Ministero delle Infrastrutture e dei Trasporti

DIREZIONE GENERALE PER LA SICUREZZA STRADALE
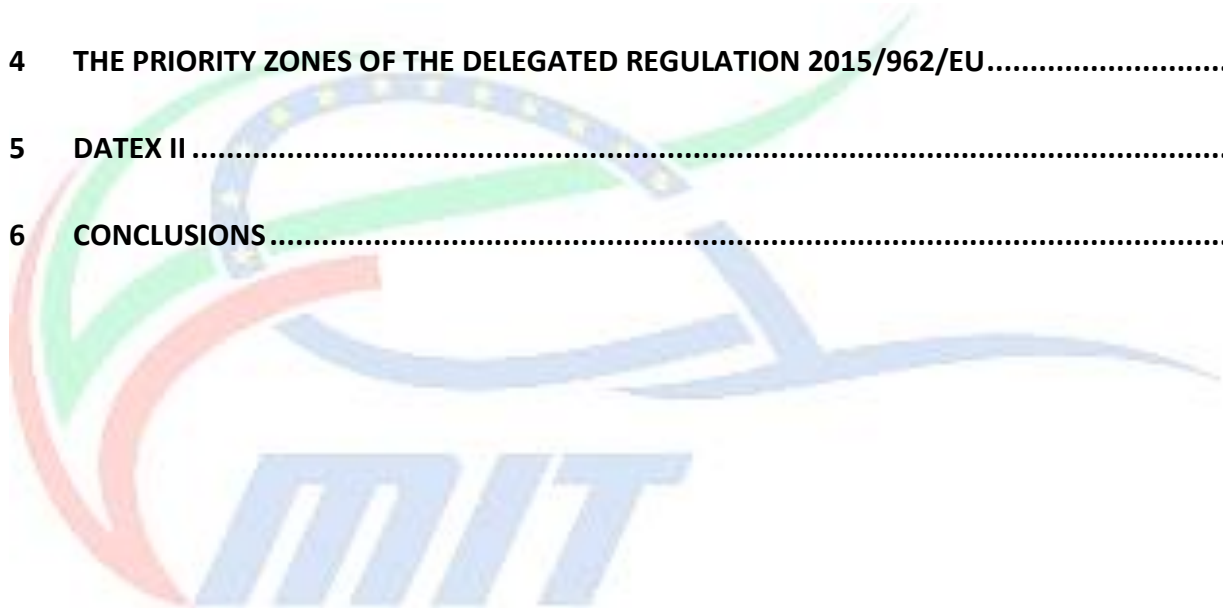
CCISS: THE STATE OF IMPLEMENTATION OF THE DIRECTIVE 2010/40/EU AND ITS RELATED COMMISSION REGULATIONS

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PREAMBLE

The European Commission, with the Communication 886 of 16 December 2008, published the Action Plan for the diffusion of Intelligent Transport Systems in Europe (ITS Action Plan) in order to promote the development of interoperable and harmonized ITS'.

ITS' Action Plan identifies six priority intervention areas, identifying for each of them some specific actions, with a precise deadline. The priority areas are:

(i)   optimal use of road, traffic and traffic data;

(ii) continuity of ITS services for the management of traffic and goods in the European transport corridors and in conurbations;

(iii) road safety and protection of transport systems;

(iv) vehicle integration in transport infrastructure;

(v) data security and protection and liability issues;

(vi) European cooperation and coordination on ITS.

On July 7, 2010, the European Parliament and the Council of the European Union accepted the **Directive 2010/40/EU** regarding the general framework for the diffusion of intelligent systems in the road transport industry and in the interfaces with other ways of transport.

The target of the Directive is to establish a framework to support the dissemination and use of coordinated and coherent intelligent transport systems within the Union, in particular across the borders between the Member States, establishing the general conditions needed for this purpose. The Directive 2010/40/EU is, in fact, the legislative act that concretizes the actions provided by the Action Plan, putting them into the political agendas of the Member States.

