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NPRA - ROSATTE Implementation Platform

# D2 - Investigation of the organizational and legal issues to align ROSATTE with the INSPIRE Directive

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# 1. Introduction

## 1.1 Background

The former ROSATTE and current eMaPS projects aim to establish an EU-wide independent platform, enabling public authorities and map makers to share road data. This aim falls within the scope of priority action 1.2 and 1.3 of the ITS directive [2]. In the context of eMaPS the implementation platform was initially called 'ROSATTE Implementation Platform; it was recently renamed 'TN-ITS Deployment Platform'.

INSPIRE is basically a legal framework and a set of technical specifications designed to make public geo-spatial data available to other public authorities, but also to citizens and enterprises. The legal framework ensures that the EU member states deliver data through harmonized service interfaces and in accordance with harmonized data specifications and data models. INSPIRE is currently being implemented in the member states.

The ITS Action Plan 1.3 Study (the *Rapp Trans Report* [9]) suggested that a combination of INSPIRE and ROSATTE is the best solution to make public data available for digital maps in the future.

In order to align ROSATTE with INSPIRE, TN-ITS initiated two studies to:

1. Align the ROSATTE specifications with the INSPIRE specifications.
2. Investigate how the ROSATTE Implementations Platform might be aligned with the INSPIRE organization and with the INSPIRE spatial data infrastructure, and the legal implications thereof.

The first study was conducted by Triona and produced recommendations on how to:

3. Align ROSATTE with INSPIRE from a technical point of view [10].
4. Deal with georeferencing in the ROSATTE Implementation Platform [11].

This report presents the results of the second study on the organisational and legal alignment of ROSATTE and INSPIRE.

## 1.2 Research Questions

eMaPS defined the following research questions:

- A number of proposals or suggestions for alignment have already been made in the 1.3 study and in resent presentations and discussions. The most detailed and mature of these is a suggested structure put forward by the Swedish Transport Administration. How do we get from this/these suggestions to a viable proposal that covers the needs and is easily endorsed by the MS and DG Move?
- Give a brief report on how the roads part of the TN theme is implemented in the MS. Is it centrally managed or is it a distributed responsibility? Compare the most important implementations models, and how they will accommodate the needs of the ROSATTE Implementation Platform.
- Is it possible to introduce "ITS competence" into INSPIRE maintenance working groups, in order to ensure the connection between ROSATTE Implementation Platform and INSPIRE in a steady state? What are the implications for the ROSATTE Implementation Platform? What are the legal and organizational implications?
- Review the current version of ROSATTE Implementation Platform Terms of Reference and judge if they are still relevant and if so, how they need to be changed to fit into the INSPIRE alignment.
- Report on the implementation of national/regional INSPIRE portals. How does this align with the organizational implementation of INSPIRE, how does it relate to the

EU-level INSPIRE portal? What implications will this have for the ROSATTE Implementation Platform?
- Report on where the ITS Directive is legally implemented, how this is done pertaining to responsibility and organization. How will this affect the ROSATTE Implementation Platform?

### 1.3 Refined Scope and Study Goals

The *Rapp Trans Report* [9] recommended the alignment of ROSATTE with INSPIRE (see Annex 1) which resulted in the research questions listed in the previous paragraph. In the course of the study, the scope and study goals were refined based on discussions with representatives of eMaPS, JRC, mapping organisations and road authorities. In particular, the following questions were added:

- How can support from the European Commission (EC) be fostered for ROSATTE/INSPIRE-deployment in the Member States?
- How can public road authorities in the Member States be converted to support ROSATTE/INSPIRE deployment?

The refined scope led to a slight shift in study focus which is reflected in the more elaborated structure of this report.

### 1.4 Reading Guide

Chapters 2 and **Feil! Fant ikke referansekilden.** provide a comparison of legislative and organisational aspects of INSPIRE and ROSATTE, and are followed by chapter 4 providing an overview of the state-of-play of INSPIRE and ROSATTE. Based on the information from chapters 2 to 4, chapter 5 presents and assesses a number of alignment options. Chapter 6 synthesizes all information into concrete recommendations.

Document references are indicated as [numbers between square brackets] and refer to the Literature Reference List. Acronyms used in the text are described in the list of acronyms. The Literature Reference List and List of Acronyms are on the pages following chapter 5.

# 2. Legal aspects

### 2.1 Relevant Legislation

#### 2.1.1 INSPIRE

*Purpose and scope*
The purpose of the INSPIRE Directive [1] was to lay down the rules required for establishing an infrastructure for spatial information in the European Community, for the purposes of European environmental policies or policies and activities with an impact on environment. INSPIRE should build on existing information infrastructures in the member states, i.e. not create a completely new information infrastructure.

Within the scope of INSPIRE are only *spatial* datasets which fulfil a number of conditions, in particular:
- The dataset relates to an area where the member states have jurisdictional rights
- The dataset is in electronic format (registers only available in printed form are excluded)
- The dataset is held by or on behalf of a public authority (falling within the scope of its public tasks)
- The dataset relates to one of the themes specified in the Annexes I-III to the directive. *Transport Networks*, including road networks, is one of the themes listed

in Annex I, for which the Implementation rules were to be adopted in the first phase, i.e. before May 15th 2009.

*INSPIRE services to be implemented*
The directive rules that the member states have to establish a network of services for the spatial data sets, including:

- Discovery services, i.e. making it possible to search for services using metadata, and to display the metadata
- Viewing services, including zooming, display of legends, map navigation, etc.
- Download services
- Transformation services to achieve interoperability where needed.

*INSPIRE portals*
The EC established and operates an INSPIRE geo-portal at the community level, through which member states shall provide access to the services listed above. Member states may also create their own access points. Most member states have done so – on national or regional level - but this is not a requirement from the INSPIRE directive.

*Data sharing*
Each Member State shall adopt measures for the sharing of spatial data sets and services between its public authorities, as well as with institutions and bodies of the EC that deal with environment.

*Implementing Rules*
The directive further requires that Implementing Rules (IRs) were to be adopted to ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and cross-border context, in a number of specific areas:

- Metadata
- Data Specifications
- Network Services
- Data and Service Sharing
- Monitoring and Reporting

The implementing rules take account of standards adopted by European standardization bodies as well as international standards. IRs are adopted as Commission Decisions or Regulations, and are binding in their entirety.

*Coordination*
Member States have to ensure that appropriate structures and mechanisms are designated for coordination, across the different levels of government. This applies to contributions of users, producers, value-added service providers and coordinating bodies. It concerns identification of data sets, user needs, providing information on existing practices, etc.

The Commission coordinates INSPIRE at the Community level. Each Member State shall designate a contact point, usually a public authority, to be responsible for contacts with the Commission (also referred to as MSCPs). The Commission is assisted in the process of adopting the Implementing Rules by a regulatory committee (the IC) composed by representatives of the Member States and chaired by a representative of the Commission.

The INSPIRE directive entered into force on May 15th 2007.

### 2.1.2 ITS Directive and its Relevance to Digital Maps

The European Commission is planning to work in partnership with Member States and European road operators, service providers and industry to provide efficient, safe, and environmentally friendly intelligent transport systems which best serve the needs of travellers, transport operators, service providers, industry, and society at large. These systems will encourage travellers to make best use of the available modes and to support an integrated, sustainable transport system throughout Europe.

Many state-of-the-art ITS applications rely on accurate knowledge of both the characteristics of the road network and the applicable traffic regulations. Whilst in the past the bulk of this knowledge was provided by authorities, there is a trend towards the utilisation of commercial sources. Where road safety is at stake it is essential that public information is validated and made available to all players on a timely, fair and equitable basis, in view of ensuring safe and orderly management of traffic. This applies in particular, to road network data.

On 16 December 2008 the European Commission adopted the ITS Action Plan (COM (2008) 886) for road transport and interfaces with other modes. One of the key priority areas identified is the optimal use of road, traffic and travel data.

The ITS Directive (Directive 2010/40/EU) [2], adopted on 7 July 2010, provides the legal framework for the deployment of the ITS Action Plan. The directive targets 'specifications for action' as well as 'the development of standards'. It should be noted that the directive identifies the areas but does not sharply define what actions are to be taken or what standards are to be developed; this is to be elaborated by the EC, in consultation with the Member States and stakeholders.

Priority area I, 'Optimal use of road, traffic and travel data' directly relates to digital maps, although there are also links to the other priority areas. Next to 'priority areas', 6 'priority actions' are defined. These actions are related to traffic information services (b and c), multi-modal travel information (a), eCall (d) and truck parking information and reservation (e and f). There is no explicit relation between these priority areas and digital maps, yet there is an indirect relation.
Annex I of the Directive [2] provides more details on the priority areas and priority actions. Within Priority Area I, under the action 3 'specification for priority action a) and b)', the following is specified (3.2):

"
*The definition of the necessary requirements to make road, traffic and transport services data used for digital maps accurate and available, where possible, to digital map producers and service providers, based on:*

- *the availability of existing road and traffic data used for digital maps to digital map producers and service providers,*
- *the facilitation of the electronic data exchange between the relevant public authorities and stakeholders and the private digital map producers and service providers,*
- *the timely updating of road and traffic data for digital maps by the relevant public authorities and stakeholders,*
- *the timely updating of the digital maps by the digital map producers and service providers.*

"

This clearly indicates that the scope of eMaps falls within the scope of the ITS Directive, and even within the 'priorities', even if it is not listed as 'priority action' by itself. It is noted that action 2 under area 1 also relates to road data.

Article 7 of the ITS Directive stipulates that the Commission may adopt delegated acts in accordance with Article 290 of the TFEU [6], as regards specifications, and in fact requires the Commission to do so for the priority actions (a) to (f). This power is granted to the EC for a period of 7 years, and can be revoked by the Council or the European Parliament. The following procedure applies:

- The Council and the EP are notified of an adopted delegated act.
- If the Council and the EP raise no objection, the act enters into force automatically.

A dedicated study ('1.3') was commissioned by DG MOVE in 2011 to explore what would be needed in the area of digital maps [9].

