eCall provides benefit to road users travelling abroad who may be unfamiliar with the roads and their exact location. eCall also allows emergency calls to be made without language difficulties by virtue of the digital data. This is likely to reduce misunderstanding and stress."[53]

There are over 100 million cross-border road trips per year in the EU which will benefit from an interoperable eCall service working seamlessly across the EU Member States. Citizens travelling abroad will profit more of the eCall service benefits, such as the transmission of the exact location of the accident, as it is more probable that the occupants of the vehicle ignore it. Problems with local languages would also be reduced by the harmonised use of the Minimum Set of Data.

Description of Option 1: No EU action

Private in-vehicle emergency call services started to be introduced in Europe by 1999. Most of them are bundled to other telematics services (i.e., breakdown calls, assistance, navigation and guidance). These services use private call centres to handle the calls, which will contact the PSAPs in case of identifying an emergency case. Therefore, when a private in-vehicle emergency/assistance call is triggered – manually or automatically – the in-vehicle system calls a private number of a private service provider. Data are normally sent using SMS.

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[52] "In-depth evaluation of the effects of an automatic emergency call system on road fatalities", European Conference of Transport Research Institutes (ECTRI) 2009

[53] "Impact assessment on the introduction of the eCall service in all new type-approved vehicles in Europe, including liability/ legal issues", SMART 2008/55, page 245

Private in-vehicle emergency/assistance call services have so far reached a penetration of ~0.4%.

Vehicle Manufacturer	Brand	Private eCall available
BMW	BMW	√
	Mini	
	Rolls-Royce	
Chrysler	Chrysler	
	Jeep	
Daimler	Maybach	
	Mercedes-Benz	
	Smart	
Fiat Auto	Alfa Romeo	√
	Ferrari	
	Fiat	√
	Lancia	√
	Maserati	
Ford Motor Company	Ford	
	Mazda	
	Volvo	√
General Motors	Cadillac	
	Chevrolet	
	Opel	
	Saab	
	Subaru	
	Vauxhall	
Honda	Honda	
Koream Brands	Daewoo	
	Hyundai	
	Kia Motors	
	Ssang Yong	
PSA – Peugeot Citroen	Citroen	√
	Peugeot	√
Porsche	Porsche	√
Renault – Nissan	Nissan	
	Renault	
Tata Motors	Jaguar	
	Land Rover	
Toyota	Lexus	
	Toyota	
Volkswagen Audi Group	Audi	
	Bentley	
	Seat	
	Skoda	
	Volkswagen	

Table 2: Brands of vehicle manufacturers offering private service eCall in Europe[54]

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[54] "The complete guide to Telematics in Europe and the USA" SBD, 2010 (SBD/TEL/2900)

1.1.1. Cost of implementation

The main costs for the introduction of a private eCall service are as follows:

Setting up (if not already done) and maintaining private call centre(s) with staff trained in emergencies handling and all the other services offered, offering 24 hours service, 7 days /week. The personnel of the service providers has to ensure that they have the right "long" numbers (E.164) and the geographic boundaries of all the PSAPs regularly operating in the country. These private call centre(s) normally serve also to attend other calls related to added value services (e.g., breakdown calls, real time navigation).

Data are normally transmitted by SMS in Europe (in USA they are transmitted by in-band modem) and thus, appropriate procedures need to be used to ensure their timely delivery, (e.g. extracting the SMS from the mobile telecom networks before arriving to the mobile switching centres), following a different path. This may imply additional private parties.

Decoding and matching the data with the phone calls for the operator. This may imply additional private service providers.

The communication costs to the Mobile Network Operators (normally annual fees).

To ensure a full deployment of eCall in the EU, the private service providers should create a similar infrastructure in all Member States, as normally the PSAPs accept only calls coming from the same country (with some exceptions, i.e.: Belgium, Luxembourg and the Netherlands are all served from a common centre for the PSA system).

Manufacturer	eCall coverage		
	Telematics service provider	Number of countries where eCall is sold	Number of countries with additional roaming coverage
BMW	ATX	4	2
Fiat	TIM	3	-
PSA	IMA	9	-
Volvo	WirelessCar	11	3

Table 3: European coverage of Private eCall[55]

If the eCall service would be deployed based on private solutions, to ensure that all the vehicles are equipped and served, every vehicle manufacturer (PSA, Volvo, BMW, Daymler, Renault, Toyota, VW Group, etc.) may need to deploy the whole infrastructure, as they do not normally share call centres.

FIAT	BMW	Citroën-Peugeot	Jaguar	Volvo
Blue&Me nav	Assist&Teleservice	eTouch	Watch	onCall
700€[56]	820€[56]	290€	930€[56]	1580€

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[55] Source: SBD, 2008. Other private eCall schemes are offered by companies other than OEMs (e.g.: insurance companies, user clubs) based normally on an initial price for aftermarket equipment plus annual subscription.

[56] The annual subscription over lifetime of the vehicles should be added to this initial amount.

Table 4: Pricing models for Private eCall[57]

Due to the high maintenance costs, some private eCall services have been dismissed in Europe (i.e., Renault – *Odysline*, Ford/Opel – *OnStar*, Daimler – *TeleAid*).

These developments have shown a <u>market failure</u> issue, as:

-   Market prices are in general affordable to a limited number of users

-   No EU-wide coverage (private services not available in all Member States)

-   Difficulty to maintain PSAPs databases with the emergency response call centre phone numbers (E.164) and geographical areas served[58].
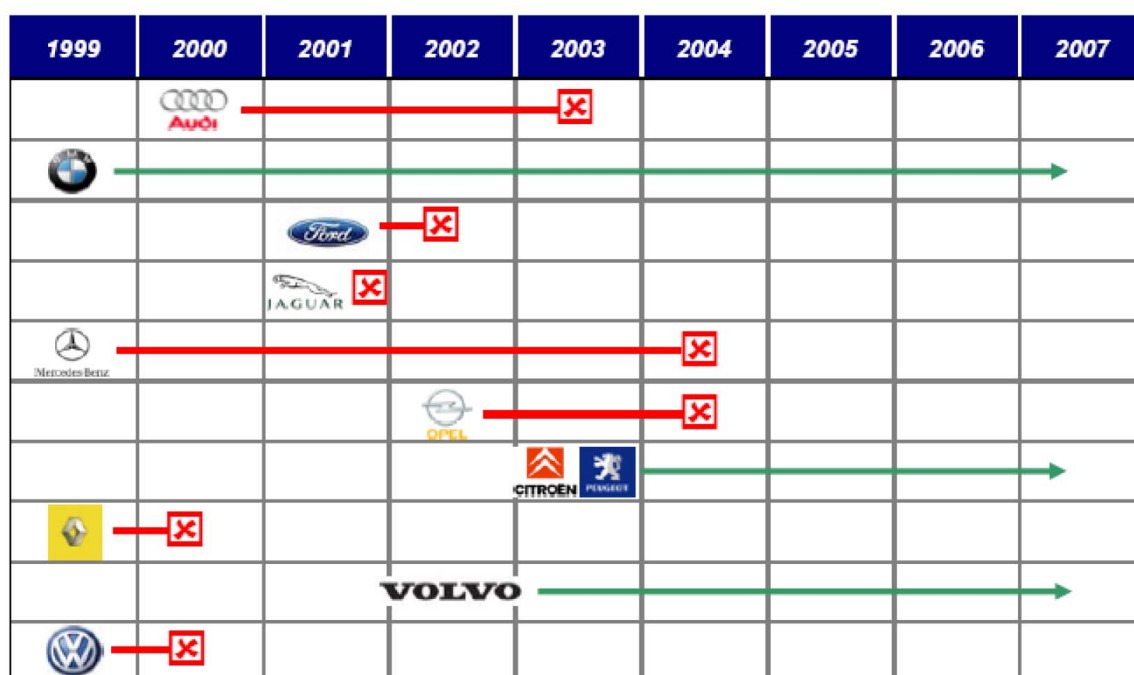
Figure 6: Implementation and interruptions of private eCall service in Europe[59]

Advantages

The main advantage of these services is the provision of added value services usually provided by the private service providers. It should be noted that for the other two options the same or other service providers may provide the same or different/additional services also by keeping the call centres to provide the added value services (for which they get revenues) while migrating the private eCalls into 112 eCall service, so saving resources and avoiding liability issues.

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[57] "The complete guide to Telematics in Europe and USA", SBD/TEL/2009

[58] E.164 is an ITU-T recommendation which defines the international public telecommunication numbering plan. Private Call Centres cannot contact the PSAPs by dialling 112 –e.g., the private call centre may be placed in a different geographic area than the PSAP serving the accident location-, thus they need to use the "long" E.164 number of the most appropriate PSAP.

[59] Source: SBD, 2008

The private call centres may filter the calls and transfer only the real emergencies to the PSAPs (it should be noted this may also be done through intermediate call centres – PSAPs 1 – in case of public 112 eCalls) for the other two options.

The occupants may be served in their local language (normally the language of the country where the vehicle is registered)

The use of SMS for the transmission of the data will imply less transmission power (control channel), thus better coverage.

Limitations

Using SMS implies that the coverage may be limited to the home network to which the SIM is registered and to those networks with roaming agreement. In other networks timely delivery may not be ensured.

For the time being, Mobile Network Operators do not have a problem with the limited number of SMS extracted from the networks that are needed for the limited fleet of vehicles equipped with the private eCalls that follow special paths, but it is not clear that this approach could be followed when introduced in millions of vehicles needed for full penetration of eCall. SMS suffer access restrictions when outside the home network (i.e., international roaming). The delays in roaming conditions to deliver SMS may be multiplied. The introduction of one or several intermediate call centres introduces delays in the handling of the calls.

The operators from the private call centres that need to make the first qualification of the call may not be trained to handle emergency situations in the same way than the PSAP operators.

It should be noted that the different countries are establishing different rules for the PSAPs to receive the information about the accident from the private call centre. For example, in the United Kingdom the data should go via the private call centre whereas the call should reach directly the UK PSAP1. In other countries the data are communicated to the PSAPs operator via phone call, and confirmed via fax or email, the type of data depending on the country.

The emergency call will not reach the PSAP if the in-vehicle system is outside GSM coverage of the Mobile Network Operator providing the service or the Mobile Network Operator with roaming agreement in case of travelling outside the home country of the vehicle.

There is a concern regarding safeguarding privacy (handling of private data by third party service providers, permanent tracking of the device), as shown by the replies to the public consultation.

Furthermore, appropriate measures in case of failure (e.g., bankruptcy) of one of the private partners in the value chain need to be considered.

The answers to the eCall public consultations have shown that the representatives of users advocate for universal services in all vehicles in line with the right of all citizens to road safety and public health.

Description of Option 2: Voluntary approach

Policy option 2 would consist in the voluntary deployment of a pan-European eCall service by the concerned stakeholders, supported by the signatures of the eCall Memorandum of Understanding and the adoption of the common specifications within the Directive

2010/40/EU. This service would piggy-back on the E112 service and the common standards developed by the ESOs (ETSI and CEN)[60] and may coexist with eCall proprietary services.

1.1.1. Cost of implementation

For Option 2, while the eCall implementation costs to upgrade the mobile phone networks and to upgrade the PSAPs infrastructures will be the same as for the Option 3, the benefits will be reduced significantly, as only a portion of the car fleet will be equipped.

Advantages

Using the 112 number ensures EU-wide coverage. 112 calls enjoy priority in the mobile phone networks. In case of insufficient coverage in the home network, the device will normally register in whatever network is available. The emergency calls go immediately to the PSAPs operators, specialised in dealing with emergency situation, and applying strict privacy protection protocols. The devices are not permanently tracked.

The Commission requested ETSI MSG and the 3GPP to standardize the eCall service. For the eCall data transfer, an in-band modem solution has been identified by ETSI as the most suitable technology that fulfils all eCall requirements [61] after having analysed different possible technologies[62].

Data is received by the same operator that receives the voice call. There is no problem to maintain the PSAPs databases.

The MoU has been signed by 20 Member States, 3 associated States and more than 100 organisations, including ACEA and GSMA Europe. The voluntary approach will not require regulatory procedures, thus continuing the bottom-up approach.

Limitations

The voluntary approach maintained up to now has not shown the expected progress towards the introduction of the pan-European eCall service in all vehicles. Vehicle manufacturers have not changed their position and are only willing to offer eCall as an option in some models, while they wait for the Member States to move first, and fearing fragmentation of the market if some Member States refuse to upgrade their PSAPs. On the other hand, Member States do not want to invest in upgrading their PSAPs if it is only to offer services to a limited number of vehicles, normally high-end vehicles. This may reduce the benefits of economies of scale drastically. Mobile Network Operators have declared their willingness to support public eCall provided that car manufacturers and Member States will equip their vehicles and PSAPs to handle the eCalls.

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[60] See list of pan-European eCall related standards in
http://ec.europa.eu/information_society/activities/esafety/doc/ecall/annex_standard.pdf
[61] Options for eCall MSD signalling - 21 April 2006 (GSMA Europe) and Liaison Statement M-07-065 from ESTI MSG regarding suitability of proposed eCall solution.
[62] The following options were considered: SMS, CS Data, UUS, USSD, DTMF, and in-band Modem, being in-band modem the solution retained as the one satisfying the eCall requirements and that could be implemented in a cost-efficient way. ETSI MSG evaluated more in depth other two technologies on top of the in-band modem. The first solution was based on the use of SMS, which could not guarantee to meet the timing requirement (although it was recognized that the SMS technology is used by existing private solutions). The second solution was based on CTM and could not meet the timing of 4 seconds for the reception of the full MSD by the PSAP.

It is difficult to ensure parallel action from the main three stakeholders (vehicle manufacturers, mobile network operators and Member States/PSAPs). Some Member States may refuse to equip their PSAPs to handle eCall, in that case only the voice call would be received. The reasons why some Member States refuse to sign the MoU may vary, for instance:

France: The official position is that the private emergency call, currently offered in France, is sufficient to the national needs of rescue services and the obligation of exclusive use of a pan-European eCall is considered inefficient, expensive and contradictory with the principles of the Directive 2010/40/EU[63];

UK's decision is depending on the cost-benefit analysis of the system, as explained in the official position[64];

Ireland is in principle in favour of the mandatory introduction;

Some organisations (including major stakeholder like ACEA – see Annex V), despite the signature of the MoU and the declared full support to the eCall initiative, are reluctant in undertaking important steps, as they wait for higher commitments from other stakeholders and/or more certain implementation of eCall in the near future.

The emergency call will not reach the PSAP if the IVS is outside GSM coverage. In this regard, GSM Association Europe has declared a GSM geographical coverage of 99% of the EU territory with at least one operator.

eCall as an option does not offer the same level of economies of scale as Option 3, thus increasing the price of the in-vehicle system[65], reducing its demand and slowing down its penetration.

Description of Option 3: Regulatory measures

This option will mean parallel regulatory measures to mandate the introduction of eCall systems in all new type-approved vehicles starting by certain categories, to ensure the support of the mobile network operators to the eCalls, and to ensure appropriate handling of the eCalls by the PSAPs in the Member States, as indicated in the Communication 'eCall: Time for Deployment' (COM (2009) (434). This service would piggy-back on the E112 service and the common standards developed by the ESOs (ETSI and CEN)[60] and may coexist with eCall proprietary services. The regulatory measures would consist of:

1. New regulation to include an additional requirement within the motor vehicle type-approval regulatory framework[66]; this will imply mandatory introduction in new vehicle types, taking into consideration Art. 114 of the TFEU.

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[63] As stated in the letter of 26/04/2010 from D. Bussereau to Commissioner S. Kallas
[64] "We are supportive of technologies that improve road safety, but the benefits of each technology have to be meaures against the cost of their implementation. In the case of eCall we have not been able to establish a positive benefit to cost case for mandatory deployment in the UK"
[65] TRL study, estimated cost of in-vehicle system in case of option 2, ~ 450 €
[66] Directive 2007/46/EC establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles

2. Recommendation to Member States targeting Mobile Network Operators for the support of the eCalls in their networks within the framework of the Universal Service Directive;[67] taking into consideration Art. 114 of the TFEU.

3. Approval of common specifications and, if necessary, a proposal for a Directive on the implementation of eCall, addressing mainly the necessary upgrade of the emergency response services, within the framework of the Directive on ITS implementation[68], taking into consideration Art. 91 of the TFEU.

The eCall regulatory measures would mean:

The provision of eCall service to all EU road users, in all EU territory (and where possible at its external borders) and in all classes of vehicles (starting by certain categories).

The public investment to upgrade the PSAPs will provide service to all European citizens.

The support of the Mobile Networks Operators to the eCall service.

Different sub-options could be envisaged regarding the above mentioned regulatory approach, such as mandating only the upgrade of the PSAPs and the support of the eCalls by MNOs, while leaving it up to the buyer whether to opt for an eCall service (public or private). However the representatives of the respective major stakeholders (automotive manufacturers, MNOs and PSAPs) have rejected this solution, calling for a parallel action of the three of them for an effective implementation of the eCall service; otherwise it may lead to investments from some stakeholders without actual implementation of the service. Furthermore this could also lead to staggered introduction of the eCall service, with the risk of market fragmentation.

1.1.1. *Cost of implementation*

For option 3, the implementation costs can be summarised as follows:

Cost for upgrading the PSAPs and their operation, charged to Member States

Cost for implementing the eCall discriminator[69] and handling the calls, charged to mobile network operators

Cost to equip all type-approved vehicle with eCall system, charged to automotive industry and therefore to the user

Advantages

Using the 112 number ensures EU-wide coverage. 112 calls enjoy priority in the mobile phone networks. In case of insufficient coverage in the home network, the device will normally register in whatever network is available. The emergency calls go immediately to the PSAPs operators, specialised in dealing with emergency situation, and applying strict privacy protection protocols. The devices are not permanently tracked.

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[67] Directive 2002/22/EC on universal service and user's rights to electronic communication networks and services

[68] Directive 2010/40/EU on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport

[69] Approved by 3GPP, the eCall discriminator ('eCall flag') is included in Release 8 of the technical specifications with which the mobile telecommunications systems must comply. The eCall discriminator will differentiate between 112 calls made from mobile phones and eCalls, and also between manual and automatically triggered eCalls.

The Commission requested ETSI MSG and the 3GPP to standardize the eCall service. For eCall data transfer, an in-band modem solution has been identified by ETSI as the most suitable technology that fulfils all eCall requirements after having analysed and tested different possible technologies[70].

The standard solution developed by ETSI (use of in-band modem technology) for the transmission of the eCall data and voice (simultaneously) can be run in different automotive telematic platforms, allowing vehicle/equipment manufacturers to propose their own technical solutions. This technology can also be used to provide some added value services[71]; however equipment/vehicle manufacturers are free to choose which technological solution they want to use for their added value services (SMS, GPRS, 3G, etc.). Both solutions can run in the same platform with a minimum additional cost (in-band modem for eCall and other technologies for added value services).

Using the common standard solution developed by ETSI the data from the vehicle is received by the same operator that receives the voice call. There is no need to maintain and update the PSAPs contact number and geographical boundaries databases.

The maximum impact in terms of reduction of fatalities, severe injuries and congestions will be achieved sooner.

Economies of scale are achieved at maximum level. There is no risk of fragmentation of the markets.

Mandatory introduction of eCall through regulation may improve the business case of automotive industry on in-vehicle telematic services. It might be an opportunity for the European industry, as having the eCall system in all vehicles will enable both vehicle manufacturers and private service providers to share common technical resources with the eCall platform and/or to offer added value services, provided that their deployment does not imply that competition with other service providers is distorted.

This prospect will help the EU to gain a competitive advantage over other geographical regions in the in-vehicle telematics sectors. The reason is that eCall would include some of the basic functionalities of a telematic system, which could allow automotive industry to include more connected-car functionality.[72]

Connected car applications are rapidly emerging as drivers and passengers increasingly expect mobile communication services to be available in the car. The US region is currently leading in the deployment of connected car or telematics applications with about 50% of autos sold having telematics, while most of the automotive manufacturers have not deployed such system within the EU. However, the eCall regulation is likely to improve the EU's position. Most automotive manufacturers are likely to build more services on top of the eCall systems, which will provide better opportunities for telematics hardware and software systems suppliers in Europe. The eCall regulation will provide the impetus for automotive manufacturers to implement applications such as remote Electronic Control Units diagnostics and remote software management. It will also provide a platform for private and public operators to implement intelligent transport services applications and services, such as

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[70] Options for eCall MSD signalling - 21 April 2006 (GSMA Europe) and Liaison Statement M-07-065 from ESTI MSG regarding suitability of proposed eCall solution.

[71] Some vehicle manufacturers (e.g.: Ford, BMW) are using in-band modem solutions in their in-vehicle telematic services in the USA.

[72] "*The competitiveness of the European automotive embedded software industry*", Joint Research Centre – Institute for Perspective Technological Studies, 2010

electronic tolling, hazardous goods tracking, digital tachograph, pay-as-you drive, dynamic navigation, stolen vehicle tracking systems, etc[72].

Automotive suppliers, including also software suppliers, have called for the mandatory introduction of eCall as the opportunity to kick-start the big scale deployment of in-vehicle telematics services in Europe.

A great variety of GNSS applications can today be found in transport and this is expected to significantly increase. Just to name two, traffic management is improved through GNSS road tolling and real-time travel information is provided directly to the driver to avoid congested areas. The introduction of the eCall system in the vehicles could also contribute significantly to the deployment of a European market for GNSS applications, widely promoted by the European Commission which has recently (June 2010) adopted an Action Plan for the development of the applications of GNSS. Intelligent Transport System for Road is one of the main focus of this Action Plan.

Limitations

The system operates with the single European Emergency number, 112, which means that in principle the system might not function outside the EU territory in those countries that do not recognise 112 as an emergency call; however if the networks recognise a standardised emergency call number (e.g., 911) they may recognise 112 as well [73].

Driving through different countries may mean that the PSAP operator connected in the event of an accident may not speak the same language as the vehicle occupants, although multilingual handling in the 112 service is being reinforced in the EU; moreover, the Minimum Set of Data will provide electronic data about the accident, which will be displayed in the PSAPs operator language.

The emergency call will not reach the PSAP if the IVS is outside GSM coverage. In this regard, GSM Association Europe has declared a GSM geographical coverage of 99% of the EU territory with at least one operator.

The PSAPs may receive an increased number of false calls, mainly from manual calls. However, this is a normal situation to the PSAPs, as the volume of possible false calls can be assumed in the standard operation of the PSAPs (see Annex III). Moreover, the eCall can be received on specialised call centres under public delegation (PSAP1) that will filter the false calls. On the other hand, as the PSAP will be able to identify the vehicle in distress, it may reduce the number of adjacent calls (i.e. it may accumulate several calls related to the same accident into the real emergency call).

Assessment of policy options against criteria

Regarding the option of not intervening (policy option 1), the proprietary in-vehicle emergency call services have proved their benefit, but their market penetration is very slow, restricted mainly to high-end cars (due to its high price) and only certain countries in Europe (where business case is higher). Moreover the emergency response services will need to interface with different proprietary services, adding complexity to the service. All vehicle

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[73] Nota Bene: A 112 call is recognised by a mobile phone network as TS12 emergency call. Mobile phone networks complying with 3GPP standards may recognise 112 calls as emergency calls in countries using emergency numbers other than 112, and handle them like local emergency calls.

manufacturers will need to implement their own private call centres and assume liability of handling the emergency calls.

The voluntary approach (policy option 2) would lead to the introduction of the eCall service in Europe, but at slow speed. The commitment of industry to offer eCall as an option in all vehicles of certain categories is a positive step forward, and would, with time, increase the penetration rate of the service. However, by making eCall only an option there would not be the same economies of scale, which could increase its price, reduce demand and curb its penetration and consequently its benefits.

There is a risk of market fragmentation, as it is not ensured that all Member States will upgrade their emergency services to handle eCalls at the same time; not all the citizens will benefit from the costs of upgrading, but only those that will buy the option. Upgrade of the telecom networks in all the countries cannot be ensured either.

The regulatory approach (policy option 3) would mean making eCall standard factory fitted equipment installed in all new vehicles in Europe, starting with certain categories[74], and would provide a framework for handling eCalls in telecommunications networks and PSAPs, based on existing regulations and common European standards and specifications.

This approach would make eCall available to all citizens in Europe, accelerate take-up and unlock the full potential of eCall to save lives and mitigate the severity of injuries. Furthermore it is expected that the certainty created by the regulatory approach will accelerate the introduction of eCall systems by automobile/equipment manufacturers, thus fostering the introduction of the service even before it becomes compulsory, and at the same time stimulating the telematic services market and incorporation of GNSS/Galileo receivers in Europe, which would lead into indirect benefits.

As explained in the COM (2009) 434, the mandatory introduction of eCall would not mean that the private proprietary eCall services need to be dismantled. EU-wide eCall based on 112 and private eCall services (also known as TPS-eCall) can coexist. In Member States where there is an agreement to support proprietary eCall services in line with the quality of service of the pan-European eCall (as described in the relevant standards), the vehicle manufacturer would be free to provide their private service. In any case, the provision of the EU-wide eCall service, based on 112, must be ensured when the vehicle enters into a Member State where there is no agreement to support that proprietary eCall service.

Whether or not a buyer of a vehicle opts for the private eCall solution, the vehicle must be equipped with the 112 eCall service to ensure continuity of the service EU-wide along the lifetime of the vehicle.

When eCall is fully deployed across Europe, the providers of proprietary eCall services can also migrate to using the pan-European eCall, i.e. in-vehicle system will call the 112 number for emergencies while all other services provided stay intact, calling the service provider. This means that, in case of option 3, there will not be distortion of the competition as the vehicle manufacturers and the service providers will still be able to provide added value services, either adding eCall to their offer (in agreement with the concerned Member States) or separating eCall (routed to 112) from the added value services.

The eCall public consultation showed that the majority of respondents (57%) advocate for

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[74] eCall will be introduced first in passenger cars and light commercial vehicles (categories M1 and N1) for which an appropriate triggering mechanism exists, and later it may be introduced in other vehicle categories, such as motorcycles and heavy duty vehicles.

legislative measures while 24% consider that there is no need for legislative measures. Furthermore 68% of the respondents consider that eCall should be mandatory in all vehicles, while 19% disagree with this statement.

	Policy Option 1 **No EU action**	**Policy Option 2** **Voluntary approach**	**Policy Option 3** **Regulatory measures**
Scale of implementation	0 (0) Limited penetration (normally to high range vehicles) (0) Benefits for those buying the option (less than 0.4% penetration of the EU car fleet after 10 year) (0) Penetration only in major markets	+ (+) Reduced penetration (starting by high-end vehicles, where price of the service will be reduced in proportion). (+) Benefits for those buying the option (+) Different level of implementation in MS	++ (++) Full scale. (++) Benefits for all users, (available in all class of vehicles starting with certain categories -passenger cars and light commercial vehicles-). (++) eCall available in all EU Member States.
Speed of implementation	0 Very slow: weak business case.	+ Slow, as many stakeholders are not willing to commit until the other stakeholders are not equally committed.	++ Fast, as all stakeholders are bound by the same legislation.
Risk(s)	0 Lack of willingness of users to pay Different proprietary systems in each Member State Private parties may decide to stop the service Some Member States may refuse to implement it	0 Lack of willingness of users to pay Market fragmentation. Unbalanced commitment from the different stakeholders Some Member States may refuse to implement it	++ Delay in the application of the EU legislation .

NOTE: + means less risks

	Policy Option 1 **No EU action**	**Policy Option 2** **Voluntary approach**	**Policy Option 3** **Regulatory measures**
Costs implementation	0 (0) None for public authorities. (0) None for Mobile Network Operators. (0) Very high for individual users.	- (-) Upgrade of the PSAPs for public authorities in Member States supporting the service. (-) eCall flag in all MNOs networks (+) High for individual us (high economies of sca not attained)	- (-) PSAPs upgrade for public authorities (-) eCall flag in all MNOs networks (++) Low for individual users due to economies of scale.

NOTE: - means more costs

Table 5: Assessment of policy options against criteria

Note: The policy option 1 is considered the baseline scenario and attributed a 0. The impacts for the other 2 options are considered negative (-,--) or positive (+,++) in comparison with the baseline scenario

Overall impact of policy options

	Policy Option 1 No EU action	Policy Option 2 Voluntary approach	Policy Option 3 Regulatory measures
Impact on operational objectives: - 100% eCall penetration; - % of PSAP upgraded to handle eCalls;	(0) Lowest penetration (eCall as option in some type of vehicles) (0) Only minor upgrade of the PSAPs needed. (0) Different protocols (0) Handling of the data normally by traditional methods (phone call, fax)	(+) Reduced penetration (eCall offered as an option) (-) Some countries may not upgrade the PSAPs to receive the eCall. (+) Same European protocols (+) Electronic Handling of the data *(but stakeholders (OEMs, MNOs) may wait for the upgrade of the PSAPs before upgrading their infrastructure)*	(++) Full penetration in passenger cars and Light Duty Vehicles within 16 years (+) All PSAP infrastructures upgraded in all MSs (+) Same European protocols (+) Electronic handling of the data
Impact on specific objectives: - Reduction of road fatalities - Reduction of severe injuries - Reduction of congestion	(0) Lowest penetration, lowest impact on the 3 specific objectives	(+) Reduced penetration, mid impact on the 3 specific objectives	(++) Highest penetration, highest impact on the 3 specific objectives
Economic impact	(0) Highest price for consumers for the in-vehicle device (0) Market segmentation (0) Lowest price for the PSAPs and MNOs (0) Reduced introduction of new services and applications (0) Competitive position of automotive and telecom EU industry offering the service	(+) Less economies of scale: higher price for consumers (+) Possible market segmentation (MSs not supporting eCall) (-) Compliance costs imposed to PSAPs and MNOs (+) Facilitate the introduction of new services and applications (+) Competitive position of automotive and telecom EU industry	(++) Lowest price for consumers (++) Full EU coverage (-) Compliance costs imposed to PSAPs and MNOs (++) Facilitate the introduction of new services and applications (++) Competitive position of automotive and telecom EU industry
Social impact	(0) Unequal access to automatic in-vehicle emergency call services. Only a limited number of citizens will benefit from the service (0) Emergency call in own national language (of the country where the vehicle is registered) (0) Additional delays to reach the emergency services (0) Handling of emergency calls by private operators (0) Personal data controlled by private parties (0) Provision of proprietary	(+) Unequal access to automatic in-vehicle emergency call services. Only those that will buy the eCall option will benefit from them (-) Linguistic handling of emergency call as any 112 call (more or less effective depending on the country/region) (+) Direct access to PSAPs (+) Handling of emergency calls by public safety trained operators (+) Personal data controlled by Public authorities (+) Interoperable and harmonised provision of seamless service	(++) Access to automatic in-vehicle emergency call services for all (-) Linguistic handling of emergency call as any 112 call (more or less effective depending on the country/region) (+) Direct access to PSAPs (+) Handling of emergency calls by public safety trained operators (+) Personal data controlled by Public authorities (++) Interoperable and harmonised provision of seamless service EU-

	services in covered countries (0) Improved prevention of fire, explosions and accidents (limited scale)	wherever supported by MSs (+) Improved prevention of fire, explosions and accidents (reduced scale)	wide and beyond (++) Improved prevention of fire, explosions and accidents[75]
Environmental impact	(0) Improved incident management (limited scale) (0) Reduction of energy consumption and CO_2 emissions (limited scale)	(+) Improved incident management (reduced scale) (+) Reduction of energy consumption and CO_2 emissions (reduced scale)	(++) Improved incident management[76] (++) Reduction of energy consumption and CO_2 emissions[77]

Table 6: Overall impacts of each policy option

Analysis of policy options on the principles of the ITS Directive

The principles for the selection and deployment of ITS applications and services are listed in the Annex II of the Directive on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport (Directive 2010/40/EU). These measures shall:

(1)   Be Effective – make a tangible contribution towards solving the key challenges affecting road transportation in Europe (e.g. reducing congestion, lowering of emissions, improving energy efficiency, attaining higher levels of safety and security including vulnerable road users);

The deployment of eCall service will contribute to attain higher levels of safety including vulnerable users and reduction of congestion. The Option 3 will be the one producing higher effects, as the penetration of the eCall service will be the higher, followed by Option 2 and Option 1.