Based on the ISO Action Plan, the Directive identifies four priority areas for ITS:

(i)   optimal use of road, traffic and mobility data;

(ii) the continuity of ITS services: traffic and goods transport management;

(iii) ITS applications for road safety and security;

(iv) the link between vehicles and transport infrastructure.

Within the four priority areas for elaboration and use of specifications and standards, priority actions are:

a) predisposition of multi-modal mobility information services throughout the European Union;

b) predisposition of real-time traffic information services throughout the European Union;

c) data and procedures for free communication to users, if possible, of minimum universal traffic information linked to road safety;

d) harmonized predisposition throughout the European Union of an interoperable electronic call service (eCall);

e) predisposition of information services for safe parking areas for heavy and commercial vehicles;

f) predisposition of reservation services for safe parking areas for heavy vehicles and commercial vehicles.

Concerning point (c), the European Commission, in accordance with Directive 2010/40/EU, adopted on May 15, 2013 the **Delegated Regulation 2013/886/EU** that integrates the above-mentioned Directive on "data and procedures for free communication to users, if possible, of minimum universal information linked to road safety".

Similarly, with regard to point (e), the Commission adopted the same **Delegated Regulation 2013/883/EU** integrating the Directive 2010/40/EU on the "predisposition of information services for safe parking areas for heavy and commercial vehicles".

In the end, with regard to point (b), Delegated Regulation 2015/962/EU of 18 December 2014, incorporates Directive 2010/40/EU of the European Parliament and of the Council on the "predispostion of real-time traffic information services throughout the European Union".

It states the specifications necessary to ensure the accessibility, exchange, re-use and updating of road and traffic data by road authorities, road users and service providers for the predisposition throughout the European Union's territory of real-time traffic information services. The Regulation focuses on the whole trans-European road network, as well as to highways not included in this network and the priority areas identified by the national authorities where they consider it pertinent.

The Road Safety Information & Coordination Center (Centro di Coordinamento Informazioni per la Sicurezza Stradale - CCISS) is working to carry out the obligations of the Delegated Directives and Regulations, through the evolution of their systems, the implementation of a cooperative model and various agreements it is signing with Entities and Companies operating in national transport.

In particular, CCISS complies with each of the priority areas of Community legislation through initiatives implemented through its cooperative model, in which each actor is an indispensable part in order to ensure the service to the user and is actively involved in the definition of modalities in which the service has to be realized or improved.

For each of the above mentioned priority areas the actions undertaken by CCISS and its cooperative model are:

Priority Areas	CCISS' Main Activities
Predisposition of multi-modal mobility information services throughout the European Union	• Predisposition of tools and services enable communication through the European Datex II standard, which allows collection and distribution of information in any language for EU's citizens.
Predisposition of real-time traffic information services throughout the European Union	• Evolution of Infrastructure, systems and data structures in order to automate the processes of automatic creation of newsletters and information for users. • Enhancement of the process of receiving, validating and certifying the information to communicate, in collaboration with road managers and competent authorities (eg. Road Police, Arms of Carabinieri, ANAS, AISCAT, etc.)
Data and procedures for free communication to users, if possible, of minimum universal traffic information linked to road safety	• Communication through multiple channels, including radio or television channels, and RAI - Italian Radio and Television, identified as the Cooperative Model Institutional Service Provider • Interaction with users via communication channels (eg. 1518, Twitter platform, etc.) • Introduction of Local Authorities as National *Priority Areas*, in order to collect further road data useful for widening the traffic data set, especially in urban areas
Harmonized predisposition throughout the European Union of an interoperable electronic call service (eCall)	• Introduction of dangerous goods transport's monitoring on the national territory, through an extensive cooperative model, which involves companies and organizations directly connected to the transport of dangerous goods