The study identified a number of legal constraints that need to be taken into account:

- The publication of full datasets is complicated for legal reasons. In various Member States (e.g. UK, FR, SE) the ownership of the road data sets lies completely or partially with (semi) private companies. This means legal barriers make publication of the full data sets difficult or even impossible.
- Many Member States have procedures in place that oblige road authorities to publish any change in road and traffic regulations. In some Member States this is done centrally, but in many other the information is published (i.e. aggregated) in (paper) government announcements. It should be relatively easy for Member States to change the procedures, or if need be the legal framework to assure changes to road and traffic regulations are published both on paper and in electronic form.

So far, the EC has not produced a specification of requirements or further action in connection to this. It is unclear whether this can be expected on a short term, although there is a possibility that the EC will draft one set of specifications covering all themes covered by actions a), b) and c) in 2013.

### 2.1.3 ROSATTE

ROSATTE started as an EU-funded project which was completed in 2011. It aimed to establish an efficient and quality-assured data supply chain from public authorities to commercial map providers with regards to safety related road content. It built on standards, rules and procedures used by or developed for INSPIRE (in particular ISO TC211), and work of ISO TC204 (focusing on ITS).

The ROSATTE project developed components of an infrastructure and supporting tools to enable European access to road safety attributes including incremental updates. This infrastructure facilitates internal administrative functions as well as supply of data to third parties e.g. for safety relevant services.

The overall objectives of the project were to:

- Facilitate access to, exchange and maintain Europe-wide core road safety spatial data from national/regional/local sources by standard procedures
- Enable multi-level aggregation and update of Europe-wide safety map data
- Assess the technical and organisational feasibility of this infrastructure

The ROSATTE[1] framework is promoted as a solution to the exchange of relevant static and semi-static public ITS map data between public authorities or road operators and map makers as well as other map data users.

Currently a platform is shaped ('Transport Network ITS Deployment Platform', or TN-ITS) to initiate the realisation of the ROSATTE framework across Europe.

The members of the platform commit themselves to the objectives:

- Achieve use of an agreed framework as an interface for the exchange of ITS map data,
- Accelerate deployment of a common solution by supporting each other and exchanging technological solutions and best practices,
- Propose solutions to improve the quality of the conversion of dynamic location reference methods,
- Support financially and/or by staffing an executive secretariat managing the association of signatories and supporting the realisation of the above-mentioned points.

[1] ROad Safety ATTributes exchange infrastructure in Europe

This commitment is expressed in the form of a Memorandum of Understanding (MoU) 'for a common Framework exchanging ITS Map data between Public Authorities and Data Users' [6].
The MoU is explicitly non-binding in legal terms. There is no guarantee that the members / signatories will act accordingly and there are no legal instruments to enforce such.

At this point a number of data users (Nokia, TomTom) and public authorities (SRA, NPRA, Flanders government) have signed up. Major EU Member States are still missing (Germany, France, Italy, UK).

## 2.2 Licenses, Charges and Conditions for Re-Use

The PSI Directive [3], adopted in 2003, provides for a minimum degree of harmonisation concerning the requirements and conditions for re-use of all public sector information. In the 2009 review of this directive it was concluded that significant differences in national rules and practices persist, leading to fragmentation of the internal information market and hindering the creation of cross-border information services. Major differences still exist with respect to charging, with cost recovery practised in some cases and free or practically free re-use fees in others.

In April 2013 the EC issued a proposal for revision of the PSI Directive. Approval by Member States is pending. Most notable change to the current version is the insistence that disclosing PSI data for re-use becomes obligatory. The current version of the directive only encourages this practice, leaving it as a suggestion. Once adopted, the new PSI Directive, requires European national governments to provide access to all PSI data – "ranging from digital maps to weather data to traffic statistics" - at zero or marginal cost.

The INSPIRE Directive provides a more specific framework for sharing of public spatial data. Under the INSPIRE Directive data sets within the defined scope - and to which the exceptions of national security, personal data protection etc. do not apply - *have* to be made accessible. Furthermore, discovery and viewing services shall be offered free of charge, with an exception for datasets and corresponding services where fees are unavoidable to cover the costs of maintenance of the data or service, see [1], Art 14 of the INSPIRE Directive. This however does not rule out the option of exclusion of re-use for commercial purposes, limitations in liability through disclaimers and the use of licenses. In general INSPIRE provides for transparency on applicable licenses and fees for data sets within its scope, but it does not provide for a harmonisation of re-use constraints, fees and licenses. One of the reasons public sector bodies might have not to make its data available for re-use is the liability it might have for incorrectness of the data. This may however also be solved in exoneration clauses in the conditions for re-use.

National implementations of the INSPIRE directive may further define the options for specific constraints on data re-use, see e.g. the Irish implementation rules [4]. Such national rules often go beyond what is strictly required by the directive as far as accessibility and re-use is concerned, but will differ between Member States.

The ITS Directive [2] empowers the Commission to set specifications that Member States shall respect whenever ITS is deployed. This could include a requirement to make road data owned by public bodies available for commercial and non-commercial re-use, including TN-ITS attributes as far as available. Such a specification may further include that the INSPIRE framework is to be used for this purpose and that a specific extension to the TN theme specifications is to be applied. It has to be noted that Member State support for such a far-reaching requirement is important. This is currently an unknown factor.

# 3. Organisation

## 3.1 INSPIRE

The organisational description in this section is a summary of information from the INSPIRE website of JRC, see http://inspire.jrc.ec.europa.eu/index.cfm for a more detailed description.

It is noted that the INSPIRE organisation is described in detail for the responsibilities and activities on EU-level, as well as for the (initial) process of drafting and adopting the Implementing Rules and Specifications. However, major responsibilities within the scope of INSPIRE apply to the member state level. Member states make their own decisions on most appropriate structures for national collaboration. Such structures logically build on existing governance structures, distribution of geographical scope over different layers of government and responsibilities of data owners. As a consequence there is no single INSPIRE organisational model that applies to the member state level; the requirements are formulated on a functional and technical level.

### 3.1.1 Governance

The following actors are involved in the governance and the management of INSPIRE:
- European Commission Inspire Team (CT)
- INSPIRE Committee (IC)
- The Member State Contact Points (MSCPs)
- Initial Operating Capability Task Force (IOC TF)

#### 3.1.1.1 European Commission Inspire Team

The INSPIRE team (CT) consists of staff of the European Commission DG Environment, Eurostat the JRC and (since 2013) the European Environmental Agency (EEA). The CT coordinates the INSPIRE development.

DG Environment acts as the overall legislative and policy co-ordinator for INSPIRE. The establishment of the legislative act and its follow-up is led by DG Environment, supported and advised by Eurostat. Given the primary focus of INSPIRE on environmental policy, and based on liaison with the EEA, DG Environment specifies environmental thematic policy requirements for INSPIRE as a framework for the implementation program.

Eurostat acts as the implementation co-ordinator for INSPIRE. Eurostat and JRC jointly prepare the programme of work. Eurostat provides the secretariat for the INSPIRE Regulatory Committee as part of its operational responsibilities.

The EC Joint Research Centre (JRC) acts as the technical co-ordinator of INSPIRE. The JRC ensures the viability and evolution of the technical infrastructure for INSPIRE and guarantees the liaison with the European and international research community. JRC also initiates and monitors the work with the European and international standardisation bodies.

The EEA has tasks in the area of monitoring and reporting, as well as data and service sharing under INSPIRE.

#### 3.1.1.2 The INSPIRE Committee

The regulatory nature of the Implementing Rules requires the Commission to present them to a Regulatory Committee of Member States representatives, referred to as the INSPIRE Committee.

The INSPIRE Committee has the general task to assist the Commission and to deliver its opinion on the draft Implementing Rules proposed by the Commission. This opinion shall be delivered in the form of a vote.

#### 3.1.1.3 Member State Contact Points

Each member state must designate a Contact Point, usually a public authority, to be responsible for contacts with the Commission in relation to INSPIRE.

The role of the contact points is to provide results about the transposition of INSPIRE in National legislation. The contact points will also be responsible for providing regular information about the implementation of INSPIRE in their country and report on behalf of the Member State to the Commission.

#### 3.1.1.4 Initial Operating Capability Task Force

The Initial Operating Capability Task Force (IOC TF) was set up in June 2009 to help and support Member States in the implementation of INSPIRE services and ensure interoperability with the INSPIRE geoportal of the European Commission. The IOC TF consists of the representatives from all Member States which are responsible for the Architecture design and the service implementation of the National SDIs.

The initial focus of the IOC TF was on the implementation of the INSPIRE Discovery and View Services. The scope of the IOC TF has been extended to include the implementation of the INSPIRE download and transformation services.

### 3.1.2 Stakeholders

In addition to the organisations mentioned in the previous subsection, a number of roles for types of stakeholders within INSPIRE are defined. These stakeholders mostly have (had) a role in drafting specifications and providing input and feedback on specifications.

The following stakeholder types are recognised:
- Spatial Data Interest Committees (SDICs)
- Legally Mandated Organisations (LMOs)
- Drafting Teams (DTs)
- Thematic Working Groups (TWGs)

It is noted that stakeholder involvement was strong in the specification phase of INSPIRE. At this point specifications and Implementing Rules are mostly stable, and the stakeholder activity is strongly reduced.

#### 3.1.2.1 Spatial Data Interest Communities

Spatial Data Interest Communities (SDICs) bundle the human expertise of users, producers and transformers of spatial information, technical competence, financial resources and policies, with an interest to better use these resources for spatial data management and the development and operation of spatial information services. Through their activities they drive the demand for spatial data and spatial information services. SDICs are best placed to know what spatial data is required in implementing different tasks, ranging from local, regional, and national to Pan-European applications.

The involvement of stakeholders can be one or more of the following: keep informed, review INSPIRE deliverables, propose experts, submit reference material, and/or test draft specifications. Registration is continuously open.

#### 3.1.2.2 Legally Mandated Organisations (LMOs)

Legally Mandated Organisations (LMOs) are all the Member States' public authorities, institutions and bodies who already have or will get a legal mandate to set up and run one or some of the components of national and regional SDIs, and which are eligible to become the Member States' contributors to INSPIRE for a particular component. These components cover all fields of activity targeted by INSPIRE and can be either of a technical nature, or of a policy and organisation related nature.

The role of LMO's can be one or more of the following: keep informed, review INSPIRE deliverables, propose experts, submit reference material, and/or test draft specifications.