(2)   Be Cost-efficient – optimise the ratio of costs in relation to output with regard to meeting objectives;

The analysis made in this impact assessment provides the cost-efficiency of the different options

(3)   Be proportionate – provide, where appropriate, for different levels of achievable service quality and deployment, taking into account the local, regional, national and European specificities;

All the 3 options allow Member States to design the PSAP infrastructure in the way the best suited to their local, regional and national specificities. This is attained in Option 1 by agreement on protocols between private service providers and PSAPs at national level, whereas for Options 2 and 3 this is achieved through the implementation of the eCall discriminator, allowing Member States to design the infrastructure of the emergency call response centres that will receive the eCalls taking into account their local, regional and national specificities (e.g., incorporating filtering centres as those existing in the private services, or receiving the eCalls in the same PSAP receiving the 112 calls)

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[75] Since the Minimum Set of Data sent by the vehicle includes the propulsion mean of the vehicle (natural gas, fuel, electric, etc.), rescue services can operate more safely and prevent further accidents and explosions.

[76] Incident management will be improved thanks to the immediate notification of the accident from the eCall In-vehicle System to public authorities and traffic management centres

[77] Energy consumption and CO_2 emissions will be reduced thanks to the improved traffic management and the consequent reduction of traffic congestions caused by road accidents.

All the options can support additional levels of service.

(4)   Support continuity of services – ensure seamless services across the Union, in particular on the trans-European network, and where possible at its external borders, when ITS services are deployed. Continuity of services should be ensured at a level adapted to the characteristics of the transport networks linking countries with countries, and where appropriate, regions with regions and cities with rural areas;

This is attained automatically in the option 3 and in the option 2 for the countries having upgraded their PSAPs to handle eCalls –otherwise only the voice call will be received, not the data-, as the use of 112 ensures continuity of the service across Europe and at its external borders. In the case of Option 1, this is only achievable by multiplying the number of private call centres and ensuring that the databases with the long phone numbers of the PSAPs and their boundaries are maintained updated, so that all countries will be served, multiplying the costs.

(5)   Deliver Interoperability – ensure that systems and the underlying business processes have the capacity to exchange data and to share information and knowledge to enable effective ITS service delivery;

Complete interoperability is achieved automatically in Option 3, in Option 2 only for those having equipped the vehicles and the PSAPs (for those countries having equipped the vehicles and not the PSAP, there will be only interoperability in terms of voice call, not for sending and handling the data), and for Option 1 only by multiplying the private call centres by countries and by all the vehicle brands, as well as defining protocols for the communication between the PSAPs and the private call centres in all the countries.

(6)   Support backward compatibility – ensure, where appropriate, the capability for ITS systems to work with existing systems that share a common purpose, without hindering the development of new technologies;

Option 1 supports backward compatibility, as the systems implemented will be based on existing ones.

Options 2 and 3 will support backward compatibility as well. It is foreseen that those private services providing a similar level of service that the harmonised interoperable EU-wide eCall could continue delivering the service. As normally all existing services are based on communication via phone call and/or fax, they can continue providing the data in the same way to the PSAPs, or deploying other interfaces in agreement with the PSAPs.

None of the options will hinder the appearance of new technologies. On the contrary, all the options will foster the development of added value services which could share common technical resources with eCall, although the Option 3 will attain a bigger impact in this sense[78].

(7)   Respect existing national infrastructure and network characteristics – take into account the inherent differences in the transport network characteristics, in particular in the sizes of the traffic volumes and in road weather conditions;

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[78] The Competitiveness of the European Automotive Embedded Software Industry, IPTS, 2010.

All the 3 options respect the existing national infrastructure of the PSAPs. None of the 3 options will have any impact on the transport networks, with the exception of Option 3, which may lead to the reduction of the SOS systems in the roadside.

(8)   Promote equality of access – do not impede or discriminate against access to ITS applications and services by vulnerable road users;

Option 3 will attain the higher impact in terms of promoting the equality of access to all road users.

Cost-benefit analysis

1.1.1.   *External expertise*[79]

Several external studies have analysed the possible benefits and costs for the introduction of eCall in Europe[80]. Three studies, the SEiSS, eIMPACT and "TRL" have analysed the cost-benefit case of the introduction of eCall service at European level. eIMPACT also looked into the break-even point of different in-vehicle safety systems

The SEiSS[81] study analysed the costs and benefits of the introduction of eCall in case of mandatory introduction in all vehicles (Option 3) analysing costs and benefits in the most optimistic and worst cases. The study concluded that even in the most pessimistic case (highest costs and fewest benefits), the cost-benefit ratio for the introduction of eCall in Europe would be 1.3, whereas in the most optimistic case it would be 8.5. eIMPACT[82] identified possible cost-benefits ratios for eCall between 1.9 and 2.7, depending on the penetration rate. eIMPACT also concluded that eCall was the system with best break-even point, along with the Electronic Stability Control (ESC). The study coordinated by TRL[83] considered policy options equivalent to the Options 1, 2, 3, looked into all the costs, focusing on four country cases and extrapolating to the rest, and in benefits arising from reduction of fatalities and mitigation of injuries, and concluded that the only positive cost-benefit ratio will be for Option 3 (between 1.31 and 2.48). The other 2 Options resulted into ratios under 1.

This impact assessment has considered the outcomes of the several studies that have analysed the costs and benefits of the introduction of eCall in Europe (cf section 5.7). The results of the studies have been taken in consideration through critical analysis of the basis of their scientific methodology and relevance. See also annex IV for more details on the methodology.

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[79] Studies are publicly available and they have been scrutinised by experts in a number of occasions, namely in the European eCall Implementation Platform. Hyperlinks to the studies have been provided together with the public consultation.

[80] See http://www.esafetysupport.org/en/ecall_toolbox/related_studies/

[81] Exploratory Study on the potential socioeconomic impact of the introduction if Intelligent Safety Systems in Road Vehicles. 2005.

[82] Socio-economic Impact Assessment of Stand-alone and Co-operative Intelligent Vehicle Safety Systems (IVSS) in Europe. TNO and al, 2008

[83] "Impact assessment on the introduction of the eCall service in all new type-approved vehicles in Europe, including liability/ legal issues", TRL, SMART 2008/55, 2009

Analysis of Main costs

1.1.1.1. In-vehicle systems costs

Triggering mechanism (mostly based on existing systems) –all options-, Communication module –all options-, in-band modem (Option 2 and 3, software, licence free), electronic control unit (processing, memory) –all options-, positioning system (e.g.: GNSS) -all options-.

Suppliers have quoted 50-60€ for the full eCall in-vehicle system if deployed in *all vehicles* due to economies of scale (Option 3). A multiplication factor by 2, usually used in impact assessment studies, to consider the integration costs, overheads, etc. into the vehicles would result into 100-120€ A multiplication factor by 3 to consider all additional possible OEMs costs would mean 150-180€ (See Annex IV for more details on vehicle costs calculations).

If eCall is offered as optional (Option 2), the same level of economies of scale cannot be reached, thus the cost may go up to 290-600€ This option will add also marketing costs.

Current proprietary systems (Option 1) range in the level of 800€- 2000€ (price to customer), considering installation and device costs plus subscription[84]. It should be noted that there is no "eCall only" service currently offered by proprietary systems. On the other side proprietary systems are expected to produce benefits from the additional services bundled to eCall.

For all the options it is important to highlight that due to the progress of Information and Communication Technologies, economies of scale, and maturity of integration processes, the related in-vehicle costs will not increase with time, but rather stay constant or decrease. Moreover, market trends indicate that most vehicles are likely to be equipped with GNSS units in the forthcoming years, independently from the deployment of eCall.

Communication costs

For options 2 and 3, the transmission of 112 based eCall is transparent to the network operators, which will deal with it like with any other 112 call. eCall based on 112 is free for the user, no call/roaming costs. Moreover if there is weak coverage from the home operator, in most of the countries it will roam automatically in other operators' network, increasing coverage. For option 1, the costs for the calls to the private call centre and for the calls between private call centres and PSAPs will be charged at the normal rate.

For options 2 and 3, the implementation of the eCall flag (discriminator) will need an upgrade of the Mobile Switches Centres (MSC) in order to identify manually and automatically triggered eCalls (MIeC & AIeC) within the Table 10.5.135d, which provides the Emergency Service Category Value. The eCall discriminator is part of the Release 8 of the 3GPP standards (3GPP TS 24.008) with which the mobile phone networks need to comply with.

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[84] According to the latest SDB study on eCall, PSA will start offering a new eCall/bCall service (eTouch) for 290 €and no subscription costs.

This will mean an upgrade of the Tables already existing in the MSCs used to route the emergency calls depending on their category (e.g., police, ambulance, fire brigade, marine guard, mountain rescue). Normally this would be a software upgrade (even if the Release 8 of the GSM standards is not implemented in the MSCs, the tables can be upgraded using a patch).

The upgrade of the MSC tables is done on (semi)regular basis to include the routing directions of the PSAPs as specified by the Member States Authorities.

The costs for implementing the eCall flag will depend from country to country, namely on the complexity of the networks and on the decisions of the Authorities where to route the eCalls. For the time when the eCall implementation is expected to be mandatory, the incremental costs to upgrade the MSCs will be moderated (as they will need to be upgraded to comply with the Release 8 of the standard. Vodafone, e.g, has stated that by end of 2012 all their MSCs could be progressively updated incorporating the eCall flag).

For Options 2 and 3 the SIM for the 112 eCall will be an *ad hoc* SIM in a dormant terminal with no management costs (there will be subscription costs only in case of upgrading of the SIM for provision of added value services). The cost of the SIM will be one time payment integrated in the cost of the in-vehicle system.

In case of private proprietary eCall service (Option 1) there is a need to install a SIM in the vehicle, subject to annual management costs. Furthermore, to ensure timely delivery of the SMS, special mechanisms should be implemented normally, which may mean annual payment to mobile network operators. In many proprietary systems, there is a need to pay one or two private companies to extract and route the calls and the SMS to the call centre and to decode and transmit the incident data.

Emergency call centre costs

For the 112 based eCall (Options 2 and 3), the marginal costs for each of those PSAPs duly equipped to handle 112 calls enhanced with location capabilities -E112- calls (obligation under the Universal Service Directive[85]) are:

In-band modem server (from 3,000 to 20,000 € depending on the number of eCalls)

Software to decode the MSD and integration into the PSAP software

Training

For instance, for Bulgaria it is estimated that the total PSAPs upgrading cost to be 150,000€[86], while UK estimated total 200,000€[87]. To these costs it should be added the annual operational costs. In case that the eCalls will be received in the same PSAP receiving other emergency calls, the majority of these costs will be subsumed within the normal operational costs; otherwise the costs will depend on the number of operators needed to handle the estimated number of eCalls (see also Annex III).

For the proprietary eCalls, (Option 1), OEMs or service providers should make available private call centres with trained personnel, available 24/24h, 7/7d, equipped with

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[85] Directive 2002/22/EC, Art. 26
[86] Source: eCall Driving Group
[87] Source: TRL study.

redundant workstations, GIS servers, software to decode the MSD and handle the eCalls, usually one call centre per country and per brand. Part of these costs will be subsumed within the costs to provide assistance services paid normally by subscription.

Administrative costs

The main administrative costs for public authorities due to the implementation of eCall would be the costs to certify the systems. In case of mandatory introduction or voluntary approach (Options 3 and 2) there will be European standards. In case of the do nothing option (Option 1) there will be national certification procedures designed by the countries administrations.

Certification procedures are well established nowadays. Vehicles need to be type-approved, and the eCall systems would be one part more of the whole procedure. Therefore, these costs in comparison with the total costs for type approve the vehicle, and taking into account the possible volume of vehicles equipped, are estimated as negligible.

Analysis of Main benefits

NOTE: If otherwise mentioned, all benefits apply to the three policy options with different scales.

Reduction of fatalities (with all vehicles eCall-equipped, between 1% and 10% depending on country population density, road and emergency response infrastructure)[88].

Reduction of severity of injuries (between 2 and 15%)[88].

> *NOTA BENE: It is extremely difficult to estimate the benefits of the eCall system in terms of reduction of fatalities and of mitigation of severity of injuries. This is due to the fact that there are no reliable statistics on the time when the accident took place, but just from the moment the emergency services or the PSAPs were notified. Therefore the estimations should be taken with precaution. See Annexes IV and XIV for more details on the estimations and the methodology applied.*

Reduction of congestion costs caused by traffic accidents. This is due to the improvement of accident management, as the accident is immediately notified to the PSAPs and can therefore be transferred to the appropriate Traffic Management Control, which can immediately inform other road users. This will imply reduction of congestion due to traffic accidents (between 3 and 17%, depending on country population density, road and incident management infrastructure). It will also facilitate the avoidance of secondary accidents and reduce the CO_2 emissions due to traffic congestions[89]. While the reduction of fatalities will normally happen in low density roads or during night time, the impact on congestion reduction will be bigger for accidents in dense areas or during day.

Facilitation of rescue services and increased security of rescue teams (ex.: firemen) when extracting trapped occupants, as the MSD will provide information on the fuel type. This

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[88] SEiSS, E-MERGE, eIMPACT, AINO studies. For a more detailed analysis on the calculation, please see Annex IV

[89] *"E-call en Verkeersveiligheidskansen, DEEL 4: De verwachte directe en indirecte effecten van e-call in Nederland". TRL study/*

issue gets even more important when hybrid vehicles and/or Electric Vehicles are involved in the accident[90].

Added value services may share technical resources with eCall. The eCall in-vehicle system would include the basic functionality of a telematic system, which would allow automotive industry to include more connected-car functionality[91].

Reduction of SOS roadside infrastructure[92], as road users would have the possibility to trigger an emergency call from each vehicle (option 3 only).
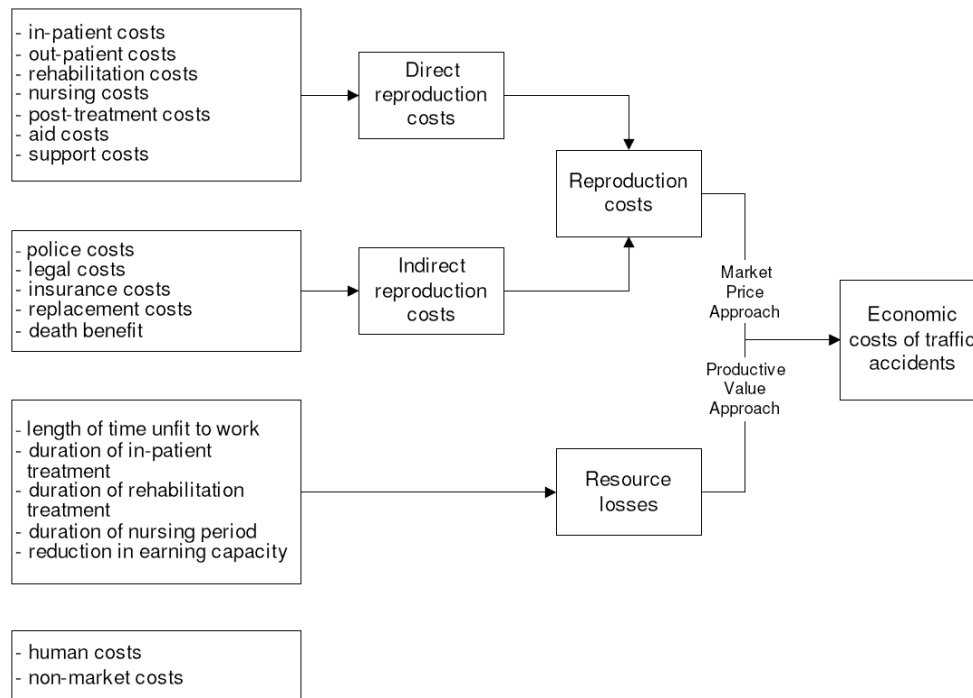
Figure 7: Main components of economic costs of traffic accidents[93]

For this impact assessment, the calculation has been based on estimation and costs and benefits, following the recommendations of the European Road Safety Observatory[94].

In the Annex IV details on the methodology to estimate the costs and benefits are provided.

Under-reporting of accidents

Underreporting of road accidents is a well recognized problem in all road accident statistics. Literature reviews recommend applying the correction factors for unreported road accidents as shown in Table 11.

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[90] ADAC feasibility Study, May 2007
[91] "*The competitiveness of the European automotive embedded software industry*", Joint Research Centre – Institute for Perspective Technological Studies, 2010
[92] *"A Cost Benefit Analysis of eCall and Event Data Recorder",* S. Conry, April 2007
[93] Source: SEiSS study
[94] European Road Safety Observatory

	Fatality	Serious injury	Slight injury	Average injury	Damage only
Average	1.02	1.50	3.00	2.25	6.00
Car	1.02	1.25	2.00	1.63	3.50
Motorbike/moped	1.02	1.55	3.20	2.38	6.50
Bicycle	1.02	2.75	8.00	5.38	18.50
Pedestrian	1.02	1.35	2.40	1.88	4.50

Table 7: European average correction factors for unreported road accidents[95]

An additional correction factor should be considered for fatalities which are not reported as road fatalities. Currently the reporting system is different across the EU: in some Member States road fatalities are considered only those with deaths in the accident spot, others count deaths within 24 hours or within 30 days of hospitalisation. Even greater discrepancies are registered in the classification of light/severe injuries.

Therefore, the figures of the Impact Assessment may underestimate the true number of road fatalities/injuries and the potential benefits of eCall.

Cost-benefit analysis per stakeholders

The three policy options would provide different impacts on each of the affected stakeholders, which are summarised in the table below.

This table is providing description of qualitative benefits. Estimation of Monetary costs corresponding to these costs and benefits are provided in Annex IV.

Stakeholders	Policy Option 1 No EU action		Policy Option 2 Voluntary approach		Policy Option 3 Regulatory measures	
	Costs	Benefits	Costs	Benefits	Costs	Benefits
EU citizens	For customers only	Reduction of severe injuries and fatalities for customers only; only in some Member States	For customers only	Reduction of severe injuries and fatalities for customers only. Some MS may not implement it	Repercussion of the IVS. All vehicles	Improvement of road safety. Reduction of severe injuries and fatalities for all citizens Reduction of congestion
PSAPs	Interfaces with private call centres	Calls filtered by private call centre	Upgrade (technical + HR) Handling of eCalls	Immediate accident report MSD (for customers only)	Upgrade (technical + HR) Handling of eCalls (*see Annex III for details*)	Immediate accident report MSD

[95] Source: Bickel, P. et al. 2005. Deliverable 2: State-of-the-art in project assessment, HEATCO Germany.

	Policy Option 1 Costs	Policy Option 1 Benefits	Policy Option 2 Costs	Policy Option 2 Benefits	Policy Option 3 Costs	Policy Option 3 Benefits
Automotive industry (offering private eCall service)	Implementation and management costs IVS (±450 EUR) Private call centres in each Member State Liability on handling the emergencies Privacy issues	Profit	IVS (±450 EUR) Loss of profit (only for eCall, not for the added value services)	No liability issues on handling the emergencies Possible AVS (eCall Platform in equipped vehicles) No need for private call centres for eCalls	IVS (±180 EUR)[96] Loss of profit (only for the added value services)	Same system for all countries Interoperability Possible AVS (eCall Platform in all vehicles) No need for private call centres for eCalls No liability issues
Automotive industry (not offering private eCall service)	None	None	IVS (±450 EUR)	No liability issues on handling the emergencies AVS (eCall Platform in all vehicles)	IVS (±180 EUR)	Same system for all countries Interoperability AVS (eCall Platform in all vehicles) No liability issues

Stakeholders	Policy Option 1 — No EU action		Policy Option 2 — Voluntary approach		Policy Option 3 — Regulatory measures	
	Costs	Benefits	Costs	Benefits	Costs	Benefits
Emergency Services	None	Limited	None	Reduced	None	Faster and more efficient service Avoidance of secondary accidents at the scene Advance guidance
MNOs	Negligible	Limited Profit (SIMs + Communication costs)	eCall flag implementation Support of 112 calls	Reduced Profit AVS on eCall platform. Upgradeable SIMs)	eCall flag implementation Support of 112 calls	Profit AVS on eCall platform. Upgradeable SIMs
Healthcare and social services	None	Lives saved, less severe injuries: limited for customers	None	Lives saved, less severe injuries: Reduced for customers	None	Lives saved, less severe injuries for all citizens Reduction of social costs
Insurances and Service Providers	Management costs Private call centres	Profit	None (may contribute with incentives)	Platform for AVS Additional info available May receive delegation of public service Reduction of dead and injured customers	None (may contribute with incentives)	Platform for AVS Additional info available May receive delegation of public service Reduction of dead and injured customers

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[96] The cost of the in-vehicle system (IVS) is different in policy options 2 and 3 as the latter will allow larger economy of scale and reduce the price.

| Road operators | None | Negligible | None | Prompt info available

Faster clearing time

Lane reservation

Less congestion

Reduced due to penetration. | None | Prompt info available

Faster clearing time

Lane reservation

Less congestion

Reduction of SOS phones in the roadside |

Table 8: Qualitative Cost-benefit analysis by stakeholders

The relative increase of the price for low-end vehicles (worst case scenario, average cost: 9,000 EUR) is estimated to be around 2% (180€) for option 3; 5% (450€) for option 2; 8,9% for option 1 (800€) on average. For options 1 and 2 the consumer will be confronted with the choice to pay an extra amount for the eCall option. For option 3, the consumer will ignore the real cost of the system as it will be subsumed in the total price; this is an added value for life-saving in-vehicle systems, such as seatbelts, airbags or ABS. Otherwise it may impact mainly the low-income consumers as the price increase would be relatively higher, and this may refraining his decision. This would mean that low-incomers risk not benefiting from life-saving systems in the vehicles, as pointed out in the public consultation by the users' organisations.

The real threat for vehicle manufacturers is not the cost associated with regulatory eCall. Instead, the automotive industry could take advantage of the deployment of eCall to piggy-bag innovative new features on a mass-market scale, thereby making their vehicles more appealing to consumers.[97, 98]

The in-vehicle eCall equipment could form the basis for an in-vehicle platform that could support additional public or private telematics services giving further safety and economic benefits.[99]

Analysis per vehicle categories

The eCall system is currently available in the market for passenger cars, motorbikes and light commercial vehicles. In the case of policy option 3, the mandatory implementation of eCall will start from certain vehicle categories (namely passenger cars and light duty vehicles below 3.5t), for which the standards, the triggering mechanisms and the relevant technology is currently available. Nevertheless, the eCall system would be beneficial also for other vehicle categories, as explained below.

1.1.1.1. Passenger cars and light duty vehicles

Passenger cars and light duty vehicles will benefit from the eCall service, mainly in case of accidents in interurban roads, during night hours, and in cases where one or two vehicles are involved in the accidents. Passenger cars and light duty vehicles (with the exception of flat nose light duty vehicles) are equipped with sensors that can detect serious accidents and hence

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[97] "Market trends report: getting ready for public eCall.", SBD - 2010

[98] "*The competitiveness of the European automotive embedded software industry*", Joint Research Centre – Institute for Perspective Technological Studies, 2010

[99] "Impact assessment on the introduction of the eCall service in all new type-approved vehicles in Europe, including liability/ legal issues", TRL and others. SMART 2008/55, page 245

trigger the eCalls. Therefore the eCall service can be deployed immediately in these categories of vehicles.

Motorcycles

Motorcycles will be the category of vehicles that will benefit the most from the deployment of the eCall service, as in many of the accidents in which motorcycles are involved the rider remains unconscious for a certain period, and the motorbike goes outside the road, remaining invisible to other road users in many more cases than passengers vehicles[100].

bus	mopeds	Car	agricultural	heavy	pedal	**motorbikes**
-60,9%	-36,0%	-34,8%	-33,7%	-30,8%	-28,5%	**-3,3%**

Table 9: Decrease on the number of fatalities between 2001 and 2008 (total -28,3%)

There are some systems already offered in the market with very limited penetration[101]. The triggering mechanisms, based either on helmet impact or on leaning sectors, although close to be reliable to identify serious accidents, may benefit from further research. Once adequate triggering mechanisms will be refined, motorcycles can install automatic and manual eCall services.

The relative costs of the eCall system in comparison with the overall cost of the motorcycle can be more onerous that in the case of the passenger cars, namely in case of low cc engine motorbikes (e.g., L1e and L2e). Depending on the type of motorcycles they may benefit more from eCall systems (e.g., high cc motorcycles are more used in interurban journeys, mid cc for urban commuters) although it is difficult to establish total correlations.
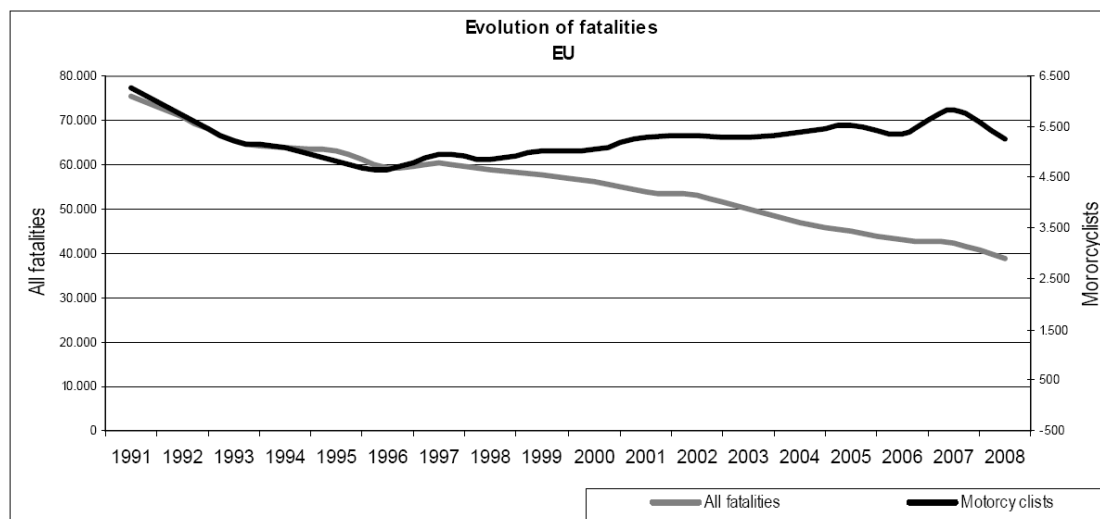

Figure 8: Total road fatalities and road fatalities of motorcyclists in the period 1991-2008[102]

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[100] Aino Study on the impact of the introduction of eCall in Finland. See www.aino.fi

[101] E.g. eBike10 service from Mapfre.

[102] COM(2010) 389 – 'Towards a European road safety area: policy orientations on road safety 2011-2020'

Other Vulnerable Road Users

The vulnerable road users are involved in a high percentage of all accident with fatalities in Europe. Motorcycles and mopeds have been considered in the previous section. Regarding bicyclists and pedestrians, although normally they will not benefit from the automatic triggering of eCall, they can benefit from the manual triggering of eCall from the vehicle involved in the accident.

This will accelerate the arrival of the emergency services, as a/ the emergency services will receive the exact position of the accident; b/ they will know that they are normally dealing with a road accident; c/ even if the occupant of the vehicle is in shock it will be easier to trigger the manual eCall that to phone the right emergency number, and the Minimum Set of Data will provide the information if (s)he cannot find the location.

2001	2008
40,1%	44,6%

Table 10: Share of fatalities involving vulnerable road users (motorcycles+mopeds+cycles+pedestrians)[103]

Heavy Duty Vehicles (Trucks and buses)

Trucks will also benefit from the implementation of the eCall service in Europe. Although reliable mechanisms have not been deployed yet to trigger eCalls, the manual eCall may be beneficial in cases where heavy duty vehicles are involved in accidents, as normally heavy duty vehicles suffer fewer consequences than passenger cars of vulnerable road users in case of accidents.

Another benefit of eCall in heavy duty vehicles when the triggering mechanism will be refined, will be for those transporting hazardous goods, as authorities will be immediately informed about this fact, and take the necessary measures to protect the road users.