Priority Areas	CCISS' Main Activities
Predisposition of information services for safe parking areas for heavy and commercial vehicles	• Implementation of a Mobile App to allow the transport operators to access the information and the services provided by parking area
Predisposition of reservation services for safe parking areas for heavy vehicles and commercial vehicles.	• Trial phase of a project to manage, from remote, buffering and parking areas for heavy vehicles. The experimentation involves some local areas such as Catania Bicocca

This document summarizes the main evolutionary aspects CCISS is working on, in order to carry out the regulatory obligations of the European Commission described in the preamble.
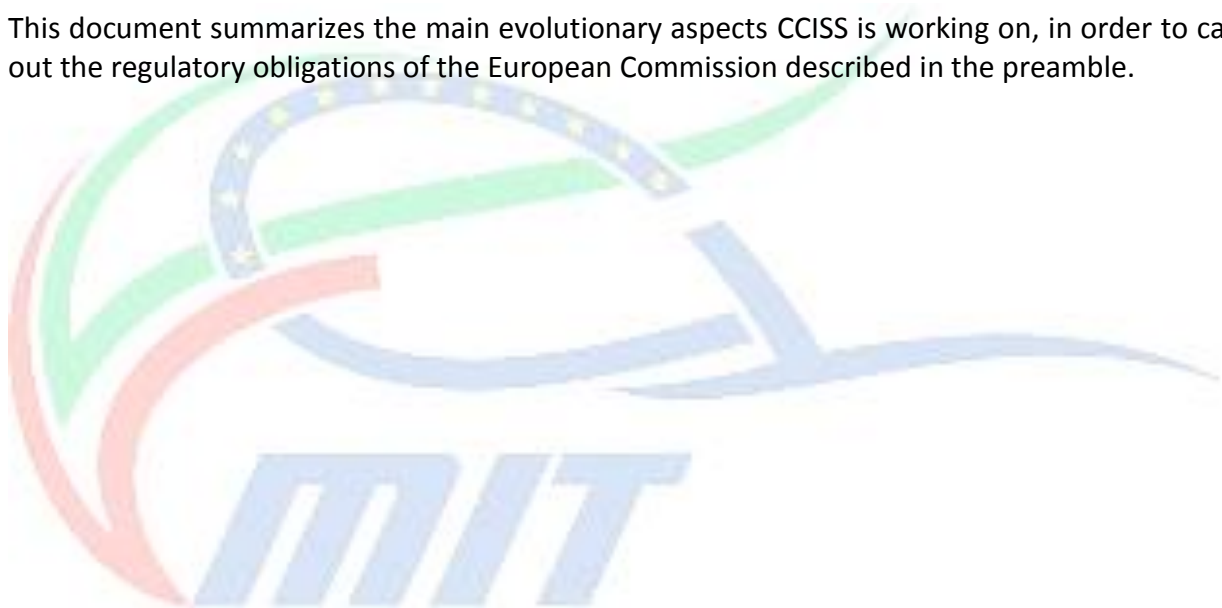
1 CCISS: THE NATIONAL ACCESS POINT

Public competence in the field of infomobility was born in 1988, with Law no. 556, that established CCISS, coordinated and directed by the General Direction of Road Safety and whose services that State Council recognized as essential public services.

Since 1990, the year in which CCISS became operational, the evolution of the services model has shifted from information processing and communication specially addressed to RAI services, to a more structured and widespread approach, thanks to the adoption of processes and tools for automatic validation and production of content and to multichannel.

CCISS works with a modern operational centre located at the headquarter of Via Caraci in Rome, and cooperates with entities such as Road Police, Carabinieri, Anas, Motorway Concessionaries, ACI, RAI, Radio 105 and Radio Montecarlo, some municipalities and the Infoblu and Viasat companies.

The current information's sources of CCISS are represented by police forces (with the task of validating news from other sources), road owners, infrastructure managers, and public and private entities have signed Conventions with the Centre (some Municipalities, Infoblu and Viasat Societies), which are responsible for sending traffic information across the national territory through a standard Community Protocol (DATEX II).

