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COVER NOTE

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Subject:	COMMISSION STAFF WORKING DOCUMENT Cost-Benefit Analysis *Accompanying the document* COMMISSION DELEGATED REGULATION supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to data and procedures for the provision where possible, of road safety-related minimum universal traffic information free of charge to users

Delegations will find attached Commission document SWD(2013) 170 final.

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COMMISSION STAFF WORKING DOCUMENT

Cost-Benefit Analysis

Accompanying the document

COMMISSION DELEGATED REGULATION

supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to data and procedures for the provision where possible, of road safety-related minimum universal traffic information free of charge to users

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COMMISSION STAFF WORKING DOCUMENT

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1. CONTEXT OF THE DELEGATED ACT

The aim of the Delegated Regulation is to define data and procedures for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users. It is intended to provide a predictable framework for road operators and service providers, and to support the interoperability, compatibility and continuity of safety-related traffic information services across Europe.

1.1. Background and relevance to other European policies

Road safety is a major element of the European Union's transport policy. Although fatalities have fallen by 42 % since 2001, 2011 still saw more than 30 000 persons lose their lives and almost 1.5 million people injured on European roads in more than a million road traffic accidents. This represents approximately € 130 billion in costs for society. As shown in the last road accident figures published by the Commission in March 2012, the progress in cutting road fatalities significantly slowed in 2011 (to -2 %) compared to a very promising EU-wide reduction throughout the last decade (average -6 %). In fact, in some Member States the number of fatalities increased compared to 2010[1].

In this context, new technologies are expected to contribute a great deal to improving the safety record of road transport. It is considered that the wide deployment of Intelligent Transport Systems (ITS) that can detect incidents, support traffic supervision and provide information to road users in real time will considerably improve traffic safety (accident prevention). The human factor is the most important factor in accidents. Therefore, accurate and widely available road safety-related traffic information that can warn motorists and allow them to better anticipate and avoid unexpected and potentially dangerous situations has a high potential to reduce the number of traffic accidents.

The European Union is highly committed to reducing the number of road accidents and enhancing traffic efficiency. However, earlier attempts by the Commission to improve the uptake of ITS through 'soft' measures have failed, e.g. the Commission Recommendation of 4 July 2001[2] on the development of a legal and business framework for participation of the private sector in deploying telematics-based Traffic and Travel Information (TTI) services in Europe, which invited Member States to establish harmonising requirements for traffic information at national, regional and local level.

In 2006, the Commission launched the eSafety[3] initiative with the aim of accelerating the development, deployment and use of intelligent vehicle safety systems to improve road safety. Its working group 'Real-Time Traffic and Travel Information' issued a final report in 2007[4] with a strong focus on road transport, including the topic of free road safety-related traffic information. This subject was raised again at a high-level eSafety conference held in Berlin that same year under the German Presidency of the EU Council.

On 16 December 2008, the Commission adopted an Action Plan for the Deployment of Intelligent Transport Systems for road transport and its interfaces with other modes[5]. The aim

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1 http://ec.europa.eu/transport/road_safety/events-archive/2012_03_29_press_release_en.htm.
2 C(2001) 1102.
3 http://www.esafetysupport.org/en/esafety_activities/index.html.
4 http://www.esafetysupport.org/download/working_groups/RTTI/070918%20%20RTTI%20WG%20Final%20Report.pdf.
5 COM(2008) 886.

of this Action Plan is to accelerate and coordinate the deployment of ITS applications. Action 1.4 of the Plan calls for the definition of specifications for data and procedures for the free provision of minimum universal traffic information services (including definition of the repository of messages to be provided).

On 20 July 2010, in the Communication 'Towards a European road safety area: policy orientations on road safety 2011-2020'[6], the Commission set itself the ambitious target of halving the overall number of road fatalities in the European Union by 2020, starting from 2010, and presented seven strategic objectives to that end, including 'Promote the use of modern technology to increase road safety'.

Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the legal framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport[7] identified six priority actions for the adoption of specifications and, if appropriate, their mandatory deployment. 'Data and procedures for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users' is one of these six priorities.

The White Paper on transport policy adopted by the Commission on 28 March 2011 aims to move towards zero fatalities in road transport by 2050 and increase the efficiency of transport and infrastructure use with information systems.

On 12 December 2011, in the Communication 'Open Data. An engine for innovation, growth and transparent governance'[8], the Commission stressed that intelligent processing of data was essential for addressing societal challenges. Opening up public and private data for re-use not only improves information-based services helping business and citizens to take informed decisions, but also stimulates innovation and contributes to growth. This was also pointed out in the Digital Agenda for Europe[9] adopted by the Commission on 26 August 2010.

1.2. Commission approach to road safety-related traffic information

The impact assessment prepared in support of the ITS Action Plan and Directive 2010/40/EU showed that promoting the interoperability of road traffic information, and more specifically developing common requirements, guidelines, specifications and conditions to ensure the harmonised, interoperable and open development and deployment of ITS, would contribute very positively to road safety and traffic efficiency. The impact assessment clearly showed that the existing patchwork of national, regional and local solutions is slowing down overall deployment and hampering the provision of seamless services across the European Union.

Similarly, the impact assessment prepared in support of the 2011 Transport White Paper also indicated that the large-scale deployment of ITS is expected to have positive effects on safety.

Indeed, it is widely recognised that many road accidents can be avoided by timely warning of motorists about unexpected and dangerous traffic incidents and situations. However, in current circumstances, road users are not informed in a way that would contribute effectively to the target of zero fatalities in road transport by 2050.

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6 COM(2010) 389 final.
7 OJ L 207, 6.8.2010, p. 1.
8 COM(2011) 882 final
9 COM(2010)245 final

This situation stems from two main reasons:

– Police and road authorities in Member States have long collected traffic information to better inform motorists of immediate safety-related issues such as wrong-way drivers, unprotected accident areas, road works etc. Nevertheless, the information at the disposal of road users varies between Member States in terms of content, format, coverage and quality. The information is therefore very scattered, non-universal, and not seamless across borders. Moreover, in the present situation, traffic information for road users is not necessarily made available through communication channels that are compatible and interoperable with each other.

– The past decade has seen a significant increase in the activity of private companies collecting data and providing traffic information, mainly in the form of itinerary advice to avoid congestion but which do not necessarily address road safety. The emergence and proliferation of traffic information and navigation applications from such private service providers, with business models based on subscription or bundling of premium services, could limit the access to traffic information concerning safety-critical incidents, as and if detected and further processed by these private companies.

Consequently, such a situation could prevent all road users benefiting from safety-critical universal warnings of dangerous traffic incidents or situations, sufficiently ahead of time to allow them to increase their vigilance, adapt their behaviour, and avoid potential accidents. This is all the more unacceptable if this type of traffic information is largely available to some service providers (whether public or private).

The adoption of specifications for real-time road safety-related minimum universal traffic information free of charge to users across various road segments, including at cross-border level, should tackle this problem. More specifically, this can be achieved by:

– Defining the relevant road safety-related minimum universal traffic information in terms of content, format, and quality, to be made available free of charge to road users;

– Establishing on the basis of existing standards and technology the procedures to ensure compatibility, interoperability and continuity for the provision of minimum traffic information.

In this context, the Commission has engaged in a close dialogue with representatives of all stakeholder associations involved in the road safety-related traffic information value chain and with the Member States. In particular, the Commission has paid great attention to the work of the Traveller Information Services Association (TISA), a market-driven membership association with worldwide scope focusing on the implementation of traffic information services and products based on existing standards (primarily the RDS-TMC and TPEG technologies). Based on its technical, business and operational expertise in all issues relevant to real-time traffic information, TISA issued a position paper on the provision of a free minimum universal traffic information service in May 2012, which contains useful material for preparation of the specifications for the present priority action.

In parallel, the Commission has requested the European Standardisation Organisations (ESOs) to draft the necessary common European standards, and provided support for their

development. For instance, ESO CEN (Technical Committee 278) has developed and is further developing common standards for road traffic data and traffic information (e.g. data coding standards, location referencing standards, broadcasting standards) and for ITS architecture and terminology.

