



ROad Safety ATtributes exchange infrastructure in Europe

Organisational aspects and expected benefits

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Abstract: This document tries to stimulate future implementation of ROSATE project results by analysing organisational aspects, exploring expected benefits for data providers and data users, analysing deployment aspects and promoting the exploitation of results.

Keyword list: organisational aspects, expected benefits, questionnaire-based studies, public authorities, map providers, motivation for use, data quality, deployment roadmap, IPR issues

Document control sheet

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Executive Summary

ROSATTE D6 Organisational Aspects and Expected Benefits is structured in seven chapters.

First chapter looks into familiarising the reader with the project objectives and scope, purpose and structure of the report and the project methodology approaches.

Chapter 2 describes the expected benefits of a ROSATTE data-exchange framework. The public authorities and the map providers discuss their motivation and the advantages of using ROSATTE. A study focused on ROSATTE expected benefits has been conducted in 2009. Its results are presented in section 2.2. Moreover, the potential benefits of using ROSATTE are being assessed and discussed in section 2.3.

Chapter 3 approaches the organisational aspects of ROSATTE framework. A study focused on the investigation of ROSATTE-related organisational issues has been conducted in 2009. Its results are presented in section 3.1. Experiences from different projects/similar initiatives, as well as different organisational barriers identified by different actors' point of view - motorway operators, public authorities and map providers - are also discussed (section 3.2).

Legal issues, Intellectual Property Rights (IPR) and standardization related aspects are identified in chapter 4. The results of two studies conducted in 2010 are presented here: the first study focused on the European legal aspects (section 4.2) and the second approached IPR issues for road data at the national/regional level (section 4.3).

Chapter 5 discusses the deployment-related aspects of the ROSATTE framework. This chapter gives an overview over the data collection, exchange and update issues, describes different road database working models, looks into data quality and certification, as well as into the involvement/commitment of stakeholders, finalising by proposing a deployment road map (section 5.5).

ROSATTE guidelines are proposed by chapter 6. This part of the report aims at providing guidelines for data supplier (section 6.1), for data consumer (6.2) as well as on metadata to be provided by the public authorities in ROSATTE (section 6.3). The links between ROSATTE and EasyWay guidelines on speed limit information are also highlighted in section 6.4.

Last, recommendations on next steps for ROSATTE are presented in chapter 7. Overall implementation recommendations are provided, together with recommendations over the creation of a service-oriented partnership organisation (7.2) and suggestions for future work items for ROSATTE Forum.

Enclosed to this report:

1. Appendixes document, providing the extensive results of the three studies conducted in Work Package 6 (on organisational aspects, expected benefits and road data IPR issues), as well as detailed description of the working models discussed in section 5.2 and a in-depth overview of the Swedish example on data collection, exchange and update.
2. Full text in French of ROSATTE Legal Study conducted by SETRA in 2010, identifying main legal issues regarding property, compliance/responsibility and patents/standards at the European level (the conclusions in English are included in the main report, section 4.2).

1. Project description

1.1 *ROSATTE Contractual References*

ROSATTE is a STREP submitted for the call FP7-ICT-2007-1. The acronym stands for *ROad SAFety ATtributes exchange infrastructure in Europe*. The Grant Agreement number is 213467 and project duration is 36 months, effective from 01 January 2008 until 31 December 2010 (after the contract amendment in March 2010). The agreement is with the European Commission, DG INFSO.

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1.2 *Project objectives and scope*

The ROSATTE project intends to develop the enabling infrastructure and supporting tools that will ensure Europe-wide access to safety road attributes with a focus on incremental updates. This infrastructure is intended to facilitate a continuous supply of such data at a high and steady level of quality from the parties that administer and control the attributes to third parties and thereby to help maintain near-permanent correctness of such data in data sets for use in road safety applications. In addition, the infrastructure will serve administrative internal functions at data providers, which will in turn be beneficial for the system of safety road attributes as a whole. Improved and more extended availability of up-to-date safety road attributes is expected to result in improved and extended functionality of driving assistance systems, and thereby to contribute to more efficient road operations and increased traffic safety.

The flow of data addressed in ROSATTE may be seen as a data chain, which is depicted in the upper part of Figure 1. Public road administrations and other road operators, which are seen as the most efficient and reliable source for update information, are at the beginning of the chain. Processes to define, install and

change safety road attributes, like issuing of regulations and work orders, are not included in the scope of the project. ROSATTE looks only at the outcome of these processes and especially at incremental changes in attributes. For this, ROSATTE will study database storage of attribute information and update mechanisms (on the data provider side) and methods for extracting the information (both complete data sets and incremental updates).

The extracted information is the input for the data exchange infrastructure, which is the topic of this project. On the user side, the project will study data integration, especially at providers of digital map databases for navigation systems and other driving assistance applications. The data chain from map providers to in-vehicle systems, which is depicted in the lower part of Figure 1, is not part of the project scope. Of this chain, especially the part representing incremental updating of the in-vehicle map database at regular, short intervals, will benefit from and provides at the same time a rationale for the data chain that the project intends to realise.

Setting up this chain has a clear benefit for public authorities and road operators through its potential contribution to improving road traffic safety, while giving the industry the opportunity to improve the quality of map databases used in in-vehicle systems, and enabling new safety applications that need map data with Europe-wide complete and up-to-date coverage of road safety attributes.

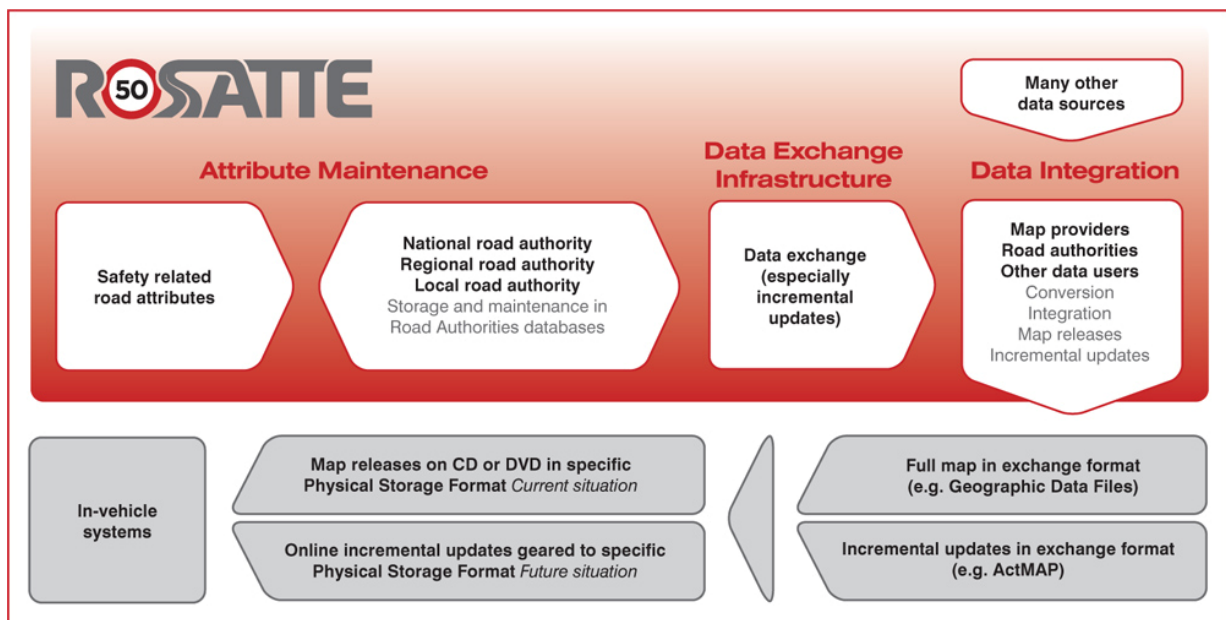


Figure 1 - The scope of the ROSATTE project and the ROSATTE data chain

1.3 Purpose and structure of the document

The purpose of this document is to investigate:

- the benefits expected by the different stakeholders involved, mainly public authorities and map providers (Chapter 2),
- the organisational aspects concerning the implementation of ROSATTE framework (Chapter 3),
- the legal aspects and IPR issues concerning road data among the Member States (Chapter 4),
- and to identify solutions for deploying ROSATTE.

An implementation road map is proposed (Chapter 5) and guidelines to implement ROSATTE are provided (Chapter 6) as well as a set of recommendations for the future of ROSATTE (Chapter 7).

1.4 Approach and methodology

In order to make possible an in-depth analysis of ROSATTE needs in terms of organisational aspects, expected benefits and deployment aspects, WP6 partners organised a couple of studies. The WP6 studies have been spread across its three complementary tasks: Organisational aspects (T6.1), Expected benefits (T6.2), Deployment aspects (T6.3).

The first two studies were questionnaire-based and addressed the public authorities (representatives of the Member States) and the map-makers representatives.

Study 1: Organisational aspects

This survey focussed on ROSATTE organisational aspects related issues assessment. The study was launched in spring 2009 and has been organised under Task T6.1. The results are discussed in Chapter 3.

Study 2: Expected benefits

This study assessed the expected benefits of using ROSATTE. It was launched in November 2009 under Task T6.2 and its results are available in Chapter 2.

Study 3: IPR issues and legal aspects

This third investigation was conducted under Task T6.3 and identified the legal aspects and IPR issues influencing ROSATTE deployment.

The investigation was two-fold:

- A European legal study was conducted by one of ROSATTE partners, SETRA, aiming at identifying the Intellectual Property Rights boundaries influencing ROSATTE from the legal framework point of view at the level of the Member

States. The study looked mainly at property issues, compliance and responsibility and standards;

- A questionnaire-based survey identified the main IPR tendencies in Europe for data road attributes and was launched in July 2010

Both studies' results are discussed in Chapter 4.

The results of the studies have been reordered for a better reading flow.

Based on the results of these studies as well as on the results and experiences gained during the project by ROSATTE partners, this report further proposes:

- An implementation roadmap for ROSATTE (Section 5),
- Guidelines for ROSATTE implementation (chapter 6), and
- Recommendations for ROSATTE next steps (Chapter 7).

2. Expected benefits of a ROSATTE data exchange framework

2.1 *Motivation to use a ROSATTE framework*

2.1.1 *Need for exchange of safety-relevant map data*

Accurate and up-to-date safety related road network attributes are particularly important for safe driving along the European road network. Over the past years, important research and development activities have been undertaken concerning Intelligent Transportation Systems (ITS), Intelligent Speed Adaptation (ISA), Advanced Driver Assistance Systems (ADAS) etc. Recent focus of ADAS has also widened to include driving efficiency and fuel economy, and road user charging applications. Digital maps play an important role in these type of applications. With such systems becoming technically and commercially feasible, high quality map content becomes a prerequisite for their success.

Especially with regards to safety related road content, public authorities are considered to be key player for the supply of relevant data in a standardised way and with a minimum level of required quality.

Map providers of digital maps for in-vehicle applications continuously update their map databases, using field surveys and a multitude of other sources of information. Today, update of digital maps are typically delivered periodically (e.g. once every year/quarter). In near future this is expected to evolve towards instantaneous incremental updating of the digital maps used of the in-vehicle applications.

2.1.2 *The objectives addressed by the ROSATTE framework*

The ROSATTE framework consist of the infrastructure and supporting tools that will ensure European access to road safety attributes including incremental updates.

The overall objectives of the ROSATTE framework are to:

- Facilitate access to, exchange and maintain European-wide core road safety spatial data from national/regional/local sources by standard procedures;
- Enable multi-level aggregation and update of European-wide safety map data;
- Identify the technical and organisational issues to be taken into account before and during deployment.

The data flow that is addressed in ROSATTE may be seen as a data chain. The establishment of a ROSATTE infrastructure has a clear benefit for public authorities and road operators through its potential contribution to improving road traffic safety, while giving the industry the opportunity to improve the quality of map da-

tabases used in in-vehicle systems, and enabling new safety applications that need map data with Europe-wide complete and up-to-date coverage of road safety attributes.

Road safety attributes so far addressed by the ROSATTE framework are speed limit; traffic signs; lane information; traffic lights; crossings; toll barriers; motorway junctions; tunnel access; gradient (slope); transverse gradient (banking).

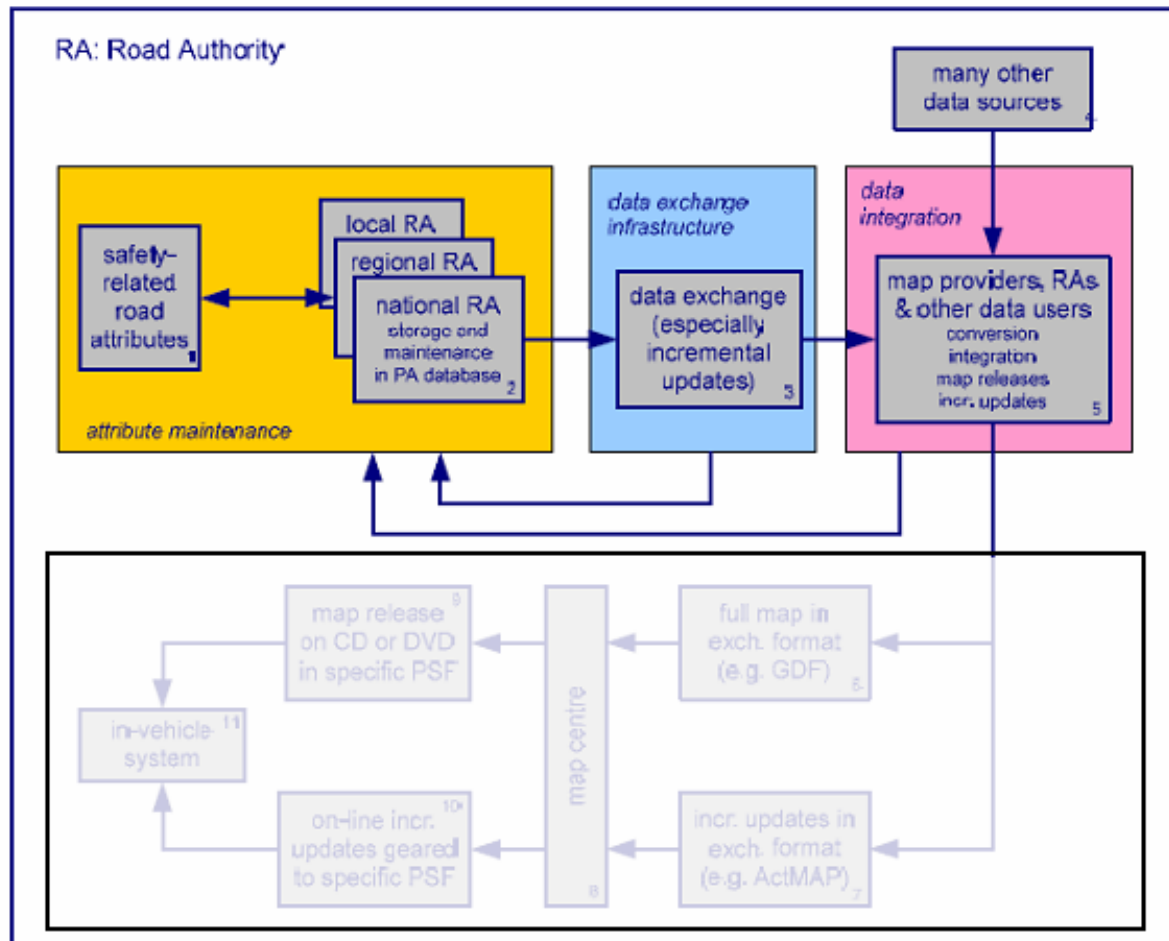


Figure 2 - The ROSATTE framework

For the public authorities, road operators and map makers, the implemented ROSATTE infrastructure is expected to contribute to:

- Considerably decrease the time delay between the update of an attribute in the road database at a road authority and its availability in the end-user map database;
- Significantly extend the coverage of up-to-date safety-related road information in digital map databases;
- Provide mechanisms to assure high attribute value quality;

- Establish at road authorities more efficient processes for maintaining safety related data;
- Facilitate smooth and efficient data integration at map providers.

The next sections provide motivation from both map providers and public authorities.

2.1.3 Motivation of the map providers to use the ROSATTE framework

NAVTEQ

The digital map provides an important framework for many ADAS applications. The map enables vehicle positioning, acts as a connecting layer for different types of sensor data, and provides additional data about the environment for sensor data fusion and direct use of applications. Map enabled ADAS applications require higher accuracy and detail of map data, both for geometry and attributes, and an increased coverage of attribute information, compared to the digital map as it was originally specified for navigation applications. As a result, the specification of the digital map has evolved over time, and is still doing so.

Another important aspect is the update cycle. The world is constantly changing, and so is the road network, both in geometry and attributes. This means that the digital map for in-vehicle applications needs to change as well, it needs to be maintained. Map providers use various sources for information for capturing changes, like contacts and arrangements with public authorities and other organisations, direct observation (field surveys), and crowd-sourcing (a more recent phenomenon).

The ROSATTE framework, based on a common specification for the provision of update information, has especially focused on road attributes that are controlled by public authorities. This concerns in the first place attributes that are or may be expressed by traffic signs/traffic regulations. Much of this information is of critical importance for ADAS applications, especially in the area of driver comfort and road traffic safety (speed limits, warning signs, priority signs etc.). To be effective highly up-to-date maps concerning such attributes are important. The industry, including map providers, is working on mechanisms to improve the update cycle of in-vehicle map data (the downstream part of the data chain). The objective is on-the-fly incremental updating of the map that is onboard the vehicle. The in-vehicle map can hereby be kept really up-to-date on a day-by-day basis.

This opportunity requires the timely, consistent and reliable availability of update information of high quality (the upstream part of the data chain). Current data sourcing methods are not always able to meet these requirements sufficiently. The basic idea behind the ROSATTE framework is that public road authorities are entitled to decide for and implement changes to these attributes. The ROSATTE framework could be a foundation on which we can build good ICT (Information and Communication Technologies) infrastructures on the part of road authorities for

maintaining information concerning road attributes. It will also enable building of mechanisms to regularly extract changes in that information in terms of location and attribute change. Extracted on a daily or weekly basis, and processed in the same time intervals by the map providers, such information on changes could arrive in the vehicle and be incorporated in the in-vehicle map nearly instantly. This will provide an important contribution to improving and optimising the operation and usability of ADAS applications.

Important prerequisites for this to work are active involvement and cooperation of public road authorities. The project therefore aims at conceiving solutions that also provide benefits for the authorities, for instance in terms of an improved map-based ICT infrastructure, which can also be used for other road related information than the one that is specifically relevant for ROSATTE. This then is a more direct and tangible benefit in addition to the major benefit to be expected, an increase in road traffic safety, which is a general goal of public road authorities.

TomTom/Tele Atlas

There is a growing interest by car drivers in map enabled in-vehicle safety support systems and speed alert systems. In fact, most of the navigation systems today have some sort of speed advice function build in. Truck and bus drivers can today benefit from navigation application which route them in an intelligent way (by considering axle load, height, weight, length, dangerous goods restriction etc.). These road attributes were collected by map providers from various sources - via field surveys, input from authorities, mapping agencies etc. Typically the above mentioned systems perform the best for the highest road classes (e.g. European motorways). For lower road classes (e.g. local roads) today's sourcing and maintenance mechanism are often not cost efficient.

Many vehicle manufacturers have recently successfully launched map enabled applications in their series vehicles, e.g. Traffic Sign Recognition - Speed Limit Recognition (Daimler, Opel, BMW etc). Most of them use a combination of a camera system, for detecting traffic signs along the road, with an on board digital map. The latter provides relevant information if the camera system fails, or may help to increase the confidence in detecting and interpreting traffic signs. We also witness a growing success of after-market speed alert systems based on maps from map providers (e.g. RoadPilot, Coyote).

It is well known that adopting standards is an important approach to reduce costs related to map creation, maintenance and delivery. Therefore the digital mapping industry is intensively working towards standards. Recent initiatives are:

- Navigation Data Standard (NDS): emerging interoperable run time map format to be used in navigation system. It supports map updating and map features/attributes enabling Advanced Driver Assistance Systems.
- ADASIS v2: describes an interface between multiple ADAS applications and a central map in the vehicle.
- ROSATTE

Recently TomTom introduced the driver into the map maintenance chain using its MapShare technology. By this innovative approach the end user benefits directly from fresher maps - there is no need to wait for an official new map release every quarter or every year. Despite the fact that corrections of speed limits can directly be reported by the drivers, the majority of their reports address traditional navigation attributes as missing one way streets, errors in street names, missing/errors in Points of Interest etc.

Another attention point is the fact that for many lower class roads, drivers “accept” lower quality and are therefore less motivated to actively report changes in real world compared to the digital map they use. One can expect that remote, rural, low traffic density roads get least of the attention of drivers actively filing reports.

The statistical validation of the reports can be much more efficient and reliable if the provider of the information is known. For example, one can include moderators in the loop, continuously reviewing contributions from others. This approach is used by Wikipedia. However, the highest form of confidence in provided data is to know it originates from the authority managing and publishing the updates.

Tele Atlas, the content provider of TomTom, is looking at sourcing updates of safety relevant attributes from road authorities and other “trusted” content providers. Typically, road authorities manage the updates of speed limits and traffic signs as they update their own national regulation and/or road databases. This sourcing from reliable sources is currently explored in the ROSATTE project.

2.1.4 Motivation of public authorities to use the ROSATTE framework

Road authorities often operate road databases with attributes to support their business systems and attributes of general interest e.g. traffic regulations. The use of information from PAs databases has so far mostly been used for internal purposes.

Only a minority of the European Member States have so far established national road databases in close cooperation with road authorities (data owners) at national, regional and local levels. The major problem is how to ensure timely and easy access to road information owned and maintained by thousands of road authorities. The result of the ROSATTE project - the ROSATTE framework - is expected to provide solutions which can be integrated into the road authorities own workflow.

Road authorities, at national level, are also often assigned sectoral responsibilities for the entire road transport system. This includes issues relating to the environmental impact of the road transport system, road traffic safety, and accessibility as well as issues relating to intelligent transport systems, public transport and commercial traffic. It is important for PAs to make better use of the existing public information, from all organizational levels, to fulfil sectoral goals (e.g. decrease the number of casualties and injuries). For example Transport for London is running a trial of ISA at the moment.

Identified expected benefits for public authorities of the ROSATTE framework:

- facilitates the establishment of an efficient and quality assured data supply chain from authorities to commercial map providers;
- the establishment of an efficient and quality assured data supply chain for exchanging information between authorities to produce a national data set;
- concepts, methods and tools for aggregation of data - solutions which also could be integrated into the authorities own workflow;
- the ROSATTE framework could assist road authorities to establish databases, eventually based on maps from commercial map providers, giving substantial benefits and assistance to realise their mandate of managing the road network;
- safe and suitable access to a number of public road databases in different countries in a standardised and homogeneous manner;
- presence of up-to-date safety related road attribute information in in-vehicle applications, and getting this information to the driver at the point they are making a decision, is crucial in improving road safety;
- better use of existing public road safety information will contribute (though relevant ADAS applications) to achieve the stated targets for road traffic safety improvement).

2.2 Study on ROSATTE Expected benefits

2.2.1 Introduction

As an input to the work on expected benefits from the use of road safety attributes a survey was developed with questions relating to benefits and the use of road safety attributes as well as questions about data quality and the need for a central data store.

The survey was carried out as a web-survey with two different versions depending on organisation or company answering. One version with 24 questions was developed for the road authorities and a shorter version with 9 questions was developed for map providers, service providers and other stakeholders

More detailed information can be found in Appendix 4, which contains:

- Questionnaire used in the survey
- Results overview and conclusions
- Data collected per country/organisation

2.2.2 Participation overview

An email was sent to over a hundred organisations and authorities inviting them to answer the survey. It was open for six weeks and 34 organisations, companies or authorities answered.

To get a better distribution between countries and local and regional levels, interviews were conducted with several actors who had not answered the web-survey. These interviews followed the questions from the survey as a basis and the answers were incorporated in the results from the web-survey.

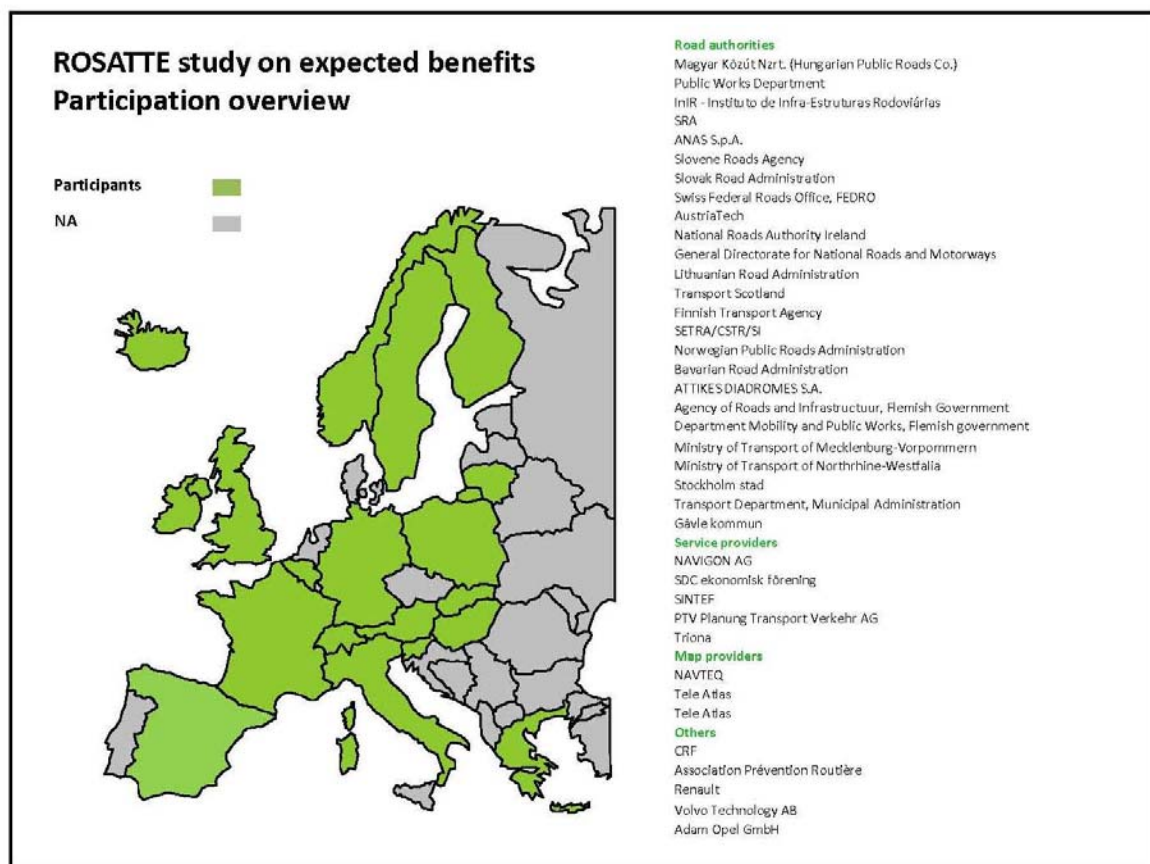


Figure 3 - Expected benefits study: overview of the participating stakeholders

The following list shows the respondents to the online-survey and the subsequent interviews.

Table 1: respondents to the online-survey and the subsequent interviews

Road authorities		
Company	Level	City
Magyar Közút Nzt. (Hungarian Public Roads Co.)	National	Budapest
Public Works Department	National	Nicosia
InIR - Instituto de Infra-Estruturas Rodoviárias	National	Lisboa
SRA	National	Borlänge
ANAS S.p.A.	National	Rome
Slovene Roads Agency	National	Ljubljana
Slovak Road Administration	National	Bratislava
Swiss Federal Roads Office, FEDRO	National	Bern
AustriaTech	National	Vienna
National Roads Authority Ireland	National	Dublin
General Directorate for National Roads and Motorways	National	Warsaw
Lithuanian Road Administration	National	Vilnius
Transport Scotland	National	Glasgow
Finnish Transport Agency	National	Helsinki
SETRA/CSTR/SI	National	Paris
Norwegian Public Roads Administration	National	Lillehammer
Bavarian Road Administration	Regional	Munich
ATTIKES DIADROMES S.A.	Regional	PEANIA
Agency of Roads and Infrastructuur, Flemish Government	Regional	Brussels
Department Mobility and Public Works, Flemish government	Regional	Antwerp
Ministry of Transport of Mecklenburg-Vorpommern	Regional	Schwerin
Ministry of Transport of Northrhine-Westfalia	Regional	Düsseldorf
Stockholm stad	Local	Stockholm
Transport Department, Municipal Administration	Local	Oslo
Gävle kommun	Local	Gävle
Service providers		
Company		City
NAVIGON AG		Würzburg
SDC ekonomisk förening		Sundsvall
SINTEF		Trondheim
PTV Planung Transport Verkehr AG		Karlsruhe

Triona		Borlänge
Map providers		
Company		City
NAVTEQ		Veldhoven
Tele Atlas		Gent
Tele Atlas		Harsum
Others		
Company	Category	City
CRF	Motor organisation	
Association Prévention Routière	Motor organisation	PARIS
Renault	Car manufacturer	BOULOGNE Cedex
Volvo Technology AB	Car manufacturer	Gothenburg
Adam Opel GmbH	Car manufacturer	Rüsselsheim, Germany

2.2.3 Study limitations

As can be seen in the Figure 3, the coverage of road authorities on a national level is quite good but we did not manage to cover all EU-countries, as planned. Another limitation is that the coverage of regional and especially local authorities is too limited to draw well-founded conclusions.

Receiving input on ROSATTE from all-level public authorities (local, regional and national), as well as from the national police representation is considered as very important and their participation shall be assured in the future ROSATTE related approaches.

2.2.4 Summary of results

This section provides a summary of the results of the “Expected benefits” survey for road authorities (4.2.4.1) and map providers and other actors (4.2.4.2).

Road authorities

This subsection is a brief summary of the response to the survey from road authorities.

Existing business systems and databases. Other ongoing projects beside ROSATTE may influence one another or they may benefit from each other, therefore it is interesting to know what is going on in your organisation/country. The road authorities were asked if they have stand alone business systems and databases for use

within their own organization and a majority (74%) manage such systems. A minority of these systems and databases are managed, however, at the national level.

Interest in a geoportal or other data store. To increase data availability and usage a portal or data store can be of use, it will facilitate discovering data and information about whom to contact for more information and deliveries. There is a relatively strong interest among road authorities (44%) to supply data to a geoportal, but there are still many organizations that haven't considered the issue. Availability of data of neighbouring administrative divisions is seen as an important advantage of a geoportal. Other major benefits identified are "Easier access" and "Improved data quality".

Availability of road safety attributes. Road authorities, map providers, safety systems suppliers and end-users have a substantial need for road data including road safety attributes. For efficient use the data must be easily available.

- Charging for the data.
 - It is not possible to distinguish a common strategy for how the authorities intend to charge for data.
- Willingness to share data.
 - Most organizations are willing to share data but in some cases there are restrictions included.
- Reason for supplying road safety attributes.
 - The organizations consent to the proposed reasons for providing data. It is notable that the "economical reason" is not a significant reason for data supply.

Collection of data. The collection of data is a central and time consuming activity and the road authorities were asked to assess the importance of a number of factors that motivate the collection and updating of road safety attributes.

- Considered as most important.
 - Easier access
 - Lower accident rates
 - Better use
 - Improved data quality
- Considered as less important.
 - Economical issues
 - Environmental issues (e.g. fuel consumption)
 - Legislature ("forced" to supply them, INSPIRE directive)

The general opinion is that priority of both attributes and road classes helps to speed up data collection.

Most organizations also see possible benefits with interactions between other on-going internal projects. The possibility of sharing resources is often cited as an advantage.

It is not possible to distinguish a common strategy for updates. The higher classed road network is generally higher in priority in terms of up-date rates and update frequency.

A majority (75%) of respondents could not give a time estimate for when an up-dated data set of safety attributes could be available.

Data quality - data specifications. To be able to assess and compare data from different sources it is important to know the quality of the data. A majority of the responding authorities indicate/say:

- There are existing demands on thematic accuracy in data specifications.
- There are existing demands on position accuracy in data specifications.
- They live up to the quality demands in their data specifications.
- Have decided to comply with a certain map database standard.

Metadata. Metadata is often defined as data about data and is important for users who are searching for data for a specific purpose and needs to evaluate its usage and compare it to other sources of data. Metadata should for example include information about quality, lineage, extent and contact information for the actual resource. There seems to be a significant lack of metadata but several organizations are planning to add metadata to their data in the future. Perhaps INSPIRE could be the trigger.

Benefits of the outcome of the ROSATTE project.

- Most organizations see possible benefits of the outcome of the ROSATTE project, mainly "Learned experiences/increased competence".
- Most organizations plan to charge for making data available but the cost will be low and the motive is usually to obtain cost recovery for their own organization's actual costs.

Map Providers, Service Providers and Others

This subsection is a brief summary of the response to the survey from road authorities, Map Providers, Service Providers and Others.

- Both major Map Providers - NAVTEQ and TomTom/Tele Atlas - have contributed with answers.
- Service Providers are third party software developers.
- The group "Others" consists of car manufactures and motorists organizations.

Benefits found by setting up a geoportal (central data store)

“Easier access to data” and “Improved data quality” has been identified as benefits by all three groups.

Benefits found by setting up a geoportal (central data store) All three groups see a Geoportal as a great help when searching for data.

Interest in building Geoportal(s). The given answers support the idea to realize Geoportal(s) in joint venture. One of the Map Providers can even see an interest of building a Geoportal by their own effort.

Data quality - data specifications.

The given response to the survey;

- Indicate existing demands on thematic accuracy in data specifications.
- Indicate existing demands on position accuracy in data specifications.
- Say that they live up to the quality demands in their data specifications.

Dependence between data quality and cost for data.

- The given answers give a scattered view to the expected correlation between data quality and cost for data.
- One of the Map Providers see a risk for a lower data quality if data is available free of charge.

Use of map database standards. A majority of the respondents have decided to comply with a certain map database standard.

2.3 Qualitative assessment of potential benefits

2.3.1 For stakeholders

TomTom/Tele Atlas

Timely incorporating future data modifications (pre-actual data, e.g. anticipated speed limit change at plant road works)

One important benefit of a ROSATTE update supply is the fact that pre-actual data can be broadcast by enacting authorities. For example, a speed limit change at planned road works can be transmitted. The “valid from” condition for a ROSATTE safety attribute enables map makers to anticipate the updating of a map database. This is especially relevant today as many in-vehicle applications make use of on board maps without frequently updating them. If the installed map already includes anticipated changes provided by the enacting authority, the up-to-dateness of this map is guaranteed over a longer period of time.

Improving data validation process

Map providers use proprietary validation processes to assess the quality of sourced map information. These processes typically start by validating the source data suppliers. The validation of a change to a map database is done by the comparison of data coming from different sources in a manual, semi-automatic or fully automatic way.

ROSATTE updates provided by enacting authorities can facilitate the data validation process in a direct and indirect way. For example, a map provider may already have received one or more indications that a speed limit has changed for a road, but the exact speed limit value or its condition (dependencies on weather, vehicle type, direction, etc.) is not unambiguously known. In such a situation, a ROSATTE update can directly improve the validation of existing information. An example of an indirect way to support data validation is a situation where one or more ROSATTE attributes confirm earlier detected changes, e.g. the introduction of a new warning sign of type "pedestrian crossing" via ROSATTE can validate observed changes in speed limit, or, a new speed limit of 50kmh can validate a pending change in build-up area extent.

NAVTEQ

Efficiency in data sourcing for database maintenance by optimising the communications with public authorities, one of the timely consuming efforts in database maintenance is spent on contacting the public authorities for enquiring about current/future changes in the road infrastructure; this can be drastically reduced using the ROSATTE framework.

In addition, the map providers will have better allocation of resources, e.g. enhancing the common interaction by directing current resourcing to enhance other ways of communication such as web interaction or software improvement.

Moreover, securing optimal updates for the safety related attributes will allow the map providers to focus on better maintenance for other attributes in their database.

Keeping up-to-date database and at the same time maintaining a highly standard error-free database is a tidy job that can consume time and effort, at the current date, in average, the map provider update its database on quarterly base. Having a continuous update on current and future changes will dramatically increase freshness of the map and ensure a mechanism to enhance the quality of the available data in terms of accuracy, correctness and up-to-datedness, and to enable multilevel (local/national/European) aggregation of the data.

Moreover, up-to-date safety attributes are needed to enhance Advanced Driver Assistance Systems (ADAS) which is needed to ensure high level of security, cost efficiency for the end users.

The current data exchange methodology for safety attributes will pave the road in the future for further exploitation for other important road attributes to be included in the map providers database.

Feedback loop from map providers to the public authorities would help improving or correcting public authorities database, which will be in turn be implemented back to the map providers database.

ASFA

Motorway operators (and more generally, road infrastructure managers) have a strong interest in keeping road safety attributes databases updated, both for themselves and for road users.

Indeed, drivers tend to rely more and more on the advice given by their PNDs, so the information given by these devices should be kept up-to-date. The ROSATTE infrastructure will help update the databases more rapidly and more precisely than it is done today. It will also be possible to inform of the changes in advance: for example, major road works are usually planned weeks before, so their impacts on the road (e.g. decrease of speed limits) are known and can be pre-integrated into digital databases so that ultimately people driving on the road will be given the right information, making roads safer for them and for road staff carrying out the road works.

Putting in place such an exchange infrastructure will also allow road operators to be more aware about the quality and consistency of their own databases, so it will be easier to improve this quality if needed: first because they will have a clearer view of the current situation, and second because they will have tools to improve this situation, for example with the feedback loop that should allow to detect errors in the databases very rapidly.

Knowing better road safety attributes databases may also ease the maintenance of these safety attributes on the ground, whether it concerns road equipment or the road infrastructure itself.

Another advantage of ROSATTE for motorway operators is that it will be easier for third parties to gain access to and exploit road data if a common format is used. Moreover, the quality improvement of these data is another argument for their use by third parties.

Finally, a shared ROSATTE framework would also help harmonise the way that road safety attributes are handled on the different motorway companies / road operators and thus result in an equivalent level of service for drivers on the different motorway networks.

NPRA

In Norway there are a lot of different users of road and traffic data, both within the organization and in the public and private sectors. For the users, the reality often is a complex landscape of data providers, data formats, data availability and data quality.

The ownership of public data is also spread between different organizations. Some data are available for free and other data are available for sale or subscription.

"Norway digital" is a nationwide program for co-operation on establishment, maintenance and distribution of digital geographic data. The goal is to enhance the availability and use of quality geographic information among a broad range of users, primarily in the public sector. The co-operation is based on the white paper from the Norwegian government; Stortingsmelding nr. 30 (2002-2003) "Norway digital - a joint fundament for value adding". The formal start of the "Norway digital" co-operation programme was 1.1.2005.

The National Road Data Base (NRDB) profits by "Norway digital" as both the road network and the some of the most important features and attributes attached are a result of co-operation between NPRA, Norwegian Mapping Authority and the municipalities, all participating in "Norway digital". Other important results are larger focus on data formats, data availability and data quality.

Until now the speed limits and other safety attributes are mainly used for navigation purposes and fleet management. But we see an increasing interest to use the safety attributes for ISA applications and other driver assistance systems (ADAS). Thus the ROSATTE project and other similar activities lead to:

- Increased focus on data quality. If the safety attributes are going to be used for example in driver warning systems, the data must be reliable and correct.
- Increased focus on data updating. As soon as a speed limit is changed due to road work or other reasons, the update must reach the driver as soon as possible. The drivers are also interested in real time data.
- A demand for common definitions on road data across the European countries. This might also be a benefit for the public authorities when they want to exchange data with one another or when reporting data for statistical purposes.
- A demand for common exchange format. Everybody will profit on this, especially the different users and service providers.
- A demand for easier access to data. This includes discovery services, view services and download services as defines in the INSPIRE framework.

As a consequence, the authorities themselves and also the different users will benefit from the results of the project.

STAd

Road Authorities have a policy goal to improve mainly traffic flow/throughput, traffic safety and environment on the road network. They are building and maintaining the road network to allow safe traffic flow. They are further improving the basic conditions by additional infrastructure based measures to control the traffic flow (like traffic signals). They are also testing the quality of the vehicles (yearly inspections etc) as well as the skill of drivers (to receive drivers' license).

By developing and utilising technique involving all the three basic elements mentioned, driver-vehicle-infrastructure, safety can be further improved. The infra-

structure keeper needs to provide the necessary information in time and with the right quality. The system integrator need to develop systems that can make use of updated infrastructural information and provide an interface that is appreciated and used in a proper way by the driver.

The map providers will process and convert the safety attribute data to a format that allows integration in their standard digital road map databases, which are available on the market. The safety attributes will thus also be available to the authorities in a consistent way. A prerequisite for updating is availability to fast and secure communication links. The led time need to be cut down to a minimum.

It is essential for the industry to provide reliable and applicable road safety systems in an open market to affordable prices. The actors have to be prepared for and overcome possible introductory risks related to inadequate functionality and accuracy. This might lead to increased development costs as well as initial customer maintenance costs. Hence, from the industry perspective it is crucial to mitigate such risks by advocating for and complying with European standards and common code of practice including agreed data formats, communication standards and updating procedures.

Flanders DoT

For road authorities, several advantages can be expected from setting up a traffic sign/safety attribute data store. Part of these advantages are listed below.

The safety attribute data store can be a useful tool for supporting and facilitating processes. Some examples are:

- Maintenance and reparation;
- Design;
- Management;
- Traffic Management (detours, road works, re-routings etc);
- To establish and maintain a coherent signalisation in order to obtain an optimal traffic flow;
- Readable arrangement of the road and the surrounding area in order to increase traffic safety;
- Follow-up of contracts (guarantee, delivery and placing);
- Drawing up and control 'Supplementary regulations' ('Aanvullende Reglementen')

The safety attribute data store can be a source of basic data. This can be of importance for:

- Traffic guidance (signposting, route planning);
- Speed maps;
- Intelligent Transport Systems (ITS) systems like GPS, ISA, etc;

- Correlation parameters (accident analysis);
- Asset management etc.

Although the establishment of a safety attribute data store will cost a lot of effort, there will be numerous financial benefits once the data store exists and is kept up to date, e. g. different recordings and movements will become superfluous.

The existence of a safety attribute data store is expected to also have a lot of social benefits:

- Improvement of the policy functioning due to a better opening up of the data;
- Improvement of the quality and the consistency of the signalisation;
- Integration of traffic sign data in applications of map makers;
- Improvement of traffic safety, traffic fluidity, traffic liveability, by integrating the traffic sign data for various road users in GPS;
- Avoidance of traffic jams by taking into account traffic signalisation plans;
- Avoidance of traffic jams by taking into account height, width and weight limitations;
- Avoidance of heavy traffic in town centres;
- Better speed harmonisation - variable speed;
- Better parking management.

OBB

The Master plan for Traffic Management in Bavaria, issued by the State Ministry for the Interior and executed by the newly founded Centre for Traffic Management, describes the goals of traffic management with "ensuring a secure and smooth flow of traffic by avoiding negative factors". One of the measures named in the plan to fulfil these goals is the monitoring and promotion of traffic information services and ADAS applications provided by private organisations. In this way the provision of safety attributes from the public administrations to the commercial mapmakers is in line with this activity.

On the organisational level setting up a ROSATTE infrastructure in Bavaria would help solve organisational problems derived from the shared responsibilities from traffic ruling and the federal structure. Common definitions and standardised tools would enhance the cooperation between the different authorities in charge of or being integrated into the process of ruling.

TfL

In London, as with much of Europe and the UK there are many different authorities that collect road data in a variety of different ways and formats. This makes sharing data more difficult, costly and the potential for loss of quality is increased.

ROSATTE has the potential to alleviate and solve many of these problems by introducing the following:

- Common definitions for road data;
- Standardised collection techniques/tools;
- Common exchange formats and methods;
- Through cooperation - reduced potential for 'duplicating' work;
- Improved sharing of safety critical data amongst local authorities;
- Reduced time for updates of safety related road data.

Local authorities across the UK have a duty to maintain and improve road networks within their boundaries. As users of these networks will often not restrict their use to just one local authority, but will in fact often move between two or more local authorities in a single trip, the road safety related data should be seen and considered in a more holistic and homogenous view across all local authorities.

Through ROSATTE, the increased sharing, and hence awareness, of road safety data between local authorities will help to homogenise the management of this data in a more efficient manner.

In addition, of considerable importance to all local authorities is road safety. Road safety is an issue that should not be seen as being isolated to one specific area (e.g. a local authority), but to several authorities. As the road user often covers more than one local authority in the entirety of their trip, having a standardised format for collecting road safety data with common definitions will allow this data to be more consistent and of better quality across all local authorities. Making this data readily available to Map Providers as soon as changes are made on the ground will allow developers of Advanced Driver Assistance Systems (ADAS) to make the best use of safety related road content in their applications. This could only improve road safety and extend the scope of potential road safety applications. By making the data available in an up-to-date and quality assured manner, the data will become more valuable and, as far a private industry is concerned, more exploitable and relevant for their applications.

The two-pronged benefit of this is that ADAS developers will be able to generate new and improved revenue streams whilst local authorities will benefit from increased road safety on their roads - as well as developing administrative internal functions for better managing, maintaining, storing and sharing road safety related data.

Finally having a best practice template for local authorities to use in the collection, storage and maintenance of road safety data will make adopting these new

practices easier and less costly. As some local authorities may not collect digital road safety data as yet, ROSATTE will provide them with a step-by-step guide to how to best to go about this. For local authorities that do already collect digital data, ROSATTE can provide a comparison with suggestions of how to improve already established databases and how to make this data readily available to other local authorities and Map Providers. Improved communication between all users of digital road safety data, will be a major potential benefit of the ROSATTE project.

2.3.2 For end users

Generally speaking, drivers are not aware of the different road authorities that operate the road networks they are travelling on, and they expect a good traffic information quality everywhere. This is of course hard to achieve, as we have seen that the reality often is a complex landscape of data providers, data formats, data availability and data quality.

By setting common formats and exchange mechanisms, ROSATTE will help improve this situation and allow drivers to get access to up-to-date and reliable road information. The differences between safety attributes data from different road authorities should be reduced and related risks of errors will be minimized as well, so that end-users will be able to access high quality of service during the totality of their trip.

In addition, ROSATTE will greatly improve the ability to shorten lead times from that a decision on safety related traffic restrictions is made at the enacting authority until the information is available for end users in the vehicle systems. ROSATTE even enables supply of pre-actual data - using the "valid from" / "valid to" conditions - from enacting authorities to be integrated in in-vehicle applications. For example, safety related restrictions affecting traffic regulations in connection with planned road works can be transmitted and activated only when these road works are actually ongoing. This will improve the reliability and trustworthiness of information for drivers and make them more willing to respect regulations.

At the end, the long-term effects of the ROSATTE framework will participate to the overall goal of reducing the number of accidents and the level of congestion on European roads.

3. Organizational aspects of the ROSATTE framework

This chapter investigates the organisational aspects concerning the implementation of ROSATTE framework. It first relates to a survey launched in spring 2009, then identifies organisational barriers and provides more practical details from previous experiences with similar initiatives.

3.1 *Study on ROSATTE organisational issues*

3.1.1 *Introduction*

This study aimed at covering all ROSATTE organisational aspects. Two questionnaires were developed.

A first questionnaire was intended for public authorities, road administrations and road operators. This questionnaire was sent to all known European road authorities and the motorway operator (the same as the ones contacted for deliverable D1.1).

A second questionnaire was intended for the map makers and was sent to NAVTEQ and TomTom/Tele Atlas.

More detailed information can be found in Appendix 1, which contains:

- Questionnaire used in the survey
- Results overview and conclusions
- Data collected per country/organisation

3.1.2 *Participation overview*

In total, the questionnaires were sent to the 2 map providers NAVTEQ and TomTom/Tele Atlas, to 30 road authorities mainly consisting of CEDR partners, and to road operators via ASFA and ASECAP members.

Both map providers, 20 authorities and 1 motorway operator have completed the questionnaire: Belgium-Flanders, Belgium-Wallonia, Cyprus, Denmark, Finland, France (the French Ministry + ASFA), Germany-Bavaria, Germany-Mecklenburg-Vorpommern, Germany-North Rhine-Westphalia, Iceland, Ireland, Italy, Lithuania, Norway, Slovakia, Slovenia, Sweden, UK-Northern Ireland, UK-Scotland and UK-London.

Figure 4 illustrates the participating member states and regions.

3.1.3 *Study limitations*

As can be seen in the Figure 4, part of the road authorities answered the questionnaire. It is not clear why the remaining road authorities did not answer. Two possi-

bilities are to be considered: the recipient did not take the time to participate or the recipient does not have any competent service.

A second limitation was that several road authorities only answered to selected questions of the questionnaire. Therefore, for some questions, limited number of answers was received. This was mainly the case for questions 8 and 16.

It is considered as very important to receive input on ROSATTE from all-level public authorities (local, regional and national), as well as from the national police representation. Not all these stakeholders have been invited to participate in this study, however, their participation shall be assured in future ROSATTE related approaches.

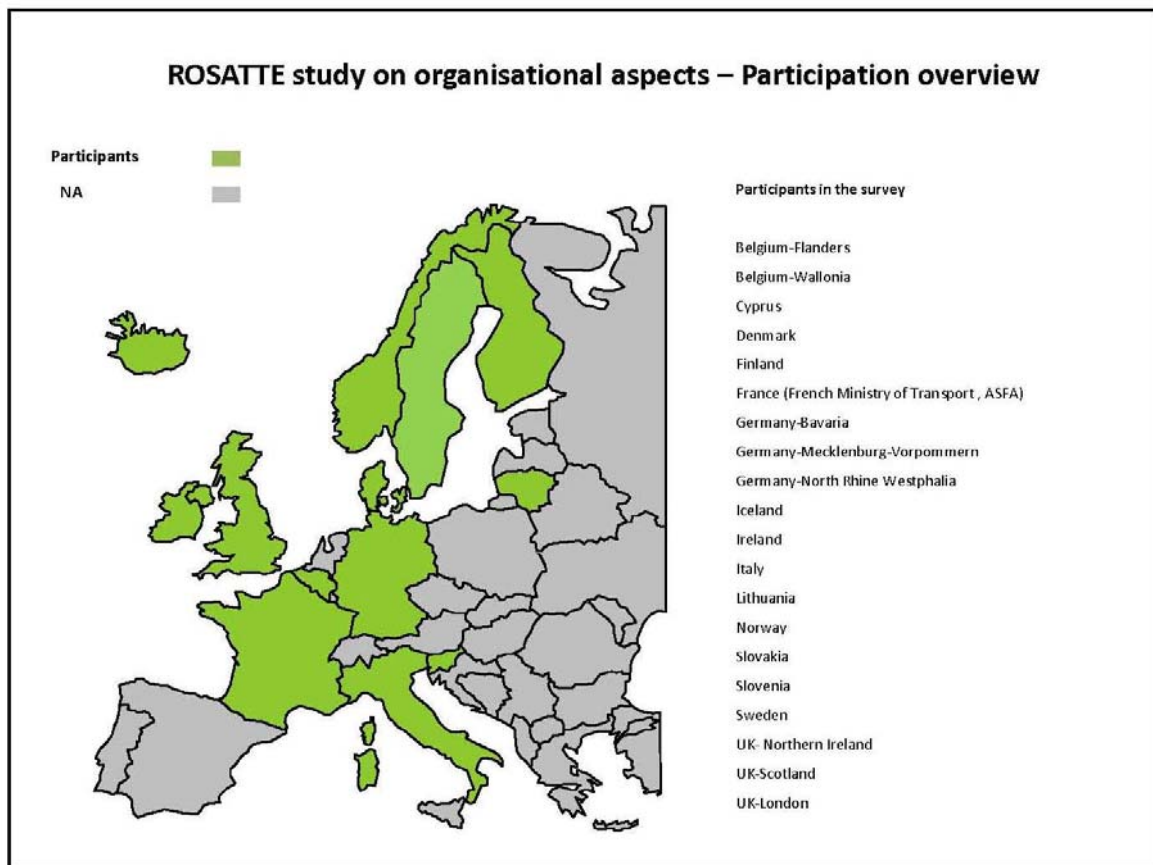


Figure 4 - Organisational aspects study: overview of participating road authorities

3.1.4 Summary of results

In the following sections, the answers received from the road authorities are described followed by the answers from the map providers. Only the main results of the questionnaire will be given in this paragraph.