The institutional task of CCISS is to integrate info from different sources and at different territorial levels to guarantee the diffusion of them to end users, ensuring timeliness and validity through a certification process consisting in the definition and application of rules to evaluate their fairness and their update.

The management of CCISS, within the Transport's Department of the Ministry, involves a multiplicity of subjects who continuously contribute, depending on the specific scope and competence, to the information process of the service and to the publication of infomobility news.

The distribution of information collected by CCISS takes place through the following channels:

CCISS' Distribution Channels					
Web	**Television**	**Radio**	**Telephone**	**Mobile**	**Social**
▪ Web Portal www.cciss.it	▪ TV's Newsletters on RAI channels	▪ Day and night Newsletters live on Radio RAI, Radio 105 and Radio Montecarlo Channels ▪ Isoradio Channels ▪ RDS-TMS channel in Radio 1 RAI frequencies for traffic news' updates on mobile devices	▪ Free Number 1518 for on-demand direct information. Service via Interactive Voice Response (IVR) or operatos 365 days per year, 24/7	▪ Mobile Apps for Android and IOS	▪ Twitter

The average annual volumes of the services provided by CCISS are shown below:

Average Annual Volumes of CCISS' Services						
Ingoing Calls Call-Center	**Phone Calls on operators**	**Visits to the portal (www.cciss.it)**	**News Acquired**	**Number of uploads**	**Newsletters created**	**Macro-regional Newsletters**
▪ 500.000 each	▪ 242.000 (8.000 managed by ANAS)	▪ 1000.000.000 each	▪ 50.000	▪ 72.000	▪ 45.000 ca	▪ 19.000 (5.000 created by ANAS)

According to Delegated Regulation 2015/962/EU and Inter-Ministerial Decree 2013/39, CCISS is identified and operates as an Italian National Access Point and as a digital interface where static road data, dynamic data of road conditions and traffic data, with the corresponding metadata, or their sources, are available to be re-used by users.

2 THE COOPERATIVE MODEL

Since the '90s, during which CCISS became effectively operational on infomobility over the national territory, the spirit of active collaboration between the actors involved on the theme has been manifested through the adoption of ever-evolving and multi-channel processes and instruments, involving a specialized team to handle the collection, processing and communication of information in the best possible way.

Since its inception, a cooperative model has been set up to evolve, addressing not only the technical and institutional aspects of CCISS, but also the latest Directives (specifically Directive 2010/40/EU) and European Delegate Regulations (in particular Delegated Regulations 2015/962/EU and 886/2013).

In order to translate the regulatory aspects and to adapt to their content, CCISS – identified as the National Access Point for real-time information on roads and traffic, according to the competences recognized by the Interministerial Decree 2013/39 – is subscribing a Memorandum of Understanding between the actors of the cooperative model. The aim is of defining the roles as far as possible by July 2018, during which date a new update report on the implementation of the Delegated Regulation 2015/962/EU is due to be released.

In this regard, it is noted that delays in the delivery of this document have been due to the effort to interpret and to share specific needs among the model actors. This approach has been used in order to avoid fragmentation and to ensure a shared evolution, in compliance with the Directive 2010/40/EU where there are no blocks operating autonomously but in a correlated, dynamic and "united" way.

The cooperative model used by the National Access Point is the basis of the interaction between the involved actors and it provides for an open dialogue between the subjects themselves, who cooperate in order to improve mutual information enrichment both in terms of information exchanged, that of inter-European interoperability. Three actors cooperate in this model, and they are identifiable in network operators or dealers, Service Providers and Content Providers, all communicating through computerized connections (with the aim of achieving interoperability and application co-operation).