#### 3.1.2.3 Drafting Teams

Drafting Teams (DTs) are the groups of experts proposed by the SDICs and LMOs and selected by the Commission to participate in the process of creation of Implementing Rules in the fields of metadata, network services, data and service sharing and monitoring and reporting. They were set up based on the INSPIRE call published on 9th March 2005, and their composition has since then evolved due to the availability of experts and changes in the requirements of the DTs.

The Role of the drafting Teams is to analyse and review the reference material provided for their topic, to produce draft INSPIRE Implementing Rules and to provide recommendations to the Consolidation Team in case of conflicting technical specifications or issues.

#### 3.1.2.4 Thematic Working Groups (TWGs)

Thematic Working Groups were set up to assist in the drafting of technical specifications for the themes covered in Annex I of the INSPIRE directive. TWGs are composed of experts in these spatial data themes. Their skills and experiences make it possible to review, take into account, and streamline standardisation and harmonisation initiatives of different international, national, regional and local initiatives in order to achieve interoperability and, where practicable, harmonisation of spatial datasets and services.

The role of the Thematic Working Groups is to develop technical specifications for the themes they are responsible for.

## 3.2 ITS Directive

Under the ITS Directive, the European Commission is to adopt binding specifications to address the compatibility, interoperability and continuity of ITS solutions across the EU. The specifications shall cover functional, technical, organisational and service-provision issues in a number of areas. The first priorities are traffic and travel information, the eCall emergency system and intelligent truck parking. (ITS attributes to) Digital map data can possibly be regarded in the scope of traffic and travel information.

The Working Programme [5], sets the timeline for preparing these specifications. The working programme describes the specific objectives and gives a first timetable until 2015 for the implementation of the directive.

In preparing the specifications, the Commission will consult experts and shall take into account the advice of all stakeholders.

The Commission is assisted by two bodies in the implementation of the ITS Directive: the *European ITS Committee* and the *ITS Advisory Group* (Figure 1). The European ITS Committee consists of representatives of the EU Member States. Its role is to give advice on the work programme, standardisation mandates and on the adoption of possible guidelines or non-binding recommendations.

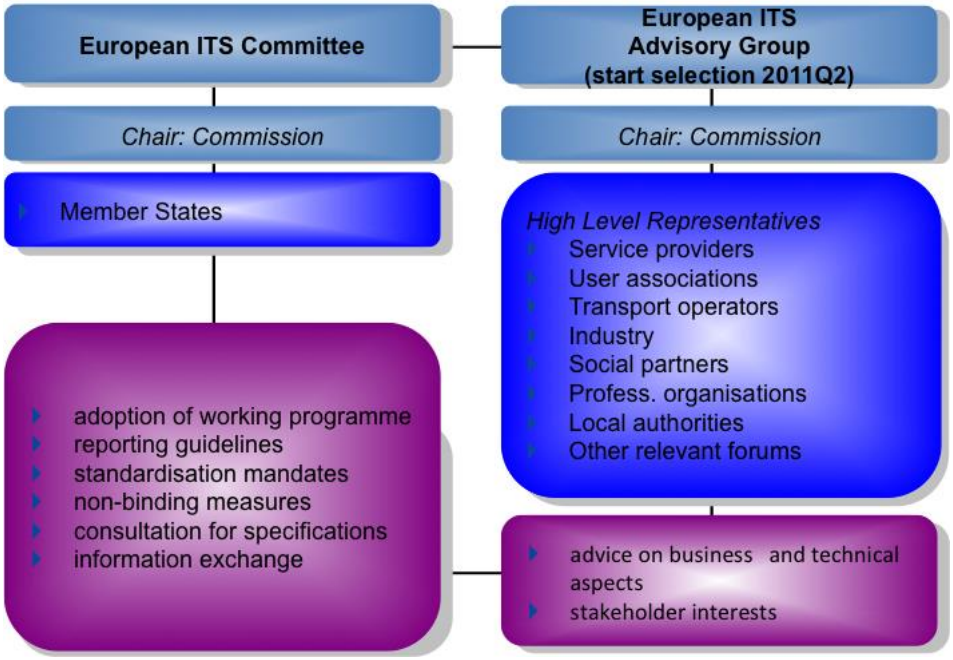


**Figure 1 Relation between European Commission, ITS Committee and ITS Advisory Group.**

The ITS Advisory Group — bringing together representatives of stakeholders such as industry, service-providers and associations of users — supports the Commission mainly on the technical and business aspects of ITS deployment.

The two bodies are consulted for input for, and feedback on various aspects of the work programme including the *specifications* foreseen under the directive. The bodies have no formal power to block or amend delegated acts. In practice however, sufficient support in both groups is sought by the EC. The process is illustrated in Figure 2.

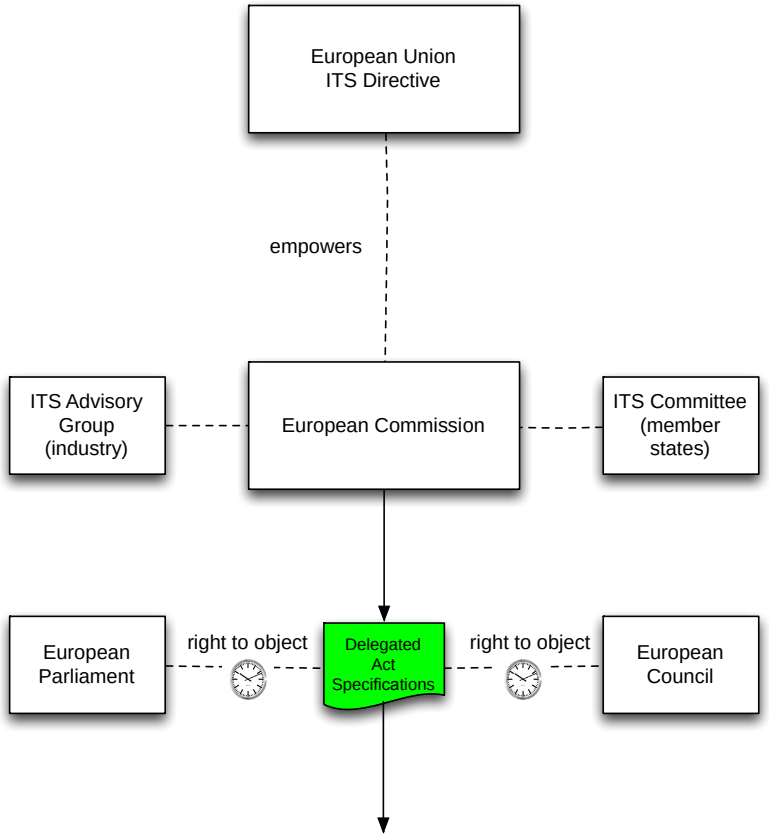


**Figure 2 Process for the adoption of Delegated Acts under the ITS Directive**

## 3.3 TN-ITS Deployment Platform

The TN-ITS Deployment Platform – previously known at ROSATTE Implementation Platform - will take the form of an association under Belgian law. The constituting assembly will be held on June 5th 2013.

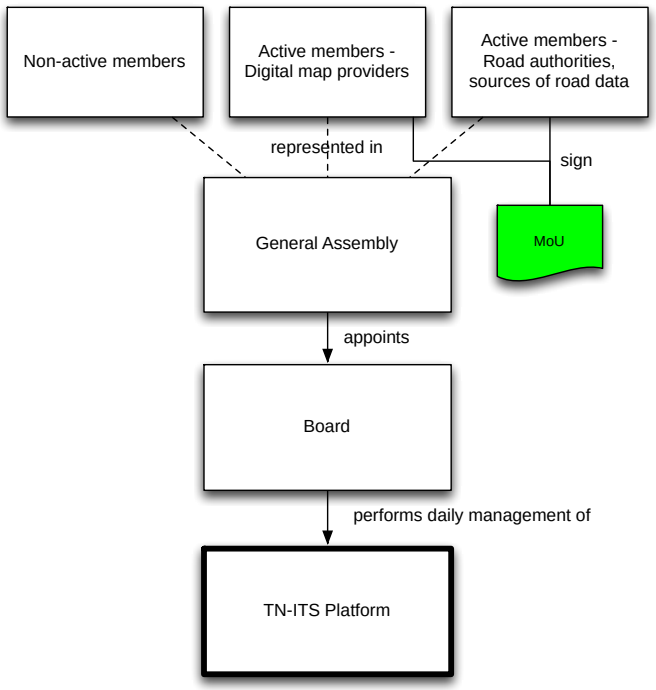


**Figure 3 Governance structure of the TN-ITS Platform**

The association is under control of its members. Major decisions including approval of annual budget, appointment of key staff are taken by the General Assembly to which all members are invited. Membership is open for commercial and public sector entities, they and can be supplying or using TN-ITS data or can be non-active members. An appointed Board, headed by a president takes care of the daily management of the organisation. See the TN-ITS Terms of Reference [15], for further details on the (envisaged) organisation.

# 4. State of Play

## 4.1 INSPIRE

This section provides an overview of the implementation of national and regional INSPIRE portals, and the different organisational models currently in use in European countries. It also addresses the TN/roads theme and its organisational context.

Figure 4 indicates that all Member States have transposed the INSPIRE Directive into national law.