Moreover, heavy duty vehicles are subject to criminal offences, principally in resting areas. In those cases having a manual eCall that could put them directly in contact with police will be a beneficial tool[104]. Similar benefits are applicable to other types of professional drivers, such as taxi drivers and other public transports drivers subject to criminal offences.

Regarding buses, it would be important for the PSAPs in case of accident to know the number of passengers travelling in the vehicle, as this will allow them to send the necessary resources to the incident scene without delays.

The relative costs of introduction of the eCall system in relation with the overall costs will be the lowest for this category of vehicles.

Impact of the recent economic crisis in the automotive industry

It is difficult to correlate the impact of the economic crisis with the introduction of eCall.

However it is expected that the regulatory option (Option 3) will be the one with the least impact regarding the introduction of eCall, as the price of the eCall system will be included in the final price of the vehicle. According to the public consultation the cost increase in the

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[103] Source: CARE database
[104] European Union Road Federation (ERF)

vehicles due to the introduction of an eCall system would not affect their choice of the vehicle in 76% of the cases.

Due to the crisis, the Option number 1 will be more difficult to sustain, as vehicle OEMs will need to make investment in proprietary systems and private call centres to handle eCalls without revenues, which will be more difficult during crisis situations.

Regarding the voluntary option (Option 2), as the price of the eCall as option is expected to be several times the price of the minimum eCall service mandated in the vehicle, it is expected that it will be less demanded.

Impact on vehicle demand and industry's profit margins

For the regulatory option (option 3), with a reduced price of less than 200 €, the vehicle demand will not be affected, or very marginally, as shown by the answers provided in the public consultation. Within this option, as the in-vehicle system will be introduced in all the vehicles, it will not distort the competition or affect the margins; only for low-end cars may have a slight effect. For the other 2 options, the vehicle demand will not be affected significantly, as eCall will be an option. There may be an increase of demand of vehicles equipped with the eCall option, but not affecting the overall demand. However, in case that a harmonised and interoperable eCall is not introduced in all EU Member States, the automotive industry could encounter additional logistic expenses in order to produce and supply the appropriate vehicle model to each Member State according to national requirements (risk of market fragmentation).

Regarding the impact in the EU automotive industry of the regulatory introduction of eCall (Option 3), the European OEMs will not be affected, as all vehicle manufacturers will need to include them. On the contrary, it will place them in an advantageous situation in relation to third countries that foresee the regulatory introduction of eCall related systems, like Brazil, or eCall systems following the European Standards, like Russia.

The automotive industry may benefit from the introduction of eCall platform in the vehicles to offer other telematic added value service which could increase their profits. This may have more impact for policy option 3, then 2 and 1, due to the penetration levels. This has been also highlighted by the answers to the eCall public consultation.

The automotive suppliers industry will benefit widely from the mandatory introduction of eCall, namely when coming out from a crisis period.

The mandatory introduction of eCall will mean an important opportunity for the automotive software industry to close the gap between Europe and other regions (US, Japan) and will increase their competitiveness in relation with them, strengthening the European position[105].

Telecom industry will also benefit from the telematics services that may be offered using common technical resources with eCall.

Impact on Mobile Network Operators

For options 2 and 3, the impact on telecom operators, the impact is estimated to be limited because:

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[105] "*The competitiveness of the European automotive embedded software industry*", Joint Research Centre – Institute for Perspective Technological Studies, 2010

The implementation of the eCall discriminator is part of the standards the MNOs have to comply with

The number of estimated additional 112 calls is considered reduced because of the substitution effect

With options 2 and 3, there will not be additional traffic signalling in the networks as the terminals will be dormant.

On the other hand, Mobile Network Operators may benefit from the possible added value services that may be offered using common technical resources with the eCall platform.

Impact on SMEs

The deployment of eCall depends on major stakeholders (public authorities responsible for the PSAPs, Mobile Network Operators and Automotive Manufacturers) with very dissimilar business characteristics from SMEs (large enterprises, large number of employees, large turnovers, etc.). SMEs are therefore not considered among the population affected by the initiative.

Analysis of possible number of eCalls

The total number of eCalls, based on statistics from existing private systems (i.e., GM OnStar in USA and PSA in Europe) is estimated to be around 5,5 million of calls per year when fully deployed in the whole passenger cars park. This would mean an increase of 2% of the total number or emergency calls in Europe, around 3 calls more per PSAP operator per day (without taking into account the substitution and accumulation effects, that is, respectively the emergency calls that will not be done using the mobile phones because the eCalls are initiated automatically, and the accumulation of eCalls on the real incident by the PSAP operator, e.g., in case of accidents in the highway, where several "good Samaritans" may call for the same incident)

The estimation of the total number of expected calls can be found in Annex III

1.1.1.1. Hoax calls and false calls

Hoax calls are considered those from abusive callers (i.e.: for a joke, to test a mobile phone, etc.). Hoax calls are considered punishable offences and usually prosecuted as crimes. That is why many hoax calls to 112 number are made from public phones or SIM-less mobile phones (e.g., to demonstrate that the terminal works for selling it). It is therefore unlikely that hoax calls will be made by the eCall system which is intentionally equipped to be quickly identifiable if needed.

False calls are considered those from people that:

Require assistance but do not need intervention from emergency services.
Call unintentionally the emergency services.

The experience with private eCall services shows an important percentage of false calls in case of manual eCalls (in the order of 90%), whereas in case of automatic eCall the percentage of false calls is much more reduced (around 30%).

It should be considered that in the case of the private eCall services existing in the market, all of them are bundled with assistance services; therefore the occupant of the vehicle is asking

for a service he has paid for. It is also expected that the number of false calls would decrease by means of awareness/education campaigns for stand-alone eCall services.

"Automatically triggered eCall is likely to have a lower false alarm rate compared with conventional emergency calls."[106]

False/hoax calls are not an issue specific to the eCall service. The PSAPs in Europe are usually working with a percentage of false/hoax calls around 60% of the calls to the emergency numbers in Europe. This is considered a normal operation within the protocols of the PSAPs operators. This amount of "extra" calls can be assumed by the PSAPs operators so the system does not risk to be saturated due to the increase of false/hoax calls[107].

It should also be considered that the eCalls will have a substitution effect, which means that eCalls will replace, in many cases, calls to the 112 or local emergency numbers. However, this replacement effect is difficult to estimate until the service will be in operation. eCall will also have the advantage that in case of many calls related to the same accident, the PSAP operator will be able to recognise the vehicle involved in the accident (the one that has triggered the automatic eCall) and therefore accumulate all the other calls to the real one, saving resources. The estimation of the number of expected calls can be found in Annex III.

Costs comparison between private emergency call services (policy option 1) and public eCall service (policy option 3)

The table below provides a comparison between the main investments needed in case of private eCall systems and public harmonised interoperable EU-wide eCall systems. Results from the public consultation and private surveys indicates that majority of respondents prefer the handling of the eCalls by public emergency call response infrastructures. The public consultation also indicates that a significant number of respondent are supportive of keeping the existing private services in parallel to the public pan-European eCall.

	Call Centres	Communica-tion Costs	In-vehicle system	Maintenance of PSAPs phone numbers and boundaries	Mobile Network Operators	Other Costs
Private eCall services	~One per MS x Automotive Brands. Annual contracts with the Service Providers (normally providing also other services)	Annual fee to Mobile Network Operators per country + Costs of the calls + Costs of SMS + SIM	Different IVS for each automotive brand. Small-scale production.	Structure to maintain the database at European level	None	Third party(ies) to ensure the timely delivery of data, the telematics platform and to send the data to the right call centre operator.
	Annual payments based on commercial agreement with service provider(s)[1]	~20,000€/year /country € 2/call Communication costs call center-PSAPs	€ 800	Timely effort in resources	€ 0	Annual payments based on commercial agreement with 3rd Party[1]

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[106] "Impact assessment on the introduction of the eCall service in all new type-approved vehicles in Europe, including liability/ legal issues", TRL, SMART 2008/55, page 245

[107] See estimated number of calls including false/hoax calls in Annex III.

Public eCall (based on 112)[108]	1 time Upgrade of PSAPs or 1 per MS if eCall dedicated solution plus increasing costs for annual operation	None. 112 calls are free under the Universal Service Directive[109]	Mass production	None	One-time implementation of the eCall discriminator (software upgrade of the Mobile Switching Centres, part of the Release 8 of GSM standards)	None
	€ 1,100,000 on average per Member State	€ 0	€ 180	€ 0	Modest (the marginal increase with respect to the normal upgrades is negligible)	€ 0

Table 11: Comparative table for Private and Public eCall

Note 1: The third parties may be manifold, e.g., those acting as call centers answering the call and handling the incident, those ensuring timely delivery of the data and those supporting the telematics platform. Part of the private call centres costs would be shared with other assistance services in case they will be offered. It is difficult to estimate the costs for the private centres as these costs are subject to confidential market agreements. Moreover the costs will depend on the number of vehicles equipped.

These costs have been considered to the best extent in the estimation of the cost benefit analysis herein after.

Complementary note for the reader: Cost-effectiveness and human values

The cost-benefit analysis and the nature itself of the impact assessment aim to provide actual facts and figures in order to objectively present the various solutions to the defined problem.

However we believe that the legislator, as public authority of the large community of European citizens, should focus not only on the cost-benefit analysis, but also take into high consideration ethical values that can be hardly quantifiable, such as the value of a human life and the cost of human suffering.

"A high level of human health protection shall be ensured in the definition and implementation of all Union policies and activities."[110]

"Everyone has the right of equal access to public service in his country."[111]

"Mandatory eCall would mean that the public investment in eCall infrastructure was shared more equitably between citizens rather than the benefit of public investment falling preferentially on citizens who can afford optional in-vehicle equipment."[112]

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[108] The estimations for policy option 2 are the same as for public eCall with the difference in the higher cost per in-vehicle system (450 EUR instead of 180 EUR)

[109] Directive 2002/22/EC, Art. 26

[110] Charter of Fundamental Rights of the European Union (2000/C 364/01), Art. 35

[111] United Nations, Universal Declaration of Human Rights, Art. 21(2)

[112] "Impact assessment on the introduction of the eCall service in all new type-approved vehicles in Europe, including liability/ legal issues", SMART 2008/55, page 245

Prospects of penetration for the scenarios foreseen

In case policy option 3 is chosen, the operational objectives stated in section 3 are predicted to be achieved by 2030, meaning several decades earlier than in the other two cases (policy options 1 and 2).
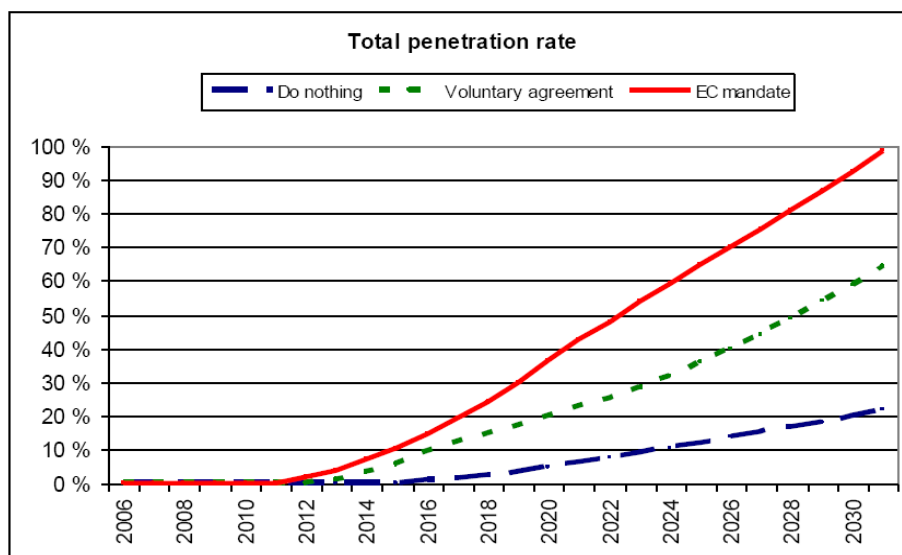
Figure 9: Total penetration rate following the three scenarios of eCall implementation[112]

This scenario has been identified by the TRL study, which states *"In the do-nothing scenario the penetration rate is estimated at 6%, in the voluntary approach the penetration rate is estimated at 23% and in the mandatory introduction scenario at 42% in 2020"[112]*. Estimations are based on an average annual sale of 16 million new vehicles in the EU.

Similar penetration rate for policy option 3 is foreseen also by a recent study by SBD, as shown in the following figure.
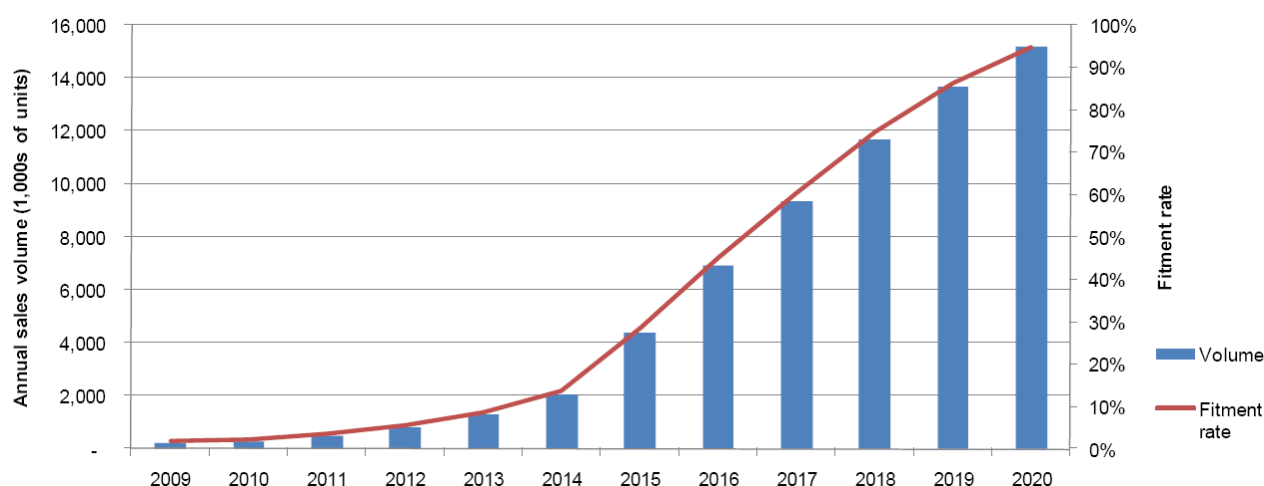
Based on the above estimations, we can draft a projection of equipped vehicles, saved road fatalities and mitigated serious injuries through the years 2013-2033[114] for the 3 policy options, as indicated in the following table.

Details on the way of calculating costs and benefits of the different three options can be found in the annex IV. Annex IV provides clarifications on how to reach the figures in the table. Policy option 1 starts on year 2011, as there are private systems already existing today. The Option 2 starts on year 2014, as vehicle manufacturers have declared that they need lead time since the standards are approved and pilots have been done.

The vehicles equipped with these private systems have also been added to the estimated possible number of eCall equipped vehicles for Options 2 and 3.

It is expected that a certain number of after-market solutions will appear in the market for options 2 and 3, retrofitting the existing park. This will help to accelerate the penetration of eCall in Europe. The amount of possible aftermarket solutions however is difficult to estimate and has not been considered in the calculation.

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[113] "Market trends report: getting ready for public eCall", SBD/TEL/2401, 2010

[114] 2014 is considered as initial year for voluntary approach (option 2) and 2015 for the Option 3, the regulatory measures as it is foreseen that the regulatory measures could enter into force as of this year, taking into account the regulatory path and lead times. Estimations are calculated until 2033 as this will be the year when 100% penetration could be achieved for policy option 3.

YEAR	Policy Option 1 No EU action			Policy Option 2 Voluntary approach			Policy Option 3 Regulatory measures		
	eCall equipped vehicles (million)	Saved road fatalities	Mitigated serious injuries	eCall equipped vehicles (million)	Saved road fatalities	Mitigated serious injuries	eCall equipped vehicles (million)	Saved road fatalities	Mitigated serious injuries
2013	1.4	8	64	1.4	8	64	1.4	8	64
2014	1.7	9	74	1.7	9	74	1.7	9	74
2015	2.0	10	86	2.3	12	99	4.3	22	187
2016	2.3	12	100	3.0	15	128	9.2	47	395
2017	2.8	13	116	3.8	19	161	16.6	81	695
2018	3.3	15	134	4.8	23	199	26.3	123	1,081
2019	3.9	17	156	6.0	27	242	38.5	174	1,553
2020	4.6	20	180	7.4	32	292	53.3	233	2,110
2021	5.4	23	209	9.1	38	352	68.2	288	2,649
2022	6.3	26	242	11.1	45	423	83.2	339	3,173
2023	7.5	29	280	13.6	53	508	98.5	387	3,683
2024	8.8	34	324	16.6	63	610	113.9	432	4,180
2025	10.4	38	376	20.3	74	731	129.6	475	4,665
2026	12.3	44	435	24.8	88	876	145.6	514	5,141
2027	14.5	50	503	30.3	103	1,049	161.9	552	5,608
2028	17.2	56	583	37.0	122	1,257	178.7	588	6,069
2029	20.3	64	675	45.2	144	1,507	195.9	622	6,526
2030	23.9	73	781	55.3	169	1,806	213.6	655	6,982
2031	28.2	83	904	67.6	200	2,166	232.0	686	7,440
2032	33.3	95	1,047	82.6	236	2,599	251.2	717	7,901
2033	39.3	108	1,212	101.1	278	3,120	271.0	747	8,371
TOTAL		827	8,481		1,758	18,263		7,699	78,547

Table 12: Expected penetration and main benefits for the 3 policy options

Estimations are calculated up to year 2033 as this is the expected year of full penetration of the eCall service in case of policy option 3.

Comparison with other in-vehicle intelligent safety technologies

Although is difficult to compare the impact of the introduction of the eCall service with other in-vehicle intelligent safety technologies, Annex XII provides a comparison of the Cost-Benefit Ratios estimated for the mandatory introduction of eCall, Electronic Stability Control (ESC), Advanced Emergency Breaking System (AEBS) and Lane Departure Warning System (LDW). Annex XII includes also an estimated comparative break-even analysis.

| | Electronic Stability Control | | Advanced Emergency Braking | | eCall | Lane Departure Warning |
	Light vehicles	Heavy vehicles	Light vehicles	Heavy vehicles	Light vehicles	(all vehicles)
Benefit / Cost Ratio (BCR)	3.97	1.16	0.43	2.15	3.16	1.1

Table 13: Comparison of BCR for in-vehicle intelligent safety technologies

Using similar assumptions, eCall ranks after ESC as system with higher BCR. eCall and ESC are also the systems performing better in the break-even analysis.

Comparison of Benefits-Costs Ratios for the three Policy Options

To calculate the benefits-costs ratios first, the potential of saving lives and preventing injuries along the time have been assessed, considering different percentages for the different countries (using clustering methodology) to reflect their different road network and emergency response infrastructures. Subsequently they have been corrected for the actual take-up in the car park (see table 12). These effects have been monetised (see unit values for the different options in Annex XIV). Then these benefits have been compared with the quantitative costs estimates and other quantified benefits of the introduction of the service for the different stakeholders; the BCR has been calculated for the 3 policy options using a conservative approach. For more details about the methodology see Annex IV and Annex XIV for the empirical tables with the monetary values.

The following table summarised the BCR results for the three Policy Options, with the assumptions and estimations above mentioned and detailed in Annex IV. To calculate these BCR, annualised values have been considered, using a discount rate of 4%, as recommended by the Impact Assessment Guidelines

	Policy Option 1 No EU action	Policy Option 2 Voluntary approach	Policy Option 3 Regulatory measures
BCR	0.29	0.68	1.74

Table 14: Comparison of accumulated BCR for the Three Policy Options

It should be noted that there are some effects that cannot be quantified with a valid estimation, such as the benefits of introducing added value services, the avoidance of secondary accidents or the savings on road-side SOS phones infrastructure, due to lack of accurate data or

difficulty of a clear prospective. These effects will increase the quantitative net benefit estimate.

CONCLUSION AND PREFERRED POLICY OPTION

The harmonised implementation of an interoperable EU-wide eCall service in the EU has been in the agenda of the European Commission since 2005 and has become now a priority action for the improvement of road safety and the deployment of ITS in Europe.

All major stakeholders directly affected by eCall are supporting its deployment under the condition that the implementation will be undertaken in parallel by all actors (mainly OEMs, MNOs and PSAPs).

More than 80% of the people responding to the public consultation find the eCall system useful and they would like their vehicle to be equipped with eCall. 68% are in favour of the mandatory introduction of eCall and 58% prefer eCall to be handled by public authorities. There is no clear opinion whether eCall can be achieved through private-led initiatives, but major actors in the public consultation advocate for the maintenance of private services in parallel to the public eCall, provided that it could provide similar level of service and EU-wide coverage.

Numerous studies on eCall have shown that the system can potentially avoid around 4% of the road fatalities per year in Europe and reduce the severity of injuries by a factor around 6%. eCall can also have a significant impact on the reduction of the congestion caused by the traffic accidents and thus the overall congestion of the European roads.

For the above reasons and in line with the outcome of this impact assessment (cost-benefit analysis – see Annex IV – and assessment of different options), the policy option 3 results to be the most effective and efficient, and therefore is the preferred option for the implementation of the eCall system in the EU.

This means mandatory introduction of the harmonised interoperable EU-wide eCall service, based on 112 and on the pan-European standards developed by the European Standardisation Organisations, in all vehicles in Europe starting by certain categories (i.e., passenger cars and light duty vehicles)[115], including upgrade of Mobile Network Operators and PSAPs to receive/forward and handle the eCalls. This service may coexist with the private eCall services[116].

This option complies with the principle of proportionality as it does not go beyond what is necessary to achieve the objectives satisfactorily, its scope is limited to those aspect where the Union can do better (ensuring EU interoperability and continuity of the service), while a substantial part of the implementation (organisation of PSAPs) is left to national decisions. The upgrade of the PSAPs infrastructure will be done by the Member States in the way best suited to their national/local architecture, thus respecting the specificities and circumstances applying in each Member State.

The EU-wide eCall has been conceived in a way to minimise the impact on all the stakeholders in the value chain and distribute it in a fair way (automotive industry, mobile network operators, Member States - PSAPs). Financial and administrative costs for

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[115] Categories may be extended when appropriate triggering mechanisms ensuring reliability and cost-efficiency of the system will be found. In the meantime other categories of vehicles (e,g., Heavy-duty vehicles, motorbikes) could benefit from manual eCall and/or aftermarket equipment.

[116] As explained in section 5.4

national/regional authorities are foreseen to be minor and commensurate with the objectives to be achieved.

The choice of the community action is based on existing regulatory frameworks, and it is the simplest possible taking into account the number of stakeholders involved and the complexity of the implementation of the service.

EVALUATION AND MONITORING

The European Commission will be in charge of monitoring progress and providing a report on the implementation and impacts of the chosen policy option. Member States will be asked to inform the Commission of actions taken in response to the initiative.

The evaluation and monitoring process will be based on the following indicators:

Number of Vehicles equipped with eCall service – currently ±800,000

Number of eCalls (automatic and manual) and results (lives saved, severe injuries reduced, other benefits, percentage of false calls) – overall figures not available, as owned by various private service providers (see estimations in Annex III)

Number of Mobile Network Operators Upgraded and correspondent EU area covered – currently none

Number of upgraded PSAPs and correspondent EU area covered – currently none

Number of vehicles equipped with an in-vehicle telematics platform including the eCall system – currently ±800,000

Reduction of time achieved at PSAPs on emergency management

Reduction of time achieved at traffic management centres on incident management

These information will be gathered by the Commission from/through appropriate fora (e..g.: EeIP, ITS Committee, etc.) at regular intervals. The Directive 2010/40/EU foresees that Member States report periodically on the progress of their actions, including eCall.

OPINION OF THE IMPACT ASSESSMENT BOARD

The draft version of this Impact Assessment was examined by the Impact Assessment Board (IAB), according to the COM(2010) 543 "Smart Regulation in the European Union". The IAB declared that all procedural requirements were respected in the conduction of the impact assessment.
Following the issue of the IAB opinion[117] on the 21st January 2011, the Impact Assessment was revised taking into account the recommendations of the IAB. These recommendations are included in this final version of the document and they have been taken into account in the following way:

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[117] Opinions of the IAB are publicly available at http://ec.europa.eu/governance/impact/iab/iab_en.htm

Recommendation 1: Clarify the nature of the problem and the baseline situation.
Additional paragraph has been added in section 2.4 to explain the market failures more clearly, making also reference to section 5.2 where further details are provided. Regulatory failures are also addressed in section 5.5.

Recommendation 2: Explain whether a wider range of options can be defined.
Additional paragraph has been added in section 5.4 describing the possible options. It should be noted that parallel action from all major stakeholders involved (i.e., automotive manufacturers, mobile network operators and Members States) is considered by all stakeholders as a pre-requisite for eCall harmonised and EU-wide deployment.

Recommendation 3: Improve the assessment and presentation of impacts.
A section was added in Annex XIV clarifying the total implementation and operational costs and their split between public and private sector. Additional paragraph was also added in section 5.8.5. The costs of the different options are included in table 8 (qualitative cost-benefit analysis) and further details are provided in Annex IV.B.1.

Recommendation 4: Better compare the options.
Table 5, 6 and 8 modified following the recommendation, including clear comparison to the baseline scenario and the addition of explanatory footnotes. The same appraisal criteria have been used for all the options.

EUROPEAN COMMISSION

Brussels, 8.9.2011
SEC(2011) 1019 final

Part 2

COMMISSION STAFF WORKING PAPER

IMPACT ASSESMENT

Accompanying the document

COMMISSION RECOMMENDATION

on suppor for an EU-wide eCall service in electronic communication networks for the transmission of in-vehicle emergency calls based on 112 ('eCalls')

{C(2011) 6269 final}
{SEC(2011) 1020 final}

Public consultation on the deployment of the pan-European in-vehicle emergency call **(eCall)** in Europe

<u>QUESTIONNAIRE</u>

<u>What is eCall?</u>

In case of a severe crash, an eCall-equipped vehicle will automatically call 112, the EU's single emergency number. Even if no passenger is able to speak, e.g. due to injuries, a minimum set of data with information about the accident is sent automatically. The minimum set of data includes the exact geographic location of the crash site. eCall can also be activated manually.

eCall has the potential to reduce the time that emergency services will need to arrive at the accident scene. This will contribute to reducing the number of people killed in road accidents, as well as the severity of injuries.

More information available on www.ec.europa.eu/ecall

<u>Objective of the public consultation</u>

The European Commission is carrying out an assessment of the impact of eCall. The assessment considers various policy options (no intervention, voluntary approach or mandatory implementation of eCall) to implement the eCall service in Europe.

The main objective of this public consultation is to collect the opinions of stakeholders and EU citizens on the issue and therefore ensure the transparency of the decision making process.

"The Commission seeks the views of civil society groups and other interest parties because of the constituencies they represent, rather than because of the expertise they possess" (COM(2002) 713)

IDENTIFICATION INFORMATION:

Name, Organisation, Function, Country of residence, Email, Answering:

 as individual - on behalf of your company/organisation - on behalf of your public authority

1. **I am aware of the eCall system and its functions**

<div align="center">No - Partly - Yes</div>

2. **I find the eCall system useful**

agree strongly - agree - undecided - disagree - disagree strongly

3. **I would like to have my vehicle equipped with the eCall system**

agree strongly - agree - undecided - disagree - disagree strongly

4. **I would like the eCall system to work all over Europe and across all automotive brands**

   agree strongly - agree - undecided - disagree - disagree strongly

5. **Private eCall systems will suffice to achieve the pan-European deployment of eCall**

   agree strongly - agree - undecided - disagree - disagree strongly

6. **Since 20 EU Member States have signed the eCall Memorandum of Understanding to promote the voluntary deployment of eCall, there is no need for legislative measures**

   agree strongly - agree - undecided - disagree - disagree strongly

7. **eCall should not be optional, but mandatory in all vehicles**

   agree strongly - agree - undecided - disagree - disagree strongly

8. **eCall should be introduced in the following categories of vehicles?** *(you may tick more than one box)*

☐ cars
☐ motorcycles
☐ light trucks
☐ heavy duty trucks
☐ buses
☐ none of them

9. **I would prefer that the voice call and data generated by the eCall system be handled by a private service provider rather than by a public emergency call centre (112 centre)**

   agree strongly - agree - undecided - disagree - disagree strongly

10. How much would you, as vehicle owner, be willing to pay for having eCall in your next vehicle?

☐ less than 150 €   ☐ between 150 to 300 €   ☐ More than 300 €

11. If the price of vehicles would go up by ~ 200€ because it has eCall, this would affect my choice when buying a new vehicle

☐ Yes, I would change vehicles less frequently or buy cheaper vehicle models

☐ No, it would not affect my choice

12. The mandatory introduction of eCall will contribute to speed up the deployment of other telematics services in Europe

agree strongly - agree - undecided - disagree - disagree strongly

13. By providing the basic components for connecting the car to the telecommunications network, the in-vehicle eCall system could also be used to offer additional private or public services, such as pay as your drive insurance schemes, dangerous goods tracking, dynamic navigation, breakdown calls, car localisation in case of theft. The availability of such services would provide me with more of an incentive to equip my next vehicle with eCall

agree strongly - agree - undecided - disagree - disagree strongly

14. Other comments and/or contributions on eCall

………………………………………………………………………………….…………

The Commission may contact me for further details on the submitted information

YES   -   NO

Thank you very much for providing your opinion on the deployment of eCall in Europe. Your contribution will be taken into consideration in line with the European Union's legal framework, which states that *"the Commission should [...] consult widely before proposing legislation and, wherever appropriate, publish consultation documents"*.

eCall Public consultation 2010

Results

1. BACKGROUND INFORMATION

- The public consultation was conducted via the on-line Inter-active Policy Making (IPM) survey, published on the dedicated web-site "Your Voice in Europe". Information on the public consultation were extensively disseminated through stakeholders (ICT constituency, Members of the EeIP, iCar Support, ITS Nationals, Impact Assessment Steering Group mailing list, eSafety Forum, etc.) and also advertised in major websites (DG INFSO website, Your Voice in Europe, Ministries, Associations, etc.).