Road authorities

Technical barriers. 30% of the road authorities do not expect any technical barriers at all. Only 33% of these 30% authorities that do not expect any technical difficulties are ROSATTE project partners. The most important technical barriers for the deployment of the ROSATTE infrastructure seem to be the data quality, data availability, standardisation issues and data conversion issues;

Organisational barriers. The fragmentation of the responsibilities between the different organisational levels in a country or region is clearly seen as the most important organisational barrier for the deployment of a ROSATTE infrastructure. The financing of the development is also seen as an important organisational barrier. Most authorities (70%) consider it as feasible that the same infrastructure is operational at different organisational levels. Most of these authorities (40%) state however that it will be difficult. None of the authorities considers it as unfeasible, 30% of the authorities do not have a viewpoint yet;

Availability to third parties. Most road authorities (75%) are willing to make the safety attributes available to third parties. However, most of them (65%) are only willing to do so under certain conditions. The condition 'cost' and 'contract' are most frequently mentioned. 20% of the road authorities did not decide yet how they would deal with this;

Willingness to pay and/or put efforts for setting up a ROSATTE data store. Almost 50% of the road authorities are willing to put effort in setting up a ROSATTE data store. However, 25% of the road authorities think that it should be a joint effort. 20% of the road authorities are not able to take a position yet. 10% of the road authorities state that they are just not willing to put efforts in setting up a ROSATTE data store. Another 10% thinks it will not be obvious;

Interaction between ROSATTE infrastructure and the existing databases. 40% of the authorities that completed the questionnaire did not answer the question about the relevancy of the ROSATTE entities, roles and use cases. Among the answers, most road authorities consider the entities, roles and use cases defined within the ROSATTE project as being relevant;

Expected technical difficulties when implementing ROSATTE infrastructure. 55% of the road authorities did not answer the question about the expected technical difficulties when ROSATTE would be implemented in their country or region. 10% of the road authorities do not expect any technical difficulties. The other 35% of the road authorities do expect to encounter certain technical difficulties (Linking safety attributes with linear referencing system, Agora encoding, lack of re-

sources, zero measurement, implementation of different standards, compatibility with existing systems, relation between ROSATTE requirements and PA requirements);

Benefits and drawbacks of ROSATTE infrastructure. Almost all road authorities acknowledge that a ROSATTE infrastructure will have administrative benefits. Some of them however fear some administrative burden. The ROSATTE infrastructure is considered to give as many financial benefits as drawbacks. The major financial drawbacks relate to the cost for setting up and maintaining such an infrastructure. Road authorities all agree that there will only be social benefits;

Commitment of all stakeholders. 30% of the road authorities assume that a good way to ensure the commitment of all stakeholders necessary for collecting, sharing and updating road safety attribute information is to do so by law. 20% of the road authorities think that explaining the win-win situation could also be a good way to ensure commitment. Goodwill, information sessions and a central entity that organises and monitors it are means that were mentioned by 15% of the road authorities;

IPR and legal issues. Between the road authorities, the opinion is spread. About 40% of the road authorities think there will be legal or IPR issues, 30% thinks that there won't be any issues. The other 30% did not answer the question;

Quality control. 35% of the road authorities prefer their own quality control. 20 % prefer a combination of the ROSATTE quality control and their own quality control. Only 10% of the authorities would rely on the ROSATTE quality control. What the ROSATTE quality control would be was not yet specified, since this was not yet elaborated at the moment the questionnaires were distributed;

Standardisation. The majority (60%) of the road authorities thinks it would be easier for them to implement the ROSATTE infrastructure if the tools and formats developed within the ROSATTE project would be standardised. Quite some road authorities did not take a position (35%) and 5% of the road authorities answered negatively to the question;

Certification body. 50% of the road authorities consider a certification body as being useful in order to ensure that the ROSATTE infrastructure, tools and mechanisms are run properly. However, 20% of the road authorities do not consider it as being necessary. One road authority is even sceptical towards the realisation of such a centralized certification body. 30% road authorities did not answer the question;

Influence of ROSATTE infrastructure. 35% of the road authorities did not answer this question. The other road authorities agree that the ROSATTE infrastructure would improve their position and capability towards data collection, exchange and information update;

Implementation of ROSATTE infrastructure. The views on the time before a start of the implementation of ROSATTE varied between a few months until a few years. The road authorities' views on the time needed for the full implementation of the ROSATTE infrastructure varied between a few months until a few years. The opinions on the kind of measures needed for the implementation are very diverse. Most road authorities agree that the following actors need to be involved in setting up a ROSATTE data chain: Federal authority, Regional authority, Municipalities, Map providers, Police, Motorway companies, National mapping authority. Most road authorities believe that in order to increase the awareness of the involved stakeholders, more communication is needed to demonstrate the win-win situation that the ROSATTE implementation represents.

Map providers

Main technical and organisational barriers for the deployment of a ROSATTE infrastructure. One map provider didn't see any technical barriers, while the other one listed possible barriers concerning data quality, data availability and standardisation. Both map providers agree that the fragmentation of responsibilities is an organisational barrier. Other issues are the legal framework, ownership of data, pricing issues and an unclear contract model;

Experience in receiving attributes data from public authorities or road operators. Both map providers already have a lot of experience on this. Various kinds of payment/contractual conditions have been used so far;

Willingness to pay and/or put efforts for setting up a ROSATTE data store. The map providers are willing to help setting up a ROSATTE data stores, but only when it's a joint effort, or when it is related to a business case;

Motivation for participating in setting up a ROSATTE infrastructure across Europe. The map providers listed following topics as a motivation for setting up a ROSATTE infrastructure: a replacement of existing local suppliers with inhomogeneous data and formats, obtain up-to-date safety attribute information, which will be supplied directly to users and finally a more structured data exchange;

IPR and legal issues. Both map makers expect that there will be legal or IPR issues when a ROSATTE infrastructure is deployed;

Quality control. One map provider would rely on the own quality control, while the other map provider prefers a combination of the own quality control and the ROSATTE quality control. What the ROSATTE quality control would be was not yet specified, since this was not yet elaborated at the moment the questionnaires were distributed;

Standardisation. Both map providers agree that it would be easier if the tools and formats developed within the ROSATTE project would be standardised;

Certification body. Both map providers agree that the creation of a certification body would be useful in order to ensure that the ROSATTE infrastructure, tools and mechanisms are run properly;

Implementation of ROSATTE infrastructure. One map provider thinks it depends on the outcome of ROSATTE when the implementation phase will start, while the other one believes it would take at least 3 years. The map providers both think it would take a few years before it would be up and running. The map providers also have some measures that they think will be needed. Following actors need to be involved in setting up a ROSATTE data chain: Federal authority, Regional authority, Municipalities, Map providers, Police, Motorway companies and National mapping authority. The map providers suggest that mapping companies and road administrations will not realise the intended effect on traffic efficiency/safety if they run completely independent from each other, or that the project needs to be explained in short while putting the emphasis on the benefits and advantages for the respective stakeholders (win-win situation).

The questionnaires, results overview and detailed data and results (per country) can be consulted in Appendix 1 of this document.

The questionnaire addressed topics related to each of the three tasks of Work Package 6, thus the results of the questionnaire formed the basis for the work performed in the tasks T6.2 and T 6.3.

3.2 Organizational barriers from different actors point of view

3.2.1 Viewpoint from a motorway operator

From a private motorway operator point of view, the main organisational barrier relies on the definition of responsibilities for data provision, if this becomes an obligation. Indeed, the duties of private motorway companies are defined in a grant with the State. It is then difficult to amend such contracts through new constraints that may change the economical balance. Nevertheless, motorway companies remain submitted to public authority that has the responsibility to provide data for the rest of the road network. As a consequence, motorway companies and State's roles can overlap concerning data provision, and the decision about which organisation is responsible for providing the data should be clarified.

Apart from this, there is no major organisational barrier to the deployment of ROSATTE infrastructure. Motorway operators are mostly organized at a national level and have access to regulations related to their own network. The key point is to clearly define the entity responsible for providing safety attributes data.

For example in France, the different motorway companies are grouped together within an association called ASFA, and road information for external stakeholders from all motorway companies transits through one unique service provider collecting the data. This service provider could thus provide safety attributes databases from French motorway companies, which are ready to participate on a voluntary basis.

More generally, up-to-date information provision requires the establishment of a complete data transmission chain from the different motorway companies to the service providers responsible for collecting data and managing the consolidated databases.

3.2.2 Viewpoint from a map provider

In general, the Map Providers have recognized three themes of organisational barriers related to deployment of ROSATTE on a pan European scale.

Firstly, Map providers, which represent the user in the ROSATTE service chain, identify the fragmentation of the responsibilities as a major organisational barrier for the early and successful deployment of ROSATTE. Typically, the larger the EU member state, the more complex the responsibilities are divided. Some countries are characterized by a very complex structure with respect to management of road information, not only making cooperation not very evident (e.g. Belgium), but also running the risk that at some level - often local or intermediate level, the overall benefits of ROSATTE are not clear or actually present. The latter is important, especially when there are costs involved (technology: databases, servers, human involvement). An "overall societal benefit" might not be a sufficient moti-

vation for a local authority. However, the appearance of some successful role models - mostly situated in Scandinavian countries - along with aligning to EU directives (INSPIRE), could stimulate a breakthrough.

Secondly, legal issues related to the use of provided data represent potential organisational barrier for ROSATTE. License conditions for provided data need to be clear and favourable for Map Providers to accept ROSATTE information. Clearly, as Map Providers aim to support in-vehicle safety systems with integrated information, liability matters are of importance too.

A third barrier that Map Providers have identified related to the **price of the ROSATTE updates**. This issue was already addressed by the eSafety Working Group Digital Maps and represents the view of the experts on improving Road Safety in Europe with eSafety systems. However, note that these views have not been adopted or in any way approved by the European Commission and should not be relied upon as a statement of the European Commission's or its Information Society Directorate-General's view. Recommendation 11 by the eSafety DMWG indicates that the data should be provided free of charge (when possible).

Reference: eSafety WG Digital Maps, Nov 2005,
www.esafetysupport.org/download/working_groups/DMWGfinalreport.pdf

3.2.3 Viewpoint from a public road authority

The very rationale behind initiating ROSATTE in the first place, explains the main organisational barriers of timely deliverables of traffic safety attributes from road authorities.

Organisational barriers are related to many aspects of the operations at the road authorities: infrastructure (road databases), awareness and overview, availability of quality assured data, coverage, pricing issues and legally assured processes.

It all boils down to the fact that the authorities are inherently focused on road planning, construction, operation and maintenance. Due to this they do collect and store a number of different data types to support these traditional processes. To support this, quite a number of authorities have build or have started to build road databases. Still though, most of these databases only covers parts of the road network and are aimed at a specific operational or maintenance task. Also, considering the different levels of authorities and the many different processes and technologies that are involved - the lack of overview is bound to be one of the main barriers. Overview calls for quite detailed knowledge of the demands, trends and the state of art within this field. It also calls for the ability to see that data should be stored and distributed in one common standardised way to meet the demand from future clients.

To be able to meet future demands, it's necessary to store road attributes for roads on a national level and to do so according to quality principles. These principles state the number of attributes, the content, the coverage and when they are updated.

Although many road authorities acknowledge the need to supply data for free to private vendors, and actually are forced to do so by coming directives - they might have (at least for now) internal rules and decisions that prevent them from doing so. These rules or decisions might have been taken at a superior level - and are thus hard to change.

Most of the attributes involved here are created as traffic regulations. Storing and distribution of traffic regulations follows clearly defined legal procedures and might even be paper based. All handling of the attributes needs thus to be derived and processed according to both legal needs and the need to (digitise and) distribute.

The upcoming ITS directive, the INSPIRE directive and the likes, are the driving forces that eventually will make public authorities comply to pan-European rules within this field. However, by then ROSATTE must have a strong basis and be able to provide implementation guidance in terms procedures, reference implementation, tools, standards, intellectual property and best practises.

3.3 Experiences from similar initiatives

3.3.1 Experiences from Bavaria

Based on experiences from other projects, several issues related to organisational aspects can be mentioned with respect to the Bavarian test site.

The first point is that especially in Germany the structure of responsibilities for traffic ruling is very complex. The federal government issues the implicit regulations by law (e.g. "recommended speed limit of 130 km/h on Autobahn and two-lane highways"). The sign-posting is done by the lower authorities for traffic ruling in the Länder under control by the higher traffic ruling authorities (e.g. regional government of Bavaria). Different organisations can serve as lower traffic ruling authorities.

The current workflow for ruling of speed limits is similar in all traffic ruling authorities:

- request for a speed limit brought forward mostly in plain text form to the responsible authority by
 - o *communities*: major or responsible person brings forward a request for roads beyond their responsibility after request by their citizens, companies or public authorities;
 - o *private persons*: sometimes they bring forward requests directly. This happens mainly for community roads, e.g. Speed 30-zones near day-cares or in densely populated areas;
 - o *companies*: sometimes they bring forward requests directly e.g. request for a speed limit by a construction company due to a high fre-

- quency of heavy goods vehicles having to enter a high level road from the exit of the company facilities;
- *public authorities* not directly responsible for traffic ruling;
- *the police* e.g. due to high accident rate,
- check for completeness and correctness of the request,
- check of the location by using analogous maps, ortho-photos or expert knowledge,
- hearing: hearing and in some cases joint meeting at the place, where the order shall become operative,
- decision on the order,
 - if positive →
 - predefinition of the traffic sign;
 - hearing of other parties concerned by the order (if necessary), e.g. companies or public bodies owning facilities next to the concerned road;
 - elaboration of the official traffic ruling paper;
 - forwarding of the paper together with a visualisation of the order to the installing partner (road maintenance centre);
 - physical installation of the sign: the place of installation can differ slightly from the place ordered due to the specific situation at the face (bridges or trees might handicap visibility of the sign or the ground at the spot might not be suitable for installing a sign etc.);
 - notification of installation (via e-Mail) including justification of deviations from the order. The notification is not transferred completely in time, but at the next possible occasion the installing person will notify about all signs installed in the last day/days/week ,
 - if negative → information of concerned parties,
- filing of the paper copies by all authorities concerned with the order.

In Bavaria, there are 2 Highway Authorities (in Munich and Nuremberg), 20 local road administrations that belong to the State of Bavaria, 71 independent District Authorities, 25 “district-free” big cities and about 2000 communities. The installation of signs is executed by road maintenance centres of the highway authorities, road administrations of the State or the communities. One example for the share of responsibilities from the ROSATTE model region of Ansbach illustrates the complexity.

In exceptional cases also the State Ministry can do the ruling for all roads.

Table 2: - Example for the share of responsibilities for traffic ruling in the region of Ansbach

Road class	Traffic ruling	Installation of signs	Hearing required
Highway (e.g. A3)	Highway Authority of the State	Highway maintenance State centre	Highway Police
Federal Road (e.g. B13)	Ansbach District Authority	Road maintenance State' centre	Road maintenance State centres, Police
State Road (e.g. ST2245)	District Authority of Ansbach	Road maintenance State centre	Road maintenance State centres, Police
Federal Roads within the City	City of Ansbach ("district-free")	Road maintenance centres of the State	Road maintenance State centres, Police
State Roads within the City	City of Ansbach ("district-free")	Road maintenance State centres	road maintenance State centres, Police
District Roads (e.g. AN7)	Ansbach District Authority	Road maintenance State centres	Local Police
Community Roads	respective communities	Respective communities	Local Police

The second point is that for traffic ruling software tools using geographic reference systems are very rarely used. If tools are in use, there are very many different solutions in place. That has the consequence that a data exchange beyond the own responsibility is very hard to accomplish. Also the share of data with external partners (map makers) is not possible in a standardised way.

On the other hand, there is a great need for common tools, standardised solutions for data collection and geographic reference systems. An example is that, at the moment, it is very hard for the police to find the original traffic order for one road sign in the case of an accident. It is also not possible to exchange exact information of the location between the different authorities, e.g. between the one in charge of traffic ruling and the ones in charge of installing or the police.

The solution of these problems can be achieved by initiating a law that prescribes the use of common tools and systems for all partners. This solution will be hard to achieve as the process will be too long. For instance, it is considered that all authorities linked to the Bavarian State would be forced to use a common tool by a ministry order, but even this will take time, because several parts of the road administration are concerned with these issues. The third way is to install pilots and to demonstrate the feasibility of concepts. In this case, the goodwill and personal motivation of the partners in the model regions is required. They will only test in-

novative systems, if they have no additional work to do and if the systems are easily integrated into their everyday workflow.

4. Legal, IPR and standardisation issues relating to the ROSATTE framework

This section looks at the European legal framework, in three steps:

- A background to understand the issues related to the legal framework in ROSATTE (Section 4.1)
- A European legal study was conducted, aiming at identifying the IPR boundaries influencing ROSATTE from the legal framework view at the level of the Member States. The study looked at property issues, compliance and responsibility as well as standards (Section 4.2);
- A questionnaire-based study meant at identifying the main Intellectual Property Rights tendencies in Europe for data road attributes was launched in July 2010, addressing the Public Authorities of all EU Member States (Section 4.3).

4.1 Background to the legal and IPR issues

4.1.1 A map maker point of view

Map providers have extensive know-how with regard to the production and commercialisation of electronic databases containing geographic and topographic data, data related to traffic and transportation and address data. In order to maintain and extend its databases, a map maker requires access to different sources. The provider, or enacting authority in ROSATTE terminology, has access to up-to-date source material - reflecting ROSATTE updates - which may be used for the updating or extension of the database contents. From time to time, the provider may create updates, which are new, amended or enhanced version of complete or parts of the source material.

In typical agreements where a data provider offers source material to a map provider, the data provider grants a perpetual, irrevocable, non exclusive, worldwide, fully paid up right to use the supplied source material and updates for the purpose of creating and exploiting the combined data sets and for internal testing purposes. These combined datasets are products or datasets of the map provider or its affiliates which, besides the source material (ROSATTE datasets) and updates, may also include third party information.

The right to create these combined datasets includes the right of copying, reformatting, rearrangement, adaptation, translation, changing, reproduction, integration and compiling off all or part of the data contained in the source material or its updates. The map provider also has the right to exploit the combined data sets: performing activities to that aim at deriving commercial benefit from the source material and updates as combined with and incorporated into a combined data set.

The IPR related to the source material or updates, such as copyright and database rights, remains the exclusive property of the data provider or its licensors.

All IPR relating to the combined data set, such as copyright and database rights resulting from the combination of the source material or updates of it with other material, or resulting from the incorporation of the source material or updates into the combined dataset, shall be the exclusive property of the map provider.

Typically, source provider agreements include an article which describes that the provider will not use the map providers trade names, trade marks, service marks, etc without prior written agreement of the map provider.

4.1.2 The INSPIRE and ITS directives and ROSATTE

In March 2007 the European Parliament and the Council adopted the INSPIRE directive on establishing an Infrastructure for Spatial Information in the European Community. It is a legal framework for the establishment and operation of a geographical information infrastructure with the aim of making high-quality data available at all levels across the European Union and to give public access to the information.

INSPIRE (Infrastructure for spatial information in Europe) is a directive from the EU where a legal foundation is laid for a far reaching harmonization of spatial data and services. The member states shall have brought into force the laws, regulations and provisions necessary to comply with the INSPIRE directive by 15 May 2009. The Directive should not set requirements for the collection of new data, or for reporting such information to the Commission, since those matters are regulated by other legislation related to the environment.

The guiding principles of INSPIRE are:

- that the infrastructures for spatial information in the Member States should be designed to ensure that spatial data are stored, made available and maintained at the most appropriate level;
- that it is possible to combine spatial data from different sources across the Community in a consistent way and share them between several users and applications;
- that it is possible for spatial data collected at one level of public authority to be shared between all the different levels of public authorities;
- that spatial data are made available under conditions that do not restrict their extensive use;
- that it is easy to discover available spatial data, to evaluate their fitness for purpose and to know the conditions applicable to their use.

Rules for network services (December 2008) and downloading services (December 2009) has been approved.

In several European countries the INSPIRE directive has resulted in projects/activities to establish a national SDI (Spatial Data Infrastructure) to ensure that the required spatial data can be made available according to the INSPIRE specifications.

The purpose of the INSPIRE directive is to lay down general rules for the purposes of Community environmental policies and policies or activities which may have an impact on the environment. From a technical viewpoint, INSPIRE provides a number of implementing rules concerning data-, metadata- and service specifications.

The INSPIRE data specification for Transport Networks (INSPIRE DS TN) as well as the INSPIRE Network Services Architecture is closely related to ROSATTE. The data providers are often the same (road authorities), and the architectural needs for services and data specifications are very similar. On the other hand, the scope of ROSATTE (safety related road data) is not referenced within the INSPIRE DS TN. As a fact, since INSPIRE DS TN covers the vast area of transport networks, data closely related to specific applications are excluded from the specification at the moment. Also, INSPIRE DS TN focuses on exchanging information about the representation of the network itself, while ROSATTE focuses on exchanging data related to the network, between different representations of the network (i.e. authorities and map providers do often not share representations of the network). This has resulted in ROSATTE focusing on map agnostic location referencing, which currently is not a part of INSPIRE DS TN. Also, INSPIRE DS TN and the ROSATTE specifications have been developed in parallel.

It would be very unpractical for authorities to have to implement different solutions depending on who the receiver of the data is. Also, if current INSPIRE becomes a success, it would be quite safe to assume that the INSPIRE DS TN (or new specifications related to INSPIRE DS TN) in the future also will include data common to different communities, such as the ROSATTE community. Therefore, the ROSATTE project has tried to align as much as possible with what has been available from INSPIRE at different points in time. One possible development in the future would be the proposal of ROSATTE, as is or modified and perhaps better aligned, as an extension to INSPIRE DS TN. In order to achieve this, INSPIRE DS TN should be extended with an option for map agnostic location referencing such as ISO 17572-3 (AGORA) and also rules for adding application specific modules such as ROSATTE to the existing specification.

To summarize there are currently no legal requirements coming from INSPIRE that put demands on the ROSATTE specifications or on how to implement ROSATTE, but ROSATTE has, as much as possible, been aligned with INSPIRE with the aim to facilitate future parallel use of INSPIRE and ROSATTE.

While ROSATTE is focused on safety and contains only a few specifications, the ITS Action Plan and Directive aims to make road transport more sustainable through coordinated and accelerated deployment of ITS in general. However ROSATTE deals with the whole chain of actions that must be in place to accommodate updated safety attributes, including organization, flow/format and specifications.

This makes the ROSATTE community competent to both suggest further actions and to help organize further work according to this suggestion.

4.2 Study on European level legal aspects

The ROSATTE project aims to establish an efficient and quality-assured supply chain from public authorities to commercial map providers with regard to road safety related content. As such, it is fully consistent with the INSPIRE Directive, which requires the exchange, sharing, access and use of interoperable spatial data and spatial data services.

For such a project to be viable, the providers of services to users must be able to control the costs of using the road safety information held by the public authorities.

Several legal constraints may have a bearing on the economic model of the service projects, in particular at the level of:

- possible license fees relating to intellectual property,
- liability of the authorities in the event of inaccuracy of the information collected and distributed,
- consequences of the introduction of patented technologies within the framework of standards,

all within the framework of European and international legislation.

This study has been carried out to answer these questions with a view to minimising the impact of intellectual property costs through a collaborative project.

4.2.1 Property

Intellectual property in the area of the information and communication technologies has been subject to European harmonisation by means of directives. These directives now take account the authors' rights while respecting the free circulation of goods.

Intellectual property is no longer seen as a hindrance to the free circulation of goods. The European Union has taken the view that, in the absence of Community provisions for harmonisation, it is necessary to apply national law as well as international conventions, in particular the Berne Convention on the rights of authors and the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

Thus Member States are free to legislate to limit and restrict the Directives so as to continue to apply their national specifications. These national specifications must not, however, be in conflict with the harmonisation rules.

As regards spatial data sets (databases in the sense of the directive of the same name, this European legislation distinguishes between:

- the author's right that is attached to any creator of an original work (data, metadata, database, etc.) and
- the sui generis (economic) right attached to the manufacturer of databases.

The INSPIRE Directive¹ and the three Regulations and Decision² that accompany it lay down rules regarding the implementation of data and the associated metadata so as to encode and classify them, etc. in order to transfer them. The process of encoding data and metadata in a standard ROSATTE format (AGORA-C compliant) makes it possible to transform safety attributes into data stripped of all author rights without detriment to their author.

Authors retain their intellectual property right over the creative elements of their work in full.

This European legislation will also permit the provision, exchange, sharing, access and use, subject to some fairly undemanding conditions:

- spatial data encoded by public organisations, exempt from authors' rights;
- spatial data sets and spatial data services, by obtaining the necessary authorisations from the public organisations within the framework of contractual licences.

This reality will require public and private organizations to insert, in the contracts with the services providers responsible for data acquisition work, clauses that:

- identify the creative aspects of their work if there is intellectual creation in the sense of authors' rights,
- require the data and metadata regarding safety aspects to contain no intellectual property attributes,
- specify the purpose of these data and metadata while protecting the authors as regards their creation.

¹ Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 : establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

² Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata (Text with EEA relevance),

Commission Regulation (EU) No 268/2010 of 29 March 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the access to spatial data sets and services of the Member States by Community institutions and bodies under harmonised conditions,

Commission Decision (2009/442/EC) of 5 June 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards monitoring and reporting (notified under document number C(2009) 4199) (Text with EEA relevance),

Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the Network Services.

Moreover, within the ROSATTE project, contractual licences will have to be signed between the organisations responsible for the establishment, management, maintenance and distribution of spatial data sets and services, and also between each successive participant in the ROSATTE chain including the end-user.

These licences will make it possible to transfer the right to exchange, share, access and use interoperable spatial data sets and services³ within the framework of the ROSATTE project with no financial impact as regards the intellectual property of data and metadata encoded in the adopted ROSATTE format (e.g. AGORA-C compliant).

The spatial reference systems used by the various participants in acquisition and encoding also require possession of a contractual licence for use. The technical particularity of the decoding makes it possible to use the reference system from which the encoding is derived or another compatible reference system. This technical freedom does not exempt the organisations responsible for the decoding from the obligation to possess a contractual licence for the reference system that is used:

- either the original one, part of which is transferred with the encoded elements in compliance with AGORA-C,
- or the compatible one, not used for the encoding. In the latter case, the data and metadata can be freed from the intellectual property constraints relating to the reference system used for encoding.

4.2.2 Compliance/Liability

The European directives distinguish between compliance with the implementing rules of the INSPIRE Directive and the rules relating to the compliance and validity of a data set.

The first rules require compliance with the three Regulations and the Decision published subsequent to the INSPIRE Directive.

By contrast, the rules concerning quality and validity stipulate that Member States must set up a quality assurance process that is as common as possible since the flows are cross-border.

This quality assurance will suffice to minimise the risks of inadequate quality, but will it serve to limit liability or even totally exonerate the public authority or organisation?

For example, in the case of a difference between speed limits:

- contained in a decision by a national or local public authority,
- displayed on the road, or

³ Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata (Text with EEA relevance) Annex ("Metadata implementing rules"), Part B. § 9)

- emanating from information displayed in the vehicle,

the national legal authority will always tend to refer to the decision or also to take into account whether the speed limit signs displaying the decision of the authority concerned were visible and readable, rather than refer to the information displayed in the user's vehicle, especially in the event of an accident.

European legislation, however, gives no precise response regarding the liability of the public authorities that exchange, share and permit access to and use of spatial data sets.

Directive 2010/40/EU of 7 July 2010, known as the ITS Directive, lays down general rules on liability at the level of the supply of applications and services with application of the rules relating to defective products⁴⁵. However, these applications and services are only "Navigation Systems".

Nonetheless, some provisions of Regulation No. 1205/2008 of 3 December 2008 regarding INSPIRE metadata mention organisations responsible for the establishment, management, maintenance and distribution of spatial data sets and services, whose liability relates more to compliance with the implementation requirements of the Directive than the quality of the data. Moreover, this liability could be reduced by virtue of Article 14-4 of the INSPIRE Directive, which seems to grant a possibility of limitation and/or exoneration of liability through disclaimers at the level of the spatial data services provided by a public authority.

As a consequence, no penal statute within the framework of the INSPIRE Directive sets any limitations or exonérations of liability of the public authorities and organisations at the level of the data and metadata.

Does this statute remain to be determined at Community level or is it left to national judges?

This absence seems to entail risks of conflict of laws at the level of cross-border exchanges.

Pending an as yet uncertain European legal framework, it becomes particularly desirable to put in place the maximum possible number of precautions, particularly by strengthening:

- the disclaimer clauses in contracts,
- warnings at the level of applications and services intended for users,
- information campaigns,
- quality assurance processes as stipulated by the INSPIRE Directive, and

⁴ Article 11 "Rules on Liability" of Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport

⁵ Council Directive (85/374/EEC) of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products

- by specifying the validity of the information to users.

In this way the users use the information as an aid to navigation, which is not intended to take the place of the driver's vigilance.

4.2.3 Patents and standards

Manufacturers are increasingly integrating their technologies at the level of standards. These technologies are subject to patent applications generally in the course of the definition of standards.

In the area of information and communication technologies, the European Union is encouraging the standardisation organisations to ask the owner of or applicant for a patent linked to the standard that is being defined to grant a licence within the text of the standard. This licence must offer fair, reasonable and non-discriminatory conditions, in particular specifying the maximum fees before adoption of the said standard.

Within the framework of Community coordination, it appears necessary to conclude a negotiation with each patent holder.

This negotiation is necessary, because this project:

- is Community-wide
- opens up a vast market for manufacturers and operators
- should in exchange be based on strong communication to promote this project

For the ROSATTE project, this negotiation should lead to:

- reduction of licence fees with a maximum rate based on future developments of the market, and
- template licences that can be adapted to the specificities of each licence project.

Manufacturers and operators should profit from this. The public authorities should make savings.

Intellectual property rights should thus no longer be an economic, financial and organisational barrier for the Europe-wide implementation of the patented technology.

The case of AGORA-C patenting pool in ROSATTE

Under ROSATTE, the intellectual property rights relating to the chosen geographic on-the-fly referencing method are applicable across the entire data chain, namely the AGORA-C standard.

With regards to the impact of deposits Licensing AGORA-C, the pool company has filed patents on technology for coding and decoding standard AGORA-C has par-

tially complied with these recommendations, but without specifying the maximum rate of royalties.

For each step of the chain ROSATTE, contractual licenses will have to be signed between the organisations responsible for the establishment, management, maintenance and distribution of spatial and spatial data services.

These licenses will grant the right to exchange, share, access, use of interoperable spatial data and spatial data services in the project ROSATTE.

They authorise especially:

- A controlled management of intellectual property rights, especially in gathering phase and
- An extinguishment of IPR of the existing geographical reference in case of abandonment of it when decoding, avoiding overlapping of rights from distinct origins on the same data.

The legal study full report (in French) is annexed to this deliverable.

Section 5.3.1 gives further details on the use of AGROA-C as the chosen on-the-fly location referencing method. The lessons learned during the tests lead to a possible abandon of this method in the context of ROSATTE. The main reason is that bandwidth is not a limiting factor in ROSATTE, but the IPR is surely another factor for this future decision.

4.3 Study on IPR issues for road data: national applications

4.3.1 Introduction

A questionnaire-based study meant at identifying the main Intellectual Property Rights tendencies in Europe for data road attributes was launched in July 2010, addressing the Public Authorities of all EU Member States.

The questionnaire investigated firstly if the local law of the respective countries could allow the formation of intellectual property rights on sets of data (i.e. road safety attributes) or databases outside the cases provided by European law. When the answer was yes, five more questions followed, addressing the conditions (including pricing) to use, disseminate and exploit the data (road safety attributes), the existence of a defined business model of how the road safety attributes are made available, the handling of the liability issues in the data supply process and the local certification processes for ensuring the quality of road safety data in databases. The study also requested from the participants to enclose relevant documentation or references available, detailing the IPR issues at national/regional/local level (in any language of EU Member States).

4.3.2 Participation overview

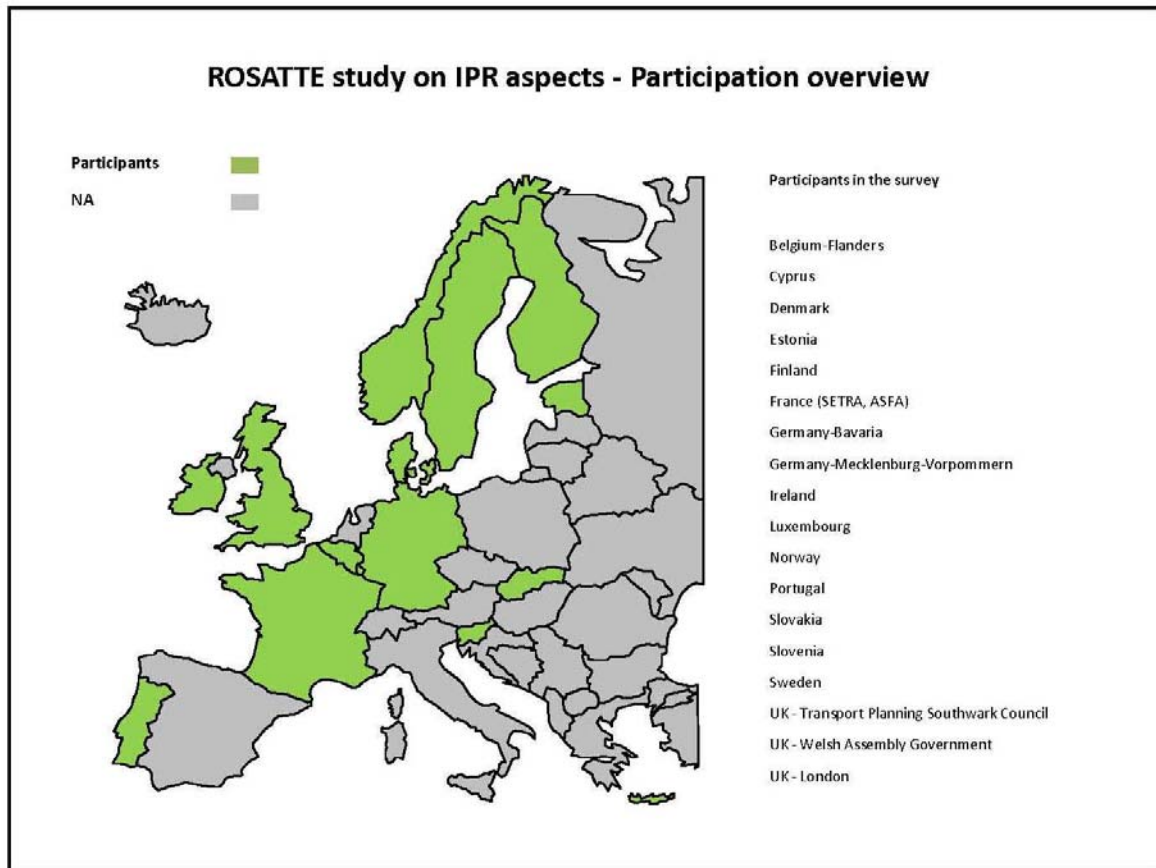


Figure 5 - IPR national aspects study: overview of participating actors

20 responses were received by the end of August 2010:

Flanders (Vlaamse-overhead), UK (Welsh Assembly Government, Transport Planning Southwark Council, TfL), Slovakia (Road Administration), Ireland (National Roads Authority, Ministry), Slovenia (Ministry), Estonia (Road Administration), Finland (Transport Agency), Cyprus (Ministry), Denmark (Vejdirektoratet), Sweden (STA), Germany (Mecklenburg-Vorpommern, Bavaria), France (ASFA, SETRA), Norway (NPRA), Portugal (Ministry), Luxembourg (Ministry).

Figure 5 illustrates the participation of the member states to the survey.

4.3.3 Study limitations

Main limitation is given by the relatively low participation in the study.

4.3.4 Summary of results

5 countries (Ireland, Slovenia, Estonia, Finland and Cyprus) replied that their local laws do not allow the formation of intellectual property rights on road safety attributes data or databases outside the cases provided by European law.

For the rest of the countries, which confirmed that their local laws allow the formation of intellectual property rights on sets of data, an overview of the responses received is given below.

The following issues were addressed:

1. Conditions (including pricing) to use, disseminate and exploit the data (road safety attributes);
 2. Availability of a defined business model of how the data (road safety attributes) are made available;
 3. Handling of liability issues in the data supply process and responsibility of the data suppliers (local and regional authorities, etc);
 4. Implementation of certification processes to ensure the quality of road safety data in the databases.
- 1 Conditions (including pricing) to use, disseminate and exploit the data
 - The purpose of using the data shall be stated before hand;
 - The permission is granted separately for each request.
 - 2 Availability of a defined business model of how the data are made available
 - Four main situations can be encountered:
 1. data is free of charge if it is requested for public use; no situation is envisaged for the cases where a commercial use would be involved (case of Slovakia, Portugal);
 2. another body collects the data, and the conditions and costs are to be negotiated with the respective body (case of France, Germany (Bavaria, Mecklenburg-Vorpommern), UK (Southwark));
 3. differentiated costs are established, corresponding to the purpose of use; data can be provided free of charge for test/evaluation purposes and for a reduced cost for education/research purposes (case of Norway, Sweden);
 4. the authority considers applying costs/ contracts introduction under discussion (case of Belgium (Flanders)).
 - 3 Handling of liability issues in the data supply process and responsibility of the data suppliers
 - the supply chain is based on written agreements between stakeholders (local and national government bodies) that describe timeliness and level of quality - however, no penalties are established for not delivering or under-performance;

- data can only be provided if the third party accepts a non-liability clause at the same time;
 - an agreement is put in place, defining the conditions for data delivery, the expected service levels, the pricing and the penalties applicable;
 - national validation checks are an integral part of the data supply process for national statistical purposes;
 - collection of data from suppliers is based on voluntary agreements without economic compensation (the supplier receives data in exchange for supplied data (for example a municipality receives data for state roads in exchange for supplied municipal data);
the supplier agreements define what, when and how data is to be supplied and the quality demands are defined in the data product specification
- 4 Implementation of certification processes to ensure the quality of road safety data in the databases
- no data certification process
 - no certification, but qualification processes in place; quality controls of the data input to the system as well as the stored data
 - no certification, but validation process in place
 - only data needed to plan, design, construct, maintain, operate and administer federal and land roads are kept in the database; certification processes have not been implemented in the road administration authority yet; to ensure the quality of the data bases, data are subject to different internal plausibility checks which vary with respect to the type of data

The questionnaire and detailed results (per country) collected during the study are available in Appendix 2.

4.4 Standardisation aspects and current works in CEN and ISO

CEN and ISO have developed a lot of standards for road network models and traffic data for the digital map marked over several years. Still the obvious lack of interoperability and horizontal integration in Europe demands more standardization. Responding to this, map makers and public authorities have initiated development of a range of standards in the relevant ISO and CEN comities mentioned above.

For many years there has been a liaison connection between ISO/TC211 and ISO/TC204. Many national experts are working in both TC's. Even though the two comities are aimed and focused differently, the cooperation has been effective. A lot of standards have been co-produced by the two comities due to expert overlap. ISO is aimed at world-wide needs, but most of the resulting standards become CEN-standards aimed at the European marked as well. A lot of ISO standards also have their origin in CEN or other European standardizations efforts.

TC 211 started out in the early 90's with the aim to create a set of base standards to support a common conception of geographic information. Among a lot of different results, these standards provide the framework models for transportation network, point locations, nodes, and the means (like feature catalogues) to connect information to the geographic features and model structures.

Likewise, the TC 204 base standards offer a range of base standards for the automotive industry. The family of standards created here covers a very broad field from communications between roadside and car (CALM), ticketing, tolling and geographic data files for the transmission of navigational information between map-makers and users.

Both comities are still very busy, with a lot of on-going work which might be of importance both domains and also for ROSATTE. Recent or current standard with common interest from both comities:

- TC 204 WG3 ISO 14825 GDF (Geographical Data File) standard was initially started by digital map industries in Europe. This standard is still being developed and is currently in it fifth version.
- TC 204 WG16 ISO Calm standards
- TC 211 WG4 ISO 19136 GML Geographic Markup Language
- TC 204 WG3 ISO 17572 Location Referencing part 1, 2 and 3 (AGORA-C)
- TC 211 WG10 DIS 19148 Linear Referencing
- TC 204 WG 10 ISO 18234 (TPEG 1), ISO 21219 (TPEG 2), ISO 14819 (TMC)
- CEN standards for digital road/traffic data
- DATEX2

Recently a new working group has started under TC 211. This working group covers Ubiquities public access and geographic information. This WG is populated with expert from both domains to accommodate common needs. Important on-going work here is:

- Place identifier: identification of road furniture
- U-position: global location of the road furniture
- Transfer Nodes: definition of stopping places in the network - multimodal

The recent standards development is moving in the direction of more content standards, as most of the structural standards are now ready. This means that more domain and applications-near standard are needed. These kinds of standards will need a different follow up after they are ready. Content will change and the need for content will be ever developing. This calls for operational comities that

prevails and keep developing the content. This is hard to do (at the moment) very weak business models for running such comities.

It is a long process to develop standards. It takes at least 30 months and it is a struggle between strong wills and often it also involves research at a high academic level. The benefits for the participants doing the work are membership in world-class networks and deep professional knowledge.

5. Deployment aspects of the ROSATTE framework

This section describes the issues related to the deployment of the ROSATTE framework across Europe. It first gives a simple view on the Data collection, exchange and update process, then describes through examples the four identified road database “working models”. The section 5.3 addresses in details the issues and lessons learned related to the data quality and its certification; followed by the view point of the different stakeholders. Finally, a Deployment roadmap is proposed supported by the creation of a ROSATTE forum including all involved stakeholders.

5.1 *General view on Data collection, exchange and update*

A simplified general process view that describes coordination of the delivery of road safety attributes from the road authorities at various levels - local, regional, national - is shown in Figure 6. Note that this simplified process view does not address issue of data update.

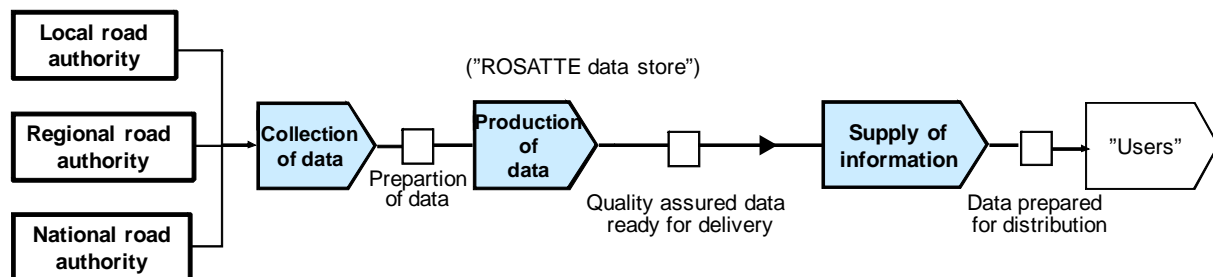


Figure 6 - General process view

1. Data collection

To enable effective and quality assured management of data from many different stakeholders, it is very important to agree on basic definitions and specifications. This also means that existing data collection requirements should also be harmonized.

2. Data delivery and data update

To make data exchange effective it must be based on agreed interfaces. When the stakeholder group is extensive, it is safest to use interfaces based on existing standards.

3. Data sharing

Data (information) should be made available by the use of formats based on standards (ISO, national standards, “software standards” etc) and through standardized geodata services.

The examples of the Swedish databases NVDB and RDT are further detailed in Appendix 3.

5.2 Road database “Working models”

Making road safety data accessible from public authorities in a harmonised way and paving the way for the creation of road safety attribute data stores is a new concept. It implies cooperation between public and private actors. So far, the market forces have created such exchange mechanisms and data access. This is amongst many reasons owed due to the fact that such data do not exist on the public authority side in any accessible digital form. Moreover, where such data exist, different data models, referencing mechanisms and technical access conditions create a burden to content providers to integrate and use such data. It seems slightly premature to define “business models”. Rather, the notion of “working models” is therefore preferred and further used in this chapter.

From the current point of view it is easier to grasp and some local experiences exist on “working models” which can be analysed, in how far they could be apt to foster a harmonised access to road safety data.

In principal, four working models can be defined and each of them is currently either already in application or intended.

1. State/local government controls (section 5.1.1)
2. Service delegations (section 5.1.2)
3. Public Private Partnership (section 5.1.3)
4. Market initiatives (section 5.1.4)

This section will describe each of the models above, looking at the following aspects:

- Motivation for collaborating in the working model
ex. financial, political, increasing safety etc
- Role of each actor in the system’s creation phase
ex. data maintenance and data exchange
- Role in the operation phase and
- Advantages/disadvantages of being involved in the WM for each actor.

5.2.1 Working model 1: Case of state/local government controls

The case of Sweden and Flanders are proposed in the next two sections. A brief summary of their respective working models is presented hereafter:

- Sweden
 - NVDB & RDT - results of government commissions
 - NVDB - joint forum (the NVDB Council) deals with important issues concerning the operation and development
 - RDT - justification by law
- Flanders
 - Traffic Sign Database of Flanders
 - Inventory completed by the end of 2010
 - Local and regional road authorities responsible for updating

Major advantages of the working models are listed (per country) below:

- Sweden
 - Common definitions,
 - Common exchange formats,
 - Better use of data collected using public funding,
 - Nationally uniform handling,
 - Quality assured data,
 - Better cooperation between actors contributing to the data chain,
 - Increased access to data from neighbouring stakeholders.
- Flanders
 - supporting and facilitating several operational processes (maintenance, reparation and design of traffic signs, traffic management, ...) of the road authorities,
 - Basic data available for 'higher' initiatives (speed map, ITS, traffic guidance, etc.),
 - Financial benefit (more efficient government),
 - Social benefit (increased traffic safety and liveability, consistency of signalization, etc.).

Swedish case(s)

For the Swedish part the two national databases NVDB and RDT are used as cases to describe working model(s) for "*state/local government control*".

- NVDB = The Swedish national road database
- RDT = The Swedish national database for traffic regulations

Both databases are results of government commissions given to the Swedish Road Administration. The creation phase of NVDB started in 1996 and the database has been in operational use since the late 1990s. The creation phase of RDT has just finished and the database is to be in operational use from 1st July 2010.

Since the Swedish Road Administration “ceased to exist” on the 1st April 2010 the responsibilities for the databases have been allocated to the newly established authorities:

- The Swedish Transport Administration is responsible for NVDB
- The Swedish Transport Agency is responsible for RDT

NVDB is operated in cooperation between:

- the Swedish Transport Administration
- Swedish municipalities
- the forestry industry
- the Swedish Transport Agency
- the Swedish mapping, cadastral and land registration authority.

The NVDB Council is a joint forum, for the stakeholders of NVDB, whose task is to deal with important issues concerning the operation and development of NVDB.

RDT is operated by the Swedish Transport Agency.

There is a law in Sweden prescribing that all traffic regulations must be delivered to the national database of traffic regulations (RDT) and this solves the problem of motivation in terms of data delivery.

The RDT stakeholders are:

- the Swedish Transport Agency,
- the Swedish Transport Administration,
- Swedish municipalities.
- Swedish county administrative boards,
- local Swedish police authorities.

1. Motivation for collaborating in the working model

- Increased availability, usage and quality of data,
- Better use of data collected using public funding,
- The workflow - the process - also provides benefits such as quality controls (at data delivery) and the possibility to use of common routines to make data available to users,
- In the case of RDT the law is a convincing motive for collaboration.

2. Role of each actor - NVDB

- Swedish Transport Administration
 - Enacting Authority, Data Provider, Datastore Operator (NVDB)

- Swedish municipalities and county councils
 - Enacting Authority, Data Provider, Datastore Operator (local & regional)
 - *A handful of selected municipalities participated as test partners in the creation phase.*
- Forestry industry
 - Data Provider, Datastore Operator (Forestry road network)
 - *Participated as test partners in the creation phase.*
- Swedish Transport Agency
 - Enacting Authority, Data Provider
 - *Data store operator for national database of traffic regulations (RDT).*
- Swedish mapping, cadastral and land registration authority
 - Data Provider
 - *Supplier of road network data (and to some extent even road data) for road operators with which SRA had not yet established data supply agreements.*

3. Role of each actor - RDT

- Swedish Transport Agency
 - Enacting Authority, Data Provider, Datastore Operator (RDT)
- Swedish Transport Administration
 - Enacting Authority, Data Provider
 - *Data store operator of NVDB which is the database that holds traffic rules resulting from traffic regulations.*
- Swedish municipalities and county councils
 - Enacting Authority, Data Provider
 - *A handful of selected representatives participated as test partners in the creation phase.*
- Local Swedish police authorities
 - Enacting Authority, Data Provider
 - *A handful of selected representatives participated as test partners in the creation phase.*

4. Advantages/disadvantages in the working model

Advantages of the working model are:

- Common definitions for road data,
- Common exchange formats,
- Better use of data collected using public funding,
- Better cooperation between actors contributing to the data chain,

- Increased access to data from neighbouring municipalities and other road operators,
- Increased access to data from other road operators needed to manage the transport requirements of the forest industry.
- Nationally uniform handling of traffic regulations.
- Completeness
 - All traffic regulations gathered in a national database,
 - All traffic regulations officially announced on a specific website,
- The resulting traffic rules connected to the national Road Data Base (NVDB),
- Quality assured data supply of traffic rules to NVDB.

Disadvantages of the working model:

- Complex data chain from local authorities to the data store operator on national level,
- Requires a constant political support and allocation of the necessary budget for being operational.

A More detailed info is available in Appendix 5 part 1.1)

Flanders case – FL

As an example of a working model, this paragraph will more in depth analyse how the construction and maintenance of the traffic sign database is realised in the Flemish region of Belgium.

1. Motivation for collaborating in the working model

Belgium consists out of 3 communities (the Flemish Community, the French community and the German speaking community), 3 regions (the Flemish region, the Brussels Capital region and the Walloon region), 10 provinces and 589 municipalities. Belgium has thus a complex structure with 3 organisational levels: the highest level consists out of the federal government, the communities and the regions; the middle level consists out of the provinces and finally the lowest level with the municipalities.

The legislation on the Belgian road network is an authority of the federal government. However, the competence of the construction, the maintenance and management of the roads is assigned to the 3 regional governments (the Flemish region, the Brussels Capital region and the Walloon region), the provinces and the cities and municipalities. The regions are responsible for the motorways, highways, the regional and the main secondary roads. The provincial roads are partially secondary roads, and partially local roads. The rest of the road network is for the cities and municipalities.

In Flanders, it is planned in the coming years to divide all the provincial roads among the Flemish region (secondary roads) and the cities and municipalities (local roads).

2. Role of each actor in the system's creation phase

In the Flemish part of Belgium (Flemish region), the upper level in the data collection process is the Flemish government. The Agency for Roads and Traffic (AWV) of the Flemish government) is responsible for the road database of the highways, regional roads, and the main secondary roads in Flanders (about 6500km). This road database contains information such as speed limits, safety constructions, number of lanes, pavement, etc. In March 2007, AWV started with the inventory of all the traffic signs along their roads. This will probably be complete at the end of 2010.

At the same time the Department of Mobility and Public Works of the Flemish government has started with the inventory of the traffic signs for the rest of the Flemish roads (provincial roads, municipal roads and other roads, in total about 54000km). This database was completed in July 2010.

In the mean while, both databases mentioned above have been merged in one central database. This central database will contain each traffic sign along each road in Flanders. The Flemish government has financed the development of this central database.

3. Role in the operation phase

The maintenance and up to datedness of the database will have to be guaranteed by the respective road authorities (Flemish region and the 308 municipalities in Flanders).

As far as the Flemish region is concerned, the database will be kept up to date by integrating the process of the updating of the database in the workflows of the AWV districts. As far as the other road authorities are concerned, the database will be kept up to date by using the workflow of the 'additional regulations' regarding local restrictions that autonomously can be put in place by cities and municipalities. However, since this regulation does not cover all types of traffic signs in Flanders, one will also depend on the goodwill of the respective road authorities in order to be able to guarantee the up to datedness of the traffic sign database. The Flemish government has therefore organised numerous information sessions and courses for the different municipalities in order to explain the working principles and the benefits of the existence of an up to date traffic sign database. The majority of the municipalities seem to be convinced by the win-win situation this traffic sign database brings, and therefore the Flemish government trusts that the traffic sign database will be kept up to date.

4. Advantages/disadvantages of being involved in the working model

Mainly benefits can be expected from the existence of a traffic sign data store. The traffic sign data store can be a great help for

- supporting and facilitating several operational processes for the road authorities:

- Maintenance and reparation;
- Design;
- Management;
- Traffic Management (detours, road works, re-routings, etc)
 - To establish and maintain a coherent signalisation in order to obtain an optimal traffic flow
 - Readable arrangement of the road and the surrounding area in order to increase traffic safety
- Follow-up of contracts (guarantee, delivery and placing);
- Drawing up and control 'Supplementary regulations' ('Aanvullende Reglementen')
- Providing an overview on the actual situation of the traffic signs along all Flemish roads using the central datastore
- Providing basic data for all kinds of purposes:
 - Traffic guidance (signposting, route planning);
 - Speed maps;
 - Intelligent Transport Systems (ITS) systems like GPS, ISA, etc;
 - Correlation parameters (accident analysis);
 - Asset management.

Besides the above mentioned benefits, there is also the financial benefit that different recordings and movements are made superfluous. There are also many social benefits:

- Improvement of the policy functioning due to a better opening up of the data
- Improvement of the quality and the consistency of the signalisation
- Integration of traffic sign data in applications of map makers
- Improvement of traffic safety, traffic fluidity, traffic liveability, etc. by integrating the traffic sign data for various road users in GPS
 - Avoidance of trough traffic by taking into account traffic signalisation plans
 - Avoidance of trough traffic by taking into account height, width and weight limitations
 - Avoidance of heavy traffic in town centres
 - Better speed harmonisation - variable speed

- Better parking management

A major disadvantage for all actors is the implementation and the maintenance cost. The additional workload for the maintenance should be limited or even zero, since it is tried to integrate it in the existing working processes.

The update mechanism using the 'supplementary regulations' is not yet operational, and does not cover all kinds of traffic signs, so the updating will also depend on the goodwill of the road authorities.

A More detailed info is available in Appendix 5 part 1.2)

5.2.2 Working model 2: Case of service delegation

This section gives a description of the French motorways service delegation.

French private motorway companies are in charge of more than 8 500 km of the French motorway network under the rule of public service delegation. More precisely, private motorway companies are bound to the State by concession contracts. It means that motorways all belong to the French state but are granted to private companies. All operations of management and all investments are done by the motorway companies, and they pay themselves by applying a fee to the drivers using the motorway. The amount of the fee is defined in the service delegation contract.

Speed limit regulation and management

A speed limit regulation always comes from a local public authority. However, motorway companies can be associated to the decision of a regulation, and concretely motorway companies are (nearly) always at the origin of the regulation by proposing the speed limits to be applied.

A motorway company is responsible of the speed limit signs on its network. Each private motorway company manages its own speed limits database (different software and various internal formats).

Centralization of speed limits

ASFA is the association which gathers French private motorway companies.

In 2006 ASFA managed to start building up a national motorway speed limits database.

The central data store is operated by Autoroutes Trafic, a company which belongs to the nine most important French private motorway companies and which is already in charge of traffic data collection and delivery to service providers.

Even though ASFA focuses in the first place on speed limits, other safety attributes can be provided using the same mechanisms. This is included in their roadmap.

1. Motivation for collaborating in the working model "Service Delegation"

French Transport Administration grants the management and the extension investments of the motorway network to private companies. Thus they do not handle the maintenance of the network and the related investments. Motorway companies get the grant of the network for 20 or 30 years which allow them to build long term business models. Beside that they owe a public services mission to the French Transport Administration; one of these services is to take actions for the improvement of road safety.

ASFA is the common voice of French motorway companies for the study of user's safety aspects and drives private motorway companies' common policy regarding safety aspects.

Given the implication of motorway companies in ASFA, their collaboration to safety related projects is rather easy to obtain. Once ASFA has committed itself to tackle certain subject to the French State, its members (the motorway companies) take action to deal with this subject.

The will to tackle a subject can also come directly from a motorway company. In this case the collaboration of other companies can be more difficult to gain.

Autoroutes-Trafic is the frontend company of the system. It is the one who collects the data from all motorway companies and who can deliver up-to-date data to third parties. It is the one who builds up the business model regarding traffic data delivery or safety attributes delivery.