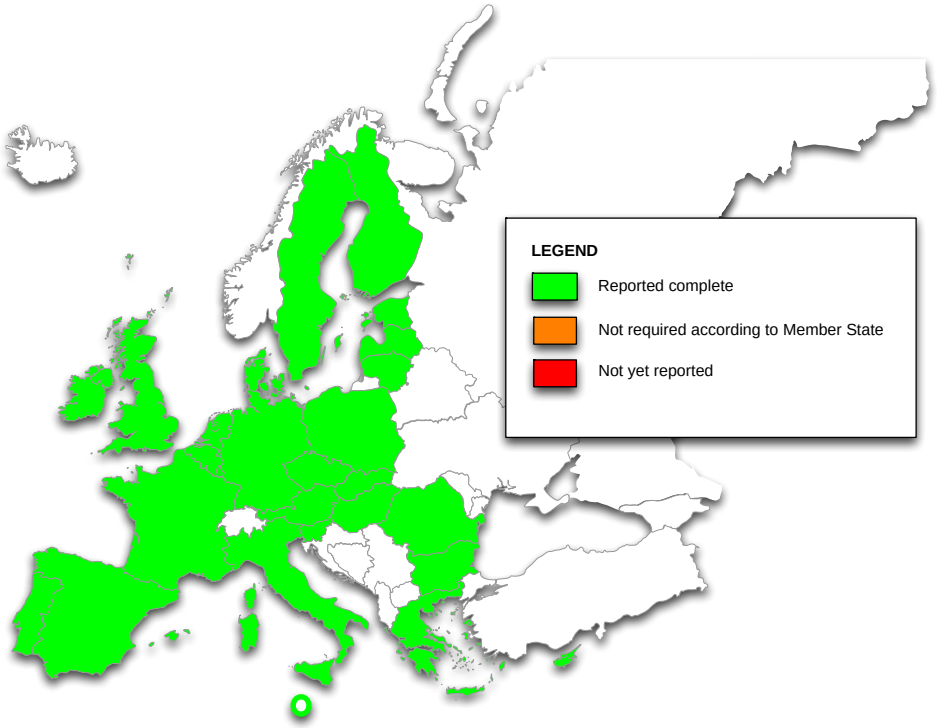


**Figure 4 Status of National Execution Measure of the INSPIRE Directive [EUR-LEX 17 April 2013]**

An inventory was made of the operational state of national INSPIRE portals in the Member States of the EU (EU27). The full inventory is included in Annex 2, Figure 5 presents an overview. In total geo portals in 20 Member States were accessible through the EU portal. In particular the smaller or less affluent Member States have yet to operationalize or register their INSPIRE portal: Bulgaria, Cyprus, Greece, Hungary, Lithuania and Malta. But Italy too still has to register its INSPIRE Portal.

It should be noted that all Member States that have not yet registered their services in the EU Geoportal do have GIS-data sets available and are taking efforts to become INSPIRE compliant [12]. This suggests that all Member States will have an INSPIRE portal operational soon.

Of the 20 Member States that have registered their portal, 19 included the TN-theme in their data sets (Figure 5).

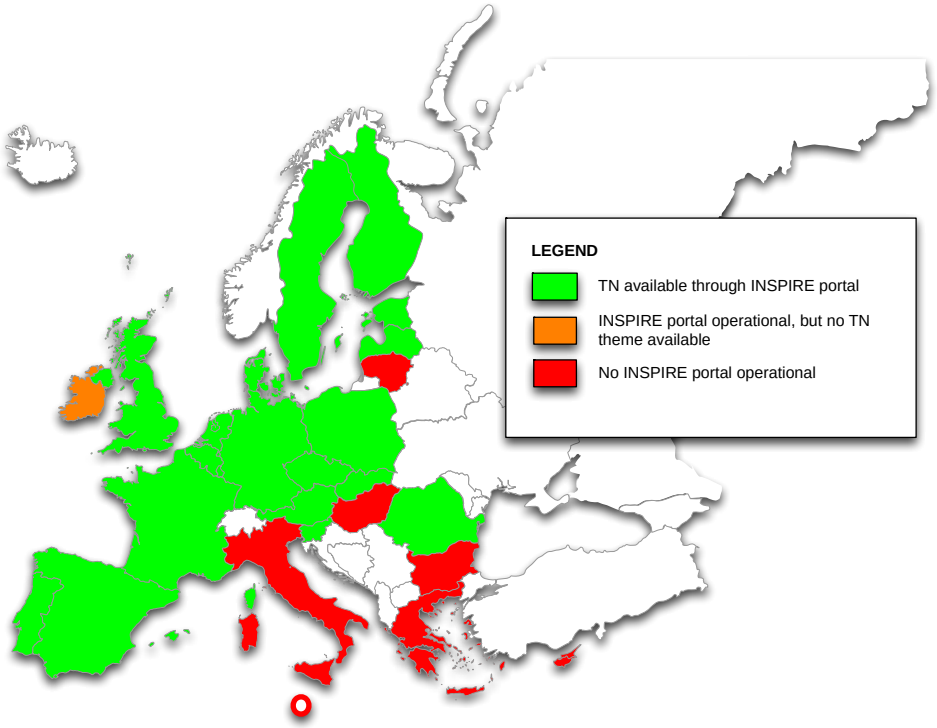


**Figure 5 Availability TN theme.**

Important to note is that of the Member States for which the TN Theme is available through the INSPIRE portal, for only 11 a road authority is listed as source (Figure 6). Whether the information is correct and up to date in the other 9 Member States obviously depends on the way the INSPIRE value chain has been organised, but it seems less likely that these data sets are adequately updated when a road regulation is changed by the road authority.

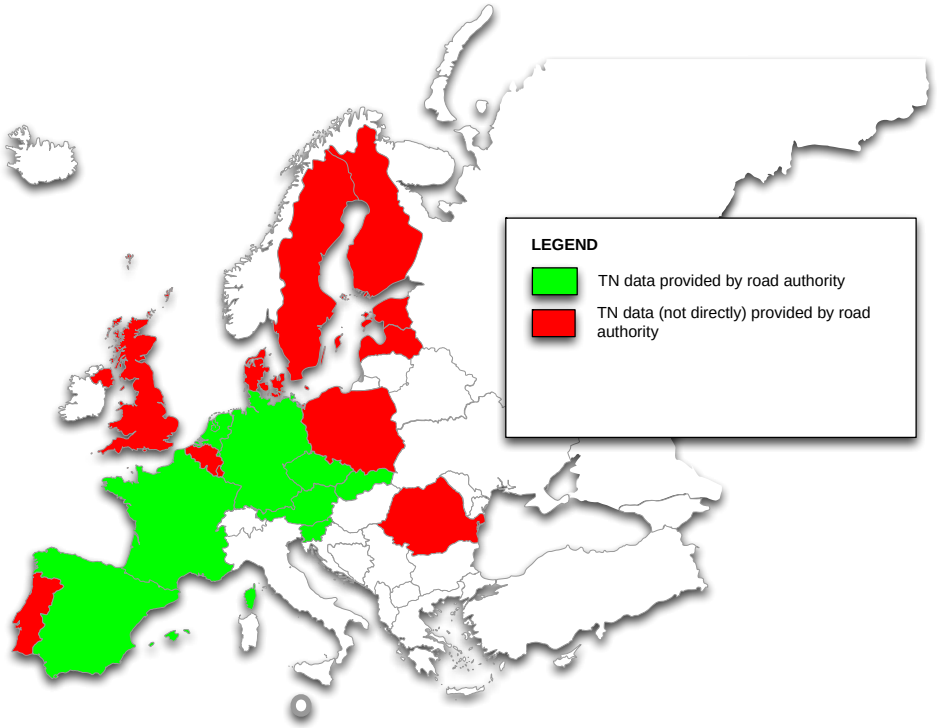


**Figure 6 TN data provided by road authorities.**

To better understand the road type coverage and information quality, sample sets of Germany (North-Rhine Palatinate, Bavaria, Hessen), Belgium (Flanders), Spain (Catalonia) and the Netherlands have been investigated. Because in many countries download services are not yet available, only metadata were analysed. This proved insufficient to obtain an overall understanding of the content quality. What did become clear is that in most of these countries not all regions of a country are covered, or represented in the same level of detail. This applies in particular to larger countries or countries with a federal government structure such as Belgium, Germany, Spain and the UK.

An observation from a quick scan of the INSPIRE portals and data sets is that the road data that are currently provided through INSPIRE are insufficient to meet the requirements of the ITS sector. This is understandable considering that INSPIRE emerged from the environmental and spatial planning sector, where road data are relevant but not a key element. This raises an important issue: can eMaPS best be aligned to INSPIRE in such a way that road data quality is improved to a level that is suited for safety-centric ITS applications such as ADAS? Clearly the original source for road data – local, regional and national legislative bodies and road authorities – need to be more closely involved to assure that road data is complete and of adequate quality.

## 4.2 ITS Directive

This section provides an overview of the transposition of the ITS Directive in the EU Member States, and the current status of the delegated acts by the European Commission.

Figure 7 provides an overview of the National Execution Measures as reported by the Member States. Although the ITS Directive should have been transposed by all Member States on 27 February 2012, and the European Commission might disagree with the way the Directive has been transposed, the EC has not yet launched any infringement procedures.

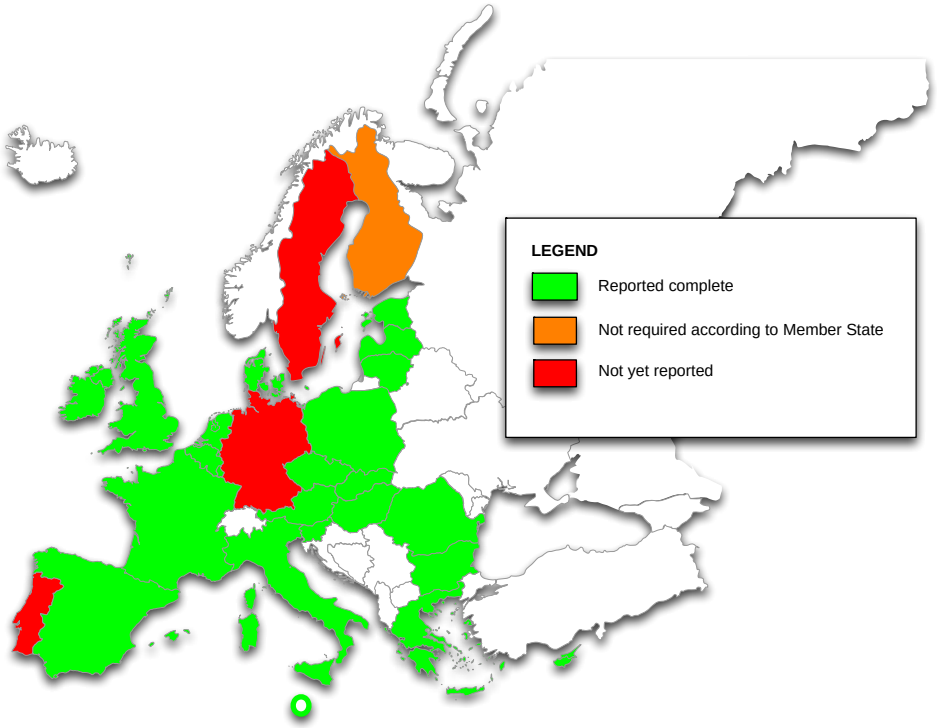


**Figure 7 Status of National Execution Measure of the ITS Directive [EUR-LEX 17 April 2013].**

The European Commission is responsible for the drafting of *specifications* per *action* of the ITS Directive. From 2012 up to 2015, the European Commission will draft specifications for 6 *priority areas* (Figure 8). The priority actions relevant to eMaPS are actions A and B as described in Annex I of the ITS Directive [2].

