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COMMISSION STAFF WORKING PAPER

EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

on the implementation of the harmonised EU-wide in-vehicle emergency call, 'eCall'

Accompanying the document

COMMISSION RECOMMENDATION

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

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Disclaimer: *This report commits only the Commission's services involved in its preparation and does not prejudge the final form of any decision to be taken by the Commission*

1. PROBLEM DEFINITION AND RATIONALE FOR INTERVENTION

This impact assessment aims to find the best solution to implement the pan-European in-vehicle emergency call service (eCall).

Road safety is one of the major issues within the European Union's transport policy. In 2009, 1.15 million serious traffic accidents on EU roads caused around 35 000 deaths and more than 1.5 million injuries. The costs to society were about EUR 160 billion.

The EU is highly committed to reducing the number of road accidents, mitigating their consequences and improving the efficiency of post-accident care. eCall can significantly contribute to reducing road fatalities and the severity of injuries. The Commission has proposed, as a priority action to mitigate the consequences of road accidents, the introduction, for all vehicles in Europe, of an eCall service based on 112[1] and on common European standards to ensure an affordable interoperable service working seamlessly across Europe.

In the Communication 'eCall: Time for Deployment', the Commission indicated that if significant progress had not been made by the end of 2009, it would consider taking regulatory measures.

Directive 2010/40/EU on the deployment of Intelligent Transport Systems includes '*the harmonised provision for an interoperable EU-wide eCall'* among its priority actions.

1.1. What is eCall?

In the event of a severe crash, an eCall-equipped vehicle will automatically trigger an emergency call. Even if passengers cannot speak, a minimum set of data ('MSD') with information on the incident is sent including the exact location of the accident. eCall can also be activated manually.

eCall does not prevent accidents, but improves the effectiveness of emergency services. When emergency services are promptly notified and know the accident location, they can arrive quickly and reduce the risk of death and the severity of injuries ('*golden hour'* principle).

The take-up of the eCall service offered by private companies has been slow, due to the following factors:

- There is a lack of coordination between the major stakeholders (mobile network operators — MNOs, vehicle manufacturers and public authorities). Despite general agreement, each group is waiting for the others to act first.
- As a result. the public emergency response infrastructure is not being upgraded to handle eCalls (insufficient supply of public goods).
- Consequently, private eCall schemes (relying on parallel infrastructures such as private call centres) have so far been very expensive. Market prices do not reflect real costs and potential benefits to society.

[1] Single European Emergency Number.

– There are missing markets (service offered only in some Member States).

Emergency services are now alerted by the people involved in the accident or by third parties knowing about it. This often causes unacceptable delays.

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

Table 1: Summary of major problems and respective drivers that eCall can improve

2. JUSTIFICATION FOR EU INTERVENTION

The eCall initiative aims to introduce in all vehicles in Europe a minimum set of functionalities to ensure the adequate handling of emergency calls by emergency response services. Road journeys across Member States (MS) are increasing (over 100 million annually). Guaranteeing the interoperability and continuity of the service throughout Europe cannot be achieved by single MS, so needs action at EU level.

Private services exist covering several MS, but none ensures EU-wide coverage, so when vehicles travel into countries that are not served, the service is discontinued. Further, there is no common European standard and the take-up of private eCall services has been slow. Some of the services introduced have been suddenly discontinued.

EU action based on common standards will ensure provision of the service across Europe, e.g. for vehicles travelling abroad, and avoid market fragmentation (due to proliferation of different national and/or private solutions).

The EU-wide eCall service has been conceived to minimise the impact among stakeholders in the value chain and distribute it in a fair way. Financial and administrative costs for national/regional authorities are expected to be minor and commensurate with the objectives pursued.

A substantial part of the implementation is left to national decisions: the infrastructure for public safety answering points (PSAPs) will be upgraded by Member States in a way best suited to their national/local architectures.

The proposed legislative instrument has been chosen after consultation with the different services, taking into account the opinion of the European Parliament and Council. The proposed actions are coherent with the pan-European nature of the objectives.