As Autoroutes-Trafic is a subsidiary of motorway companies, it also makes things easier to get collaboration from all parts. For example in the case of speed limits database management, all motorway companies provide static speed limits data to Autoroutes-Trafic to feed a central database.

2. Role of each actor in the system's creation phase

The only difference between creation and operation is that ASFA stops acting as data provider and local data store operator once the service has been started.

- French Transport Administration
 - Enacting authority
- Local registration authority(county)
 - Enacting authority
- Motorway companies
 - Enacting authority, Data provider, Local data store operator
- ASFA / Autoroutes-Trafic
 - Data provider, Local data store operator, Data store operator

ASFA originated the collection of speed limits information by motorway companies and its centralization through the Autoroutes-Trafic entity.

3. Role in the operation phase

- Local registration authority(county)
 - Enacting authority
- Motorway companies
 - Enacting authority, Data provider, Local data store operator
- ASFA / Autoroutes-Trafic
 - Data store operator

4. Advantages/disadvantages of being involved in the working model "Service delegation"

Each actor can find advantages and disadvantages in the case of public service delegation:

- French Transport Administration

Advantage: Still owns the motorways but is not in charge of the network maintenance and does not make any investment.

Disadvantage: No control on the motorway companies management and organisational aspects.

- Local registration authority (county)

Advantage: Takes the decision of the speed limits regulations on the motorway network.

Disadvantage: No other role than taking the decision.

- Motorway companies

Advantage: Users pay a fee for the use of the motorway network and services. Motorway companies' business model is built on it.

Disadvantage: Motorway companies have to do all financial investments, under the rule of the French Transport administration; the business model was built over 20, 30 or 50 years.

(The public authority can ask for the ASFA safety attributes database for free as a part of the services owed by motorway companies.)

- ASFA

Advantage: It drives the private motorway companies' common policy on safety aspects and it is the common voice of motorway companies when discussing road safety issues with French transport administration, also being the team leader in road safety European projects.

Disadvantage: There is need to make investments to build up and maintain the central data store; must convince motorways companies to stick to the project and to keep up their motivation all the way long.

- Autoroutes-Trafic

Advantage: It is in charge of the central data store and data supplier for third parties and it is the organisation who can build a business model that would generate incomes for motorway companies and itself.

Disadvantage: It is a long process before providing data with full coverage to third parties; part of the proposed strategies will not be accepted by the motorway companies (the strategy is dependent on motorway companies' decision).

A More detailed description is available in Appendix 5, part 2)

5.2.3 Working model 3: Case of public private partnership

This section gives a description of the PPP model for Traffic Information in Bavaria.

PPP means a collaboration setup between Public and Private which is meant to generate financing and resources (expertise) for ensuring certain public tasks/roles. It means in practice a partly privatisation of public tasks. There is no clear definition to PPP. In contrast to mere financing of private company to fulfil a task, both partners contribute their strengths, i.e. capital, physical resources and/or personnel provided by both PPP partners. The public side hopes to leverage assets (know-how, technology etc.) from the private side, the private side hopes to gain market share, access, strategic positioning for its activities.

PPP means a 'functional' privatisation (between task/materialistic privatisation and organisational privatization). PA remains overall responsible; however certain responsibilities are delegated to the operating company. Generally, a separate company is often founded for this purpose, which shall fulfil/operate the functions of the PPP for the duration time of the partnership.

In Bavaria the collection, maintenance and distribution of Traffic Information has been organized in a PPP-model. The information that is also provided as a B2C service to the public via www.bayerninfo.de can be used as B2A services for internal tasks of road operation like road works management, traffic guidance systems or (using statistical data) for road planning. Also the distribution as a B2B service to other service providers like navigation device operators, vehicle manufacturers and other users is organized in a PPP-model. The organizational body of this model is the Traffic Information Agency Bavaria (VIB).

In terms of ROSATTE, this means that implementation and operation of the data maintenance and the ROSATTE data exchange could also be organized through this kind of partnership.

1. *What is the motivation to the actors to engage in this collaboration model*

The motivations of the central Bavarian road administration are the following:

- Ensure with limited funds (in money and personnel) public functions, (which are not considered as core). In the case of ROSATTE, in particular of road data maintenance system operation and maintenance (for use by local enacting authorities) is the subject of 'outsourcing'.
- Avoid build-up of additional, administrative capacity (with long term obligations) in times of budget scarcity
- Public funding is focused on financing build-up phase of the data maintenance system (specification, development and implementation) according to predefined requirements. Some funding may be reserved to basic maintenance operations, where PPP-entity cannot generate own revenues.

Expectations are that PPP-entity can bring in own assets (specific technology) and that will generate own revenues from the PPP activities. This implies that public funding needed may be lower than if build-up/operations were ensured by the public body itself.

The main motivations of the private partner in the PPP are:

- Availability of initial funding and sheltered market for longer term technological developments
- By bringing own resources (technological,
- Achieve a competitive advantage compared to the competitors

Chance to enter advantageous role for the supply of products and services in the region concerned

Enacting authorities (on the ground) are not directly involved in the PPP. They are considered as users/customers of the system which operated under the PPP model

2. *What is the role in the build-up phase?*

The roles in the build-up phase are distributed as following:

- The central authority (CA) provides technical and organizational requirements on the system to be designed and operated
- The central authority ensures access to other public resources needed for the PPP access (e.g. access to data ...)
- It also provides funds for the build-up phase of the data maintenance system (specification, development and implementation) according to predefined requirements.
- It checks and approves the system implementation;
- The central authority sets further conditions, rules and requirements for the operation phase (e.g. access conditions to PPP services for EA);
- The private partner builds system and establishes organizational setup for the operations of the PPP and the system
- Individual enacting local authorities are involved in the pilot operation phase for functional and acceptance tests

3. *What is the role in the operation phase?*

In the operation phase the roles are:

- Some funding by CA may be reserved to basic maintenance operations, where the PPP-entity cannot generate own revenues,
- CA checks whether operational requirements are kept,
- No further involvement of CA outside agreed contributions during operation phase,
- The private partner operates the system, markets PPP offerings to third parties,
- May create further offerings on a commercial basis to customers,
- The enacting authority uses the systems and components.

4. *What are advantages/disadvantages of the PPP model*

There are various advantages of a PPP-model e.g.:

The public partner can conceive and foster functions outside the restrictions of public administration framework and increases range of manoeuvre/reach despite budget scarcity. Innovative approaches can be leveraged in the technical and organizational setup of service provision. Private paradigm of operation phase fosters functions/offerings with direct benefits to the users.

The main disadvantages for the public side are the long negotiation phase, limited further development of the functions over the PPP duration time after the investment phase and a potential lock-in to initially chosen approach over the operation time. The private partner must ensure the quality and service levels in PPP operations, which can be very complex. For the users there might be a restriction to internal assets and developments of companies involved in the PPP.

A more detailed description is available in Appendix 3, part 3)

5.2.4 Working model 4: Case of market initiatives

This working model can be described as the status quo model existing today in most countries.

1. Motivation for participating in the ROSATTE framework/working model

The core motivation for the map providers to cooperate in the ROSATTE framework is that it provides a highly efficient mechanism for collecting and integrating certain safety related attributes. This mechanism enables up-to-dateness of these attributes in the map database for in-vehicle applications that cannot always easily be achieved with the data maintenance methods that are currently deployed by the map providers.

Today, leading Map Providers are using various technologies and approaches to source information to maintain their digital map databases. These include sending out surveyors to inspect the road for updates, driving around with mobile mapping

vehicles to collect geo referenced imagery along the roads for remote processing, asking feedback from customers (community input), using vehicle probes or float car data (FCD), contacting authorities to learn about planned works, etc. Except for the last example, all actions relate to the detection of changes in the real world. Due to limitations in resources, it is obvious that it is impossible for Map Providers to detect changes as they occur. For the safety attributes considered in the ROSATTE data chain, such as speed limits and traffic signs, the responsible (road) authorities by nature represent the most efficient source for updates of this information. They decide on/plan the changes and implement the changes. The core idea of ROSATTE is to put ICT systems in place at the side of the authorities to immediately record these changes in a database that permits automatic and nearly immediate extraction of updates, being single update or aggregated sets of updates. This fact and the need for a public-private agreement for the supply of the updates has been the core starting point of the ROSATTE initiative.

2. Role of the Map Providers in the ROSATTE framework/working model

The overall role of the map providers is to receive and process in a timely manner update sets received from public authorities and other providers, and to integrate the update information in their core map databases. In addition, the map providers may provide relevant feedback information to public authorities and other providers, concerning:

- data that could not be properly processed due to data errors or other issues,
- discrepancies detected as a result of the processing of the data, conflicts with other data (e.g. from live vehicle probes), conflicts with business rules,
- Conclusions of inspection of issues found (by visual/manual inspection and comparison of the data provided, of by field survey, and
- Provision of incremental updates of map databases, as part of a (future) service for incremental updating.

It is important to realize that between the leading Map Providers there is no exchange of map information for obvious competitive reasons. Each Map Provider has invested heavily - and continues to do so - in creating a rich product of high quality. Today, we face the situation that there are bilateral agreements in place between Map Providers and some (road) authorities with respect to the exchange of information for the creation and/or maintenance of digital maps (these agreements are in most cases one-sided, without further extension to include another map provider). These agreements include license conditions, exclusivity issues, pricing matters, etc. Whenever a public authority - or any other information provider - wants to set-up a ROSATTE data provision chain, the existing agreements and contracts with respect to source data provision might be affected. The access to, the conditions of use, and the cost attached to ROSATTE updates could raise conflicts or represent barriers.

The need to establish a new business model helped realizing the ROSATTE project. Two case scenarios can be envisaged: a full exchange (supply) of dataset and exchange of some attributes (especially safety related road attributes). ROSATTE is

particularly addressing the latter case and presents an acceptable generic solution to establish a reliable exchange framework between Public Authorities and Map Providers.

An obvious advantage of the new business model, that the Map Providers will concentrate on building the core map database, adding the safety related attributes as added value to its maps - or, alternatively, validating an already detected but not committed change of an attribute - and complying with the INSPIRE principles.

3. Advantages/disadvantages of involvement in the ROSATTE framework/working model

At this moment, there is no common framework to regulate exchange of data with the public authorities, neither the infrastructure to implement it. Therefore, a general advantage of participating in the ROSATTE framework is that a more efficient and robust mechanism for data exchange with public authorities is established.

A specific advantage of participating in the framework is that it will enable the Map Providers to include safety attributes in their map databases with a high degree of completeness, correctness and up-to-dateness, which cannot be reached without the ROSATTE framework in a cost efficient way. Inclusion of these attributes at a high quality level is a requirement for map-based safety-related vehicle systems. Adoption of such systems and their proper functioning is important from a general perspective, as this is expected to provide a contribution to the improvement of road traffic safety.

The table below gives a summary of roles and actions for the stakeholders involved in the working models described in this section.

Table 3: Summary of Working Models

Role	Action	Summary: Working Models			
		1. Public control	2. Public Service Delegation	3. PPP	4. Market initiative
Sponsor	Definition of the organisation	Central public authority	Central public authority	Central public authority	Private operator
	Design of the system	Central public authority	Central public authority	Central public authority	Private operator
		Local authorities		Private partner (Local authorities)	
	Implementation of the system	Central public authority	Central public authority	Central public authority	Private operator
		Local authorities		Private partner (Local authorities)	
Data provider	Identify / provide data	Local authorities	Private delegate	Local authorities	Local authorities
	Collect data			Private partner	Private operator
		Local authorities	Private delegate	Private partner	Private operator
Data store operator	Check the data, to produce consistent and standardised data sets	Central public authority	Private delegate	Private partner	Private operator
Integrator	Prepare / update safety maps ready for use	Private operator (Map maker)	Private operator (Map maker)	Private operator (Map maker)	Private operator (Map maker)
Service provider	Design and marketing services	Private operators	Private operators	Private operators	Private operators

5.3 Data quality and certification

The Digital Maps Working Groups of the eSafety initiative of the European Commission (DG Information Society and Media) proposed in its report (2005) a three-step approach regarding the integration of safety attributes in a digital map. In particular, the third step should include a qualification process.

The ROSATTE framework includes an agreed way to declare the quality of the data on dataset level (for each type of attributes) received from the PA. The recipients have then the possibility to decide if the data meets the necessary requirements to be used for its application.

The quality of the resulting end-user product/data is a sum of the quality of the supplied data plus the influence of the data processing along the ROSATTE data chain.

In practice metadata provides data source information, in particular:

- which road category is covered (e.g. road categories within Inspire),
- is the map data certified,
- if not certified, what are the quality criteria used to measure quality of the map data provided.

The ROSATTE data processing mainly influences:

- the time period, needed by the individual processing steps and
- the influence of location referencing on geometrical accuracy, topological correctness and completeness.

In general, there is not one single way to measure quality. Some countries provide this information in their metadata, others have certification stamps. Also the quality of the supplied data itself varies across Europe. Even the quality of the data coming from a single supplier may not be consistent in time and space (e.g. different acquisition methods).

In any case, processes have to be put in place to verify the validity of the data in the database. ROSATTE helped to motivate and speed up the implementation of the data quality processes.

Supply quality information according to this model is not straight forward, since the PA internal processes are in general not developed for the purpose of the exchange to third parties, nor have they can they be expected to be aligned with ROSATTE. So in fact, quality information is not always provided or even internally available at the local authorities.

As it is now and without regulatory framework, local authorities providing road safety features in a ROSATTE framework cannot (in all EU member states) be forced to supply such data and meet certain quality requirements.

ROSATTE therefore can just use the information that the member states regularly maintain.

This leads to diversity with respect to the provided content and level of quality of the available road safety feature data across Europe. Information receivers therefore would need to invest in more quality checks to validate if the supplied information could be used in (demanding) applications.

Making data available and having third party data users via ROSATTE will entail a virtuous circle:

- Interested data users will express their quality requirements more explicitly and may rely on ROSATTE quality concepts as methodology.
- Requirements by users will bring quality issues up on the agenda and drive PAs to improvements.
- More data users will become interested in using such data.

Key aspect: data users to express their quality needs in a harmonised way (ROSATTE conform) are needed to start the virtuous circle.

As we see, data quality, qualification and certification are complex issues. The following sub-sections look at the:

- lessons learned from ROSATTE implementation (field test sites) (5.2.1),
- needs for qualification (5.2.2), and
- impact of qualification (5.2.3).

The current legal framework and the impact in term of responsibility for the different actors of the data supply chain are covered in chapter 3 of the report.

5.3.1 Lessons learnt from the ROSATTE field test sites

In order to provide information about the current quality level of the provided data, local authorities need to learn about their internal processes of data acquisition and maintenance. This involved people of different internal levels. In many cases, a better internal communication and information exchange could be established within the local authorities. This also allowed them to better understand their internal processes, and from this they could start to improve the processes and therewith the quality of the provided data.

In this context, the test sites discovered that up to now, there is no common way to express the quality of such road safety features. Existing standards only provide very general information. Also the map providers as potential data users in ROSATTE only provided very little quality requirements. So in the end, if more detailed requirements were available, the test sites probably could have provided more detailed quality information. This also could have helped to improve the results of the data integration at the map providers.

Secondly, all test sites encountered problems implementing and using an on-the-fly location referencing service. On the technical side, implementation differences due to ambiguities in the AGORA standard were discovered and needed to be solved. Since the AGORA standard contains a lot of rules and therefore is quite complicated to implement, only one test site could use an own AGORA encoder implementation. Two test sites could make use of encoders provided by the map makers since they also used commercial maps. Two test sites, however, were forced to search for alternatives to AGORA since they were not able to provide proper AGORA codes for many different reasons. In these two test sites, an OpenLR encoder could be implemented using publicly available source code.

Besides these technical problems, the test sites anticipate problems caused by potential IPR issues related to AGORA. In this respect, OpenLR as an open source method provides an interesting alternative and probably lowers the threshold for other countries to provide ROSATTE data in the future.

Besides the location referencing method, some test sites discovered IPR issues with their used maps and also the data derived from those maps. Currently they were only allowed to share the data for evaluation purposes and not for commercial use. So without relaxation of those IPR regulations, the provision of ROSATTE data would not be possible for these test sites.

The test sites also discovered problems by matching their own internal attribute specification to the ROSATTE specification. In some cases, this matching was difficult or even not possible so that not all ROSATTE attributes could be provided.

In general, test sites with mature databases implementing ROSATTE framework could extract the quality measures needed with little efforts (e.g. Sweden-Norway test sites).

For some PA who had already worked on experimental maps, the validity or accuracy of the data were a concern and had to be (re-)evaluated through integrity tests on the database itself, on its interpretation according to local regulation and/or through short surveys on the field. These processes are similar to the ones implemented by Public Authorities with mature databases.

For new map database implementation, the quality measure could be integrated directly in the database according to the requirements and specification of ROSATTE.

5.3.2 Requirements for qualification of data providers

To be able to qualify as a provider of road safety data, a data provider (road authority) has to comply with two different “levels” of requirements.

Requirements on the data provider

The internal processes used by the data provider, producing data, should be documented as part of a quality management system (e.g. ISO 9001).

Requirements on the data provided

The data provided (HARMONISED data exchange to third parties) must be able to comply with the requirements of the ROSATTE specifications (metadata, content, quality parameters etc.).

The user or customer of geodata has certain expectations on the quality of the data delivered. This means that it is important to declare metadata and quality of data in a uniform manner that follows recognized standards supported by ISO and CEN standardisation processes (EN ISO 19115, ISO 19157, ISO 19158, etc.).

Unfortunately, the quality-standards mentioned above, have not yet reached the desired impact among the stakeholders. This means that there is significant need of active dialogue between the stakeholders before the ROSATTE data chain is deployed.

As the provided data can be used for several purposes a declaration of quality makes it possible to decide when and where to use certain data.

The responsibility and the consequences for the data provider (PA) of a false quality statement (for a data set) differ depending on differences in national legislation. These kinds of issues have to be solved in consensus with other EU initiatives (e.g. INSPIRE).

Some other identified issues that have to be clarified are:

- Which part of the road network should be covered and with which quality level?
- What data quality level will be needed on which road category?

Since on-the-fly location referencing was an important issue in ROSATTE and since there are many possible interpretations of the standard, it might be good to think of a qualification of the LR implementations at the local authorities, i.e. a data supplier can indicate in the dataset metadata that its location referencing was proved by certain application providers, e.g. map makers, etc. therewith, other users can check whether the location referencing is compatible to their decoders etc.

Further information about qualification is given as guidelines in section 6.3.

5.3.3 Impact of ROSATTE on qualification of data providers

The implementation of a qualification scheme at road authority may not only impact its processes and provided data, but may also impact other parts of the authority in many different aspects. This section therefore presents the impacts of implementing the ROSATTE framework with respect to data qualification and gives practical experiences that were gained within ROSATTE.

Positive impacts of implementing the ROSATTE framework

The introduction of the ROSATTE frame work (working model) at a road authority (or other road manager) is in itself a factor of progress. It will lead to improvement of internal processes, awareness of quality management and introduction of sound relations with all partners engaged in the whole data chain from data capture to delivered road safety attributes.

Improving internal processes and establishment of quality criteria

Internal processes, at a road authority, may change significantly through the establishment of a ROSATTE working model.

- By setting up an internal process of quality management in order to satisfy the requirements of ROSATTE.
- Through development and implementation of a quality controlled structured delivery framework for its own (contracted) data suppliers.
- Gradually improve the quality level of road safety attributes by using the experience given in feedback from the integrators (map providers, service providers etc) to express admission criteria's for contracted data suppliers.

Guidelines on the subject data quality are found in chapter 6.3.

Improving organisational and legal soundness

The ROSATTE framework introduces a comprehensive methodology for acquiring, managing and transmitting data - data that obeys principles of contractual clarity and of legal transparency.

Other business activities supported by internal databases of the road authority may benefit from the processes established for ROSATTE, especially in terms of quality control, relationships with partners and legal processes.

An important issue for road authorities is the possibility to reuse information outside of the target for which the information (data) was originally collected. The ROSATTE project in itself imposes a method to spread road safety information, from public databases for use by service providers, where the final user application is not yet known to a detailed level.

Improving the quality of other internal databases

Other data managed by the road authority may also benefit of that a ROSATTE frame work (working model) is introduced.

- Incipient use of road safety data in end user applications will help to raise awareness about data quality issues in the internal PA processes.
- Consistency checking with other managed data will highlight residual anomalies of either database; this might form a virtuous circle.

Quality related obstacles in implementing the ROSATTE framework

Compliance to quality specification

Quality specifications with which it is hard to comply can increase the risk for road authorities to effectively use and apply the ROSATTE specifications.

It is never the less important that the ROSATTE project establishes minimum recommendations. They should:

- be harmonized with other European general recommendations in the field of map data, in particular INSPIRE- and ITS-directives
- follow ISO and CEN standards.

Decisions on possible more demanding quality criteria's have to be decided later in the light of special needs specified by end users.

The roadmap for deployment (section 5.5) suggests creation of several Working Groups, with different focus.

One of these Working Groups will focus on "specifications and standardization" and this group of course also have to deal with questions like "How to comply with the ROSATTE specifications?".

Responsibility of data providers

The policy generally adopted by Public Authorities is to disclaim responsibility by stressing the purely indicative value of the information; this is also confirmed by the IPR questionnaire-based study presented in section 4.2.

Similar policies are also very common among Service Providers and Map Providers. This widely prevalent approach makes it hard to introduce requirements for certification of data providers. It might be better to reduce the level of ambition and start out with requirements for qualification which the data providers are more likely to follow. Requirements for qualification also give possibilities for a gradual increase in level of ambition and each contributor can take responsibility for his part of the data chain.

The ability to fulfil the requirements of qualification will help all stakeholders (including new entrants) to deal with the liability issue task of data providers.

5.4 Involvement and commitment of stakeholders

5.4.1 Viewpoint from a motorway operator

From the viewpoint of motorway operators, it seems important that in one country all motorway companies provide the same level of service. It means that all motorway companies should be involved and should appoint staff in charge of manag-

ing this activity, maintaining the local databases in each motorway company and using tools provided for updates.

To ensure involvement and commitment of all stakeholders, a top-down approach is necessary but may not be sufficient, depending on the contractual context between stakeholders. An important success factor is to define a win-win cooperation framework, so that everyone is convinced that it is useful to adopt the ROSATTE infrastructure. The process for collecting and updating speed limits and other safety attributes must be both uniform and flexible enough to fit the different national or regional policies.

A friendly interface, easy access and short time delays between data provision and its up-date on digital maps are also recommended.

Generally speaking, motorway operators are already particularly interested in communicating about dynamic and variable speed limits, because these are already used today on the motorways to manage a large number of events (road works, heavy traffic, air pollution, speed control, etc) and provide traffic control.

They are aware that such an infrastructure will be profitable to the drivers and will contribute to improved data quality and reliability.

Nevertheless, business models still need to be defined, depending on the market needs and the countries specificities.

5.4.2 Viewpoint from a map maker

Map Providers are natural stakeholders in the future ROSATTE exchange service. As the customers of Map Providers - car manufacturers - have ever increasing quality requirements for digital maps for safety systems, the sourcing of ROSATTE "safety attributes" and their integration in Map Providers databases is of high importance. Clearly, win-win cooperation models need to be identified.

To achieve this, it might be necessary to involve vehicle manufacturers in an overall cooperation. Related to commitment, Map Providers will use supplied ROSATTE updates, if the quality can be trusted, the service can be relied upon, etc.

5.4.3 Viewpoint from a road authority

For the operational phase, there are two stakeholders involved in the provision of the safety attributes: public authority and digital map providers. They have a very different business approach; the public is governed by safety policies and targets involving reduced numbers of road fatalities - thus beneficial to the society as a whole, while the map makers want to add value to their products in order to sell more to the car owners.

However, in spite of the different approaches, both parties are needed to achieve both goals. During the progress of ROSATTE there has been conducted several user surveys - among the stakeholders. At large, the result of the surveys shows that

most public stakeholders are willing to commit to make safety attributes available for map makers and other users. Most of them are in a process of improving their data quality management to support the commitment. Map makers are also willing to pass on safety attributes (from the authorities) to their end-users. In doing so they help the authorities full fill their goals and at their users to become more informed drivers.

Viewed in the light of the ITS Action Plan and emerging Directive, all EU authorities will need to comply with concepts like ROSATTE in the near future - this gives them, of course, an extra incentive to speed up the process, e.g. in terms of data collection of their own existing infrastructure. The ROSATTE project results provide an infrastructure to answer the action 1.2 of the ITS Action Plan, especially regarding the optimisation of the provision of traffic regulations. If a data exchange as proposed in ROSATTE is implemented, an up-to-date provision of regulation data from the road operators to the commercial map makers and thus also to the end-user will be enhanced regarding timeliness and correctness, as the ordering body is given the chance to provide actual data at the time of installation. The ROSATTE exchange infrastructure technically also offers a potential to be extended towards the provision of recommended alternative routes.

But still, most nations, states and municipalities in Europe have poor possibilities to meet the coming requirements on short notice. They still lack the technical and organizational means - and will therefore commit to any EU-recommended way to standardize and organize their provision of safety attributes. Likewise, map makes will comply and agree to provide the data in order to stay competitive. On the other hand, regions with advanced technical infrastructure starting to use the ROSATTE framework at an early stage (early adopters) can provide their experiences in data provision.

5.5 Deployment roadmap

5.5.1 Objectives of a roadmap

ROSATTE deployment roadmap main goals are to provide:

1. a step wise development path of the framework
2. a common understanding of the steps forward,
3. the possibility to follow-up ROSATTE implementation in time, guaranteeing in this way the monitoring of ROSATTE activities.

Moreover, the roadmap shall be used as an information/communication tool.

Thus, its visualisation must allow a quick identification of the steps to be taken in order to implement ROSATTE, facilitating in this way the adoption of ROSATTE by new comers.

5.5.2 The proposed roadmap

The following section proposes a fast lane roadmap for the early adopters (including the standards definition).

The milestones to be considered for the organisations which will implement ROSATTE at a later stage are identified in section 6.1.

This roadmap (see Figure 7) aims at indentifying and describing the milestones which ROSATTE framework will encounter in the next 10 years. The milestones implementation' status is tracked from their start-up to their finalisation, three indicators being used:

1. **Specification phase:** a lot of work left until the milestone is overcome (colour code: red),
2. **Implementation phase:** more work is needed to fulfil the milestone (colour code: yellow) and
3. **Operational phase** - the milestone has been overcome (colour code: green).

A first milestone of the ROSATTE framework is represented by the *creation of a self-contained organisation*. A Governance structure is to be created, terms of reference will be proposed and approved by the active members of the organisation, a start-up planning will be put in place. By mid-2011, the ROSATTE organisation should be setup and running.

The next milestones are represented by the creation of several Working Groups, with different focus:

1. **Working Group on Location Reference (LR):** working along the goal of benchmarking of current LR solutions and proposal for adapted improvement for ROSATTE coordinated, with operational link to TISA.
2. **Working Group on specs and Standardisation:** working along the consolidation of specifications with other existing documents (e.g EuroROADS, INSPIRE WG) and standardisation of ROSATTE framework (data store interfaces, services, data exchange format) - links to ISO, CEN, ETSI to be established.
3. **Working Group on Implementation Support:** working with the goal of providing guidelines, test environment, best practices examples, Q&A, launch of basic services for the organisation members -including test facilities, support to new implementation of ROSATTE (consultancy offering), quality process available for ROSATTE suppliers/ certification.

4. **WG on generic tools and reference implementation:** working with the goal of providing generic tools and reference implementation in order to accelerate generic parts of the implementation of a ROSATTE infrastructure.
5. **Liaison Working Group on Policy, awareness and dissemination of the platform activities:** working along creative an integrative perspective within the current EU political frames and priorities: ITS Directive, INSPIRE, eSafety recommendations, eventually, Road safety attributes integrated into ITS Directive, information/awareness actions for ROSATTE platform.

As of beginning of 2011, the work on two more milestones is being planned:

- Developing actions to increase the information and awareness of the ROSATTE platform to potential new comers;
- Setting-up a quality process and make it available for ROSATTE suppliers (certification included).

The following milestones were identified to start as of mid-2011:

- Launch of basic services for the members of the organisation, including test facilities,
- Development of generic tools for ROSATTE,
- Development of reference implementation for ROSATTE, and,
- Support to new implementation of ROSATTE (consultancy offering to the new comers).

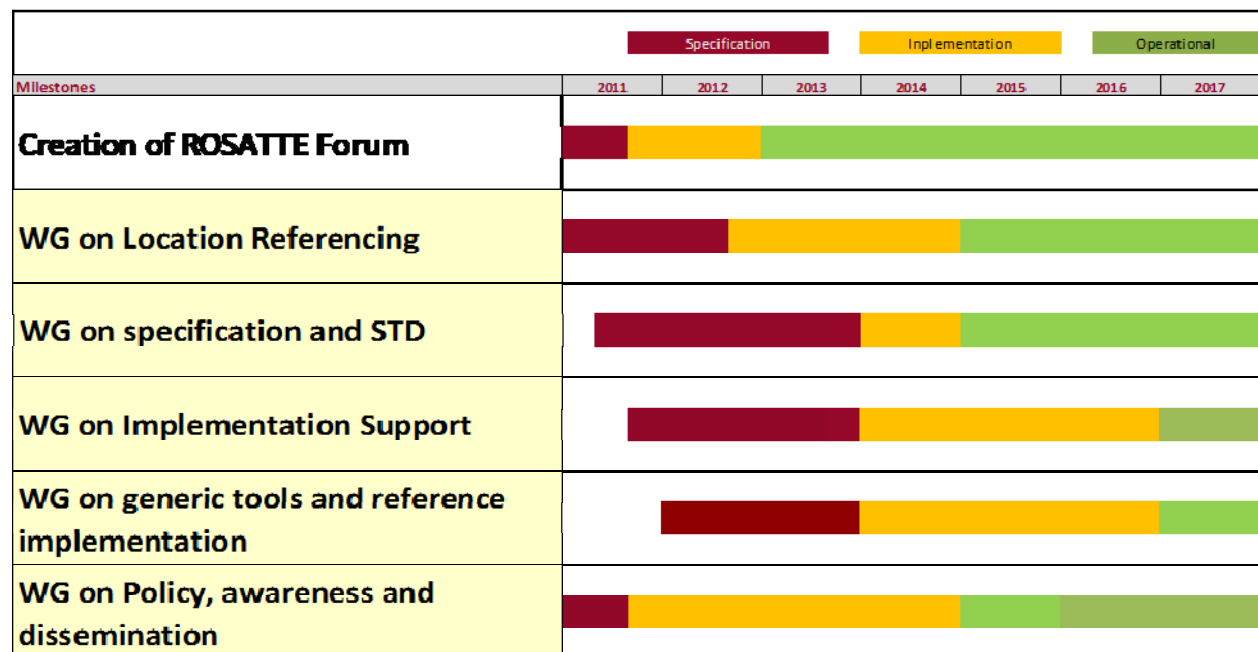


Figure 7 - ROSATTE Implementation Road Map

Moreover, a small study was conducted in order to identify the different European Member States that could possibly join such organisation and reach result in a short time.

The countries and regions were categorised using the following criteria:

- **Availability of data:** countries or regions who have already an existing road database;
- **Possibility of updates:** countries or regions who have already the possibility of sending updates from their road database;

The following maps reflect two levels: the existence of a national database and the possibility of sending updates.

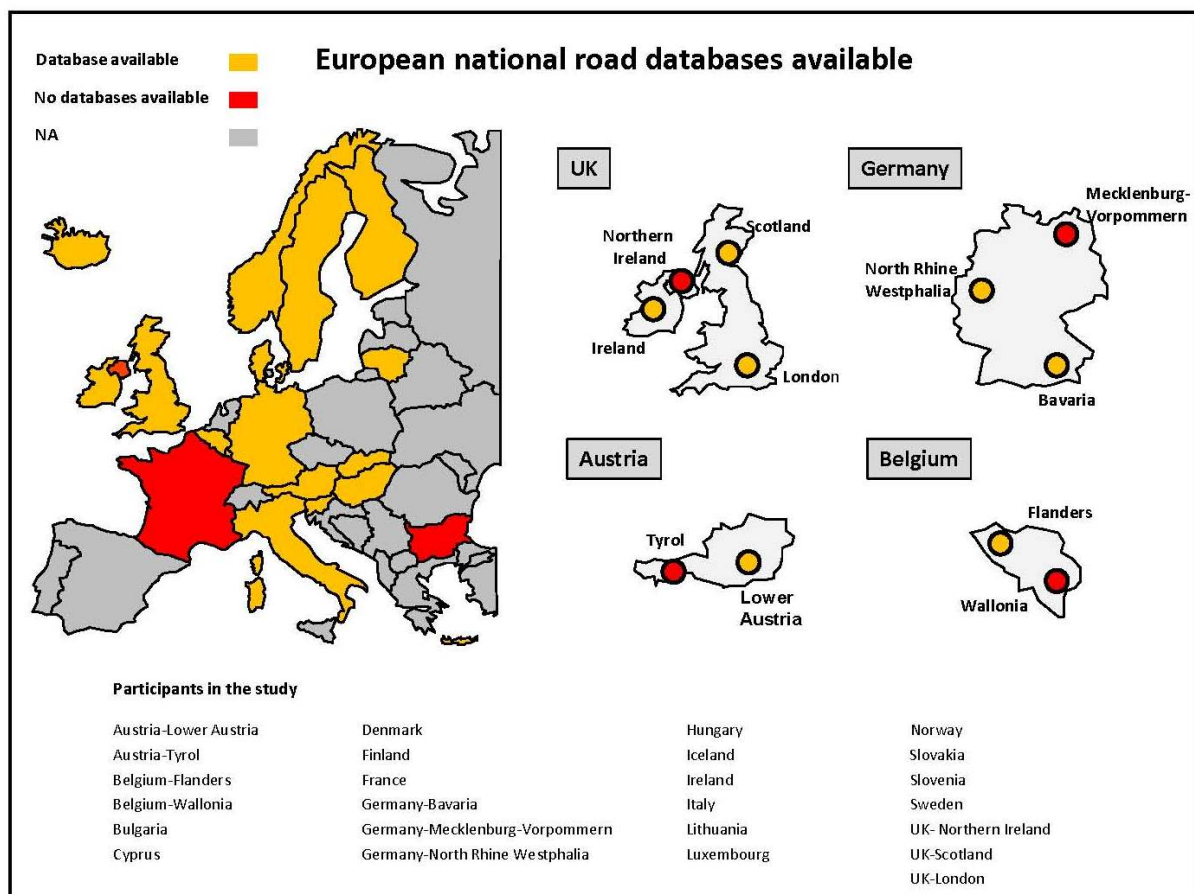


Figure 8 - European national databases

From the countries who responded to ROSATTE Organisational aspects survey, 19 have national/regional databases in place: Belgium-Flanders, Lower Austria, Cyprus, Denmark, Finland, Germany-Bavaria, Germany-North Rhine-Westphalia, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Norway, Slovakia, Slovenia, Sweden, UK-Scotland and UK-London.

12 of these national/regional databases are capable to sending data updates on road attributes: Belgium-Flanders, Lower Austria, Cyprus, Denmark, Finland, Germany-Bavaria, Germany-North Rhine-Westphalia, Iceland, Norway, Slovakia, Sweden, UK-Scotland (see Figure 11).

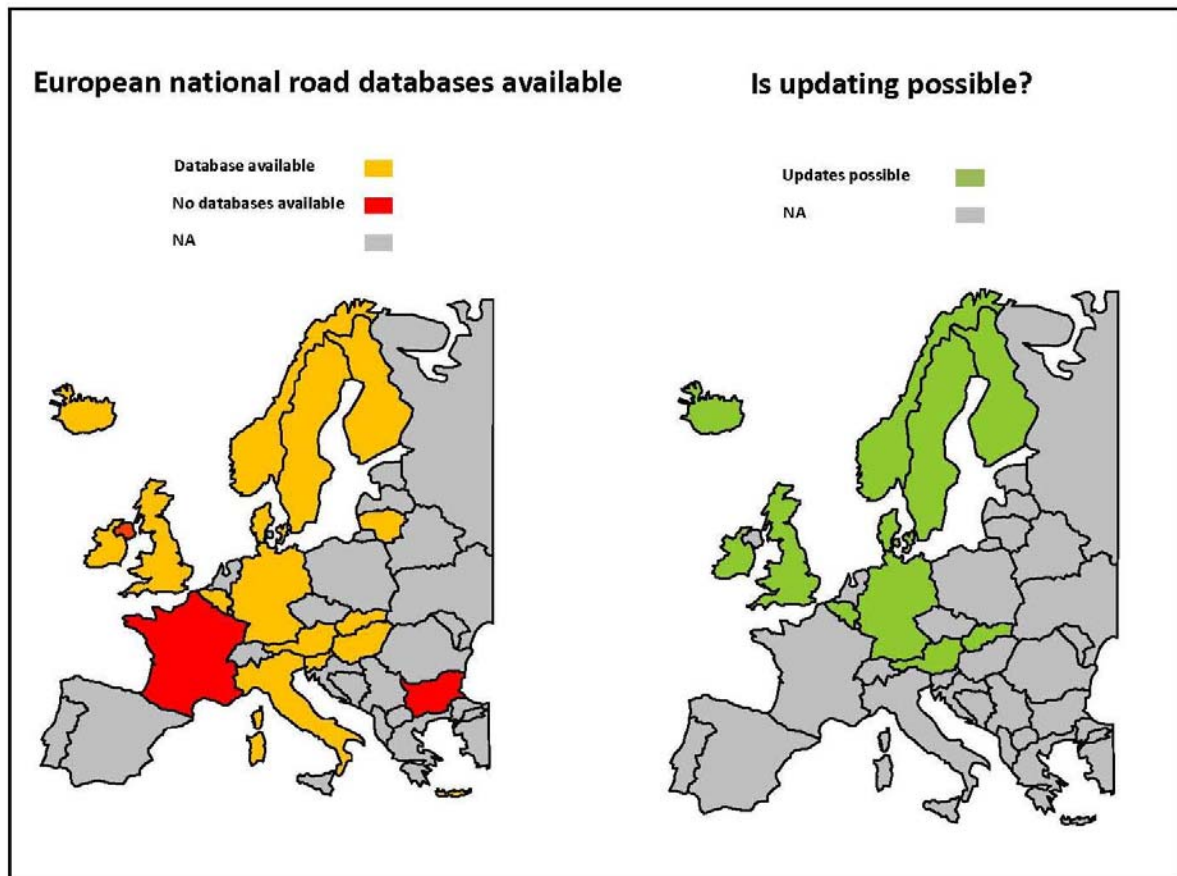


Figure 9 - National databases and possibility of sending updates

The results reflected by the maps above are a positive start, but it is important to consider that not all stakeholders needed in ROSATTE have been invited to participate in the studies conducted during the project.

For the future approaches, and in order to facilitate ROSATTE implementation, receiving input from all-level public authorities (local, regional and national), as well as from the national police representation is considered very valuable, thus their participation in the next steps shall be assured.

6. ROSATTE guidelines

6.1 Guidelines for data supplier

In order for data suppliers of safety attributes, in our case mainly Public Road Authorities, to be able to use the proposed ROSATTE data exchange framework, the following needs to be done:

- Safety map data provision should ensure that the data gathered and the chosen data model will enable the data to be adapted to the agreed ROSATTE specifications. This will ensure that the same approach is taken in all Members States and should guarantee the exchange of this data.
- At the EU level, agreement or even harmonisation has to be found about:
 - the political and regulatory settings for exchanging this type of data,
 - the respective IPR frame, ensuring that cross-border services using this data are possible,
 - the standardisation of the ROSATTE approach.
- Proposing a MoU or an implementation directive could also be the best way to put aside the complicated organisational and IPR aspects already mentioned.

This following section aims at identifying and describing a list of ROSATTE milestones for new comers the moment they decide to join the framework and implement ROSATTE. All the milestones identified can be implemented in the first 3 years.

The milestones status is tracked from their start-up to their finalisation, the same three indicators as in the description of ROSATTE implementation roadmap in section 5.4.2 being used:

1. **Specification phase:** a lot of work left until the milestone is overcome (colour code: red),
2. **Implementation phase:** more work is needed to fulfil the milestone (colour code: yellow) and
3. **Operational phase** - the milestone has been overcome (colour code: green).

This list shall be considered as a checking tool, a list of milestones that shows the status of the implementation at all times.

In order to start working along the implementation of ROSATTE, the new comers have to assure that the first two milestones described in the Figure 12 are achieved:

- INSPIRE directive translated into national law and implemented (by the end of 2010) and

- ITS directive translated into national law and implemented (by the end of 2014).

The milestones for a newcomer can be organised in three phases:

Phase 1. Creation of a database:

1. Creation of a National Geo-data infrastructure group (Spatial Data Infrastructure),
2. Traffic rules in authority road databases are reflecting legally binding regulations,
3. Definition of the road safety database specification including quality model etc.,
4. Full initial supply of road safety features.

Phase 2. Maintenance and updating the database

5. All local authorities committed to maintenance chain,
6. Procedure for maintenance of database together with local authorities.

Phase 3. Necessary actions to comply with ROSATTE

7. Formal cooperation with map makers and agreements,
8. Setup of the local/regional/national ROSATTE data services (including data store),
9. Commercial map makers to use ROSATTE supply systematically.

Figure 10 illustrates the milestones needed in order to implement the ROSATTE data store.










Milestones for ROSATTE new comers within the Implementation WG	Y1	Y2	Y3
INSPIRE directive translated into national law and implemented by end 2010			
ITS directive translated into national law and implemented by end of 2014			
Creation of a National Geo-data infrastructure group (SDI)			
Traffic rules in authority road databases are reflecting legally binding regulations			
Definition of the road safety database specification including quality model etc..			
Full initial supply of road safety features			
All local authorities committed to maintenance chain			
Procedure for maintenance of database together with local authorities			
Formal cooperation with map makers and agreements			
Setup of the local/regional/national ROSATTE data services (incl data store)			
Commercial map makers to use ROSATTE supply systematically			

Figure 10 - Milestones for ROSATTE new comers within Implementation Working Group

6.2 Guidelines for data consumer

6.2.1 Data Retrieval

Security

Network: The ROSATTE system is a distributed system where data consumers access data which is supplied by data providers via web-services. Due to the nature of distributed systems it is necessary for the data consumers to access remote systems which might return - intentionally or not - malicious data that can pose security threats on the requesting systems. To prevent security risks which are based on network communication, ensure that the network connection is done with an external partition of the network to prevent hazards to the local network and ensure that all network traffic is inspected by security software or devices like a firewall.

Network: Network communication always bears the risk of errors due to for example network problems or failures on the end points of communication. Ensure that network errors do not block the requesting software from working correctly if and while an error occurs. This can be archived by utilizing parallel programming and adequate timeouts.

Authentication/Provider identification: The ROSATTE specification does not include ways of verifying a data provider's identity, communication between web-services is handled via unencrypted HTTP. Since no service discovery mechanism which only lists trusted data providers' services is in place yet, it is inevitable to contact the service provider before querying a service to verify that the provider does not purposely send erroneous or invalid data and to check if the data looks legit. Safe communication would make it necessary to change the communication protocol from HTTP to HTTPS.

Performance

Ensure that disk space, database space and RAM is scaled according to the expected size of data provided by the queried services.

Ensure that sufficient resources are available by checking the size of the data to be downloaded first. ROSATTE does not provide this information, but it is possible to query the size of a file before downloading it by using the HEAD command of HTTP and by aborting the download in case the size returned in the answer of the HEAD command is considerably lower than the actual file size.

Usually a service should return all available datasets in case the *lastValidDatasetID* parameter is omitted. Experience shows that not all implementations of the *query-Datasets* web-service behave as specified. For this reason services should also be queried with an empty value for the *lastValidDatasetID* parameter ("*lastValidDatasetID*=") in order to receive a full listing of available dataset if no dataset has been downloaded so far.

6.2.2 Data Processing

Security

Ensure robustness of XML parsing to avoid undesired behaviour of the software which is processing the data and to avoid invalid data in the result. Validate the data against the ROSATTE XSDs, handle unexpected and invalid values in syntactically valid datasets appropriately.

Since datasets might include free text fields, take measures against SQL injection by filtering all values which are extracted from the input data and by using features which prevent this type of attacks like for example prepared statements. Also take into account that data might be displayed in other applications which might open attack vectors which are not obvious at first sight like for example cross-site scripting in case the data is displayed in an HTML interface later.

Performance

It is not advised to use DOM based parsers when processing ROSATTE data due to its high resource needs, instead SAX should be used. In addition JAXB has been recognized to have problems with creating a correct object model from the ROSATTE XSDs.

Quality

Ensure that datasets which have been downloaded from a web-service are processed in the right order since datasets might rely on data which is included in previous datasets. Therefore parallel processing of datasets might lead to wrong results.

Handle all provided conditions/exceptions for safety attributes and take into account that conditions can be recursive.

Ensure that location reference decoders used to decode location reference from the input data support all rules of the encoder for maximum matching rates and quality.

Data provides might include a GML description of the encoded location reference. This data can be used to check if the decoded location reference matches the encoded location reference at least roughly.

6.2.3 Data Feedback

Security

The ROSATTE specification does not include any mechanisms to make sure that only a data provider can access the feedback documents of his data. Since it is necessary to know the ID of a dataset to receive the according feedback documents, feedback documents are somewhat protected by security by obscurity, even though it is easy to query feedback documents with unknown dataset IDs by using a brute

force strategy. Counter measures could include access restrictions by using IP filters and additional login mechanisms which are not part of the ROSATTE specification though.

As any system offering services in a network, the feedback service is vulnerable to denial of service attacks where high numbers of requests are sent in a short time in order to overload the system. Access to the feedback service should be guarded by appropriate network devices which can cut off access to the service in case a denial of service attack is suspected.

Performance

Depending on the expected usage of the feedback service feedback documents can be either generated dynamically from the processed data or they can be created once and be stored for repeated access. Dynamic creation minimizes the space needed for data storage, documents which are only created once minimize the usage of resources like RAM, CPU and database. Smart caching can be used as a compromise which allows flexible adaptation in case of changing requirements, but it also increases the implementation effort.

6.3 Guidelines on metadata to be provided by Public Authorities

As described in section 5.2, PAs should describe and/or qualify their internal processes and the quality of their provided data. The results will be made available for data users / costumers by metadata elements. These metadata, for instance, can then be used by certain applications to find proper data suppliers.

The metadata should contain all mandatory INSPIRE elements. However, experience in ROSATTE has shown, that in addition the following parameters should be added to describe the data source in more detail, as it follows.

Data source information

- coverage (is already defined by INSPIRE, however needs to be detailed here):
 - Administrative Area
 - Road class
 - supported / supplied road safety features (may be that different suppliers provide different features for the same area / road class)
- completeness

this parameter is related to coverage. It gives a quantitative estimation of the relative amount of road safety features that are available for the given coverage. This should be relative to the number of total road sections. 100% would mean that data is available for all road sections on the given coverage.

- correctness
This parameter describes the level of correctness (attributive and topological). This parameter must be evaluated using reference information.

Data source process description

- used data acquisition method
in practice, the accuracy will result from the way the data has been acquired. One could think of different qualitative levels of accuracy rather than quantitative. For example, a DGPS position at the moment of placing a post sign would lead to a better accuracy than an order form.
- used update intervals
The time that an update needs to be processed from the database entry at the PA up to the integration at the customer database usually only depends on the chosen update cycles.
- Used location referencing technique
incl. details of used implementation (proprietary implementation or use of webservice e.g. offered by map makers)

Quality of provided data

- geometric accuracy
 - this parameter seems to be very hard to measure in reality, since one would need a reference available in real-time
 - The original information in the information systems of Public Authorities often specifies locations in linear dimensions, some have also implemented the linear reference system with kilometer markers (milestones) along the road network.
 - Authorities usually also handles spatial information in GIS systems and therefore have the ability to store or "transform" from linearly specified positions to absolute positions (coordinates) stated in a national geodetic reference system.
 - If you are lucky the geodetic reference system used is a national realization of the European three-dimensional reference system ETRS 89, which means consistency with WGS84 (the reference system used for data exchange in the ROSATTE project) within a few decimeters at the transformation of coordinates.
 - Is the national reference system used is not a realization of ETRS89 you can expect an additional error contribution of the same magnitude, i.e. another few decimeters.
 - You must also take into account the error contribution of transformations from local geodetic reference systems to national systems, here error contribution in the magnitude of meters are not unusual.

Summing up this means that the total error contributions due to transformations in the entire ROSATTE data chain normally can be assumed to be in the order of 0.5 to 5 meters.

- up-to-dateness: The up-to-dateness describes the degree of adherence of geographic data to the time changing universe of discourse. This is depending on the dynamic of reality and the rate of update. The parameter describes how long does it take to provide the update beginning with the date when the traffic sign/regulation became valid. This parameter also includes the time from the installation of the signpost up to the database entry at the PA

It has to be noted, that all these parameters only reflect the quality of the data supplied by the public authorities. They do not contain the influence of the data processing and the location referencing. However, these processes may also have a major effect on the final data quality. This can only be determined during an evaluation process where reference information is required (reference data represents the true reality, must be acquired separately, e.g. by a field survey). Detailed information and the definitions of corresponding quality parameters can be found in deliverable D5.1.

Summarising the above, the following table (Figure 13) reflects the minimum data quality requested for a new comer to start the implementation, as well as the quality needed to pass to the next levels. This table is proposed as a checking tool for the new comers, in evaluating their level with regards to the data parameters described.

Table 4: Data quality parameters table

Parameters	Entry level	1*	2*	3*
Coverage	Only Motorways and/or major roads	Motorways and main roads	Full network without residential streets	Full road network
Completeness	>80%	>90%	>95%	>99%
Correctness	>80%	>90%	>95%	>99%
Geometric accuracy	50m	20m	10m	5m
Up-to-dateness	3 months	Month-week	1 day	1 hour
Used location referencing technique, incl. details of used implementation	Provision of WGS84 coordinates with additional location information (e.g. road class, name, ...)		Provision of standardised and accepted location referencing code that enables accurate and reliable exchange of location information	

6.4 Relations to EasyWay Guidelines on speed limit information

It is important to make appropriate actions toward the CEDR and EASYWAY community, to promote the ROSATTE framework and the launch of a new organisation.

EasyWay is European programme aimed at deploying Core European ITS Services on the Trans-European Road Network and its major interfaces with other transport modes, in order to reduce road traffic originated fatalities, congestion and greenhouse gases emissions. The project is supported under the TEN-T 2007-2013 Multi Annual Programme, and it is driven by the European road authorities and motorway operators.

The key tool in this process is the implementation and use of common Deployment Guidelines for coordinated deployment activities in countries, regions and Europe-wide. During 2008-2009, EasyWay through European Studies have developed a range of Deployment Guidelines for ITS in their respective domains to promote the harmonised deployment of ITS services.

ES1 (European Study 1) is dedicated to traveller information services and has developed six deployment guidelines to promote the concept of harmonised traveller information services throughout Europe. These documents are living documents in that it is intended they will evolve over time and be updated to take on board developments in key aspects of deployment.

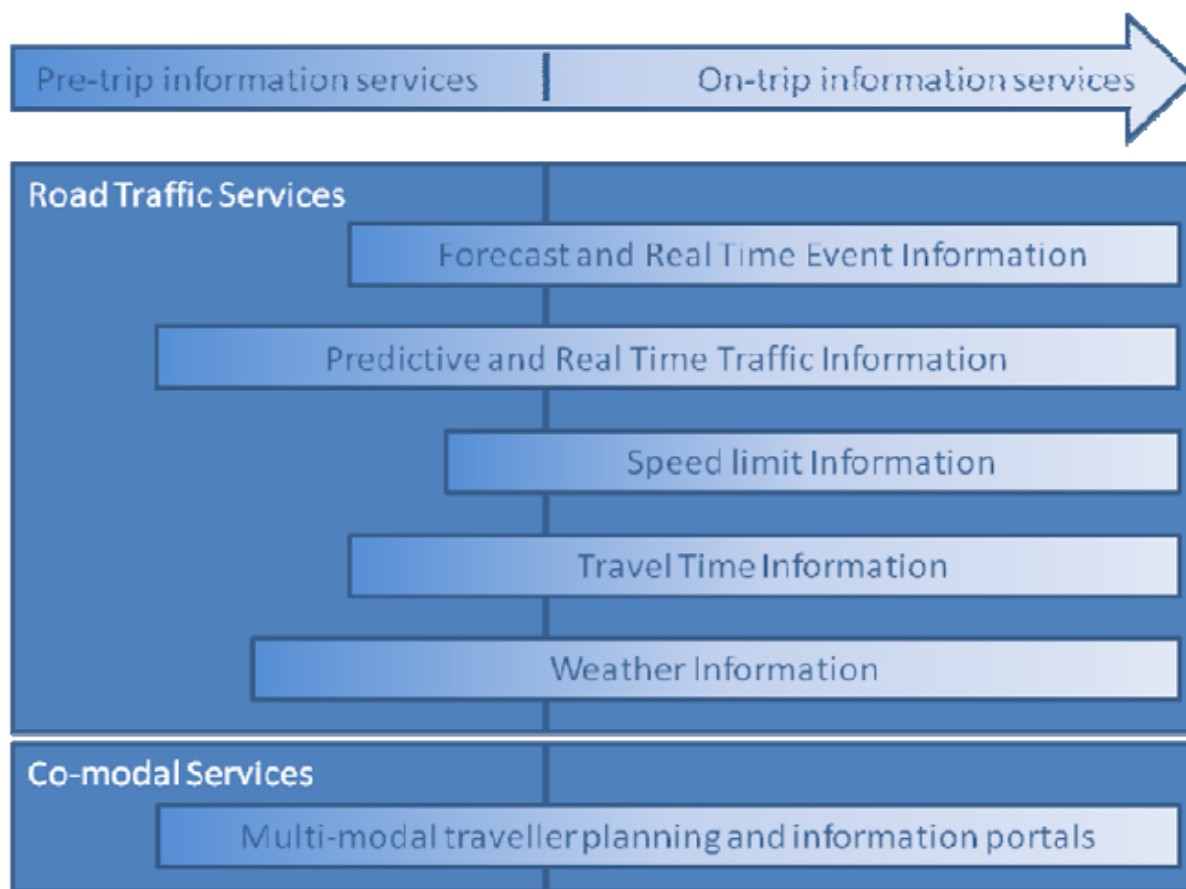


Figure 11 - The 6 ES1 core services

One of these guidelines is called “Speed limit Information”; the ROSATTE project has been integrated to this guideline as a best practice example for the deployment of a European harmonised speed limit database.