Ultimately, the specifications should ensure compatible and interoperable services building on and complementing existing standards and technology. In the medium term, they will contribute to harmonised and Europe-wide road safety-related traffic information.

1.3. Delegated act under Directive 2010/40/EU

Directive 2010/40/EU aims to accelerate the coordinated deployment and use of intelligent transport systems in road transport (and its interfaces with other modes) across Europe. 'Data and procedures for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users' is one of the six priority actions defined in Article 3 of Directive 2010/40/EU (priority action c).

Article 7 of Directive 2010/40/EU empowers the Commission to adopt delegated acts in accordance with Article 290 of the Treaty on the Functioning of the European Union (TFEU) to define specifications for the priority actions.

The present Regulation, to be adopted as a delegated act, constitutes the binding specifications for priority action c.

2. CONSULTATIONS AND EXTERNAL INPUTS PRIOR TO ADOPTION OF THE ACT

2.1. External expertise

The Delegated Regulation also drew on external expertise and material, in particular:

- Since 1988, the Commission has funded several research and development projects on ITS, which have delivered many useful results;
- A number of Euro-regional ITS deployment projects have been funded under the Trans-European Transport Network programme and work has continued on the EasyWay project, which is finalising 'Deployment Guidelines'[10] for core ITS services;
- National Reports on ITS Actions submitted by the Member States to the Commission under Article 17 of Directive 2010/40/EU provided a broad picture of existing ITS services across Europe;
- A support study[11] examining the costs and benefits of the provision, where possible, of road safety-related minimum universal traffic information free of charge to users was carried out by consultants from April to December 2012, leading to a final report. Elements of the analysis and conclusions have been taken over in the present Staff Working Document.

2.2. Stakeholder consultations[12]

The Delegated Regulation is the result of extensive consultations with stakeholders.

In the course of the study on 'Guaranteed access to traffic and travel data and free provision of universal traffic information', completed in March 2011[13] the Commission conducted an online public consultation in spring 2010[14], a stakeholder workshop in June 2010[15], interviews with selected stakeholders, a presentation and discussion of study results at conferences, and a meeting with Member State experts in May 2011[16].

The main issues raised during this first meeting with Member State experts on priority action c were:

– Definition of safety-related traffic information

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10 http://www.easyway-its.eu/deployment-guidelines/.

11 Deliverables of this external study are available online: http://ec.europa.eu/transport/themes/its/index_en.htm.

12 Details of the stakeholder consultation are provided and fully documented in the Consultation Report (D2) of the external study, which is available online: http://ec.europa.eu/transport/themes/its/index_en.htm.

13 Study report: http://ec.europa.eu/transport/themes/its/studies/doc/2011_03-final-report-study-data-access-free-safety-traffic-information.pdf.

14 Online questionnaire and results at: http://ec.europa.eu/transport/themes/its/consultations/2010_06_18_traffic_travel_data_en.htm.

15 Workshop materials at: http://ec.europa.eu/transport/themes/its/road/action_plan/traffic_and_travel_information_en.htm.

16 Agenda at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=1941.

– Data availability and minimum quality

– Communication channels, technologies and standards

– Road network coverage

– Implications of the 'free of charge' model, in particular its impact on service providers

In addition and as part of the 2012 follow-up work, the Commission conducted:

- An online public consultation[17] on 'the provision, where possible, of road safety-related minimum universal traffic information free of charge to users' to evaluate the current provision of safety-related traffic information across Europe and gather participants' feedback on potential deployment options and topics to be covered by the specifications. It ran for 12 weeks from 13 March to 5 June 2012, and received 132 contributions, representing a good mix of all stakeholders in the traffic information value chain from across the EU and beyond (e.g. Switzerland, Israel and companies with a global focus).

- Face-to-face interviews in spring 2012 with key stakeholders (22) selected so as to cover all roles in the traffic information value chain (e.g. policy maker, road authority, road operator, data collector, information integrator, traffic information service provider, navigation provider, telecom provider, broadcaster, car manufacturer, insurance company, and end users association), and to ensure maximum coverage of Member States.

- A stakeholder workshop on 29 June 2012[18] to consolidate the preliminary findings of the work carried out, in particular the results of the online public consultation and the outcomes of or issues raised during the interviews. It had 53 participants representing public authorities, road operators, private organisations (including automotive industry, data/service providers) and users associations, among others, who had the opportunity to debate key issues on three separate panels dealing with the state of the art, the technical challenges, and the possible deployment options to be considered in the impact assessment for the provision of road safety-related traffic information.

The results of this part of the stakeholder consultation can be summarised as follows:

– Stakeholders strongly indicated that safety-related traffic information can contribute to road safety, and broadly supported harmonisation action by the Commission.

– They indicated a clear preference for functional rather than detailed technical specifications, leaving room for Member State-specific implementations based on the technical expertise of organisations such as TISA.

[17] Online questionnaire and results at: http://ec.europa.eu/transport/modes/road/consultations/2012-06-05-its2012_en.htm.

[18] Workshop materials at: http://ec.europa.eu/transport/themes/its/events/2012-06-29-workshop_en.htm.

– They considered the list of safety-related traffic event categories proposed by TISA[19] to be a good starting point, to be supplemented by the category 'extreme/exceptional weather conditions'. By keeping the specifications at a functional level there will be room for specific interpretation of the categories by Member States and road operators.

– They strongly supported harmonisation of the content and universal presentation of safety-related traffic information to all end users.

– As regards dissemination channels, stakeholders emphasised that a maximum number of road users should be reached. But opinions diverged on whether specific channels should be mandated, and if so, whether these should be RDS-TMC, TPEG over DAB, or TPEG over IP (e.g. smartphones). Other means were also mentioned such as on-board units, navigation devices, and upcoming cooperative systems.

– Most stakeholders agreed that the trans-European road network can be considered an appropriate minimum requirement for road network coverage, leaving open the option of coverage of other main roads where safety-related traffic information was available.

– A broad consensus emerged on the sharing of the safety-related traffic data available, although opinions differed on the possible cooperation model (e.g. public sector in the lead, public-private partnership) and market impact. In any case, existing data sharing arrangements and cooperative agreements had to be respected.

– Stakeholders considered the quality of safety-related traffic information very important for the credibility of the service and user acceptance. But they also emphasised that measuring, monitoring and managing quality was complex and that ambitions should be kept realistic.

These considerations have been taken into account in preparing a first draft of the specifications for the present priority action, which have been further discussed with major stakeholders:

- A series of four meetings with Member State experts[20] (+ EEA countries + Switzerland) were organised to further discuss the details of the specifications (on 26 September, 16 October, 30 October, and 15 November 2012), to which representatives from the European Parliament and the European Data Protection Supervisor were also invited.

- Written consultation of the 25 members of the European ITS Advisory Group[21], composed of high-level representatives from ITS service providers, associations of users, transport and facilities operators, manufacturing industry,

19 This covers the following categories: Dangerous road surface; Animal/people/debris on the road; Unprotected accident area; Short-term road works; Reduced visibility; Wrong-way driver; Unmanaged blockage of a road or tunnel; and Unexpected end of queue (optional).

20 Agenda and summary records of each meeting at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=1941.

21 Composition and task of the group at: http://ec.europa.eu/transport/themes/its/road/action_plan/its_advisory_group_en.htm.

social partners, professional associations, local authorities and other relevant fora, on the draft specifications and their potential impacts.

The detailed discussions with the Member State experts enabled the Commission to balance ambitions for the service and reality constraints in the Member States. They confirmed that:

- The trans-European road network was the appropriate minimum coverage for the provision of road safety-related minimum universal traffic information across Europe.

- An incremental approach building on the existing situation was appropriate.

- The list of safety-related traffic event categories proposed by TISA was relevant, although the inclusion of 'unexpected end of queue' was debated due to complexity and cost of detection.