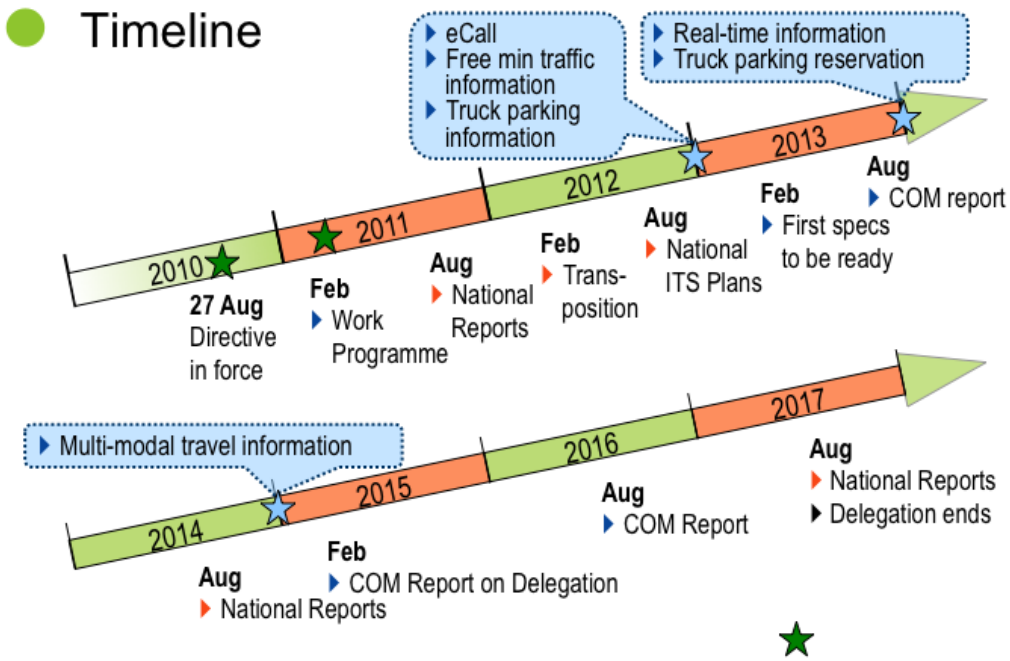


**Figure 8 EC timeline for the Priority Areas of the ITS Directive.**

In 2011, a study team led by Rapp Trans NL, completed a study on the 'Availability of Public Data for Digital Maps' (Action 1.3 of the ITS Action Plan) [9]. It presented 23 recommendations, among others describing in general terms how ROSATTE and INSPIRE could be aligned. The full set of recommendations has been included in Annex 1.

The ITS Directive [2] defines the availability and accessibility of (existing and accurate) road data as an integral part of EU-wide real-time traffic information services (priority action b)). This implies that the availability and accessibility of road data needs to be incorporated into the specifications for priority action b), which need to be complete by the end of 2013.

In January 2013 Rapp Trans was commissioned to support the European Commission with the drafting of the specifications for Action b). A first draft of the specifications is planned for release to Member State experts after summer 2013. This provides an opportunity for eMaPS to obtain legislative backing for its initiative through EU legislation.

# 5. Alignment Options

## 5.1 Introduction

A number of organisational and technical options for alignment of TN-ITS with INSPIRE are conceivable. In terms of the legislative or procedural steps there are also alternatives available. The appropriate legislative/procedural embedding is however to a large extent determined by the organisational/technical alignment. The adopted method of selection is therefore initially based on the first dimension.

To determine the most suitable option the following criteria were selected:

1. *ITS Support*. Suits the needs of, and is likely broadly supported by the ITS community, road authorities and map providers.
2. *Integration benefits*. Optimum harmonization and interoperability, re-use of existing services and infrastructures.
3. *Minimum effort*. Minimises effort and costs of implementation.
4. *Feasibility*. Has limited risks for acceptance and realisation, and can be deployed on the short to medium term.

## 5.2 Technical and organisational alignment

Based on the inventory of the state of play and legal frameworks, and discussions with JRC, EC, road authorities and map providers, a number of technical domains were defined that need to be considered in the organisational alignment. Per domain a number of options are defined, see Table 1 below.

**Table 1 Technical/organisational alignment options**

| Domain | Minimum alignment | Intermediate options | Maximum alignment |
|---|---|---|---|
| **Data coding** | Adoption of ROSATTE specifications as extension to TN with no other changes than strictly required to be compliant with IRs of INSPIRE | Minimum resistance option of Triona; i.e. no changes to INSPIRE, only changes to ROSATTE specifications that can be achieved with limited effort. ROSATTE specifications can be integrated in INSPIRE-TN at a later stage. Option to drop parts of the INSPIRE-TN specifications in favour of TN-ITS specifications. | Changes to INSPIRE-TN to accommodate requirements of TN-ITS. |

| Domain | Minimum alignment | Intermediate options | | Maximum alignment |
|---|---|---|---|---|
| **Discovery services** | Publication using ROSATTE specifications, separate TN-ITS portal in Member States, and a separate TN-ITS portal for Europe | Member States are free to decide whether road datasets are published on a national TN-ITS or INSPIRE portal, but all datasets are discoverable on a new EU TN-ITS portal | Member States are free to decide whether road datasets are published on a national TN-ITS or INSPIRE portal, but all datasets are discoverable on the EU INSPIRE portal | Publication using INSPIRE specs, publication in INSPIRE Member State portals and in the EU INSPIRE portal |
| **Download services** | Download service is not required | Download service can be provided by Member States but is not mandatory | | Download service is required as defined by INSPIRE |
| **Feedback loop** | Feedback loop is implemented as developed and tested by ROSATTE | Feedback loop is implemented as developed and tested by ROSATTE. Adoption of the ROSATTE feedback method in INSPIRE is promoted | | INSPIRE is to adopt a feedback loop method as IR |

Although data coding, discovery and download services, and the feedback loop are in essence technical issues, the way they are implemented has organisational effects. The next sections consider these effects.

### 5.2.1 Data Coding

Concerning the alignment of data coding, Triona already made a structured analysis concluding that the extreme variants are not suited for practical reasons, see [11]. The minimum alignment option will produce no integration benefits and as such could be considered the 'no alignment' option.

The maximum alignment option would lead to a fully integrated approach. This would likely increase the amount of road data and their quality in INSPIRE, which would be beneficial to the INSPIRE community. Maximum alignment would however present some a drawback. It would require a substantial overhaul of the INSPIRE-TN specifications, changing for example definitions of road parameters. Which in turn implies that new INSPIRE-TN data sets would no longer be compatible with existing INSPIRE-TN data sets.

Triona described what they called the *minimum resistance option* [10] whereby no changes would be made to the INSPIRE specifications, but only to the ROSATTE specifications. JRC indicated that alignment of specifications is not straightforward and not always the most practical way forward [13], and suggested that TN-ITS adapts the ROSATTE specifications as extension to INSPIRE-TN. In practice it means alignment is carried out by TN-ITS in isolation from the INSPIRE community.

Within the minimum resistance option, two approaches are possible:

- Alignment is improved by transferring parts of the TN-ITS specifications to either INSPIRE-TN specifications and/or the general INSPIRE specifications at a later stage.
- Alignment is improved by dropping parts of the TN-specifications in favour of the TN-ITS specifications at a later stage.

It is noted that both approaches may be followed in parallel or sequentially, as it is to some extent unpredictable what modifications will in the end be adopted by INSPIRE. They are therefore treated as one alignment scenario.

The advantage of the minimum resistance approach is that the ITS community can tailor the TN-ITS specifications to its own needs without being held back by INSPIRE-TN legacy.

It should be noted that it is likely to lead to two diverging road attribute specifications within INSPIRE as it is unlikely that convergence between INSPIRE-TN and TN-ITS will happen once TN-ITS is adopted alongside INSPIRE-TN.

**Table 2 Summary of assessment of alignment options for Data Coding**

| Scenario | 1. ITS support | 2. Integration benefits | 3. Minimum effort | 4. Feasibility |
|---|---|---|---|---|
| **Minimum alignment** | + | -- | ++ | ++ |
| **Intermediate ('minimum resistance')** | ++ | + | + | + |
| **Maximum alignment** | - | ++ | - | - |

It is concluded that the intermediate option is preferable, as it appears feasible while still bearing useful integration benefits.

### 5.2.2 Discovery Services

Another important organisational aspect concerns the organisation of discovery services for TN-ITS data sets. Both ROSATTE and INSPIRE opted for a distributed approach for data publication: allowing for, but not requiring, (meta) data aggregation at different levels. Essential to this approach is that data sets are made discoverable, regardless of where, and by what organisation, they are hosted. For this purpose, INSPIRE defined *discovery services*; usually implemented as portals where meta data (including the publishing source) on data sets are published in a structured format and including search functions on the basis of these metadata.

As the inventory showed, most Member States already have an INSPIRE portal operational or are in the process of making one operational. These could very well be used by road authorities to make their TN-ITS data sets discoverable. The downside of this approach is that it would require cooperation between the INSPIRE and ITS community in the Member States which is not straightforward and will not always lead to consensus. Although the situation is different between Member States, various road authorities expressed their concern on working too closely with the INSPIRE community during discussions with the study team. One concern is that the overlap in needs for road data is too limited to warrant the additional coordination effort between the ITS and INSPIRE community.

An alternative approach is to leave the decision on where to publish the TN-ITS metadata to the Member States; in the national INSPIRE portal, or on a national TN-ITS portal. On a European level the option exists to implement a new TN-ITS portal, or to make use of the existing INSPIRE portal.

As to support of the ITS community, the minimum alignment option has the obvious advantage that discovery services can be implemented to closely stick to the needs of the ITS sector. The introduction of a new national TN-ITS portal might be a good solution in some countries, but regarded as an unnecessary and undesirable effort in others. The intermediate scenarios I and II therefore leave this decision to the individual Member States. The distributed approach adopted by both ROSATTE and INSPIRE allows for this flexibility.