These guidelines will be used in the next phase of EasyWay as specifications for the implementation of the provision of speed limit information. For static and sometimes dynamic speed limits, ROSATTE is mentioned as the main mechanism to provide the speed limits.

Last online version of this guideline (TIS-DG04 - Speed Limit Information services) can be found on EasyWay website⁶.

The links between ROSATTE and EasyWay are important due to the fact that virtually all European road authorities are involved in EasyWay; it is therefore a mean to reach a very large number of them and let them know about ROSATTE.

A joint workshop ROSATTE-EasyWay was held in Brussels on June 26th, 2009⁷.

⁶ http://www.easyway-its.eu/1/index.php?option=com_docman&task=doc_download&gid=1514&Itemid=103

7. Recommendations and next steps

The main goal of the ROSATTE project is to demonstrate the possibility of a framework for availability and processing of information concerning changes in road attributes within a short time frame after implementation of such changes. The underlying idea of this data chain is that road authorities (mostly public, sometimes private) control these attributes and make the changes, for which reason they are the most efficient source for information concerning the changes. The purpose is to have in the near future in-vehicle map data that are to a high degree up to date for these attributes. The attributes are important for in-vehicle safety and efficiency applications. A roll-out of ROSATTE results across Europe is foreseen.

For a seamless Europe-wide introduction of the implementation of the ROSATTE data chain, use of a harmonised data exchange infrastructure is of paramount importance. ROSATTE has developed and tested such exchange infrastructure, which is built up from a data content specification, a physical exchange format specification and a service specification. These elements are described in project deliverable D3.1 "Specification of data exchange methods". They will need further review and a more formal description in terms of one or more technical specifications. Building on the results of the ROSATTE project, quality assurance levels for the exchanged data need to be defined and agreed upon, possibly also in a technical specification. A list of the specific road attributes that are covered by the ROSATTE exchange framework needs to be drafted and subsequently maintained. Also this can be done in terms of a technical specification.

Special attention is needed for dynamic (map based) location referencing. This is an important element in the ROSATTE data chain, which enables exchange of attribute information between map databases of different origin and specification. The ROSATTE project has used the AGORA-C method, which is described in an ISO standard. Unfortunately, IPR claims are attached to parts of this method. It is without doubt the best method currently available. It is quite clear that the Public Authorities are not willing to pay for any licensing of the on-the-fly referencing method. Therefore, if the position of the IPR holders does not change, it has little chance of becoming widely adopted.

For this reason, the ROSATTE framework has been kept independent of the on-the-fly referencing method and could adopt an alternative if this is relevant. OpenLR was identified as a candidate alternative location referencing (LR) technology. Since its launch, updates to this open source and license free LR approach were carried through (e.g. the support of point location references, April 2010). This shows that on a technical level OpenLR is getting more mature and that finally the market will decide which LR technology will be adopted.

7

http://www.ertico.com/en/activities/safemobility/rosatte/news/joint_workshop_of_easyway_and_rosatte.htm

Concerning the formalisation of the essential elements of the ROSATTE exchange infrastructure in terms of specifications, two options exist. One is formal standardisation through CEN or ISO, the other is the creation of relevant specifications by a recognised organisation of the public and private organisations that have an interest in the ROSATTE exchange infrastructure. In analogy with the TMC Forum (now part of TISA), a ROSATTE Forum could be formed with interested parties as members, possibly under the umbrella of ERTICO. This organisation could develop ROSATTE Forum Specifications (in analogy with the phenomenon of TMC Forum Specifications). The advantage of this approach is greater flexibility, speed and focus on the specific interests of the organisations concerned. A similar approach has been adopted by the ADASIS Forum (the custodian of the ADAS Interface Specification).

Simplified ROSATTE messaging method could be envisaged for new entrants as Public Authorities. In this case, the Public Authority would only notify about a change without giving further details this can be done with a simplified geo-reference (WGS84 and name of the road). It would then be up to the map maker to make a field survey. This “light ROSATTE” solution might not be relevant for the most advanced road database owners but it would be a good initial point for new entrants. Also, in general, the lower categories of the road network could use this method.

7.1 Overall recommendation

One of the recommendations from ROSATTE WG 6 (organizational issues) is to set up an organisation that assembles the relevant specifications already made in Europe and make an agreed set of specifications to be used by road owners. The work already done in EuroRoadS, ROSATTE and INSPIRE will be important stepping stones. This organisation would promote, maintain and further develop the specifications.

All-level public authorities (local, regional and national), as well as representation of the national police shall be invited to participate in this organization.

This new organisation would be focussed on transport map database at large. It should be created in order to enhance cooperation between European countries as well as with data providers. The *raison d’être* is to facilitate the implementation of the INSPIRE and ITS directive especially the actions 1.2 and 1.3 of the action plan.

In this respect, we would like to support the revival of the “eSafety Digital Map Working Group” under the eSafety Forum, which should act as steering body for the establishment of the implementation platform. The WG should eventually derive actions and recommendations to be addressed by the platform leading to a European-wide deployment of road data exchange infrastructure including the maintenance of the data. We also support the extension from safety-related content to any geo-located public road attributes in line with the requirements of the ITS directive.

The organisation should not compete but act as all-inclusive platform based on an open approach. The work already done in EuroRoadS, ROSATTE and INSPIRE are important stepping stones.

In line with the deployment roadmap, ROSATTE recommends the following set of direct actions:

- Gather letters of support from industry and public sector
- Revive the eSafety Digital Map Working Group to steer the establishment of the implementation platform
- Take into consideration the output of the current study on Action 1.3
- Possibly receive funding support

7.2 Establishment of a public-private partnership organisation

Given the technical complexity of the ROSATTE framework, it is recommended to use a public-private partnership in the form of an implementation platform to make sure expertise of the private sector can be used in the different public authorities who have to implement a ROSATTE datastore.

The implementation platform is assumed to provide the following supporting role for its members:

- *Gather an extensive list of active public authorities at local, regional and national levels committed to the deployment of a road data exchange infrastructure,*
- *Create a pool of experts to support the implementation of a road data exchange infrastructure in the member states,*
- *Maintain and update the ROSATTE specifications through a centralised change request process,*
- *Write comprehensive implementation guidelines to support new implementations,*
- *Define procedures for making ROSATTE services searchable in (third party) metadata platforms. Where possible, implement metadata supply to such platforms,*
- *Offer map-related tools and services especially with regards to quality assurance and on-the-fly location referencing issues,*
- *Clarify with member states the legal and licensing aspects related to using the ROSATTE framework for public authorities who provide data to commercial map makers,*
- *Raise awareness and cooperate at international level on the topic.*

The first tasks of the platform will be to address the unsolved issues that have been identified in this report. This is where the Working Groups described in Section 5.5.2 should find their home. The proposed structure of the implementation platform is shown in Figure 12.

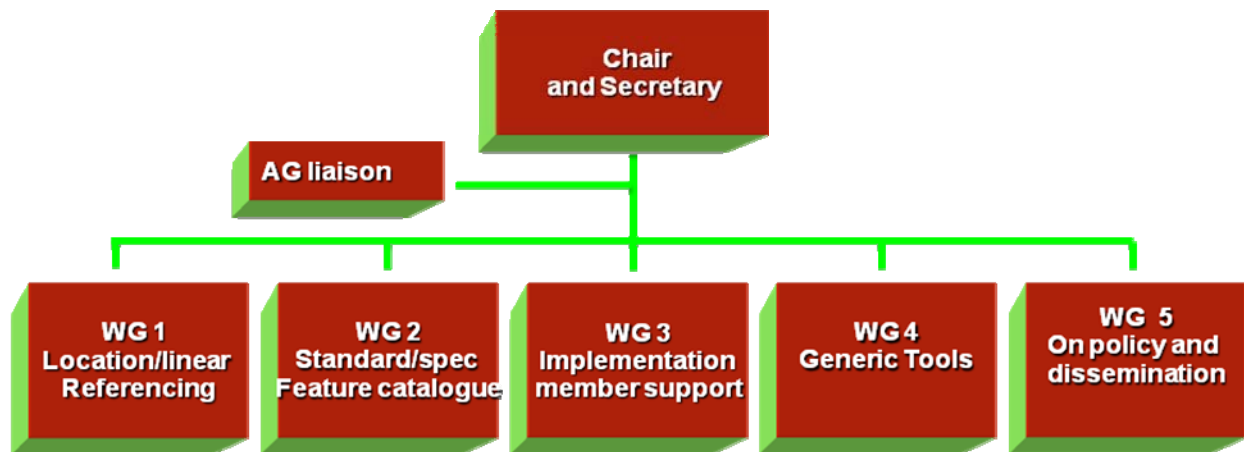


Figure 12 - Proposed structure of the ROSATTE implementation platform

The issues of Location Referencing, specifications and standards, guidelines and best practices, tools for e.g. quality monitoring, and policy issues are covered in this structure.

Eventually, the organisation should offer a series of value-added services developed within the partnership for its members. The services would be only offered to its members so that development of the different tools and services can be self-financed. The execution of the services would be operated by its members. This would result in a light operation structure.

Different kind of level of services can be created: basic and additional. Basic services would be offered for free to all its members whereas additional services can be offered with additional costs. This service could also be used between local authorities and national database.

Basic services envisaged could be as follows:

- Access to the ROSATTE portal
- Access to the service discovery service
- ValidLR: simple LR encoding validation service
- TestLR (including encoding and decoding): Testing service for PA (and others) to test the encoding and decoding of their LR on the different existing maps

- LRConversion: Conversion service for LR between local Geo-reference, AGORA-C, OpenLR, linear reference, etc...
- Other basic tools related to LR and map updates
- Access to Specs, reference implementation,
- MapLR: For the flagged LR, offer the possibility to visualise the map and modify the attribute and get a new corresponding LR

Example of additional services could be:

- VerifyUpdate: cooperate with a map maker to check the validity of the map update using the newly collected GPS traces

Eventhough it is too early to foresee its exact shape, the ambition is to setup a portal with which all public authorities can interact using the developed set of tools to ensure an efficient exchange of public spatial data between public and private sector.

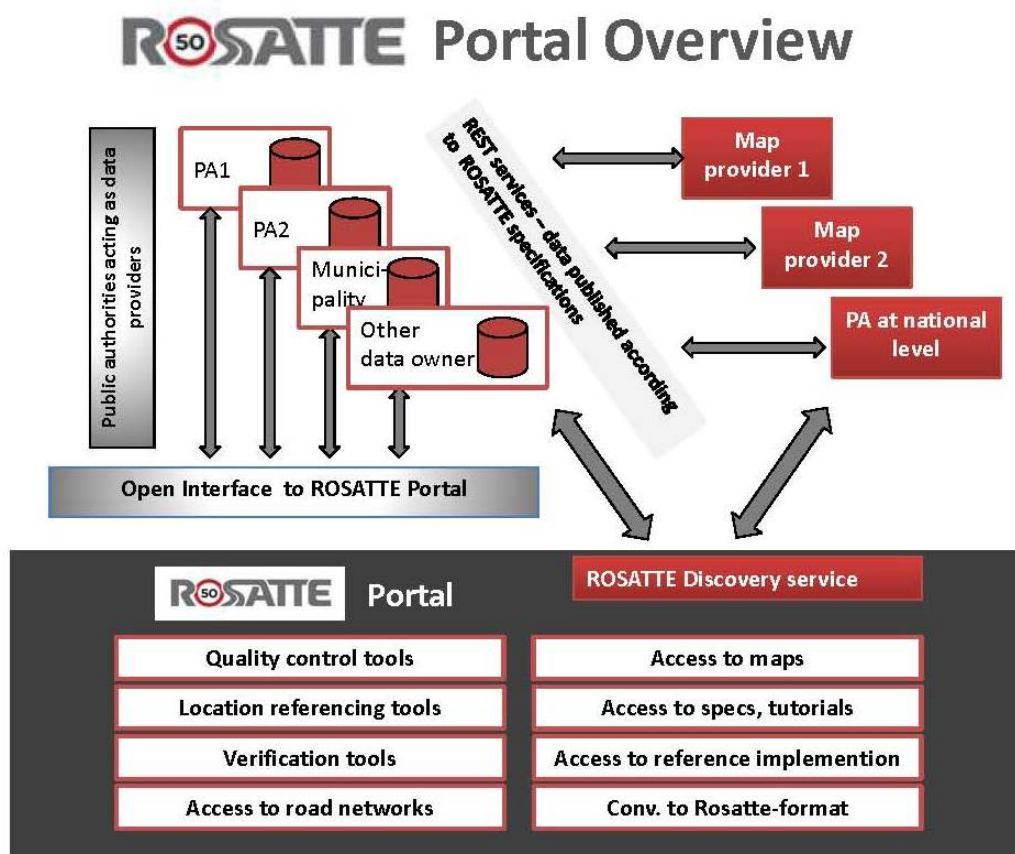


Figure 13 - ROSATTE Portal Overview

Organisational aspects and expected benefits

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APPENDIX 1 : Survey on ROSATTE “Organisational aspects” - questionnaires and detailed results

Section 1 of this appendix provides the two versions of the questionnaire used in the “Organisational aspects” study: one version was used for the road authorities and another one for map providers. Section 2 of this appendix gives a detailed overview of the results of the study.

1. Questionnaires “Organisational aspects”

1.1 Road authorities

The answers to the first three questions are not included in this annex because they are actually related to D1.1.

Questions in relation to the ROSATTE D1.1 deliverable:

Are you currently developing a road database?

What is the purpose of the database (road management, ITS...)?

Which areas of the database are under development?

What are the most important safety attributes in the database (speed limits, traffic signs, ...)?

When do you expect the development to be finished?

Are you planning to improve or extend a road database?

What is the purpose of the database (road management, ITS...)?

What will be the upgrade actions?

What are/will be the most important safety attributes in the database (speed limits, traffic signs, ...)?

When will you start the upgrade and when do you expect it to be finished?

Are you planning to create a road database?

What will be the purpose of the database (road management, ITS...)?

What will be the most important safety attributes in the database? (Speed limits, traffic signs, ...)

When will you start the development and when do you expect it to be finished?

Organisational and technical questions in relation to the ROSATTE project:

According to you, what are the main technical barrier(s) to the deployment of such a ROSATTE infrastructure in your country?

According to you, what would be the major barrier(s) with respect to national/regional/local organisation in your country? In the other EU Member States?

Will it be feasible in your country/ region to have the same infrastructure operating at the different organisational levels? Which barriers need to be overcome?

What is the position of your country/region about making the safety attribute database available to third parties? Under which conditions would your country be willing to do so?

As a public authority or road administration, would you be ready to pay and/or put efforts for setting up a ROSATTE data store or do you expect the map makers or any other party to pay and/or put effort for it?

How do you see the interaction between the ROSATTE infrastructure and the databases already existing in your country/ region?

ROSATTE has identified different entities (Data Store, Data Service, Discovery Service, Subscription Service, Information Provider Service - see D1.2 pg 23). Are they relevant for your country/ region or do you see any other important entities that are missing?

ROSATTE has identified different roles (Enacting Authority, Data Store Operator, Information Provider and Data Provider, ... - see D1.2 pg 18). Are they relevant for your country/ region or do you see any other important roles that are missing?

ROSATTE has defined some use cases for data storage & maintenance, data exchange and data integration (see figures 4, 5 and 9 of D1.2). Do you find them relevant for your country/ region as well? Can you identify any other?

What technical difficulties do you expect if you would implement the ROSATTE infrastructure in your country/ region?

What would be the main benefits and draw-backs of such an infrastructure?

Administrative benefits and draw-backs?

Financial benefits and costs?

Social benefits?

In your country/region, how would you ensure commitment of all stakeholders necessary for collecting, sharing and updating road safety attribute information?

Do you expect any IPR or legal issues to be raised?

Would you rely on a ROSATTE quality control or would you carry out your own quality control?

Would it be easier for you to implement the ROSATTE infrastructure if the tools and formats developed within the ROSATTE project would be standardised?

Would you consider the creation of a "certification body" useful in order to ensure that the ROSATTE infrastructure, tools and mechanisms are run properly?

How would the ROSATTE infrastructure improve your position and capability towards data collection, exchange and information update?

If the ROSATTE infrastructure would be available tomorrow, how would you proceed to implement it in your country?

How much time would you expect before implementing it in your country/region?

When do you expect it to be up and running?

What kind of measures would you need to take before it can be fully implemented?

Which actors need to be involved in setting up such a data chain?

Which recommendations would you take to increase awareness of involved stakeholders on their respective roles and responsibilities?

1.2 Map providers

According to you, what are the main technical and organisational barrier(s) to the deployment of such an infrastructure in the different EU countries?

Do you already have experience in receiving attributes data from public authorities or road operators?

How was the data exchanged? What difficulties were encountered?

Under which conditions? What there a pre-existing contract? Did you have to pay for it?

As a map provider, would you be ready to pay and/or put efforts for setting up and implementing a ROSATTE data store in the different EU countries? Or do you expect any other party to pay and/or put effort for it?

What is your motivation for participating in setting up a ROSATTE infrastructure across Europe?

Do you expect any IPR or legal issues to be raised?

Would you rely on a ROSATTE quality control or would you carry out your own quality control?

Would it be easier for you to implement the ROSATTE infrastructure if the tools and formats developed within the ROSATTE project would be standardised?

Would you consider the creation of a "certification body" useful in order to ensure that the ROSATTE infrastructure, tools and mechanisms are run properly?

If the ROSATTE infrastructure would be available tomorrow, how would you proceed to implement it?

How much time would you expect before implementing it?

When do you expect it to be up and running?

What kind of measures would you need to take before it can be fully implemented?

Which actors need to be involved in setting up such a data chain?

Which recommendations would you take to increase awareness of involved stakeholders on their respective roles and responsibilities?

2. *Results overview and conclusions*

In this section, the answers received from the road authorities will be described first. After that, the answers from the map providers will be dealt with. Only the main results of the questionnaire will be given in this paragraph. The detailed questionnaire results can be found in Appendix 1, section 3.

The aspects to be highlighted by this section from the road authorities point of view:

Technical barriers

Organisational barriers

Availability to third parties

Willingness to pay and/or put efforts for setting up a ROSATTE data store

Interaction between ROSATTE infrastructure and the existing databases

Expected technical difficulties when implementing ROSATTE infrastructure:

Benefits and drawbacks of ROSATTE infrastructure

Commitment of all stakeholders

IPR and legal issues

Quality control

Standardization

Certification body

Influence of ROSATTE infrastructure

Implementation of ROSATTE infrastructure

The aspects to be highlighted by this section from the map makers point of view:

Main technical and organisational barriers for the deployment of a ROSATTE infrastructure

Experience in receiving attributes data from public authorities or road operators

Willingness to pay and/or put efforts for setting up a ROSATTE data store

Motivation for participating in setting up a ROSATTE infrastructure across Europe

IPR and legal issues

Quality control

Standardisation

Certification body

Implementation of ROSATTE infrastructure

2.3.4.1 Road authorities

Technical barriers

The different countries and regions listed the following topics as main technical barriers for the deployment of a ROSATTE infrastructure (see graphical representation):

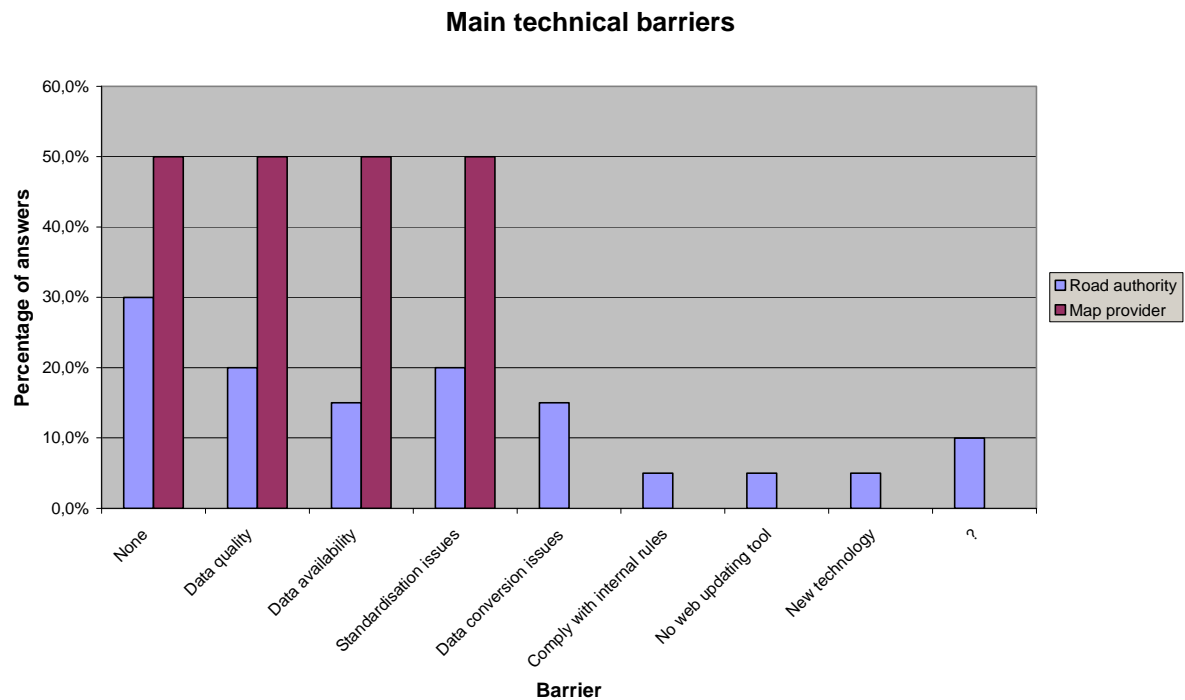


Figure 1 - Graphical representation of the main technical barriers. The question mark indicates that the authority did not answer this specific question.

Conclusion:

30% of the road authorities do not expect any technical barriers at all. Only 33% of these 30% authorities that do not expect any technical difficulties are ROSATTE project partners.

The most important technical barriers for the deployment of the ROSATTE infrastructure seem to be the data quality, data availability, standardisation issues and data conversion issues.

Organisational barriers

The different countries and regions listed the following topics as main organisational barriers for the deployment of a ROSATTE infrastructure (see graphical representation):

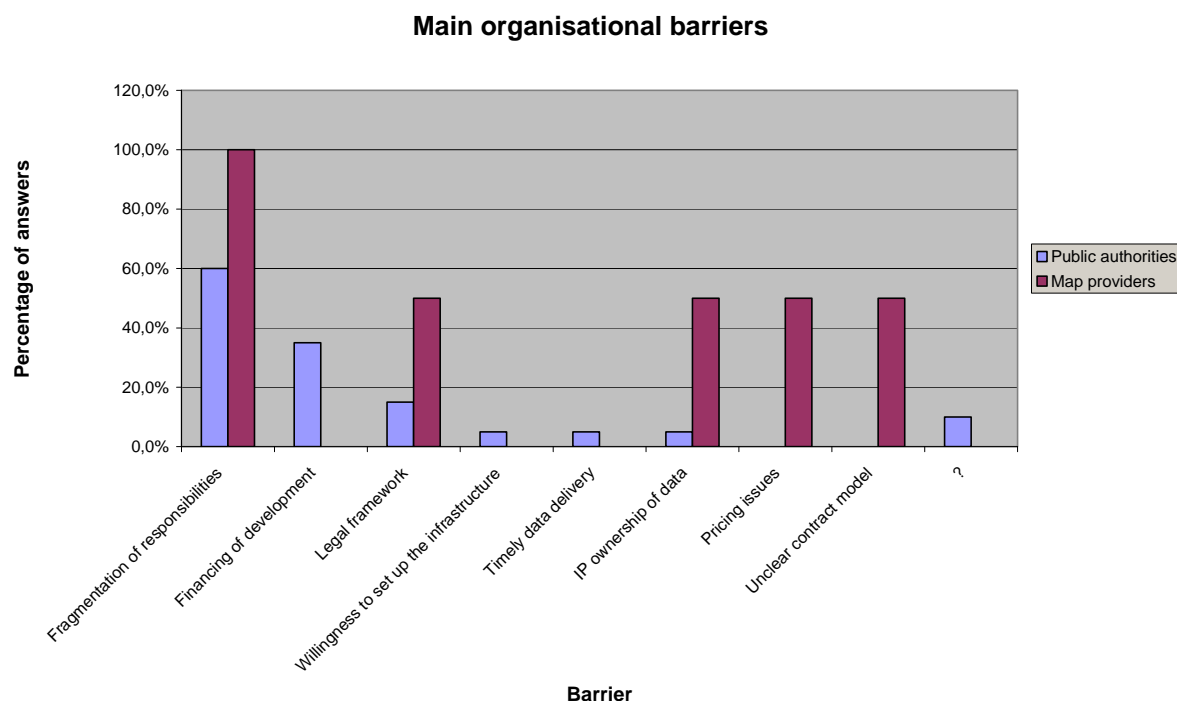


Figure 2 - Graphical representation of the main organisational barriers. The question mark indicates that the authority did not answer this specific question.

Conclusion:

The fragmentation of the responsibilities between the different organisational levels in a country or region is clearly seen as the most important organisational barrier for the deployment of a ROSATTE infrastructure. The financing of the development is also seen as an important organisational barrier.

Most authorities (70%) consider it as feasible that the same infrastructure is operational at different organisational levels. Most of these authorities (40%) state however that it will be difficult. None of the authorities considers it as unfeasible, 30% of the authorities do not have a viewpoint yet.

Availability to third parties

Conclusion:

Most road authorities (75%) are willing to make the safety attributes available to third parties. However, most of them (65%) are only willing to do so under certain conditions. The condition 'cost' and 'contract' are most frequently mentioned.

20% of the road authorities did not decide yet how they would deal with this.

Willingness to pay and/or put efforts for setting up a ROSATTE data store

Conclusion:

Almost 50% of the road authorities is willing to put effort in setting up a ROSATTE data store. However, 25% of the road authorities think that it should be a joint effort.

20% of the road authorities is not able to take a position yet

10% of the road authorities state that they are just not willing to put efforts in setting up a ROSATTE data store.

Another 10% thinks it will not be obvious.

Interaction between ROSATTE infrastructure and the existing databases

Conclusion:

40% of the authorities that completed the questionnaire did not answer the question about the relevancy of the ROSATTE entities, roles and use cases.

Among the answers, most road authorities consider the entities, roles and use cases defined within the ROSATTE project as being relevant.

Expected technical difficulties when implementing ROSATTE infrastructure:

Conclusion:

55% of the road authorities did not answer the question about the expected technical difficulties when ROSATTE would be implemented in their country or region.

10% of the road authorities does not expect any technical difficulties.

The other 35% of the road authorities do expect to encounter certain technical difficulties (Linking safety attributes with linear referencing system, Agora encoding, lack of resources, zero measurement, implementation of different standards, compatibility with existing systems, relation between ROSATTE requirements and PA requirements)

Benefits and drawbacks of ROSATTE infrastructure

Conclusion:

Almost all road authorities acknowledge that a ROSATTE infrastructure will have administrative benefits. Some of them also fear some administrative drawbacks however.

The ROSATTE infrastructure is considered to give as many financial benefits as drawbacks. The major financial drawbacks relate to the cost for setting up and maintaining such an infrastructure.

Road authorities all agree that there will only be social benefits.

Commitment of all stakeholders

Conclusion:

30% of the road authorities assume that a good way to ensure the commitment of all stakeholders necessary for collecting, sharing and updating road safety attribute information is to do so by law.

20% of the road authorities think that explaining the win-win situation could also be a good way to ensure commitment.

Goodwill, information sessions and a central entity that organises and monitors it are means that were mentioned by 15% of the road authorities.

IPR and legal issues

Conclusion:

Between the road authorities the opinion is spread. About 40% of the road authorities think there will be legal or IPR issues, 30% thinks that there won't be any issues. The other 30% did not answer the question.

Quality control

The question was asked whether road authorities and map providers would carry out their own quality control or if they would rely on the ROSATTE quality control. What the ROSATTE quality control would be, was not yet specified, since this was not yet elaborated at the moment the questionnaires were distributed.

Conclusion:

35% of the road authorities did not answer the question.

35% of the road authorities prefer their own quality control.

20 % prefer a combination of the ROSATTE quality control and their own quality control.

Only 10% of the authorities would rely on the ROSATTE quality control.

Standardisation

Conclusion:

The majority (60%) of the road authorities thinks it would be easier for them to implement the ROSATTE infrastructure if the tools and formats developed within the ROSATTE project would be standardised.

Quite some road authorities did not take a position (35%) and 5% of the road authorities answered negatively to the question.

Certification body

It was asked if the road authorities support the idea that the creation of a "certification body" could be useful in order to ensure that the ROSATTE infrastructure, tools and mechanisms are run properly.

Conclusion:

50% of the road authorities consider a certification body as being useful. However, 20% of the road authorities do not consider it as being necessary. One road authority is even sceptical towards the realisation of such a centralized certification body.

30% road authorities did not answer the question.

Influence of ROSATTE infrastructure

Conclusion:

35% of the road authorities did not answer this question.

The other road authorities agree that the ROSATTE infrastructure would improve their position and capability towards data collection, exchange and information update.

Implementation of ROSATTE infrastructure

The following question was asked to the road authorities:

"If the ROSATTE infrastructure would be available tomorrow, how would you proceed to implement it?"

- a) How much time would you expect before implementing it?
- b) When do you expect it to be up and running?
- c) What kind of measures would you need to take before it can be fully implemented?
- d) Which actors need to be involved in setting up such a data chain?
- e) Which recommendations would you take to increase awareness of involved stakeholders on their respective roles and responsibilities?"

The next subparagraphs will address each of these sub questions.

Country	Database available	Updates possible	ROSATTE compliant	Comments
	Yes/No	Yes/No	Yes/No	
Austria-Lower Austria	Yes	Yes	?	
Austria-Tyrol	No			
Belgium-Flanders	Yes	Yes	Yes (test site)	Some more work is needed to make the entire traffic sign database of Flanders ROSATTE compliant.
Belgium-Wallonia	No			
Bulgaria	No			
Cyprus	Yes	Yes	?	It is expected that it will take 6-12months to implement the ROSATTE infrastructure. However problems are expected with available human resources and any costs associated.
Denmark	Yes	Yes	?	
Finland	Yes	Yes	?	
France	No			No common storage of safety attributes.
Germany-Bavaria	Yes	Yes		
Germany-Mecklenburg-Vorpommern	No			
Germany-North Rhine Westphalia	Yes	Yes		
Hungary	Yes	?	?	
Iceland	Yes	Yes	?	
Ireland	Yes	?	No	INSPIRE is more important than ROSATTE
Italy	Yes	No		
Lithuania	Yes	?	?	
Luxembourg	Yes	?	?	
Norway	Yes	Yes		

Slovakia	Yes	Yes	?	
Slovenia	Yes	?	?	
Sweden	Yes	Yes		
UK- Northern Ireland	No			
UK-Scotland	Yes	Yes		
UK-London	Yes			

Figure 3 - Availability of national databases, possibility of sending updates and ROSATTE compliance

Conclusion:

The ideas about when the implementation could start varied between a few months until a few years

The road authorities think that the ROSATTE infrastructure can be up and running also varied between a few months until a few year

The opinions about what kind of measures are needed for the implementation are very diverse

Most road authorities agree that that the following actors need to be involved in setting up a ROSATTE data chain:

Federal authority

Regional authority

Municipalities

Map providers

Police

Motorway companies

National mapping authority

Most road authorities believe that in order to increase the awareness of the involved stakeholders, there needs to be a communication about the win-win situation.

2.3.4.2 Map providers

Main technical and organisational barriers for the deployment of a ROSATTE infrastructure

Conclusion:

One map provider didn't see any technical barriers, while the other one listed possible barriers concerning data quality, data availability and standardisation.

Both map providers agree that the fragmentation of responsibilities is an organisational barrier. Other issues are the legal framework, ownership of data, pricing issues and an unclear contract model.

Do you already have experience in receiving attributes data from public authorities or road operators?

Conclusion:

Both map providers already have a lot of experience on this. Various kinds of payment/contractual conditions have been used so far.

Willingness to pay and/or put efforts for setting up a ROSATTE data store

Conclusion:

The map providers are willing, but only when it's a joint effort, of when it is related to a business case.

Motivation for participating in setting up a ROSATTE infrastructure across Europe

Conclusion:

The map providers listed following topics as a motivation for setting up a ROSATTE infrastructure:

a replacement of existing local suppliers with inhomogeneous data and formats
obtain up-to-date safety attribute information, which will be supplied directly to users
more structured data exchange

IPR and legal issues

Conclusion:

Both map makers expect that there will be legal or IPR issues when a ROSATTE infrastructure is deployed.

Quality control

The question was asked whether map providers would carry out their own quality control or if they would rely on the ROSATTE quality control. What the ROSATTE quality control would be, was not yet specified, since this was not yet elaborated at the moment the questionnaires were distributed.

Conclusion:

One map provider would rely on the own quality control, while the other map provider prefers a combination of both.

Would it be easier if the tools and formats developed within the ROSATTE project would be standardised?

Conclusion:

Both map providers agree that standardisation would make things easier.

Certification body

Conclusion:

Both map providers agree that the creation of a certification body would be useful in order to ensure that the ROSATTE infrastructure, tools and mechanisms are run properly.

Implementation of ROSATTE infrastructure

The following question was asked to the map providers:

"If the ROSATTE infrastructure would be available tomorrow, how would you proceed to implement it?

- a) How much time would you expect before implementing it?
- b) When do you expect it to be up and running?
- c) What kind of measures would you need to take before it can be fully implemented?
- d) Which actors need to be involved in setting up such a data chain?
- e) Which recommendations would you take to increase awareness of involved stakeholders on their respective roles and responsibilities?"

The next subparagraphs will address each of these sub questions.

Conclusion:

One map provider thinks it depends on the outcome of ROSATTE when the implementation phase will start, while the other one believes it would take at least 3 years.

The map providers both think it would take a few years before it would be up and running.

The map providers also have some measures that they think will be needed.

Following actors need to be involved in setting up a ROSATTE data chain:

Federal authority

Regional authority

Municipalities

Map providers

Police

Motorway companies

National mapping authority

The map providers suggest that mapping companies and road administrations will not realise the intended effect on traffic efficiency/safety if they run completely independent from each other, or that the project needs to be explained in short while putting the emphasis on the benefits and advantages for the respective stakeholders (win-win situation)

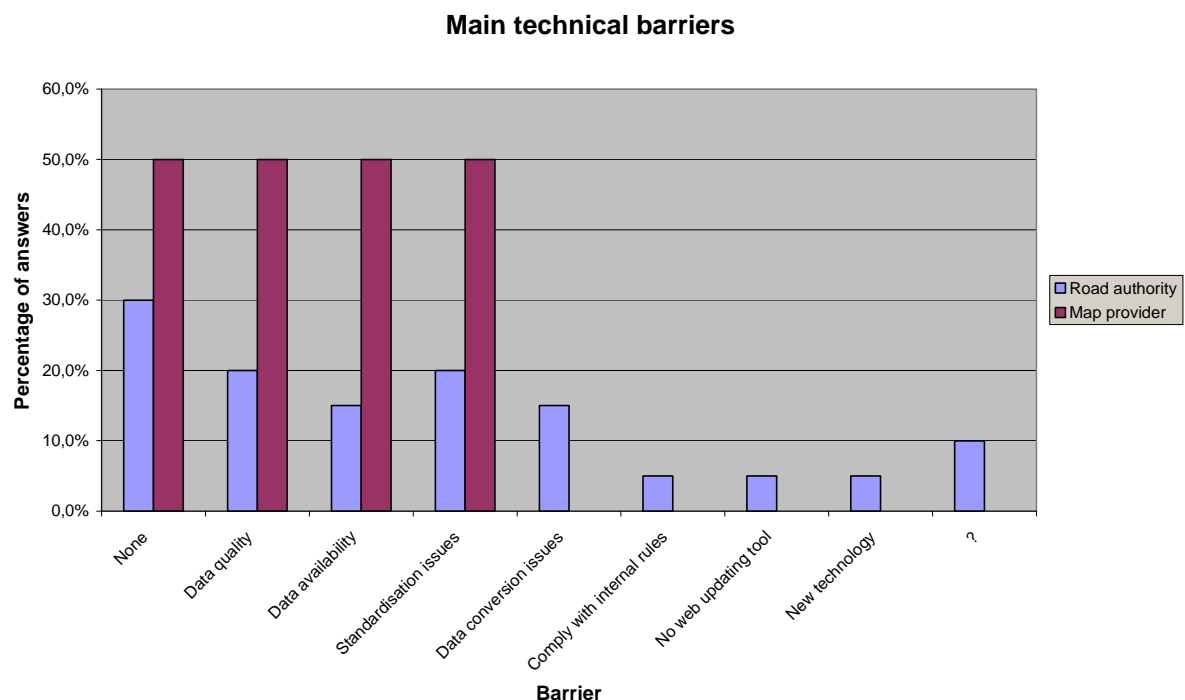
Since the questionnaire addressed topics related to each of the three tasks of work package 6, the results of the questionnaire will form the basis for the work performed in the tasks 6.1, 6.2 and 6.3.

3. Data collected per country/ organisation

2.1 Road authorities

The answers to the first three questions are not included in this annex because they are actually related to D1.1.

According to you, what are the main technical barrier(s) to the deployment of such a ROSATTE infrastructure in your country?



BELGIUM - Flanders

The main barrier will probably be the fragmentation of power between the different regions, provinces, cities and municipalities. In Belgium there are 3 regions, 10 provinces and 589 municipalities. Each organisational level has a certain degree of autonomy.

The answers to the questions in this questionnaire will be given from the viewpoint of the Flemish region. We can not speak for the other authorities involved.

BELGIUM - Wallonia

There are of course technical difficulties but the major barrier is to have time and qualified staff.

The data update is also a major subject but hard to manage.

CYPRUS

Currently within the PWD a database for infrastructure/safety data is been developed and we do not foresee any technical barriers. However, if the ROSATTE Infrastructure is compatible to the Cyprus System (developed in an SQL Server environment) we don't expect any technical difficulties.

DENMARK

Concerning the state roads there are no real big technical problems except from eventual lacks in economic resources when a service is going to be developed. Technical barriers concerning regional and local roads are data quality and availability which could be difficult to overcome.

FINLAND

The road authority requirements are possible to fulfil. Other parts are difficult to comment.

FRANCE

French Ministry:

The only technical barrier we are seeing for implementing the ROSATTE infrastructure is to comply with the internal rules and choices (e.g. software) of the Ministry to host such an infrastructure.

There may be some issues when using map database.

French Ministry + ASFA:

However the main barriers are legal, organisational and financial (cf. questionnaire 2008).

These barriers are probably triple:

legal: linked to the national administrative framework for the different authorities and operators;

organisational: the different road authorities / operators have a lot of different tasks and duties. It does not seem acceptable to burden them with too complex or expensive tasks;

financial: the cost of setting up and maintaining such a database can be too high for the ministry in charge of road safety.

GERMANY - Bavaria

There are several different systems for traffic ruling in operation.

GERMANY - Mecklenburg-Vorpommern

The technical infrastructure on the level of local governments is presumed to be the main barrier to the deployment of a ROSATTE infrastructure in Mecklenburg-Vorpommern.

GERMANY - North Rhine-Westphalia

Minor technical obstacles if ROSATTE infrastructure is standard based.

ICELAND

No particular technical barriers.

IRELAND

The main technical barriers will involve the adoption, or not of standards for geo-spatial data. The EU INSPIRE directive and the timescale it imposes on Member States will have the largest effect on these technical issues

ITALY

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LITHUANIA

The main problems of using data are a data inaccuracy and a delayed updating.

NORWAY

There will be many barriers to overcome before we see a successful deployment of a ROSATTE infrastructure in Norway. We have a well developed national road database

which contains safety attributes on the national and county roads. Also we cooperate with The Norwegian Mapping Authority and the municipalities to collect these attributes on the municipal and private roads.

Speed limit is available for the whole road network.

However, we don't have any specially designed Web updating tool for these attributes; neither do we have any open standards to float these data around.

SLOVAKIA

In Slovakia the road management is fragmented from the state level to 8 regions and 2891 municipalities (in which towns 138). The cooperation is secured by law, but there are some difficulties to fulfil given duties because of low budgets. Another barrier might be low technical standardisation. (e.g. currently the implementation of INSPIRE to the national law is being prepared, but there may be a long way to set down the regulatory decree for detailed specification.

SLOVENIA

New technology and attributes.

SWEDEN

SRA can not see any major barriers of deployment in Sweden.

UNITED KINGDOM - Northern Ireland

Not answerable.

UNITED KINGDOM - Scotland

The purpose of the Project is to consider the collection of information about measures in place (eg signs, restrictions) that will promote road safety and its provision to companies marketing provision of navigational aids for drivers and to map publishers.

The factors in Scotland that may act as the main barriers to a single nationwide system are:

- the current division of responsibility for roads between the Trunk Road Authority (TRA) and the local roads authorities (LRA); Accessibility of LRA databases (see last sentence on page 34 of Deliverable D1.1 State of the Art);

- the availability of databases that are kept up to date in all those authorities;

- a common standard of provision at TRA and LRA levels throughout Scotland and the UK;

- the resource requirements of developing and maintaining databases (more likely for the LRAs than Scotland's TRA);

- whether the companies providing navigational aids for drivers and the map publishers can agree and work to a common method and standard for provision of data;

- agreement between the roads authorities and companies on the details to be made available and frequency of updates; and

- the legal liability in cases where the information may not be considered as current (or is inaccurate).

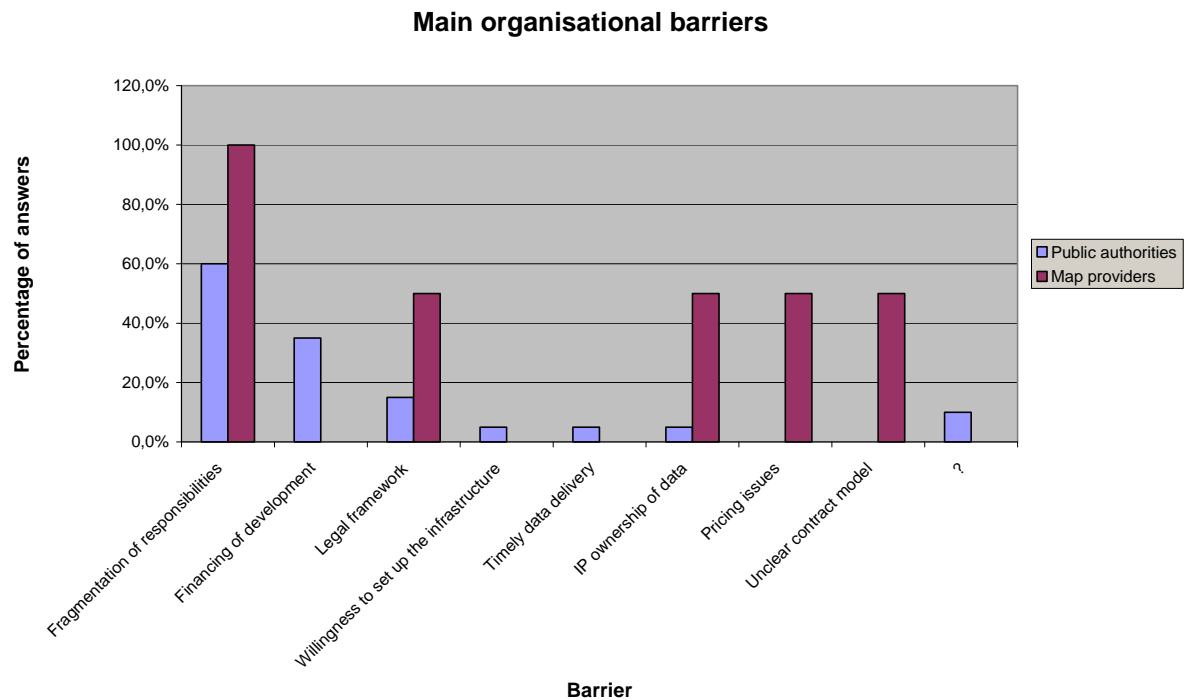
UNITED KINGDOM - London

We need to obtain an Agora encoder

Our mapping is all based on Ordnance Survey (OS), so would need to be able to convert data effectively. We have collected the speed limits as point items, then overlayed onto an OS map. We own the points, but the links of the OS map are derived data and IPR belongs to OS. The issue of derived data with OS may be an issue.

Would the fact that the UK uses miles per hour as opposed to kilometres per hour be an issue?

According to you, what would be the major barrier(s) with respect to national/regional/local organisation in your country? In the other EU Member States? Will it be feasible in your country/ region to have the same infrastructure operating at the different organisational levels? Which barriers need to be overcome?



BELGIUM - Flanders

As can be deduced from the answer to question 4, a good cooperation between the different authorities will be necessary. This will not be obvious however, since there are so many authorities involved.

Region: yes it is feasible. The database of the traffic signs along the roads under the jurisdiction of the Agency of Roads and Traffic in Flanders was elaborated first. The same system is currently used to make an inventory of the traffic signs along the other roads in Flanders.

BELGIUM - Wallonia

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CYPRUS

In our case, the PWD is responsible for the road database and the HMS as a whole that is a National Organization therefore no other levels need to be considered.

DENMARK

Generally it will be an advantage with the same infrastructure - what ever it is. Barriers to overcome: Many - first of all to come to an agreement concerning the concept with the local administrations, then to finance the required development in the local systems and then to secure data quality.

FINLAND

It is positive to have the same infrastructure for different levels.

FRANCE

French Ministry:

The French constitution states the free administration for each regional/local authority (region, département, community). Therefore when a new obligation is imposed by a law the State must give means / fund local authorities for fulfilling these new duties.

As such, the actual splitting of the duties among a very high number of authorities makes very hard (and quite impossible) any participation based on a voluntary basis (e.g. 36 000 mayors to convince!). And it is not the current trend to define new obligations by law.

Moreover, a part of the national road network is operated by 14 private motorway companies. Their duties are defined in a grant with the State. It is then difficult to amend such contracts through new constraints that may change the economical balance.

French Ministry + ASFA

Yes it is feasible although difficult due first to the number of decision makers in France (around 40 000!). However what is true in one county, is true in another one ...

Nevertheless, it implies to have together different ways (or means) to collect data, the legal framework to make the different road authorities and operators to cooperate and an entity in charge of the database management. Moreover, there needs to be a real willingness in the Ministry to set up and operate such an infrastructure.

Whatever the adopted solution for organisation, a great number of actors have to be considered, due to the high number of stakeholders (in France there 36600 communities, 100 counties not to mention a number of intermunicipal cooperation entities, 11 specialised road departments and 14 motorway companies. All of them are supposed to create and input safety attributes.

Besides, depending on the adopted organisation one or several database administrators can be considered. Three levels are theoretically possible:

national,
(inter)regional,
local.

The choice of the best one is not made yet. It must put in balance the closeness to decision makers and a sufficient number of regulations to maintain its knowledge.

The feasibility study defined three profiles:

police authority (or road authority)
DB administrator
field supervisor

It seems rather difficult to use and implement due first to the number of decision makers in France (around 40 000!). It implies to have together different ways (or means) to collect data, the legal framework to make the different road authorities and operators cooperate and an entity in charge of the database management. Without these three conditions, there will only be low progress on this topic.

GERMANY - Bavaria

The main organisational challenge will be the very federal system and the widespread responsibilities for traffic ruling. Thus there are many players involved. In other states it might be easier.

The Federal State of Germany has given all responsibility for road operation to the States. The Bavarian Road Administration only has direct influence on the highways, federal and state roads. Regarding district and community roads there are more than 2000 authorities only in Bavaria, which makes it very difficult to reach a common system all over Bavaria in short time.

GERMANY - Mecklenburg-Vorpommern

Based on the different jurisdictions that the road network is subject to differing databases infrastructures have been created. These differing database systems have to be standardised beforehand

GERMANY - North Rhine-Westphalia

The traffic ministry has only reduced influence on decisions on infrastructure on local level

ICELAND

Only financial barriers

N/A

IRELAND

If one of the main objectives of ROSATTE is to facilitate access and exchange at all levels of government it will be dependent on the adoption of standards and numerous formal arrangements (Local Government to National Gov, National Gov to EU etc, and some possibly encompassing IPR issues.

It is difficult to see how this harmonised infrastructure will suit all levels of government. Local Government may not have too interest at what happens at a national level but may be best placed to gather this data. However without any extra resources being made available it will be difficult form them to implement new data collection/management arrangements.

ITALY

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LITHUANIA

Presently a study, assessing various organizational and technical aspects of usage of the above mentioned data is executed. It is expected, that with reference to this study results an improvement of information systems will take place for those systems to be more effective. The reduced funding limits data collecting and upgrading.

NORWAY

I believe that the awareness among the officers that carries out the regulation and later store the safety attributes in databases (or in paper files) is the major barrier. We'll have to teach a large number of them about the public need and interest for these data and that the update speed is vital to enhance traffic safety.

Once the awareness process is started, the public authorities will need to optimise its organisation to comply with these needs. This might involve a reorganisation and increased budgets - which both might take a lot of time.

We have 430 municipalities in Norway, many of them are rather small with limited resources on this field.

Yes, we believe that the same infrastructure will accommodate all levels in Norway (municipalities, police and Public Roads Authorities).

SLOVAKIA

This topic is related to previous answer - this would need close cooperation among different road owners and administrators, in some cases depending on good will of these actors. Organisational and technical rules must be given in law, standards, e.g.

SLOVENIA

Two different managing institutions on the national level, one for HighWays and the other for the rest of national road network, and additional numerous local roads' managing authorities.

See answer to question #5.

SWEDEN

As many actors are involved the major problem probably will be to ensure timely data delivery to the ROSATTE data store..

Regarding other EU members we feel that in member states where responsibilities between the different levels -national/regional/local - not yet has been defined will face some significant tasks to solve.

In Sweden there already exists an infrastructure used by the different organisation levels to exchange data with the national database of traffic regulations (RDT) and the national road database (NVDB).

UNITED KINGDOM - Northern Ireland

Not answerable.

UNITED KINGDOM - Scotland

See responses to 4 above.

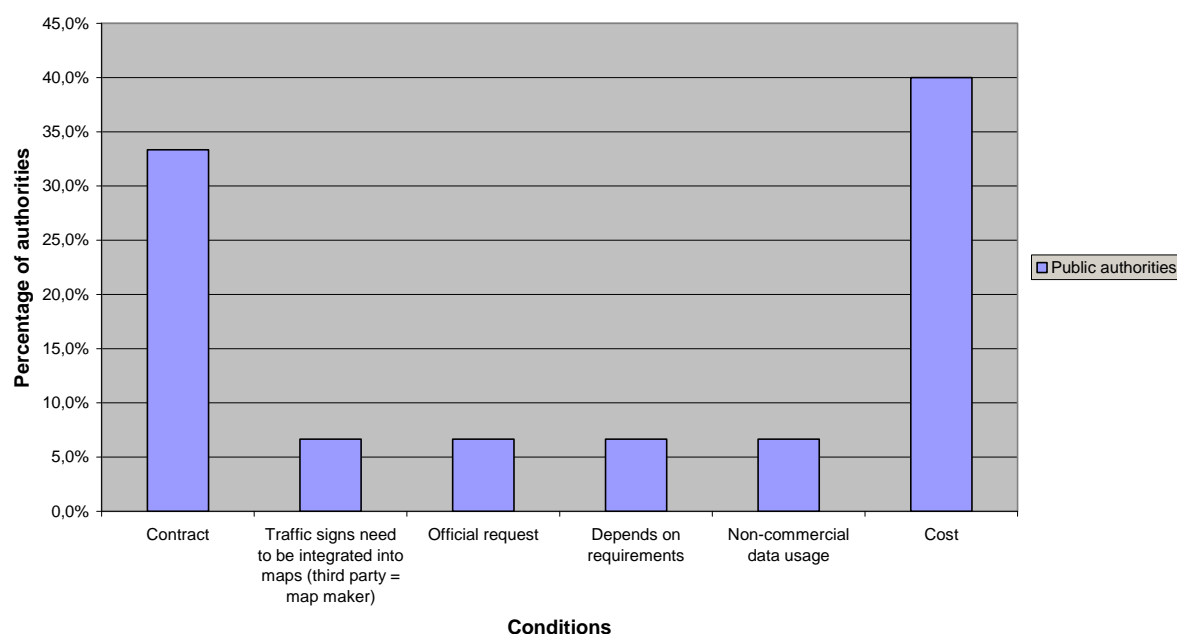
UNITED KINGDOM - London

Communication. London as an example has 33 different boroughs, all with different political leanings. Some look upon TfL favourably, others do not. Some are willing to help, some not so. The major barrier would be to get everyone on the same page, with everyone benefitting equally. Only if there is consensus and mutual benefits will you get the buy in of all the authorities. Probably the easiest way to achieve this is if it was a top down directive. i.e. the Dept. for Transport made it a requirement.

This would be possible with some work. Again it would be about have a top down directive and ensuring buy in from all organisations. Buy in would only be achieved if the solution was seen as mutually beneficial to all parties.

What is the position of your country/region about making the safety attribute database available to third parties? Under which conditions would your country be willing to do so?

Conditions for making safety attributes available to third parties



BELGIUM - Flanders

In first instance, the Vlaamse Overheid takes the position that the traffic sign database can be made available to third parties like the map makers TeleAtlas and Navteq under the condition that they will integrate the traffic signs into their maps.

In the framework of this, a contract will probably be concluded with the third parties that wish to have access to the Flemish traffic sign database.

BELGIUM - Wallonia

We are open-minded about making the safety attribute database available to third parties. Nevertheless, we are very reserved if the third part wishes to use data with commercial end. In this situation, we are faced with the financial question and the repartition of out-goings and incomings.

CYPRUS

We will be willing to make information from the Cyprus Database available to third parties provided these are received via an official request.

DENMARK

In DK - as a result of an EC-directive - data collected and financed by a public organisation shall be available to third parties without cost except for the direct cost in delivering the data. This does not count for data which can be used to identify individuals.

FINLAND

Making the database available depends on the requirements. The performance is related to the extent of the task and resources available at the time.