- The survey was launched on 19/07/2010 and closed on 19/09/2010.

- In-house report.

2. COMPARISON OF RESPONDENTS TO THE SURVEY, REPLYING:

- **As individual**   308   **68,44%**

- On behalf of company/organisation   130   28,44%

- On behalf of public authority   14   3,11%

    Grand Total   **450**   **100%**

- **By States :**

    Citizens/representatives of organisations from all European Member States replied to the survey, except Estonia (EE) and Cyprus (CY).**:**

AT	70		FI	5		NL	19
BE	43		FR	19		PL	10
BG	3		EL	18		PT	5
CZ	7		HU	5		RO	1
DE	79		IE	4		SK	1
DK	1		IT	50		SI	6
UK	23		LV	2		SE	7
ES	32		LT	1		NO	28

MT	1		LU	4

Remark : DE, AT, IT, BE, NO are the most represented States.

The Commission has acknowledged the receipt of all stakeholder responses to the consultation, and the final results of the consultation have been made publicly available[1] on the 8th October 2010.

In total 450 responses were received, resulting as follows:
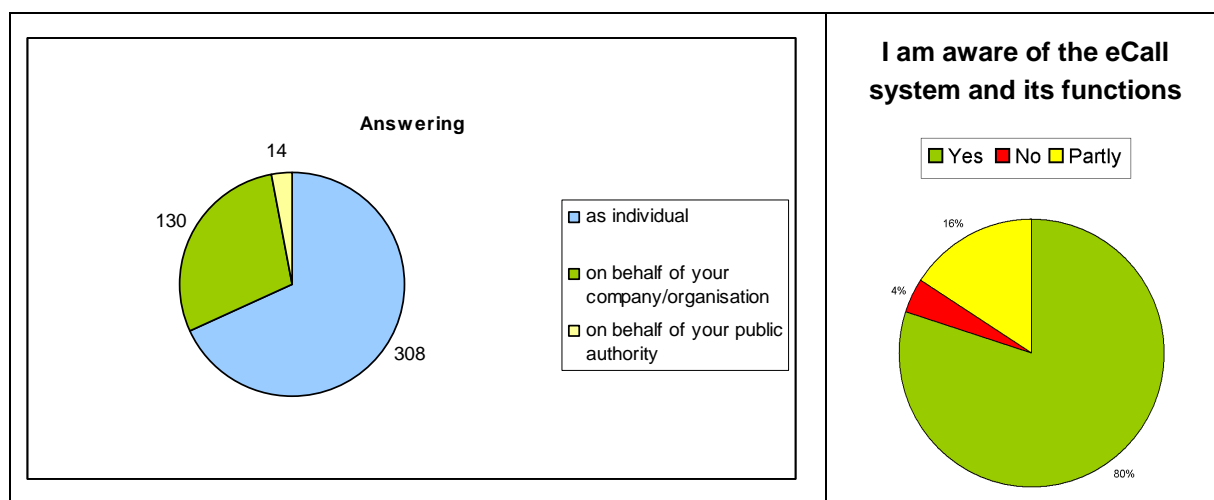
3. QUANTITATIVE ANALYSIS: REPLIES TO QUESTIONS

3.1.   I am aware of the eCall system and its functions

Answering :	n/a	No	**Partly**	**Yes**	Grand Total
• as individual	4	16	60	228	308
• on behalf of your company/organisation		2	10	116	128
• on behalf of your public authority			1	13	14
Grand Total	4	18	71	357	450
	0,88%	4%	**15,78%**	**79,33%**	

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[1] http://ec.europa.eu/information_society/activities/esafety/ecall/index_en.htm
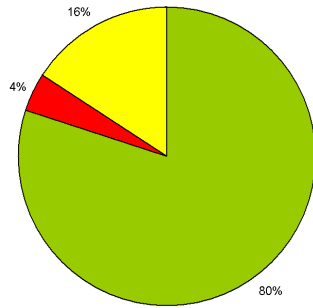
Remark : A huge majority of the respondents are aware of the eCall system.

Yes ■ No □ Partly

3.2. I find the eCall system useful

Answering :	agree strongly	Agree	Disagree	disagree strongly	Undecided	Grand Total
• as individual	187	86	7	13	15	308
• on behalf of your company/organisation	81	40	2	1	4	128
• on behalf of your public authority	5	7	1		1	14
Grand Total	273	133	10	14	20	450
	60,67%	**29,56%**	2,22%	3,11%	4,44%	

Remark : A big majority of participants find the system useful.
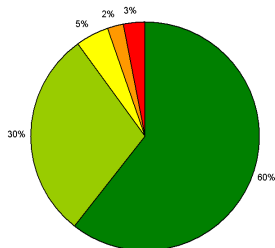
■ agree strongly ■ agree □ undecided ■ disagree ■ disagree strongly

3.3. I would like to have my vehicle equipped with the eCall system

Answering :	agree strongly	Agree	disagree	disagree strongly	undecided	Grand Total
• as individual	161	99	4	22	22	308

	agree strongly	agree	undecided	disagree	disagree strongly	Grand Total
• on behalf of your company/organisation	64	50	3	2	9	128
• on behalf of your public authority	5	4	1		4	14
Grand Total	230	153	8	24	35	450
	51,11%	34,00%	1,78%	5,33%	7,78%	1
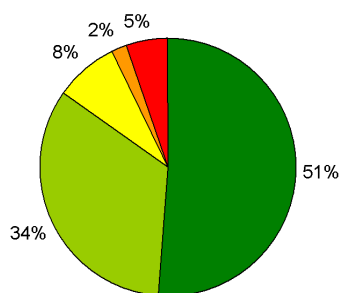
Remark : 85% would like to have their vehicle equipped with eCall.

■ agree strongly ■ agree □ undecided ■ disagree ■ disagree strongly

3.4. I would like the eCall system to work all over Europe and across all automotive brands

Answering :	agree strongly	agree	disagree	disagree strongly	Undecided	Grand Total
• as individual	212	59	5	21	11	308
• on behalf of your company/organisation	87	31	1	2	7	128
• on behalf of your public authority	6	5	1		2	14
Grand Total	305	95	7	23	20	450
	67,78%	21,11%	1,56%	5,11%	4,44%	1
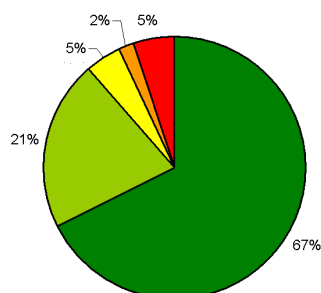
Remark : 88% want a pan-European system working in all vehicles.

■ agree strongly ■ agree □ undecided ■ disagree ■ disagree strongly

3.5. The deployment of an interoperable EU-wide eCall can be achieved through private-led initiatives

Answering :	agree strongly	**agree**	**Disagree**	disagree strongly	**undecided**	Grand Total
• as individual	29	86	79	33	81	308
• on behalf of your company/organisation	22	29	32	13	31	127
• on behalf of your public authority		1	3	3	7	14
Grand Total	51	116	114	49	119	449
	11,36%	**25,84%**	**25,39%**	10,91%	**26,50%**	1

11% 12%
25%
26%
26%

■ agree strongly ■ agree □ undecided ■ disagree ■ disagree strongly
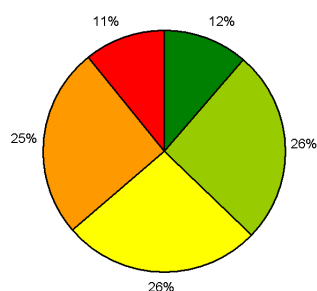
Remark : There is no clear opinion whether eCall can be achieved through private-led initiatives.

3.6. Since 20 EU Member States have signed the eCall Memorandum of Understanding (1) to promote the voluntary deployment of eCall, there is no need for legislative measures

() The eCall Memorandum of Understanding is an expression of commitment of the signatories to work for the implementation of eCall, but it is not a legally binding agreement. It has been signed by 20 Member States, 3 Associated States and more than 100 organisations.

Answering :	agree strongly	agree	**disagree**	**disagree strongly**	disagree totally	**Undecided**	Grand Total
• as individual	32	45	120	53	1	57	308
• on behalf of your company/organisation	16	13	51	26	1	20	127
• on behalf of your public authority		2	6	2		4	14
Grand Total	48	60	177	81	2	81	449
	10,69%	13,36%	**39,42%**	**18,04%**	0,45%	**18,04%**	1
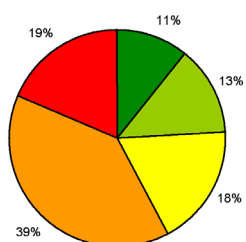
Remark : 57% advocate for legislative measures to implement eCall. 24% consider that there is no need for legislative measures.

■ agree strongly ■ agree □ undecided ■ disagree ■ disagree strongly

3.7.   eCall should not be optional, but mandatory in all vehicles

Answering :	agree strongly	agree	disagree	disagree strongly	undecided	Grand Total
• as individual	111	99	25	39	34	308
• on behalf of your company/organisation	43	45	13	9	17	127
• on behalf of your public authority	5	2	1	2	4	14
Grand Total	159	146	39	50	55	449
	35,41%	**32,52%**	8,69%	11,14%	12,25%	1
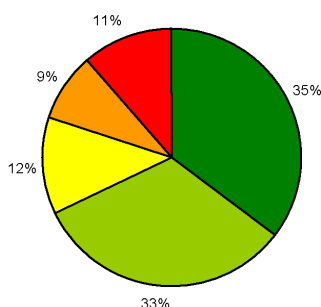
Remark : 68% consider that eCall should be mandatory in all vehicles. 19% disagree with this.

■ agree strongly ■ agree □ undecided ■ disagree ■ disagree strongly

3.8.   eCall should be introduced in the following categories of vehicles? (you may tick more than one box)

Answering :	cars; motorcycles; light trucks; heavy duty trucks; buses	cars; light trucks; heavy duty trucks; buses	cars; motorcycles; light trucks; heavy duty trucks	Cars	none of them
• as individual	193	34	11	8	20
• on behalf of your company/organisation	81	12	7	5	4
• on behalf of your public authority	7	2	1		1

Grand Total	281	48	19	13	25
	62,58%	10,69%	4,21%	2,90%	5,57%

TOTAL CARS :   91,13%

TOTAL LIGHT TRUCKS :   84,48%   TOTAL BUSES :   82,26%

TOTAL HEAVY DUTY TRUCKS :   82,71%   TOTAL MOTORCYCLES :   73,17%

3.9. I would prefer that the voice call and data generated by the eCall system be handled by a private service provider rather than by a public emergency call centre (112 centre)

Answering :	n/a	agree	agree strongly	**disagree**	**disagree strongly**	undecided	Grand Total
• as individual	4	29	12	99	89	75	308
• on behalf of your company/organisation	1	7	21	33	30	36	127
• on behalf of your public authority		1	1	6	5	1	14
Grand Total	5	37	34	138	124	111	449
	1,11%	8,24%	7,57%	**30,73%**	**27,62%**	24,50%	1
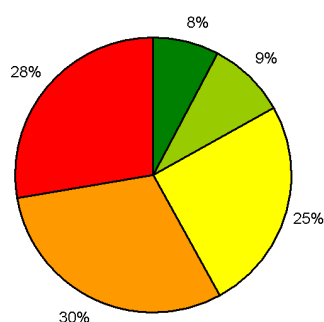
Remark : 58% prefer eCall to be handled by public authorities, whereas 16% favours the private service provider.

■ agree strongly ■ agree □ undecided ■ disagree ■ disagree strongly

3.10. How much would you, as vehicle owner, be willing to pay for having eCall in your next vehicle?

Answering :	**less than 150 €**	between 150 to 300 €	more than 300 €	Grand Total
• as individual	212	89	6	307
• on behalf of your	79	45	1	125

company/organisation				
• on behalf of your public authority	8	6		14
Grand Total	299	140	7	446
	67,04%	31,39%	1,57%	1

Remark : The majority prefers a cheap solution.

3.11. If the price of all new vehicles goes up by ~ 200€ because it includes the eCall system, this would affect my choice when buying a new vehicle

Answering :	n/a	**No, it would not affect my choice.**	Yes, I would change vehicles less frequently or buy cheaper vehicle models.	Grand Total
• as individual	3	236	69	308
• on behalf of your company/organisation	10	90	24	124
• on behalf of your public authority	2	11	1	14
Grand Total	15	337	94	446
	3,36 %	**75,56%**	21,08%	1

Remark : eCall would not affect the vehicle buyers' choice in the majority of the cases.

3.12. By providing the basic components for connecting the car to the telecommunications network, the in-vehicle eCall system could also be used to offer optional private or public telematic services. The availability of such services would provide me with more of an incentive to equip my next vehicle with eCall

Answering :	**agree strongly**	**agree**	disagree	disagree strongly	undecided	Grand Total
• as individual	85	130	22	30	41	308
• on behalf of your company/organisation	52	46	8	5	16	127
• on behalf of your public authority	3	3	4	1	3	14

Grand Total	140	179	34	36	60	449
	31,18%	**39,87%**	7,57%	8,02%	13,36	100,00%
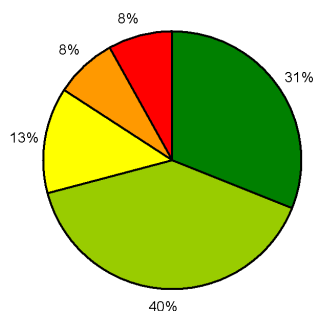
Remark : 71% consider that the eCall platform could be useful to provide other services.

■ agree strongly ■ agree □ undecided ■ disagree ■ disagree strongly

3.13. The mandatory introduction of eCall will contribute to speed up the deployment of other telematics services in Europe

Answering :	**agree strongly**	**agree**	Disagree	disagree strongly	undecided	Grand Total
• as individual	89	148	16	15	40	308
• on behalf of your company/organi sation	47	47	6	6	21	127
• on behalf of your public authority	3	5	3		3	14
Grand Total	139	200	25	21	64	449
	30,96	**44,54**	5,57	4,68	14,25	100,00%
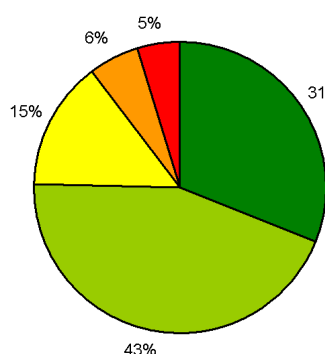
Remark : 74% consider that the mandatory introduction of eCall will kick-off the telematics market in Europe.

■ agree strongly ■ agree □ undecided ■ disagree ■ disagree strongly

Representative quote from a comment to the public consultation:

"Don't try to create the perfect eCall system for everyone in Europe at one time! That is not realistic as there are too many differences in prerequisites. Get the infrastructure (on board cars and at PSAPs) in place by using the regulatory mandate and support the vehicle

manufacturers in motivating a higher cost for their cars with eCall. Let eCall make its eway step by step but with requirements on implementation."

4.- QUALITATIVE ANALYSIS OF THE ANSWERS TO THE PUBLIC CONSULTATION ON ECALL

This qualitative analysis has been performed of those contributions to the public consultation that have answered on behalf of their organisations or on behalf of their public authorities.

Out of total 450 responses to the public consultation, 130 answers have been received on behalf of organisation and 14 on behalf of public authorities. The answers have been grouped in the following sectors:

STAKEHOLDER TYPE	NUMBER OF CONTRIBUTIONS
Vehicle Manufacturers	6
Civil Protection representatives	15
Consultancies	9
Insurance companies	10
Users' and Road Safety organisation	19
National Associations on road/vehicle safety	6
Suppliers	26
Dealers	3
Organisations related to Navigation/satellite navigations	6
ITS National associations	3
Automobile users club	7
Mobile Network Operators	6
Research organisation	8
Road operators	4
Service providers	5
Transport Operators	6
Others	5
TOTAL	**144**

1. **Vehicle Manufacturers**: 4+1+1 answers (BMW, Daimler, Ford, Fiat + position papers by ACEA – European Association of Automobile Manufacturers, and ACEM –European Association of Motorcycle Manufacturers)

All Car Manufacturers having answered agree/agree strongly on the usefulness of the system and on the convenience on having the cars equipped with eCall, although Ford thinks that depending on the location it may vary in usefulness. All agree strongly/agree that it should work all over Europe and for all brands, stressing that it should work in all 27 Member States. 2 manufacturers agree that private services can lead the introduction of eCall, as private services already exist. Ford, based on their US experience, is undecided, as direct contact with PSAP may be more efficient. BMW Group is against leaving it to the private initiative. Daimler agrees strongly that there is no need to use legislative measures, Centro Ricerche Fiat agrees to it. Ford agrees as well, pledging to leave to market forces its introduction, however asks to consider legislation for the upgrade of the PSAPs infrastructure. BMW Group is undecided, as the MoU is not imposing tempos, asking for the support of private services as well. With the exception of Fiat (undecided) the others are strongly against the mandatory introduction of eCall: if the customer has to pay, he needs to decide; otherwise he may not

consider buying new cars. Regarding vehicle categories, all auto manufacturers think eCall should only be introduced for cars, with the exception of Fiat, who would also like to see it introduced for light and heavy duty vehicles. All ask for the cheapest solution, Fiat for a free service, Ford asks to consider mobile devices (phones) based solutions as well. Regarding whether it would affect the change of vehicle, the opinions are divided. Fiat agrees strongly to the fact that the eCall platform can be used for other services, the others disagree/disagree strongly, as they claim the organisation may not be the same and not all the customers would like them (BMW); users prefer smart phones for such services (Daimler), and that deployment of other services should be left to market forces.

Fiat agrees to consider that mandatory introduction of eCall would speed up in-vehicle telematic services, Ford is undecided and BMW and Daimler disagree. Additional comments are to allow private eCalls in the future (BMW), and to allow OEMs to choose the technical solutions to implement eCall.

The position paper from ACEA mainly refers to the costs, with no opinion regarding mandatory introduction or not. In its previous position paper, ACEA, supported by JAMA and KAMA (Japanese and Korean Association of Vehicle Manufacturers) stated that the eCall service could be offered as option in the cars three years after the relevant standards would have been approved. They also stated that the service should work in all Member States, and that it should be limited at a first stage to M1 and N1 categories of vehicles, for which an appropriate triggering strategy exists.

ACEM, although favourable in principle to the concept of eCall and the possible benefits it may bring, considers that the technology is not mature enough for its introduction in powered-two-wheelers (P2W), and that more consideration should be given to the specificities of motorcycles in terms of their dynamics, technology, usage by categories, and relative costs. ACEM therefore advocates for continuing research and standardisation activities regarding eCall and P2W.

2. **Civil Protection representatives**: 15 answers, comprising international (1), national (5), regional (1) and local level (8)

Regarding country of origin, 3 come from Spain (local/regional bodies), 4 from Germany (local/regional), 1 from Lithuania (the national 112 emergency service), Austria (national, fire-fighters association), 3 from Norway (2 national answers, from Norwegian Air Ambulance, 1 local), Slovenia (Ministry of Defence) and one answer from the International Association of Emergency Managers.

This should be completed with the answers provided by the representatives from emergency call centre from Nurnberg, Germany, and the National 112 Call Centre from the Netherlands, which replied as public organisations.

All the respondents share common positions (with the exception of the Norwegian local representative, which is following in the majority of the cases the opposite opinion): they all strongly agree/agree to the usefulness of the system, they would like to have new vehicles equipped with eCall, - German representative of municipality undecided, all strongly agree/agree it should work all over Europe and for all brands.

To the question whether the initiative should be left to the private sector, two disagree strongly (mentioning problems with roaming), one disagree, eight are undecided, three agree (although one advocates for the regulatory authorities ought to have strong impact - to ensure legitimacy) and one agrees strongly.

To the question whether there is no need for mandatory introduction, eight disagree/disagree strongly, mentioning that the voluntary approach had led to a lot of delay. Four are undecided, the rest (four) agree/agree strongly.

To the question of the mandatory introduction, five agree strongly (to ensure functionality, to ensure standard protocols as several emergency services will be covered), 5 agree, 3 are undecided and 3 disagree.

Regarding the type of vehicles, the majority would like all types to be equipped.

Regarding the question of the private handling of eCall, five disagree strongly (necessity to involve several emergency services, need to ensure roaming in different countries), five disagree, four are undecided and two agree strongly (municipality in Germany, region in Spain)

For the price, 8 would like the cheapest solution, 8 could go up to 300€ All except one do not consider that it will affect their choice of vehicle. 13 think that the mandatory introduction will speed-up telematics, 3 are undecided.

To summarise, the majority of civil protection representatives thinks the system is useful, it should work all over Europe, do not have clear whether initiative should be left to private sector, prefer mandatory introduction, and public handling of the calls.

3. **Consultancies:** 9 answers (from Germany, UK, Belgium, France, Spain; 4 coming from technology consultancies, 1 from Northern Ireland bike rider lobby, 1 transport consultancy, 2 on auto telematics, 1 business related)

The Right to Ride consultancy opposes strongly to the idea of introducing eCall, considers a way to track the citizens, and useless as mobile phones can already be used to call emergency services. All the others offer consistent answers: all agree/strongly agree that eCall is quite useful and would like new vehicles equipped with it (can have important effects to save lives, technology available and trustworthy), and should work all over Europe for all brands (one – business consultancy, is undecided to these question).

Four respondents disagree to leave it to the private initiative, (system should be cheap, although private initiatives are important, minimum service should be ensured to all EU citizens), one is undecided, three agree (the eCall service should be bundled with others, eCall could be achieved through private initiative, EU institutions have to build up the legislative framework in the near future)

The majority (6) respondents think that there is a need of regulatory measures to introduce eCall (to ensure deployment, ensure upgrade of infrastructures by Member States), one is undecided, one –the French- disagrees (voluntary will allow optimisation country by country). Similar is the answer to the mandatory introduction of eCall in the vehicles (allowing economies of scale, benefiting all citizens), although here three are undecided.

Majority think all vehicles should be equipped, one only passenger cars, one only heavy duty vehicles and buses.

Regarding private handling of eCalls, majority disagree strongly/disagree (health care belongs to public sector, 112 is public emergency number); 1 is undecided, the French disagrees (112 should only be for emergency services). All would like to have the cheapest service and do not think it will affect their choice except one.

Four agree it can be used for other services, the French consultancy thinks it should be the other way round, two are undecided, and another considers the eCall should be a part of an IT platform in the vehicle.

3 think that the mandatory introduction would speed-up the in-vehicle telematics market; four are undecided (one thinks it will, but it should not be an argument to mandate it), the French consultancy disagrees, as it may limit existing applications.

4. **Insurance Companies**: 10 answers, including the position of the CEA – European Confederation of Insurances, and AMICE – Association of Mutual Insurers and Insurances.

The following insurance companies replied to the eCall public consulation: Asociación Española de Corredores de Reaseguro, MACIF, German Insurance Association, Allianz-Mondial Assistance, Folksam Insurance Group, Aviva. CEA and AMICE also provided their contributions. Some of them declared to offer eCall among their current services. All agree or agree strongly on the usefulness of eCall, with a positive impact also on accident management, and they all agree that the eCall system should have a pan-European dimension. However most of them stress the importance that a possible regulation would leave space for the existing services and other private initiatives, while granting interoperability. In fact 60% of the respondents believe that the deployment of an interoperable EU-wide eCall can be achieved through private-led initiatives. Concerning the mandatory implementation, 70% of the participants are in favour, while 30% remain undecided. The majority (60%) would like to have the eCall handled by a private service provider rather than by a public emergency call centre, while 40% would prefer to leave the choice to the Member States. Folksam Insurance Group believes that, considering the average cost of the vehicle, eCall could be more expensive than 300 euros, while the rest would prefer a price between 150 and 300 euros (5) or below 150 euros (4), as the price increase could influence the consumers' choice. Except CEA (undecided), all agree that the eCall in-vehicle platform could be used for other services and that its mandatory implementation could speed up the uptake of telematic services in Europe. Some of the respondents stressed the importance to guarantee consumer choice and free competition in the deployment of the eCall system, as none of the involved stakeholders should have a market dominant position.

5. **Users' and Road Safety organisation**: 19 replies, including one position paper from FIA.

The replies have been received from five international organisations (ETSC – European Transport Safety Council, FIA[2] Europe – Federation International de l'Automobilisme, EAC[3] – European Automobile Clubs, FEMA[4] – Federation of European Motorcyclists' Associations, and EENA[5] – European Emergency Number Association); FEMA refers in its answers to eCall for Powered two wheels (P2W) only.

All the five are well aware of eCall, but there are doubts whether the citizens are well aware about eCall or even about 112 in some Member States. All support strongly the usefulness of the system for saving lives and reducing injuries, indicating the need to intregate the eCall

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[2] FIA brings together 227 national motoring and sporting organisations from 132 countries on five continents. Its member clubs represent millions of motorists and their families
[3] EAC represents the interests of a total of 2.5 million people
[4] Representing 25 Motorcyclist Associations from 20 States
[5] The EENA memberships include more than 400 emergency services representatives from 39 European countries, 24 solution providers, 9 international associations/organisations as well as 20 Members of the European Parliament

service in the emergency call response infrastructure; FIA mention also that the systems can be useful to provide additional (e.g. assistance) services, and recommend a clear separation between the system in place to make emergency calls and the supply of non-emergency service (e.g., separate buttons). EENA calls for similar level of 112 services in all MS.

To the question whether you would like your vehicle equipped with eCall, FIA and ETSC agree strongly and EENA agrees, although ETSC has not an own fleet. FIA mentions that all vehicles should be equipped with the eCall devices compliant with common European standards. In the interest of making access to this important road safety technology as affordable as possible FIA advocates for its mandatory introduction by EU regulation, while giving consideration to consumer choice and protection of their privacy. EAC is undecided and FEMA considers the question for private responders.

All the five agree strongly (EAC agree) to the need of having all the brands equipped and the service working in all EU member states. FIA and EENA mentions that citizens have the right to expect the same levels of road safety and access to emergency services wherever they circulate in the EU; EAC mentions that eCall needs to be independent of a specific terminal or the automotive technology, and give the possibility of using mobile terminals. FIA supports the introduction of a public pan European eCall system of PSAP coupled with all vehicles being equipped with open standardised eCall service hardware.

The majority disagree strongly/disagree to leave the introduction of an interoperable EU-wide eCall service to the private initiative, as: the experience shows that EU-led initiative are faster and ensure interoperability; also after more than ten years eCall is not found in all vehicles and its benefits are not offered to all citizens irrespective of the EU member state in which they find themselves; public initiative is needed to ensure cooperation between all partners in the value chain as well as to ensure appropriate PSAPs infrastructure; private initiatives may lead to privacy/liability problems; EAC calls for separation between commercial services and interest of public services to avoid market dominances. FEMA, for the P2W eCall service, believes that a voluntary approach based on products proposed on the market will provide the best benefit for the consumer in terms of choice and cost-effectiveness.

The majority considers also that there is a need of regulatory measures to ensure that the eCall system will work everywhere in the EU and simultaneous and harmonised deployment across all Member States irrespective of the 112 systems deployed locally; efficient fast emergency call response infrastructures need to be deployed with similar level of service all over Europe. The voluntary approach with the MoU has not proved to be effective to deploy an interoperable EU-wide eCall system. For the P2W eCall FEMA thinks on the contrary that EC should wait to properly assess the effective of the eCall introduction, as well as reliability and cost-efficiency of the systems.

Regarding whether eCall should not be optional, but mandatory in all vehicles, ETSC and FIA agree strongly, and EENA agrees. eCall should be mandatory in all vehicles in the same way as several other safety features (e.g. mirrors, brakes, safety belts, airbags), the greater the number of vehicles equipped, the bigger the road safety impact and the lower the price. FIA calls also for retrofitting. EAC disagrees, because they ask also for solutions based on mobile devices, advocating for eCall devices independent of a specific terminal or the automotive technology. FEMA disagrees strongly as the safety benefits from the use of eCall have not yet been established for P2W considering the different vehicle types and the different usage of P2W categories. Moreover, for powered two-wheelers eCall would induce a higher cost relative to vehicle price, as well as technical issues surrounding system input and integration in the vehicle. Mandatory eCall should not be introduced for all categories of powered two-wheelers; additional research, innovation and product development is needed for P2W.

Regarding categories of vehicles all support eCall for all categories, ETSC mentions that exceeding certain speed threshold all should be equipped. FIA acknowledges that for motorcycles it may be relatively costlier, FEMA clarifies that supports availability. EAC disagrees because they want solutions independent of a specific terminal or the automotive technology (i.e., mobile terminals based)

With respect of the question whether the eCall should be handed by private parties, EAC disagrees strongly and EENA and FIA disagree. The role of PSAPs is crucial in handling emergency calls so they should be ultimate responsible in managing eCalls (although they may delegate in private organisations). The implementation of eCall can be best realised if technology is based on existing and mostly proven de-centralised emergency call structures; private handling may lead to privacy and liability issues. ETSC and FEMA are undecided.

All agree that the system should be as cheapest as possible. Market will provide leverage opportunities. eCall users must be guaranteed a quick accident assistance all over Europe, regardless of their home country's emergency call structures (different emergency numbers etc.). EAC mention that the vendor lock-in to a specific car manufacturer must be prevented. FEMA points out that the cost would be relatively higher for motorcycles. It would not affect the choice for the next car, (eCall can be integrated in the factory price as for other safety services) with the exception of motorcycles.

To the questions whether it could be used for other services and whether its mandatory introduction would speed-up the telematics market, ETSC, FIA and EENA agree to both statements, pointing out that roadside assistance should work closely with eCall services. The FIA believes that enormous commercial possibilities could be associated with the introduction of eCall, and ask to ensure that the EU roll out of this technology is based on standardised systems and interfaces which permit equitable access to stakeholders interested in competitively supplying additional services to consumers. The same is considered by EAC, which for that reasons disagree, asking to separate emergency services from commercial services. FEMA thinks that it may be too early to consider telematics deployment in P2W; further research is needed.