These intermediate scenarios differ with respect to the European portal: scenario I has a dedicated TN-ITS portal, scenario II uses the European INSPIRE portal. It is expected that a separate TN-ITS portal on European level would in fact increase the discoverability of datasets relevant for digital map providers and TN-ITS service providers. In general there is a great value of a single portal for all geo-spatial datasets, yet this does not seem to be

of great importance for the TN-ITS actors, who are primarily interested in fast and easy access to a specific type of data. As to costs/effort involved, the intermediate scenarios have a higher score as each Member State can make a choice of its own. Intermediate I involves the creation of an EU TN-ITS portal, whereas Intermediate II makes use of the INSPIRE portal. The latter may seem a smaller effort in realisation, but on the other hand requires more harmonisation effort with INSPIRE, in particular at the national level.

A summary of the assessment of alignment options with respect to Discovery Services is presented in Table 3 below.

**Table 3 Summary of assessment of alignment options for Discovery Services**

| Scenario | 1. ITS support | 2. Integration benefits | 3. Minimum effort | 4. Feasibility |
|---|---|---|---|---|
| **Minimum alignment (no use of INSPIRE portals)** | +/- | - | - | - |
| **Intermediate I (EU TN-ITS portal)** | ++ | + | + | + |
| **Intermediate II (EU INSPIRE portal)** | + | + | + | + |
| **Maximum alignment (use of INSPIRE portal on all levels)** | - | ++ | - | - |

### 5.2.3 Download Services

Download services are an important functionality for INSPIRE. INSPIRE requires that complete data sets can be downloaded, see [7] and allows – but does not require – that only updates can be requested. According to the *RappTrans Report* [9] full data set download should not be strictly required for TN-ITS attributes for the following reasons:

- There may be IPR issues related to the complete dataset, the authorities in charge of (local) road regulations may not own the complete dataset of TN-ITS attributes.
- The identified gap within the digital map 'ecosystem' that feeds ITS applications concerns the latency of *changes* to roads and road attributes, not the full set.
- The publication of updates has a natural fit with the (legislative) process of road authorities adopting/publishing new road regulations. This does not always apply to the full TN-ITS dataset.

The maximum alignment scenario – full integration in INSPIRE would require all publishing road authorities to publish complete datasets. As this is likely problematic for many, this scenario has a low score for support by the ITS community as well as for feasibility. The minimum alignment option - no download capability for full datasets – seems more appropriate. The intermediate scenario that full download capability is not required across the EU but that this is left to the discretion of individual Member States. The intermediate scenario is preferred as it enables Member States to implement/require full download capability for TN-ITS in case this is possible and desirable.

**Table 4 Summary of assessment of alignment options for Download Services**

| Scenario | 1. ITS support | 2. Integration benefits | 3. Minimum effort | 4. Feasibility |
|---|---|---|---|---|
| Minimum alignment | + | -/+ | + | + |
| Intermediate alignment | ++ | -/+ | + | + |
| Maximum alignment | -- | + | - | - |

### 5.2.4 Feedback Loop

In the TN-ITS community there is broad consensus that road authorities and map providers can both benefit from sharing road attribute data if map providers provide feedback on mismatches and errors in the provided data. Such a feedback loop allows road authorities to discover errors and omissions in their data sets they would otherwise encounter less likely or not at all. Map providers benefit from the feedback loop because the source data sets of road authorities improve, lowering future data aggregation costs and improving the quality of their map datasets. In the ROSATTE project methods for the feedback loop were developed and successfully tested. In INSPIRE similar ideas have developed but these seem much less mature than those of ROSATTE.

In the minimum alignment scenario the feedback loop is realised outside the INSPIRE framework. This is a sensible approach, given that the requirements and mechanisms suitable for TN-ITS are not necessarily in common with other geo-spatial data domains. A strategy to get the feedback loop specifications formally adopted by INSPIRE (maximum alignment scenario) is optimum in potential integration benefit, but will take many years to realise, is uncertain in terms of outcome and likely to undergo changes as a result of a consultation process. The intermediate option is similar to the minimum scenario, but adds an initiative to lobby for inclusion in INSPIRE – without upholding any action to deploy the feedback mechanisms for the TN-ITS environment. A summary of the assessment result is presented in Table 5.

**Table 5 Summary of assessment of alignment options for Feedback Loop**

| Scenario | 1. ITS support | 2. Integration benefits | 3. Minimum effort | 4. Feasibility |
|---|---|---|---|---|
| Minimum alignment | + | +/- | ++ | ++ |
| Intermediate ('minimum resistance') | ++ | + | + | + |
| Maximum alignment | - | ++ | - | - |

### 5.2.5 Preferred option

From the assessment on each of the aspects, a preferred alignment option can be selected. The preferred alignment option consists of the intermediate scenario for each aspect (and scenario Intermediate I concerning Download Services).

To summarize:

- The *minimum resistance option* of Triona is adopted; i.e. no changes are made to INSPIRE specifications, only changes to TN-ITS (ROSATTE) specifications that can be achieved with limited effort. The harmonised ROSATTE specifications are treated

as a non-mandatory extension within INSPIRE. The extension is coordinated by the TN-ITS platform. TN-ITS specifications can in a later stage be integrated in INSPIRE-TN.

- Member States are free to decide whether services are published on a national TN-ITS or INSPIRE portal, but all services are published on the EU TN-ITS portal.

- A download service for full downloads can be provided by Member States but is not mandatory.

- The feedback loop is implemented as developed and tested by ROSATTE and adoption of the ROSATTE feedback method in INSPIRE is promoted.

## 5.3 Legal Alignment Options

Based on the inventory of the state of play and legal frameworks of INSPIRE, ROSATTE, and the ITS Directive, the study team identified three basic approaches for the legal alignment of TN-ITS with INSPIRE.

a. EC adopts, as a delegated act in terms of the ITS Directive, the harmonised ROSATTE specifications to address the compatibility, interoperability and continuity of ITS-related road map data. The delegated act specifies that such data are to be included in the INSPIRE infrastructure.
b. The harmonised ROSATTE specifications are treated as non-mandatory extensions within INSPIRE. The extensions are coordinated by the TN-ITS platform.
c. The harmonised ROSATTE specifications are to become part of the INSPIRE specifications, in sync with the expected major update cycles of INSPIRE.

Subsequently, this chapter:
- Describes each of the options
- Identifies the benefits and drawbacks of each of these options

### 5.3.1 Option A

In this approach the ROSATTE specifications are imposed on the Member States, through a delegated act mandated by the ITS Directive. In addition, it would require that TN-ITS datasets would fulfil the data and service requirements of INSPIRE.

A major advantage of this approach is that the existing service infrastructure for TN-ITS can be used and that the specifications of TN-ITS data are by definition identical across the Member States. In addition, the decision (adoption of a delegated act under the ITS Directive) can be taken on a relatively short term i.e. within a few years.

The downside is that in practice broad support from the EC, the ITS Committee and the ITS Advisory Group is a precondition for such a decision. Although so far no fundamental criticism has been noted, member states and road operators may become hesitant if the act would appear to request a considerable effort on their side.

### 5.3.2 Option B

In this approach no additional legislation or delegated acts have to be adopted. The ROSATTE specifications are brought forward as an extension to the TN theme specifications of INSPIRE. This means that adoption is voluntary.

The clear advantage of this approach is that there are no doubts about the feasibility, as no Commission decision is needed. Consequently, the process can be started on a short term.

The drawback of option B is that there is no guarantee that the specifications will be implemented across the EU on a foreseeable term. There is also a risk that countries/road operators will elaborate diverging solutions because they find the ROSATTE specifications too complex, not tailored to their specific situation or simply out of unawareness.Option C In this approach, there is a complete integration with the INSPIRE specification and decision process: the ROSATTE specifications become part of the INSPIRE infrastructure.

An advantage of this approach is obviously that the existing legal and procedural framework of INSPIRE can be adopted for TN-ITS.

A disadvantage is that the process of getting additions and changes to the TN-ITS theme specifications formally accepted is a long-term process. Currently, the focus within the INSPIRE environment is on EU-wide implementation of the existing specifications. Modifications of the TN theme specifications do not fit well in this development for the short and mid term. It is also noted that the need for the foreseen modifications does clearly not originate from environmental domain – which is the basis of INSPIRE.

A further disadvantage of this approach is that the ITS community seems to object[2] to a far-reaching INSPIRE alignment.

### 5.3.3 Assessment Legal Options

The table below provides an overview of the assessment results. From the three options discussed above, it is concluded that Option A is most desirable in terms of a high-impact outcome within a not too distant future. The risk is however considerable that support for the required delegated act is insufficient at this point in time.

It is therefore recommended to use option B as an overall fall-back scenario, but also to start implementation on the basis of a non-mandatory extension with interested parties, ahead of potential adoption as a delegated act under the ITS Directive. Successful implementation of the extension as a voluntary effort of industry and road operators is likely to be beneficial for support by member state experts and EC and to increase the chances for adoption as a delegated act under the ITS Directive (Option A).

Option C is regarded unattractive or at least insufficient for any ambition on the short and mid term. It may however emerge after successful realisation of Option A or B.

**Table 6 Summary of assessment of legal alignment options**

| Scenario | 1. ITS support | 2. Integration benefits | 3. Minimum effort | 4. Feasibility |
|---|---|---|---|---|
| A | + | - | + | -/+ |
| B | ++ | - | ++ | ++ |
| C | -- | ++ | -- | - |

### 5.3.4 Relation between Legal and Technical/Organisational preferred options

The Technical/Organisational scenario of choice comes down to an approach relatively independent of INSPIRE, where some elements of the INSPIRE infrastructure are adopted but the realisation of the specific needs of the TN-ITS actors are given priority. Further integration, adoption of TN-ITS specifications by INSPIRE, is regarded desirable, but not a condition.

The preferred legal alignment option fits well with this approach:

[2] These concerns were for example expressed at the Member State Expert Meeting on 15 April 2013 in Brussels.

- An initiative to get TN-ITS (ROSATTE) specifications adopted through a delegated act under the ITS Directive resembles the priority given to fulfilment of specific TN-ITS requirements over full integration with INSPIRE.

- Starting implementation with committed parties on the basis of a non-mandatory extension on INSPIRE TN specifications, not requiring any legislative procedure or EC decision is in line with the ambition to start deployment on a short term and without dependency on factors beyond control of the TN-ITS stakeholders.