- Although mostly used by road operators but not necessarily by service providers, DATEX II would be an appropriate European standard for the sharing of road safety-related traffic data.

- The provision of the service 'free of charge' should be understood as free at the point of use, i.e. at no extra cost to end users, and did not exclude possible costs associated with data collection or re-use.

- The specifications should remain functional and respect technological neutrality (i.e. no favoured delivery channel).

- Although the quality of road safety-related traffic information was fundamental, this was a topic to be further investigated at the level of each Member State in order to define criteria, measurement methods and quality targets for the deployment of an efficient service.

- A flexible model for conformity assessment based on self-declaration and contributing to the benchmarking of Member States' practices would be welcome.

- A transition period of 2 years following entry into force of the Regulation to ensure that any road safety-related traffic information service already deployed would meet the requirements of the specifications would be justified considering national circumstances.

3. COST-BENEFIT ANALYSIS AND POTENTIAL IMPACTS

3.1. Initial considerations

At present, Member States stand at different stages of readiness for the provision of road safety-related minimum universal traffic information to users, in terms of both road safety-related events monitored and road network coverage (i.e. 17 Member States already provide some form of road safety-related traffic information or have data available for the provision of road safety-related traffic information — see Annexes I and II). Physical and social geography plays a clear role in the availability of the service, e.g. artic European countries due to their cold winters have sophisticated systems for collecting weather and road surface data to provide detailed weather and road condition warnings to road users.

In most Member States, road safety-related traffic information is available from road operators and coded in the European standard DATEX/DATEX II (CEN/TS 16157), in one or more central systems. Some Member States[22] in general do not yet have a DATEX II node, but are working on its development. Indeed, DATEX II is being increasingly used all over Europe while at the same time undergoing further development and standardisation (see Annex III). Also, DATEX II would complement INSPIRE basic data.

In recent years, private value chains have developed alongside the existing public ones, leading to a situation where in most Member States both private and public organisations collect, aggregate and validate traffic data in parallel. In general, end user services rely on congestion information from private sources and news information on incidents from public sources. While road authorities in some Member States have decided to leave service provision to private parties, others consider it important to maintain a public source of information for road users.

There is already a significant market for the provision of traffic information services. Such services include:

- Roadside services (messages displayed to road users on variable message signs);
- FM/VHF radio services (broadcast nationally or customised by local stations);
- RDS-TMC[23] (across Europe, this service is provided by a mix of public and private companies);
- TPEG-DAB[24] (market penetration of this service is still low and developing slowly due to low penetration of DAB);
- Mobile phone services (such as traffic information applications).

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22 e.g. Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, Poland.

23 The Traffic Message Channel (TMC) is a technology for providing traffic information to drivers. The complementary Radio Data System (RDS) broadcasts digital information carrying TMC updates via FM radio.

24 The Transport Protocol Experts Group (TPEG) has developed an open protocol designed to send unidirectional multi-lingual information using one or more delivery technologies (e.g. DAB, internet) and allowing a range of receiver types.

The V2I and V2V protocols are not yet ready for wide-scale deployment, but will definitely improve and make it easier to pass on road safety-related traffic information once fully operational.

For the provision of road safety-related minimum universal traffic information, a delivery channel needs a sufficient installed base, bandwidth, coverage and reliability to ensure fast and reliable dissemination of the information to users. Each of the above channels has specific benefits and drawbacks whether in terms of cost, coverage, language independence, system functionality, etc. The oldest technologies are expected to be gradually replaced by new systems, but this will take some years and it is difficult to foresee future innovations with certainty (see Annex IV). Therefore, mandating a unique delivery channel at European level would be counterproductive and might hinder innovation. The Delegated Regulation should remain technology-neutral and aim to maximise user reach through a variety of delivery channels and the associated receiver devices available on the market now and in future.

3.2. Cost-benefit analysis[25]

Baseline trends

Road accidents on European roads

On average, the trans-European road network accounts for 7% of fatalities and 6% of injury accidents[26], but there are differences in accident levels between different road types relative to their traffic levels and length, e.g. motorways account for approximately 60% of the trans-European road network, 7% of fatalities and 20% of traffic.

As an illustration, in 2011 more than 30 000 people died on European roads and almost 1.5 million were injured, i.e. there were 2 100 fatalities and 90 000 injuries on the trans-European road network in 2011.

Extrapolating from the trends over the past 10 years, the number of fatal accidents is expected to continue falling by approximately 5% p.a. while injury accidents will drop by approximately 3% p.a. It is acknowledged that future reductions in accident rates may not be as pronounced as from 2000 to 2009, although there are no data providing a firm projection.

Market penetration of traffic information services

The market penetration of traffic information services is a combination of the market penetration of delivery channels or receivers and the number of equipped users or vehicles. It is foreseen that the market for traffic information services will develop and the equipped vehicle population will expand.

In the current situation, TMC is a proven technology and has been implemented widely. Drivers can obtain real-time traffic information on accidents, road works, traffic jams, or weather conditions and so on. Additional services such as navigation and emergency response have been developed. Location tables are required in order to determine where events occur. It is therefore very important to keep them updated. The market penetration rate of RDS-TMC receivers is expected to reach 100% by 2020 (i.e. 1 device per vehicle).

Further, the market penetration of TPEG over DAB receivers is predicted to be between 1.86% and 7.23% by 2030. TPEG is a proven technology that does not need a pre-defined

[25] Details of the CBA are provided and fully documented in the Final Report (D5) of the external study, which is available online: http://ec.europa.eu/transport/themes/its/index_en.htm.

[26] Figures drawn from the European centralised database on road accidents: CARE (Statistical Report 2011, which contains data sets for the years 2000-2009).

location database and allows very detailed coding of traffic information. Although TPEG benefits from good market dynamics, its deployment remains limited and its market penetration hampered by the majority of users continuing to rely on FM receivers rather than DAB (only few European countries have TPEG services operational with supra-regional coverage).

Commercial providers are also developing TPEG over the internet as subscription-based services, enabling the delivery of real-time traffic information to road users through their in-car devices (e.g. satellite navigation system, smartphone, PND). These services are expanding fast and the mobile internet has a high potential, but several issues remain, e.g. data roaming costs, bandwidth, and end-user device set-up, in particular Human-Machine Interface considerations. The uptake of smartphones is expected to increase to nearly 100 % by 2030. However, only smartphones fitted with ad hoc applications will be able to receive road safety-related traffic information. It is assumed that 20 % of smartphone users will have access to such apps. Against this background, the proportion of users with access to a road safety-related traffic information application on their smartphone is expected to be 12 % by 2020 and 21 % by 2030.

These rates are average values for the whole of Europe[27] (see Annex V).

Analysis of main costs

Data collection costs

Some traffic event data are already available[28] from existing sources, but additional data may be required for a given network in order to provide road safety-related traffic information.

Collecting additional data requires initial investment (in sensors, CCTV, weather stations or access to alternative sources such as 112 reports, user reports, private providers/Floating Car Data, etc.) and will generate subsequent maintenance, operation and replacement costs depending on the operational lifetime of the equipment (i.e. typically between 5 and 15 years depending on the equipment).

The level of additional data collection required depends on several factors:

- the type of events monitored (i.e. static or dynamic events),
- the level of granularity of the data (i.e. the higher the density of equipment the higher the resolution and reliability),
- the length of the road network equipped,
- the estimated current level of data collection,
- the data collection method and technology.

The length of the trans-European road network is almost 100 000 km across Europe (59 201 km of motorways, 25 683 km of high-quality roads, and 15 007 km of ordinary roads)[29].

[27] Values derived from a combination of multiple sources: EUROSTAT, TISA, SBD, Comscore.

[28] Usually free of charge in the case of data from public sources (i.e. journalistic data). The market price of private data (e.g. floating car data) is not established yet

A detailed overview of the current level of data collection for each Member State is difficult to establish. Consequently, it is assumed for modelling purposes that the current level of data collection across Europe is 75% for weather-related information, 50% for incident data, and 100% for traffic observations.