As general comments, ETSC request similar support to the introduction of other intelligent vehicle safety technologies, like Intelligent Speed Adaptation and Alcohol Ignition Interlocks; EAC suggests to complete the existing emergency call response structures with the eCall service, rather than replacing it and proposes the use of cohesion funds when possible. FIA considers that eCall is an important road safety technology that is rightly identified as a priority ITS technology for rapid deployment, advocates for the use of in-vehicle open platforms and calls for respect of consumer rights (choice, privacy). FEMA asks for more research for P2W, and EENA regards eCall as a major opportunity for the European Commission to enable emergency services to benefit from innovative technologies and more data as well as to put innovation at the service of EU citizens.

6. National associations on road/vehicle safety

6 associations have responded to the consultation (Association Prévention Routière, France, RoSPA (The Royal Society for the Prevention of Accidents), UK, FITSA and FITSA Foundation, Spain, FEVR/AVR, Luxembourg, and STOP Accidentes, Spain). All these national associations match the answers provided by the European Transport Safety Council. They are all very supportive, find the system useful to improve road safety, prefer EU action to accelerate deployment in all vehicles and all brands, prefer handling of the calls by 112 Centres (3 undecided), prefer mandatory introduction (3 undecided) and think it would help to deploy other services.

7. Automobile users clubs

7 national automobile users clubs have responded individually: ADAC (Germany), RACC (Spain), OEAMTC and ARBÖ (Austria), ANWB, (The Netherlands), Automobile Club du Luxembourg, Touring Club (Belgium). ARBÖ has sent similar answers and comments that EAC. All the others agree with the position of FIA, finding it very useful. ANWB mentioned that although they support preventive systems, eCall can contribute to avoid fatalities and reduce injuries. All agree strongly that the vehicles should all be equipped with eCall, OEAMTC, ADAC and ANWB mention the need to protect privacy, ANWB the importance of introducing it in all vehicles to make it affordable; ADAC supports the public pan-European eCall, OEAMTC also likes third-party supported eCall services. They all (with the exception of Touring) think regulatory measures are needed, as voluntary approach did not lead into sufficient progress through the MoU, due to different interests. Mandatory introduction is favoured by all, as way also to bring down the prices; retrofitting is also favoured; ANWB mentions the possibility of using nomadic solutions. All would like all vehicles equipped, OEAMTC and ANWB mention specificities of Heavy Duty Vehicles and Motorcycles. The question about whether it should be handled by private parties is the only one where there are discrepancies in relation to FIA position. Touring and OEAMTC agree to the private handling of eCalls, the latter mentioning that PPP could be useful for those countries with complex emergency call infrastructures. ADAC and RACC are undecided, the others disagree. All agree to a cost lower than 150€, OEAMTC and ANWB mentioning that existing technologies allow that price for big volumes. The latter mention that combining the eCall with other services allow for 0 cost for the consumer. All with the exception of the Luxembourg Club, agree to consider eCall as way to offer added value services, the majority pledging for open competition. All think it will speed up telematics (RACC undecided) Finally, OEAMTC and ADAC ask for open standards and advocate for adoption of open platforms in the vehicle, ANWB also asks for open competition and protection of privacy.

8. Suppliers: 24 replies + 2 position papers (6 Telecom, 7 ITS, 11 Automotive industry/services + Position from CLEPA + Position from IBM)

The greatest majority of suppliers are very much in favour of the mandatory deployment of eCall, as they believe it is a useful safety system and it could create significant additional business cases linked to transport telematics. They are also in favour of a cheap solution (less than 150€) which they consider feasible from their point of view (some of the suppliers provided also cost estimations).

9. Mobile Network Operators: 5 replies (Telekom Austria AG, Vodafone, Everything Everywhere, AFOM, Deutsche Telecom AG) + 1 position paper from GSMA Europe

All respondent MNOs find eCall very useful and a reasonable way to reduce road fatalities in Europe. However Everything Everywhere (T-Mobile & Orange brands) stated that the eCall benefits would be limited to the GSM coverage and therefore disagrees strongly on the concrete usefulness of the service. All MNOs are in favour of the interoperability and availability of the service across the EU, but while two of them (Everything Everywhere and AFOM) believe this would be possible through private initiative, the others expect mandatory implementation as the only possible solution to guarantee the parallel commitment of all relevant stakeholders.

10. Road Operators: 4 replies (ASFINAG, ASECAP, Attikes Diadromes S.A., Highways Agency).

All road operators representatives find eCall useful and they strongly agree with the pan-European deployment of the system. Two of them believe that this target cannot be achieved by the private-led initiative, while the other two are undecided or in favour of this option. Except one, all respondents strongly agree with the mandatory implementation of eCall. All four agree that eCall will speed-up the uptake of telematic services.

11. Other contributions

- Dealers: 3 answers

- Organisations related to Navigation/satellite navigations: 6 answers.

- ITS National associations: 3 representatives.

- Research organisation: 8 answers

- Service providers: 5 answers

- Transport Operators: 6 answers.

- Others: 7

EUROPEAN COMMISSION

Brussels, 8.9.2011
SEC(2011) 1019 final

Part 3

COMMISSION STAFF WORKING PAPER

IMPACT ASSESSMENT

Accompanying the document

COMMISSION RECOMMENDATION

on suppor for an EU-wide eCall service in electronic communication networks for the transmission of in-vehicle emergency calls based on 112 ('eCalls')

{C(2011) 6269 final}
{SEC(2011) 1020 final}

Annex III: Analysis of the expected number of eCalls

1.   Estimated number of calls

Based on the figures provided by the main private emergency call services (GM OnStar in the United States, > 5 million vehicles equipped, and PSA, > 500,000 vehicles in Europe), the ration of automatic and manual eCalls per vehicle and year for these services is of 2 automatic and 26 manual eCalls per 1000 vehicles per year[1].

These emergency calls private services are bundled with assistance services (e.g., breakdown services, dynamic navigation), which are served by the same private call centres than the emergency call service. Therefore a 30% reduction of the manual eCalls should be considered, as there will not be assistance services, resulting in a final estimation of 2 automatic and 19 manual eCalls per 1000 vehicles per year.

Therefore, when eCall will be deployed in the whole park of 260 million vehicles[2] (full pan-European deployment) would generate the following number of eCalls:

Number of automatic eCalls: 515,000/year

Number of manual eCalls: 4,900,000/year

Total number of eCalls: 5,500,000/year   =   14,835 eCalls/day on average[3],

2.-   Estimated increase of the PSAPs workload

Comparing the amount of eCalls expected with the amount of emergency calls dealt by a PSAP, it is possible to estimate the amount of the workload of the PSAP operator.

Let's take as example the case of Madrid 112 Centre to calculate the increase of emergency call handlings[4]:

Madrid Population: ~6 Million

Madrid 112 centre: 149 operators

Number of handled 112 calls (2005 data): 4.6 million/year = 12,697/day

65.38 % being mobile calls   = 8,302/day

37.10 % being traffic related   = 4,710/day

Number of vehicles in Madrid region: ~2.79 million

Number of expected eCalls in Madrid based on the current statistics:

Number of automatic eCalls: 2,790,000* 2/1000   =   5,580/year

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[1] Source: GM OnStar, PSA operational statistics
[2] Source: ACEA
[3] Considering a lineal distribution of the calls
[4] Sources: Annual Report Madrid 112 (2006) and ANFAC.

Number of manual eCalls: 2,790,000*19/1000 = 53,010/year

Total number of eCalls: 58,590/year = 160 eCalls/day

Without considering that some of these 160 eCalls will replace some of the 4,710 calls related to traffic received daily in Madrid, the potential increase of calls will be:

Increase of number of emergency calls: **1.2 % equivalent to <u>1,6 calls per operator per day</u>**

<u>(Note: assuming that 100 operators will work in the different turns in one day in Madrid)</u>

Country	Car Park (2008) Passenger Cars & LDV	Estimated Automatic eCalls per year when fully deployed	Estimated Manual eCalls per year when fully deployed	Estimated Total eCalls per year when fully deployed	Estimated eCalls per day when fully deployed
BELGIUM	5.817.452	11.635	110.532	122.166	335
BULGARIA	2.699.348	5.399	51.288	56.686	155
CZECH REPUBLIC	5.134.682	10.269	97.559	107.828	295
DENMARK	2.646.306	5.293	50.280	55.572	152
GERMANY	44.180.519	88.361	839.430	927.791	2.542
ESTONIA	639.472	1.279	12.150	13.429	37
IRELAND	2.278.189	4.556	43.286	47.842	131
GREECE	6.153.152	12.306	116.910	129.216	354
SPAIN	27.613.145	55.226	524.650	579.876	1.589
FRANCE	37.212.000	74.424	707.028	781.452	2.141
ITALY	40.894.491	81.789	776.995	858.784	2.353
CYPRUS	506.556	1.013	9.625	10.638	29
LATVIA	1.061.540	2.123	20.169	22.292	61
LITHUANIA	1.889.209	3.778	35.895	39.673	109
LUXEMBOURG	375.353	751	7.132	7.882	22
HUNGARY	3.485.422	6.971	66.223	73.194	201
MALTA	261.264	523	4.964	5.487	15
NETHERLANDS	8.882.000	17.764	168.758	186.522	511
AUSTRIA	4.673.347	9.347	88.794	98.140	269
POLAND	19.093.899	38.188	362.784	400.972	1.099
PORTUGAL	5.757.400	11.515	109.391	120.905	331
ROMANIA	4.594.368	9.189	87.293	96.482	264
SLOVENIA	1.192.231	2.384	22.652	25.037	69
SLOVAK REPUBLIC	1.699.800	3.400	32.296	35.696	98
FINLAND	3.118.964	6.238	59.260	65.498	179
SWEDEN	4.802.668	9.605	91.251	100.856	276
UNITED KINGDOM	34.457.011	68.914	654.683	723.597	1.982
Total	271.119.788	542.240	5.151.278	5.693.513	15.599

Table 1: Estimated number of annual emergency calls in the EU Member States

Note: The total number of annual emergency calls in the EU is approximately 350 million of calls (Source: Communications Committee –COCOM- annual questionnaire).

Annex IV – Detailed cost-benefit analysis

A - Estimation of benefits in terms of reduction of fatalities and mitigation of the severity of injuries.

1 Introduction

It is extremely difficult to estimate the benefits of the eCall system in terms of reduction of fatalities and of mitigation of severity of injuries. This is due to the fact that there are no reliable statistics on the time when the accident took place, but just from the moment the emergency services or the PSAPs were notified. Therefore the estimations should be taken with precaution.

The main problem to estimate the possible benefits of eCall is due to the lack of reliable information about the time when the accident took place. If we look at the time components of the rescue emergency chain[5], eCall can produce more benefits in relation with times t1 (because of the automatic call), t3 and t4 (because of the accurate location sent within the Minimum Set of Data), and in particular regarding t1, the time that happens between the accident takes place and someone calls the emergency call response centre to alert about the accident. Since the call arrives to the PSAP, the rest of the times are normally well reported and available in the statistics of the majority of the EU countries.
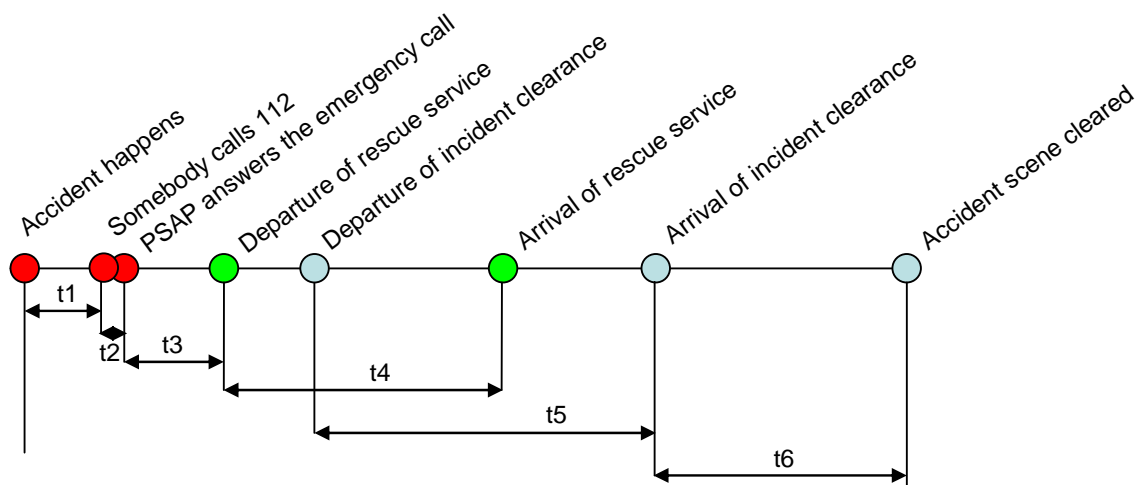
t1 – time between accident and the reporting of the accident
t2 – emergency call answering time
t3 – alert time of rescue brigade
t4 – travel time of rescue brigade
t5 – travel time of incident clearance
t6 – time to clear the accident scene

The lack of statistics about this time t1 happens in particular in those accidents where the occupants of the vehicle die or remain unconscious for a certain period of time. For these cases is when eCall would produce the most benefits.

Ideally, to have a confident evaluation of the benefits of the introduction of the eCall service, a significant number of accidents for which the time t1 is not clear should be assessed case by

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[5] Source: TRL study

case (or at least a relevant sample of them that could provide statistic evidence), although eCall can also provide benefits reducing times t3 and t5, which are easier to evaluate.

The problem is that this detailed analysis would imply an important number or resources, as sufficient sample of accidents would need to be studied, analysing case by case.

The different studies that have look in general to the benefits of automatic in-vehicle emergency call systems have provided estimations of reduction of fatalities going from 5% to 10% (E-MERGE, SEiSS), 5.9% (BMW, increasing the percentage in case of applying advanced options such as sensors to estimate the gravity), 3,5% to 6% (eIMPACT), 3,5% (SDB – UK), 1% to 6% (TRL, depending on the countries). In this study a percentage has been allocated by country taking into account the different estimations of the studies, European-wide and national ones.

2   In depth analysis countries

Some countries have carried out national studies on the impact of eCall**.**

2.1   Finland

The study that look more in-depth to this issue was the AINO study carried out in Finland[6], which looked into all accidents that took place between 2002 and 2003 causing fatalities, analysing them with a multidisciplinary team composed by engineers, researchers, medical doctors and emergency response staff. The estimation of possible reduction of fatalities in Finland due to the introduction of eCall provided by the AINO study was of 4,7%, just taking into account the reduction of time t1 due to the automatic call to the emergency service, with another 4% where probably reductions would have been saved.

2.2   Czech Republic

The Czech Republic authorities conducted a pilot together with the stakeholders in the eCall value chain, and carried out an analisys of the possible benefits of the eCall introduction. The analysis concluded on the estimated 4-6% reduction of fatalities and 6-9% reduction of severe injuries.

2.3   Sweden

The impact of eCall for the Road Swedish Authority (SRA) has been estimated into 2-4% reduction of road fatalities and 3-4% reduction of severe injuries.

2.4   Ireland

In Ireland the Department for Transport conducted a thorough study with the collaboration of the relevant stakeholders concluding that eCall could save 6% of fatalities annually[7].

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[6] www.aino.fi
[7] *"A Cost Benefit Analysis of eCall and Event Data Recorder",* S. Conry, April 2007

2.5 France

Recently the French Authorities (MEDDEM) have presented the outcomes of a study based on accident data from 2009 concluding that eCall could save only between 10-15 lives annually in France[8]. That would mean a maximum estimated reduction between 0,5% and 1% of fatalities: this figure is contradicting all the previous studies (for France, see LAB study or MAIF/MACIF that reported possible reduction of 285 fatalities in France in 2008 if all the car park would be equipped, i.e ~6% reduction).

To arrive to this conclusion the French Authorities take a series of assumptions that goes against previous literature in the area, the main ones being:

I - All fatalities that took place within 24 hours after the accidents are to be considered as MAIS6[9] and therefore eCall could have no benefit on these cases

This assumption will take out of the analysis 95% of fatalities in France. However this assumption contradicts all medical accidentology literature, and against the "Golden Hour" principle, well assumed by the scientific community. While it is true that many of these cases would result into a certain death, (that is the reason why eCall is estimated to reduce the number of fatalities in only around 5% of the cases), many of them could be considered as MAIS 5 and 4, and due to the not arrival of the emergency response, they become fatal accidents. It is precisely in these cases where eCall can be more efficient. The study from LAB[10] in 2005 identified several cases in France where this hypothesis is false.

II - eCall can have no impact on motorbike accidents and pedestrian

For pedestrian this assumption may be accepted (although having the manual eCall in the vehicle could help improving the emergency help), the studies[11] have proved that eCall can have many benefits in motorbikers.

III - eCall cannot be beneficial for retired people in Paris, as most of them have small cars and never leave Paris (urban) area.

This assumption is difficult to sustain, as it is difficult to prove that retired people with small cars –not clear which category of cars- never leave the Paris area; even if the hypothesis would be true, and also if we assume that for every accident in the whole Paris area there are 10 calls, even by night, and thus eCall would be useless retired people could use other persons road vehicles to go outside Paris. The statistics show that there is a significant number of fatalities with person aged over 65 in French roads outside urban areas (according to the CARE database, in 2008 in France there were 180 road fatalities of people aged 65+).

Moreover the study carried out by PSA/LAB on 2005 based on real cases with cars equipped with the PSA private eCall system showed real cases where the occupants have saved their lives or avoid possible serious injuries as consequence of rapid arrival of emergency services (with a park of 160,000 vehicles equipped, not all of them activated)

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[8] See www.

[9] MAIS 6: Injuries resulting fatally into death. See MAIS scale, Annex IX

[10] LAB study: "Appel d'urgence automatique en France", PSA Peugeot Citroën and "Laboratoire d'Accidentologie, de Biomécanique et d'étude du comportement humain (LAB)"

[11] AINO study

2.6 United Kingdom

The Department of Transport mandated in 2006 a study to SDB[12] to analyse the impact of the introduction of eCall in the United Kingdom. The study estimated a total reduction of fatalities in the UK by 3%, while reduction of severe injuries was estimated at 2%. Costs of the in-vehicle systems were estimated at 380€, resulting into a cost-benefit ratio of 0.1 – 0.7 (7.3 - 44.0 when considering public costs only). Based on the outcome of this report, the Government of the United Kingdom expressed their concerns about the cost-benefit analysis and decided not to sign the eCall Memorandum of Understanding until further evidence could be found.

It should be considered that the costs for the in-vehicle systems, communication costs and upgrade of the Public Safety Answering Point seem to have been overestimated in the SBD study, in comparison with other studies that looked into the impact of the introduction of eCall, maybe due to the fact that the final standards were not approved at the time the study was carried out, as it was pointed out by the critical analysis made by TRL and others.[13]

The studies made in the UK to date do not take into account the positive benefit that eCall will have in case of cross-border journeys, i.e., foreign people driving in another country (with more possibilities of ignoring the incident place, or having difficulties with the local language).

2.7 Other countries

Following AINO methodology, the TRL study performed also case by case analysis of accidents in the United Kingdom and Hungary, analysing in depth 30 cases. Out of this sample, in the UK they found a case where the fatality will most likely be avoided with eCall and another case where there was probability of saving the person. In Hungary they reported 2 cases out of the 30, where the death persons would have saved their live. However, these samples are unfortunately not big enough to extract statistic conclusions.

Taking into the account the above, and the different estimations provided by the studies, a percentage has been applied to every country to remain in a low part of the average estimations, taking a conservative approach.

3 Reduction of injuries

Regarding the reduction of the severity of injuries, there is less literature having looked into it in depth. The estimation of the severe injuries that can be reduced with eCall has been estimated to be between 10-15% (USA – Mayday study, E-MERGE), 10% (eCall Driving Group, SEiSS, Norwegian study) 6% - 9%, Czech study, 5% (eIMPACT) 3,5%-5% (Sweden), 3% (SDB 2006, UK) 1% - 5% (TRL, depending on the country)

The studies consider that eCall would have no significant impact on the reduction of slight injuries.

Being conservative, a percentage between 1% and 7,5% depending on the country (also using clustering methodology) has been applied to the total figure of all accidents.

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[12] SDB study: eCall – The Case for Deployment in the UK. McClure and Graham, October 2006
[13] TRL and others: Impact Assessment on the introduction of the eCall service in all new type-approved vehicles in Europe, including liability/legal issues. 2009.

4 Congestion costs

The SEiSS study estimated that up to 20% of congestion due to accidents could be reduced with the introduction of an eCall system in all vehicles.

The TRL study analysed in depth the possible congestion reduction as consequence of having eCall, and therefore the possibility of immediate reporting to the Traffic Management Centre. Depending of the country, the impact could go from 3% in UK, 10% reduction in Finland, 17% in Hungary and the Netherlands. For that the whole number of accidents is considered.

To calculate the economic costs, HEATCO estimated a cost of the generated by an accident generating fatalities of 15,000 €, whereas for an accident with injuries the estimation was of 4,500€ Recently the study CODIA[14] has analysed more in depth these assumptions, and compared with other estimations existing in United States and Australia and the actual situation of the traffic, concluding that the precedent figures were heavily underestimated the congestion costs produced by the accidents, and proposing instead figures of 16000€ for the cost of congestion time produced by an accident with injuries, and 60000€ for the costs of an accident with fatalities. In this impact assessment to be in the safe side, an average of both estimations has been considered.

The analysis has taken into account only accidents producing fatalities or severe injuries. It has been considered that on 2% of the accidents with light injuries there will be saving of congestion costs, as they will be reported via eCall systems; this is a conservative figure.

5 Benefits produced by the added value services

When the full park will be equipped it is expected that many of the vehicles will also offer added value services using the eCall functionalities as platform[15].

This will provide also savings in case of regulatory services (e.g., digital tachograph, European Toll Collection).

Although it is recognised by all the stakeholders that the introduction of the eCall telematics platform will foster the deployment of the in-vehicle telematics market, leading to the wide introduction of added value services and application that provide a source of benefits to both private and public parties, it is difficult to estimate the level of penetration and the level of benefits produced by these services. Therefore they have not been considered in the estimations of any of the options.

6 Methodology

The calculations and the cost-benefit analysis of this impact assessment are based on the following methodology:

Main assumptions

- This impact assessment has considered the outcomes of the several studies that have analysed the costs and benefits of the introduction of eCall in Europe (cf section 5.7). The

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[14] Co-Operative systems Deployment Impact Assessment,
http://ec.europa.eu/information_society/activities/esafety/doc/studies/codia/codia_final_study_report.pdf
[15] SDB report, IPTS Report, Foster and Sullivan report

results of the studies have been taken in consideration through critical analysis of the basis of their scientific methodology and relevance.

- This impact assessment consider the evolution of the accidents and their consequences along the time, in order to estimate as accurate as possible the impacts and costs of eCall.

- As the impact of the eCall service will depend on the geographical area where the vehicle could be (in particular on density of population, accidents typologies, road and emergency response infrastructure), instead of considering average figures in terms of percentage of reduction of fatalities, injures and congestion reduction, individual percentages based on the scientific literature, international and national studies and statistics, have been allocated to the different countries (for those not having percentages coming from sound scientific studies, a clustering methodology have been used to allocate the percentage)

- The impact assessment has taken into account conservative approaches to calculate estimations

Methodology:

(1) Reference point (2008 as latest available year with stable statistics): number of new type-approved vehicles (passenger cars and light duty vehicles) and relative percentage of the total vehicle fleet per Member State (source: Eurostat and ACEA).

(2) Estimation of the evolution of the number of road fatalities, injuries and accidents per Member State and the respective estimations in the coming years, based on the annual reduction of fatalities registered in the period 2000-2008 (annual reduction of 3,50% for fatalities, 1,90% for severe injuries, 1,71% for slight injuries, 1,46% for accidents). The starting date for Option 1 is 2011, for Option 2 is 2014, as OEMs and Member States would need lead time and pilots to upgrade/install equipments, for Option 3 2015, to foresee the necessary time for the regulatory path.

(3) Estimation of the penetration of vehicles equipped with eCall: for option 1 and 2, based on estimations from literature, for Option 3, on figures provides by ACEA[16].

(4) Calculation of percentages of reduction of fatalities, severe injuries, and congestion savings per country. Allocation has been based on average figure provided by in-depth study with sound basis when available, otherwise, average of allocation provided by the relevant studies in the literature if available, otherwise, allocation of the percentage of country with similar parameters within the cluster[17].

(5) Calculation of the overall number of fatalities, injuries and congestion savings for the baseline year 2008.

(6) Estimation of the number of fatalities, injuries and congestion savings for the years to come, corrected taking into account the estimated annual reduction of road accidents, fatalities and serious injuries and the actual percentage of vehicles equipped per year.

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[16] eSafety WG on Implementation roadmaps report, eIMPACT, TRL. ACEA presentation eSafety Forum on eCall.

[17] Nota Bene: The percentages refer to the total number of fatalities. Consideration of the number of accidents where eCall will most likely produce benefits is already considered when estimating the percentage.

(7)   Estimation of the monetary savings using the estimated figures recommended by the European Road Safety Observatory (ERSO).

(8)   Estimation of the in-vehicle costs, annual figure of increase of the vehicle costs due to the introduction of eCall systems (see section B1 in Annex IV for calculation of in-vehicle costs).

(9)   Estimation of the PSAPs costs, allocating for Option 2 and 3 the marginal costs for upgrading the PSAPs (assuming that the PSAPs are equipped to handle E112 calls, taking into account the revision of the Universal Service Directive). Annual maintenance figures have also been added. These figures are based on the literature studies, national and EU-wide.

(10)   Calculation of Cost-Benefit Rate (CBR). Discount figure of 4% has been used. Annual CBR is provided for information, as well as the cumulative one according to the impact assessment guidelines.

(11)   For all the annual figures correction factors due to inflation and underreporting have been used, using Eurostat figures and recommendations from the European Road Safety Observatory.

(12)   Additional savings could be considered thanks to the possibility of dismantling the roadside SOS phone infrastructure, saving installation and maintenance costs (only for policy option 3). As it is difficult to calculate such savings, this value has not been considered in the final calculation.

(13)   Additional benefits would be the provision of added value services on top of the eCall platform. As it is difficult to calculate such benefits, this value has not been considered in the final calculation.

Cluster distribution:

The cluster of countries has been done following the approach used in other project, like CODIA[18] and TRL[19] study. Clusters have been defined based on the density of the population of the country, accidents typologies, road and emergency response infrastructures. The clustering is used to extrapolate percentages when they are not available by relevant studies.

Cluster 1: Malta. Specific country, very small, high density of population. No cross-border, but tourist destination.

Cluster 2: The Netherlands, United Kingdom. Countries with high density of population (although some regions of UK are scarcely populated), developed and with centralised emergency call response systems and developed incident management.

Cluster 3: Finland, Sweden, Spain. Wide countries with extensive areas with very low density of population. Advanced integrated emergency call response systems centralised (or by regions). Spain is an important tourist destination.

Cluster 4: France, Germany Italy. Big countries with medium high-density and some areas with lower density (particularly in France). Emergency call response systems distributed with

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[18] Co-Operative systems Deployment Impact Assessment, 2008
[19] Impact assessment on the introduction of the eCall service in all new type-approved vehicles in Europe, including liability/ legal issues, 2008

numerous PSAPs and different level of equipment. High number of foreign people crossing the country.

Cluster 5: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Ireland, Luxembourg, Portugal, Slovak Republic. Countries of generally mid size, with average density of population, fatality levels close to the average, and good emergency call response service infrastructures.

Cluster 6: Bulgaria, Hungary, Latvia, Lithuania, Poland, Romania. Countries of medium size with fatalities and severity of injuries level above the average. eCall could provide good improvements on road safety.

7   Monetary value of the road fatalities and injuries

As the methodology used has been to take into account estimations per country, to consider the different impact of eCall depending on density of population, accident typology, road and emergency response infrastructures, a monetary value per country has been used.

To calculate the monetary value of the benefits in terms of fatalities and severe injuries avoided, this impact assessment has used the average value of the amounts recommended by the European Road Safety Observatory[20], adjusted to the actual years:

	Road Fatality	Serious Injury	Light Injury
EU value (€)	1.361.262	214.074	16.428

Table 2: Estimated values of road accidents consequences for year 2008

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[20] Source: ERSO - Bickel et al 2006, see http://ec.europa.eu/transport/roadsafety/specialist/index_en

B - Estimation of costs

B.1. Estimation for the eCall In-Vehicle system (IVS)

Option 1: The following automotive manufacturers currently offer the private emergency call as option[21], and only bundled with other services. The figures below show the prices to customer, as the costs are not made available by the OEMs.

For the analysis an initial cost of 800€has been considered. After 6 years, period considered to reach the maturity, and taking into account the evolution of the telecommunication equipment and scales of introduction the cost is considered to evolve into 600€

FIAT	BMW	Citroën-Peugeot	Jaguar	Volvo
Blue&Me nav	Assist&Teleservice	eTouch	Watch	onCall
700 €	820 €	290 €	930 €	1580 €

Note: eTouch is providing only eCall/bCall, routed to the Call centres used by PSA. The prices provided for all the other services do not include the annual subscription fees.

Option 2:

The costs for the eCall IVS in case of voluntary approach has been estimated to be between

450 – 600€

as there will be no such big economies of scale, and marketing costs should be added. This figure is based on the estimations provided by the different studies (e.g., SEiSS, TRL). For the analysis, an initial cost of 450€has been considered. After 6 years, period considered to reach the maturity, and taking into account the evolution of the telecommunication equipment the cost is considered to evolve into 350€

Option 3:

The cost for the eCall IVS has been estimated by previous studies as follows:

eImpact	Seiss	TRL
50 – 60 €	100 €	60 – 100 €

SBD for UK estimated 250£ (price, not cost) considering 125£ the price of the Unit. Chalmers University of Technology, Göteborg, Sweden, 2007(EX053/2007) estimated 50€when using chipset approach, 60€if modular approach or Software defined radio.

Suppliers providing the IVS have declared a possible cost between 50 and 60 €, (e.g., SierraWireless) even below 50€when the full park will be equipped.