FRANCE

French Ministry + ASFA

The French ministry in charge of transport (MEEDDAT / DSCR) is very in favour of delivering speed limit data to third parties as well as some other safety data (e.g. prohibition / obligation road signs, railway level-crossing) taking into consideration the expected positive impact on road safety. However, delivering such data needs to identify these third parties and to formalise by contract their use.

The motorway companies share this point of view globally. Regarding dynamic speed limits, which is maybe more specific to motorways, they are willing to provide service providers with this type of information. The conditions about identifying and contracting with them are similar.

However, it is necessary to define an open business model in information market: There is no free information. Safety information as well as traffic information has an economic production cost which needs to be recognized at each stage of the value chain starting from monitoring up to drivers' dissemination through all process of communication, compilation and retailing. The data value will encourage the data quality. Both approaches (public i.e. information funded by public budget and private i.e. information paid by user offering a possibility of return of investment in data processing) can be accepted at one stage or another of the economic value chain.

GERMANY - Bavaria

If the data is available, the position of Bavaria is to give away safety relevant data. Regarding costs at least the costs for supplying should be covered. There should not be too much additional effort connected with the data supply.

GERMANY - Mecklenburg-Vorpommern

Provided there are no specific reservations regarding the use of the data we would be ready to make the data base available to third parties.

GERMANY - North Rhine-Westphalia

In principle it is our intention on making precious NWSIB informations available to others - within the road administration and beyond.

ICELAND

See the following text:

TERMS & CONDITIONS RELATING TO USE OF INFORMATION FROM ICELANDIC ROAD ADMINISTRATION (ICERA)

Icelandic law and regulation on public data availability, distribution, use and reuse apply.

Data: ICERA's collection and location of traffic signs.

To promote reuse of public information, ICERA makes this data, described in paragraph 2., available as this can benefit the public. The data is provided as is in a common format and ICERA is not responsible for this data to be correct, accurate or is responsible for how it will be used. The same applies to possible information updates - ICERA does not guaranty any updates but will endeavour to provide yearly updates on request. Any receiver of the data is free to use the information in any way in their applications including data association, redistribution, (sub) - licensing and reselling this data as part of their applications without prior consent from ICERA.

ICERA warrants that it has all right, title and ownership, including all intellectual property rights, in and to the information necessary to distribute this data.

IRELAND

There is no formal position for making available to third parties the 8 attributes currently listed (only 4 of the 8 listed under Quality, Coverage and Update Frequency) in the ROSATTE 'State of the art documents' for Ireland. Currently we provide on request map

providers whom we currently work with details of new road ailments. However Ireland, like other Member States is subject to the EU Directive on reuse of public sector data.

ITALY

ANAS is currently setting up a road safety database with, in addition to external data, information coming from other sources (ACI, ISTAT) whose completion is foreseen by the end of 2010.

LITHUANIA

The question of possibility for usage of our data by the third-parties in their own systems at this moment is under discussion in the LRA.

NORWAY

At the moment we would have to sell these data to third parties. Not too far in the future we'll have to change this policy due to a more mature awareness given in EU-Directives (INSPIRE) and the ITS-Action plan.

SLOVAKIA

Slovakia has centralised road database, however the quality depends on quality of road administrators cooperation. Slovak Road Administration as the author and owner of central road database is state budget organisation and there are some needs to set down the data providing rules. Our technology supports web based services (e.g. WMS, WFS), but to make direct data access for third parties might be little bit difficult, except of non commercial data usage. For other state based bodies the data access is for free (license based). There are no rules for commercial data service.

SLOVENIA

There is no need for it.

SWEDEN

Existing traffic regulations will be accessible via Internet from RDT - free of charge. Road safety attributes will be made available, to third parties, from the national road database (NVDB) using the existing channels for data exchange. We encourage the use of road safety attributes (and other existing NVDB information) by third parties. The condition is that an agreement is established between SRA and the involved party.

UNITED KINGDOM - Northern Ireland

Not answerable.

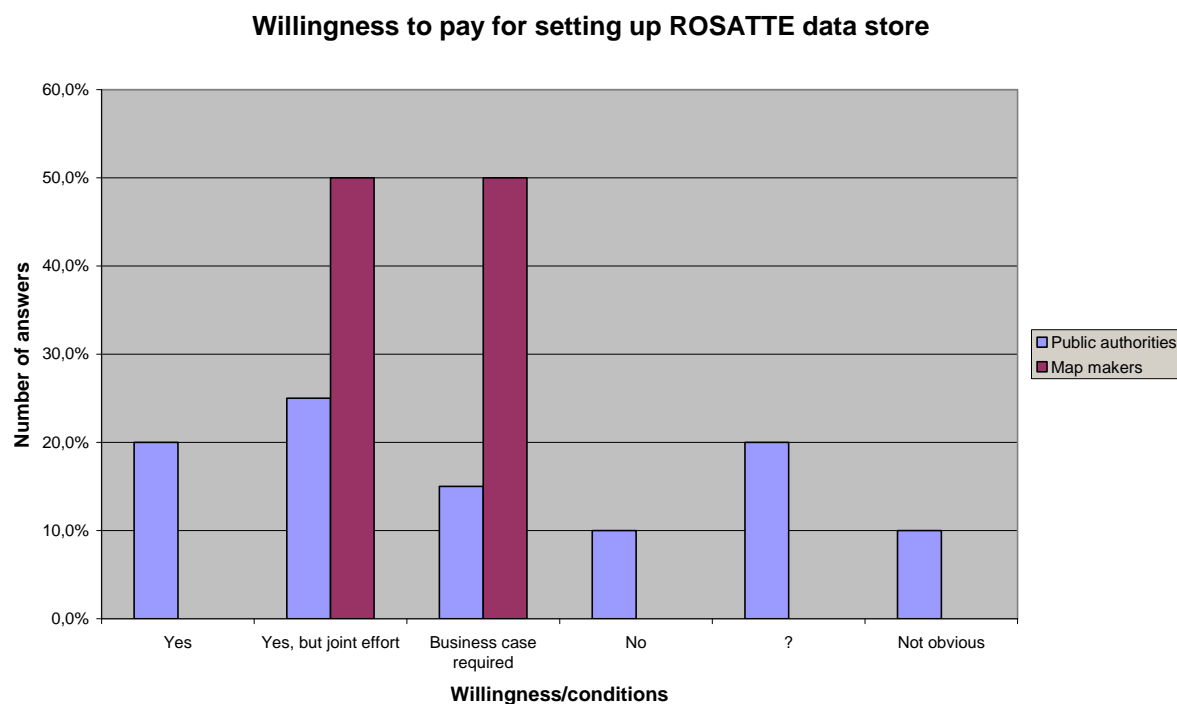
UNITED KINGDOM - Scotland

Transport Scotland, as agent for Scottish Ministers, the Trunk Road Authority, would consider making the information available to third parties at a cost to cover the cost of providing it in the form required.

UNITED KINGDOM - London

We are more than happy and currently have offered our speed limit map free of charge to anyone that wants it. We believe making this available freely will contribute to improving road safety. It is for this reason that we promote this idea.

As a public authority or road administration, would you be ready to pay and/or put efforts for setting up a ROSATTE data store or do you expect the map makers or any other party to pay and/or put effort for it?



BELGIUM - Flanders

We think that it should be a joint effort.

BELGIUM - Wallonia

We are ready to pay and/or put efforts for setting up a ROSATTE data store.

If the database is used by map providers, we also clearly expect the map makers to pay and/or put effort for it.

CYPRUS

The PWD procedures do not allow the option to pay for setting up a ROSATTE data store. Public procurement procedures have to be followed. However, depending on the actual cost or how many man hours are needed PWD will consider putting effort for the ROSATTE Data Store.

DENMARK

Difficult to answer the question. It would require a business case which shows the benefits for our organisation. The best answer for now is that a third party need to pay.

FINLAND

As a little country and with not so many actors in branch it is not obvious in Finland.

FRANCE

French Ministry

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ASFA

As partner of the Rosatte project, resources are already involved.

GERMANY - Bavaria

The map makers do have a commercial benefit from having better data, so they would have to participate in the costs, but there might also be a chance for the State to contribute.

GERMANY - Mecklenburg-Vorpommern

As a data provider we would generally not be ready to pay for setting up ROSATTE data store.

GERMANY - North Rhine-Westphalia

At present we see no necessity to construct a particularly ROSATTE data store. Business cases for support of available safety attributes need negotiations with map makers based e.g. on existing contracts.

ICELAND

Because of extremely bad financial situation in Iceland for now and foreseeingly in the coming years it is most unlikely that the Icelandic Road Administration would pay for such a project.

IRELAND

This is a difficult question to answer as there is no mention in the attached documentation about the costs involved or the extra resources needed to for "setting up a ROSATTE data store". If there is a 'cost' in collection and administrating this harmonised data store there must be a model for cost recovery both for the Public Body and the Private Operator.

ITALY

To be estimated after the completion of the ANAS project. It could be weighted the possible contribution from ROSATTE project after the executive phase.

LITHUANIA

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NORWAY

Probably, as a national public authority we would not be ready to pay a third party to set up the infrastructure. We would put in the extra effort and the resources to have this done. A municipality might be willing to pay for this though, because they might lack both capacity and competence.

We would certainly not expect map providers or others to set up the infrastructure for any public authority or road administration.

We will however have to take into consideration if the infrastructure planned to set up by The Norwegian Mapping Authority as a result of INSPIRE, will be suitable also for ROSATTE.

SLOVAKIA

The central road database in Slovakia (currently covers motorways, expressways and other main and regional roads except municipal roads, in perspective extended for municipal roads) might be available as data source for ROSATTE.

SLOVENIA

No.

SWEDEN

SRA will support data exchange in the major formats required on national (required for the national SDI) and European level (INSPIRE, ROSATTE, EuroRoadS etc). This will be done to fulfil SRAs ambition to enable use of existing road data by third parties. (See also answer question 6.)

UNITED KINGDOM - Northern Ireland

Not answerable.

UNITED KINGDOM - Scotland

Where additional work is required over and above the recording and updating of data essential for the management and maintenance of the trunk road network, Transport Scotland would expect other parties to finance their own data requirements.

UNITED KINGDOM - London

We would be prepared to pay and make an effort to set up a ROSATTE data store. We believe everyone involved that will benefit from it should contribute.

How do you see the interaction between the ROSATTE infrastructure and the databases already existing in your country/ region?

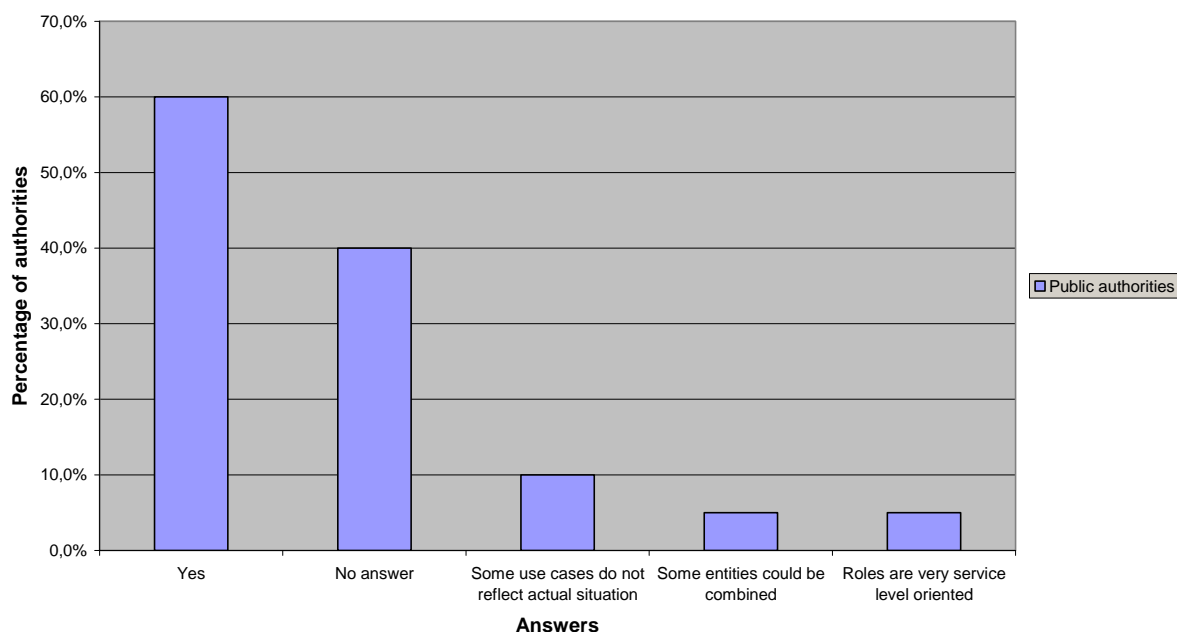
ROSATTE has identified different entities (Data Store, Data Service, Discovery Service, Subscription Service, Information Provider Service - see D1.2 pg 23). Are they relevant for your country/ region or do you see any other important entities that are missing?

ROSATTE has identified different roles (Enacting Authority, Data Store Operator, Information Provider and Data Provider, ... - see D1.2 pg 18). Are they relevant for your country/ region or do you see any other important roles that are missing?

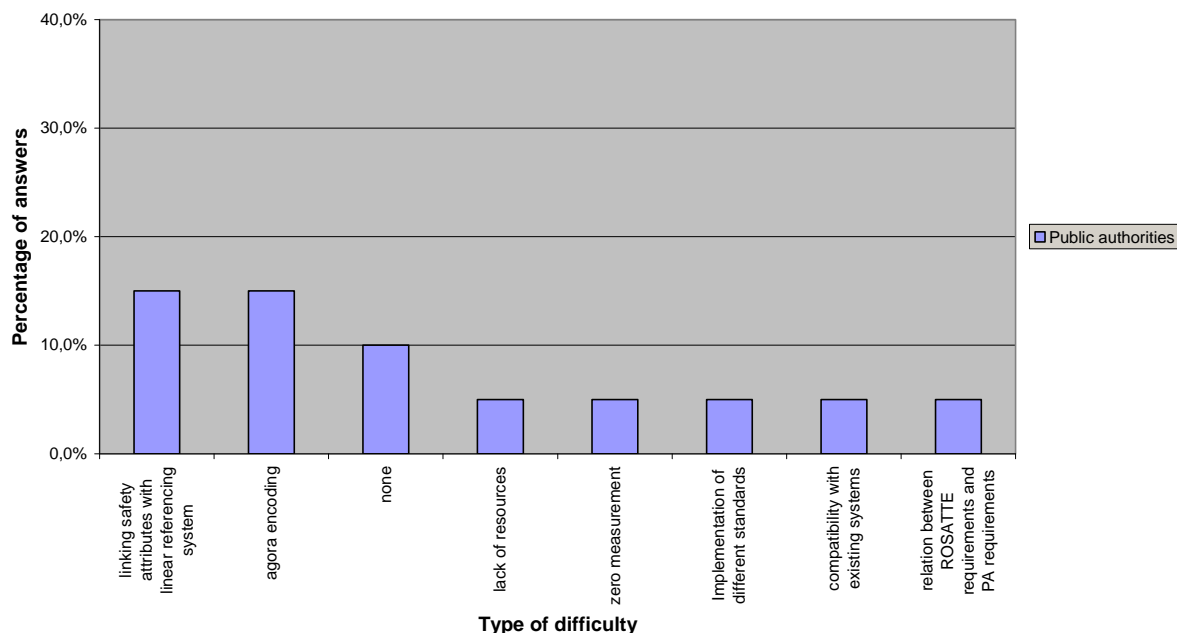
ROSATTE has defined some use cases for data storage & maintenance, data exchange and data integration (see figures 4, 5 and 9 of D1.2). Do you find them relevant for your country/ region as well? Can you identify any other?

What technical difficulties do you expect if you would implement the ROSATTE infrastructure in your country/ region?

Are the ROSATTE entities/roles/use cases relevant (D1.2)



Main technical difficulties in your country



BELGIUM - Flanders

The 2 central databases of traffic signs in Flanders (for the motorways, highways, main roads and regional roads on the one hand and the other roads on the other hand) that are currently being established were already merged into one central database. This central database will act as a data source for ROSATTE.

They are relevant.

They are relevant.

They are relevant.

The fact that Flanders is working with point location referencing might cause problems. Furthermore, the AGORA encoding is a challenge.

BELGIUM - Wallonia

The comparison between data in the database and signs really along the road is important. Tools for signs management and signs maintenance (age, condition, retro reflexion level, ...) are required for road administration.

It isn't the principal purpose of ROSATTE but it's interesting to consider integration of a specific unit or data into ROSATTE.

CYPRUS

The Cyprus system is data (traffic and accident) oriented.

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Lack of human and financial resources is definitely an issue that we would like to point out.

DENMARK

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FINLAND

In practise some of the entities could be combined.

The roles seem to be ok.

Ok

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FRANCE

For the moment, there is no national ministry database for speed limits. The motorway companies are the only ones building and feeding a specific database with speed limits. During the ROSATTE project, they are ready to have interfaces developed between their database and the ROSATTE infrastructure.

There may be local databases on some topics (local initiatives probably for maintenance reasons) but there are no central knowledge about them and no common rules for their setup.

The BALI project aims to evaluate the feasibility and the operational conditions for setting up such a national database, especially the willingness to cooperate of local authorities. The demonstrator is set up on one department (Yvelines) and deals with all the road networks.

It is planned to test export procedures within the BALI project. On the other hand, interfacing it with the ROSATTE infrastructure may need some adaptation and is not decided. It will partly depend on the logical / technical choices made in ROSATTE.

French Ministry

No specific comment

The roles identified in D1.2 are very SL-oriented and do not exactly cope with safety attributes that are linked with a legal decision (e.g. gradient or super elevation).

The adopted typology for roles in BALI is the following one:

Frame data providers;

Road data provider (incl. enacting authorities we see them more as a type of user)

Data Store operator and Data Service operator (incl. Discovery, subscription)

Clients

The UC diagram 4 does not exactly the situation for France (through the BALI demonstration) due to strong distinction between "enacting authority" and "data provider". For example the "Receive feedback" UC target Data provider as well as "Enacting authority". It is more a problem of links between roles and use cases rather of missing use cases.

Several technical difficulties may be expected when implementing the ROASTTE infrastructure beside the databases already existing:

One of the most critical issues will be to link the safety attributes natively defined with a linear referencing system (99% of cases) in local databases with Data Store database if the referent data is not present;

To initialise the speed limit (and other safety attribute) sections may be a huge work;

Issue of using a map not provided by Navteq or Tele Atlas (like IGN) with the AGORA-C encoder (reliability);

Difficulty to implement the different standards like IS 17572-3 and the necessity to make some technical choices (not always consistent with the ROSATTE choices).

ASFA

OK as partner of the project

OK as partner of the project

OK as partner of the project

See question 4.

GERMANY - Bavaria

The entities are well defined and sufficient

The roles defined cover all relevant partners, but one organisation might cover several roles

Relevant

The compatibility with existing systems might be a problem

GERMANY - Mecklenburg-Vorpommern

We are not in a position to give an accurate assessment of the interaction of our infrastructure and the ROSATTE infrastructure.

GERMANY - North Rhine-Westphalia

No additions

ICELAND

As said in the reply to question nr. 6 the Icelandic Road Administration could give data to this data base if requested.

N/A

N/A

N/A

N/A

IRELAND

The concept of a regional and national 'data services', 'discovery services' etc is laudable but the main driver for change will come from initiatives like national SDI projects and the INSPIRE directive not ROSATTE. Therefore I don't see how at any level Ireland could facilitate ROSATTE and its requirements before INSPIRE.

Not relevant at present, road safety stakeholders exchange information within informal arrangements and have been doing so successfully for at least the last decade.

The roles ROSATTE are identified on page 22 not page 18 cited above. The roles describes would have parallels in Ireland. I don't see any important roles missing from the list.

Figure 4 identifies the actor (data store operator) and their function to 'import road safety attributes'. However it assumes that "metadata like quality characteristics may be updated". What if no metadata exists? What actor is responsible for adding and maintaining safety attribute data? What is expected from the 'feedback function' if there is insufficient metadata on the road safety attributes?

The technical difficulties are somewhat irrelevant. Structural and organisational agreements will have to be addresses first. For example, why should the 'data store operator' who is most likely to be the road authority, go to the expense of providing "hardware and software structures necessary to store attributes and communicate with the other ROSATTE components"?

ITALY

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LITHUANIA

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NORWAY

On the national level, the interaction will be in place. The other levels will probably need to develop the interaction with the National Road Database as well.

Yes. And no, we don't see any significant entities that are missing.

Yes, there are others, but the most important are covered in the ROSATTE infrastructure.

Most of them are relevant, although they will need a Norwegian adoption to fit perfectly.

The fact that we did not spend time finding more use cases, is promising for the use cases already there.

Coordination between the different levels of authorities. We will probably have to deploy slightly different systems for the different levels of authorities - in order to adapt to the needs and competence of the different users at the different levels of authorities.

SLOVAKIA

We see the quite same infrastructure in the project which is currently prepared in Slovakia - National system of transport information - under this project a lot of topics would be defined and solved; the main goal of this system is cooperation of all necessary state bodies and their organisations to provide the transport information and data from their agenda to central level and at opposite to use the information and data from central level in their agenda. This project should be reflected in law, in standards and there will be a solid base to define and clear all roles and responsibilities of all acting parties.

SLOVENIA

No.

No.

No.

No.

SWEDEN

SRAs view is that the ROSATTE infrastructure must become a part of an INSPIRE infrastructure. By adopting this view SRA can see no problem integrating the ROSATTE infrastructure as it will be a part of both the national and European SDI.

Seems OK - can't see any important entities missing.

Seems OK - can't see any important roles missing.

Seems OK - can't see any major important use cases missing.

SRA consider the ROSATTE infrastructure as a part of both the national and European SDI and can't see no major technical difficulties.

UNITED KINGDOM - Northern Ireland

Not answerable.

UNITED KINGDOM - Scotland

The interaction requirements between the ROSATTE infrastructure and the databases are currently not known, as there are no arrangements in place to supply data. However, ISO standards are in use for data storing and data exchange and all data storing systems use the latest software technology.

In principle, the entities identified in document D1.2 Requirements and Overall Architecture pages 23 to 26 are relevant to Scotland.

The roles of Data Provider and Data Store Operator for the road database are likely to be carried out by external service providers under tender to Transport Scotland and they would be required to carry out these roles to the standards and specifications laid down by Transport Scotland. It would be for Transport Scotland on behalf of Scottish Ministers to manage how and by whom the data are used.

Figs 4, 5 and 9 (of D1.2) do not accurately reflect the situation in Scotland (see b above). The role of "Discovery service operator" is one that would be carried out by the Operating Companies, for the routes that they are contracted to maintain and operate, and by the DBFO franchise holders. Integration systems between the relevant parties would need to be developed. The figures within document D1.2 Requirements and Overall would form a suitable starting point for system development.

Not known currently.

One issue that would need to be addressed is how the ROSATTE requirements may relate to the Transport Scotland Asset Management requirements, which would take precedence when there are opposing requirements, and how any conflicts between opposing requirements would be resolved. As noted in reply to question 1 above, there are a number of modules for specialised elements within the asset management database which assist with road management and maintenance. It may be possible to accommodate the ROSATTE requirements similarly and along lines of Section 2.4 of Deliverable D1.1 State of the Art, but that would have to be determined.

UNITED KINGDOM - London

These are relevant and seem comprehensive enough for now

These seem relevant

These seem relevant

Conversion from OS and derived data issues. See q2.

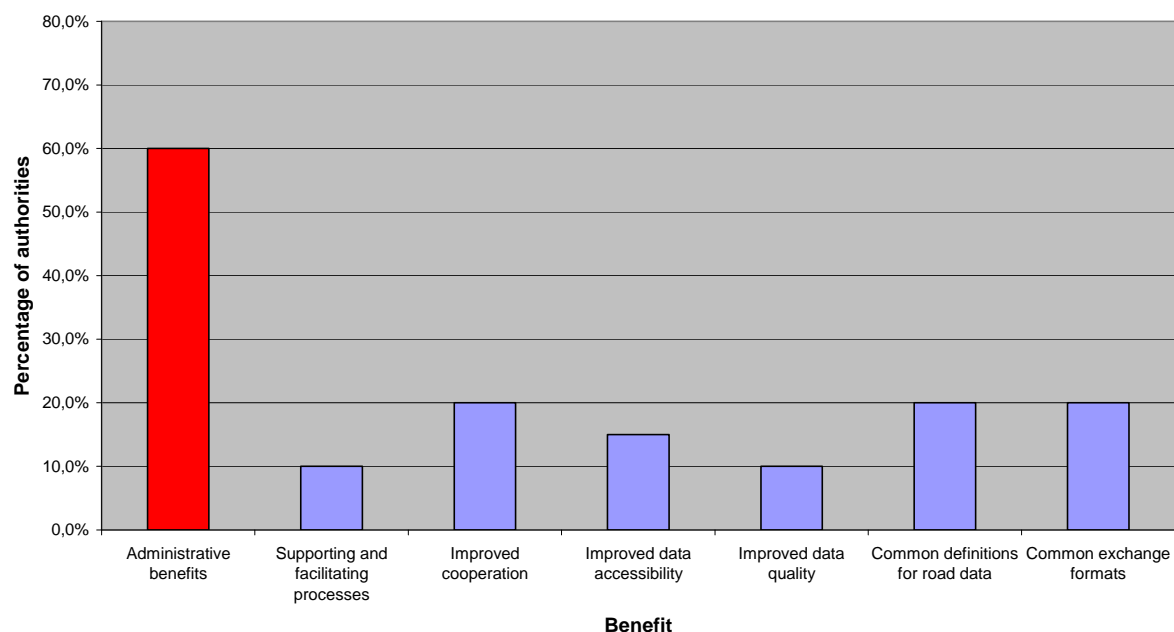
What would be the main benefits and draw-backs of such an infrastructure?

Administrative benefits and draw-backs?

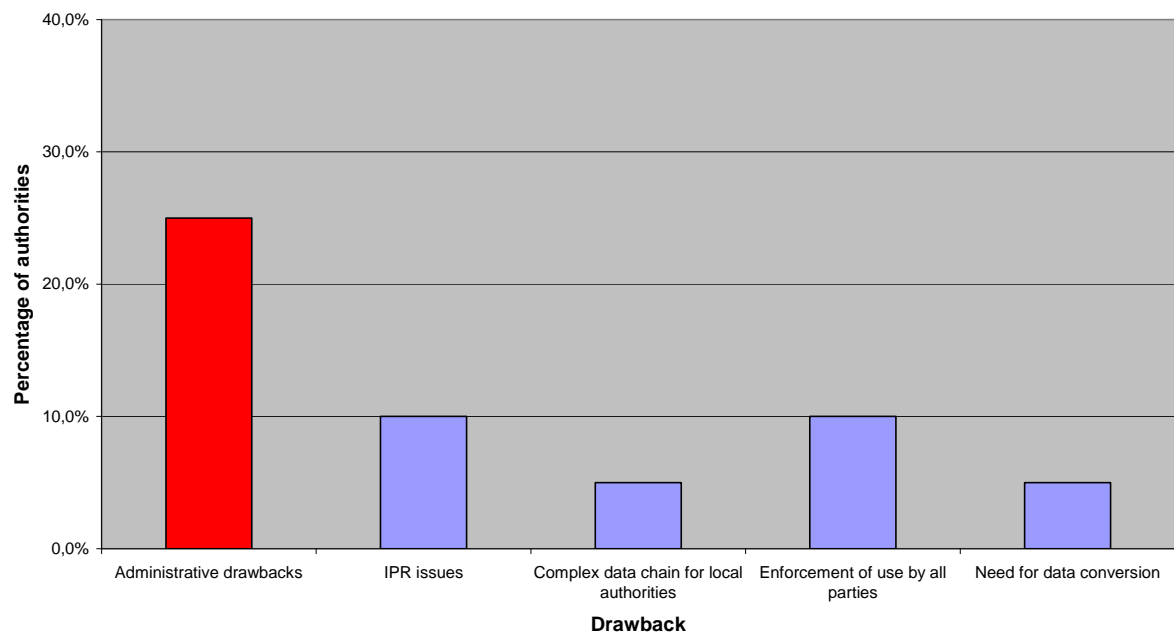
Financial benefits and costs?

Social benefits?

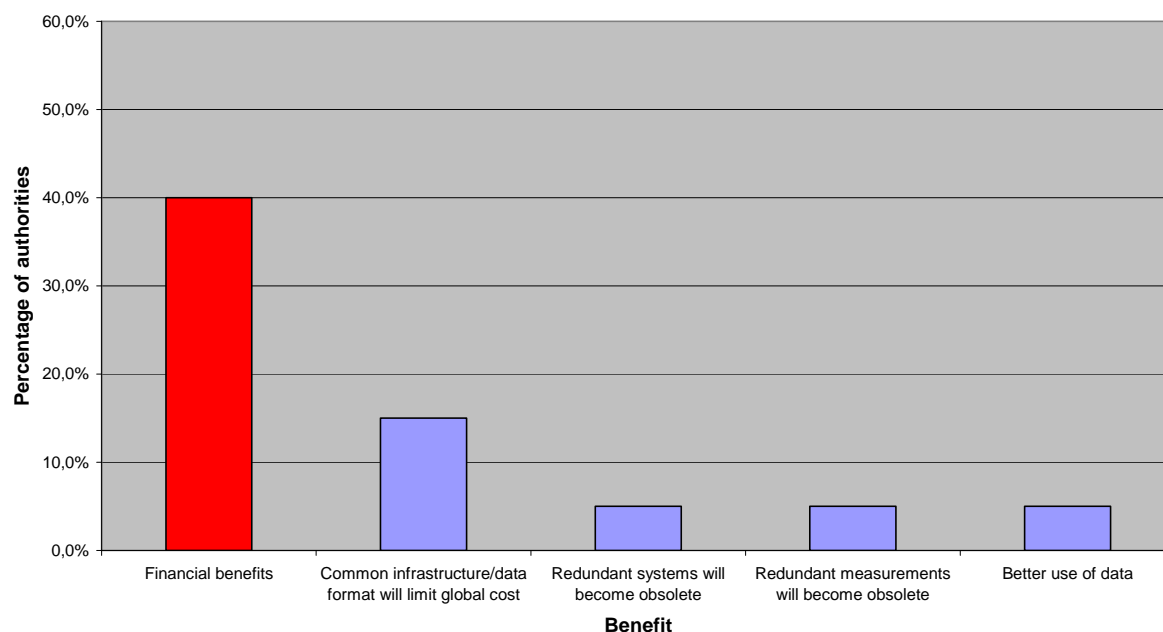
Administrative benefits



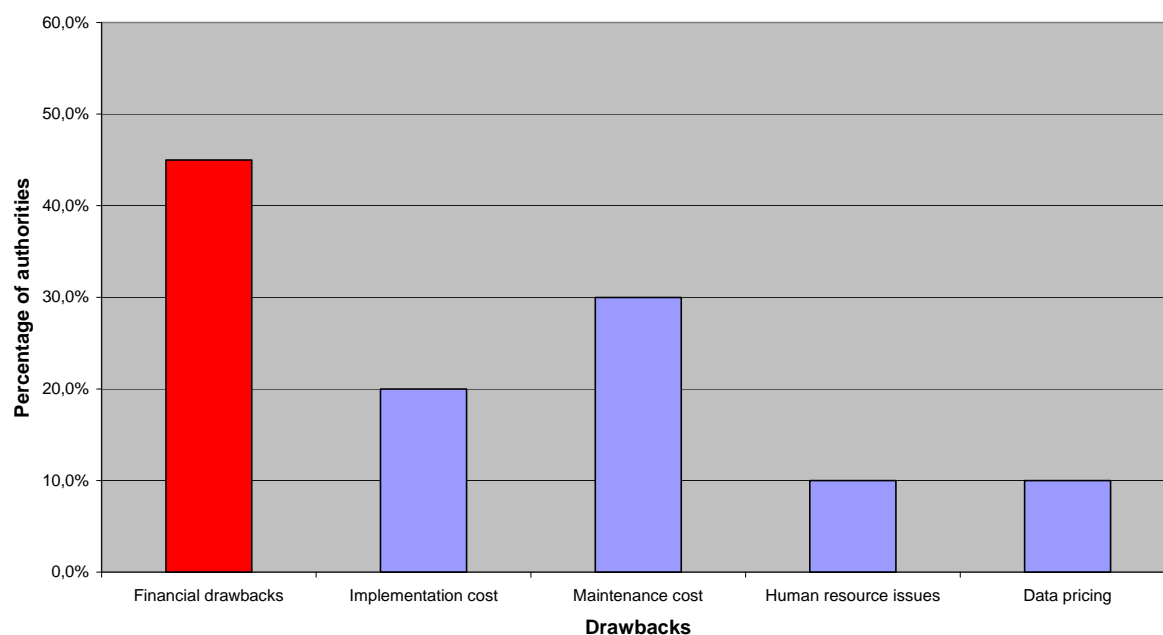
Administrative drawbacks



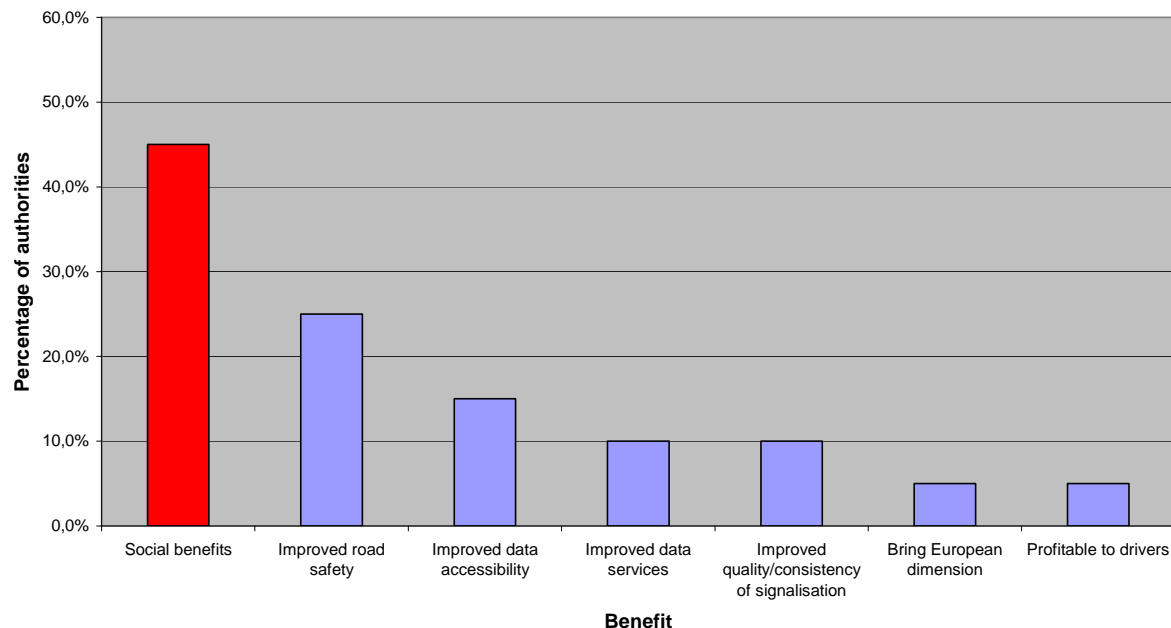
Financial benefits



Financial drawbacks



Social benefits



BELGIUM - Flanders

Administrative benefits:

Supporting and facilitating processes

Maintenance and reparation;

Design;

Management;

Traffic Management (detours, road works, re-routings, ...);

To establish and maintain a coherent signalisation in order to obtain an optimal traffic flow
Readable arrangement of the road and the surrounding area in order to increase traffic safety

Follow-up of contracts (guarantee, delivery and placing);

Drawing up and control 'Supplementary regulations' ('Aanvullende Reglementen)

Providing basic data

Traffic guidance (signposting, route planning);

Speed maps;

Intelligent Transport Systems (ITS) systems like GPS, ISA, ...;

Correlation parameters (accident analysis);

Asset management,

...

Financial benefits and costs.

Financial benefits: Different recordings and movements are made superfluous.

Costs: cost of the implementation project + the maintenance costs

Social benefits:

Improvement of the policy functioning due to a better accessibility of the data

Improvement of the quality and the consistency of the signalisation

Integration of traffic sign data in applications of map makers

Improvement of traffic safety, traffic fluidity, traffic liveability, ... by integrating the traffic sign data for various road users in GPS

Avoidance of trough traffic by taking into account traffic signalisation plans

Avoidance of trough traffic by taking into account height, width and weight limitations
Avoidance of heavy traffic in town centres
Better speed harmonisation - variable speed
Better parking management

BELGIUM - Wallonia

The benefit is an optimized road network management, in broad sense of course
administrative benefits (computerization the current paper procedure, easier check : signalisation consistence, signs location)
financial benefits on long term
social benefits

CYPRUS

All of the above apply for the Cyprus case in terms of benefits gained from such an infrastructure. However, cost and human resources issues can be considered as drawbacks.

DENMARK

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FINLAND

Based on the Rosatte Deliverable D1.2 it is not possible to answer all of the above questions.

FRANCE

French Ministry

Advantages: a common infrastructure implies a uniform process for collecting and defining speed limits and other safety attributes. This must be flexible enough to fit the different national policy to make decision on speed limits and other road signs.

Drawback: if it does not fit the national legal framework making it difficult to use, it will not be used.

Such a common infrastructure may contribute to limit the global cost of setting up and maintaining a national database, although the main costs are human costs (not impacted by the commonality of the infrastructure).

Better understanding and better respect of speed limits and other safety attributes, which will contribute to road safety improvement.

ASFA

Advantages: a common infrastructure implies a uniform process for collecting and defining speed limits and other safety attributes. This must be flexible enough to fit the different national policy to make decision on speed limits and other road signs.

Business model to be defined depending on the market needs.

Social benefits:

Will be profitable to the drivers;

Bring a European dimension;

Data are qualified.

GERMANY - Bavaria

Access to safety relevant attributes for the everyday work, structured database for the analysis road signs

Costs will come up for initial supply and maintenance of the system. Benefits can be achieved if the system is implemented as the standard system and redundant systems are obsolete

Supply of information to the driver to improve road safety.

GERMANY - Mecklenburg-Vorpommern

According to us an improved cooperation of all stakeholders will have a positive effect on decision making on a supra-regional and nationwide level.

See above.

GERMANY - North Rhine-Westphalia

Support of efforts on compatibility of regional and local administrative road data.

Each new requirement has its draw-back due to decreasing state budgets.

Existing activities for improvement of road safety are supported.

ICELAND

N/A

N/A

N/A

IRELAND

From the road authority's point of view it is not obvious where the benefits lay on either the financial or administrative fronts. Hopefully the social benefits would result from a reduction in the number of fatal and serious injury collisions for the user of in-car navigation and safety equipment.

ITALY

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LITHUANIA

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NORWAY

Easy distribution of updated data will mean benefits both for the users and for the data suppliers (public authorities).

Draw-backs will be IPR issues and data pricing.

SLOVAKIA

Quality of data and data services.

SLOVENIA

N/A.

N/A.

N/A.

SWEDEN

Benefits:

Common definitions for road data.

Common exchange formats.

Draw-backs:

Complex data chain from local authorities to ROSATTE data store operator.

Benefits:

Better use of data collected using public funding.

Costs:

May cause problems financially in the long run. Requires a solid business model.

Better cooperation between actors contributing to the data chain.

UNITED KINGDOM - Northern Ireland

Not answerable.

UNITED KINGDOM - Scotland

Providing a common method and standard can be agreed for recording and provision of data.

the Administrative benefits would be a uniform standard that all would require to follow, including newcomers to the market, but which may become a restrictive drawback if there are new hardware or software developments for data handling and communication or one party (an information provider?) decides it wants to pursue a different approach or method of providing information (ie it could stifle development);

financially there would be economy when data sets could be provided to a set of pre-agreed formats, (but a drawback with unnecessary expenditure if the information providers do not require data for the complete network - eg the remote areas are often mapped in less detail - or from all the countries). (Would there be an opt out facility?)

Not known currently.

UNITED KINGDOM - London

Administrative benefits and drawbacks

Providing road safety info (speed limits) to a wide variety of users could benefit road safety in London

Better pan European communication re: road safety data

Extra work/time/cost associated with maintaining an extra database/store

The need for conversion and possible IPR issues

Financial benefits and costs

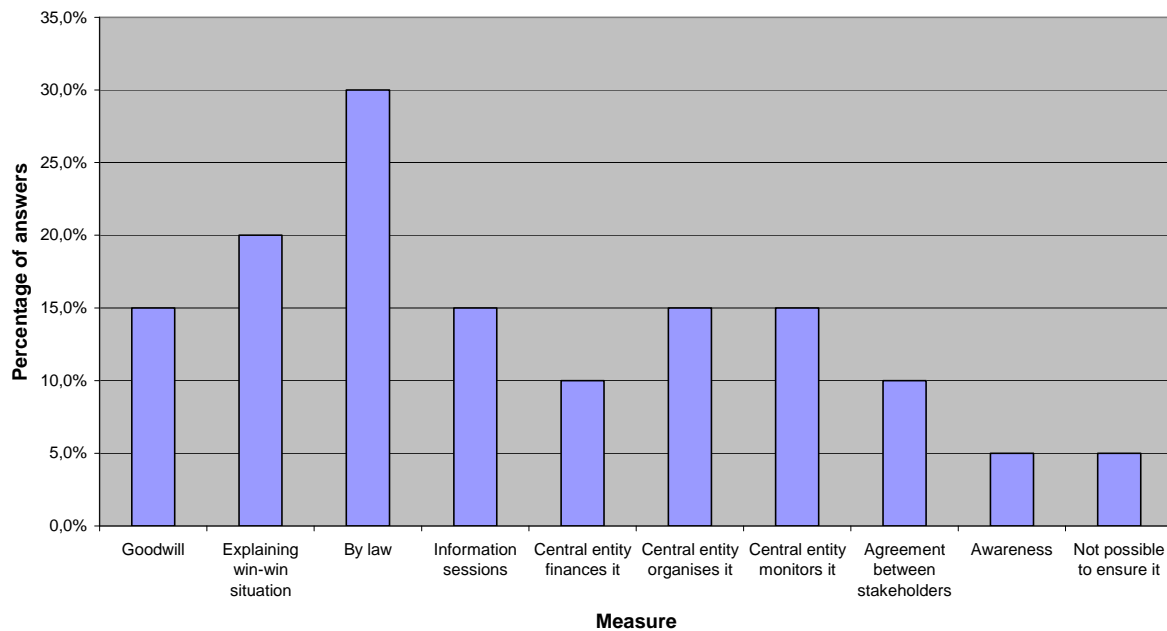
Project will assist us in realising best practice for creating and storing road safety attributes, thus saving financial outlay in trying to ascertain on our own

Time costs of maintaining additional data store

Improved availability of road safety information to users

In your country/region, how would you ensure commitment of all stakeholders necessary for collecting, sharing and updating road safety attribute information

How to ensure commitment of all stakeholders



BELGIUM - Flanders

The collection of the road safety attributes in the whole of Flanders is financed, organised and monitored by the Flemish government.

Information sessions are organised to ensure commitment of the different authorities to keep the road databases up to date. The advantages of the existence of an up to data road database are used to ensure this commitment. So, in fact, one trusts on the goodwill of the different road authorities.

BELGIUM - Wallonia

A convention or a decree.

CYPRUS

Our response to question 16e is relevant.

DENMARK

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FINLAND

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FRANCE

French Ministry

Since there is at the moment no obligation, the only possibility is to communicate and convince with a clear win-win cooperation framework.

ASFA

For motorway companies, ASFA would design an entity responsible for collecting, sharing and updating road safety attributes in each motorway company.

GERMANY - Bavaria

For the subordinate administrations of the Government of Bavaria, this can be done with the use of direct orders, for all others it is based on goodwill.

GERMANY - Mecklenburg-Vorpommern

The necessary commitment of all stakeholders has to be ensured by the responsible authority. (see under Q. 5).

GERMANY - North Rhine-Westphalia

Due to the principles of local self-government the Transport Ministry has no mandate to ensure commitments of stakeholders on local level. National local-authorities umbrella organizations (German County Association, German Association of cities, German Local Authorities Association) must be addressed.

ICELAND

The Icelandic Road Administration takes care of collecting data for the national road system.

IRELAND

Without sufficient resources this programme will have to be conducted on an informal basis. Therefore it will be reliant on the stakeholders buy in to the ROSATTE concept that will determine its likely success.

ITALY

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LITHUANIA

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NORWAY

There is no strong business model to ensure this for all safety attributes. We must therefore either work with the awareness or make swift updates a mandatory process or (most likely) do what they do in Sweden, no (safety attributes) regulation will be valid until it is stored electronically and ready to be issued from a central repository.

On the other hand we do already have cooperation between several public authorities concerning digital mapping. This cooperation is based on a white paper called "Digital Norway". As a result of this, speed limit is a dataset that should be updated according to the agreement between the participating members.

SLOVAKIA

The Slovak Road Administration performs on its own the data collection, updating, storage and data service for central road database - for data quality increasing we need to implement the new data collection technology (mobile mapping based), effective road administrators cooperation (in data updating process), including of municipal roads and building a metadata system.

SLOVENIA

It can not be ensured.

SWEDEN

As there is a law in Sweden prescribing that all traffic regulations must be delivered to the national database of traffic regulations (RDT) - and the RDT database is operated by SRA - this problem has already been solved.

UNITED KINGDOM - Northern Ireland

Not answerable.

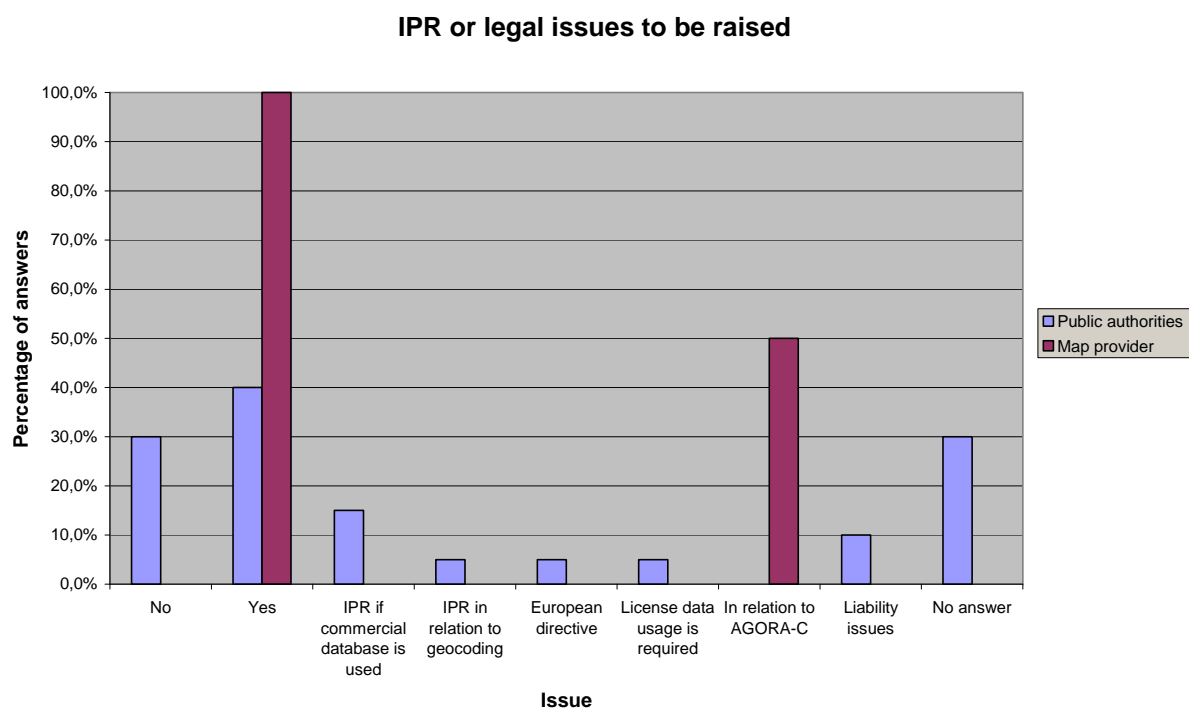
UNITED KINGDOM - Scotland

Through SCOTS (Society of Chief Officers of Transportation in Scotland), UK Roads Board

UNITED KINGDOM - London

We would need to show that this would be mutually beneficial. Ideally we would also get the Department for Transport (DfT) to mandate it, but this is not guaranteed.

Do you expect any IPR or legal issues to be raised?



BELGIUM - Flanders

No.

BELGIUM - Wallonia

Yes.

CYPRUS

No.

DENMARK

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FINLAND

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FRANCE

French Ministry + ASFA

The IPRs include two kinds of rights (European directive of 1996 - 96/9/CE):

designer's rights (database design);

producer's rights (including the mapmakers' data and the content providers "speed limits").

The main issues are about data that is actually produced and exchanged.

They are at two levels:

1- during the database setup: if a commercial map database (from the A vendor) is used for setting up the speed limit database (speed limit data) one can imagine restrictions due to IPR to delivery the produced data to another mapmaker.

2- geocoding: if a commercial map database (from the vendor A) is used for geocoding the speed limit sections there are IPR (copyright) when distributing the corresponding produced files to other mapmakers. The raised argument is "to avoid the third parties to rebuild the mapmaker's products used totally or partly". Such production can be seen as composite work including IPR from the mapmaker and from the data producer.

In France IGN defines composite work above 10 km² (large-scale) or 100 km² (medium-scale / small-scale) of covered area.

There is an obvious link with the business model of the different actors (see §6). The rules defined for IPR must be tempered by other regulations about public data (European directive 2003/98/CE).

French Ministry

Regarding legal issues three different aspects have to be considered:

Obligation for the different road authorities / operators to communicate information on safety attributes for the network operated. There is currently no leverage for creating such an obligation. One can expect the future ITS directive could modify the current situation;

Responsibility for PA: the different road administrations / operators do not want to risk having their responsibility challenged in case of inaccuracy, lack or discordance with reality. This might imply to block any willingness to communicate such data. Any modification in the future would have to be previously and carefully assessed.

Responsibility for drivers: the different Codes of Highways state drivers remain responsible for observing road signs. In short/medium It does not seem to be possible to change this statement and in particular to lower their responsibility if their device gives erroneous indications (e.g. in case of enforcement).

GERMANY - Bavaria

No.

GERMANY - Mecklenburg-Vorpommern

We expect to face difficulties with respect to contractual exploitation rights, intellectual property rights and liability issues.

GERMANY - North Rhine-Westphalia

Yes, e.g. European directive, adopted into national law.

ICELAND

See reply to question 6.

IRELAND

Yes.

ITALY

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LITHUANIA

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NORWAY

No, the public authorities own the data, and it will be in their interest to issue the data. It might be raised IPR issues if data from Tele Atlas and Navteq are used (also when getting feedback or data corrections from them)?

SLOVAKIA

IPR/Intellectual property rights - their use should be specified by agreement: licensed data usage.

SLOVENIA

It can not be determined.

SWEDEN

No - for the moment SRA can't expect any IPR or legal issues to be raised.

UNITED KINGDOM - Northern Ireland

Not answerable.

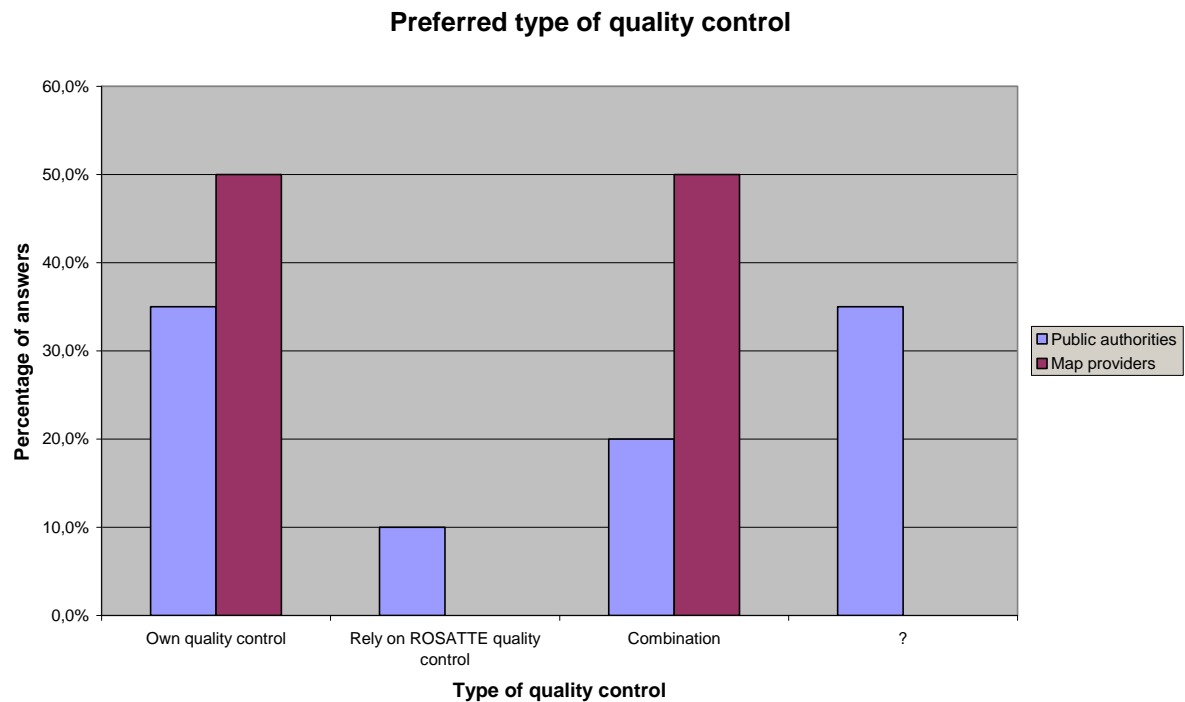
UNITED KINGDOM - Scotland

Scottish Government and Transport Scotland mapping requirements are covered by a legal agreement with the UK Ordnance Survey which allows for the sharing of data under tightly controlled circumstances.

UNITED KINGDOM - London

Possibly with OS regards derived data. We own the speed limit signs (points), they own the speed limits links or roads (lines)

Would you rely on a ROSATTE quality control or would you carry out your own quality control?



BELGIUM - Flanders

Not decided yet. Probably carry out own quality control.

BELGIUM - Wallonia

It's too early to answer this question.

CYPRUS

This is something we need to discuss internally however our first reaction is that we will probably rely on ROSATTE quality control.

DENMARK

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FINLAND

Own quality control will continue any way.