[29] Source Trans-European Road Network: http://ec.europa.eu/transport/infrastructure/ten-t-policy/transport-mode/doc/road_tab1.pdf.

Examples of capital costs and maintenance costs for different types of equipment are given in the following table:

Equipment	Average lifecycle	Capital cost (proxy)	Maintenance cost per device per year
Inductive loops	5 years	€3 000 — €8 000	€500
MIDAS loops	5 years	€12 000	€640
Camera (CCTV)	10 years	€54 000	€640
Road weather stations	15 years	€35 000	€600
Radar sensors	5 to 7 years	€8 250 — €12 000	€165
Reception of PSAP data	one-off software cost	€100 000	n/a

Depending on all these parameters, the resulting costs of data collection can vary greatly across Member States (i.e. by a factor of 10 between low-cost and high-cost estimates). Definite cost estimates can only be provided for specific deployment options with well-defined quality targets and network coverage.

Data sharing costs

Data sharing costs refer to the costs associated with the formatting and availability of the data needed for providing road safety-related traffic information to end users. In practice, these are the costs of:

- Setting up a national DATEX II node (i.e. publisher of standardised traffic data), estimated to be a total one-off cost of €5 million per Member State (i.e. the 17 Member States that do not have one); or
- Amending/updating an existing DATEX II node, estimated to have a total one-off cost of €50 000 per Member State (i.e. the 10 Member States that already have a node).

These estimates are averages and can vary across Member States depending on the size of the road networks, the number of operators or the density of the existing equipment (e.g. loops, connections, traffic control centres, etc.)

It is assumed that if road safety-related traffic data are available for re-use, service providers could then use them to offer services to their existing customers.

Operating costs

Operating costs are the costs of collating and maintaining the traffic/weather data, processing the information and information reports, staff training and expertise outsourcing, etc.

These costs are estimated at a total of €23 million per year for all the 17 Member States without a road safety-related traffic data/information service (i.e. an average of €1.4 million

each)[30]. For the 10 Member States where some form of road safety-related traffic information already exists or where data are available to provide the information service there will be no extra cost and the operation of the service will be merged with existing activities and operating contracts (i.e. it is assumed that these costs are already budgeted for the future).

Labour costs related to the provision of the service are already covered under the existing activities of road operators, traffic management centres and service providers.

Requiring road safety-related traffic information to be disseminated via existing delivery channels above their natural market penetration trends would lead to additional costs and go against the principle of technological neutrality. Indeed, it can be assumed that making road safety-related traffic data/information available through a national node to existing channels/devices and service providers without additional intervention will be sufficient, and both effective and low-cost.

Analysis of main benefits

Reduction of fatalities and injuries

The overall effect of road safety-related traffic information is estimated to be an average reduction of 2.7% in fatalities and 1.8% in injuries, relative to all road accidents[31]. These figures vary depending on the road types and safety events covered by the service (although in the absence of a road accident causation database, it is difficult to produce precise estimates).

The impact of road safety-related traffic information is calculated as a weighted average of the relative reduction of traffic fatalities/injuries per road type (e.g. motorways, inter-urban carriageways). The overall reduction percentage is multiplied by the total number of fatalities/injuries to determine the overall number of avoided fatalities/injuries.

Monetising the cost of traffic accidents, in particular fatalities and injuries, is not straightforward because no standardised values exist across Europe. Member States have their individual values and methods to monetise such costs (based on national cost factors, assessment of non-material damage, GDP values and national socio-economic considerations). Therefore, the analysis relied on the following average costs[32] for the whole of Europe:

- € 1 361 262 for fatalities;
- € 214 074 for serious injuries;
- € 16 428 for less severe injuries;
- thus a weighted average of € 42 517 for all injuries.

Reduction in delays

The delays caused by accidents will decrease as a direct result of the reduction in the number of accidents, and therefore so will the costs associated with these delays.

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30 Based on the UK NTIS OJEU for operating traffic information services, i.e. £ 8 million = € 9.5 million for a 7-year operating contract.

31 Based on an extensive literature review including CODIA, eIMPACT, PROSPER, Easyway, Road operator reports and on the CARE database.

32 Figures drawn from the eCall Impact Assessment in order to maintain a uniform approach across the various monetisation exercises conducted for the ITS Directive.

The analysis relied on the following average congestion costs[33]:

– € 37 500 for a fatal accident;

– € 10 250 for an injury accident.

[33] Source Trans-European Road Network: http://ec.europa.eu/transport/infrastructure/ten-t-policy/transport-mode/doc/road_tab1.pdf.

Total savings

While the costs of data sharing are estimated separately from the costs of data collection, the benefits of reducing road accidents and delays are estimated together.

The overall savings associated with road safety-related traffic information are calculated using:

- accident rates (by road type);
- the potential savings from road safety-related traffic information (depending on the percentage of users capable of receiving it);
- the value of the savings, calculated using the monetary values for the costs of accidents and delays (depending on accident severity).

Annual savings will increase over time when more users have access to the service and network coverage expands.

In addition to the expected reduction in road fatalities and injuries, there are other benefits for society which are important but difficult to quantify in economic terms, in particular the reduction in costs resulting from permanent disabilities, non-serious injuries and accidents without injury. For each death on European roads, there are an estimated 4 permanently disabling injuries such as damage to the brain or spinal cord, 8 serious injuries and 50 minor injuries.

Other savings are the reduced costs of infrastructure repair and maintenance due to accidents.

Benefit/cost ratios of the retained deployment options

The following table describes the main options considered by the Commission:

No	Description of deployment options
I.	Baseline ('do nothing')
II.	Deployment of road safety-related traffic information by some Member States Implementation of a DATEX II node for data sharing Dissemination to end users via existing delivery channels/devices/service providers
III.	Deployment of road safety-related traffic information except 'unexpected end of queue' (EoQ) by some Member States Implementation of a DATEX II node for data sharing Dissemination to end users via existing delivery channels/devices/service providers
IV.	Deployment of road safety-related traffic information by all Member States Implementation of a DATEX II node for data sharing • Dissemination to end users via existing delivery channels/devices/service providers
V.	Deployment of road safety-related traffic information except 'unexpected end of queue' (EoQ) by all Member States Implementation of a DATEX II node for data sharing Dissemination to end users via existing delivery channels/devices/service providers

These options address two main aspects of the Delegated Regulation, namely the extent of deployment by Member States and the road safety categories covered by the service, which are the two main cost determinants.

In case of options II and III, the service will only be deployed by the 17 Member States which already provide some form of road safety-related traffic information or have data available for the provision of road safety-related traffic information as well as a DATEX II node for data sharing.

All options require implementation of a DATEX II node or any fully compatible and interoperable with DATEX II node for data sharing, but respect technological neutrality by not mandating any specific dissemination channel or device (i.e. dissemination to end users via existing delivery channels/devices/service providers).

Deployment is assumed for the different types of roads of the trans-European road network and based on a high data granularity. Such stringent requirements entail higher costs for data collection but also a greater reduction in accidents. Although challenging, these requirements are important for the quality and credibility of the service.

Two sets of cost estimates have been considered to take into account different means of data collection.

Data collection method	Information service without EoQ (low-cost estimate examples)	Information service without EoQ (high-cost estimate examples)	Information service with EoQ (low-cost estimate examples)	Information service with EoQ (high-cost estimate examples)
Weather stations	✓	✓	✓	✓
112 reports/eCall	✓	✓	✓	✓
Loop data		✓	✓	✓
Road User reports	✓		✓	
CCTV		✓		✓

The costs and benefits have been estimated up to 2030 (to allow for market penetration and long-term investment plans). As and when necessary, a factor to account for inflation is applied to monetary valuations and costs for future years.

The following table summarises the benefit/cost ratios (BCRs) for the retained deployment options:

Options	**I**	**II**	**III**	**IV**	**V**
BCR (low-cost estimate)	-	1.09	1.80	1.01	2.58
BCR (high-cost estimate)	-	0.27	0.22	0.25	0.20

Options II and III consider two different sets of road safety-related categories (i.e. with and without 'unexpected end of queue'). These apply to 17 Member States where some form of road safety-related traffic information already exists or where data are available to provide the

information service. These 17 Member States represent a large proportion of the trans-European road network as a whole (i.e. 83 % of the total km).