Automotive OEMs are concerned about *who will bear the cost* of building-up and supporting the system. Current stakeholders include, Countries/States, telecom companies, vehicle OEM's and the consumer. It is estimated that once mass production begins, the cost of manufacturing eCall in-vehicle systems could fall to less than €100. Currently eCall systems

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[21] "The complete guide to Telematics in Europe and USA", SBD/TEL/2009

typically cost significantly more, and it remains to be seen if this €100 price target can be achieved. Experts believe the EC estimate to be accurate.[22]

ACEA has sent a position paper quoting the following figures for the in-vehicle costs:

- Fully embedded system: 400 – 450€

- Mobile eCall systems (intelligent interface in the vehicle: 150 – 200€)

- TPS eCall: 450 – 550€ (only the in-vehicle costs, not the call centres, third parties, etc.)

- ACEA used a break-down methodology to calculate these costs, getting consensus figures from all their members (consensus to the higher figure). The main contributors to these costs were:

- R& D costs. (Mainly Engineering costs rather than research)

- Component cost. This is the main contributor the final figure, the in-vehicle unit

- SIM card costs

- System integration costs

- Organisational structure of OEMs (VAT, overheads, calculated through a multiplication factor.

- All the other categories considered (type approval, procurement, warehouse, marketing, manuals, etc.) are negligible in view of the volume expected.

Critical analysis of the ACEA quotation

- ACEA did not provide a breakdown of the costs by the different factors contributing to it, although it informed that the in-vehicle unit (and the SIM cards) are the major contributors to the costs, the others are basically a multiplication factor. (with the exception of the R&D – engineering costs, considered to be around 1 million Europe per model -12 models in average per OEM- per OEMs).

- Regarding the engineering costs, it seems that the fact that different models share similar platforms was not considered in the calculation. Also it was not considered that some OEMs that already offer private eCalls have already done this part of the job.

- Regarding the in-vehicle unit, car manufacturers are considering a figure between 150 and 200 Euros (when including SIM card). However the suppliers are quoting a figure around 50-60 Euros due to economy of scale, even below at a later stage (although CLEPA has not quoted an official figure). ACEA members have agreed that they could revise down the figures when the price of the unit will be better known.

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[22] "*The competitiveness of the European automotive embedded software industry*", Joint Research Centre – Institute for Perspective Technological Studies, 2010

- Low cost SIM solutions seem not have being considered (i.e., sleeping terminal for eCall-only devices, implying SIMs with very reduced management costs except when upgraded to provide added value services)

- System integration costs. This includes the cost of integrating the in-vehicle unit with the in-vehicle systems (e.g., triggering sensors, communication system –antenna, cabling, loudspeakers) as well as the line production integration. The second will have more impact initially, and less when at mid-long term.

- The multiplication factor seems to be around 2.0. Normally, a factor of 2.0 with respect to the manufacturing costs has been used to calculate the final increase of the vehicle average in impact assessment for introduction of technologies in the vehicles.

- TNO and al. made an in-depth analysis used to calculate the impact of introducing CO_2 measures in the vehicles estimated the relation between retail price and costs. The study analysed the percentage to apply to calculate the difference between the manufacturing costs and the final prize. It analysed and compared inputs from USA (CSMI Automotive analysis and "Comparison of indirect cost multipliers for vehicle manufacturing", Centre for Transportation Research, Argonne National Laboratory) and from the Netherlands (NedCar) and compared with average EU situation.[23] The study considered all the factors contributing to the final retail costs.

- The ANL study considered on one side the manufacturing costs, and then calculated the percentage of additional costs including: a/ production overheads (warranty, R&D Engineering, Depreciation and amortization); b/ corporate overheads (corporate overheads, retirement and health); c/ selling (distribution, marketing, dealer support and dealer discount); d/ profit. This study concludes that a multiplication factor of 2.0 should be considered (exclusive of taxes). In relation with the quotation provided by ACEA, it seems that ACEA considered the multiplication factor also around 2.0, but this without including R&D, Engineering, integration and marketing/selling, that are estimated to be 1.2 of the factor. So these contributions may be have included twice, if we consider the estimations of the studies. Profit for mandatory introduction of eCall should not be considered (0.1). On the other side, 0.19 should be added to the model for EU average taxes considerations

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[23] Review and analysis of the reduction potential and costs of technological and other measures to reduce CO_2-emissions from passenger cars. TNO, ILAP, EAT, 2006

Table 1 Contributors to Manufacturer's Suggested Retail Price in ANL Methodology

Cost Category	Cost Contributor	Relative to Cost of Vehicle Manufacturing	Share of MSRP (%)
Vehicle Manufacturing	Cost of Manufacture	1.00	50.0
Production Overhead	Warranty	0.10	5.0
	R&D/Engineering	0.13	6.5
	Depreciation and Amortization	0.11	5.5
Corporate Overhead	Corporate Overhead, Retirement and Health	0.14	7.0
Selling	Distribution, Marketing, Dealer Support, and Dealer Discount	0.47	23.5
Sum of Costs		1.95	97.5
Profit	Profit	0.05	2.5
Total Contribution to MSRP		2.00	100.0

The above data are for the US situation with a MSRP exclusive of taxes.

	proposal
vehicle tax	19.0%
dealer profit	2.0%
dealer costs	16.0%
manufacturer profit	3.0%
manufacturer overhead	60.0%
manufacturing costs	
	100.0%

TNO analysed the three inputs, and converted them into the EU situation, considering the 19% of VAT level. They translated data from the three sources to a situation with EU-average tax by assuming the ratios between the various price elements (dealer costs & profits, manufacturing costs, overhead and manufacturer profits) constant and normalizing them to a retail price including 19% tax. –Dealer profit and manufacturer profits

- The proposal from TNO can be seen in the table above. Manufacturing costs are considered to be 60% of the total final retail costs (including manufacturing overheads as well.

- Based on this proposed average breakdown the average translation factor between manufacturer costs (ex-factory costs) and retail price in Europe is 1 / 0.60 = 1.67. The study proposed to use this factor to estimate the ex-factory costs to manufacturers. Furthermore the study proposed to reduce the factor to 1.44 to calculate the increased costs of the introduction of new systems, taking into account the definition of investment costs to society as well as on the basis of the interpretation of profits.

- The difference of quotation between the embedded system and the system based on mobile phone systems is difficult to understand. Suppliers have quoted a price around 20-25€ for the whole communication module, taking into account the economies of scale, including GNSS. However the difference between the two quotations are in the range of 250€

- There are systems being offered in the market by a vehicle manufacturer (eCall/bCall) for a single price of 290€, no subscriptions.

- Aftermarket systems are being offered for a price of around 140€ a year (although these are based on subscription costs). This includes integration (aftermarket) of the platform in the customers' vehicle.

- Net value costs for telecommunication equipments tend to reduce their value when equipment reach maturity.

- Other way that has been considered in the past to calculate the increase of the costs for big economies of scale in case of regulatory introduction, is to consider 2/3 of the price of the option being offered in the market. PSA is the only manufacturer starting offering an eCall/bCall system in Europe, and the price is 290€ That would give in this case a price around 190 €

Therefore, considering what is mentioned above, in order to provide a safe conservative figure, a multiplication factor of 3.0 instead of 2.0 has been considered for the average increased cost of the vehicles in Europe for the introduction of the eCall system. This would lead to a figure between 150 and 180€ Taking into account the costs and the advantages of economy of scale, the initial cost for the eCall IVS is estimated in 180 €

Moreover, it should be noted that the IVS is a telecommunication technology, therefore its price will likely decrease in the coming years, when the technology will become mature and the economies of scale achieved. Therefore a cost of 125€ has been considered after 6 years.

B2 – Estimation of costs for PSAPs/Private Call centres.

For the 112 based eCall (Options 2 and 3), the marginal costs for each of those PSAPs duly equipped to handle 112 calls enhanced with location capabilities -E112- calls (obligation under the Universal Service Directive[24]) will be:

In-band modem server (from 3,000 to 20,000 € depending on the number of eCalls)

Software to decode the MSD and integration into the PSAP software

Training

For instance, for Bulgaria it is estimated that the total PSAPs upgrading cost to be 150,000€[25], while UK estimated total 200,000€[26]. To these costs it should be added the annual operational costs. In case that the eCalls will be received in the same PSAP receiving other emergency calls, the majority of these costs will be subsumed within the normal operational costs; otherwise the costs will depend on the number of operators needed to handle the estimated number of eCalls (see Annex III).

For the purpose of the cost-benefit analysis, a conservative estimation of costs need for the initial upgrade of the PSAPs has been done per country, based on the intentions reported by the different Member States (e.g., if the Member State plans to integrate eCall in their current 112 response infrastructure, (e.g., Slovak Republic) the cost estimated is less that in case the Member States plans to receive the eCalls in a separate intermediate call centre (e.g., Spain). The estimated amounts can be found in the Table 1 of Annex XIV. These costs have been

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[24] Directive 2002/22/EC, Art. 26
[25] Source: eCall Driving Group
[26] Source: TRL study.

considered in the year 2015 corrected to reflect the inflation evolution. (See tables Tables 4 and 5 of Annex XIV)

The annual operational costs have been corrected to reflect the inflation evolution.

For the proprietary eCall services, (Option 1), OEMs or service providers should make available private call centres with trained personnel, available 24/24h, 7/7d, equipped with redundant workstations, GIS servers, software to decode the MSD and handle the eCalls, usually one call centre per country and per brand. Part of these costs will be subsumed within the costs to provide assistance services paid normally by subscription.

Although the number of staff will depend on the number of expected calls (proportional to the number of equipped vehicles) a minimum staff should be available to perform the different turns needed to ensure 24/24h, 7/7d availability.

It is difficult to estimate the costs for the call centres, as they are subject to confidential commercial agreement. However the maintenance/operational costs of these call centres will most likely be more expensive that the marginal costs for the PSAPs to handle the eCalls, as:

There will be most likely more than 1 call centre per country, as in most of the cases the different brands do not share the same call centres

There will be additional costs for maintaining the PSAPs database long (E.164) phone numbers

The call centres will need to support telecommunication costs, as the calls are not free as per the 112 calls.

The call centres may need the support of third parties/additional equipment to ensure that the data arrive to the same operator receiving the call.

On the other hand, some of the costs may be included in the operational costs to provide other services with the same call centre to the automotive manufacturer/service provider.

An initial estimation of 1.000.000 EUR has been considered for year 2015, with an increase of 4% due to the increase of the calls for the 6 first years, and 6% for the rest of the years, that is, around the third of the estimated increase of eCall take up in the vehicles fleet considered in Option 1.

<u>Annex V – Position papers from major stakeholders as reply to the public consultation</u>

The following stakeholders have replied to the public consultation linked to this impact assessment. The replies can be consulted in the following webpage:

http://ec.europa.eu/information_society/activities/esafety/ecall/index_en.htm#eCall_consultation

(14)   ACEA

      (15)   ACEM

      (16)   CLEPA

      (17)   France

      (18)   GSM Association Europe

      (19)   IBM

      (20)   United Kingdom

Other position papers sent earlier on eCall can be consulted as well in the same webpage.

Annex VI – Road accidents statistics and eCall impact

In the main part of this impact assessment the general figures on road accidents, fatalities, injuries, serious and light injuries and their evolution has been provided. The trend of reduction of fatalities in the last 8 years with complete statistics within the CARE database is around 3.9% annually where as the trend of reduction of accidents and serious injuries in the same period are 1.7% respectively. These figures have been considered in the cost-benefit analysis to estimate the possible benefits of the introduction of the eCall service along the years. It may be argued whether the current trend of reduction of fatalities will be kept, as some of the measures that have produced the positive reduction of casualties may be attaining their saturation points.

To reflect the number of cases where it is most likely that an eCall system would have had positive impact, the following situations have been retained, as considered in the majority of the literature:

Accidents that took place in interurban areas.

Accidents that took place during night

Accidents involving one vehicle

Accidents involving two vehicles (in these cases, the hypothesis cannot be assumed in all the cases, as in some cases the occupants of one of the vehicles could call the emergency services)

Regarding accidents in the motorways eCall is most likely to produce positive benefits in the following cases:

All accidents happening during night

A percentage of those happening during day, as many highways do not have a big density of circulation and most of them are not entirely monitored. This depends on the country (e.g. in the Netherlands there are less, in the low regions of the Centre-North of Spain there may be more).

The following tables provide the number of accidents and the consequences produced in the last years for the above mentioned typology of accidents (source: CARE database)

The evolution of the consequences of these types of accidents show that the reduction trend is less that for the overall number of accident, fatalities and serious injuries.

Single vehicles accidents in interurban areas

Year	Accidents	Fatalities	Serious injuries	Light injuries
2000	160284	12092	54228	126632
2001	169223	13254	55548	134290
2002	166756	12802	52308	130983
2003	167152	12683	52853	132760
2004	165050	11586	47312	128259
2005	153526	10898	47018	120158
2006	151804	10065	45847	119099
2007	153104	9802	44767	121660
2008	144737	8769	42042	114706

Two vehicles accidents in interurban areas

Year	Accidents	Fatalities	Serious injuries	Light injuries
2000	235850	13222	68476	246604
2001	236188	13981	67083	248118
2002	231707	13787	62615	237310
2003	222861	13448	60561	229481
2004	219635	12563	55910	222645
2005	204203	11967	55407	206551
2006	204799	11935	56276	203256
2007	204821	12098	55096	205689
2008	187251	10850	50313	186010

Accidents from 18h to 6h (darkness)

Year	Accidents	Fatalities	Serious injuries	Light injuries
2000	669086	22634	158318	636881
2001	673601	23988	154134	640351
2002	652602	23440	144774	620366
2003	635680	22672	139673	602206
2004	628754	21264	132173	581089
2005	602610	20112	131248	564506
2006	589728	19271	127771	554538
2007	592588	18845	127095	561146
2008	559984	17128	118327	530406

Annex VII – Glossary of terms

(Source: Glossary for Transport Statistics", 4th Edition, UNECE 2009)

Road vehicle
A vehicle running on wheels and intended for use on roads.

Road
Line of communication (travelled way) open to public traffic, primarily for the use of road motor vehicles, using a stabilized base other than rails or air strips.

Road inside a built-up area: Urban road
Road within the boundaries of a built-up area, with entries and exits sign-posted as such.

Road outside a built-up area (rural area)
Road outside the boundaries of a built-up area, which is an area with entries and exits sign-posted as such.

Moped
Two, three or four-wheeled road motor vehicle which is fitted with an engine having a cylinder capacity of less than 50cc (3.05 cu.in) and a maximum authorized design speed in accordance with national regulations.

Motorcycle
Two-, three- or four-wheeled road motor vehicle not exceeding 400 kg (900 lb) of unladen weight. All such vehicles with a cylinder capacity of 50 cc or over are included, as are those under 50 cc which do not meet the definition of moped.

Powered Two Wheelers (PTW)
Two-wheels Moped or Motorcycle

Passenger car
Road motor vehicle, other than a moped or a motor cycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver). M1 category within the motor vehicle type approval regulatory framework.

Taxi
Licensed passenger car for hire with driver without predetermined routes.

Bus
Passenger road motor vehicle designed to carry more than 24 persons (including the driver), and with provision to carry seated as well as standing passengers.

Goods road vehicle
Road vehicle designed, exclusively or primarily, to carry goods.

Heavy goods road vehicle
Goods road vehicle with a gross vehicle weight above 3 500 kg, designed, exclusively or primarily, to carry goods.

Light commercial vehicle

Goods road vehicle with a gross vehicle weight above 3 500 kg, designed, exclusively or primarily, to carry goods. N1 category within motor vehicle type approval regulatory framework.

Motor energy
The principal type of motor energy used by the vehicle as certified by the competent authority of the country of registration.

Road traffic
Any movement of a road vehicle on a given road network.

Dangerous goods
The classes of dangerous goods carried by Road are those defined by the fifteenth revised edition of the UN Recommendations on the Transport of Dangerous Goods, United Nations, Geneva 2007.

Injury accident
Any accident involving at least one road vehicle in motion on a public road or private road to which the public has right of access, resulting in at least one injured or killed person.

Fatal accident
Any injury accident resulting in a person killed.

Casualty
Any person killed or injured as a result of an injury accident.

Person killed
Any person killed immediately or dying within 30 days as a result of an injury accident, excluding suicides.

Person injured:
Any person who as result of an injury accident was not killed immediately or not dying within 30 days, but sustained an injury, normally needing medical treatment, excluding attempted suicides.

Person seriously injured:
Any person injured who was hospitalized for a period of more than 24 hours.

Person slightly injured:
Any person injured excluding persons killed or seriously injured.

Single-vehicle road accident
Any injury accident in which only one road vehicle is involved.

Two-vehicle road accident
Any injury accident in which only two road vehicles are involved.

Darkness
As reported by the police or other authorities.

Daylight
As reported by the police or other authorities.

EUROPEAN COMMISSION

Brussels, 8.9.2011
SEC(2011) 1019 final

Part 4

COMMISSION STAFF WORKING PAPER

IMPACT ASSESSMENT

Accompanying the document

COMMISSION RECOMMENDATION

on suppor for an EU-wide eCall service in electronic communication networks for the transmission of in-vehicle emergency calls based on 112 ('eCalls')

{C(2011) 6269 final}
{SEC(2011) 1020 final}

1^1

Incident: Vehicle skids at low speed on a sloping bend, then leaves the road and falls down the bank. Vehicle's final resulting position is on its roof against a rock.
Time: Daytime
Locations: Austria
Weather: Very cold (estimated -9ºC)
Passengers: Driver - man, 50 years, belted; Front passenger, woman, 13 years, belted
Rescue: Emergency call activated automatically

The vehicle involved in this incident was identified and reached by the emergency services with 30 minutes. If the vehicle had not been installed with an eCall system it is likely that it would not have been identified and due to the severe weather conditions it could have proved fatal to the occupants of the vehicle.

2^{12}

Alors qu'il est environ 2h00 du matin, le conducteur du véhicule concerné, âgé de 47 ans, perd le contrôle de sa voiture dans un virage à gauche sur une petite route de campagne. Il quitte la route à faible vitesse et glisse en contrebas. Il effectue un tonneau et termine sa course sur le toit. Le conducteur, choqué mais non blessé, fortement alcoolisé, se détache difficilement, tombe sur le pavillon de son véhicule et s'endort en attendant le lever du jour. Nous sommes en plein hiver et la température est de-2°C. Le conducteur du véhicule passe toute la nuit dans cette position, et n'est découvert que le lendemain vers 11h30, en état d'hypothermie (température corporelle de 27°).

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[1] Source: "Appel d'urgence automatique en France", PSA Peugeot Citroën and "Laboratoire d'Accidentologie, de Biomécanique et d'étude du comportement humain (LAB)"

EN

3

Jänis säästyi # Kuljettaja tuntikausia jumissa

JAAKKO ISONIEMI
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NUORI mies virui tajuissaan yli viisi tuntia vakavasti loukkaantuneena autossaan Kaavilla Pohjois-Savossa.

Kuljettaja väisti oman kertomuksensa mukaan jänistä. Hän menetti perjantaina aamuyöllä kahden ja kolmen välillä ajoneuvonsa hallinnan ja törmäsi puuhun.

Parikymppisellä kuljettajalla ei ollut onnea matkassa. Miehen matkapuhelin meni rajussa törmäyksessä rikki.

Ohikulkija huomasi romuttuneen auton ja ilmoitti kolarista hätäkeskukseen seitsemältä aamulla. Palokunta ehti paikalle 25 minuuttia ilmoituksesta. Puristuksiin jääneen miehen irrottaminen kesti tunnin.

– Maasto oli hankalaa. Näissä mennään potilaan ehdoilla ja kovin kiirettä ei voida pitää. Yleensä irrottamiseen menee vähintään puoli tuntia, palomestari **Jukka Taskinen** Pohjois-Karjalan pelastuslaitokselta kertoo.

Kuljettaja vietiin hoitoon Pohjois-Karjalan keskussairaalaan. Aineelliset vahingot ovat noin 3 000 euron luok-

kaa. ”Rippikouluiässä” oleva auto vaurioitui lunastuskuntoon.

Onnettomuuspaikalla Polvijärventiellä on erittäin huono näkyvyys tiheän metsän ja pusikon takia. Paikalla on kahdeksankympin nopeusrajoitus ja palomestarin arvion mukaan kuljettaja ei ollut juuri ehtinyt jarruttaa ennen törmäystä.

EN

2

EN

Viisi tun

Pyöräilijä osui paikalle sattumalta ja hälytti apua.

MUTKAISEN mäkinen tie oli koitua parikymppisen miehen kohtaloksi varhain perjantaiaamuna Kaavilla, Koillis-Savossa.

Volkswagen Passat -merkkisellä henkilöautolla ylämäkiosuutta lähestynyt mies väisti oman kertomansa mukaan jänistä ja menetti autonsa hallinnan.

Hän sai kolarissa useita hoitoa vaativia murtumia.

Kuin ihmeen kaupalla rajusta törmäyksestä selvinneen kuljettajan tuska ei loppunut kuitenkaan tähän. Mies virui nimittäin lähes viisi tuntia autonromun puristuksessa kolarin jälkeen.

Apua alkoi järjestyä vasta, kun paikalle osui sattumalta aamulenkillään ollut pyöräilijä.

– Huomasin tilanteen ja tajusin, että nyt pitää toimia reippaasti. Soitin ambulanssin paikalle ja odotin sen ajan kuljettajan tukena avun saapumista. Onneksi kuljettaja oli tajuissaan ja sain häneen keskusteluyhteyden, kertoo pyöräilijä.

– Kyselin hänen vointiaan ja kyllä sieltä ihan vastauksiakin tuli takaisin.

> "Lauenneet turvatyynyt ilmeisesti siirsivät hänen päätään sen verran, että hän selvisi hengissä."
>
> Ylikonstaapeli
> **Matti Kekäläinen**

Pystyimme kumpikin säilyttämään malttimme, vaikka tilanne olikin uskomattoman dramaattinen.

PELASTUSHENKILÖKUNTA saapui kolaripaikalle puolessa tunnissa.

Vaikka onnettomuuspaikka oli Kaavilla, apuun lähti Pohjois-Karjalan pelastuslaitoksen Outokummun palokunta, koska se oli onnettomuuspaikkaa lähempänä.

Paikalla kävi kaksi paloautoa henkilökuntineen. He joutuivat tekemään töitä toista tuntia miehen auttamiseksi. Lisäksi paikalla kävi poliisipartio Juankoskelta sekä pelastuslaitok-

sen ambulanssi.

– Kuljettaja ei ollut ehtinyt jarruttamaan tilanteessa. Se, että hän jäi virumaan vielä autoonsa useiksi tunneiksi, oli todella huonoa tuuria, selvitti palomestari **Jukka Taskinen**.

POHJOIS-SAVON poliisilaitoksen ylikonstaapeli **Matti Kekäläinen** vahvisti, ettei alkoholilla ollut osuutta kolarissa.

– Suojelusenkelit olivat tämän kyseisen nuoren miehen mukana. Lauenneet turvatyynyt ilmeisesti siirsivät hänen päätään sen verran, että hän selvisi hengissä, huokaili Kekäläinen.

Kuljettaja virui romuttuneessa autossa t-paidassaan, keskellä kostean kesäyön viileimpiä tunteja.

– Hän totesi pelastusmiehistölle, että "vilu meinasi tulla", kuvaili Kekäläinen onnettomuusuhrin ensituntemuksia.

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IS / HEINI KARJANMAA

1 Mies lähestyi vasemmalle kaartavaa ylämäkeä normaalinopeudella.

2 Hän kertoi tielle ilmestyneestä jäniksestä, jota hän yritti väistää.

3 Auto törmäsi täydellä tilannenopeudella isoon kuuseen. Onnettomuuspaikalla ei ollut jarrutusjälkiä.

Murheellinen kolaripäivä – kaksi kuollutta

Suomessa tapahtui perjantaina runsaasti autokolareita.

Kuolonuhreja kirjattiin kahdesta kolarista.

Moottoripyörän kyydissä ollut naishenkilö menehtyi Lahdessa, kun rekka ajoi moottoripyörän perään liikennevaloristeyksessä.

– Liikenneletkan etummaisina oli kaksi henkilöautoa ja niitä seurannut moottoripyörä sai päälleen takaa tulleen rekan, kertoi Päijät-Hämeen poliisi.

Toinen turma tapahtui Loviisassa, jossa 86-vuotias mies kuoli törmättyään au-

tollaan tavarajunaan. Onnettomuus tapahtui vartioimattomassa tasoristeyksessä.

Lapinlahdella kolaroivat puolestaan kaksi autoa ja kaksi moottoripyörää. Vakavilta henkilövahingoilta kuitenkin vältyttiin.

Kauhavalla todistettiin erikoista kolaria, jossa mies ajoi autonsa tien reunaan pysäköidyn rekan perävaunun auki olleeseen ajoluiskaan. Henkilöauton kuljettaja toimitettiin loukkaantuneena Vaasan keskussairaalaan.

EERO TUOMINEN

Rekka ajoi moottoripyörän päälle liikennevaloristeyksessä Lahdessa.

Salama heitti Peter Franzenin seinään

KONTIOLAHTI: Salama iski suosikkinäyttelijä Peter Franzenin viereen perjantaina.

Asiasta uutisoi *Karjalaisen* verkkosivut.

Franzen oli kollegansa **Toni Wahlströmin** kanssa sadetta paossa elokuvakylän talon portailla, kun vieressä jysähti. Salama iski mäntyyn, noin kuuden metrin päähän kaksikosta.

Isku oli niin luja, että Franzen singahti eteisen läpi toiselle seinälle, naulakoiden viereen. Wahlström oli paiskautunut oven läpi.

– Salama oli mennyt al-

haalta ylöspäin iskien ensin auton toiselle puolelle ja heittänyt multaa auton

?
kuka
▶ Syntynyt 14. elokuuta 1971, Kemin maalaiskunnassa.
▶ Näytellyt mm. elokuvissa *Pahat pojat*, *Koirankynnen leikkaaja* ja *Matti*.
▶ Naimisissa näyttelijä **Irina Björklundin** kanssa. Pariskunnalla on vuonna 2007 syntynyt poika.

päälle. Sitten se oli mennyt auton alitse ja rikkonut sen sähkölaitteet. Salama oli kuorinut puuhun viisi senttiä leveän halkeaman, elokuvaohjaaja **Markku Pölönen** kuvaili Karjalaiselle.

Lehden mukaan seinälle lentäneet näyttelijät olivat sokissa, ja kävivät tarkistuksessa lääkärillä. Kumpikaan ei saanut vakavia vammoja.

Mukana matkassa oli myös Vares-elokuvista tuttu **Juha Veijonen**. Mies oli tapahtumahetkellä wc-tiloissa.

Peter Franzen koki luonnon voiman kuvauksissa Kontiolahdella.

Accidente en la autovía A-7, en el término municipal de Níjar

Un niño deambula herido un kilómetro para pedir auxilio para su familia

Pierden la vida sus padres y un hermano de cuatro meses y otro resulta herido

elmundo.es - V**iernes 24/07/2009**

Un accidente con tintes trágicos. Un vehículo se salió de la vía en el kilómetro 471 de la autovía A-7, en el término municipal de Níjar (Almería). A causa del impacto, el matrimonio y un bebé de cuatro meses fallecieron en el acto. Uno de los otros dos hijos, que sufrió heridas de diversa consideración, caminó más de un kilómetro para pedir auxilio en una gasolinera.

En concreto, la familia, de origen magrebí y que residía en Alicante, viajaba en un Seat Córdoba que, por motivos que aún se desconoce, perdió el control y **se despeñó por un barranco de varios metros**. Los adultos y un bebé murieron por el impacto, mientras los otros dos hijos, de 12 y 9 años, consiguieron salvar su vida.

Incluso, uno de ellos logró salir del vehículo en busca de ayuda. De esta forma, un médico del sanatorio de San Isidro, en Níjar, certificó los fallecimientos y trasladó posteriormente a los menores heridos al hospital de Torrecárdenas de Almería, donde permanecen ingresados.

Al lugar de los hechos también se desplazaron agentes de la Guardia Civil que confirmaron la salida de vía del vehículo y el fallecimiento de las tres personas que se dirigían, presumiblemente, hacia el Puerto de Almería con destino a Marruecos. El servicio de emergencias 112 recibió a las 9.50 horas la llamada de los sanitarios solicitando la presencia de los bomberos.

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El cuerpo sin vida de un motorista que había pedido auxilio ayer a las 15 horas, ha sido localizado hoy por la Guardia Civil de Tráfico, en el kilómetro 428 de la N-234, a la altura de La Gallega (Burgos). El hombre, de 42 años, A-F.V., había llamado ayer al servicio de emergencias 112 porque se había salido de la vía y había caído por un terraplén. Entonces, en su llamada, no puedo especificar exactamente el lugar donde se encontraba, aunque dijo que estaba realizando un recorrido entre Barcelona y Villafranca del Bierzo (León).

En principio se informó de la situación a las Comandancias de la Guardia Civil de León, Palencia, Burgos, Soria, Valladolid y Zamora, así como al Grupo de Rescate de la Agencia de Protección Civil.

Posteriormente los familiares del motorista precisaron la ruta habitual que seguía en anteriores desplazamientos hacia el mismo lugar, pasando por Zaragoza, Soria y Valladolid.

Durante la tarde un helicóptero de rescate y patrullas de la Guardia Civil por tierra, a las que se unió durante la noche un vehículo todoterreno del Grupo de Rescate de la Agencia de Protección Civil, rastrearon la ruta probable del motorista, a lo largo de las carreteras N-122 y N-120 y N-234, las autovías A-6 y A-62, e, incluso, la carretera CL-619, entre Aranda de Duero y Palencia.

El cadáver fue localizado finalmente poco antes de las 10.00 de hoy una vez reanudada la búsqueda con el apoyo de un helicóptero de rescate de la Agencia de Protección Civil y otro de la Guardia Civil.