### 5.4 Residual risks Intermediate Option

The Intermediate Option was selected as it has the best overall score on the criteria listed in 5.1. It should be noted however that there are some risks with this scenario as well. In particular:

1. If no Delegated Act (under the ITS Directive) is adopted that includes a requirement for publication of TN-ITS, the current lack of commitment from major Member States is a risk for broad deployment as envisaged. An active approach / promotion of the concept towards these Member States is advised.
2. Assuming the uptake of TN-ITS as envisaged remains marginal over a longer term, and the specifications remain optional, there is a risk that they are not adhered to and Member States / road authorities make pragmatic diverging choices when publishing such data. When this occurs on a larger scale, it may be difficult to re-harmonise.

## 6. Synthesis and Recommendations

This chapter presents a synthesis of the findings and recommendations for subsequently governance, stakeholder support, legal framework, organisation of the value chain, legal framework, standardisation and planning. Recommendations are numbered R1, R2, etc.

### 6.1 General Considerations

In the ITS community there is general consensus that reliable map data are an essential building block for current and future ITS applications. ITS applications such as advanced navigation, and driver warning and assistance systems, can play a crucial role in avoiding accidents and mitigating accident impacts, and contribute to a reduction of traffic congestion and pollution.

Public authorities create road attribute data, such a speed limits, that are key component of digital road maps. The exchange of road attribute data between road authorities and digital map providers is suboptimal. Improving the efficiency of the road data value chain will provide European road users with better maps at lower prices.

If proportionate, alignment of ROSATTE to INSPIRE can reduce implementation and operational costs for public authorities and digital map providers, and can lead to more accurate and up-to-date maps for European road users. The study assessed different options to arrive at the alignment option that is feasible, cost efficient, maximises integration benefits, and is supported by the ITS community.

### 6.2 Organisation of the Value Chain

Member States differently organised, some have well–developed INSPIRE and / or ITS value chains, others are in the early stages of developing their INSPIRE portals. This implies that flexibility is required for Member States to organise their road data value chain in a way that is most suitable for their local circumstances. This can be achieved as follows.

R1: The minimum resistance option of Triona is adopted and the harmonised ROSATTE specifications are treated as a non-mandatory extension within INSPIRE.

R2: The extension is specified and maintained by the TN-ITS platform.

R3: At a later stage, the TN-ITS Deployment Platform can promote the adoption of (parts of) the TN-ITS specifications in the INSPIRE TN Specifications, or the replacement of parts of the INSPIRE-TN specifications by the TN-ITS specifications.

R4: Member States are free to decide whether services are published on a national TN-ITS or INSPIRE portal, but all services are published on the EU TN-ITS portal, operated by the TN-ITS Deployment Platform

R5: A download service for full downloads can be provided by Member States but is not mandatory.

R6: The feedback loop is implemented as developed and tested by ROSATTE and adoption of the ROSATTE feedback method in INSPIRE is promoted by the TN-ITS Platform.

### 6.3 Legal Framework

It is recommended that European governance concerning road map data is divided over the INSPIRE and ITS Directive. The interests of the ITS community should be leading.

R7: Request the EC to adopt, as a delegated act in terms of the ITS Directive, the harmonised ROSATTE specifications. Meanwhile, the harmonised ROSATTE specifications are treated as non-mandatory extensions within INSPIRE.

The EC can provide important impetus to the deployment of TN-ITS.

R8: Request EC to clearly delineate governance over INSPIRE-TN and TN-ITS between INSPIRE and ITS Directive.

R9: request clear support for TN-ITS by the EC, and roadmap for Member States:
- end-goal: all public road data accessible in electronic form
- now step-by-step: speed limits TERN in 2015

R10: request EC to define common use and re-use conditions for public road data in the ITS specifications, providing a sample text to the EC.

### 6.4 Stakeholder Support

Support from road authorities at different levels of government is essential.

R11: TN-ITS should obtain commitment from road authorities to adopt the TN-ITS specifications to publish their road data. How:

1) Clear proposition for road authorities:
    a. Direct and indirect benefits
    b. Appealing use cases from industry
    c. Insight into costs
2) Top-down support:
    a. Active support or legislation from EC

b. Convincing national organisations in Member States to participate

3) Bottom-up
   a. Involve regions and municipalities, e.g. through POLIS, EUROCITIES, CEMR
4) Provide a clear commitment (MoU) from private map providers to update their databases (not the end-user DB) within x weeks if public authorities provide correct road data.

### 6.5 Standardisation

R12: Assure presence from TN-ITS in CEN/ISO and INSPIRE expert pools.

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## List of Acronyms

| | |
|---|---|
| **CEN** | **European Committee for Standardization** |
| **EC** | **European Commission** |
| **EEA** | **European Environmental Agency** |
| **EP** | **European Parliament** |
| **ETSI** | **European Telecommunications Standards Institute** |
| **EU** | **European Union** |
| **EU27** | **Member States of the EU; Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom** |
| **IR** | **(INSPIRE) Implementing Rules** |
| **ISO** | **International Organisation for Standardization** |
| **ITS** | **Intelligent Transport Systems** |
| **JRC** | **EC Joint Research Centre** |
| **MS** | **Member State** |
| **PPP** | **Public Private Partnership** |
| **PSI** | **Public service information** |
| **R&D** | **Research and Development** |
| **ROSATTE** | **ROad Safety ATTributes exchange infrastructure in Europe** |
| **RTTI** | **Real Time Traffic Information** |
| **SRTI** | **Safety-related traffic information** |
| **SWOT** | **Strengths, Weaknesses, Opportunities, Threats** |
| **TERN** | **Trans-European Road Network** |
| **TN** | **(INSPIRE) Transport Networks** |

## Annex 1. Recommendations *RappTrans Study*

*Recommendation 1*

Set as end-goal: the publication of all publicly held road data that either originates from public authorities, or that can only be efficiently sourced by public authorities:

- All road and traffic regulations that can be applied to individual road sections and nodes, such as speed limits, driving direction, access restrictions (based on vehicle type, cargo class, weight, dimensions, time of day, day of the week, etc.), parking fees and restrictions, etc.
- Long-term roadworks.
- Infrastructure changes (new roads, changes to the layout of roads and intersections).
- Position on the road network of public services for vulnerable road users such as (special) schools (or school zones), retirement homes, hospitals, etc.
- Position on the road network of traffic lights, traffic calming measures such as speed bumps, accident hotspots, etc.

*Recommendation 2*

Make content available on a step-by-step basis, starting with what is valuable and readily available, while allowing for a gradual inclusion of other content types. This may imply the obligation for Member States to organise the collection of new road data.

*Recommendation 3*

Public road geometry data sets should remain available to digital map providers as reference sources, in particular for road infrastructure changes.

*Recommendation 4*

Adopt a classification of content as basis for deployment planning. The proposed classification is:

| Content class | Costs and effort Public Authorities | Need Digital Map Providers | Data Types |
|---|---|---|---|
| Class 1 | Low | Required for the development of basic map-based ITS applications, e.g. ISA, | Speed limit |

| Content class | Costs and effort Public Authorities | Need Digital Map Providers | Data Types |
|---|---|---|---|
| | | navigation | |
| Class 2 | Low | Not required but beneficial to the development of map-based ITS applications | Speed limit, other traffic regulations, position of informatory and warning signs on the road network |
| Class 3 | Medium | Required for more advanced map-based ITS applications | Speed limit, other traffic regulations, and informatory and warning signs, safety locations, road geometry changes |
| Class 4 | High | Required for advanced map-based ITS applications such as co-operative driving | Speed limit, other traffic regulations, informatory and warning signs, safety locations, changes in road and lane geometry and topology |

*Recommendation 5*

Set coverage of the TERN plus all motorways with content class 1 as target for 2015. This may imply that some Member States will have to collect new road data.

*Recommendation 6*

Request Member States to define a deployment plan for road data; defining per road type when a content class will be made available for digital map providers.

*Recommendation 7*

Initially adopt AGORA-C as map-agnostic location referencing method.

*Recommendation 8*

Promote short-term improvement of OpenLR or the development of another license-free map-agnostic location referencing method as alternative to AGORA-C.

*Recommendation 9*

Member States should decide on the organisation of the road data value chain in their country. This means Member States are to define what organisations are responsible for the creation and collection of road data, what organisations are responsible for aggregating and publishing road

data, and what organisation co-ordinates these activities and liaises with the various bodies within INSPIRE and ROSATTE.

*Recommendation 10*

Member States should decide on what level data is aggregated in their country. To facilitate discovery of the data sources, Member States should provide a transparent discovery service providing metadata for the different sources.

*Recommendation 11*

ROSATTE Implementation Platform should adopt the INSPIRE specifications for discovery services and metadata.

*Recommendation 12*

Road data changes should be published through case-by-case updates. Additional incremental and full data set updates should be encouraged but not made mandatory. This applies to road geometry, topology and attribute data.