FRANCE

French Ministry

ROSATTE quality control if it seems to be sufficient. However, it should be completed by some in-site verifications (esp. when updating). Another part could be brought when assessing feedbacks.

ASFA

We would better rely on a ROSATTE quality control.

GERMANY - Bavaria

Both would run in parallel as there will be an internal quality assurance system anyway.

GERMANY - Mecklenburg-Vorpommern

The decision would depend on the duties and responsibilities as well as the competency of the quality control.

GERMANY - North Rhine-Westphalia

Own quality control

ICELAND

The Icelandic Road Administration relies on its own quality control for its own data.

IRELAND

This is related to A8 part c. Quality control is best tackled at the data collection source. However without detailed metadata how can quality be assessed?

ITALY

We would first expect a quality control from the single supplier, who's responsible for the given data(data distributed by ROSATTE but not provided by ANAS), but it would be anyway desirable a ROSATTE control on the whole data.

LITHUANIA

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NORWAY

We have today our own procedures for quality control of data that will be used. Many of these controls are more or less automatic. We feel that for the moment it is not quite clear what a ROSATTE quality control would be.

SLOVAKIA

We would prefer own quality control.

SLOVENIA

N/A.

SWEDEN

Handling of traffic regulations in Sweden will establish its own quality control process.

UNITED KINGDOM - Northern Ireland

Not answerable.

UNITED KINGDOM - Scotland

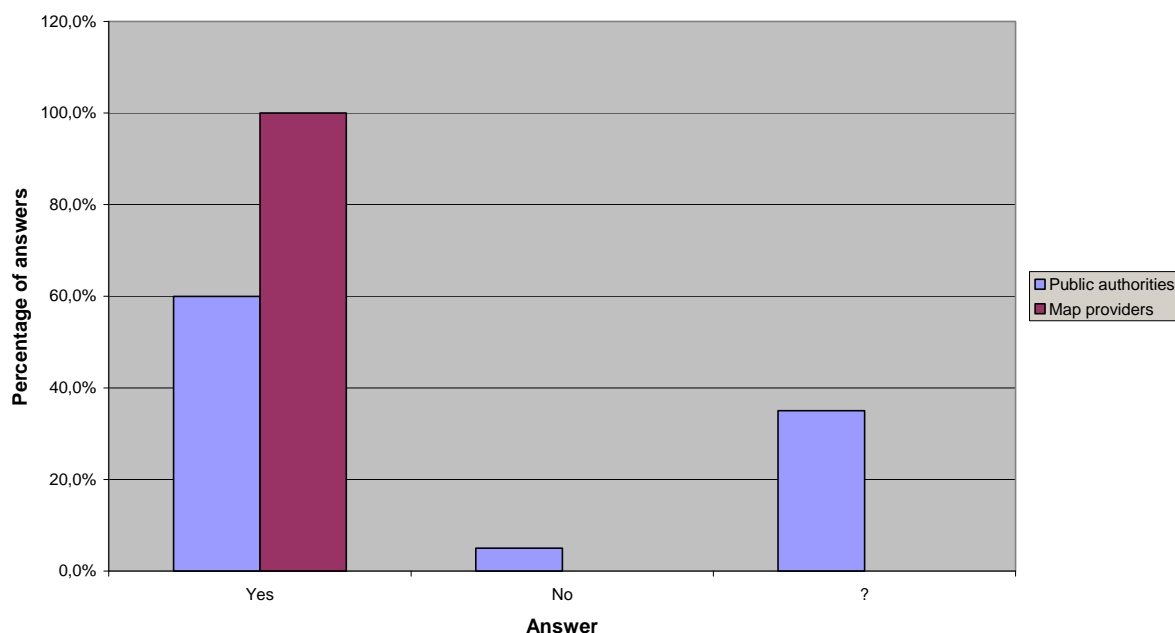
The data supply and verification would have to conform with a quality process, whether NRA or ROSATTE.

UNITED KINGDOM - London

We have our own, but would be interested in combining it with the ROSATTE quality control.

Would it be easier for you to implement the ROSATTE infrastructure if the tools and formats developed within the ROSATTE project would be standardised?

Standardised tools and formats in ROSATTE



BELGIUM - Flanders

We think that it could be beneficial to consider the standardisation/certification of the dataflow from authorities to map providers (exchange format).

BELGIUM - Wallonia

Yes, probably.

CYPRUS

Yes, it would be easier to obtain technical details of different systems used within the EU Member States prior to finalizing the ROSATTE Infrastructure, for example Cyprus uses an SQL Server System, will this be easily compatible with other systems?

DENMARK

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FINLAND

Based on the Rosatte Deliverable D1.2 it is not possible to answer all of the above questions.

FRANCE

French Ministry

Yes it may make such an implementation easier as a principle. However when implementing some standards (cf. AGORA-C aka IS 17572-3), it becomes very difficult to fully observe such standards.

ASFA

It would be really easier.

GERMANY - Bavaria

Yes, that would help.

GERMANY - Mecklenburg-Vorpommern

Yes.

GERMANY - North Rhine-Westphalia

NWSIB architecture is consequently based on established standards with technical and organisational integration in geospatial and traffic information infrastructures, as they are currently under development. We highly recommend the integration of ROSATTE in existing SDI infrastructures initiatives with legal status (INSPIRE). The success of a separate infrastructure exclusively for road safety attributes is doubted.

ICELAND

N/A

IRELAND

No I don't believe so. From working on EuroRAP projects where there is no requirement for data standardisation only conformance to a methodology participants are free to devote their limited resources to delivering the results.

ITALY

Yes.

LITHUANIA

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NORWAY

Yes. It's still likely that the tools will have to be customised to fit the local customs and processes. The formats should be the same.

SLOVAKIA

Yes.

SLOVENIA

N/A.

SWEDEN

YES.

Data exchange should, as far as possible, be based on existing standards.

Use of standards/certification is probably a basic condition to secure (quality assurance) the data exchange between public authorities and commercial map providers.

To increase the quality and usefulness of data there is also a need to harmonise existing data definitions in the national databases.

UNITED KINGDOM - Northern Ireland

Not answerable.

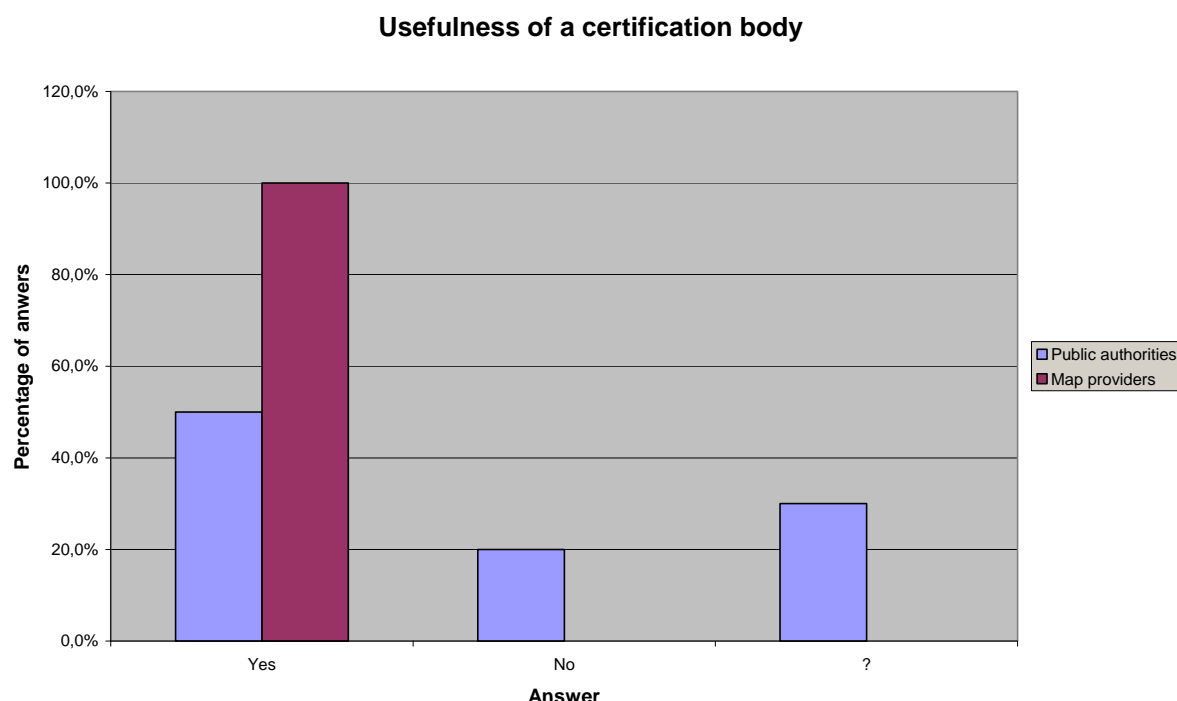
UNITED KINGDOM - Scotland

Without knowing details, it is not possible to respond fully on this question. There would be costs involved and possible difficulties if any extensive changes in format of the asset management data were to be required.

UNITED KINGDOM - London

Yes.

Would you consider the creation of a "certification body" useful in order to ensure that the ROSATTE infrastructure, tools and mechanisms are run properly?



BELGIUM - Flanders

Yes.

BELGIUM - Wallonia

Yes, it's absolutely necessary.

CYPRUS

More information is needed in order to reply to this question.

DENMARK

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FINLAND

Based on the Rosatte Deliverable D1.2 it is not possible to answer all of the above questions.

FRANCE

French Ministry

First of all, the consequences in term of responsibility are to define.

An important question is to define the aims of such certification and the quality criteria about what is of good or bad quality in space and time.

Therefore, we are rather reluctant for having such body that only tackles some issues. For us the main issue is to define and bracket the time between the event creation (regulation) and its input in the database. Useful but not a priority. Other processes can be considered like self-certification e.g.

ASFA

We are rather reluctant for having such body that only tackles some issues. For us the main issue is to define and bracket the time between the event creation (regulation) and its input in the database. Useful but not a priority. Other processes can be considered like self-certification e.g.

GERMANY - Bavaria

An independent body for that would be very useful.

GERMANY - Mecklenburg-Vorpommern

Currently, the creation of such a certification body is not deemed necessary.

GERMANY - North Rhine-Westphalia

Yes.

ICELAND

N/A.

IRELAND

No.

ITALY

Yes.

LITHUANIA

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NORWAY

It is important is that the data fulfil demands concerning the format, the product specifications and the quality. However we are sceptical to a centralized certification body.

SLOVAKIA

Yes.

SLOVENIA

No.

SWEDEN

The ROSATTE infrastructure must become a part of an INSPIRE infrastructure. For the infrastructure and the ROSATTE specific tools there may be a need of a "certification body". For the mechanisms (technique, process, personal) there is certainly a need for "certification", like ISO 9000, to assure the expected quality of information and data flow.

UNITED KINGDOM - Northern Ireland

Not answerable.

UNITED KINGDOM - Scotland

A certification body would ensure the integrity of the ROSATTE infrastructure, tools and mechanisms.

UNITED KINGDOM - London

Yes.

How would the ROSATTE infrastructure improve your position and capability towards data collection, exchange and information update?

BELGIUM - Flanders

The ROSATTE infrastructure should reduce the delay between an update in the traffic sign database of a public authority and the moment at which this update is available in a car. Reducing this delay will be beneficial for traffic safety and traffic liveability.

BELGIUM - Wallonia

ROSATTE can give a stimulus and outlines to develop road safety attributes database.

CYPRUS

Our current system is considered satisfactory for our needs. However, ROSATTE infrastructure could be more user friendly. In regards to access to information so far there has only been exchange of information for traffic safety/accident data through the CARE program.

DENMARK

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FINLAND

Based on the Rosatte Deliverable D1.2 it is not possible to answer all of the above questions.

FRANCE

French Ministry + ASFA

It seems more to be a target (incentive) for setting up and feeding such database. Moreover, it allows defining a common solution that one can expect widely used. We can expect a positive feedback from the other actors outside the ROSATTE project. The question of providing services back to the data producer is crucial to obtain their adhesion.

GERMANY - Bavaria

I would make it easier to justify an initial data capturing, if it is sure that the data will not only be used for internal purposes but also for the supply towards externals.

GERMANY - Mecklenburg-Vorpommern

Our position might be improved with respect to speeding up the collection of data from other stakeholders.

GERMANY - North Rhine-Westphalia

Data requirements on European level only improve the position of regional and local data management tasks, if they are based on legal issues.

ICELAND

N/A.

IRELAND

Again with reference to A8 I believe the major change in how road authorities collect and manage their data will come from initiatives like SDIs and INSPIRE not ROSATTE. Therefore conformance to ROSATTE will potentially hinder, because of resource issues, delivery of these other spatial programmes.

ITALY

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LITHUANIA

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NORWAY

We will get increased focus on data and data quality and better comprehension for increased resources to this kind of work. We might also get feed back on data quality and corrections to the data from the map providers and end-users.

SLOVAKIA

Positive impact of our system will be reached only when the ROSATTE is implemented in EU and then transposed in our law (e.g. INSPIRE).

SLOVENIA

N/A.

SWEDEN

The ROSATTE infrastructure must become a part of an INSPIRE infrastructure. For the infrastructure and the ROSATTE specific tools there may be a need of a "certification body". For the mechanisms (technique, process, personal) there is certainly a need for "certification", like ISO 9000, to assure the expected quality of information and data flow.

UNITED KINGDOM - Northern Ireland

Not answerable.

UNITED KINGDOM - Scotland

There would probably be no significant alteration to Transport Scotland's position or capability for data collection apart from any additional requirements to obtain data which is not currently recorded. The exchange of data would be additional to current commitments.

UNITED KINGDOM - London

As we already collect data, the main improvements would be in exchange with other organisations.

If the ROSATTE infrastructure would be available tomorrow, how would you proceed to implement it in your country?

How much time would you expect before implementing it in your country/region?

When do you expect it to be up and running?

What kind of measures would you need to take before it can be fully implemented?

Which actors need to be involved in setting up such a data chain?

Which recommendations would you take to increase awareness of involved stakeholders on their respective roles and responsibilities?

BELGIUM - Flanders

Since the Flemish government is a partner in the ROSATTE project, the ROSATTE infrastructure will be implemented in the framework of the ROSATTE test site. The preparation work for the test site will take about 4 months.

See answer to 16a).

The traffic sign information of the Flemish government need to be converted to the data model described in deliverable D3.1 of the ROSATTE project. An AGORA encoding needs to be performed.

Flemish government (regional authority), municipalities and map providers.

Most of these stakeholders are involved in the ROSATTE project. So they are aware of their responsibilities.

BELGIUM - Wallonia

2 years.

3 years.

A convention or a decree to lay down rules of users and entities.

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CYPRUS

About 6-12 months

Depending on various factors such as available human resources and any costs associated

We would need to ensure that technical support and human resources are available

Public Works Department, Cyprus Police, Municipalities, Districts and the Department of Information Technology Services of the Cyprus Government

Our recommendation is that stakeholders have to be informed promptly regarding the details required for the ROSATTE Infrastructure to be successful. As far as Cyprus is concerned this is planned to be implemented through an Info Day during which stakeholders will be invited in order to be informed and made aware of their roles and responsibilities for this initiative.

DENMARK

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FINLAND

Based on the Rosatte Deliverable D1.2 it is not possible to answer all of the above questions.

FRANCE

French Ministry

Not planned yet. The BALI project is supposed to contribute together with ROSATTE to make this kind of decision.

One can expect to have some follow-up for the non-conceded road network rather soon. This element is a part of the evaluation to be led prior to it. For the other parts of networks, it mainly depends of the political willingness to launch. Depending of the solutions adopted and the targets, 6 months to two years may be necessary.

National law and communication actions are the minimum. It is necessary to define more attractive returns for the local authorities that would facilitate adhesion (win-win cooperation).

Presidents of département (# county)(100) and mayors (36 600). Need to clarify role of the national mapping agency (IGN) and the obligations for the other road operators incl. motorway companies. Need to define which actor has to manage / operate the central database.

To communicate and convince what this database will bring (see 10)

ASFA

It could be rather fast for motorway companies, but it should be much slower if each of the 36,600 communities has to implement it.

Motorway companies would need at least a year to be fully ready, starting from the time when it is available.

We would qualify the existent local database and adapt exchange formats to Rosatte exchange formats.

For motorway companies: all motorway companies have to be involved and have to find persons in charge to drive this activity in each motorway company.

We would take recommendations about the responsibility toward a driver and police authority to provide a conform data, particularly concerning speed limit data. A person in charge would be designed to maintain the local database in each motorway company, using tools provided for feedbacks.

GERMANY - Bavaria

It would be easy to start delivering existing data, but the permanent data supply will have to start with pilot regions.

First pilots could run within several weeks, a regular operation would take several months

Implement tools at involved authorities, adapt system environment

All responsible administrations and involved partners in traffic ordering, operators of the road database, operator of the ROSATTE infrastructure, commercial partners

Spread the message of potential benefits towards the administration and the citizens.

GERMANY - Mecklenburg-Vorpommern

1. Interdepartmental implementation

2. Development of a job catalogue

3. Coordination of the Collaboration of the different stakeholders.

At this stage we are not in a position to estimate the considerable time needed for the introduction of ROSTATE.

GERMANY - North Rhine-Westphalia

No statements possible yet.

ICELAND

N/A.

IRELAND

It obvious for the previous answers above that Ireland would have issues setting up the necessary infrastructures. Our primary focus will be on complying with the EU INSPIRE directive as well as other EU road related Directives (e.g. Noise Mapping). In a wider con-

text we will continue to participate with EuroRAP and provide the road user information of the road collision risks as well as rating the national network in terms of road protection.

ITALY

/

LITHUANIA

/

NORWAY

We think that this has to be coordinated with the implementation of the INSPIRE infrastructure. Today we have a national portal up and running, but there are still some services that need to be set up according to the ROSATTE infrastructure (AGORA encoding etc).

Norwegian Mapping Authority is responsible for the portal, and as we are cooperating with them to collect safety attributes on the municipal roads and private roads, we think that using the same portal will be the best solution.

It is difficult to say when such a infrastructure will be up and running in a production environment.

SLOVAKIA

In relation with previous answer we would subsequently need the national project which would define all the necessary steps, measures, etc. to be able to implement such a structure.

SLOVENIA

N/A.

N/A.

N/A.

N/A.

N/A.

SWEDEN

As SRA consider the ROSATTE infrastructure as a part of an INSPIRE infrastructure we see no problem implementing the ROSATTE infrastructure as it will be a part of already planned work to implement both the national and European SDI.

6-12 months.

12-24 months.

Non other than is already identified as needed to implement both the national and European SDI.

Municipal authorities (290), County administrative boards (21), SRA (7 regions), Local Swedish police authorities (21 districts).

If the ROSATTE infrastructure is seen as a part of INSPIRE we can rely on the law.

It is also important to establish agreements between all actors concerned.

UNITED KINGDOM - Northern Ireland

Not answerable.

UNITED KINGDOM - Scotland

Not known at present. In principle, participation would be possible on authorisation of the Transport Scotland Board without any additional permissions required. However, Transport Scotland's internal requirements, competing pressures and priorities and the financial con-

siderations would significantly influence the time taken to implement the ROSATTE infrastructure.

UNITED KINGDOM - London

A few months

Depending on our IT dept, as soon as possible

We would need to convince our IT dept that it was a good idea. NOT an easy task ! We also need to get our own system up and running

Ourselves (TfL), the DfT (preferably), possibly OS ?, other map providers

Good communication would be essential. Meetings and clearly defined roles and responsibilities would be important.

2.2 Map providers

According to you, what are the main technical and organisational barrier(s) to the deployment of such an infrastructure in the different EU countries?

TeleAtlas

information not available in a homogenous coverage and quality

local content deviations

no data exchange formats standardized

unclear contract models and pricing

IP ownership of derived data

to many local authorities leading to high co-operation efforts

Navteq

Organizational: Getting agreement of formats in 27 EU countries.

Technical: We expect no barriers here. NAVTEQ has quite some experience in receiving and handling many different kinds of data formats. We have a special Digital Data Team to handle these issues.

Legal: Is not mentioned here but based on our experience there will be countries/organizations, which will have problems with the privacy of data.

Do you already have experience in receiving attributes data from public authorities or road operators?

How was the data exchanged? What difficulties were encountered?

Under which conditions? What there a pre-existing contract? Did you have to pay for it?

TeleAtlas

Yes.

- raster maps

paper maps

analogue construction plans

digital vector data

text description

ascii-records

In general, everything what is theoretically possible exists except direct online access / WMS.

Main difficulties are for paper documents/raster data that we are confronted with digitizing costs (no import options).

For digital data main problems are twofold:

deviating data specifications, a 1:1 translation table is often not possible

matching between source data and own map data sufficient. Common reference methods of ID's do not exist.

Payment conditions are completely inhomogenous - without contract and cost, without contract but certain cost per material, with contract but for free, with contract and with fixed cost per material or effort, with contract and with license fees, with contract but without disengagement options because of IP regulations.

Navteq

Yes.

Data exchange with all different kinds of formats. Main difficulty was to get all these formats fit for use in the NAVTEQ proprietary SW. Therefore a special team, which still exists, has been established.

All different kinds of conditions. E.g. with respect to payment of royalties, etc. NAVTEQ always tried to have a contract. Was also different per country and based on the business model of paying royalties. In most cases NAVTEQ wanted to pay for it to avoid problems in the future when NAVTEQ would become profitable.

As a map provider, would you be ready to pay and/or put efforts for setting up and implementing a ROSATTE data store in the different EU countries? Or do you expect any other party to pay and/or put effort for it?

TeleAtlas

This is a business case related question. The expected benefits would need to be valued and compared with other potential updating models & sources. This is also a question of timing: when could this happen? The competitive sourcing landscape is quite dynamic. But in general it should be in the interest of the EU to have sufficiently high quality data in the market in order to efficiently manage traffic to improve traffic safety and efficiency.

Navteq

NAVTEQ will put efforts in place to set up a data store and is also willing to pay to a certain extent (should definitely not be more than what has been paid up till now).

It would be nice when also other companies could contribute.

What is your motivation for participating in setting up a ROSATTE infrastructure across Europe?

TeleAtlas

As a replacement of existing local suppliers with inhomogenous data and formats.

Navteq

- 1) Obtain up-to-date safety attribute information, which will be supplied directly to users.
- 2) Saving NAVTEQ time and expenses in the future as the data exchange will be more structured.

Do you expect any IPR or legal issues to be raised?

TeleAtlas

Yes, especially in UK. But this could be also critical in other countries / with other suppliers with strict IP regulations.

Navteq

YES, due to the patent pool that exists we expect some IPR obstacles concerning AGORA-C. In addition there will definitely be some countries / authorities that will raise some legal issues, our experience shows that this sometimes needs more time to solve than technical problems. Therefore our proposal is to start with the countries / authorities who will not raise these concerns.

Would you rely on a ROSATTE quality control or would you carry out your own quality control?

TeleAtlas

We would do try to rely on ROSATTE QC but would apply sample checks. Of course initial supplier check would be performed until ROSATTE would receive a status as trusted source.

Navteq

Ideal would be that our Q-control will be implemented as the NAVTEQ Q-control. Both TA and NAVTEQ are ISO TS 16849 certified (highest q-standard of the car industry) and for that reason we have to prove that we do proper supplier management including (incoming) Q-control.

Would it be easier for you to implement the ROSATTE infrastructure if the tools and formats developed within the ROSATTE project would be standardised?

TeleAtlas

Yes.

Navteq

YES. We have at least to come up in the ROSATTE project with strong recommendations in the area of standardization. The experiences in the test sites will give us insight where the priorities for standardization will be.

Would you consider the creation of a "certification body" useful in order to ensure that the ROSATTE infrastructure, tools and mechanisms are run properly?

TeleAtlas

Yes, especially because of our companies QMS requirements and our ISO/TS 16949 certification.

Navteq

YES. See the experiences in the GST IP. The GST sub-project CERTECS provided a complete guide on how to come to a "certification body".

If the ROSATTE infrastructure would be available tomorrow, how would you proceed to implement it?

How much time would you expect before implementing it?

When do you expect it to be up and running?

What kind of measures would you need to take before it can be fully implemented?

Which actors need to be involved in setting up such a data chain?

Which recommendations would you take to increase awareness of involved stakeholders on their respective roles and responsibilities?

TeleAtlas

This cannot be predicted exactly. It will depend on what ROSATTE will be able to provide technically and content wise. The web based technologies for the exchange mechanisms of information (provision & feedback), however, should be implementable in short term.

Not within next two to three years. However, for some road authorities, this could be sooner.

Development of technical interface / validation engine to import data.

Pilot implementation including extended quality checking.

Process release.

Mapping Companies: Data specification, software architects and engineering, contractual framework, local QC inside regions.

ROSATTE: the same, but especially standardization on Terms And Conditions.

If mapping companies run completely independent from road administrations, the intended effects of traffic efficiency/safety will not be realized because navigation users will drive base on the navigation map.

Navteq

Recommended approach: Start with a limited pilot in a few countries. Based on the pilot experience, extend the project. Take the time (it will cost a couple of years) but really try to do it the first time right. Risk of not following this approach will be that countries / authorities will stay away when they see that a big project fails. We have too many of such examples in Europe.

At least 3 years according to the approach above.

At this stage it is a research project which still has one year to go. Once the project is completed, we would still expect another initiative to impose it on European level and to introduce the necessary legal framework, which would take 1-2 years. Once this is put into effect, we expect a rapid implementation on NAVTEQ side.

Make sure that you have upfront the approval AND commitment of some countries/authorities to do the pilot. My experience is that when this is successful others will follow.

Map makers and Public authorities/Road operators.

Explain the project in short and put the emphasis on the benefits and advantages for the respective stakeholders.

APPENDIX 2: Survey on Intellectual Property Rights “MAPPING ROAD SAFETY ATTRIBUTES”

This appendix contains the ROSATTE questionnaire used for the IPR study of July-August 2010 (1) and the full data received (2).

1. *Questionnaire “Mapping Road Safety Attributes”*

ROSATTE project intends to develop infrastructure and supporting tools that will ensure European access to road safety attributes including incremental updates. This infrastructure will facilitate administrative internal functions as well as supply of data to third parties (service providers), e.g. for safety relevant services.

The data flow that is addressed in ROSATTE may be seen as a data chain. The establishment of a ROSATTE infrastructure has a clear benefit for public authorities and road operators through its potential contribution to improving road traffic safety, while giving the industry the opportunity to improve the quality of map databases used in in-vehicle systems and enabling new safety applications that need map data with Europe-wide complete and up-to-date coverage of road safety attributes.

From a technical and organizational perspective, the project ROSATTE is built on a collaborative data workflow which concentrates, qualifies and broadcasts the safety road's attributes. It is therefore imperative to ensure such an arrangement is legally and economically relevant, including being aware of the constraints attached to the flowing data and the databases hosting them.

Several international agreements and European Directives lead to the establishment of intellectual property rights on such data and databases, and consequently built a first set of conditions for their employability¹.

This questionnaire is addressed to the Public Authorities of all EU Member States and aims at the identification of national/regional/local legal peculiarities. Please take the time to reply to the following questions.

Does your local law allow the formation of intellectual property rights on sets of data (i.e. road safety attributes) or databases outside the cases provided by European law?

☐ Yes

☐ No (End questionnaire. Thank you for your answer!)

If it does, please detail by answering the questions below:

What are the conditions (including pricing) to use, disseminate and exploit the data (road safety attributes)?

¹ The Berne Convention for the Protection of Literary and Artistic Works; The European legislation on intellectual property, including, including: Directive 90/313/EEC of 7 June 1990 on the freedom of access to information on the environment; Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data; Directive 2003/98/EC of the European Parliament and of the Council of 17 November 2003 on the re-use of public sector information; EU INSPIRE Directive 2007/2/EC, published April 25, 2007.

Do you, as Public Authority, have a defined business model of how the data (road safety attributes) are made available? If so, please describe it shortly.

How do you handle liability issues in your data supply process? What responsibility rests on your data suppliers (local and regional authorities, etc)?

Have you implemented any certification process to ensure the quality of road safety data in your databases?

Please enclose any documentation or reference available, detailing the IPR issues at national/regional/local level. (The materials can be provided in any language of EU Member States).

Thank you very much in advance for your cooperation!

2. Data collected per country

Question 1. What are the conditions (including pricing) to use, disseminate and exploit the data (road safety attributes)?

Norway Ministry

Data bought from the NPRA (via Norwegian Property, which sells data on behalf of the NPRA) are free to use as the buyer sees fit. Data handed over to a user for free, should only be used for the purpose stated before the handover.

Germany - Mecklenburg-Vorpommern

The road administration of Mecklenburg-Vorpommern does not assume any liability with respect to its data and data bases. Currently, the road administration does exclusively grant usage rights on data for specific purposes on a cases by cases. In such cases the purpose has to be declared in the process of obtaining the usage rights. At this moment the road administration authority does not charge any license fees on the use disseminate and exploit of data. However, the road administration does not exclude that costs could be raised. Third parties could be expected to contribute to the development or maintenance costs of data bases.

Germany - Bavaria

In Bavaria there is a PPP-model with the Free-State of Bavaria and the Traffic Information Agency Bavaria - VIB (consortium of SIEMENS, PTV and others) in place to disseminate all road data including road safety attributes and dynamic traffic information. All these issues have to be negotiated with the VIB.

Portugal

There are not set prices and conditions for transfer of data. The requests are usually from other official bodies, are analyzed individually and information is transferred free of charge

France (ASFA)

In ASFA case (different private companies managing motorway networks), a first condition is to collect updated safety attributes (speed limits for instance) from all the French pri-

vate motorway companies. Only the whole network coverage will interest service providers to build up an offer based on safety attributes. So it is necessary to have one entity gathering, storing and publishing the data. Autoroutes Trafic, which is a company created by the private motorway companies, is currently this entity.

The price of a safety attributes database shall take into account the following factors:

- cost to collect and produce the data
- cost to maintain and exploit the data
- cost to store and make data available
- cost of quality certification if it is necessary
- cost to use the data (IPR)

Slovakia (Slovak law does not deal about intellectual property rights on set of data for public authorities)

Slovak Road Administration handles the usage of central road database by the principle of public interest. This means that the data are free of charge for public and state bodies and organizations, or for purposes which are non commercial. These principles are secured by data licensig (license agreement). Our organization does not handle the commercial use of data yet. There are not any business model defined yet.

Flanders

This is still under discussion. Probably a contract will be established.

UK - Welsh Government The 'value' of preventing collisions (Department for Transport published figures, currently April 2009 - link <http://www.dft.gov.uk/webtag/documents/expert/pdf/unit3.4.1.pdf>) is used to justify and prioritise safety schemes on the motorway and trunk road network in Wales.

UK - Southwark

Much of the geographical data we hold and create is in part derived from Ordnance survey (OS) data, so under our present contract with the OS; anyone not working directly for Southwark would also need a contract with the OS in order to use that data. In short it is likely we hold joint IPR with the OS for the data in question.

At this present time I am not aware of any defined business model of how this data is made available (although I have been in discussion with the highways asset team to publish maps online - however, I'm not sure if they even look after road safety features). Data.gov.uk has released some guidelines/suggestions, but this is something each business unit would be in charge of (with guidance from comms, legal, ISD, etc...)

UK - TfL

Road safety data at TfL consists of traffic collision and speed limit data.

Traffic collision data:- TfL receives data from the Metropolitan Police Service for internal use. There are data protection acts relating to the data due to the sensitive nature of it, personal details of people, type of vehicle involved, location of collision etc...

Speed limit data:- TfL is not compliant to collect or disseminate this dataset. TfL does however make this data available freely and can be downloaded from the internet.

<http://www.tfl.gov.uk/corporate/projectsandschemes/7893.aspx>

Sweden - STA

Direct use (within a company, organization etc): User license for internal use. Different charges for different user categories:

- Normal user pays proportional to the number of users and amount of data (defined by geographic area and number of feature types). The price for one user and all data (total network and all features) is approximately 11 000 € year 1 or single delivery, and approx 4 000 € from year 2 for continuous updates.
- For research and education the price is reduced to delivery charge only (approx 700 € for a single delivery or 1 300 €/year for continuous updates)
- For test/evaluation there is no charge

For data processors (spreading data to other parties) the charge is royalty based or negotiated

Question 2. Do you, as Public Authority, have a defined business model of how the data (road safety attributes) are made available? If so, please describe it shortly.

Norway Ministry

All road- and traffic data that are not regarded as dynamic are stored in the National Road Database. These data are sold through the public organization Norwegian property to anybody. All road- and traffic data that are not regarded as dynamic are stored in the National Road Database. These data can be given away for free to vendors, suppliers and contractors that have a valid contract with the NPRA. Data handed over to a user for free, should only be used for the purpose stated before the handover.

Germany - Mecklenburg-Vorpommern

At this moment such a business model does not exist. If needed, a specific recommendation is going to be developed and implemented.

Germany - Bavaria

No, there is no fixed business model. It is a question of negotiation.

Portugal

We do not have a data model for road safety attributes. It is being defined. The database is SQL and mapping database is ESRI shapefile.

France (ASFA)

At this time, it is too early to talk about a precise business model for road safety attributes. Indeed, ASFA and Autoroutes-Trafic started collecting and storing the whole network permanent speed limits data and the qualified update process is being setting up.

Though, there is an existing model built for real-time traffic data delivery to service providers. It is based on the length of the covered road network with traffic data. This business model deals with two different types of data: traffic service levels and traffic events. The cost of each type of data depends on the number of kilometers covered. A service provider can choose to buy both types of data or just of one of them, for the whole motorway network or just for a part of it. Beside that, the service provider has to pay a license, which defines conditions to broadcast the data (type of media on which the data is broadcast, right or not to resell the data, etc).

Service providers are interested in such road safety attributes data even though they still see technological issues regarding the broadcast of this type of data. For example, RDS-TMC services cannot broadcast speed limits because of limitations in the implemented protocol. In the next few years, services based on DAB+ and DMB protocol should arise. For the exchange of information they will use the TPEG protocol, which already covers the delivery of safety attributes information.

A faster way to provide the safety attributes to the end user would be to directly deal with map providers like Navteq and TeleAtlas, as done in ROSATTE. Indeed, they both provide their map database to a very large number of the navigation and information systems (On board units, PND etc...). Embedding updated safety attributes in their database will ensure a straight availability to the end users.

Slovakia - see the answer at Q1

Flanders - Not yet.

UK - Welsh Government

National statistical bulletins are issued routinely, EuroRAP risk maps are published annually and we are currently considering additional ways of informing road users if high accident concentrations exist (to comply with the European Directive 2008/96/EC).

UK - TfL - No defined business model.

Sweden -STA

See answer Q1 (different charges for different users) and the enclosed documents

Question 3. How do you handle liability issues in your data supply process? What responsibility rests on your data suppliers (local and regional authorities, etc)?

Norway Ministry

Most of the data is collected by the NPRA, thus very few private suppliers. Local and regional suppliers collect a limited number of data sets that are aggregated to a national level. These suppliers are subjected to the same rules as the NPRA. There is no national legal regulation that handles liability issues. The supply chain is based on written agreements between stakeholders (local and national government bodies) that describe timeliness and level of quality - but no penalties for not delivering or underperformance.

Germany - Mecklenburg-Vorpommern

Data can only be provided, if the third party accepts a non-liability clause at the same time. That means that the road administration authority does not assume any liability on incorrect data. The acquisition of data provided by third parties depends upon the land Mecklenburg-Vorpommern or the Federal Republic of Germany are entitled the usage right exclusively. Before the data are transformed into data bases, they are subject to an internal check. Liability claims, which are due to the usage of external data, rest with the road administration authority insofar. Third parties do not have any access to the data base system of the road administration authority. For this reason data losses caused by the misuse of data by third parties and liability risks resulting from such data misuse can be excluded.

Germany - Bavaria

The responsibility for the data supply for high-level roads (Highways, Federal Roads and State Roads) lies on the State, for district roads the districts are responsible, for municipal roads the municipalities.

Portugal

We have been working in a document about liability for the use of data provided by INR

France (ASFA)

An agreement is currently contracted between each motorway operator and Autoroutes Traffic. This agreement defines the conditions for data delivery, the expected service levels, the pricing and the penalties that apply.

Slovakia

Data which the central road database consist of are collected by Slovak Road Administration staff (Road Databank Department), this means that the data collection are secured by central level. Our local suppliers represented by local road administrators provide to central level any information (not data collection) regarding to road parameters changes. However, this local road administrators duty is not performed at satisfactory level. Only data which are not measurable in the field (e.g. road structure attributes) are provided completely from local road administrators.

Flanders

Liability issues should be dealt with in the contract. This contract is not yet available.

UK - Welsh Government

National validation checks (see Stats 20 documentation referring to Stats 21 validation checks, link http://www.stats19.org.uk/html/stats_20_notes.html) are an integral part of the data supply process for national statistical purposes.

UK - TfL

Traffic collision data responsibility rests on the Metropolitan Police Service. Speed limit data represents what is on the ground at the time of collection. Data not used widely enough to have liability issues.

Sweden - STA

Collection of data from suppliers (communities, land survey, forest owners etc) is based on voluntary agreements without economic compensation. The supplier instead receives data in exchange for supplied data (for example a municipality receives data for state roads in exchange for supplied municipal data). The supplier agreements defines what, when and how data is to be supplied and the quality demands are defined in the data product specification.

In all license agreements to customers there is a specific clause that protects us (as being the national supplier) and our collaborative partners (communities, land survey, forest owners etc) to any claims from users caused by errors in data.

Question 4. Have you implemented any certification process to ensure the quality of road safety data in your databases?

Norway Ministry: No

Germany - Mecklenburg-Vorpommern

Currently, the data base system of the road administration authority does not hold any data on the road network as a whole with regard to road safety. Data on road safety are only collected and qualified in case of actual incidents. The road administration authority does only keep data in its data bases, which are needed to plan, design, construct, main-

tain, operate and administer federal and land roads. Generally speaking, certification processes have not been implemented in the road administration authority yet. To ensure the quality of the data bases data are subject to different internal plausibility checks. These checks vary with respect to different types of data.

Germany - Bavaria

No, there have been research activities for measuring data quality (EuroRoadS, FeedMAP), but no processes are implemented up to now, as there is no use case yet.

Portugal

There is no certification process the data. The data are examined individually and checked for consistency and reliability. There are some automatic processes that ensure consistency of information

France (ASFA)

Motorway companies, ASFA and Autoroutes Traffic started setting up a qualification process of the speed limit database. It is not yet a certification process but this can be a further step.

Autoroutes Traffic already built a qualification process for real-time traffic data. Indeed, the quality of the data provided by motorway companies is analyzed and evaluated every six months. At the end of the process, quality indicators are produced. A quality report is delivered to each data supplier. Thus they can see the improvement done regarding the quality of their data in the last six months. The report obviously points at the issues to be fixed during the next semester and so on.

This traffic data quality process can be applied to the safety attributes provided by the motorway companies.

Slovakia - no.

Flanders - Not yet.

UK - Welsh Government

The checks detailed at Q 3 above ensures a certain level of data quality.

UK - Southwark

We have not although it does depend what 'road safety data' you are referring to. Our collision statistics are collected and passed onto us by Transport for London (TfL), I presume they have standard means in order to assess the quality of the data although I am not sure what they are. When importing the collision statistics into our system we do complete checks on the data but these are just visual (looking at some of the new records to check they look OK) and there are no standard methods for this. With regards to other road safety data such as traffic counts (for speed data) and traffic calming attributes on our road there is no certification process to ensure the quality of the data.

UK - TfL

No. But:

Speed limit data is based on what is on the ground at the time. It is also collected based on notices sent to the government gazette. The geometry of the ITN - Integrated Road Network is based on Ordnance Survey data so the quality of that lies with the Ordnance Survey, as with the attributes.

Collision data is validated by TfL for use in a database but the attributes, geometry and the dissemination of the data is not the responsibility of TfL.

Sweden - STA

No formal certification (according to ISO...).

However, all work related to the road database is based on processes in the Transport administrations management system. We also perform, on a regular basis, quality controls of the data input to the system as well as the stored data.

Question 5. Please enclose any documentation or reference available, detailing the IPR issues at national/regional/local level. (*The materials can be provided in any language of EU Member States*).

Norway ministry - price lists for data distribution and info

Germany - Mecklenburg-Vorpommern

The federal legislator has got the exclusive legislative power. It is therefore beyond the competence of the land Mecklenburg-Vorpommern or local authorities to enact any divergent law or other regulation on IPR - issues. Insofar we can only refer to the German Copyright Law (info document received)

Germany - Bavaria - no materials available

Portugal - no materials available

France (ASFA) - no materials available

Slovakia - no materials available

Flanders - no materials available

Luxembourg - informed that Commission "Commission nationale pour la protection des données (CNPd)" gives autorizations and refusals on such issues, cf. www.cnpd.lu.

UK - Welsh Government - no materials available

UK - Southwark - no materials available

UK - TfL - road collision data received

Denmark

<http://www.vejsektoren.dk/wimpdoc.asp?page=document&objno=74639> Road Directorate (accidents data).

<http://www.statistikbanken.dk/statbank5a/default.asp?w=1280> Statistics Denmark

Sweden - STA - sent 1. NVDB Content-Overview (a brief description in English of the concept NVDB (National Road database)); 2. Pricelist for road data products and services from Transport administration (in Swedish) and 3. Road data product catalog (overview in English)

APPENDIX 3: Data collection, exchange and update: Swedish example

This appendix will detail the process views on data collection, exchange and updating from the Swedish National Road databases NVDB (1) and RDT(2).

NVDB = The Swedish national road database

RDT = The Swedish national database for traffic regulations

1. NVDB - process view

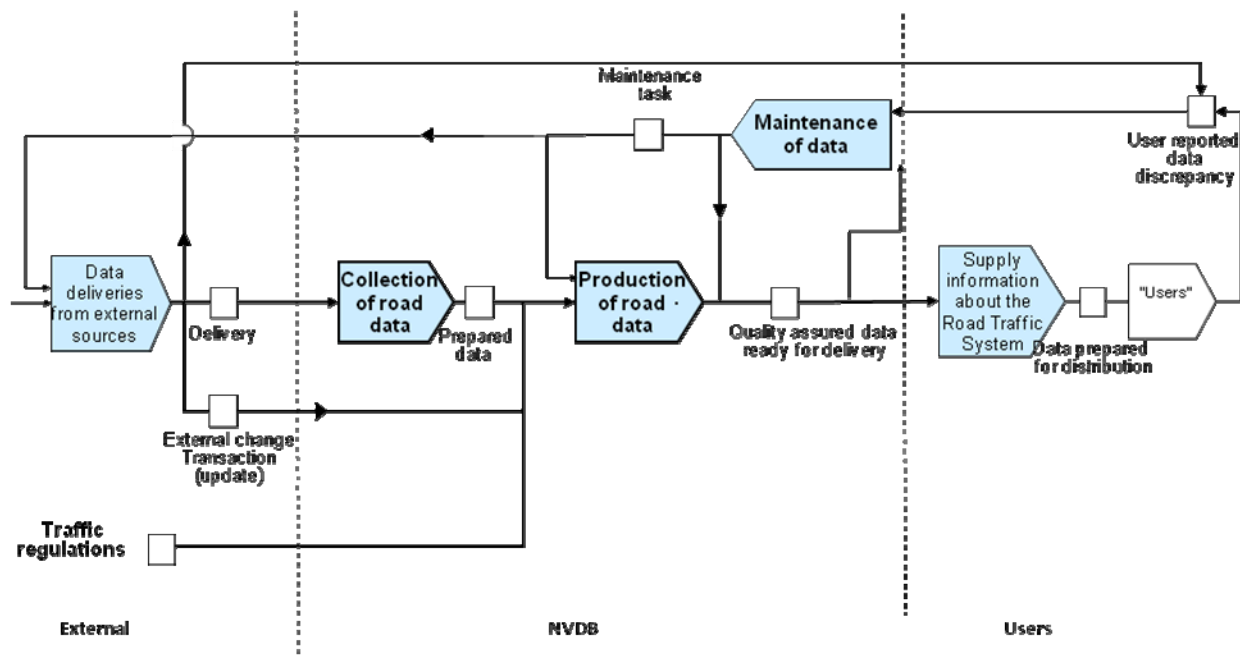


Figure 4 - NVDB - process view

1.1 Data collection

The principle construction of the NVDB consists of two parts. The first part, the road network, describes the position of the roads in relation to the surrounding landscape and how they connect to each other. The second part, the connected features, describes the road's properties and applicable traffic rules.

All input data comes directly from STAd or from the NVDB co-partners.

The Swedish Transport Administration, Swedish municipalities, Swedish Local Authorities, the forestry industry, the Swedish Transport Agency and the Swedish Mapping, Cadastral and Land Registration Authority collect data directly from source. This includes everything from official regulations to other legal documents. The source could for example be local traffic regulations, construction documents, as-built drawings, etc. This can also involve certain field measurements.

Features are divided into:

- NVDB features - which all road managers are obliged to collect.

- STAd features - which the STAd is obliged to collect. Applies only to the state road network.
- Other types of features - features collected from other source systems within the STAd.

The NVDB is designed so that it is able to accept further types of features.

All feature types within NVDB are specified in the "NVDB - data catalogue" which holds all necessary definitions (valid values, data types, collection rules etc.).

1.2 Data delivery and data update

Data from the NVDB co-partners can be delivered for storage in the national road data base using mainly the following three types of file formats:

- *.nvd - an in-house format that requires "Slussen" (a NVDB technical platform application) to be able to be used. This format is used for both initial deliveries as well as for incremental updates.
- *.xml - Swedish standard SS637004, which requires import functionality based on the standard's xml schema. This format is used for both initial deliveries as well as for incremental updates.
- *.shp - shape, a file format that can be used when working in an ESRI environment. This format is only used for initial deliveries.

The supplier prepares the data prior to central assembling for the database. This is done at a common production centre using different methods and routines. A data acceptance test is carried out both at the preparation stage and prior to assemblage.

We check and declare the data in the databases through mechanical and visual inspections. A certain amount of random sample control also occurs in the field. We check that the data is current, that the figures are correct, etc. We also carry out monitoring inspections at our data suppliers to quality assure the collection of data.

1.3 Data sharing

To be able to use any of the NVDB products the customer must have signed a contract with STAd.

Today the data is delivered either as *a pre-packaged standard product* or as *a customised product*. Future development of NVDB will imply that data also will be offered to external users via services (WMS, WFS etc.) accessible via geo-portals.

"Lastkajen" is an Internet based application (www.vv.se/lastkajen) that makes it possible to order and obtain road data from the NVDB and other STAd databases. This is where you can either obtain pre-packaged standard products or customised products to suit your own needs.

The NVDB products are delivered in four different file formats:

- *.nvd
- *.xml
- *.shp - This is an exchange format that most GIS applications can read. The format is simple for those who, for example, need snapshots for producing maps.

*.mdb - personal geodatabase, a database that can be used when working in an ESRI environment, and which makes it possible to work with complex relationships.

How it functions

There are pre-packaged standard products for the kind of data mostly in demand. These are placed in the "Lastkajen's" file stock at regular pre-defined intervals.

You choose a file format, geographical area (county or municipality) and receive NVDB Road network and all attributes. This is where all the municipalities and counties in Sweden and their road networks and attributes are stored, ready for collection, along with ISA speeds and all the speed limits on the entire road network. "Lastkajen's" file stocks are available in four file formats (see previous page) and the stock is updated every month.

If you want a special product, we use a selector function to make a choice based on your request, for example in reference to geographical area, data, coordinate system, history or changes. The options can vary somewhat depending on the different file formats.

At the "Lastkajen" home page a detailed description is given of all the attributes, available for anyone to view. Road Data can also in certain cases deliver processed data in different file formats for you to collect at "Lastkajen".

2. RDT - process view

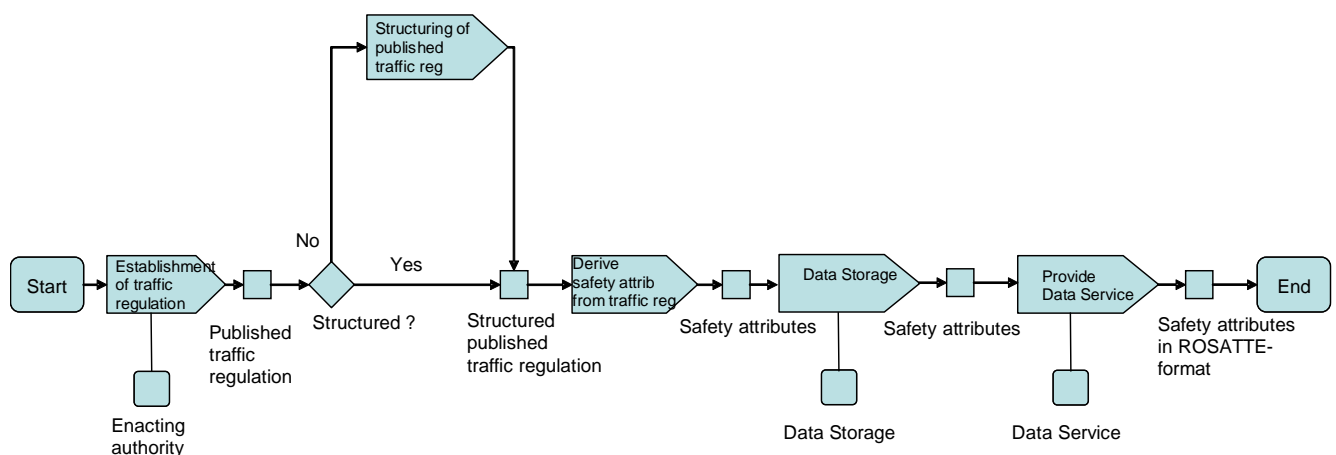


Figure 5 - Traffic regulations (RDT) - process view

2.1 Data collection

The traffic regulations are delivered to the Swedish Transport Agency by authorities on a national, county and local municipality level. A governmental directive forces the authorities to enter the regulations into the database, meaning that regulations not entered into the database are not legally valid. This secures completeness of traffic rule data in the database.

Traffic regulations in the process shown above ends up in traffic rules features connected to the NVDB road network and stored in the RDT-database hosted by The Swedish Transport Agency. In a first step the features are called BTR-features. Such features may overlap each other. There may for instance be one speed limit 50 km/h on a certain street, but on a part at the middle of the street there may be one more speed limit 30 km/h overlap-

ping the first one. The BTR-features are in a second step derived into HTR-features, meaning features that are explicit, not overlapping each other. The intention is to produce HTR-features to make it simple for data users, like navigation systems, speed alert systems (ISA) and similar.

It is planned that HTR-features are daily distributed to the Swedish Transport Administration for their internal use and for further distribution to external users.

1.2 Data delivery and data update

When new or altered traffic regulations are decided they has to be entered into the database, otherwise they are not legally valid. This action is done by the authority which is responsible for the regulation. Some traffic regulations are completed at source (by the responsible authority) with structured data and digital road network connection. Only authorities that have an customized IT application for traffic regulations design can complete the traffic rule data in that way. Other authorities just deliver the regulation document, and in that case the Swedish Transport Agency completes with structured data and digital road network connection.

1.3 Data sharing

For the delivery of the HTR-features - as eg. road safety attributes - to external users the channels of distribution that was built for NVDB are used (see chapter 3.5.2.3) and HTR-features is one of the NVDB products.

APPENDIX 4: Survey on “Expected benefits from the use of road safety attributes” - questionnaire and detailed results

Section 1 of this appendix provides the two versions of the questionnaire used in ROSATTE “Expected benefits” study: one version was used for the road authorities and another one for map providers. Section 2 of this appendix gives a detailed overview of the results of the study.

1. Questionnaire “Expected benefits”

As background information the text content of chapter 4.1 was sent out (as a separate document) together with the invitation for the survey.

Two questionnaires have been designed: one targeting the road authorities (1.1) and another one targeting the map-providers (1.2).

1.1 Questionnaire: Road authorities

Administration

Are you representing a
Road authority
National level
Regional level
Local level
Other level

Map provider

Service provider (e.g. software)

Other (e.g. car manufacturer, end user organisation)

Databases in large/other ongoing projects

Other ongoing projects beside Rosatte may influence one another or they may benefit from each other, therefore it is interesting to know what is going on in your organisation/country.

Do you have stand alone business systems for specific activities e.g. a sign post database?
Yes

Please specify what systems/projects and for what purpose:

At what level are these projects running?

Own organisation
National
International (EU)

No

Geoportal or other data store

To increase data availability and usage a portal or data store can be of use, it will facilitate discovering data and information about whom to contact for more information and deliveries.

Would you be interested in delivering data to a geoportal (Rosatte data store implemented as a portal)?

Yes

No, because...

Don't know / Not yet considered

If you deliver data to a central data store would the availability of data of neighbouring administrative divisions (municipality, county, region, country) be a benefit/incentive for delivering data?

Yes, if free of charge

Yes, even if charged

No, because...

Several advantages can be found by setting up a central data store. In your opinion, what benefits can you see from a joint effort between road authorities, map makers or other parties in setting up a Rosatte data store?

Easier access to data

Improved data quality

Lower accident rates

Economical

Environmental issues (e.g. lower fuel consumption)

Other benefits...

Would a geoportal be of help when searching for data instead of having to turn to several organisations (or other organisations than your own) in a country/countries to harvest the data needed?

Yes

No, because...

Don't know

Availability of road safety attributes

Road authorities, map providers, safety systems suppliers and end-users have a substantial need for road data including road safety attributes. For efficient use the data must be easily available.

The road safety attributes discussed are being of importance for the activities of several actors. In your country, are you aware of demands from third party companies or organisations wanting to use road safety attributes, and which would be interested in a near-permanent update of the data?

Yes

What attributes are in demand?

Which are these actors?

Are you planning to charge anything for the data?

For the direct cost of delivering

By a business model

Not decided yet

No cost

Other

No

Is your organisation willing to share this data (with/without charge)?

Yes

Is your organisation considering imposing any restrictions on the availability of data?

Yes

Why? Please specify the restrictions if possible:...

No

If not, please specify why not:...

No

In your opinion, what would be the most important reason for supplying road safety attributes to other parties/projects?

Easier access to data

Lower accident rates

Better use of data

Improved data quality

Economical

Environmental issues (e.g. fuel consumption)

Legislature ("forced" to supply them, INSPIRE directive)

A "fun project"

Other...

Collection of data

The collection of data is a central and time consuming activity. Therefore it is important that it's done efficiently and is stored in an organized way, hopefully following one of the existing standards so that exchanging data is facilitated.