Options III and V consider the deployment of the service excluding 'unexpected end of queue' for two different types of coverage (i.e. some Member States only or all Member States). The rationale for excluding 'unexpected end of queue' is that it is the most expensive event to detect with the current technologies available.

Option IV is the maximalist solution (i.e. all types of road safety-related events and all Member States).

In practice, BCRs will be somewhere in between the minimum and maximum values (for low- and high-cost estimates). This will depend on the individual deployment choices of each Member State and their respective ambitions for the service (i.e. level of quality), taking into account their current level of equipment (i.e. in particular detection and data collection equipment).

3.3. 3.3. Potential impacts

Economic, social and environmental impacts

A synthesis of the potential impacts is presented in the following table:

	Summary assessment
Economic impacts	• Reduced delays due to road accidents on the trans-European road network • Contribution to better traffic management, in particular on those parts of the trans-European road network which need it most (i.e. those with traffic and safety concerns) • Contribution to the functioning of the internal market through provision of harmonised information to road drivers and interoperability of information services/systems • Economic growth resulting from efficient and safe road transport • Budgetary consequences, mainly for road authorities, road operators and national authorities (e.g. cost of setting up data sharing nodes and associated management costs, higher investment and operation costs but possible decrease in infrastructure repair and maintenance costs) • Administrative burden for national authorities (e.g. management of a central data registry, assessment of compliance with the requirements of the Delegated Regulation, annual follow-up of the implementation of the information service) • Enhanced access to standardised road traffic data for all • Fostering of R&D for new technologies and deployment of innovations (i.e. for detection, processing, dissemination) • Fostering of competition, notably among service providers and possibly broadcasters, which might drive down costs further and improve service quality in the longer term • Expansion in activities/market basis of the main stakeholders of the value chain (e.g. data collectors, content aggregators, service providers) • Undermining of the core business of some service providers, in particular for the provision of information on 'unexpected end of queue'

Social impacts	• Reduction in primary and secondary road accidents on the trans-European road network • Creation of new activities and possibly new jobs due to new/expanded services • Enhanced customer services with respect to road safety-related traffic information • All types of road users covered, irrespective of their vehicle, age, gender, etc.
Environmental impacts	• Reduced emissions due to reduced delays caused by road accidents (marginal) • Reduced environmental risks (i.e. fire, accidental spillage, air/soil/water pollution resulting from road accidents)

Impacts are generally positive in all three categories: economic, social and environmental. However, some economic impacts could be negative. This is analysed further in the following section on impacts on existing markets.

The magnitude of the impacts varies depending on the deployment options.

Overall, the positive impacts outweigh the negative ones.

The aggregated scores for each option are summarised below:

Options	**I.**	**II.**	**III.**	**IV.**	**V.**
Economic impacts	-	3	7	4	6
Social impacts	-	5	3	6	5
Environmental impacts	-	2	1	3	2
Total	**-**	**10**	**11**	**13**	**13**

Impacts on existing markets

The main groups of stakeholders involved in the value chain for the provision of road safety-related traffic information are:

– Road operators

– Equipment suppliers

– Private data collectors

– Private data aggregators/content providers

– Road safety-related traffic information broadcasters

– Private service providers

– End users

The options with the widest network coverage would increase the activities of road operators. This increase is likely to be marginal for countries where some form of road safety-related traffic information already exists (i.e. options II and III).

All options could increase the market demand for equipment (e.g. detection equipment in particular, whether static, dynamic, road-side or on-board vehicle). This increase is likely to be marginal for countries where the data needed to provide the information service are already collected. On the other hand, the increase will be higher for the detection of 'end of queue'.

All options will increase the market demand for primary data/information necessary for the provision of road safety-related traffic information (e.g. floating car data, dynamic data/information). This increase is likely to be lower for countries where data are already available to provide the information service. However, demand will be higher for data on 'end of queue'.

Because of the data sharing requirement, more data will be available to data aggregators/content providers, who could in turn develop new products/services, possibly of better quality, and expand their markets. On the other hand, this requirement could undermine the competitiveness of private businesses, especially for data on 'end of queue'.

In all the options, it assumed that road safety-related traffic information will be delivered through any or a combination of delivery channels. Therefore, the market for broadcasters of road safety-related traffic information will increase (which might even drive down broadcasting costs).

All options will offer new/extra market opportunities to service providers (i.e. possibility of cross-selling traffic information/premium services in combination with road safety-related traffic information), but options II and IV could in contrast undermine service providers whose core business is the provision of 'end of queue' traffic information.

The foreseen increases in market demand will generate new/extra activities for road operators, data collectors, data aggregators and service providers. However, these extra activities might not necessarily translate into job creation and are difficult to anticipate and quantify.

Above all, the end users e.g. drivers, motorcyclists, hauliers and cargo owners are the main beneficiaries of all options.

Many of the stakeholders and beneficiaries are small and medium-sized enterprises (SMEs). Therefore, the different options promote their interest in the transport and information technology sectors.

The aggregated scores for each option are summarised below:

Stakeholders	**I.**	**II.**	**III.**	**IV.**	**V.**
Road operators	-	0	0	1	1
Equipment suppliers	-	1	0	2	1
Private data collectors	-	1	0	2	1
Private data aggregators/content providers	-	-1	1	-1	1
Broadcasters	-	1	1	1	1
Private service providers	-	-1	1	-1	1
End users	-	1	1	1	1
Total	**-**	**2**	**4**	**5**	**7**

Special impacts

A synthesis of the potential impacts is presented in the following table:

Special impacts	Summary assessment
Fundamental rights	• Possible impact on protection of personal data (e.g. data collection via floating car data or cooperative systems). *Privacy by design* principles need to be applied. Existing legislation is sufficient[34] • Possible impact on freedom to conduct a business. This is covered in the previous section • Possible impact on property rights (i.e. traffic data/information). Such rights will be preserved. Existing legislation is sufficient[35]
Consumers & households	• By definition, the service will be provided free of charge to end users. There will be no financial impact for them
Liability	• Faulty equipment and low-quality road safety-related traffic information can badly impair the service. Existing legislation[36] and assessment of compliance of the service with the requirements of the Delegated Regulation will be sufficient
Cost-effectiveness	• The provision of road safety-related traffic information responds to a public concern of high priority (i.e. road safety), although the cost-effectiveness of the service is not straightforward due the high costs involved. This is assessed in previous sections. Due to the fast pace of development of ITS, the earlier the implementation of the specifications, the more cost-effective the Delegated Regulation will be
Administrative burden	• Administrative burden upon Member States should be kept to a minimum. Although national authorities will have new responsibilities, proportionate/flexible/light obligations with respect to assessment of compliance and reporting/feedback are envisaged
Impact on third countries	• Use of the service will not be restricted to European end users only. Third countries can benefit from the framework established by the Delegated Regulation

3.4. 3.4. Compliance with the principles set out in Annex II to Directive 2010/40/EC

A synthesis is presented in the following table:

Principles	Summary assessment
Be effective	• All options are assessed positively with respect to economic, social and environmental impacts. Effectiveness increases with coverage (i.e. road network) and quality. Effectiveness is only guaranteed when the service is deployed (therefore the earlier the better)
Be cost-efficient	• Cost-efficiency varies depending on the current situation and level of deployment across Member States. The options have different BCRs
Be proportionate	• A balance should be achieved between cost of implementation and resulting benefits. Functional specifications should leave enough flexibility for Member States to determine the coverage of the service on their territory and implement it at their own pace, though with a view to achieving pan-European interoperability and continuity of the service. Existing markets should not be undermined. Service quality should remain achievable. No

[34] Directive 95/46/EC and Directive 2002/58/EC.
[35] Directive 2003/98/EC (Directive PSI).
[36] Directive 85/374/EEC.