*Recommendation 13*

Requirements should be adopted for the timely updating of public road data, with clear maximum update intervals per road data type. The intervals should be adopted progressively, ultimately leading to the final target intervals in the table below:

| **Data types** | **Change frequency** | **Maximum latency(s) regarding the update of public road data for the use in digital maps by Member States road authorities** | **Maximum latency(s) regarding the update of digital maps when new road data from Member States road authorities become available to the map provider** |
|---|---|---|---|
| Traffic regulations (e.g. speed limits) | Very high | One month before the regulations take effect | Within two weeks |
| Traffic signs | High | One month before the regulations take effect | Within two weeks |
| Road Geometry new roads | Low | One month before opening of the road | Within two weeks |
| Road Geometry, long-term roadworks | High | One month before the roadworks start | Within two weeks |
| Traffic restrictions (vehicle dimensions, weight, temporal, tolling, routing and parking) | Medium | One month before the restrictions take effect | Within two weeks |
| Topology, road surface, lane information (number, width, divider, connectivity) | Medium | One month before road changes are effectuated | Within two weeks |
| Traffic lights | Low | Within one month before/after it changes | Within two weeks |
| Crossings and stops (pedestrian, tram) | Low | Within one month before/after it changes | Within two weeks |
| Speed bumps, accident hotspots | Low | Within one month before/after it changes | Within two weeks |
| Slope and banking | Very low | Within one month before/after it changes | Within two weeks |

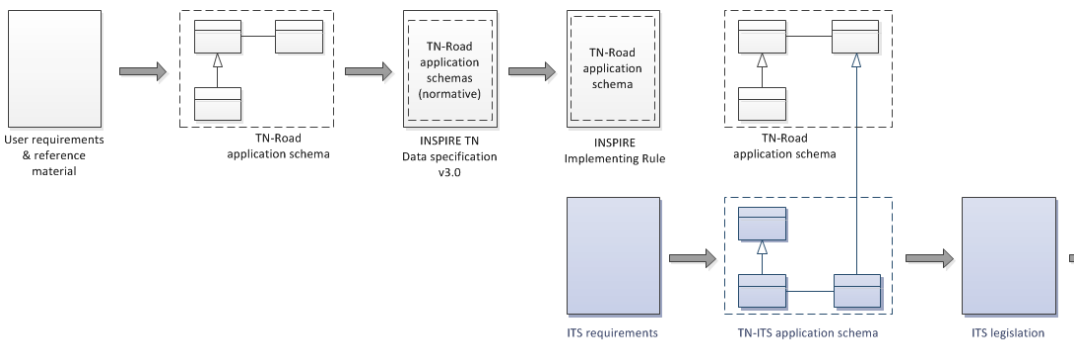
*Recommendation 14*

The recommended organisational framework combines INSPIRE and ROSATTE (see table below). ROSATTE data specifications are adopted as extension to the INSPIRE TN specifications, further referred to as the TN-ITS specifications.

| | Member States | INSPIRE | ROSATTE Implementation Platform |
|---|---|---|---|
| Development | • | Continued development of the INSPIRE service architecture and organization | Adoption of the INSPIRE service and service discovery architecture. |
| | | Adoption of ROSATTE data specifications as an extension to the INSPIRE TN specifications. Compliance testing of ROSATTE. | Developing and proposing ITS specific road data coding specifications, location referencing, quality assessment, best implementation practices, etc. |
| Operation | Publishing of road data services compliant with the TN-ITS extension | Assuring deployment in MS compliant with the specifications of the TN-ITS extension | Act as INSPIRE Spatial Data Interest Community for ITS (SDIC-ITS) |
| | | | Delegation of representatives in other relevant INSPIRE organisations (Expert Pool, LMO, DT) |
| | Publishing of ITS road data service metadata | | Monitoring and accommodating the evolving needs of private and public road data users (e.g. navigation providers and road authorities) |
| | Monitoring and managing of ITS road data quality | | Implementation planning and attuning between digital map providers and public authorities |
| | Discovery services development and operation | EU geoportal development and operation | Developing and proposing ITS specific road data coding specifications for new road data types. |

*Recommendation 15*

The ROSATTE data specifications should be adopted as extension to the INSPIRE TN specifications, further referred to as the TN-ITS specifications. The required processes – such as testing of the compliance of the specifications with INSPIRE - should be initiated as soon as possible, in line with the following approach:



*Recommendation 16*

The Implementation Platform proposed by ROSATTE serves as a forum to discuss, plan and support the implementation of the TN-ITS specifications by Member States and the Digital Map providers. It also serves as a forum where future road data needs of the users of digital maps – private and public - can be discussed and anticipated, and where the development of coding methods and quality levels for new data types are initiated.

*Recommendation 17*

The ROSATTE Implementation Platform acts as Spatial Data Interest Community on ITS (SDIC-ITS) within INSPIRE. ITS representatives should further become members of the planned “expert pool” for INSPIRE maintenance, from which experts can be selected for updates/maintenance of INSPIRE Technical Guidance documents.

*Recommendation 18*

The EC should adopt specifications as part of the ITS Directive that require the adoption of the ROSATTE specifications as extension to the INSPIRE TN specifications, and require Member States to comply with these specifications if they publish road data.

*Recommendation 19*

If the foregoing measures do not result in the required progress, the European Commission may issue a Deployment Proposal Directive within the framework of the ITS Directive (subject to a positive result to the impact assessment), requiring Member States to collect and publish new road data to meet the agreed deployment planning (recommendation 5).

*Recommendation 20*

The EC should adopt common access and re-use conditions as part of the ITS Directive that apply to all road data publishing by public authorities in the EU. Member States and (semi) public sources within each Member State should be free to add or change conditions as long as the common conditions are not violated. The conditions should cover:

- Guaranteed public access to public road data; fair, proportionate and non-discriminatory.
- The right of digital map providers to create combined datasets from multiple public data sources.
- The rights and obligations of digital map providers when copying, reformatting, rearranging, adapting (e.g. to improve consistency), translating, and reproducing public road data (and its updates).
- The rights and restrictions for map provider to exploit the combined data sets.
- Rules on the use of trade names, trademarks, service marks, etc. of public data sources.
- Basic ground rules for license fees; these should not exceed the total costs of collecting, producing and disseminating road data, together with a reasonable return on investment.
- Waiver of the liability of the public data source for damages resulting from data errors.
- Obligation for map providers to warn the end-user that the map data can contain errors and that the public authorities cannot be held liable for such errors.
- Data quality monitoring, classification and management rules, including timely update arrangements.

*Recommendation 21*

The EC should support the development of standards for coding road data content classes.

*Recommendation 22*

The EC should promote the development of an objective optional method to classify data quality of road data sets of specific data types, based on the complementary work of INSPIRE and ROSATTE.

*Recommendation 23*

The EC should promote the development and promotion of *best practices* for the collection, aggregation and publication of road data by Member States with more developed value chains.

## Annex 2. Overview of implementation status national INSPIRE portals

The table below provides the status of national INSPIRE portals and available TN-theme related datasets. The table is the result of a quick scan on the internet and may not be completely up to date.

| | Land | Inspire portal found | Inspire portal includes TN theme | Data from Road authority | Type of Authority | Relevant Datasets 1 | Relevant Datasets 2 | Relevant Datasets 3 | Relevant Datasets 4 | Details |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Austria | Yes | Yes | Yes | Regional | Bridges | Roadway | Tunnels | Cycling roads | |
| 2 | Belgium | Yes | Yes | No | Regional / local | Regional road network | | | | Irisbox |
| 3 | Bulgaria | No | No | | | | | | | |
| 4 | Cyprus | No | No | | | | | | | |
| 5 | Czech Republic | Yes | Yes | Yes | National | Road network | Cycling routes | | | |
| 6 | Denmark | Yes | Yes | No | Local / national | Transport networks | Distance | Direction | | Ministry of Geodata |
| 7 | Estonia | Yes | Yes | No | National | Speed limit | Busstops | Traffic networks | Local / national roads | National Topografical Database ( Etak ) |
| 8 | Finland | Yes | Yes | No | National | Road design (lighting) | Speed limit | Number of vehicles | Rail network | |
| 9 | France | Yes | Yes | Yes | Regional | Regional road network | | | | |
| 10 | Germany | Yes | Yes | Yes | Regional | Transport networks | Road network | | | Sorted by Lander |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 | Greece | No | No | | | | | | | |
| 12 | Hungary | No | No | | | | | | | |
| 13 | Ireland | Yes | No | | | | | | | |
| 14 | Italy | No | No | | | | | | | |
| 15 | Latvia | Yes | Yes | No | National | Transport networks | | | | Geoportal National government |
| 16 | Lithuania | No | No | | | | | | | |
| 17 | Luxemburg | Yes | Yes | No | National | Roadway | Railway | Cable way network | | |
| 18 | Malta | No | No | | | | | | | |
| 19 | Netherlands | Yes | Yes | Yes | National | Roadway | Bridges | tunnels | | |
| 20 | Poland | Yes | Yes | No | Regional / local | Transport networks | Road network | | | Centre of Documentation, Geodesie en Carthography |
| 21 | Portugal | Yes | Yes | No | National | Railway network | Road network | | | Portuguese Geographical Institute |
| 22 | Romania | Yes | Yes | No | National | Transport networks | | | | National agency of cadastre and land registration |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 | Slovakia | Yes | Yes | Yes | National | Road design | Road network | | | Slovakian road administration |
| 24 | Slovenia | Yes | Yes | Yes | National | Transport networks | | | | Ministry of Infrastructure |
| 25 | Spain | Yes | Yes | Yes | National | Transport networks | Road network | | | Ministry of Development |
| 26 | Sweden | Yes | Yes | No | | Transport networks | | | | |
| 27 | United Kingdom | Yes | Yes | No | | Railway | Bridges | Transport | | Consultancy (only data of Northern Ireland) |

# Annex 3. Excerpt of the TN-ITS ToR

The main elements of the TN-ITS ToR are

- Objective: The objective of the Association is to give support, on a permanent basis, for the implementation of priority actions 1.2 and 1.3 of the Directive 2010/40/EU of the European Parliament and of the council of the European Union (the "ITS directive").
- Activities:
    - Ensure that the Association has the necessary means, resources and funding to operate according to these statues.
    - Make full use of the result of the TN-ITS framework and develop these concepts further.
    - Enable the public authorities to comply with the ITS Directive, priority action 1.2 and 1.3, within the scope of the TN-ITS framework by developing, maintaining and publishing tools and offering consultancy services for the public authorities.
    - Consider the need for formal or other form of standardization for the underlying specifications.
    - Work with relevant authorities to raise awareness of the Association and its objectives, motivate them to become members and to contribute to and use the Association actively.
- Operational Management:
    - Roles of a number of officers managing the association
- Governance:
    - The structure, role and responsibilities of the General Assembly, consisting of all members. The GA appoints senior officers and decides on membership fees, changes to the ToR.
    - The structure, role and responsibilities of the Board. The board is –among other things- responsible for the long term strategy and planning the annual activity plan.

Types of memberships and fees:

- Different types of members are recognised
    - Active: public authority or otherwise responsible for road or spatial data through the Association. An Active Map Maker or other commercial organisation provides services or software through the Association.
    - Advisor: advises one or more working groups
    - User: non-active member, using services of the Association
    - Supporter: receives information about the business of the Association, invited to seminars etc.
- Some rules are defined concerning conditions for membership, suspension and resignation.

Principles and conduct.

Financial management:

- Two members of the Board and the President are granted PoA on behalf of the Association. These three members are appointed by the GA. They also establish bank accounts in name of the Association.
- An annual activity and budget includes budgets for revenue and expense, measurable goals and targets for active working groups, target numbers for new members.