How important, in your opinion, are the different reasons to collect and update road safety attributes?

Mark a number from 1 to 4 to show how important each statement is, 1 being the lowest and 4 the highest.

	1 (I do not agree at all)	2 (I do not agree)	3 (I agree)	4 (I most certainly agree)	Not considered
Easier access					
Lower accident rates					
Better use					
Improved data quality					
Economical issues					
Environmental issues (e.g. fuel consumption)					
Legislature ("forced" to supply them, INSPIRE directive)					
Comment				

Collection of data is often a time consuming and costly process. In your opinion could prioritizing the collection of attributes help speed up the process?

Yes, prioritizing by attributes

What attributes should be prioritized?

Yes, prioritizing by road classes

What classes should be prioritized?
No

Could other ongoing projects influence the collection of road safety attributes?
Yes
How would it affect the collection of data?
Speed it up
Delay it
Interaction benefits between projects
Other (please describe) ...
No

What update rate are you planning to use? Will you have the same update rate for all road classes or different rates depending on the importance of the class?
The same rate for all classes
Continuous
Periodical
At what interval?
Different rates depending on class, please specify the different road classe and if they are updated continuously or periodically and at what interval:

To succeed with the collection of data (and possible adaptation to standards etc), what do you need to fulfil the task?
Applications and/or tools adapted to a certain standard
We have the necessary tools
Legislature needed
Other

In your opinion who should supply applications and/or tools to register road safety attribute data?
Your own organisation
Map providers
Other software providers
Joint venture with map providers and/or software providers
Other
No viewpoint

Is it possible to estimate the time it will take to collect and register the road safety attributes and if necessary adapt them to specifications in the ROSATTE framework?
Yes
When do you think you'll have an updated database with all road safety attributes up to date?
No

Data quality

To be able to assess and compare data from different sources it is important to know the quality of the data.

Do you have specific demands in data specifications on thematic accuracy (attribute value correctness)?
Yes

No

Do you have specific demand in data specifications on position accuracy?

Yes

No

Do you live up to the quality demands in the data specifications you use?

Yes

No

We don't have any specifications on quality

Have you decided to comply to a certain map database standard?

Yes

Which one?

No

Why? Which exchange method/format do you use to manage geographical data?

Please give us your view on how the data quality can be assured?

Metadata

Metadata is often defined as data about data and is important for users who are searching for data for a specific purpose and needs to evaluate its usage and compare it to other sources of data. Metadata should for example include information about quality, lineage, extent and contact information for the actual resource.

Have you added any metadata to your road safety attribute data?

Yes

Please specify what metadata:...

No

Are you planning to add metadata in the near future?

Yes

No

Benefits/drawbacks

Increased availability, usage and quality are benefits that can be found when using a centralized intelligent storage of data. Unfortunately there are also a few drawbacks but they can be overlooked in the long run as the benefits override the drawbacks.

In your opinion will other ongoing projects benefit from the work in Rosatte?

Yes

How?

Learned experiences/increased competence

Shared costs

Shared tools/applications

Shared organisation for collection and storing of data

Other...

No

Please	specify	why	not.
--------	---------	-----	------

Will third parties be asked to pay to use the data?

Yes

What model for payment is your organisation considering?

Payment according to:

amount of delivered data

the time it would take to deliver (and/or process) the data

business case established in relation to the regularity of the data exchange

Other

No

Please feel free to add a comment about the survey:...

Thank you for your answering this survey!

1.2 Questionnaire: Map Providers, Service Providers and Others

2. *Results overview and conclusions*

In this section, the answers received from the road authorities will be described first. After that, the answers from the Map Providers, Service Providers and Others will be dealt with. Only the main results of the questionnaire will be given in this paragraph. The questionnaire and detailed results can be found in Appendix 2 (the questions 4, 6, 8, 17, 18, 19 respectively 5, 6 and 7 are presented appendix 3 section 3).

The aspects to be highlighted by this section from the road authorities point of view:

Administration level

Databases in large/other ongoing projects

Geoportal or other data store

Availability of road safety attributes

Collection of data

Data quality

Metadata

Benefits/drawbacks

The aspects to be highlighted by this section from the Map Providers, Service Providers and Others point of view:

Distribution of respondents by category

Geoportal or other data store

Data quality

2.1 Road authorities

Administration level

In the evaluation the answers from the different road authority levels have not been separated as the number of respondent for each level is not significant by themselves.

Conclusion - "Administration":

Answers were received from 27 Road authorities. On a National level 16 answered, on a Regional 9 and from Local levels 3 answers were received.

Answers were received from 20 different countries.

Databases in large/other ongoing projects

Do you have stand alone business systems for specific activities e.g. a sign post database?

Yes (74%)

Please specify what systems/projects and for what purpose:

At what level are these projects running?

Own organisation (64%)

National (24%)

International (EU) (12%)

No (26%)

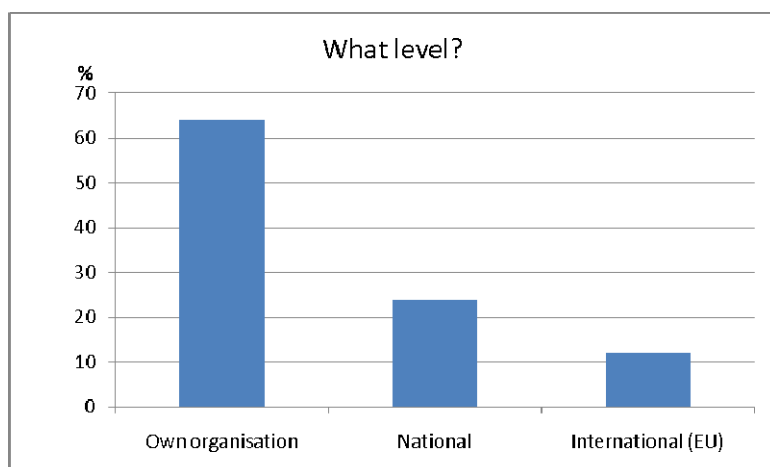


Figure 6 - Stand alone business systems.

Comments on "Systems or projects mentioned and purpose":

National Road Database
Local Road Database
GIS applications and databases for road/traffic signs
Speed limit database
Accident database
Bus stop database
Noise level database
Management systems (bridge, road network, pavement, maintenance, street lights)
Traffic flow (ADT)
Technical installations
Authorization of heavy transports
Speed cameras
Traffic information centre (TIC)
Road safety data collection
ISA evaluation project
ITS application for Motorways (EASYWAY)
Traveller information- IN-TIME
Coordination of permits for construction works
WORM- messaging system public reporting on potholes
Geodata for planning purposes
Video camera recordings taken from car travelling in both ways on every road

Conclusion - "Databases in large/other ongoing projects":

A majority (74%) of the organizations have stand alone systems for use within their own organization.

These systems range from object specific (i.e. traffic signs) databases to more advanced Maintenance and Asset Management System.

A minority of the organizations are managing systems on national and/or international level.

Geoportal or other data store

Would you be interested in delivering data to a geoportal (Rosatte data store implemented as a portal)?

Yes (44%)

No, because... (8%)

Don't know / Not yet considered (48%)

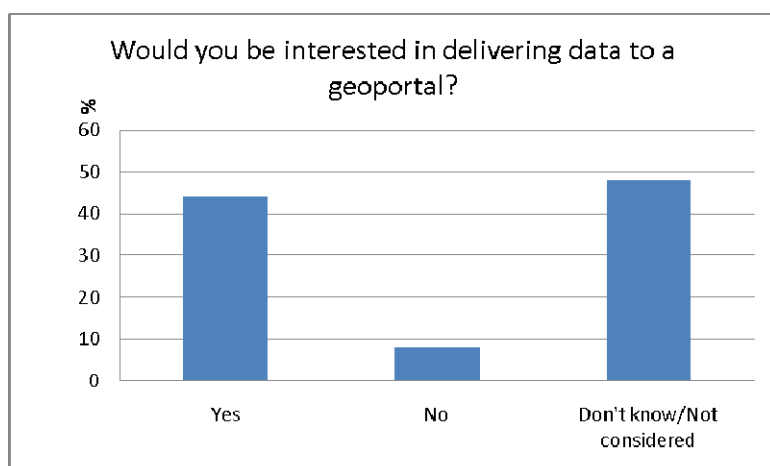


Figure 7 - Interest in delivering data to a geoportal.

Comments on "No, because":
No usecase visible

Several advantages can be found by setting up a central data store. In your opinion, what benefits can you see from a joint effort between road authorities, map makers or other parties in setting up a Rosatte data store?

Easier access to data

Improved data quality

Lower accident rates

Economical

Environmental issues (e.g. lower fuel consumption)

Other benefits...

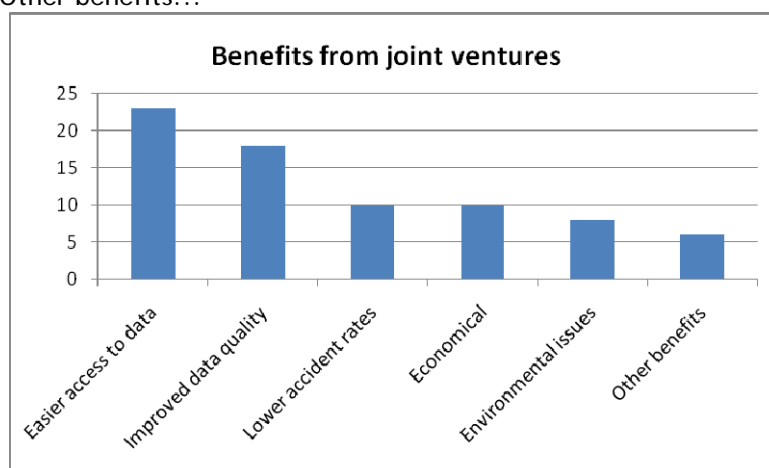


Figure 8 - Benefits found by setting up a geoportal (central data store).

Comments on "Other benefits":

Administrative benefits

Faster update of map information in in-vehicle systems. To compare road data from various countries and best practices

Better observance of speed limits, better road readiness, better acceptance of automatic speed cameras

Better updates of databases. A more central system will enhance the whole database and data production system.

Reduces the need for field inventory in-house. Reduces the need for repeated data supplies to (many) external use.

Conclusion - "Geoportal or other data store":

Interest in delivering data to a geoportal.

There is a relatively strong interest (44%) to supply data to a geoportal, but there are still many organizations that haven't considered the issue (48%).

Availability of data of neighbouring administrative divisions.

There is a strong interest if data is free (68%) but some organizations are willing to pay.

Benefits found in a geoportal.

"Easier access" (31%) and "Improved data quality" (24%) are seen as major benefits.

Geoportal as help when searching for data.

A majority (84%) find a geoportal as good help when searching for data.

Availability of road safety attributes

The road safety attributes discussed are being of importance for the activities of several actors. In your country, are you aware of demands from third party companies or organisations wanting to use road safety attributes, and which would be interested in a near-permanent update of the data?

Yes (65%)

What attributes are in demand?

Which are these actors?

Are you planning to charge anything for the data?

For the direct cost of delivering

By a business model

Not decided yet

No cost

Other

No (35%)

Actors	Attributes demanded
Map authorities	Inventory data related to Road Safety (reference network model, traffic signs, safety barriers, cross section layout, etc.) Bicycle Road Network with its attributes

Map providers	Speed limits Forbidden turns Restrictions (height, vehicle,...) Road width Roadworks Railway level crossing Traffic signs AADT Functional road class Slope Camber Curves Service stations
Service providers	Speedlimits Road width Service stations Parking areas Functional road class Height restrictions Vehicle restrictions Slope Curves Camber Traffic data
Administrations	All road safety attributes
Other regional authorities	Statistic data about roads such as costs, accidents, traffic data, conditions of road infrastructures and road surfaces
Mapmakers	All restrictions
Traffic police	Speed limit Road width Service stations Parking areas Traffic data
Road planner	Speed limit Road width Service stations Parking areas Traffic data
Private companies, private consulting firms	Statistic data about roads (costs, accidents, traffic data) Conditions of road infrastructures Road surfaces Inventory data related to Road Safety (reference network model, traffic signs, safety barriers, cross section layout, etc.) Traffic flow Accident data Statistic data about roads Features from the National Road DataBank
Research bodies	Statistic data about roads such as costs, accidents, traffic data, conditions of road infrastructures and road surfaces
Automobile club	All restrictions Accident data
Telematic actors	All restrictions

Others	Traffic flow data Accident data Inventory data related to Road Safety (reference network model, traffic signs, safety barriers, cross section layout, etc.)
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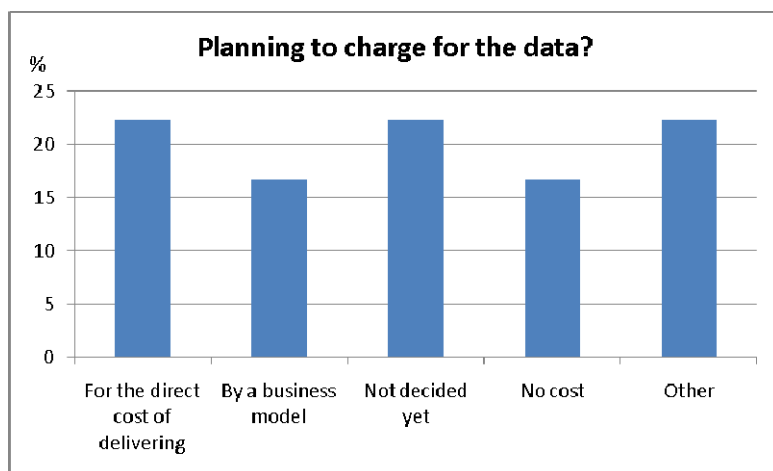


Figure 9 - Charging for the data.

Comments on "Other charging models":

We have a product on the market (Elveg) together with Norwegian Mapping and Cadastre Authority
I don't see the value for charging anything for distributing the data, but it is important for the road authorities that we know what the recipient is planning to do with this data. There is a huge difference between research and commercial purposes. Implementation of ITS Action Plan can change the policy.
Data exchange
According to purpose of data usage, commercial or non commercial

In your opinion, what would be the most important reason for supplying road safety attributes to other parties/projects?

Easier access to data
Lower accident rates
Better use of data
Improved data quality
Economical
Environmental issues (e.g. fuel consumption)
Legislature ("forced" to supply them, INSPIRE directive)
A "fun project"
Other...



Figure 10 - Reasons for supplying road safety attributes.

Conclusion - "Availability of road safety attributes":

Charging for the data.

It is not possible to distinguish a common strategy for how the authorities intend to charge for data.

Willingness to share data.

Most organizations are willing to share data but in some cases there are restrictions included.

Reason for supplying road safety attributes.

The organizations consent to the proposed reasons for providing data. It is notable that the "economical reason" is not a significant reason for data supply.

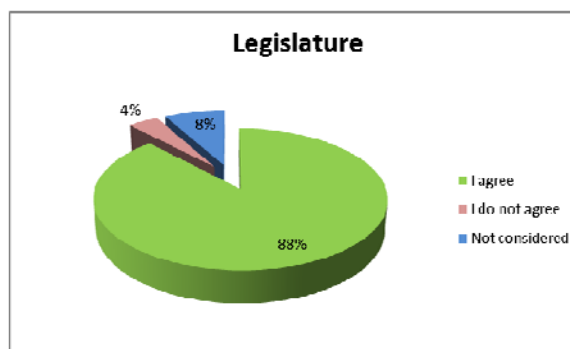
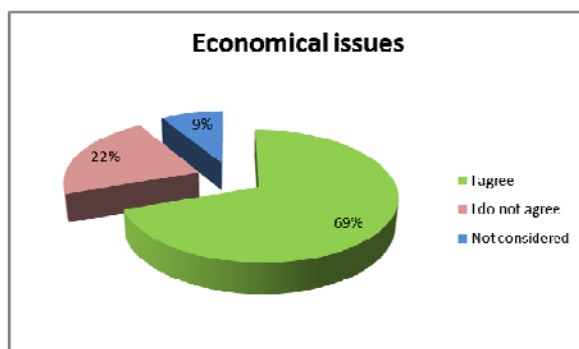
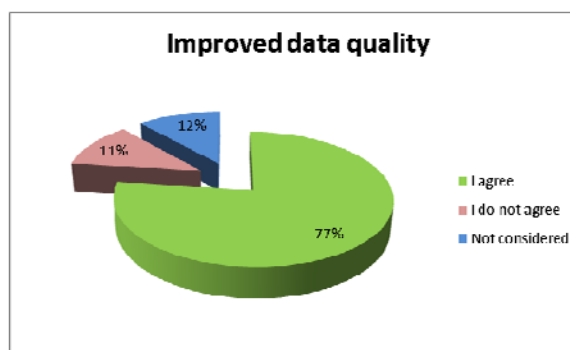
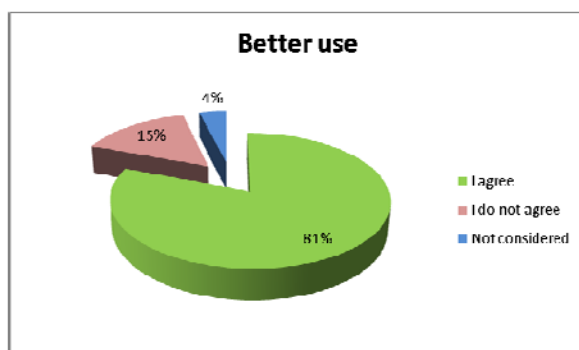
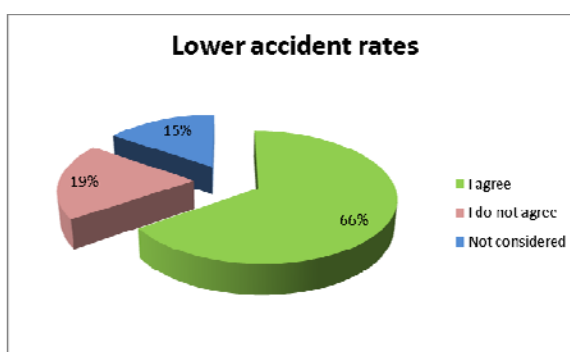
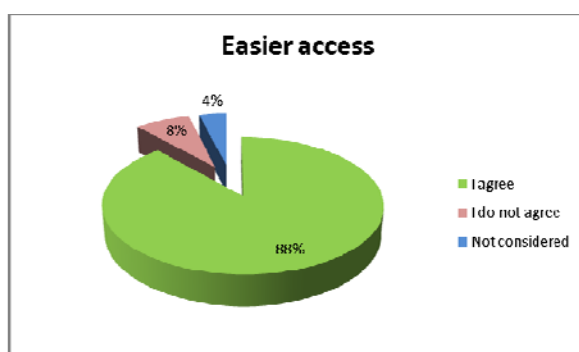
Collection of data

How important, in your opinion, are the different reasons to collect and update road safety attributes?

Mark a number from 1 to 4 to show how important each statement is, 1 being the lowest and 4 the highest.

	1 (I do not agree at all)	2 (I do not agree)	3 (I agree)	4 (I most certainly agree)	Not considered
Easier access	1	1	5	18	1
Lower accident rates	1	4	7	10	4
Better use	1	3	7	14	1
Improved data quality	1	2	10	10	3
Economical issues	0	5	14	5	2

Environmental issues (e.g. fuel consumption)	1	5	14	3	3
Legislature ("forced" to supply them, INSPIRE directive)	1	0	15	7	2



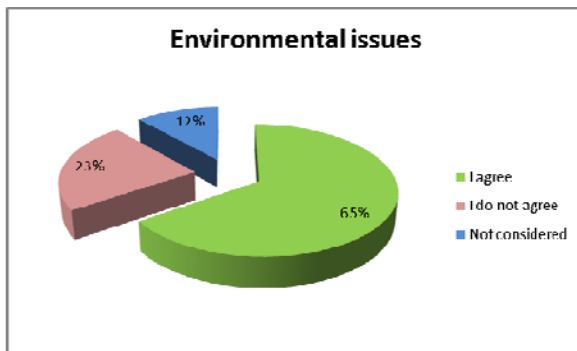


Figure 11 - Importance of collecting data.

Comments on "reasons to collect data":

External demands e.g. national legislature, demands from vehicle industry.

I would say that a reasonable approach could be that if data is being used to earn money by any party then some revenue should be returned to the organization maintaining the data in order to improve quality and maintenance. There are always costs involved in keeping data up to date. And no good means can help if the organization maintaining the data has got too little funding for keeping the data up to par.

Collection of data is often a time consuming and costly process. In your opinion could prioritizing the collection of attributes help speed up the process?

Yes, prioritizing by attributes (42%)

What attributes should be prioritized?

Yes, prioritizing by road classes (29%)

What classes should be prioritized?

No (29%)

"Prioritized attributes":

Speed limits
Warning signs
Overtaking bans
Road topology
Road pavement typology
Traffic data
Accident data
Road safety relevant data and attributes
Road signs (traffic prohibitions or restrictions)
Level crossings
Tunnels
Intersections between roads and bicycle or walking paths
Lane information
Traffic lights
Toll barriers
Motorway junctions
Gradients (slope and banking)

"Prioritized classes":

Main roads
Roads with high ADT-values (> 3500 vehicles per day).
Expressways
Road Network related to transit/international transport
TEN-T network corridors
Motorways
National roads
TERN
Most trafficked network

Could other ongoing projects influence the collection of road safety attributes?

Yes (72%)

How would it affect the collection of data?

Speed it up

Delay it

Interaction benefits between projects

Other (please describe) ...

No (28%)

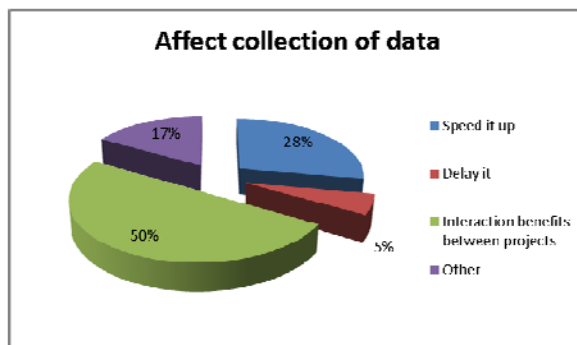


Figure 12 - Influence of other projects on the collection of data.

"Other reasons":
Cost saving by funding from other EU-projects.
Resources (staff)
Supply of traffic rules to a national database has a positive impact.

What update rate are you planning to use? Will you have the same update rate for all road classes or different rates depending on the importance of the class?
The same rate for all classes (56%)
Continuous (64%)
Periodical (36%)
At what interval?
Different rates depending on class (44%)
Please specify the different road classes and if they are updated continuously or periodically and at what interval

Specified "Periodical intervals":
Twice a year
Annually

Specified "continuous updates":
Continuous updates are useful once the updating process works perfect

Description for specified road classes:
Yearly for highways, federal and state roads
Some attributes up to 4 times per year, some annually and some every few years
State roads - continuous Municipal roads - continuous Private roads - periodical (intervals differ)
Forrest roads - periodical (intervals differ)
First priority for the data/attributes concerning the National Roads

To succeed with the collection of data (and possible adaptation to standards etc), what do you need to fulfil the task?
Applications and/or tools adapted to a certain standard
We have the necessary tools
Legislature needed
Other

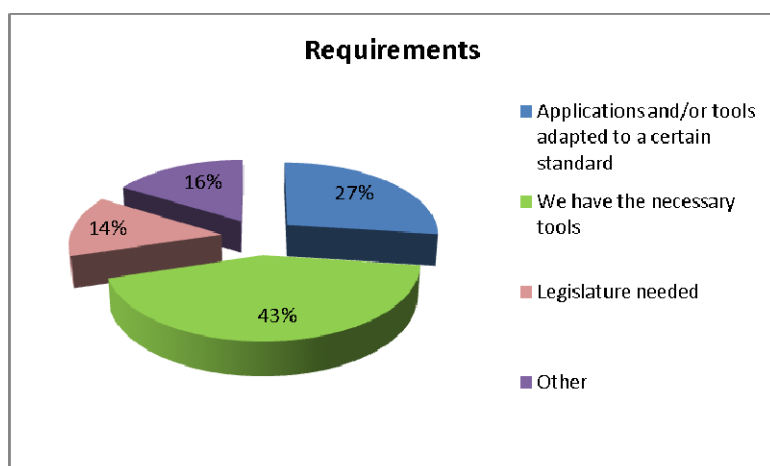


Figure 13 - Requirements to fulfil the collection of data.

"Other requirements" needed:

Acceptance from the management - from EU to national administration level - that collection and maintenance of data is time consuming and requires a lot of resources.

Software development

Access to national road data.

We need an improved internal organisation and resources with the right competence.

Budget must be available for data collection

In your opinion who should supply applications and/or tools to register road safety attribute data?

Your own organisation (35%)

Map providers (5%)

Other software providers (20%)

Joint venture with map providers and/or software providers (30%)

Other (5%)

No viewpoint (5%)

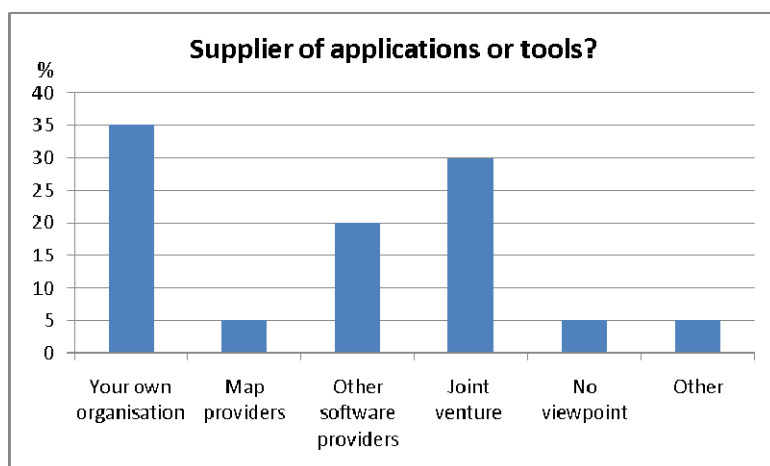


Figure 14 - Suppliers of applications for data collection.

Comments for "Other":
In Flanders the department of mobility and public works provides the tools for every road authority (regional as well as local).
Ministry for Interior NRW

Is it possible to estimate the time it will take to collect and register the road safety attributes and if necessary adapt them to specifications in the ROSATTE framework?

Yes (25%)

When do you think you'll have an updated database with all road safety attributes up to date?

No (75%)

"Updated databases with all road safety attributes":
At the end of 2010
Within the framework of the ROSATTE project
Within 1-3 years, for data based on restrictions
2015
We have them already and publicly available concerning key attributes

Conclusion - "Collection of data":
Importance of collecting data.
Considered as most important.
Easier access
Lower accident rates
Better use
Improved data quality
Considered as less important.
Economical issues
Environmental issues (e.g. fuel consumption)
Legislature ("forced" to supply them, INSPIRE directive)
Help to speed up the collection of attributes.
The organizations estimate that both collection of attributes and prioritization of road class will be speeded up.
Influence of other projects on the collection of data.
Most organizations see possible benefits with interactions between other ongoing projects but "speed it up" is not significant. The possibility of sharing resources is often cited as an advantage.
Data updates.
It is not possible to distinguish a common strategy for updates. The higher classed road network is generally higher in priority in terms of update rates and update frequency
Requirements to fulfil the collection of data.
A lot of organizations have the necessary tools but there are also those that see a need of applications and tools.

Suppliers of applications for data collection.

The own organization, other software providers and in joint venture is seen as a way to solve the supply of tools and application issue.

Estimate possible for updated database.

A majority (75%) of respondents could not give a time estimate for when an updated data set of safety attributes are available.

Data quality

Have you decided to comply with a certain map database standard?

Yes (69%)

Which one?

No (31%)

Why? Which exchange method/format do you use to manage geographical data?

Database standards used:

INTREST Standard

Mapinfo

ESRI ArcGIS

ESRI - SDE

PostGIS/MapServer

Navstreets

Navteq

SQL/SDE

Swiss TOPO

GDF

Inspire/euroroads

ATKIS

Exchange formats used:

Swedish standard (SS 63 70 xx) XML files

ESRI products

Please give us your view on how the data quality can be assured?

Responsibility for quality assurance by local players

We have a feature catalogue with strict definitions that should be followed. Some of the data are mandatory, and only values that are specified are allowed. We do also have a data controller function in every region. They are doing spot tests on different datasets according to a quality plan.

A contractor is obliged to deliver a certain quality. Each road authority or districts can verify this quality by controlling parts of the inventory they received. On the other hand, when the traffic sign database is used as source for a number of studies and research purposes, feedback concerning the data quality is always interesting and useful to make it better.

By means of random checks. Take into account the results of random checks to improve data quality.

We have a feature catalogue with definitions that should be followed. Some of the data are mandatory, and only values that are specified are allowed. Quality controls are performed on the database according to a quality plan.

To define accuracy specifications and control modalities

Give it a confidence rating

By directives and using standards

By a national data platform operator dedicated to monitor and assure the defined quality level

By establishing data collection standards which must be complied with

In GDDKIA we use a programme dedicated for Data Quality Assurance in order to avoid to put wrong data to the geographical databases

Validation runs and field survey verifications

Data quality depends on data transmission modalities (regularity, exactitude...) by different regulatory authorities. A regulation modification could be studied which would lead to impose these authorities to transmit data to the State.

"The ONLY way to make sure that a certain level of quality can be reached is to make sure the organization producing the data has got enough funding for doing so. The reality is that most organizations do NOT have money to raise the data sets to a higher level than required by their own organization and their own needs. Practically ALL attempts whatsoever where organizations or projects have tried to force data suppliers to produce data that the organization doesn't need themselves or otherwise getting played for or funding for have failed.

The only reasonable approach as far as we can see is to start using the data AS IT IS but providing information about the overall quality for that certain dataset. WHEN that dataset then is being used and there is a demand for higher quality those parties wanting that higher quality might consider adding funding to the data provider in order to raise the quality. VERY FEW data providers will just for the good sake put money into providing high quality data to third parties. Most organization has often not even fundings enough to maintain the data they need themselves."

In a close cooperation with other data suppliers, and end users of these data. We have a close co-operation on specific data in the Oslo area. Cooperation is essential.

"Feed back from users (eg taxi drivers who use the ISA system provides valuable feedback).

Delivery checks ("embedded" in the process) when delivering data to national databases (i.e. traffic regulations RDT and data to NVB).

Quality monitoring can help to develop the delivery process.

A portal may be able to offer tools for quality control.

Quality work requires resources - financial and human resources."

Conclusion - "Data quality - data specifications":

A majority indicate existing demands on thematic accuracy in data specifications.

A majority indicate existing demands on position accuracy in data specifications.

A majority say that they live up to the quality demands in their data specifications.

A majority have decided to comply with a certain map database standard.

Metadata

Have you added any metadata to your road safety attribute data?

Yes (42%)

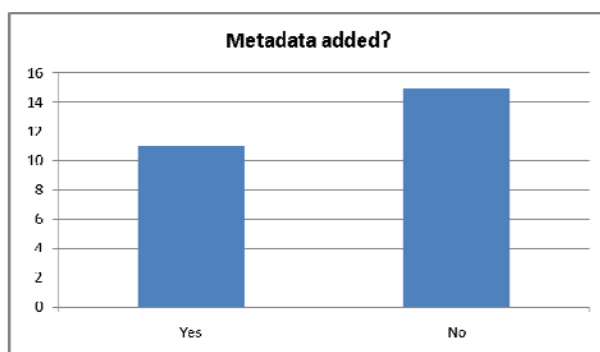
Please specify what metadata:...

No (58%)

Are you planning to add metadata in the near future?

Yes (57%)

No (43%)



Planning to add metadatatype:

Lineage

Update date

Position accuracy

Referencing of location, time, etc

Basic metadata that is mandated by inspire

Cf. based on EN ISO 19115 and ISO/TS 19139 Validity

Geographic correctness

By whom, when, collection method, etc.

Conclusion - "Metadata":

There seems to be a significant lack of metadata but several organizations are planning to add metadata to their data in the future. Perhaps INSPIRE could be the trigger.

Benefits/drawbacks

In your opinion will other ongoing projects benefit from the work in Rosatte?

Yes (84%)

How?

Learned experiences/increased competence

Shared costs

Shared tools/applications

Shared organisation for collection and storing of data

Other...

No (16%)

Please specify why not

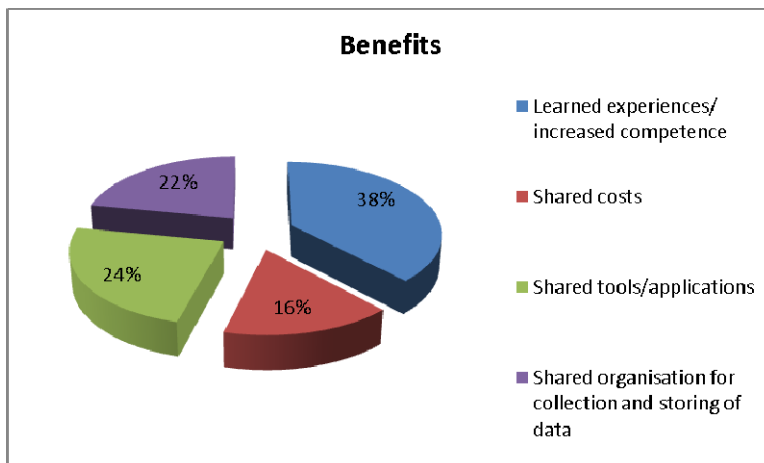


Figure 15 - Benefits

Will third parties be asked to pay to use the data?

Yes (58%)

What model for payment is your organisation considering?

No (42%)

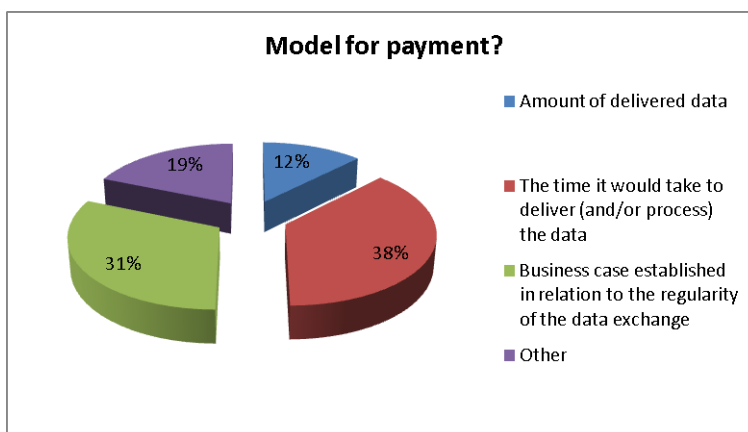


Figure 16 - Payment models.

Description of "other" payment models:

Depending on legislation

Payment probably only for road network, speed limit, height restrictions, turning restrictions, one way street

It depends on usage purposes /commercial, non commercial

Conclusion - "Benefits/drawbacks":

Benefits

Most organizations see possible benefits of the outcome of the ROSATTE project, mainly "Learned experiences/increased competence".

Payment models.

Most organizations plan to charge for making data available but the cost will be low and the motive is usually to obtain cost recovery for their own organization's actual costs.

2.2 *Map Providers, Service Providers and Others*

Distribution of respondents by category

Are you representing a ..

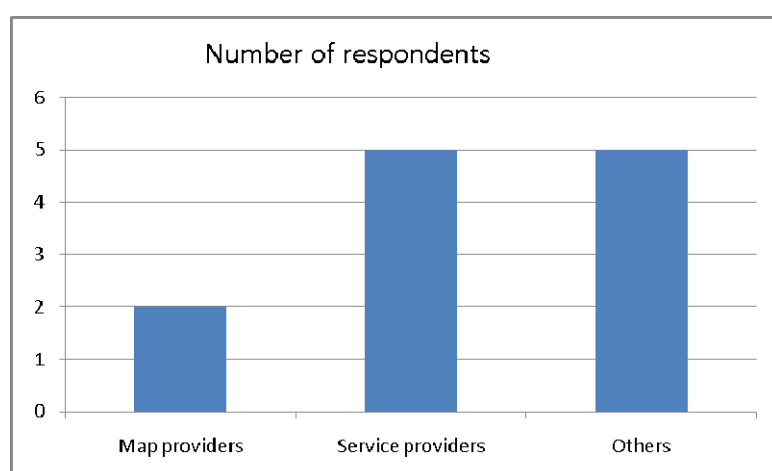


Figure 17 - Number of respondents - Map Providers, Service Providers and Others

There were two answers from TeleAtlas and one from Navteq. As the answers from TeleAtlas only differed in a couple of responses with free text the answers were analyzed as coming from two mapproviders (both comments from TeleAtlas are taken into consideration).

Conclusion - "Administration":

Both major Map Providers have contributed with answers.

Service Providers are third party software developers.

The group "Others" consists of car manufactures and motorists organizations.

Geoportal or other data store

Several advantages can be found by setting up a central data store. In your opinion, what benefits can you see from a joint effort between road authorities, map makers or other parties in setting up a ROSATTE data store?

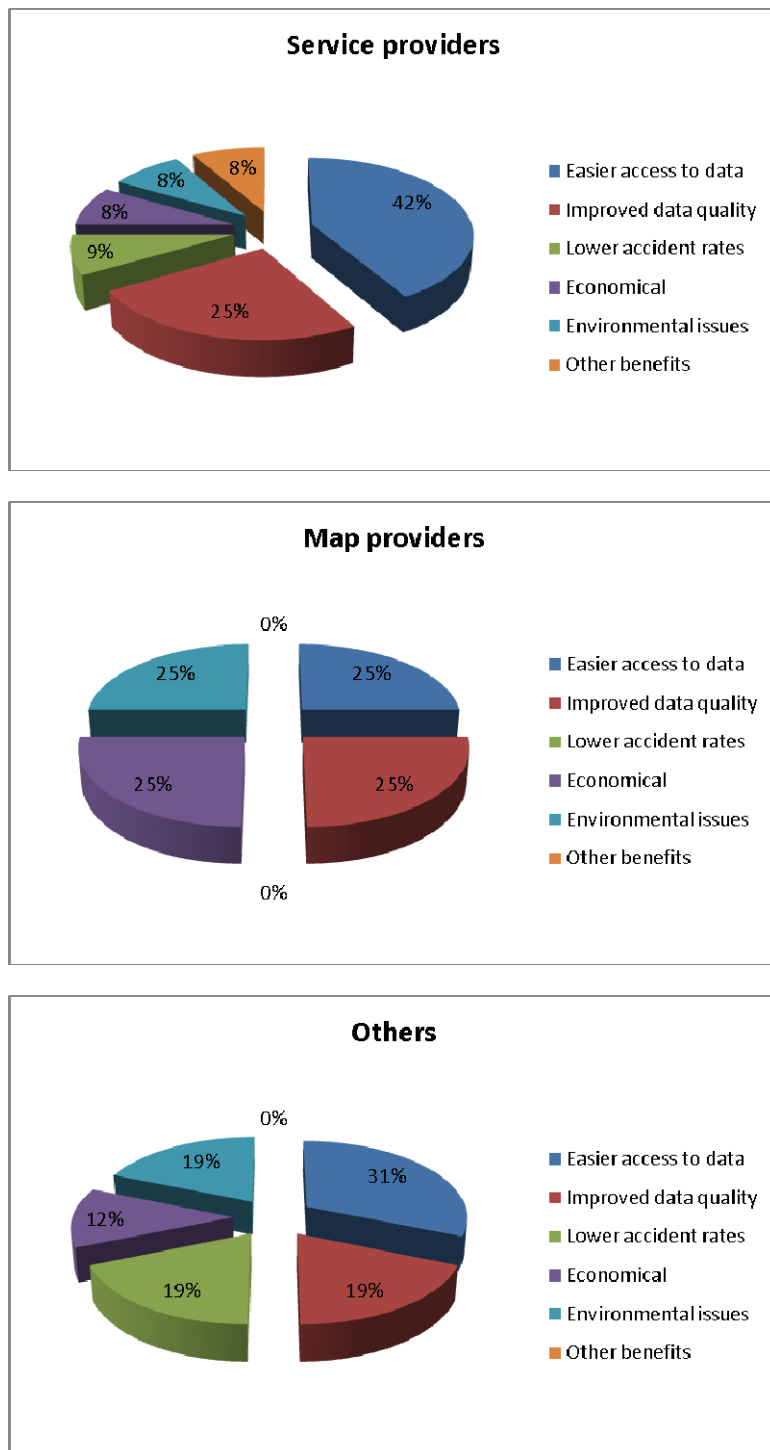


Figure 18 - Benefits found by setting up a geoportal (central data store).

Conclusion - "Benefits found by setting up a geoportal (central data store)":
 "Easier access to data" and "Improved data quality" has been identified as benefits by all three groups.
 There is a difference in how Service Providers and Map Providers judge the "Economical" and "Environmental" benefits.

Map Providers and Others have identified more issues as benefits than Service Providers.

Would a geoportal be of help when searching for data instead of having to turn to several organisations (or other organisations than your own) in a country/countries to harvest the data needed?

Conclusion - "Geoportal as help when searching for data":
All three groups see a Geoportal as a great help when searching for data.

Would you be interested in building a geoportal either by your own effort or in a joint effort with other authorities, map providers or software providers?

Comments on "Interest in building a Geoportal":
No, because we perceive ourselves mostly as users of the data for different services not as providers
We are a road safety association and it is not our task

Conclusion - "Interest in building Geoportal(s)":
One of the Map Providers has an interest of building a Geoportal by their own effort. All other answers support the idea to realize Geoportal(s) in joint venture.

Data quality

Conclusion - "Data quality - data specifications":
All answers - except one from a Service Provider - indicate existing demands on thematic accuracy in data specifications.
All answers - except one from a Service Provider - indicate existing demands on position accuracy in data specifications.
All answers - except two from Service Providers - say that they live up to the quality demands in their data specifications.

Do you feel that there will be differences in data quality depending on if the data is available free of charge or not?

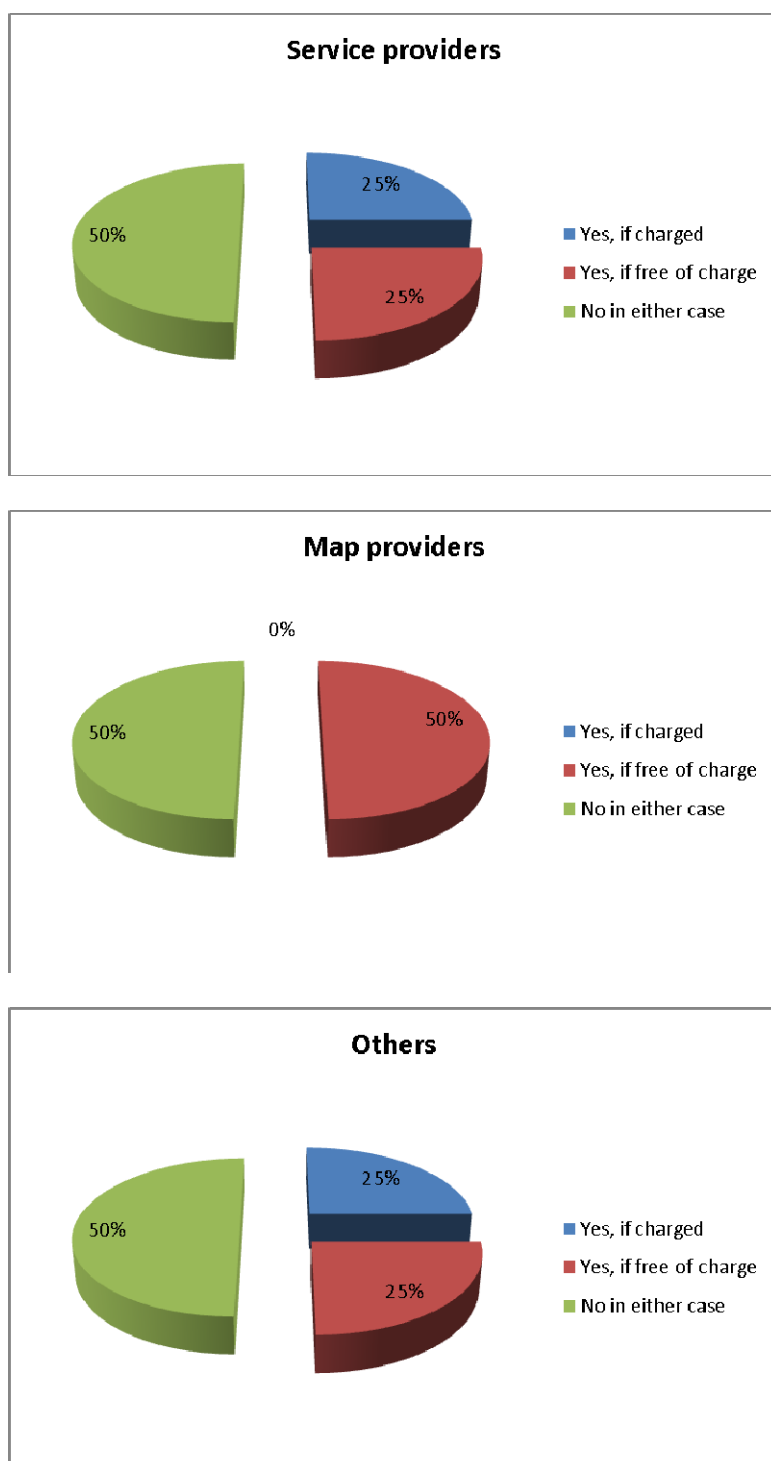


Figure 19 - Dependence between data quality and cost for data.

Conclusion - "Dependence between data quality and cost for data":
The given answers give a scattered view to the correlation between data quality and cost for data.
One of the Map Providers see a risk for a lower data quality if data is available free of

charge.

Have you decided to comply to a certain map database standard?

"Map database standards mentioned":
That provided by the big two map providers and ISO191xx

"Exchange method/format used":
Open street map, GDF
Own map database standard

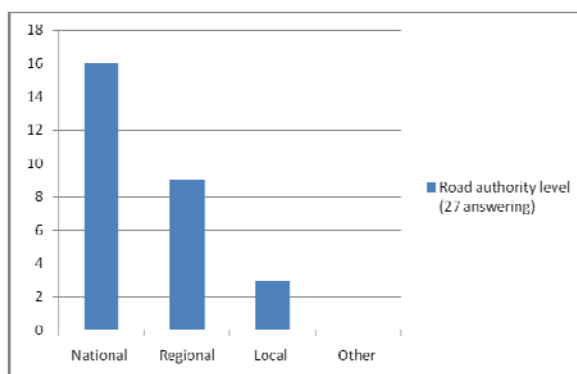
Conclusion - "Use of map database standards":
A majority have decided to comply to a certain map database standard.

3. *Data collected per country/organisation*

3.1 *Road authorities*

Administration level

Are you representing a
Road authority
National level
Regional level
Local level
Other level



Administration

Databases in large/other ongoing projects

Do you have stand alone business systems for specific activities e.g. a sign post database?
Yes (74%)

Please specify what systems/projects and for what purpose:

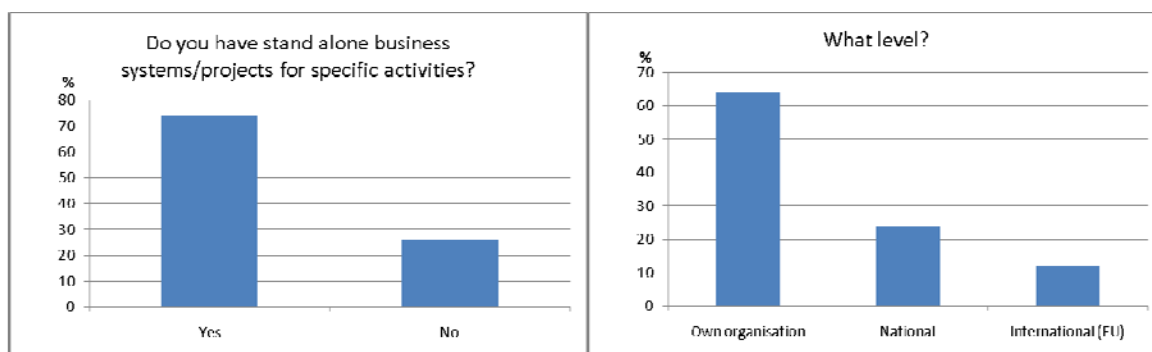
At what level are these projects running?

Own organisation (64%)

National (24%)

International (EU) (12%)

No (26%)



Stand alone business systems.

Comments on "Systems or projects mentioned and purpose":

GIS APPLICATIONS FOR ROAD SIGNING

National Road database, NRDB. Established for road maintenance, but also used for other purposes.

Speed limits

Traffic Sign database of Flanders

Project 'Traffic sign database': to perform an inventory of all traffic signs along the municipal and provincial roads in Flanders. Project ROSATTE

National Road Database (NVDB), Traffic regulations, Accidents, Road management, Bridge management, Pavement management, Traffic flow (ADT), Noise, Technical installations, Authorization of heavy transports, Speed cameras, Traffic information centre (TIC) etc

Road data census (e.g. sign post, guard rails, bridges, tunnels) - traffic, car accidents and road safety data collection and management

Specific client system for maintenance of the network client system for location of street lights

Sign post database, video camera recordings taken from car travelling in both ways on every road, etc

MISTRA: Road Data Base on national level

ITS application for Motorways (EASYWAY) Data platform for Traveller information- IN-TIME Co-operative Driveng (COOPERS) ITS Architecture

System is used as an inventory of all road traffic signs on national roads for the purpose of maintenance

Transport Scotland uses the Scottish Executive Road Information System (SERIS) as its Asset Management System. This system holds information about the entire Trunk Road Network for Scotland for which Scottish Government Ministers have direct responsibility. It is Transport Scotland's road information system containing data on the physical characteristics, condition of the trunk road network and accidents. SERIS is comprised of many modules, including a Pavement Management System (PMS), Routine Maintenance Management System (RMMS), Structures Management System (SMS), and an Accident Management System (AMS). Local Authorities operate PMS and RMMS systems for roads

that are their responsibility. RMMS is an inventory of the roads in the Trunk Road Network and itemises the individual

BALI: experimentation to assess pertinence and feasibility (technical and organisational) of a speed limit database at a county scale.

LAVIA: ISA evaluation project

COSAL: implementation of BALI products in an onboard ISA device.

The city of Stockholm has a Local Road database to which is connected a large variety of business systems for specific activities like Road constructions and road works, traffic regulations, accidents, permissions for special traffic, lights, maintenance and much more.

Different projects

Accident hotspot database

"Sign post database (being develop)

Traffic regulations database (in joint cooperation)

Coordination of permits for construction works; System in operation

Signaling systems database. System in operation

Bus stop database. Database in operation (NVDB)

Traffic statistics and calculations. System in operation (NVDB)

WORM- messaging system public reporting on potholes

Noise level database; serving as basis noise abatements

Geodata for planning purposes. Systems in operation

We have an organization for data provision (PROSAM) working in cooperation for promoting traffic data, and doing specific. Several entities are members from all public levels, and public transport providers as well.AM38:AM39"

"Gävle has its own specific system that supports specific activities - such as traffic counting systems, road maintenance, etc.

Management objects are aggregated from the specific business systems to the GIS-system that holds the "Municipality database".

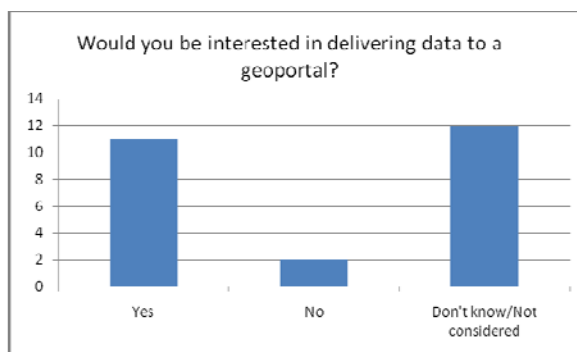
Geoportal or other data store

Would you be interested in delivering data to a geoportal (Rosatte data store implemented as a portal)?

Yes (44%)

No, because... (8%)

Don't know / Not yet considered (48%)



Interest in delivering data to a geoportal.

Comments on "No, because":

Accuracy (and/or data generalization) is depending on the purpose for collecting data in the first place, not on purpose of disseminating it.

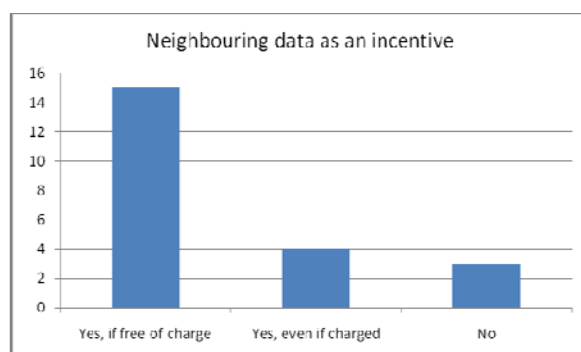
No usecase visible

If you deliver data to a central data store would the availability of data of neighbouring administrative divisions (municipality, county, region, country) be a benefit/incentive for delivering data?

Yes, if free of charge (68%)

Yes, even if charged (18%)

No, because... (14%)



Availability data of neighbouring administrative divisions.

Comments on "No, because":

Accuracy (and/or data generalization) is depending on the purpose for collecting data in the first place, not on purpose of disseminating it.

Responsibility only for parts of the network

Several advantages can be found by setting up a central data store. In your opinion, what benefits can you see from a joint effort between road authorities, map makers or other parties in setting up a Rosatte data store?

Easier access to data

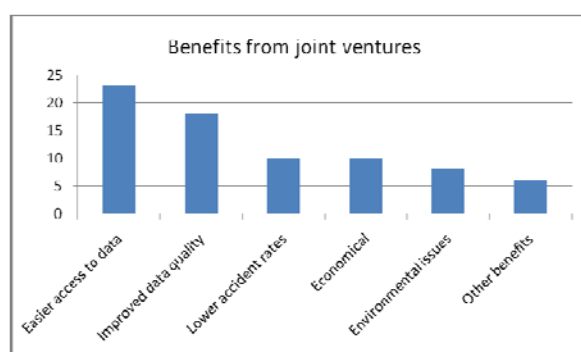
Improved data quality

Lower accident rates

Economical

Environmental issues (e.g. lower fuel consumption)

Other benefits...