In details,

    (i)   the operators or dealers of the road network of the cooperative model shall readily identify and represent the static and dynamic characteristics of traffic on road and network infrastructures and traffic and travel data, by means of specific tools;

    (ii)   Service Providers represent the unique interface with end users to which the National Access Point provides advanced information services on suitably elaborated road infrastructure data;

(iii)   Content Providers integrate and process infrastructure and road network information.

In order to better comply with the mission of CCISS to preserve and ensure the safety and security aspects of the national road network users, as anticipated, the cooperative model is constantly evolving.

One of the major improvements in the model is in terms of integrating flow data for vehicles carrying dangerous goods. Consistent with the European regulations controlling the transport of dangerous goods between countries, the cooperative model has extended its scope to this sector in order to acquire more information that are useful to increase safety on the road network (more details on the dangerous goods monitoring topic are listed in the following paragraph).

The CCISS's operating model is also evolving in "digital" terms, within the "digital transformation" that is implemented in Europe and is based on intelligent and cooperative transport systems (ITS and Cooperative-ITS).

In fact, digital transformation is an enabling factor for sustainable, intelligent and inclusive growth in the country,

(i)   enabling the creation of slim, quality, safer, cheaper and better used infrastructures,

(ii)   enabling the generation of data and services for a better travel experience to citizens, facilitating goods transport and helping to define a favorable technology ecosystem for businesses,

(iii)   enhancing existing assets through technological upgrading and

(iv)   promoting innovation-oriented investment in the production of public transport, infrastructure and technology systems - "Smart", "ITS" infrastructures and the innovative services provision.

3 THE DANGEROUS GOODS TRANSPORT MONITORING

As anticipated in the previous paragraph, the cooperative model has extended its scope to the context of dangerous goods.

The objective of CCISS is to be able to activate a safety and security strategy by tracing the handling of dangerous goods on national territory near critical road conditions or traffic events, in order to provide preventative information, in the event of an incident involving the means, for a more effective management of the eventual emergency that should occur.

This model schematizes the actors of the road context and it defines their roles within the process of exchange of information for the dangerous goods transport. Specifically, the roles identified are the following:

- *Trusted Party 1*: it is the actor of the extended collaborative model, which allows the collection, and the processing of information about the transportation of dangerous goods from the Trusted Party 2. The nationally-owned Trusted Party 1 is UIRNet S.p.a., a private company controlled by the Infrastructure and Transport Ministry, which uses the National Logistics Platform (PLN) for data collection and processing, and which provides for information exchange on mobility and traffic from CCISS to Trusted Party 2, and vice versa.
- *Trusted Party 2*: it is the actor of the extended collaborative model which allows the collection of data from Dangerous Goods Owners and Vectors that have to carry the load. The data are related to the route, quantity and type of load, in addition to the information of the means of transport and his driver. Institutional Trusted Party 2 must be nationally certified and responsible for transmitting data to the Trusted Party 1.
- *Petroleum Company*: it is the source from which the dangerous goods loads. The data concerning the dangerous goods and the path to be followed must be made available to the Trusted Party 2.
- *Transport Company*: it is the means of transporting dangerous goods. Data relating to the transport means and the information relating to the haulier must be made available to Trusted Party 2.

CCISS is undergoing some agreements with the Petroleum Union, Petroleum Companies and Transport Companies, in the context of actions aimed at providing information on dangerous goods traffic on national territory, , with the aim of adopting common policies for the increase

in road safety. The agreements would allow the use of real-time oil transport data in order to enrich the CCISS information system.

In particular, the information they are committing to sharing is all that is needed to assess potential additional risk scenarios for already-congested or rapidly aggravated road conditions, even for contingent situations (worsening weather conditions, accidents, roadblocks, yards, etc.), in order to improve the road safety conditions on national territory.

4 THE PRIORITY ZONES OF THE DELEGATED REGULATION 2015/962/EU

Delegated Regulation 2015/962/EU sets out the necessary specifications to ensure the accessibility, exchange, re-use and updating of road and traffic data by road authorities, road users and service providers provision of real-time traffic information services throughout the European Union. It applies to the entire trans-European road network, as well as to the highways not included in this net and the Priority Areas that are identified by the national authorities, where the latters consider it pertinent.