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Annex IX – MAIS scale

	PDO	MAIS 0	MAIS 1	MAIS 2	MAIS 3	MAIS 4	MAIS 5	Fatal
INJURY COMPONENTS								
Medical	$0	$1	$2,380	$15,625	$46,495	$131,306	$332,457	$22,095
Emergency Services	$31	$22	$97	$212	$368	$830	$852	$833
Market Productivity	$0	$0	$1,749	$25,017	$71,454	$106,439	$438,705	$595,358
HH Productivity	$47	$33	$572	$7,322	$21,075	$28,009	$149,308	$191,541
Insurance Admin.	$116	$80	$741	$6,909	$18,893	$32,335	$68,197	$37,120
Workplace Cost	$51	$34	$252	$1,953	$4,266	$4,698	$8,191	$8,702
Legal Costs	$0	$0	$150	$4,981	$15,808	$33,685	$79,856	$102,138
Subtotal	**$245**	**$170**	**$5,941**	**$62,020**	**$178,358**	**$337,301**	**$1,077,567**	**$957,787**
NON-INJURY COMPONENTS								
Travel Delay	$803	$773	$777	$846	$940	$999	$9,148	$9,148
Prop Damage	$1,484	$1,019	$3,844	$3,954	$6,799	$9,833	$9,446	$10,273
Subtotal	**$2,287**	**$1,792**	**$4,621**	**$4,800**	**$7,739**	**$10,832**	**$18,594**	**$19,421**
Total	**$2,532**	**$1,962**	**$10,562**	**$66,820**	**$186,097**	**$348,133**	**$1,096,161**	**$977,208**

Table 1: Costs of the MAIS scale[2] (USD)[3]
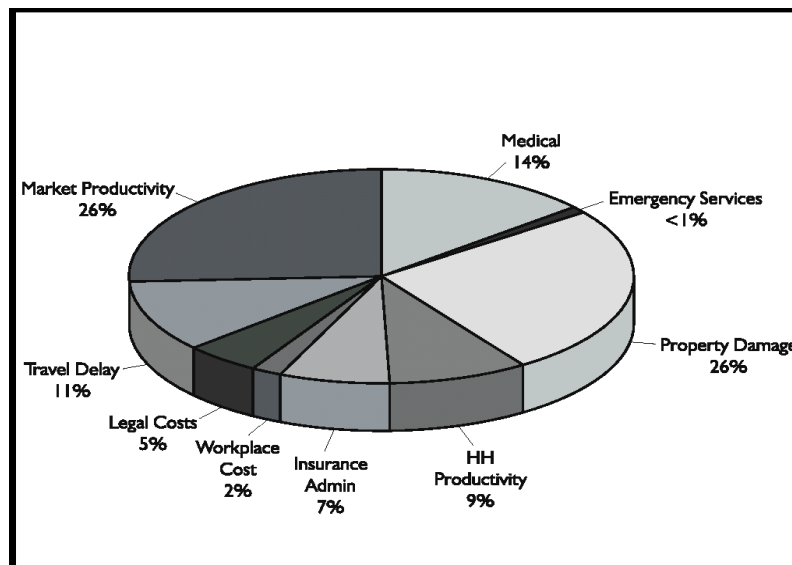
Figure 1: Components of Total Costs of road accidents[4]

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[2] "*The economic impact of motor vehicle crashes*", NHTSA, USA

[3] Note: MAIS is the maximum injury severity level experienced by the victim. PDO is property damage only.

[4] "*The economic impact of motor vehicle crashes*", NHTSA, USA

X.1. Results of the Eurobarometer special survey 267

Use of Intelligent Systems in Vehicles

This Eurobarometer study that covered all 25 Member States. 24,815 citizens[5] were interviewed face to face between 7 June and 12 July 2006 about their perception of intelligent vehicle systems and their usefulness.

QE8 I will read out a list of car safety systems, some of which already exist and others which are currently under development. For each of these systems, please tell me which of the following statements best corresponds to your opinion. - % EU25

- ■ It is a useful system and you would like to have it on your next car
- ■ It is not a useful system but you would like to have it on your next car
- ■ It is a useful system but you would not like to have it on you next car
- ■ It is not a useful system and you would not like to have it on your next car
- □ Not applicable (SPONTANEOUS)
- □ DK

System	Useful, want it	Not useful, want it	Useful, not want it	Not useful, not want it	N/A	DK
1. ABS, Anti-Lock Breaking System	73%		7%		9%	6%
2. ESP, Electronic Stability Program	65%		12%	4%	9%	7%
7. Ecall, Emergency call system	59%		16%	6%	9%	7%
3. Blind Spot Monitoring System	57%	4%	17%	6%	9%	7%
10. Monitoring the state of vigilance of the driver	53%		20%	8%	9%	7%
4. Adaptive Head Lights	53%	4%	17%	10%	9%	7%
5. Obstacle and collision warning	52%	4%	19%	9%	9%	7%
8. Real time traffic and travel information	50%	4%	21%	9%	9%	6%
9. Speed Alert	49%	4%	20%	11%	9%	6%
6. Lane departure warning system	47%	5%	20%	13%	9%	7%

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[5] The study covers the population of the respective nationalities of the European Union Member States, resident in each of the Member States and aged 15 years and over.

- It is a useful system and you would like to have it on your next car
- It is not a useful system but you would like to have it on your next car
- It is a useful system but you would not like to have it on you next car
- It is not a useful system and you would not like to have it on your next car

Country	Useful, would like	Not useful, would like	Useful, would not like	Not useful, would not like
PT	88%		11%	
EL	85%		10%	
PL	84%		11%	
CY	84%		11%	
LT	83%		12%	4%
IE	83%		11%	4%
LV	83%		12%	4%
SE	78%	5%	13%	4%
SI	78%	4%	14%	4%
DK	71%	11%	12%	6%
ES	78%		17%	
MT	78%		15%	5%
LU	75%	5%	12%	8%
UK	76%		15%	6%
EE	76%		17%	5%
BE	74%		16%	6%
FR	73%	4%	15%	8%
HU	72%		20%	5%
EU25	70%	4%	19%	7%
SK	69%	5%	22%	4%
IT	63%	8%	21%	8%
CZ	64%		30%	
FI	61%		28%	9%
DE	60%		27%	10%
AT	58%	5%	27%	9%
NL	58%		27%	12%

0%   50%   100%

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QE12a Cars can be equipped with an emergency call system which automatically calls the local emergency authorities when the vehicle is involved in a serious accident...Do you personally regard this as... – % country

- ■ You do not consider it as an inconvenience as far as you are concerned
- ■ A minor inconvenience compared with the usefulness of the system
- ■ A real risk of intrusion that would deter you from having such a system
- □ None of these (SPONTANEOUS)
- ■ DK

Country	Not an inconvenience	Minor inconvenience	Real risk	None of these	DK
DK	61%	21%	5%	4%	9%
SE	58%	28%	7%		5%
BE	56%	32%	7%		
PT	55%	22%	7%	4%	12%
EL	53%	28%	12%	4%	
NL	52%	30%	9%		6%
LU	52%	24%	9%		12%
ES	52%	15%	5%	8%	20%
CY	51%	28%	7%		11%
FR	50%	30%	10%		8%
SK	49%	32%	5%	4%	10%
SI	46%	30%	9%	10%	6%
HU	46%	19%	10%	10%	15%
AT	46%	24%	11%	5%	13%
IT	45%	32%	7%	9%	6%
EU25	45%	28%	10%	6%	11%
FI	44%	39%	10%		4%
MT	43%	20%	13%	4%	20%
EE	41%	20%	5%	5%	29%
UK	40%	32%	11%	9%	9%
PL	39%	26%	9%	6%	19%
CZ	39%	36%	8%	7%	10%
LV	38%	22%	8%	9%	24%
LT	38%	28%	10%	5%	20%
IE	37%	30%	8%	7%	18%
DE	37%	31%	16%	7%	9%

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X.2. – Automobile Clubs survey on intelligent vehicle safety systems

Survey made in 2008, using EUROTEST consortium (Automobile Clubs from 12 European countries, more than 40 million members), within CVIS and eSafetyTechnopro projects.
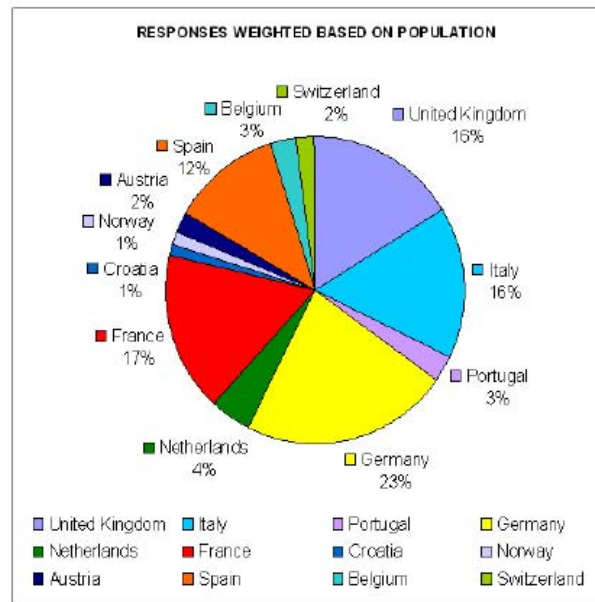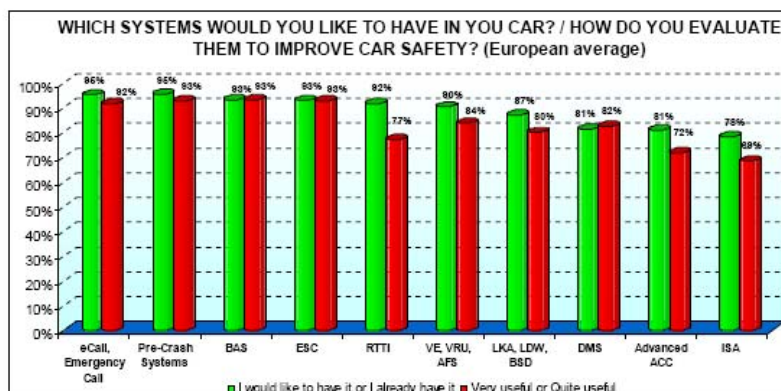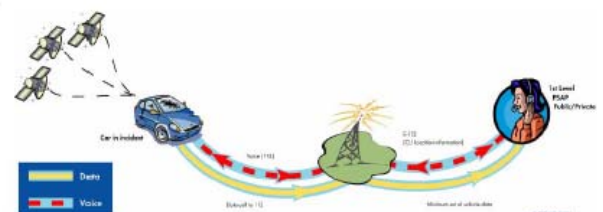
Problem statement

Road transport clearly plays a predominant role in the EU-27 transport system, both for passengers and for goods. Passenger cars, powered two-wheelers and buses/coaches together account for 83 % of total passenger transport performance.[6]
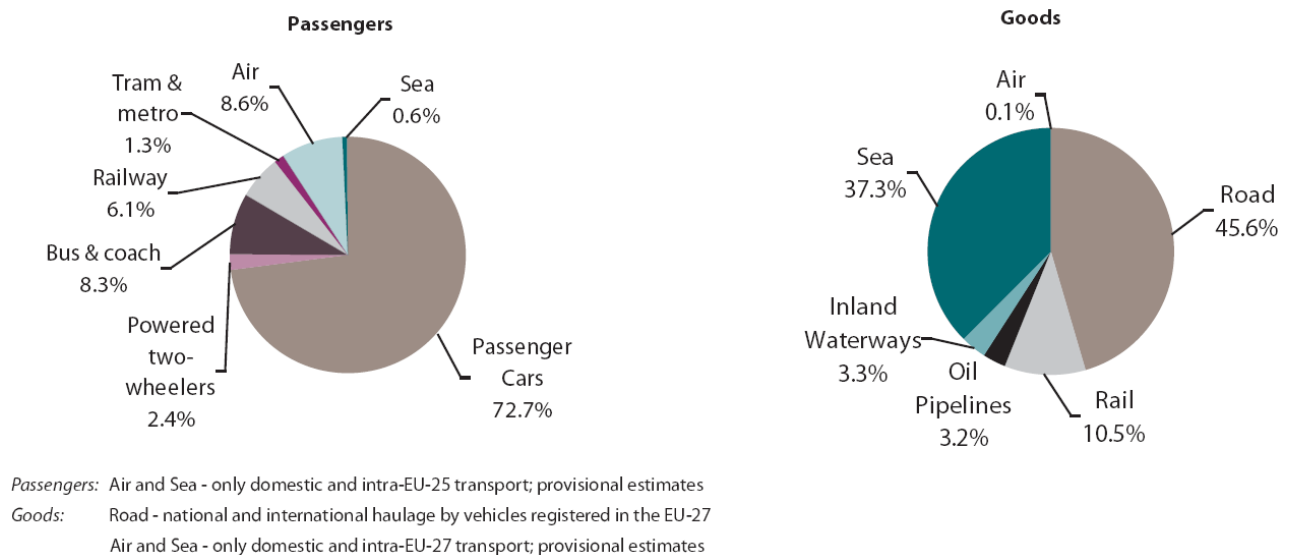
Figure 2: Modal distribution of passenger and goods transport performance, EU-27

Around 35,000 people are killed and more than 1.5 million injured every year in about 1.15 million traffic accidents on roads in the European Union. In 2009 this represented approximately 130 billion euros of cost for society.[7]

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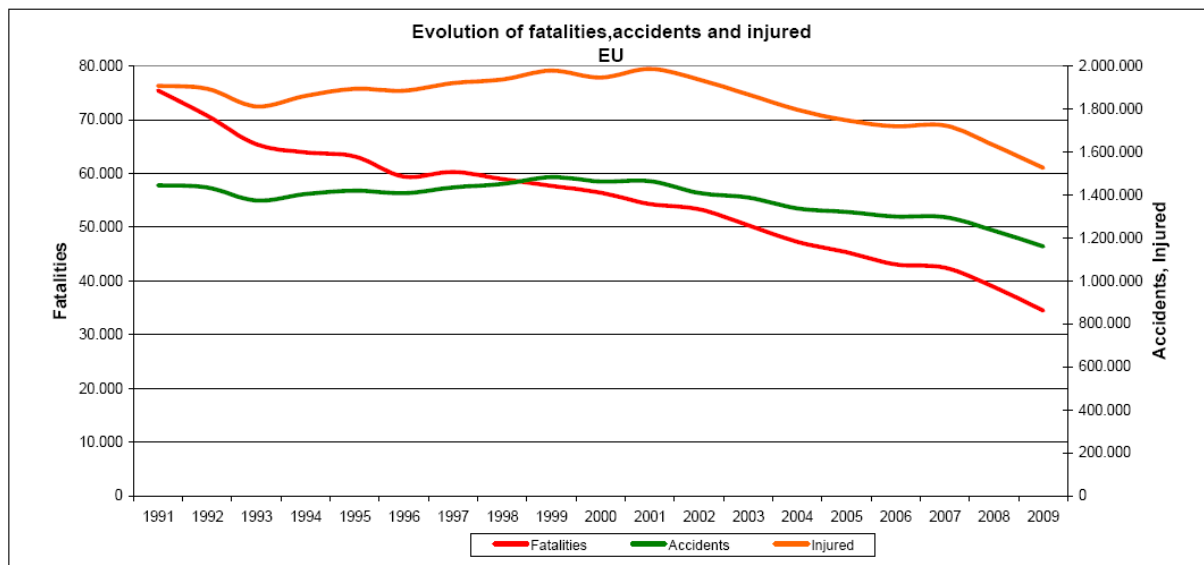
[6] "*Panorama of Transport*", Eurostat, 2009 Edition
[7] Based on the value of a statistical life calculated by the HEATCO study (6th Framework Programme for Research and Technological Development)

Road fatalities in the EU-27 have fallen by more than 32 % since 2001, when the Commission published its White Paper on European Transport Policy[8]. The European Road Safety Action Programme[9] and the Intelligent Car Initiative[10] have had a significant impact on this positive development, and are expected to continue to yield further benefits towards the goal of reducing fatalities.

However, current statistics have not reached the European Commission objective to halve the number of road fatalities in the EU in the period 2000-2010, meaning less than 27,000 fatalities per year by 2010. Furthermore, the number of accidents causing injured people, although also decreasing, do not follow a similar slope, but a smoother one, resulting into around 1,5 million injured in EU-27 annually. Road injuries have also been recognized as a major public health concern at international level, in particular by the World Health Organization[11] and in the framework of the UN Decade for Action on road safety.

In view of achieving the objective of creating a common road safety area, the Commission proposes to continue with the target of halving the overall number of road deaths in the European Union by 2020 starting from 2010.[12]
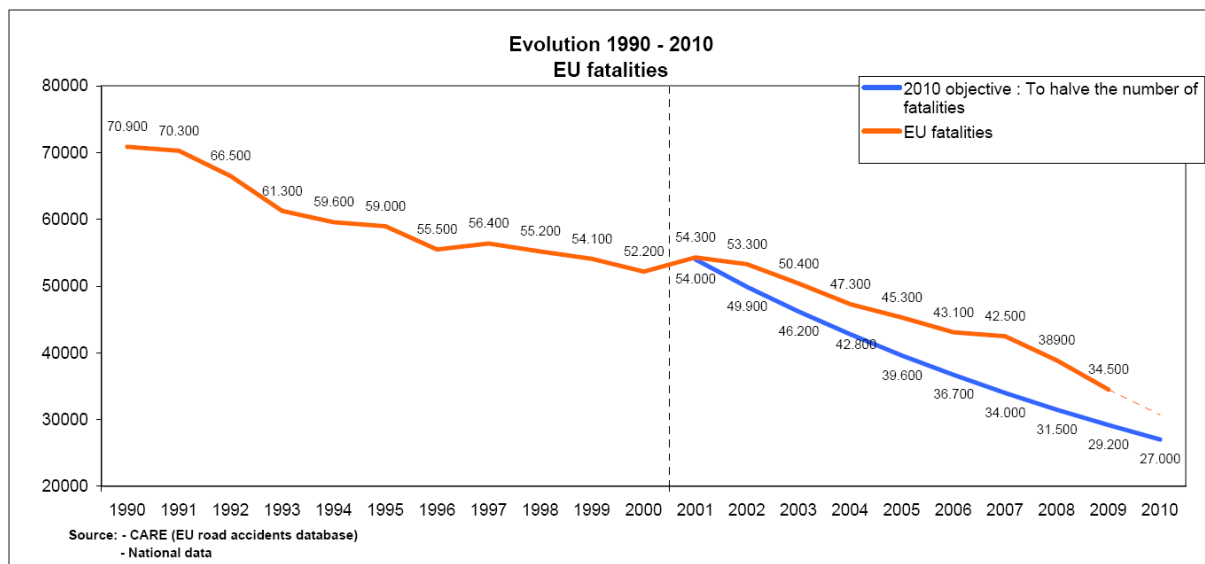
Figure 3: Evolution of road fatalities in the EU and objective

The EU is highly committed to reducing the number of road accidents (accident prevention or *active safety*), but also in mitigating their consequences when they occur (*passive safety*), and also by improving the efficiency of the emergency services and the effectiveness of post-accident medical care. eCall can significantly contribute to the reduction of road fatalities and alleviation of severity of road injuries.

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[8] COM(2001) 370 – 'White Paper on European transport policy for 2010: time to decide'
[9] COM(2003) 311 – 'European Road Safety Action Programme — Halving the number of road accident victims in the European Union by 2010: A shared responsibility'.
[10] COM(2006) 59 – Intelligent Car Initiative - 'Raising Awareness of ICT for Smarter, Safer and Cleaner Vehicles'. COM(2007) 541 – 'Towards Europe-wide Safer, Cleaner and Efficient Mobility: The First Intelligent Car Report'.
[11] World Report on Road Traffic Injury Prevention, WHO, 2004
[12] COM(2010) 389 – 'Towards a European road safety area: policy orientations on road safety 2011-2020'

EUROPEAN COMMISSION

Brussels, 8.9.2011
SEC(2011) 1019 final

Part 5

COMMISSION STAFF WORKING PAPER

IMPACT ASSESSMENT

Accompanying the document

COMMISSION RECOMMENDATION

on suppor for an EU-wide eCall service in electronic communication networks for the transmission of in-vehicle emergency calls based on 112 ('eCalls')

{C(2011) 6269 final}
{SEC(2011) 1020 final}

ANNEX XII
COMPARISON OF COSTS AND BENEFITS FOR VARIOUS IN-VEHICLE TECHNOLOGIES

To compare the BCR ratio of the introduction of eCall in comparison with other technologies, we have used the conclusions of the impact assessment annex to the proposal for a regulation concerning Type-approval requirements for the general safety of motor vehicles, which compared several intelligent vehicle safety technologies. The same assumptions has been used for eCall in order to be able to compare the different technologies in a coherent way (e.g., taking 2008 as baseline, assuming full penetration, 13 years of vehicle life, discount of benefits of 4%, not considering evolution of accidents)

Note: The following table gives an indicative comparison between the costs and benefits of various technologies. Due to the different source data used, some of the assumptions used (for example, on vehicle fleet sizes and casualty costs) may differ, so comparisons should be treated with caution).

| | Electronic Stability Control | | Advanced Emergency Braking | | eCall | Lane Departure Warning |
	Light vehicles	Heavy vehicles	Light vehicles	Heavy vehicles	Light vehicles	(all vehicles)
Increase in vehicle cost €	250	1,000	1,000	1,000	180	600
Fatalities saved (per annum)	2,250	500	7,000	1,020	1,817	5,500
Serious injuries saved (per annum)	23,000	2,500	17,000	4,280	20,292	30,800
Slight injuries saved (per annum)	260,000	0	-15,000	-1,800	0	208,500
Value of accident savings per annum (Million €)	10,802	867	9,213	1,608.9	12,391	14,824
Total per vehicle per year €	127	148	54.5	275	72.8	84.7
Total value (€) of accident savings through 13 year vehicle life	1,651	1,926	708.5	3,575	947	1,101
Present value €	991	1,155	425	2,147	570	661
Benefit / Cost Ratio	3.97	1.16	0.43	2.15	3.16	1.1

The introduction of eCall system in all vehicles represents an additional advantage compared to other technologies. It should be considered that, while ESC, AEBS, LDW or LKA are "stand-alone" in-vehicle systems, eCall could be the basis for other applications and services

and therefore bring significant indirect benefits (e.g., introduction of a telematics platform usable for other added value services, accelerating the introduction of GNSS/Galileo in the vehicles).

Break-even analyses of different technologies

The eImpact study performed a Break-even analyses of the different technologies[1].

The break-even analyses for system users reveal that the pay-off period of investing in IVSS depends largely on the kilometers driven per year. Since frequent drivers are more exposed to safety risks, systems which avoid driving conflicts or mitigate the consequences are more attractive to them. The study assumed different level of penetration along the years. At least for the 2020 high scenario, all systems reach the break-even point within the average vehicle lifetime which was assumed to 12 years.

The comparison between IVSS shows that mature systems and systems with rather low market prices (e.g. Electronic Stability Control, eCall) perform better in the break-even analysis than other systems. This is illustrated in the following Table by the scale ranging from '+++' (indicating that the break-even point is reached within two years after registration) to '-' (indicating that the break-even point is not reached within twelve years). The assumptions can be extrapolated to other starting years (2015-2025)

It should be pointed out that conducting break-even analyses for the involved industries (automotive industry, insurance industry) requires information which is not publicly available. Therefore, it is difficult to come up with quantitative results for these stakeholders. A possible solution to overcome these difficulties, used by eImpact for the automotive industry, is to narrow down the playing field from two sides, based on market prices per unit and revenues on the one hand and based on unit costs on the other hand. Given that the industry rule of thumb suggests a factor three between cost and price it does not mean that the difference represents the profit. This difference can be interpreted as a sort of price-cost margin. It can only serve as starting point from which research and development costs, vehicle implementation costs, costs for call-back campaigns etc. also have to be covered.

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[1] eImpact. Final Report. P. 46 and following

Systems	System User Groups according to 1,000 kilometers driven per year	Year			
		2010		2020	
		Low	High	Low	High
Electronic Stability Control	SUG 1: < 5	-	-	-	-
	SUG 2: 5 – 10	+	++	+	++
	SUG 3: 10 – 15	+	++	++	++
	SUG 4: 15 – 20	++	++	++	+++
	SUG 5: 20 – 30	++	+++	+++	+++
	SUG 6: > 30	++	+++	+++	+++
Emergency Braking	SUG 1: < 5	n.a	n.a	-	-
	SUG 2: 5 – 10	n.a	n.a	-	-
	SUG 3: 10 – 15	n.a	n.a	-	-
	SUG 4: 15 – 20	n.a	n.a	-	-
	SUG 5: 20 – 30	n.a	n.a	-	+
	SUG 6: > 30	n.a	n.a	-	+
Lane Keeping Support	SUG 1: < 5	-	-	-	-
	SUG 2: 5 – 10	-	-	-	-
	SUG 3: 10 – 15	-	-	-	-
	SUG 4: 15 – 20	-	-	-	-
	SUG 5: 20 – 30	-	-	-	+
	SUG 6: > 30	-	-	-	+
eCall	SUG 1: < 5	+	+	-	-
	SUG 2: 5 – 10	++	++	++	++
	SUG 3: 10 – 15	++	++	++	++
	SUG 4: 15 – 20	+++	+++	++	++
	SUG 5: 20 – 30	+++	+++	+++	+++
	SUG 6: > 30	+++	+++	+++	+++
Speed Alert	SUG 1: < 5	-	-	-	-
	SUG 2: 5 – 10	-	-	-	-
	SUG 3: 10 – 15	-	-	+	+
	SUG 4: 15 – 20	-	-	+	+
	SUG 5: 20 – 30	-	-	+	++
	SUG 6: > 30	-	-	++	++

Annotations:

-       Break-even point is not reached within lifetime of the passenger car
+   Break-even point is reached within lifetime of the passenger car
++   Break-even point is reached in the first six years
+++   Break-even point reached in the first two years

Table 3: System profitability from the user perspective

ANNEX XIII – LIST OF ACRONYMS

ABS	Anti lock brake system: Electronically controlled braking system, which avoids wheel lock, when braking under slippery road conditions
ACEA	European Automobile Manufacturers Association
AVS	Added Value Services
BCR	Benefits-Costs Ratio
CARE	Community Road Accident Database
CBA	Costs/Benefit Analysis
CEN	Comité Européen de Standardisation (European Committee for Standardisation)
CTM	Cellular text telephone modem
E112	112 enhanced with location capability
ESO	European Standardisation Organisations
ETSI	European Telecommunication Standards Institute
ETSI MSG	Mobile Standards Group of ETSI
EU	European Union
EuroNCAP	European New Car Assessment Programme
GALILEO	European Satellite radio navigation infrastructure
GNSS	Global Navigation Satellite Systems
GPRS	General Packet Radio Service
GSM	Global System for Mobile telecommunications
GSMA	GSM Association
ICT	Information and Communications Technologies
ITS	Intelligent Transport Systems
IVS	In-Vehicle System
JAMA	Japan Automobile Manufacturers Association
KAMA	Korean Automobile Manufacturers Association
MNO	Mobile Network Operator
MS	EU Member States
MSD	Minimum Set of Data
NHTSA	National Highway Traffic Safety Agency
PSAP	Public Safety Answering Point
SMS	Short Message Text
TEN	Trans European Networks
TPS-eCall	Third Party Supported eCall
TS	Technical Specification
VIN	Vehicle Identification Number
WG	Working Group
112	Single European Emergency Number

TABLE 1 - GENERAL STATISTICS BY COUNTRY						
Country	Population (2008)	Vehicles in use (Eurostat 2008)	Vehicles in use Passenger cars and LDV (ACEA-2008)	Percentage of vehicles	Costs Estimated PSAPs upgrading	Km of motorways	Cost for SOS roadside phones
BELGIUM	10.666.866	5.131.000	5.817.452	2,15%	600.000	1763	264450
BULGARIA	7.640.238	2.366.000	2.699.348	1,00%	600.000	418	62700
CZECH REPUBLIC	10.381.130	4.423.000	5.134.682	1,89%	200.000	657	98550
DENMARK	5.475.791	2.099.000	2.646.306	0,98%	200.000	1111	166650
GERMANY	82.217.837	41.321.000	44.180.519	16,30%	4.000.000	12594	1889100
ESTONIA	1.340.935	552.000	639.472	0,24%	600.000	96	14400
IRELAND	4.401.335	1.953.000	2.278.189	0,84%	1.000.000	269	40350
GREECE	11.213.785	5.024.000	6.153.152	2,27%	200.000	1103	165450
SPAIN	45.283.259	22.145.000	27.613.145	10,18%	3.000.000	13014	1952100
FRANCE	64.004.333	31.109.000	37.212.000	13,73%	4.000.000	10958	1643700
ITALY	59.619.290	36.105.000	40.894.491	15,08%	4.000.000	6588	988200
CYPRUS	789.269	444.000	506.556	0,19%	200.000	257	38550
LATVIA	2.270.894	933.000	1.061.540	0,39%	1.000.000	250	37500
LITHUANIA	3.366.357	1.671.000	1.889.209	0,70%	100.000	309	46350
LUXEMBOURG	483.799	329.000	375.353	0,14%	100.000	147	22050
HUNGARY	10.045.401	3.055.000	3.485.422	1,29%	4.000.000	858	128700
MALTA	410.290	229.000	261.264	0,10%	50.000	150	22500
NETHERLANDS	16.405.399	7.542.000	8.882.000	3,28%	100.000	2582	387300
AUSTRIA	8.318.592	4.285.000	4.673.347	1,72%	1.000.000	1696	254400
POLAND	38.115.641	16.080.000	19.093.899	7,04%	4.000.000	663	99450
PORTUGAL	10.617.575	4.408.000	5.757.400	2,12%	200.000	2613	391950
ROMANIA	21.528.627	4.027.000	4.594.368	1,69%	600.000	281	42150
SLOVENIA	2.010.269	1.045.000	1.192.231	0,44%	15.000	579	86850
SLOVAK REPUBLIC	5.400.998	1.545.000	1.699.800	0,63%	50.000	365	54750
FINLAND	5.300.484	2.700.000	3.118.964	1,15%	70.000	700	105000
SWEDEN	9.182.927	4.279.000	4.802.668	1,77%	600.000	1806	270900
UNITED KINGDOM	61.191.951	29.279.000	34.457.011	12,71%	200.000	3673	550950
Total	436.491.321	234.079.000	271.119.788	100,00%	30.685.000	65500	9825000