Principles	Summary assessment
	deployment mandated at this stage
Support continuity of service	• Options with a wider geographical scope and supporting cross-border harmonisation contribute better to continuity of service
Deliver interoperability	• This is an objective of the Delegated Regulation. Relying on European standards supports interoperability. Interoperability will foster uptake of the information systems and contribute to growth
Support backward compatibility	• The Delegated Regulation should provide sufficient flexibility and allow a transition period for compliance of existing/legacy systems with the specification requirements. The longer the delay in adaptation, the higher the cost of retrofitting. The Delegated Regulation offers the clarity and predictability needed by stakeholders
Respect existing national infrastructure and network characteristics	• All options respect national organisational set-ups. Existing infrastructure and network characteristics will be preserved
Promote equality of access	• All users are treated equally and will benefit from a service free of charge at the point of use (i.e. at no extra cost)
Support maturity	• The specifications are technology-neutral. They support both proven/mature technologies and market-driven solutions/innovations
Deliver quality of timing and positioning	• N/A
Facilitate intermodality	• N/A
Respect coherence	• All options will safeguard existing rules and policies, e.g. Member States can publish data using tools and procedures available under the PSI and INSPIRE Directives

Specific shortcomings regarding compliance with the principles set out in the ITS Directive are summarised for each option as follows:

I.	II.	III.	IV.	V.
-	Cost-efficiency Continuity of service Proportionality Backward compatibility (transition needed)	Effectiveness Continuity of service Backward compatibility (transition needed)	Cost-efficiency Proportionality Backward compatibility (transition needed)	Backward compatibility (transition needed)

3.5. Conclusions

Considering the results of the stakeholder consultations on the one hand, and the overall results of the impact and cost-benefit analysis on the other, option V is the preferred option.

Option III constitutes a first step towards option V, but is not satisfactory as it does not ensure full continuity of the service across Europe and is less effective.

Options III and V will yield lower safety benefits compared to options II and IV, e.g. a service covering all types of road safety-related events and/or conditions[37] would theoretically reduce

[37] They include: Dangerous road surface; Animal/people/debris on the road; Unprotected accident area; Short-term road works; Reduced visibility; Wrong-way driver; Unmanaged blockage of a road or tunnel; and Unexpected end of queue.

road accidents by approx. 20 % more than a service not including 'unexpected end of queue'. On the other hand, options III and V will have much lower deployment costs than options II and IV, and do not undermine the competitiveness of private businesses, while still supporting R&D and innovation (e.g. new technologies for detection, processing or dissemination to end users).

Although not covering the whole of Europe, option II is still too costly to deploy at a time of scarce resources for all Member States. It is not proportionate and does not support continuity of service across Europe.

Option IV addresses more European end users but does not have a high cost efficiency due to the high cost of deployment. However, it is more satisfactory in terms of continuity of service, overall efficiency of the trans-European road network, and contribution towards the internal market.

All options raise the issue of backward compatibility with existing services and legacy systems. But this is a prerequisite in order to achieve the objectives of interoperability and compatibility under the ITS Directive.

The impacts of the preferred option (i.e. option V) are positive in all three categories economic, social and environmental as it will contribute to the reduction of road accidents and associated delays, CO2 emissions and environmental risks (e.g. fire, spillage), the cost of infrastructure repair. It will support economic growth and better traffic management. It will foster research and development as well as deployment of innovations. Such road safety-related traffic information services will enhance customer satisfaction and collaboration among stakeholders, and might also create new jobs.

The impacts of the preferred option are positive for the main groups of stakeholders along the value chain e.g. road operators, data collectors, content providers, service providers. Most of them will increase their activities and market base. Above all, the end users e.g. drivers, motorcyclists, hauliers and cargo owners from the freight sector, will be the main beneficiaries.

Such benefits will outweigh possible burdens that may occur for private service providers of traffic information and navigation applications. They might have to adapt their business models but could also benefit from the market opportunities offered by the Delegated regulation (i.e. possibility of cross selling traffic information services in combination with road safety-related traffic information).

Many of the stakeholders involved along the value chain and beneficiaries are small and medium-sized enterprises (SMEs). The Delegated Regulation therefore promotes their interest in the transport and information technology sectors.

The Delegated Regulation remains technology-neutral and aims to maximise user reach through a variety of delivery channels and receiver devices available on the market now and in the future.

The use of a common European standard such as DATEX II or any format fully compatible and interoperable with DATEX II will promote interoperability of the service by facilitating access to and the exchange and re-use of road safety-related traffic data, and will enable compatibility with any delivery channel and receiver device, while supporting the activities of road operators.

Road safety-related traffic information will gradually evolve in coverage and quality. In most Member States, only parts of the trans-European road network currently have sufficient equipment to detect and provide high-quality road safety-related traffic information. The Delegated Regulation will promote the expansion of the road safety-related traffic information service, its effectiveness and its broad continuity EU-wide, starting with Member States where some form of road safety-related traffic information service already exists.

In order to accommodate different national situations and ambitions, it is recommended to remain flexible in defining the coverage of the road safety-related minimum universal traffic information service, e.g. the service can consist in any combination of the most relevant road safety-related events and/or conditions, on specific sections of the trans-European road network, depending on Member States' local circumstances, organisational framework and investment capacity.

The Delegated Regulation will enable step-by-step deployment, providing leeway for the needed investments (e.g. investment first in the DATEX II node, then in data collection means, more or less dynamic and extended along the trans-European road network).

Specific implementation issues related to level of service (e.g. quality criteria, quality monitoring/measurement methods and quality targets) need to be further investigated with and by the Member States, taking into account their respective experience and expertise.

4. LEGAL ELEMENTS OF THE DELEGATED ACT

4.1. Legal basis

This delegated act supplements Directive 2010/40/EU.

The specifications set out in the Delegated Regulation will ensure a predictable framework for road operators and service providers. The flexibility built into the specifications allows national authorities, road operators and service providers, whether public or private, to rely on the organisational processes and existing or future technologies they consider the most relevant and suitable to achieve the overall objective of providing, where possible, road safety-related minimum universal traffic information free of charge to users, provided that the functional requirements of the delegated Regulation are met.

A Regulation seems the most appropriate legal instrument for the delegated act as it does not call for national transposition, thus ensuring a higher degree of harmonisation and control by the Commission as well as quicker entry into force.

4.2. Subsidiarity and proportionality

According to the principle of subsidiarity (Article 5(3) of the Treaty on European Union), action at EU level should be taken only when the aims envisaged cannot be achieved satisfactorily by Member States alone and can therefore, by reason of the scale or effects of the proposed action, be better achieved by the EU.

Road safety is a major concern across the whole of the European Union: in the 27 Member States, 500 million citizens use more than 230 million vehicles on over 5 million km of roads. The provision of road safety-related minimum universal traffic information aims to inform all drivers on EU roads of potential dangerous situations and incidents in a harmonised manner across Europe. This requires the collaboration of many different public and private stakeholders and some essential steps to be covered (in particular, the detection of road safety events, the availability, exchange and re-use of road safety-related data, and delivery of the information to all end users).

Action at EU level is needed in order to guarantee the interoperability and continuity of the service throughout Europe, including across borders, which cannot be satisfactorily achieved by single Member States. It would clearly trigger benefits of scale and can foster European competitiveness and growth.

Action at EU level using common European standards, terminologies and processes approved by the European Standardisation Organisation CEN and/or supported by the widely representative association TISA will contribute to optimising the provision of the service, building consensus among professionals, and avoiding market fragmentation (which may happen due to the proliferation of national and/or proprietary private solutions implemented in different ways).

Defining requirements limited only to the data necessary for providing the road safety-related minimum universal traffic information service and that do not favour particular technical solutions (i.e. technology-neutral approach) will ensure there is no undue disturbance to existing markets while preserving the innovation potential of the European Union.

The specifications for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users have been conceived so as to minimise the negative impact on all public and private stakeholders in the value chain (i.e. road operators, Member States/road authorities, service providers, broadcasters). However, the provision of the service entails unavoidable extra costs directly related to the quality of the service and the expected safety benefits.