Priority Areas are road sections, in particular in urban areas, which are not part of the global trans-European road network, and which are not highways; national authorities identify relevant Priority Areas, based on recurrent levels of traffic congestion or other considerations regarding traffic management.

It is going to define some Priority Areas, taking into account that the specific cities of Florence, Milan, Naples, Rome, Turin and Verona have manifested the interest in becoming Priority Areas in accordance with Regulation Delegate 2015/962/EU in the current month.

A technical table will therefore be convened at the beginning of December of the current year to establish which Local Authorities will be recognized as Priority Areas.

When a certain area is recognized as a priority one, in addition to spreading information over local networks, it has to provide the minimum traffic information to the National Access Point (CCISS), which is going to make it available to other country members' Access Points.

CCISS is hypothesizing of define an initial experimental phase during which it would make its architecture available to the Priority Areas, defining a sort of Cloud-based Operations Center, whereby some Local Entities could become Priority Areas without the need of building other Operations Centers.

5 DATEX II

The Datex II (CEN / TS 16157: 2011) is the Europe standard for data exchange between ITS and it replaces the Datex standard (UNI ENV 13777) after its deprecation in November 2011.

The Datex II is a more modern standard than its predecessor, and it leads many advantages like:

- the separation between the data (content of messages) and the exchange protocols;
- the extension of the number of network protocols and supported data exchange modes;
- the usage of the XML language for messages, in place of the EDIFACT used in Datex;
- the usage of the XSD language to define the structure of messages;
- strictly defining the standard using the UML language, which describes the content of the messages independently of the implementation;
- the ability to create extensions while maintaining interoperability between the implementations.

The message structure of Datex II is considerably more articulated than Datex one. This feature, along with the ability to define extensions, allows you to express much more complex concepts and to overcome the lack of a specific element of the model, by combining multiple elements.

The syntax and structure of Datex II messages are described in a strict and unambiguous way with the usage of languages such as UML and XSD, which are widely used in standard documentation and freely accessible on the Datex II initiative site.

The Datex II implementation, realized by CCISS, was created focusing on the need to easily connect to the widest possible number of providers, adapting to the standard version and profile that are used by each individual partner. It adopts a rule-based approach that converts messages in an internal representation, independent of the original format, which allows it to be stored and to be processed in a uniform way.

The issue of converting Datex II messages into natural language required significant, rule-based effort; the new used method can represent the contents of the messages in Italian, English, French and German language, and it can provide the output in any desired format (eg. XML, JSON, etc.), through a plugin system that makes it easily extensible.

Thanks to this standard format, therefore, any community citizen will be allowed to have information in his own language, without any particular effort.

A specific extension of Datex II, called DatExpert, has been carried out for the treatment of data related to the dangerous goods transport.

This tool allows, through a web interface:

- the analysis and the validation of the Datex II messages that must produce, for each message, a clear and exhaustive diagnosis of the errors;
- the management of a Knowledge Base containing both standard documents and the description of conventions and best practices adopted by stakeholders;
- the management of a Trouble Ticketing system that allows users to submit modification requests and report any issues that have arisen in the validation system or in the Knowledge Base;
- the implementation of the Datex II Extension, proposed by UNECE for the exchange of information regarding the location, alarms and state of the load of vehicles carrying dangerous goods.

The CCISS' technological infrastructure integrates the DatExpert system.

6 CONCLUSIONS

CCISS is operating in order to improve its infrastructure and systems by implementing solutions and projects that comply in the best way with the content of Directive 2010/40/EU and its related Delegated Regulations.

Collaboration and active participation by all the actors in the cooperative model the CCISS uses, allows the enrichment and continuous evolution of the entire National Access Point.