3. POLICY OPTIONS

In line with COM(2009) 434, three policy options are considered.

3.1. Option 1: No EU action

Leaving the initiative to the market, to proprietary in-vehicle emergency call services (not using 112). This is considered as the *baseline scenario*.

3.2. Option 2: Voluntary approach

Supporting the development of common European standards for an EU-wide eCall service based on 112, conducting awareness campaigns and waiting for the Member States and relevant stakeholders to implement eCall voluntarily.

3.3. Option 3: Regulatory measures

Requiring the installation of a factory system in all vehicles in Europe, starting with certain categories, to provide an EU-wide eCall service based on 112 and common European standards, and preparing a framework for the handling of eCalls in the telecommunication networks and PSAPs.

4. ANALYSIS OF THE POLICY OPTIONS AND THEIR IMPACT

The three policy options are analysed and compared in terms of effectiveness (i.e. the extent to which they fulfil the specific objectives) and efficiency (i.e. cost-benefit analysis). This includes their assessment by stakeholders (i.e. EU citizens, PSAPs, automotive industry, emergency services, MNOs, healthcare services, insurances and service providers, road operators) and their economic, social and environmental impacts.

Regarding option 1, the penetration of proprietary eCall services is very slow (private eCall services started more than 12 years ago but their penetration remains below 0.4% of the car fleet), restricted mainly to high-end cars and only in some countries in Europe (with a better business case). The emergency response services must interface with different proprietary services, adding complexity. All vehicle manufacturers will need to implement their own private call centres and take responsibility for handling emergency calls.

Option 2 would lead to the introduction of an eCall service in Europe, but at a slow pace. The commitment of the automotive industry to offer eCall as an option is positive and would, with time, raise its penetration. But economies of scale will be less with eCall only as option, increasing its price and reducing its demand and penetration and thus its benefits.

There is a market fragmentation risk, as it is not certain that all Member States will upgrade their PSAPs to handle eCalls at the same time. Further, not all citizens will benefit from the upgrading, only those buying the option. The upgrading of telecom networks in all countries cannot be guaranteed.

This has been the Commission policy since 2003 and has not achieved significant progress so far.

Option 3 would make factory-fitted eCall equipment obligatory in all new vehicles in Europe, starting with certain categories, and ensure the handling of eCalls in telecommunications

networks and PSAPs, based on existing regulations and common European standards and specifications.

This would make an EU-wide eCall service available to all citizens, accelerate take-up and unlock the full potential of eCall. The certainty created by this approach is also expected to speed up the introduction of eCall systems by automobile/equipment manufacturers before this becomes compulsory.

It would also boost the telematics market and the use of GNSS/Galileo receivers in Europe, leading to indirect benefits.

The 112 EU-wide eCall service and private eCall services can coexist. Private eCall service providers can also migrate to the EU-wide eCall service, i.e. with 112 called for emergencies while the service provider continues to be called for other services.

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

	PO 1 **No EU action**	**PO 2** **Voluntary approach**	**PO 3** **Regulatory measures**
Impact on operational objectives: - 100% eCall penetration; - % of PSAPs upgraded to handle eCalls;	(0) Lowest penetration (eCall as option in some types of vehicles) (0) Only minor upgrade of PSAPs needed. (0) Different protocols (0) Handling of data normally by traditional methods (phone call, fax)	(+) Reduced penetration (eCall offered as an option) (-) Some countries may not upgrade the PSAPs to receive eCalls (+) Same European protocols (+) Electronic handling of the data	(++) Full penetration in passenger cars and light-duty vehicles within 16 years (+) All PSAP infrastructures upgraded in all MS (+) Same European protocols (+) Electronic handling of the data
Impact on specific objectives. Reduction in: - Road fatalities - Severe injuries - Congestion	(0) Lowest penetration, lowest impact	(+) Reduced penetration, medium impact	(++) Highest penetration, highest impact