The financial and administrative costs for national/regional authorities are expected to be minor and proportionate to the objectives to be achieved. A substantial part of implementation is left to national decisions. The organisational processes needed to meet the functional requirements of the specifications will be undertaken by the Member States in a way best suited to their national/local situations, thus respecting the specificities and circumstances of each Member State. In particular, requirements for the assessment of compliance with the Delegated Regulation and reporting/feedback by the Member States have been kept moderate and flexible.

5. BUDGETARY IMPLICATIONS

There are no budgetary implications for the EU budget.

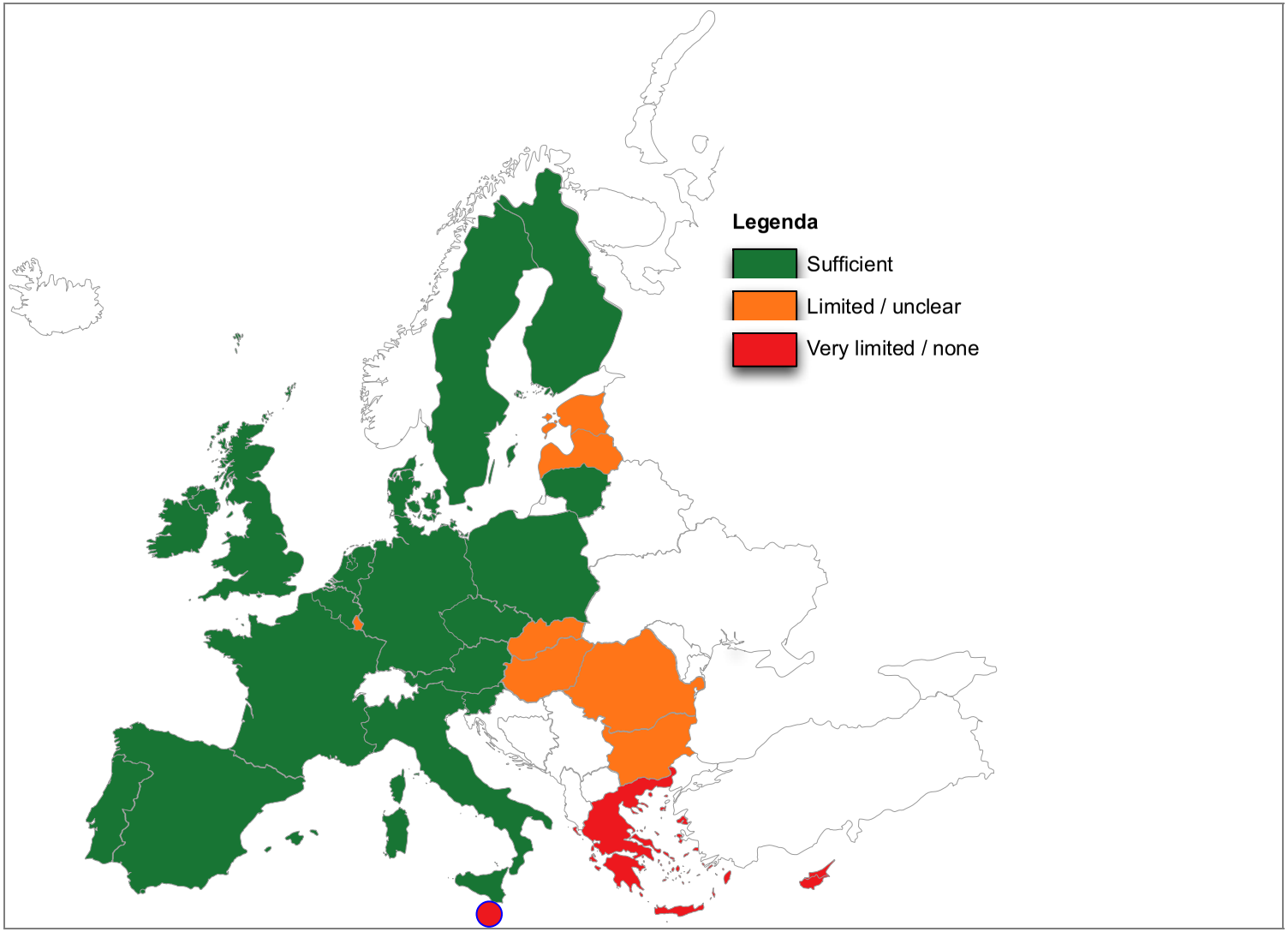
6. OPTIONAL ELEMENTS

A substantial part of implementation is left to national decisions. In this context, Member States should aim to provide an accurate overview of the provision of the information service on their territory. They should aim to do so in the form of a publishable map of the road network covered by the service and a register of the providers of the service. This national overview should be updated as and when necessary. The map and register should be both in an electronic format that will be commonly agreed between the Commission competent services and the Member States' authorities. This would allow the Commission to report on the regular progress made for the implementation of ITS applications and services within the Union as required in Article 17(4) of Directive 2010/40/EU.

Annex I

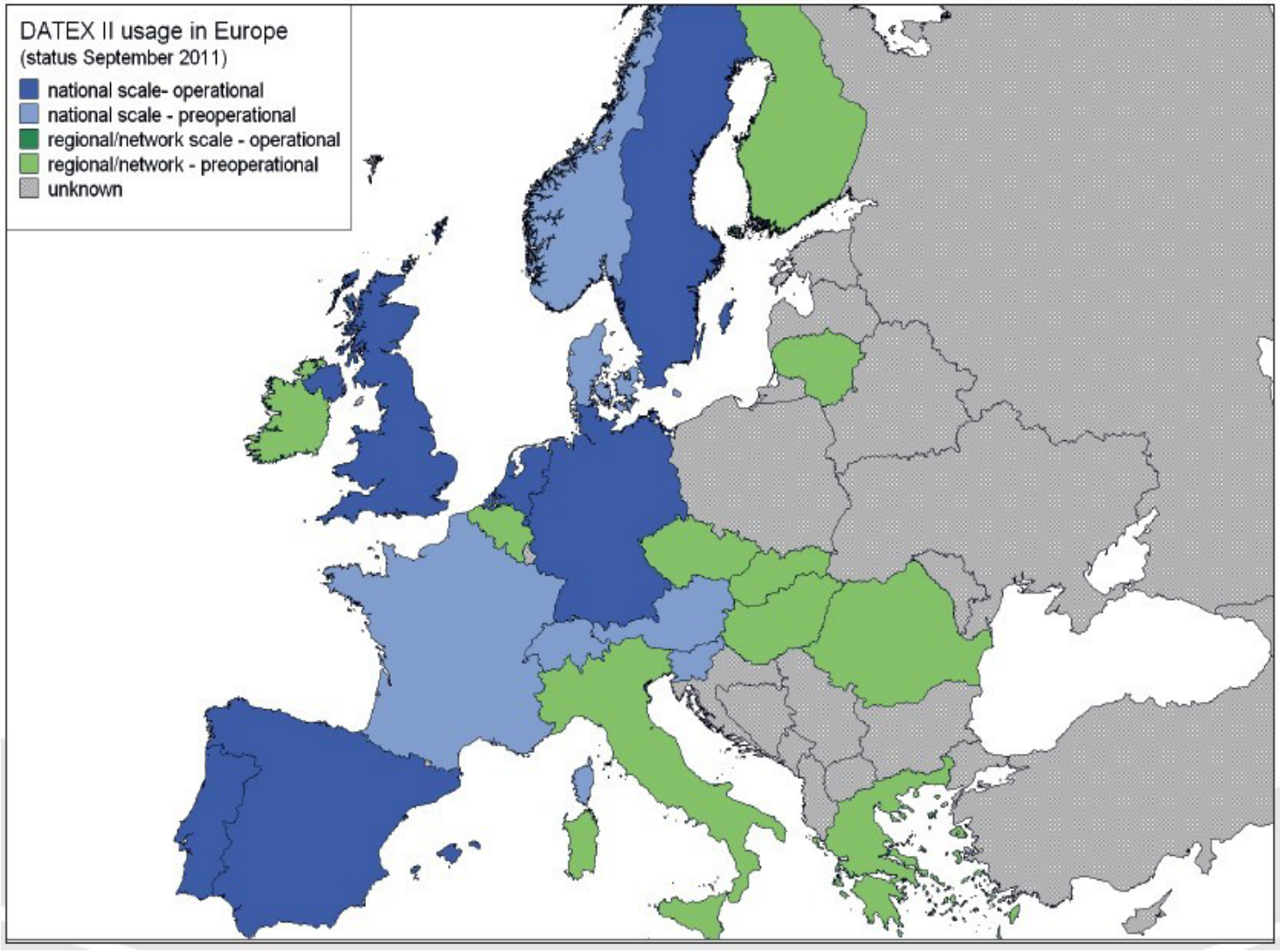
	Motorways	Secondary Roads	City Arteries	Ghost driver	Dangerous road surface	Reduced visibility	Animal / people / debris on the road	Unmanaged road blockage	Unprotected accident area	Short term roadworks	Unexpected end-of-queue
Austria	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Belgium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Bulgaria	No	No	Yes	Unknown	Unknown	Unknown	Yes	Yes	Unknown	Yes	No
Cyprus	No	No	No	No	No	No	No	No	No	No	No
Czech Republic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Denmark	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Estonia	Some	No	Some	Unknown	Yes	Yes	Unknown	Unknown	Unknown	Unknown	No
Finland	Yes	Yes	Yes	Unknown	Yes	Yes	Unknown	Yes	Unknown	Yes	No
France	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Germany	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Greece	Unknown	No	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	No
Hungary	Yes	Yes	Yes	Unknown	Yes	Yes	Unknown	Yes	Unknown	Yes	No
Ireland	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Italy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Latvia	Yes	No	Yes	Unknown	Yes	Yes	Unknown	Unknown	Unknown	Yes	No
Lithuania	Yes	No	Yes	Unknown	Yes	Yes	Yes	Yes	Yes	Yes	No
Luxembourg	Yes	Yes	No	Unknown	Yes	Yes	Unknown	Unknown	Unknown	Yes	No
Malta	No	No	No	No	No	No	No	No	No	No	No
Poland	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Portugal	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Romania	Yes	Unknown	Unknown	Unknown	Yes	Yes	Unknown	Yes	Unknown	Yes	No
Slovakia	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	No
Slovenia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Spain	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Sweden	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
The Netherlands	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
UK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