Country	Population	Accidents	Acc. x1M hab.	Fatalities	Fat.x 1M hab.	Injured	Injur.x 1M hab.	Seriously Injured	S.I.x 1M hab.	Cluster No	Fatalities Saving perc.	Number Fatalities Saved	Fatalities Cost Saving	Severity Reduct. Perc.	Severity Reduct. Savings	Injuries Costs Saving	Total Congestion Costs	Perc. Congest. reduction	Congestion Costs Saving	Total costs saving 2008
BELGIUM	10.666.866	42.115	3.948	944	88	55.643	5.216	6.013	564	5	5,00%	47,20	67.464.130	6,00%	541	115.850.311	1.601.590.736,66	17%	272.270.425,23	323.108.466,08
BULGARIA	7.640.238	8.045	1.053	1.061	139	9.952	1.303	2.930	383	6	6,00%	63,66	90.990.816	6,00%	264	56.451.258	321.580.537,12	17%	54.668.691,31	235.707.208,51
CZECH REP.	10.381.130	22.481	2.166	1.076	104	28.501	2.745	3.743	361	5	5,00%	53,80	76.897.674	7,50%	421	90.143.796	843.682.228,10	10%	84.368.222,81	272.032.984,20
DENMARK	5.475.791	5.020	917	406	74	5.923	1.082	2.831	517	5	5,00%	20,30	29.015.293	5,00%	212	45.453.217	182.513.288,86	10%	18.251.328,89	134.615.244,93
GERMANY	82.217.837	320.614	3.900	4.477	54	409.047	4.975	70.644	859	4	4,00%	179,08	255.963.483	5,00%	5.298	1.134.227.144	11.676.769.071,39	17%	1.985.050.742,14	2.721.996.616,66
ESTONIA	1.340.935	1.868	1.393	132	98	2.398	1.788	350	261	5	5,00%	6,60	9.433.544	5,00%	26	5.619.437	72.618.036,75	17%	12.345.066,25	26.051.570,50
IRELAND	4.401.335	6.736	1.530	280	64	9.747	2.215	835	190	5	6,00%	16,80	24.012.656	6,00%	75	16.087.645	285.065.021,57	10%	28.506.502,16	65.744.056,50
GREECE	11.213.785	15.083	1.345	1.553	138	19.010	1.695	1.872	167	6	6,00%	93,18	133.184.484	6,00%	168	36.067.152	595.621.603,38	17%	101.255.672,58	262.696.300,27
SPAIN	45.283.259	93.161	2.057	2.656	59	121.391	2.681	16.932	374	3	6,00%	159,36	227.777.198	6,00%	1.524	326.222.762	3.517.526.779,36	10%	351.752.677,94	942.373.555,11
FRANCE	64.004.333	74.487	1.164	4.275	67	93.798	1.465	34.965	546	4	4,00%	171,00	244.414.539	5,00%	2.622	561.381.746	2.805.488.886,59	10%	280.548.888,66	1.523.772.049,89
ITALY	59.619.290	218.963	3.673	4.731	79	310.739	5.212	43.350	727	4	4,00%	189,24	270.485.423	5,00%	3.251	696.007.399	8.922.809.467,74	17%	1.516.877.609,52	1.874.096.941,58
CYPRUS	789.269	1.392	1.764	82	104	1.963	2.487	280	355	5	5,00%	4,10	5.860.232	6,00%	25	5.394.659	58.419.122,66	17%	9.931.250,85	19.133.656,05
LATVIA	2.270.894	4.196	1.848	316	139	5.408	2.381	792	349	6	6,00%	18,96	27.099.998	6,00%	71	15.259.180	164.490.149,19	17%	27.963.325,36	67.924.957,48
LITHUANIA	3.366.357	4.897	1.455	499	148	5.940	1.765	875	260	6	6,00%	29,94	42.793.984	6,00%	79	16.858.311	186.653.124,29	17%	31.731.031,13	93.791.869,84
LUXEMBOURG	483.799	927	1.916	35	72	1.239	2.561	290	599	5	5,00%	1,75	2.501.318	4,00%	17	3.724.884	36.213.006,17	3%	1.086.390,18	12.257.622,27
HUNGARY	10.045.401	19.174	1.909	996	99	25.369	2.525	7.227	719	6	4,00%	39,84	56.944.300	6,00%	650	139.240.013	752.475.046,65	17%	127.920.757,93	350.236.047,57
MALTA	410.290	764	1.862	9	22	859	2.094	174	424	1	2,00%	0,18	257.802	2,00%	5	1.117.465	24.505.434,66	17%	4.165.923,89	4.544.793,63
NETHERLANDS	16.405.399	23.708	1.445	677	41	27.507	1.677	9.310	567	2	2,00%	13,54	19.353.058	1,00%	140	29.895.404	800.024.975,27	17%	136.004.245,80	222.776.971,93
AUSTRIA	8.318.592	39.173	4.709	679	82	50.521	6.073	12.035	1.447	5	5,00%	33,95	48.525.577	6,00%	1.083	231.874.022	1.447.149.693,92	10%	144.714.969,39	500.062.978,53
POLAND	38.115.641	49.054	1.287	5.437	143	62.097	1.629	16.042	421	6	6,00%	326,22	466.274.332	6,00%	1.444	309.075.452	1.959.958.885,30	17%	333.193.010,50	1.245.518.683,85
PORTUGAL	10.617.575	33.613	3.166	776	73	43.933	4.138	2.606	245	5	5,00%	38,80	55.457.802	7,50%	293	62.761.082	1.265.745.342,43	10%	126.574.534,24	197.313.169,15
ROMANIA	21.528.627	29.307	1.361	3.061	142	36.177	1.680	9.383	436	6	6,00%	183,66	262.509.790	6,00%	844	180.778.891	1.137.654.797,47	17%	193.401.315,57	713.571.951,08
SLOVENIA	2.010.269	9.165	4.559	214	106	12.472	6.204	1.100	547	5	5,00%	10,70	15.293.775	6,00%	99	21.193.305	359.080.517,88	10%	35.908.051,79	64.212.440,10
SLOVAK REP.	5.400.998	8.343	1.545	606	112	10.886	2.016	1.768	327	5	5,00%	30,30	43.308.541	7,50%	199	42.579.276	329.924.620,76	17%	56.087.185,53	138.801.257,22
FINLAND	5.300.484	6.881	1.298	344	65	8.513	1.606	2.200	415	3	6,00%	20,64	29.501.264	4,00%	132	28.257.740	252.890.717,00	10%	25.289.071,70	106.423.168,45
SWEDEN	9.182.927	18.462	2.010	397	43	26.248	2.858	3.657	398	3	3,50%	13,90	19.860.468	4,00%	219	46.972.070	753.602.787,71	10%	75.360.278,77	143.321.943,19
UK	61.191.951	170.591	2.788	2.538	41	228.367	3.732	26.034	425	2	2,00%	50,76	72.552.526	1,50%	586	125.396.932	6.520.544.974,57	3%	195.616.349,24	739.634.222,84
Total	497.683.272	1.228.220	2.151	38.257	89	1.613.648	2.808	278.238	477			1.817,46	2.597.733.482		20.292	4.343.890.551	46.874.598.853,47		6.230.843.519,35	12.725.902.657,42

Table caption: TABLE 2 - CALCULATIONS FOR BASELINE YEAR 2008

Nota Bene: Year 2008 has been taken as reference year, as this is the latest year for which all statistics are available (number of vehicles, population, accidents, accidents consequences). To monetise the value of the savings the adjusted values provided by the European Road Safety Observatory have been used (1.361.262 €for road fatality, 214.074 €for serious injury and 16.428 €for light injury. See also annex IV).

To calculate the impact of the introduction of eCall for the different policy options, then the estimated actual evolution of the eCall take up in the car park and the estimated evolution road safety figures have been taken into consideration to correct the benefits for the baseline year. Then these benefits have been compared with the quantitative cost estimates. See Tables 3, 4 and 5 of this Annex for more information.

	TABLE 3 - ANNUAL EVOLUTION FOR POLICY OPTION "NO EU ACTION"													
Year	New cars equipped with ecall	Number of equipped cars	% over total number	IVS Costs	Call Centres costs	Estimated fatalities	Number of fatalities saved by eCall	Estimated Severe Injuries (SI)	Number of SI avoided by eCall	Congestion savings by eCall	Total Costs discounted	Total Benefits Discounted	Net Value	BCR discounted
2008		600.000	0,22%			38.900		278.238		2.369.337				
2009	120.000	720.000	0,27%			34.500		274.174		2.814.115				
2010	133.200	853.200	0,31%			33.294		270.170		3.300.608				
2011	157.176	1.010.376	0,37%			32.130		266.224		3.868.654				
2012	185.468	1.195.844	0,44%			31.007		262.335		4.531.949				
2013	218.852	1.414.696	0,52%			29.923		258.503		5.306.490				
2014	258.245	1.672.941	0,62%			28.878		254.728		6.210.958				
2015	304.729	1.977.670	0,73%	243.783.467	1.164.545	27.868	10	251.007	86	7.267.175	244.948.012	56.723.732	-188.224.279	0,202934436
2016	359.581	2.337.251	0,86%	287.664.491	1.237.772	26.894	12	247.341	100	8.500.624	277.790.637	64.199.343	-213.591.293	0,231526609
2017	424.305	2.761.556	1,02%	339.444.099	1.315.603	25.954	13	243.729	116	9.941.069	315.051.499	72.647.192	-242.404.307	0,23098539
2018	500.680	3.262.236	1,20%	400.544.037	1.398.328	25.047	15	240.169	134	11.623.271	357.325.298	82.194.999	-275.130.299	0,230402497
2019	590.802	3.853.038	1,42%	472.641.963	1.486.255	24.171	17	236.661	156	13.587.828	405.286.788	92.987.301	-312.299.487	0,229786683
2020	697.147	4.550.185	1,68%	557.717.517	1.579.710	23.326	20	233.204	180	15.882.159	459.701.552	105.187.669	-354.513.882	0,229145337
2021	822.633	5.372.819	1,98%	493.580.002	1.711.332	22.511	23	229.798	209	18.561.641	391.435.936	118.981.234	-272.454.702	0,304523604
2022	970.707	6.343.526	2,34%	582.424.403	1.853.920	21.724	26	226.442	242	21.690.953	444.003.505	134.577.533	-309.425.972	0,303640746
2023	1.145.435	7.488.961	2,76%	687.260.795	2.008.389	20.965	29	223.134	280	25.345.636	503.642.241	152.213.745	-351.428.496	0,302742803
2024	1.351.613	8.840.573	3,26%	810.967.738	2.175.727	20.232	34	219.875	324	29.613.915	571.303.813	172.158.352	-399.145.461	0,301835051
2025	1.594.903	10.435.477	3,85%	956.941.931	2.357.009	19.525	38	216.664	376	34.598.830	648.067.991	194.715.286	-453.352.705	0,300921927
2026	1.881.986	12.317.462	4,54%	1.129.191.479	2.553.395	18.842	44	213.499	435	40.420.725	735.159.889	220.228.626	-514.931.263	0,300007166
2027	2.220.743	14.538.206	5,36%	1.332.445.945	2.766.144	18.184	50	210.381	503	47.220.153	833.969.531	249.087.928	-584.881.603	0,299093897
2028	2.620.477	17.158.683	6,33%	1.572.286.215	2.996.619	17.548	56	207.308	583	55.161.270	946.074.048	281.734.253	-664.339.796	0,298184746
2029	3.092.163	20.250.846	7,47%	1.855.297.734	3.246.297	16.935	64	204.280	675	64.435.797	1.073.262.868	318.667.004	-754.595.864	0,297281905
2030	3.648.752	23.899.598	8,82%	2.189.251.326	3.516.779	16.343	73	201.296	781	75.267.652	1.217.566.291	360.451.676	-857.114.615	0,296387201
2031	4.305.528	28.205.125	10,40%	2.583.316.564	3.809.797	15.772	83	198.356	904	87.918.353	1.381.287.916	407.728.628	-973.559.287	0,295502152
2032	5.080.523	33.285.648	12,28%	3.048.313.546	4.127.229	15.220	95	195.459	1.047	102.693.335	1.567.041.428	461.223.038	-1.105.818.391	0,294628013
2033	5.995.017	39.280.665	14,49%	3.597.009.984	4.471.110	14.688	108	192.604	1.212	119.949.323	1.777.792.345	521.756.170	-1.256.036.175	0,293765818
											14.150.711.588	4.067.463.709	-10.083.247.879	0,287438811

Estimations: In-vehicle system cost initial period: 800€ Annual increase of vehicles initial period: 11%
In-vehicle system cost second period: 600€ Annual increase of vehicles second period: 18%
Initial period duration (until reaching maturity): 6 years.

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	TABLE 4 - ANNUAL EVOLUTION FOR POLICY OPTION "VOLUNTARY APPROACH"														
Year	New cars equipped with ecall	Number of equipped cars	Number of equipped cars, including private eCall	% over total number	IVS Costs	PSAPs costs	Estimated fatalities	Number fatalities Saved by eCall	Estimated Severe Injuries (SI)	No SI avoided by eCall	Congestion savings by eCall	Total Costs discounted	Total Benefits Discounted	Net Value	BCR discounted
2008			600.000	0			38.900		278.238	0	0				
2009			720.000	0			34.500		274.174	0	0				
2010			853.200	0			33.294		270.170	0	0				
2011			1.010.376	0			32.130		266.224	0	0				
2012			1.195.844	0			31.007		262.335	0	0				
2013			1.414.696	0			29.923		258.503	0	0				
2014			1.672.941	0			28.878		254.728	0	0				
2015	300.000	300.000	2.277.670	0,84%	135.000.000	35.734.063	27.868	12	251.007	99	8.369.560	170.734.063	65.328.362	-105.405.701	0,382632272
2016	354.000	654.000	2.991.251	1,10%	159.300.000	714.099	26.894	15	247.341	128	10.879.235	153.859.711	82.163.343	-71.696.368	0,534014673
2017	417.720	1.071.720	3.833.276	1,41%	187.974.000	729.809	25.954	19	243.729	161	13.799.054	174.467.279	100.840.520	-73.626.759	0,577991015
2018	492.910	1.564.630	4.826.865	1,78%	221.809.320	745.865	25.047	23	240.169	199	17.198.010	197.850.749	121.617.265	-76.233.484	0,61469196
2019	581.633	2.146.263	5.999.301	2,21%	261.734.998	762.274	24.171	27	236.661	242	21.156.674	224.383.768	144.784.137	-79.599.631	0,645252277
2020	686.327	2.832.590	7.382.775	2,72%	308.847.297	779.044	23.326	32	233.204	292	25.769.151	254.490.283	170.669.304	-83.820.979	0,670631908
2021	857.909	3.690.499	9.063.318	3,34%	300.268.206	796.183	22.511	38	229.798	352	31.311.322	237.935.559	200.707.458	-37.228.101	0,843537042
2022	1.072.386	4.762.886	11.106.412	4,10%	375.335.257	813.699	21.724	45	226.442	423	37.977.091	285.842.292	235.621.879	-50.220.413	0,82430727
2023	1.340.483	6.103.369	13.592.329	5,01%	469.169.071	831.600	20.965	53	223.134	508	46.001.876	343.424.887	276.265.226	-67.159.661	0,804441484
2024	1.675.604	7.778.973	16.619.546	6,13%	586.461.339	849.896	20.232	63	219.875	610	55.671.708	412.637.083	323.643.450	-88.993.633	0,784329532
2025	2.094.505	9.873.478	20.308.954	7,49%	733.076.674	868.593	19.525	74	216.664	731	67.334.351	495.827.124	378.944.245	-116.882.880	0,764266871
2026	2.618.131	12.491.609	24.809.071	9,15%	916.345.842	887.702	18.842	88	213.499	876	81.412.923	595.817.420	443.570.876	-152.246.544	0,744474501
2027	3.272.664	15.764.272	30.302.478	11,18%	1.145.432.303	907.232	18.184	103	210.381	1.049	98.422.575	716.000.291	519.182.463	-196.817.828	0,725114877
2028	4.090.830	19.855.102	37.013.785	13,65%	1.431.790.378	927.191	17.548	122	207.308	1.257	118.990.916	860.453.045	607.741.930	-252.711.115	0,706304584
2029	5.113.537	24.968.639	45.219.485	16,68%	1.789.737.973	947.589	16.935	144	204.280	1.507	143.883.056	1.034.076.293	711.573.134	-322.503.159	0,688124405
2030	6.391.921	31.360.560	55.260.158	20,38%	2.237.172.466	968.436	16.343	169	201.296	1.806	174.032.316	1.242.760.195	833.428.945	-409.331.250	0,670627325
2031	7.989.902	39.350.462	67.555.587	24,92%	2.796.465.583	989.742	15.772	200	198.356	2.166	210.577.896	1.493.584.269	976.572.399	-517.011.870	0,653844861
2032	9.987.377	49.337.839	82.623.487	30,47%	3.495.581.979	1.011.516	15.220	236	195.459	2.599	254.911.108	1.795.057.552	1.144.873.481	-650.184.071	0,637792075
2033	12.484.221	61.822.060	101.102.725	37,29%	4.369.477.473	1.033.769	14.688	278	192.604	3.120	308.732.133	2.157.407.253	1.342.924.593	-814.482.660	0,62247153
												12.846.609.117	8.680.453.010	-4.166.156.107	0,67569994

Estimations: In-vehicle system cost initial period: 450€   Annual increase of vehicles initial period: 18%
In-vehicle system cost second period: 350€   Annual increase of vehicles second period: 25%
Initial period duration (until reaching maturity):   6 years.

TABLE 5 - ANNUAL EVOLUTION FOR POLICY OPTION "REGULATORY MEASURES"

Year	New cars equipped with ecall	Number of equipped cars	Number of equipped cars, including private eCall	% over total number	IVS Costs	PSAPs costs	Estimated fatalities	Number fatalities Saved by eCall	Estimated Severe Injuries (SI)	No SI avoided by eCall	Congestion savings by eCall	Total Costs discounted	Total Benefits Discounted	Net Value	BCR discounted
2008			600.000	0,22%			38.900		278.238		2.369.337				
2009			720.000	0,27%			34.500		274.174		2.814.115				
2010			853.200	0,31%			33.294		270.170		3.300.608				
2011			1.010.376	0,37%			32.130		266.224		3.868.654				
2012			1.195.844	0,44%			31.007		262.335		4.531.949				
2013			1.414.696	0,52%			29.923		258.503		5.306.490				
2014			1.672.941	0,62%			28.878		254.728		6.210.958				
2015	2.300.000	2.300.000	4.277.670	1,58%	414.000.000	35.734.063	27.868	22	251.007	187	15.718.789	449.734.063	122.692.564	-327.041.499	0,272811366
2016	4.600.000	6.900.000	9.237.251	3,41%	828.000.000	714.099	26.894	47	247.341	395	33.596.053	796.840.480	253.727.780	-543.112.700	0,318417283
2017	6.900.000	13.800.000	16.561.556	6,11%	1.242.000.000	729.809	25.954	81	243.729	695	59.618.411	1.148.973.566	435.678.510	-713.295.056	0,379189325
2018	9.200.000	23.000.000	26.262.236	9,69%	1.656.000.000	745.865	25.047	123	240.169	1.081	93.571.737	1.472.841.041	661.700.915	-811.140.126	0,449268385
2019	11.600.000	34.600.000	38.453.038	14,18%	2.088.000.000	762.274	24.171	174	236.661	1.553	135.605.525	1.785.482.746	928.006.405	-857.476.341	0,519750979
2020	14.100.000	48.700.000	53.250.185	19,64%	2.538.000.000	779.044	23.326	233	233.204	2.110	185.866.696	2.086.691.314	1.230.996.675	-855.694.640	0,58992754
2021	14.100.000	62.800.000	68.172.819	25,14%	1.762.500.000	796.183	22.511	288	229.798	2.649	235.518.724	1.393.558.587	1.509.689.187	116.130.600	1,083333848
2022	14.100.000	76.900.000	83.243.526	30,70%	1.762.500.000	813.699	21.724	339	226.442	3.173	284.641.611	1.339.973.490	1.766.006.561	426.033.071	1,317941418
2023	14.100.000	91.000.000	98.488.961	36,33%	1.762.500.000	831.600	20.965	387	223.134	3.683	333.326.012	1.288.449.129	2.001.796.306	713.347.177	1,553647918
2024	14.100.000	105.100.000	113.940.573	42,03%	1.762.500.000	849.896	20.232	432	219.875	4.180	381.675.063	1.238.906.247	2.218.840.389	979.934.142	1,790967149
2025	14.100.000	119.200.000	129.635.477	47,81%	1.762.500.000	868.593	19.525	475	216.664	4.665	429.806.507	1.191.268.638	2.418.864.967	1.227.596.329	2,030494961
2026	14.100.000	133.300.000	145.617.462	53,71%	1.762.500.000	887.702	18.842	514	213.499	5.141	477.855.190	1.145.463.026	2.603.550.353	1.458.087.326	2,272923955
2027	14.100.000	147.400.000	161.938.206	59,73%	1.762.500.000	907.232	18.184	552	210.381	5.608	525.975.971	1.101.418.954	2.774.541.301	1.673.122.346	2,51906079
2028	14.100.000	161.500.000	178.658.683	65,90%	1.762.500.000	927.191	17.548	588	207.308	6.069	574.347.110	1.059.068.674	2.933.457.731	1.874.389.057	2,769846568
2029	14.100.000	175.600.000	195.850.846	72,24%	1.762.500.000	947.589	16.935	622	204.280	6.526	623.174.244	1.018.347.043	3.081.905.984	2.063.558.942	3,026380846
2030	14.100.000	189.700.000	213.599.598	78,78%	1.762.500.000	968.436	16.343	655	201.296	6.982	672.695.012	979.191.424	3.221.490.739	2.242.299.315	3,289949911
2031	14.100.000	203.800.000	232.005.125	85,57%	1.762.500.000	989.742	15.772	686	198.356	7.440	723.184.464	941.541.591	3.353.827.724	2.412.286.133	3,56206009
2032	14.100.000	217.900.000	251.185.648	92,65%	1.762.500.000	1.011.516	15.220	717	195.459	7.901	774.961.383	905.339.631	3.480.557.374	2.575.217.743	3,844476984
2033	14.100.000	232.000.000	271.280.665	100,06%	1.762.500.000	1.033.769	14.688	747	192.604	8.371	828.395.657	870.529.861	3.603.359.613	2.732.829.752	4,139271695
												22.213.619.504	38.600.691.079	16.387.071.574	1,737703802

Estimations: In-vehicle system cost initial period: 180€
In-vehicle system cost second period: 125€   Annual increase of vehicles: Following new models introduction.
Initial period duration (until reaching maturity): 6 years.

Summary of main costs (€) estimated for the different policy options

The following table summarises the total introduction and operational annual costs for the introduction of eCall by the different policy options.
For option 2 and 3 only marginal costs (i.e., those needed on top of the normal operation) have been considered.

Policy Options	IN-VEHICLE SYSTEMS					Call Centres		PSAPs*		PSAPs/ Call centers	MNOs	
	UNIT COST		TOTAL COSTS			TOTAL COSTS		TOTAL COSTS		TOTAL COSTS	TOTAL COSTS	
	YEAR 2015	YEAR 2033	YEAR 2015	YEAR 2033	Cumulative (2015-2033)	YEAR 2015	YEAR 2033	YEAR 2015	YEAR 2033	Cumulative (2015-2033)	YEAR 2015	YEAR 2033
1	800**	600**	243,783,467	2,189,251,326	23,140,083,233	1,164,545	4,471,110			45,775,959	0	0
2	450	350	135,000,000	2,237,172,466	21,920,980,159			35,734,063	1,033,769	51,298,303	minor	minor
3	180	125	414,000,000	1,762,500,000	31,678,500,000			35,734,063	1,033,769	51,298,303	minor	minor

The costs for PSAPs in 2015 are significantly higher for options 2 and 3 due to the initial technical upgrades.
*** For Option 1, the cost of the in-vehicle unit may comprise also some other services (additional subscriptions costs may be charged as well)*

The costs for the in-vehicle systems will be paid by the final users. For options 1 and 2, the buyer will need to positively select to pay the cost of the option.
In the case of option 3, the cost will be integrated in the final price of the vehicle.
The call centres costs will be paid by the vehicle manufacturers/service providers (they may be charged to the users via subscriptions)
The PSAPs costs will be supported by Public Authorities from the Member States, in different proportion depending on their emergency response infrastructure.

Summary of total savings (€) estimated for the different policy options

Policy Options	TOTAL NET VALUES		
	YEAR 2015	YEAR 2033	TOTAL
1	-188,224,279	-1,256,036,175	-10,083,247,879
2	-105,405,701	-814,482,660	-4,166,156,107
3	-327,041,499	2,732,829,752	16,387,071,574

République Française

Ministère de l'Ecologie, de l'Energie,
du Développement durable et de la Mer
en charge des Technologies vertes et des Négociations sur le Climat

Le Secrétaire d'Etat chargé des Transports

Paris, le **2.6 AVR. 2010**

Monsieur le Président,

Le Conseil et le Parlement européen sont récemment parvenus à un compromis sur le principe et les bases d'un accord anticipé en deuxième lecture sur le projet de directive cadre pour l'utilisation coordonnée des systèmes de transport intelligents (STI) dans le domaine routier et des interfaces avec d'autres modes de transport.

La France a soutenu depuis le début cette proposition législative qui est un instrument approprié pour aboutir à un déploiement efficace de STI interopérables. C'est pourquoi, nous nous félicitons de l'adoption de ce texte et de l'équilibre qui a été trouvé entre l'objectif essentiel de disposer de services fonctionnant dans l'ensemble de l'Union et l'exigence de tenir compte des contextes nationaux.

Cet équilibre est déterminant pour la mise en place du service d'appel d'urgence (eCall) identifié comme l'un des quatre systèmes prioritaires par la directive. La décision entérinée par le Conseil et le Parlement européen de supprimer dans le texte la référence à l'eCall paneuropéen, en faveur d'un eCall interopérable, nous rassure sur la possibilité d'obtenir à terme un outil de sécurité routière viable et efficace.

La France dispose depuis 2005 d'un service d'appel d'urgence très performant (« TPS eCall ») développé par les constructeurs automobiles et les mutuelles d'assurance. Environ 500 000 véhicules en sont aujourd'hui équipés. Ce système, alternatif à l'eCall paneuropéen mais pas incompatible, répond parfaitement aux besoins de nos usagers et aux exigences des services de secours nationaux.

Monsieur Siim KALLAS
Vice-Président de la Commission européenne
Commissaire chargé des Transports
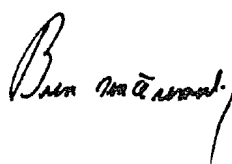Commission européenne
Bruxelles

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Nous souhaitons que le travail de spécification confié à la Commission dans le cadre de la directive « STI » aboutisse à définir une architecture et un modèle d'organisation interopérables avec le système et les technologies déployés en France. Nous ne pourrons pas souscrire à une solution consistant à imposer le recours exclusif à l'eCall paneuropéen. Cette solution serait à la fois inefficace et coûteuse en plus d'être contradictoire vis-à-vis des principes de la directive.

C'est dans cet esprit que le gouvernement français déposera au Conseil, lors de l'adoption prochaine de la position commune sur la directive STI, une déclaration sur le système eCall dont vous trouverez ci-joint le texte. Nous souhaitons, par le biais de cette déclaration, contribuer à poser des bases solides permettant une mise en œuvre rapide de la directive.

En vous remerciant par avance de l'attention que vous porterez à ce courrier, je vous prie d'agréer, Monsieur le Président, l'assurance de mes sentiments les meilleurs.

Dominique BUSSEREAU

03/03/2010
MEEDDM

Projet de déclaration de la France pour le Conseil Transports

La France partage pleinement l'objectif de mise en œuvre au niveau communautaire d'un système interopérable d'appels d'urgence embarqués (« eCall ») qui devra permettre des progrès en matière de sécurité routière.

Elle considère toutefois que toute décision sur les spécifications fonctionnelles et techniques du système eCall devra être précédée de nouvelles analyses d'impact et du rapport coût-bénéfice du système envisagé.

La France souhaite que les experts nationaux soient dûment associés à ces travaux, dans la mesure où la mise en œuvre d'un système eCall relèverait de la responsabilité des États membres.

En tant que solution unique, l'eCall paneuropéen, proposé par la Commission, a été écarté par le Conseil et le Parlement européen. La formulation adoptée par les co-législateurs permet ainsi la coexistence de systèmes interopérables, incluant les systèmes existants, conformément aux principes de l'annexe I de la directive.

La France réitère ses fortes réserves sur l'eCall paneuropéen, dans la mesure où la technologie retenue ne permet pas une couverture optimale du territoire de l'Union et où la Commission n'a pas donné de garantie suffisante en réponse au risque de désorganisation des services d'urgence des États membres.

ANNEX XVI
Sensitivity analysis

A sensitivity analysis has been performed increasing and decreasing the value units of the major parameters, in order to assess their impact in the final cost-benefit ratio for the preferred policy option. The following table provides the results of this sensitivity analysis[2].

	CBR discounted	CBR in 2033	Saved fatalities in year 2033	Mitigated severe injuries in year 2033
Current estimations	1.74	4.14	747	8,371
IVS cost 125-100 €	2.27	5.17	747	8,371
IVS cost 225-150 €	1.41	3.45	747	8,371
% Fatalities/injuries +1%	2.06	4.90	904	10,053
% Fatalities/injuries +2%	2.37	5.66	1,062	11,814
% Fatalities/injuries -1%	1.42	3.38	590	6,545
% Fatalities/injuries -1% & IVS cost 225-150 €	1.15	2.82	590	6,545
% Fatalities/injuries +1% & IVS cost 125-100 €	2.70	6.12	904	10,053
% Fatalities/injuries +2% & IVS cost 125-100 €	3.11	7.07	1,062	11,814

Table 1: Sensitivity analysis for the preferred policy option

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[2] As explained in the methodological approach, this impact assessment is based on conservative figures and pessimistic estimations. The possibility to have -1% in the reduction of fatalities and severity of injuries is therefore improbable.

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