Economic impact	(0) Highest price for consumers for the in-vehicle device (0) Market segmentation (0) Lowest price for PSAPs and MNOs (0) Slower introduction of new services and applications (0) Competitive position of EU automotive and telecom industries offering the service	(+) Less economies of scale: higher price for consumers (+) Possible market segmentation (MS not supporting eCall) (-) Compliance costs for PSAPs and MNOs (+) Facilitated introduction of new services and applications (+) Competitive position of EU automotive and telecom industries	(++) Lowest price for consumers (++) Full EU coverage (-) Compliance costs for PSAPs and MNOs (++) Facilitated introduction of new services and applications (++) Competitive position of EU automotive and telecom industries
Social impact	(0) Unequal access to eCall services. Only a limited number of citizens will benefit from the service (0) Emergency call in own national language (of the registration country of the vehicle) (0) Additional delay in reaching emergency services (0) Handling of emergency calls by private operators (0) Personal data controlled by private parties (0) Provision of proprietary services in countries covered (0) Improved prevention of fire, explosions and accidents (limited scale)	(+) Unequal access to eCall services. Only those that buy the eCall option will benefit from them (-) Linguistic handling of emergency call as for any 112 call (more or less effective depending on the country/region) (+) Direct access to PSAPs (+) Handling of emergency calls by trained operators (+) Personal data controlled by public authorities (+) Interoperable and harmonised provision of seamless service wherever supported by MS (+) Improved prevention of fire, explosions and accidents (reduced scale)	(++) Access to eCall services for all (-) Linguistic handling of emergency call as for any 112 call (more or less effective depending on the country/region) (+) Direct access to PSAPs (+) Handling of emergency calls by trained operators (+) Personal data controlled by public authorities (++) Interoperable and harmonised provision of seamless service EU-wide and beyond (++) Improved prevention of fire, explosions and accidents

Environmental impact	(0) Improved incident management (limited scale) (0) Reduced energy consumption and CO2 emissions (limited scale)	(+) Improved incident management (reduced scale) (+) Reduced energy consumption and CO2 emissions (reduced scale)	(++) Improved incident management (++) Reduced energy consumption and CO2 emissions

Table 2: Overall impact of policy options

Note: Option 1 is considered the baseline scenario (0). The impacts for the other options are deemed negative (-,--) or positive (+,++) compared to the baseline.

4.1. Comparison of benefit-cost ratios for the policy options

To calculate the benefit-cost ratio (BCR), we assessed the potential for saving lives and alleviating injuries over time, using different percentages for countries to reflect their different road and emergency response infrastructures, and then corrected them for actual take-up in the car fleet. We monetised these benefits and compared them and other quantified benefits with the quantitative cost estimates, using a conservative approach. We considered annualised values, with a 4% discount rate.

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

Table 3: Comparison of cumulative BCRs

4.2. Comparison with other in-vehicle intelligent safety technologies

Although it is difficult to compare the respective impacts, we compared the estimated BCR of the obligatory introduction of eCall and other systems, applying the assumptions used in the impact assessment for a regulation concerning type-approval requirements for the general safety of motor vehicles: eCall ranks after ESC.

	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 4: Comparison of BCR for in-vehicle intelligent safety technologies

5. CONCLUSION AND PREFERRED POLICY OPTION

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

The three options have been analysed and compared. In line with the outcome of this impact assessment, **policy option 3 (regulatory approach)** is deemed to be the most effective and efficient, and is thus recommended as the preferred option for the implementation of the eCall service in the EU.

This means the obligatory introduction of a 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 with certain categories (i.e. passenger cars and light-duty vehicles), together with the upgrading of MNOs and PSAPs to receive/forward and handle eCalls.

5.1. Additional note

The cost-benefit analysis and the impact assessment aim to provide actual figures to assess objectively the solutions to the problem.

However, we believe that the legislator, as the public representative of the community of European citizens, should consider not only the cost-benefit analysis but also ethical values difficult to quantify, such as the value of human life and the cost of human suffering.