Overview of content availability per Member State
Annex II

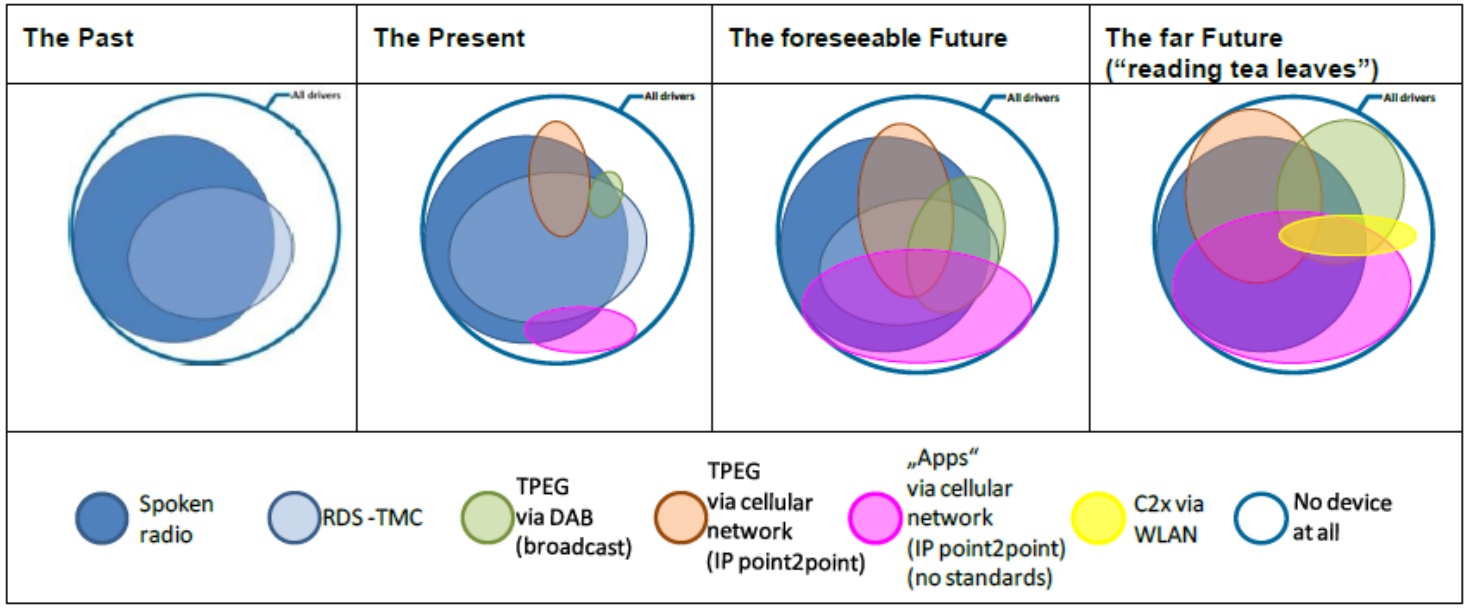


Availability of safety-related traffic information

Annex III


DATEX II usage in Europe
(status September 2011)
national scale- operational
national scale - preoperational
regional/network scale - operational
regional/network - preoperational
unknown

Annex IV



Possible evolution of delivery channels (source: TISA)

Annex V

Year	Vehicle population in Europe	Total number of users equipped with RDS-TMC receivers	Market Penetration (%)	Total number of users equipped with TPEG (DAB) receivers	Market penetration (%)	Total users of a road safety related traffic information smartphone app	Market penetration (%)
2012	270,988,248	107,586,100	39.70	49,900	0.02	24,388,942	9.00
2013	272,471,630	117,838,200	43.25	160,200	0.06	25,067,390	9.20
2014	274,141,301	132,676,700	48.40	447,600	0.16	25,769,282	9.40
2015	276,002,539	152,179,800	55.14	1,013,600	0.37	26,496,244	9.60
2016	278,061,172	174,297,620	62.68	1,618,810	0.58	27,249,995	9.80
2017	280,323,592	199,943,440	71.33	2,356,790	0.84	28,032,359	10.00
2018	282,796,760	229,117,260	81.02	3,227,540	1.14	29,410,863	10.40
2019	285,488,219	261,819,080	91.71	4,231,060	1.48	31,974,681	11.20
2020	288,406,116	288,406,116	100.00	5,367,350	1.86	34,608,734	12.00
2021	291,559,213	291,559,213	100.00	6,636,410	2.28	36,736,461	12.60
2022	294,956,915	294,956,915	100.00	8,038,240	2.73	38,344,399	13.00
2023	298,609,293	298,609,293	100.00	9,572,840	3.21	41,805,301	14.00
2024	302,527,112	302,527,112	100.00	11,240,210	3.72	45,379,067	15.00
2025	306,721,861	306,721,861	100.00	13,040,350	4.25	49,075,498	16.00
2026	311,205,785	311,205,785	100.00	14,973,260	4.81	52,904,983	17.00
2027	315,991,922	315,991,922	100.00	17,038,940	5.39	56,878,546	18.00
2028	321,094,146	321,094,146	100.00	19,237,390	5.99	61,007,888	19.00
2029	326,527,200	326,527,200	100.00	21,568,610	6.61	65,305,440	20.00
2030	332,306,749	332,306,749	100.00	24,032,600	7.23	69,784,417	21.00

Penetration rates of road safety-related traffic information via different delivery channels (2012-2030)