Benefits found by setting up a geoportal (central data store).

Comments on "Other benefits":

Administrative benefits

Faster update of map information in in-vehicle systems. Better possibilities to guide traffic to the most suitable roads.

To compare road data from various countries and best practices

Better observance of speed limits, better road readiness, better acceptance of automatic speed cameras

The trunk road operating companies engaged by Transport Scotland have contractual obligations to maintain the RMMS inventory up to date. Further benefits that will assist in the achievement of Scottish Government policies (eg to achieve road safety targets, to reduce the amount of unnecessary car use) and improve the efficiency of Transport Scotland and the Scottish Government's road transport management and maintenance are considered more likely accrue from inter-governmental and authority co-operation than by a central data store per se.

Better updates and improved economy of scale for providing databases. We see sometimes shifting priorities for datashystems within entities. A more central system will enhance the whole database and dataproduction system.

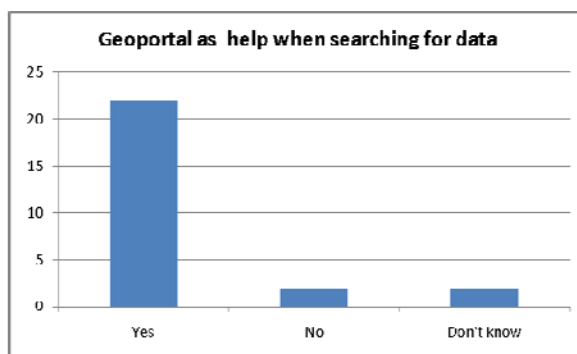
Reduces the need for field inventory in-house. Reduces the need for repeated data supplies to (many) external use

Would a geoportal be of help when searching for data instead of having to turn to several organisations (or other organisations than your own) in a country/countries to harvest the data needed?

Yes (84%)

No, because... (8%)

Don't know (8%)



Geoportal as help when searching for data.

Comments on "No, because":

Accuracy (and/or data generalization) is depending on the purpose for collecting data in the first place, not on purpose of disseminating it.

The trunk road operating companies engaged by Transport Scotland have contractual obligations to maintain the RMMS inventory up to date. Further benefits that will assist in the achievement of Scottish Government policies (eg to achieve road safety targets, to reduce the amount of unnecessary car use) and improve the efficiency of Transport Scotland and the Scottish Government's road transport management and maintenance are considered more likely accrue from inter-governmental and authority co-operation than by a central data store per se.

Somewhat but would of cause depend on coverage and how tight and accurate the maintenance of the data will be

Availability of road safety attributes

The road safety attributes discussed are being of importance for the activities of several actors. In your country, are you aware of demands from third party companies or organisations wanting to use road safety attributes, and which would be interested in a near-permanent update of the data?

Yes (65%)

What attributes are in demand?

Which are these actors?

Are you planning to charge anything for the data?

For the direct cost of delivering

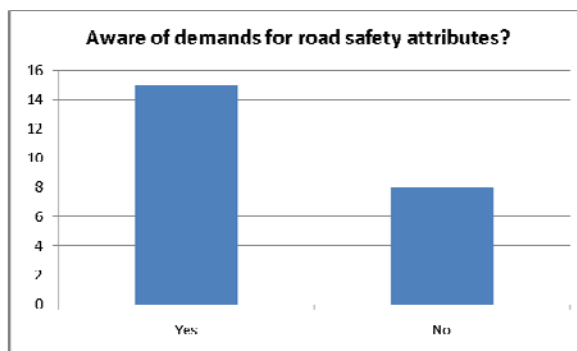
By a business model

Not decided yet

No cost

Other

No (35%)



Aware of demands for road safety attributes.

Attributes demanded:

Speed limit, different traffic signs, AADT

Mostly speed limits, forbidden turns, all kind of restrictions.

All attributes

Speed limit, Functional road class, Height restrictions, Vehicle restriction, Slope (also curves, camber etc).

Speed limits, road width, service stations, parking area and traffic data

Inventory data related to Road Safety (reference network model, traffic signs, safety barriers, cross section layout, etc.)

Statistic data about roads such as costs, accidents, traffic data, conditions of road infrastructures and road surfaces

Speed limits etc.

Roadworks Railway level crossing, Road restriction

All restrictions

Accident data

Features from the National Road DataBank

Bicycle Road Network with its attributes is requested

Actors:

Other organizations, private companies and others

Map providers

Department of mobility and public works, studies and research projects concerning traffic safety and mobility, mapmakers, ...

Map providers, administrations, ...

Map providers, Service providers.

Map providers, traffic police and road planner

Our own sections at SRA / responsibility of black spots improvement activities, road designers/private companies

Other regional authorities, research bodies, private consulting firms, etc

Service providers

Mapmakers (Navteq, Tele Atlas...)

Telematics actors, Mapmakers, Automobile Club

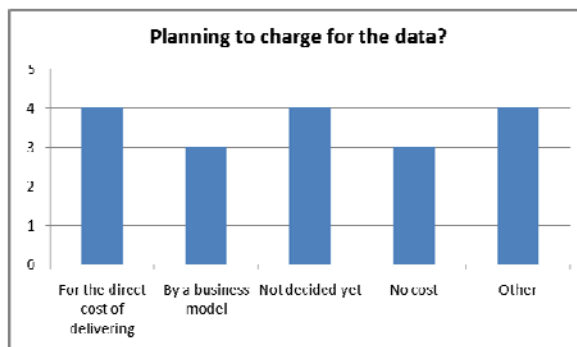
Automobile Club

ICT development companies

Delivers data to NVDB and RDT regularly

Actors	Attributes demanded
Map authorities	Inventory data related to Road Safety (reference network model, traffic signs, safety barriers, cross section layout, etc.) Bicycle Road Network with its attributes
Map providers	Speed limits Forbidden turns Restrictions (height, vehicle,...) Road width Roadworks Railway level crossing Traffic signs AADT Functional road class Slope Camber Curves Service stations
Service providers	Speedlimits Road width Service stations Parking areas Functional road class Height restrictions Vehicle restrictions Slope Curves Camber Traffic data
Administrations	All road safety attributes
Other regional authorities	Statistic data about roads such as costs, accidents, traffic data, conditions of road infrastructures and road surfaces
Mapmakers	All restrictions
Traffic police	Speed limit Road width Service stations Parking areas Traffic data
Road planner	Speed limit Road width Service stations Parking areas Traffic data

Private companies, private consulting firms	Statistic data about roads (costs, accidents, traffic data) Conditions of road infrastructures Road surfaces Inventory data related to Road Safety (reference network model, traffic signs, safety barriers, cross section layout, etc.) Traffic flow data Accident data Statistic data about roads Features from the National Road DataBank
Research bodies	Statistic data about roads such as costs, accidents, traffic data, conditions of road infrastructures and road surfaces
Automobile club	All restrictions Accident data
Telematic actors	All restrictions
Others	Traffic flow data Accident data Inventory data related to Road Safety (reference network model, traffic signs, safety barriers, cross section layout, etc.)



Charging for the data.

Comments on "Other charging models":

We have a product on the market (Elveg) together with Norwegian Mapping and Cadastre Authority. I don't see the value for charging anything for distributing the data, but it is important for the road authorities that we know what the recipient is planning to do with this data. There is a huge difference between research and commercial purposes.

Implementation of ITS Action Plan can change the policy.

data exchange

Accuracy (and/or data generalization) is depending on the purpose for collecting data in the first place, not on purpose of disseminating it.

According to purpose of data usage / commercial - non commercial

Is your organisation willing to share this data (with/without charge)?

Yes (83%)

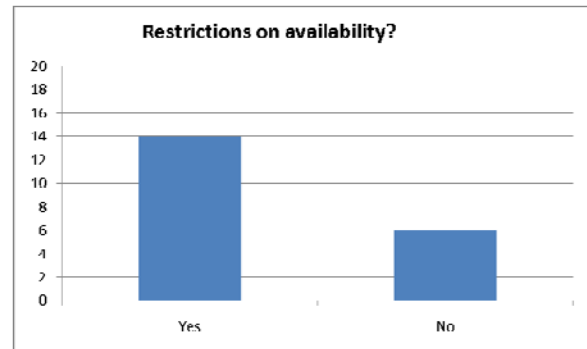
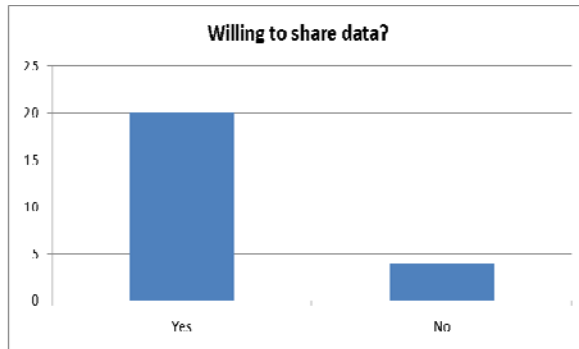
Is your organisation considering imposing any restrictions on the availability of data?

Yes (70%)

Why? Please specify the restrictions if possible:...

No (30%)

If not, please specify why not: ...
No (17%)



Willingness to share data.

Comments on "Description of restrictions":

Only for public use activity.

Data to be used for specific purposes etc It depends on the data given

Restrictions will depend upon the type of data, and the purpose of the demand for data.

Not decided yet: maybe some contra services should be delivered or some requirements will be made in exchange for the data from the traffic sign database

Non-profit use - not to transfer to third parties

Need to validate data and confirm accuracy due to legal implications

Depends on the type of data - not yet considered

The likelihood that restrictions would be considered would depend on the specifics of any requests for data so that it is not possible to specify any proposals here

According to data quality

Data can easily be misinterpreted, if expert knowledge is missing

For technical data there are no restrictions but data that also includes demographic information (Personal Data) are restricted

Comments on "Reasons for not imposing any restrictions":

Elveg is available to everyone, not decided what to do with i.e. traffic signs and AADT

All information classified as public is available for use.

Open availability of data has economic benefits to us

As long as data privacy is not violated, there should be no restriction

We promote unrestricted delivery of public authorities' data free of charge

Not decided yet

In your opinion, what would be the most important reason for supplying road safety attributes to other parties/projects?

Easier access to data

Lower accident rates

Better use of data

Improved data quality

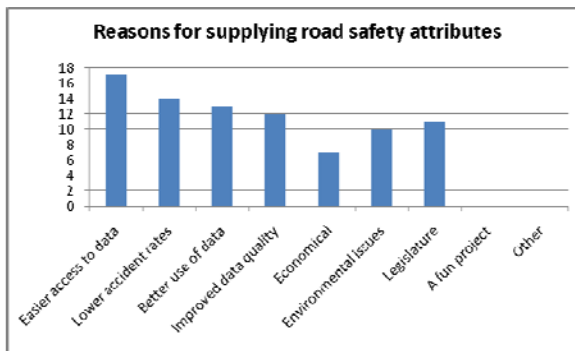
Economical

Environmental issues (e.g. fuel consumption)

Legislature ("forced" to supply them, INSPIRE directive)

A "fun project"

Other...



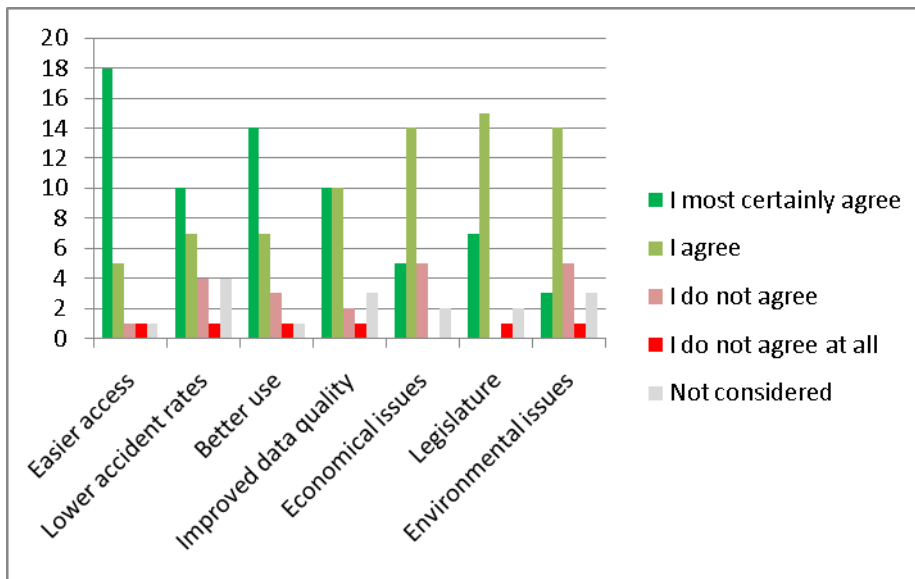
Reason for supplying road safety attributes.

Collection of data

How important, in your opinion, are the different reasons to collect and update road safety attributes?

Mark a number from 1 to 4 to show how important each statement is, 1 being the lowest and 4 the highest.

	1 (I do not agree at all)	2 (I do not agree)	3 (I agree)	4 (I most certainly agree)	Not considered
Easier access	1	1	5	18	1
Lower accident rates	1	4	7	10	4
Better use	1	3	7	14	1
Improved data quality	1	2	10	10	3
Economical issues	0	5	14	5	2
Environmental issues (e.g. fuel consumption)	1	5	14	3	3
Legislature ("forced" to supply them, INSPIRE directive)	1	0	15	7	2



Importance of collecting data.

Comments on "reasons to collect data":

External demands e.g. national legislature, demands from vehicle industry.

INSPIRE directive does not "force" us to publish our data rather it requires us to published metadata about data we are legally obliged to maintain

I would say that a reasonable approach could be that if data is being used to earn money by any party then some revenue should be returned to the organization maintaining the data in order to improve quality and maintenance. There are always costs involved in keeping data up to date. And no good means can help if the organization maintaining the data has got too little funding for keeping the data up to pair.

Collection of data is often a time consuming and costly process. In your opinion could prioritizing the collection of attributes help speed up the process?

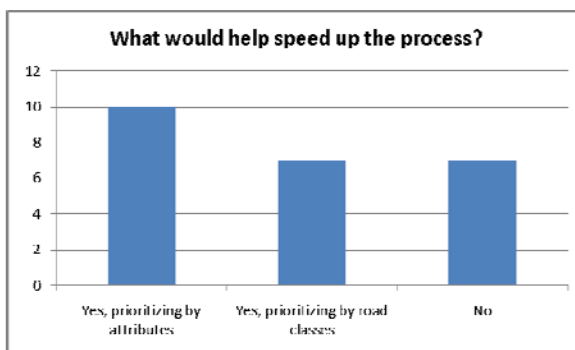
Yes, prioritizing by attributes (42%)

What attributes should be prioritized?

Yes, prioritizing by road classes (29%)

What classes should be prioritized?

No (29%)



Speed up the collection of attributes.

Comments on "Prioritized attributes":

Speed limits, warning signs, overtaking bans

Road topology, road pavement typology, traffic data and car accidents

Road safety relevant data and attributes

For the Trunk Road network in Scotland, highest priority would be given to collecting those data that are of most significance in the achieving its road management and safety objectives.

Those with wide use and significant impact concerning our organization's objectives

Speed limits, other road signs, traffic prohibitions or restrictions for speed limitation, level crossing, tunnel

Should be pointed out by those in the need of the data of the project. But beside the data mentioned in the instructions for the survey Intersections between car roads and bicycle roads or walking paths should be considered high priority.

"The attributes that are also useful in the municipality's own operations are of priority.

The enumeration in the ROSATTE information document - speed limit; traffic signs; lane information; traffic lights; crossings; toll barriers; motorway junctions; tunnel access; gradient (slope); transverse gradient (banking) - is broadly consistent with the municipality's view. "

Comments on "Prioritized classes":

Main roads

Roads with high ADT-values (> 3500 vehicles per day).

All classes should be prioritized in order of importance

Motorways, Expressways, 1st class Roads - Road Network related to transit/international transport, E, TEN-T network corridors

Motorways, urban and sub-urban rural

Motorway, Dual, Single

national roads

TERN, national roads, most trafficked network

Road classes

Could other ongoing projects influence the collection of road safety attributes?

Yes (72%)

How would it affect the collection of data?

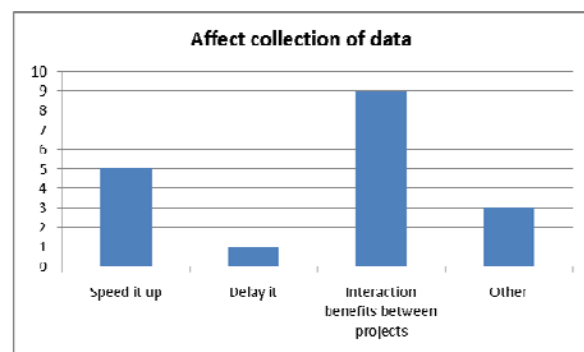
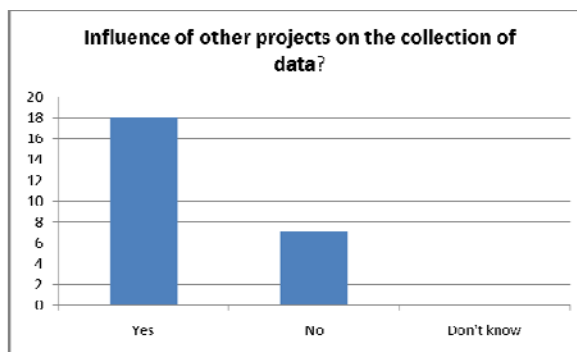
Speed it up

Delay it

Interaction benefits between projects

Other (please describe) ...

No (28%)



Influence of other projects on the collection of data.

Comments to "Other reasons":

Cost saving by funding from other EU-projects.

Too little staff

Other ongoing projects could influence the collection of road safety attributes in each of the ways above; which way would depend on the individual circumstances of each.

Supply of traffic rules to the national database RDT has a positive impact. Replacement of the municipality's local geodetic reference system to the national geodetic reference system (SWEREF99 - in the correct projection zone) may also offer synergies.

What update rate are you planning to use? Will you have the same update rate for all road classes or different rates depending on the importance of the class?

The same rate for all classes (56%)

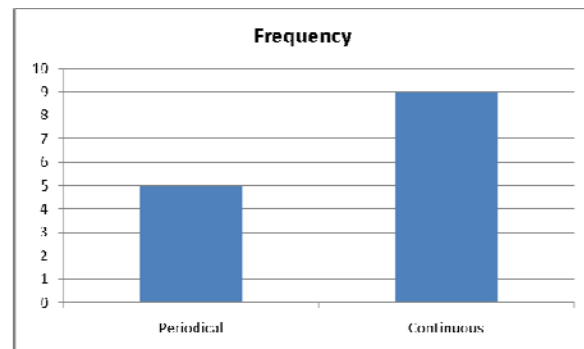
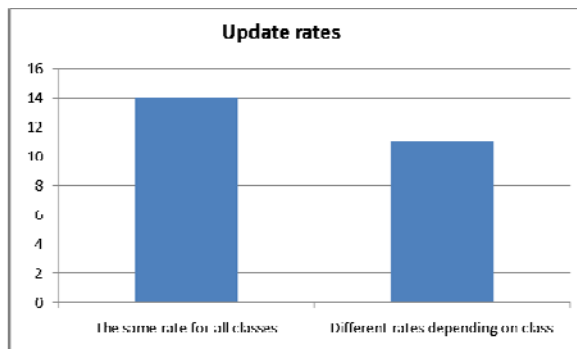
Continuous (64%)

Periodical (36%)

At what interval?

Different rates depending on class (44%)

Please specify the different road classes and if they are updated continuously or periodically and at what interval



Data updates.

Comments on "Periodical intervals":

Twice a year

Annually

Update interval will depend on the road authority (e.g. will be different for the different municipalities)

Periodic updates

Periodic intervals for some and dynamic for other. There are some attributes that one needs to keep updated.

A comment on "continuous update":

Continuous updates are useful once the updating process works perfect, but in the starting phase it would be preferable to begin with periodical updates (which can be triggered by each authority itself when the data is updated)

Description for specified road classes:

Yearly for highways, federal and state roads not defined for roads outside of our responsibility

Usually motorways have more data (and more accurate)

State roads - continuous Municipal roads – continuous Private roads – periodical (intervals differ) Forrest roads - periodical (intervals differ)

Motorway, A Class, B class, C class, Unclassified. Update rate as yet unknown.

First priority for the data/attributes concerning the National Roads

Motorways urban roads and arteries suburban rural

We are still at early stages of establishing update process for road attribute classes

Some attributes up to 4 times per year, some annually and some every few years

This would in general be for upper class roads

There is a high dependence linked to the attribute in question - more dependent than the road class.

To succeed with the collection of data (and possible adaptation to standards etc), what do you need to fulfil the task?

Applications and/or tools adapted to a certain standard

We have the necessary tools

Legislature needed

Other



Requirements to fulfil the collection of data.

Comments on "Other requirements":

Acceptance from the management - from EU to national administration level - that collection and maintenance of data is time consuming and requires a lot of resources. Information should be considered a vital resource for all business systems.

Software development

Budget must be available for data collection

Access to NVDB. We need an improved internal organisation, and resources with the right competence.

There often lacks human and financial resources to perform the task.

In your opinion who should supply applications and/or tools to register road safety attribute data?

Your own organisation (35%)

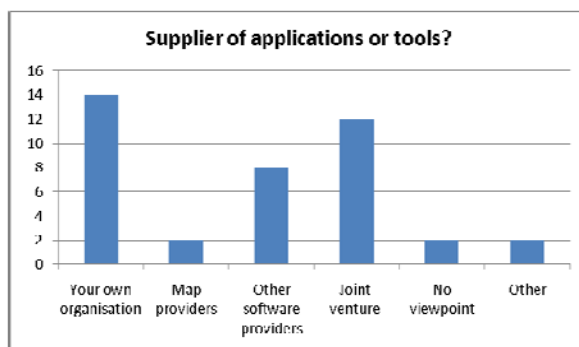
Map providers (5%)

Other software providers (20%)

Joint venture with map providers and/or software providers (30%)

Other (5%)

No viewpoint (5%)



Suppliers of applications for data collection.

Comments for "Other":

In Flanders the department of mobility and public works provides the tools for every road authority (regional as well as local).

Ministry for Interior NRW

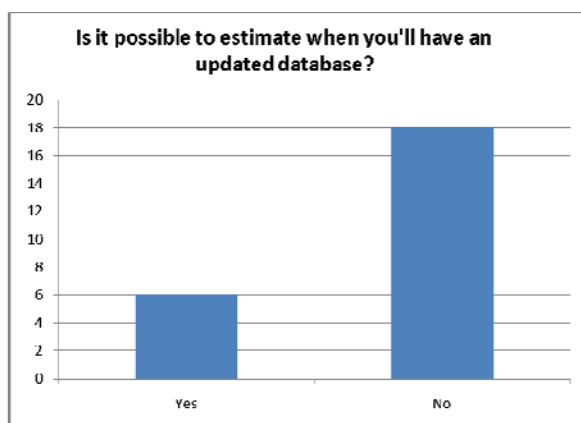
It is necessary to use common standards that several road owners should agree upon

Is it possible to estimate the time it will take to collect and register the road safety attributes and if necessary adapt them to specifications in the ROSATTE framework?

Yes (25%)

When do you think you'll have an updated database with all road safety attributes up to date?

No (75%)



Estimate possible for updated database.

Comments on "Updated databases with all road safety attributes":

At the end of 2010 the initial supply for traffic sign database of Flanders will be completed. From that moment each road authority is responsible for its own updating.

Within the framework of the ROSATTE project.

Within 1-3 years, for data based on restrictions. For other data, like warning signs, there is no time plan decided.

2015

Is depending on priorities, road types, available manpower, etc

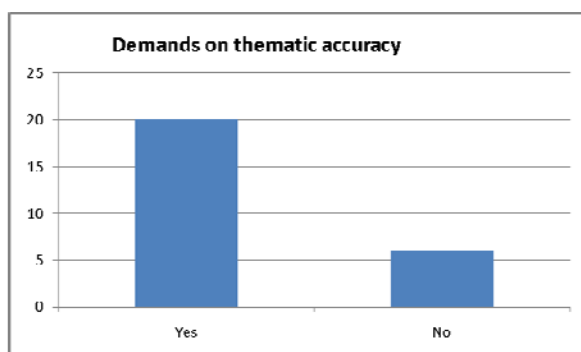
We have them already and publicly available concerning key attributes

Data quality

Do you have specific demands in data specifications on thematic accuracy (attribute value correctness)?

Yes (77%)

No (23%)

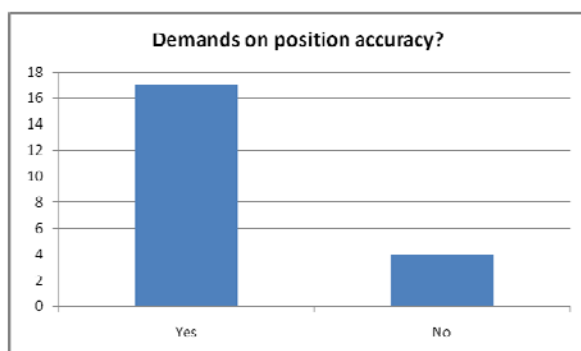


Specific demands in thematic accuracy in data specifications.

Do you have specific demand in data specifications on position accuracy?

Yes (81%)

No (19%)



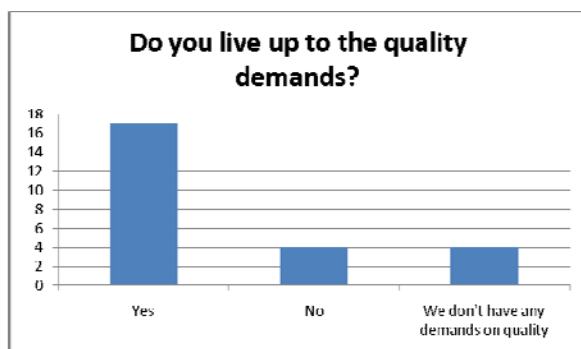
Specific demands in position accuracy in data specifications.

Do you live up to the quality demands in the data specifications you use?

Yes (68%)

No (16%)

We don't have any specifications on quality (16%)



Specific demands in thematic accuracy in data specifications.

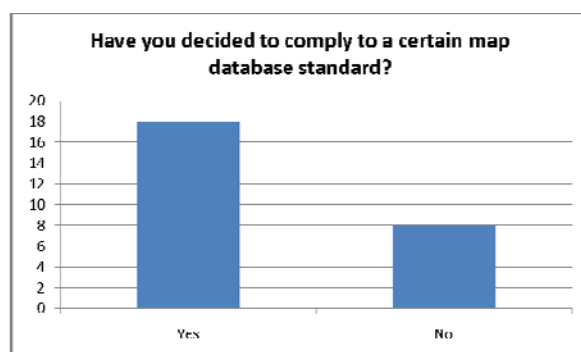
Have you decided to comply with a certain map database standard?

Yes (69%)

Which one?

No (31%)

Why? Which exchange method/format do you use to manage geographical data?



Ability to meet quality demands in data specifications.

Yes, database standard:

INTREST Standard

Use of Mapinfo

ArcGIS and maybe PostGIS/MapServer

At this moment we use Navstreets as standard map database in Flanders.

Navteq

SQL/SDE

ESRI - SDE

ESRI ArcGIS

Swiss TOPO and ESRI tools

The Standards are defined within the National project GIP.at (National Austrian Graph Integration Platform)

gdf

Transport Scotland is adopting International Standards for Display and Download of data - specifically Web Mapping Services 1.3.0, and Web Features Service 2.0 (when ratified).

Inspire/euroroads

We can produce data in most of the existing map formats in the market of today.

ATKIS

Official map database of NRW

Not decided yet. We should towards a SOSI standard for data that could be delivered to the Norway Digital.

Follows the defacto standards used by software providers and other (in-house) standards that apply within the own organization

No, exchange formats used:

The National Swedish Road database (NVDB) is implemented according to a Swedish standard (SS 63 70 xx) which makes it possible to combine the information in NVDB with other road information.

Applications for presentation and analysis is based on ESRI products.

Not yet, up to now we use proprietary formats

The NRA's Road Database is managed using ESRI's ArcGIS Suite of software

We use GIS formats (ArcView) and shape files

Please give us your view on how the data quality can be assured?

Responsibility for quality assurance by local players

We have a feature catalogue with strict definitions that should be followed. Some of the data are mandatory, and only values that are specified are allowed. We do also have a data controller function in every region. They are doing spot tests on different datasets according to a quality plan.

A contractor is obliged to deliver a certain quality. Each road authority or districts can verify this quality by controlling parts of the inventory they received. On the other hand, when the traffic sign database is used as source for a number of studies and research purposes, feedback concerning the data quality is always interesting and useful to make it better.

By means of random checks. Take into account the results of random checks to improve data quality.

We have a feature catalogue with definitions that should be followed. Some of the data are mandatory, and only values that are specified are allowed. Quality controls are performed on the database according to a quality plan.

To define accuracy specifications and control modalities

Give it a confidence rating

By directives and using standards

By a national data platform operator dedicated to monitor and assure the defined quality level

By establishing data collection standards which must be complied with

In GDDKIA we use a programme dedicated for Data Quality Assurance in order to avoid to put wrong data to the geographical databases

Validation runs and field survey verifications

Data quality depends on data transmission modalities (regularity, exactitude...) by different regulatory authorities. A regulation modification could be studied which would lead to impose these authorities to transmit data to the State.

"The ONLY way to make sure that a certain level of quality can be reached is to make sure the organization producing the data has got enough funding for doing so. The reality is that most organizations do NOT have money to raise the data sets to a higher level than required by their own organization and their own needs. Practically ALL attempts whatsoever where organizations or projects have tried to force data suppliers to produce data that the organization doesn't need themselves or otherwise getting played for or funding for have failed.

The only reasonable approach as far as we can see is to start using the data AS IT IS but providing information about the overall quality for that certain dataset. WHEN that dataset then is being used and there is a demand for higher quality those parties wanting that higher quality might consider adding funding to the data provider in order to raise the quality. VERY FEW data providers will just for the good sake put money into providing high quality data to third parties. Most organization has often not even fundings enough to maintain the data they need themselves."

In a close cooperation with other data suppliers, and end users of these data. We have a close cooperation on specific data in the Oslo area. Cooperation is essential.

"Feed back from users (eg taxi drivers who use the ISA system provides valuable feedback).

Delivery checks ("embedded" in the process) when delivering data to national databases (i.e. traffic regulations RDT and data to NVB).

Quality monitoring can help to develop the delivery process.

A portal may be able to offer tools for quality control.

Quality work requires resources - financial and human resources."

Metadata

Have you added any metadata to your road safety attribute data?

Yes (42%)

Please specify what metadata:...

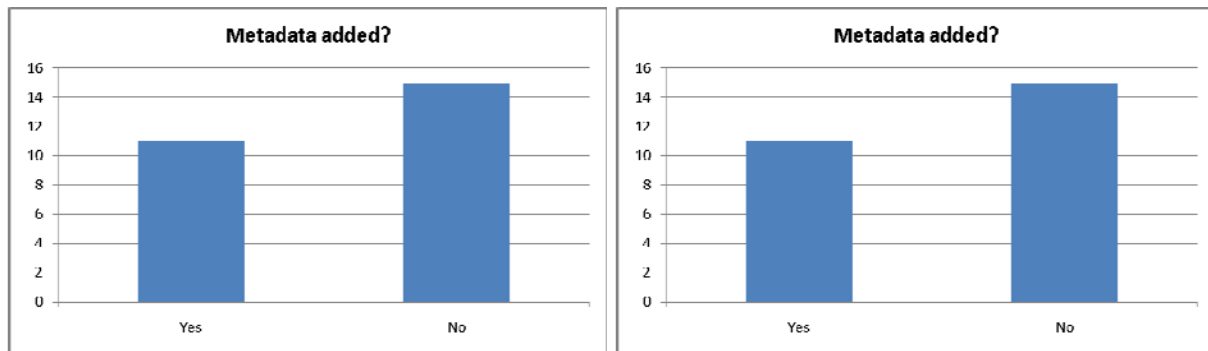
No (58%)

Are you planning to add metadata in the near future?

Yes (57%)

No

(43%)



Existence of metadata.

Planning to add metadata type:

Lineage is specified.

Update date - position accuracy

Specifications concerning referencing of location, time, etc

Basic metadata that is mandated by inspire

Cf. based on EN ISO 19115 and ISO/TS 19139 as specified by the overall framework of Ministry (ADÉ-LIE))

Too much data to list here. There are whole databases connected to the digital road networks with a great variety of data.

Validity, Geographic correctness

By whom, when, collection method, etc.

Benefits/drawbacks

In your opinion will other ongoing projects benefit from the work in Rosatte?

Yes (84%)

How?

Learned experiences/increased competence

Shared costs

Shared tools/applications

Shared organisation for collection and storing of data

Other...

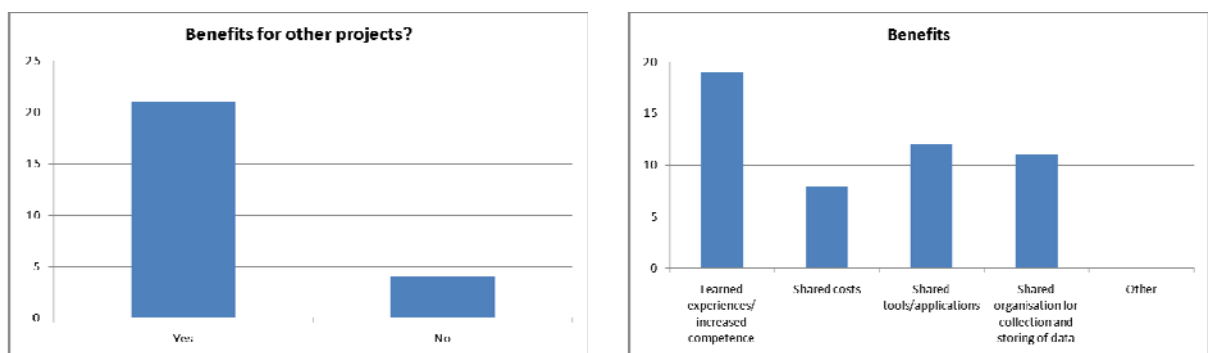
No (16%)

Please

specify

why

not



Benefits

Reasons why not:

Accuracy (and/or data generalization) is depending on the purpose for collecting data in the first place, and the purpose is given by legislation.

Not known at present which, if any other projects may be relevant.

Common central data storage is not anything new. It might be that some organizations might have some use for knowledge or tools provided in this project but many organizations already have tools and systems and there are many existing solutions in the market. So this side of the project is not likely to be the largest benefits of this project. Many similar projects have primarily contributed to the IT suppliers involved unless there was a VERY specific goal already from the start to produce something of common interest meeting demands that wasn't solved before.

Additional work on the same topic

Will third parties be asked to pay to use the data?

Yes (58%)

What model for payment is your organisation considering?

Payment according to:

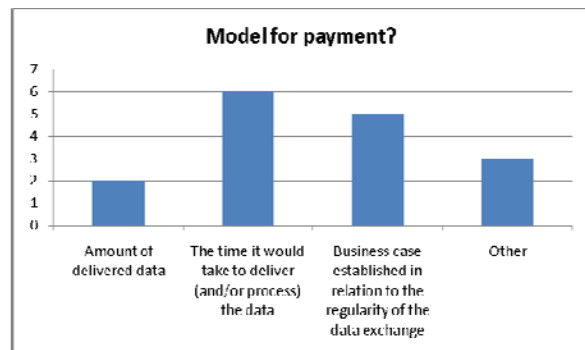
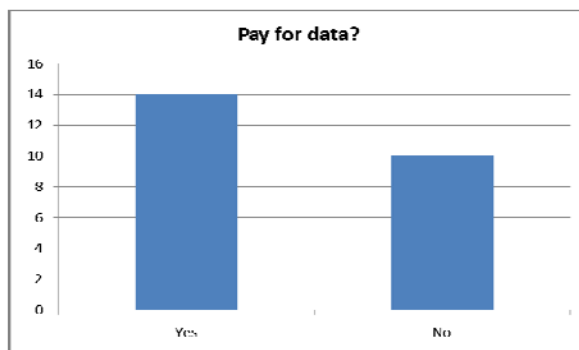
amount of delivered data

the time it would take to deliver (and/or process) the data

business case established in relation to the regularity of the data exchange

Other

No (42%)



Payment models.

Description of payment model:

Payment probably only for Elveg dataset (road network, speed limit, height restrictions, turning restrictions, one way street)

It is possible that some parties will need to pay for the use of some kind of data, but this still needs to be determined for Flanders. The agency of roads and traffic is prepared to provide the information for free, but this is no guarantee that it will be decided this way.

Implementation of ITS Action Plan can change the policy.

Depending on legislation.

It depends on usage purposes /commercial, non commercial

Although still under consideration, there may be a charge to prevent ambiguous/overly elaborate requests

Feedback

Please feel free to add a comment about the survey:...

I hope it will be very useful for the traffic safety specialist of the EU.

Maybe this questionnaire should be answered by only one person within NPRA (responsible for policies).

I answered the questionnaire for the Flemish government, Department Mobility and Public Works

Some comments: Q-19 "Do you live up to the quality demands in the data specifications you use?" YES Partly!!

We do not know how we fulfil the demands from map providers documented in the product specification for ROSATTE (as it has not been specified).

Northern Ireland Roads Service has not made a decision to be involved in this project.

We are interested to get more information and news about the state of the ROSATTE project and the main findings and results.

Question 25 - not yet considered

The questionnaire more relevant to another LRA division - Traffic Safety Division, but not for Traffic Information and Management Division.

No apparent means of saving the survey data to continue later or to check back on responses. With regard to the question on "delivering data to a central data store would the availability of data of neighbouring administrative divisions (municipality, county, region, country) be a benefit/incentive for delivering data" TS responds that, "apart from at the immediate vicinity of the interfaces between the national Trunk Roads and the local roads such information would be superfluous to requirements and could encumber the functioning of SERIS." and to the question on "The road safety attributes discussed are being of importance for the activities of several actors. In your country, are you aware of demands from third party companies or organisations wanting to use road safety attributes, and which would be interested in a near-permanent update of the data?" it has not been possible to ascertain what requests have been made. It may be possible to do so if a response is necessary and to the question on "planning to add metadata in the near future" the answer is "Possibly to UK Gemini 2 standards."

Well. It is rather hard to make a questionnaire that will fit all organizations that is being asked. Also the questionnaire might require knowledge in the specific field of Road Safety that is just a small sector of all data concerning road and traffic.

Anyhow: Thx for the survey and wish you the best of luck with your project!

3.2 Map Providers, Service Providers and Others

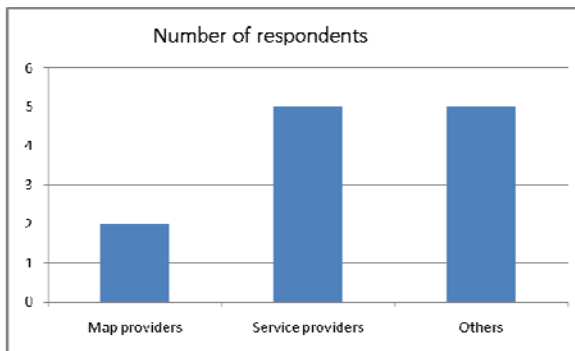
Administration

Are you representing a

Map provider

Service provider (e.g. software)

Other (e.g. car manufacturer, end user organisation)



Number of respondents - Map Providers, Service Providers and Others

There were two answers from TeleAtlas and one from Navteq. As the answers from TeleAtlas only differed in a couple of responses with free text the answers were analyzed as coming from two mapproviders (both comments from TeleAtlas are taken into consideration).

Geoportal or other data store

Several advantages can be found by setting up a central data store. In your opinion, what benefits can you see from a joint effort between road authorities, map makers or other parties in setting up a ROSATTE data store?

Easier access to data

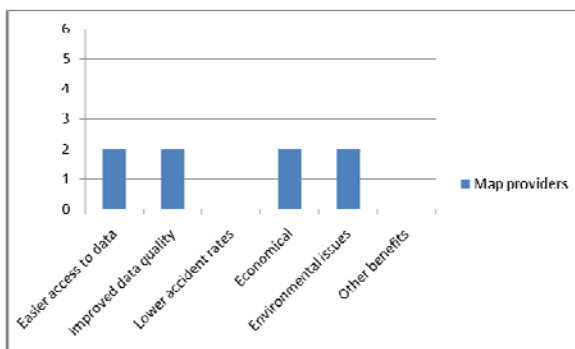
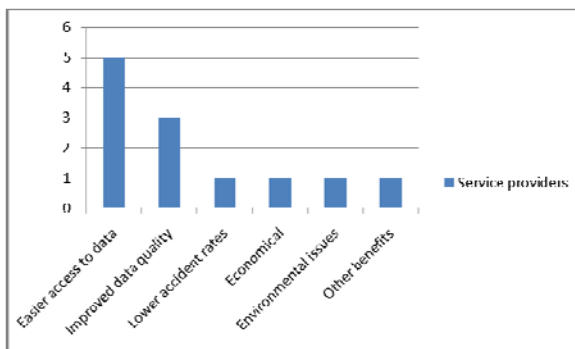
Improved data quality

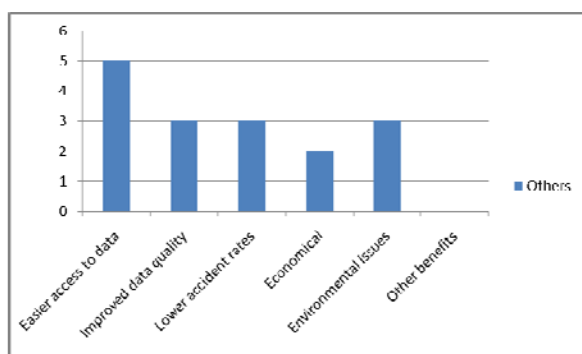
Lower accident rates

Economical

Environmental issues (e.g. lower fuel consumption)

Other benefits...





Benefits found by setting up a geoportal (central data store).

Comments given to "Other benefits"

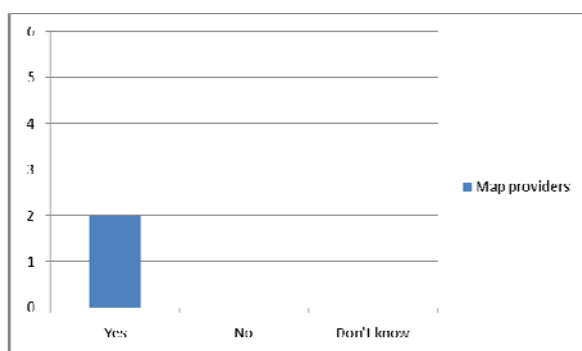
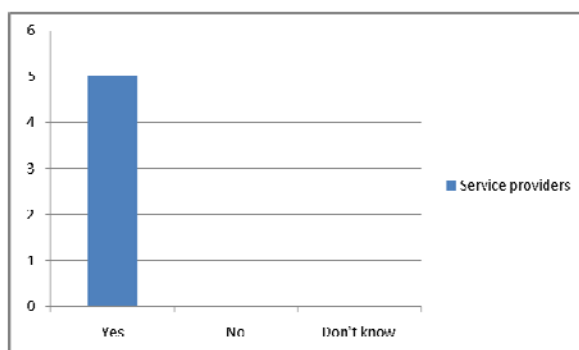
Easier access to data will hopefully result in lower accident rates and more environmental navigation in the long run

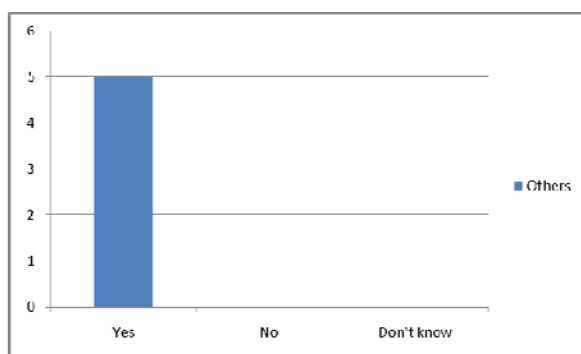
Would a geoportal be of help when searching for data instead of having to turn to several organisations (or other organisations than your own) in a country/countries to harvest the data needed?

Yes (Map Provider 100%, Service providers 100%, Others 100%)

No, because... (Map Providers 0%, Service providers 0%, Others 0%)

Don't know (Map Providers 0%, Service providers 0%, Others 0%)





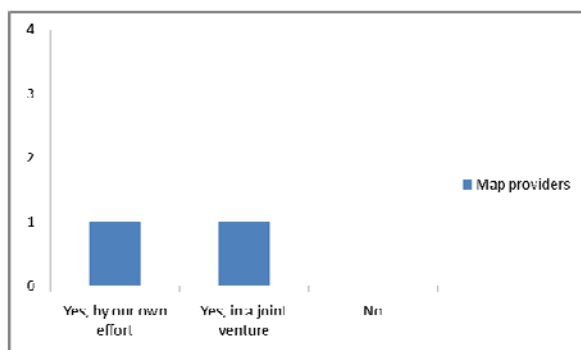
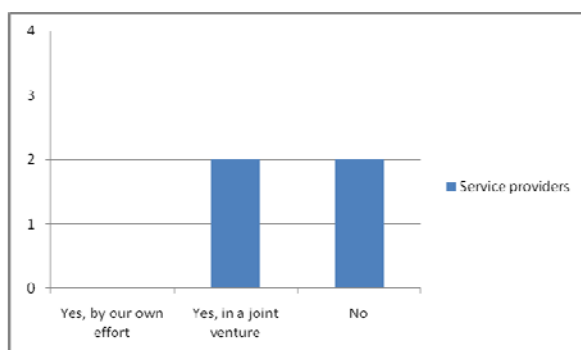
Geoportal as help when searching for data.

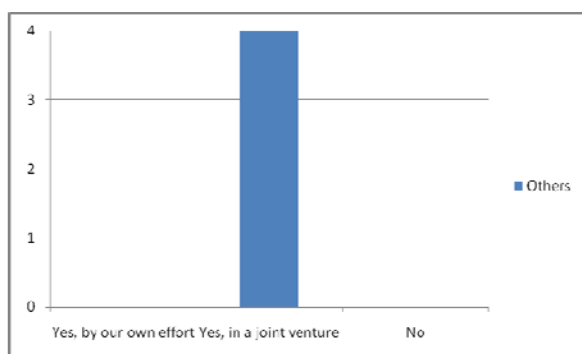
Would you be interested in building a geoportal either by your own effort or in a joint effort with other authorities, map providers or software providers?

Yes, by our own effort (Map Provider 33%, Service providers 0%, Others 0%)

Yes, in a joint venture (Map Providers 67%, Service Providers 50%, Others 100%)

No, because.... (Map Providers 0%, Service Providers 50%, Others 0%)





Interest in building a Geoportal.

Comments on "Interest in building a Geoportal":

No, because we perceive ourselves mostly as users of the data for different services not as providers.

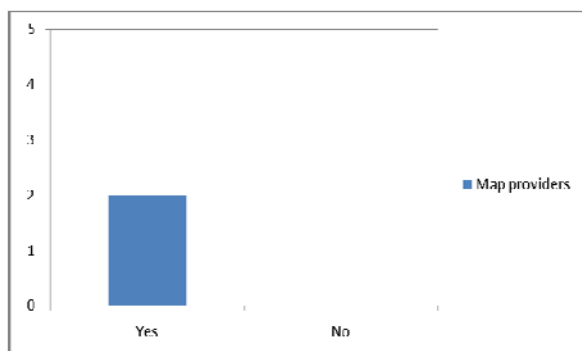
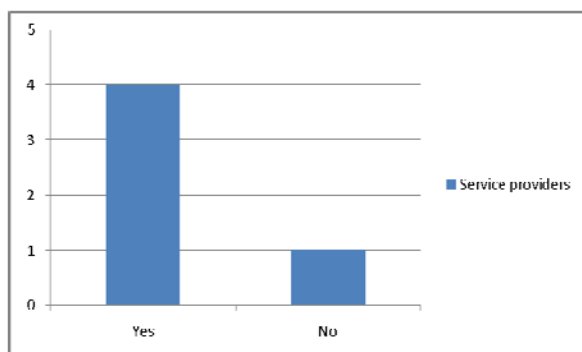
We are a road safety association. It's not our job to build

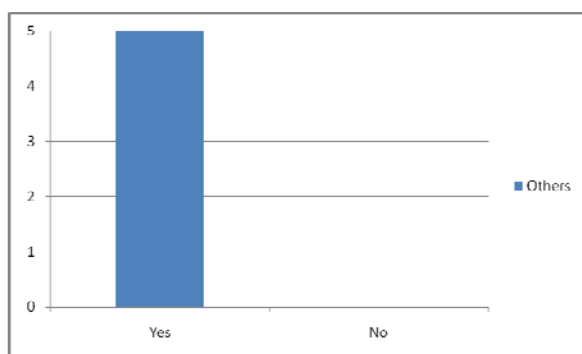
Data quality

Do you have specific demands in data specifications on thematic accuracy (attribute value correctness)?

Yes (Map Providers 100%, Service Providers 80%, Others 100%)

No (Map Providers 0%, Service Providers 20%, Others 0%)



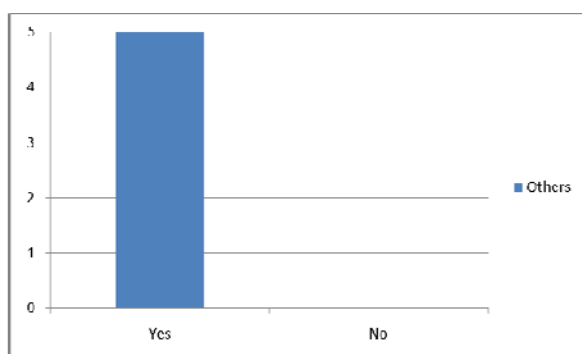
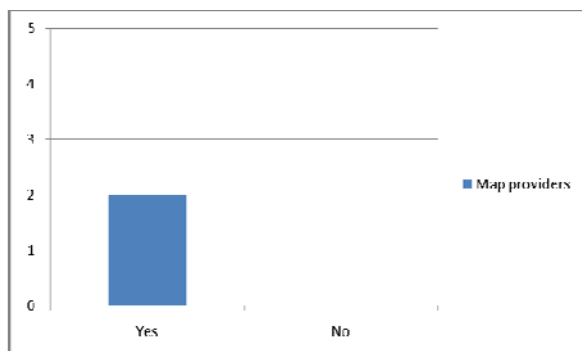
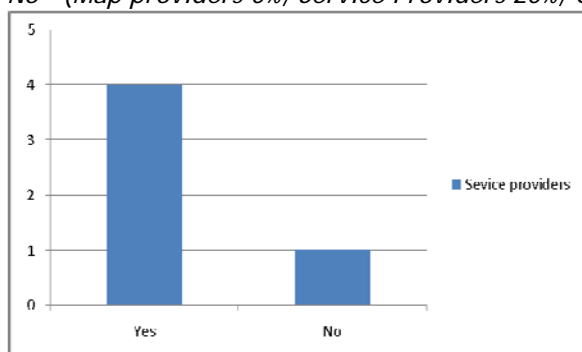


Specific demands on thematic accuracy.

Do you have specific demand in data specifications on position accuracy?

Yes (Map Providers 100,% Service Providers 80%, Others 100%)

No (Map providers 0%, Service Providers 20%, Others 0%)



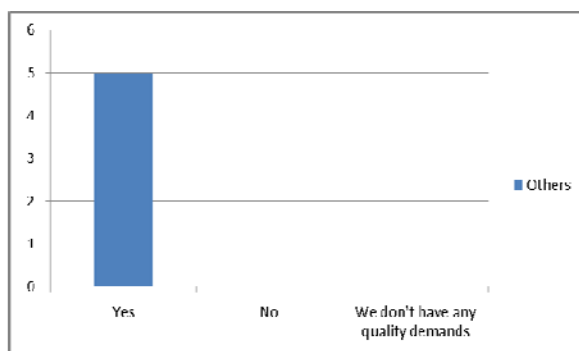
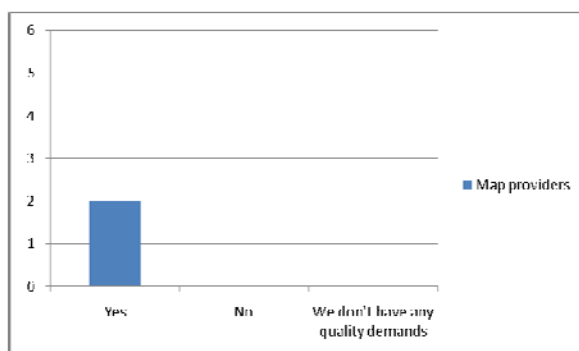
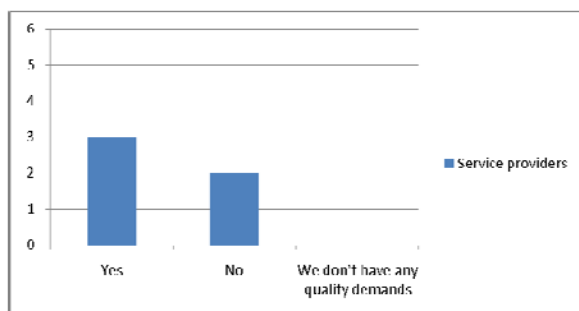
Specific demands on position accuracy.

Do you live up to the quality demands in the data specifications you use?

Yes (Map Providers 100%, Service Providers 60%, Others 100%)

No (Map providers 0%, Service Providers 40%, Others 0%)

We don't have any specifications on quality (Map providers 0%, Service Providers 0%, Others 0%)



Ability to meet quality demands in data specifications.

Do you feel that there will be differences in data quality depending on if the data is available free of charge or not?

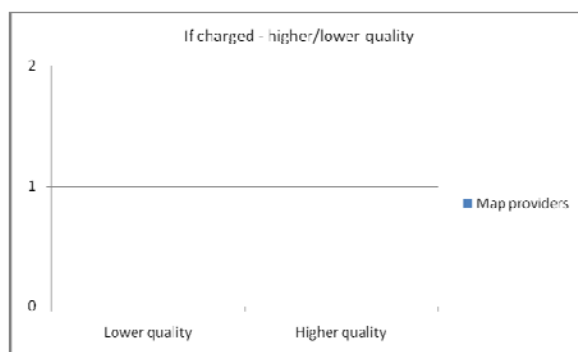
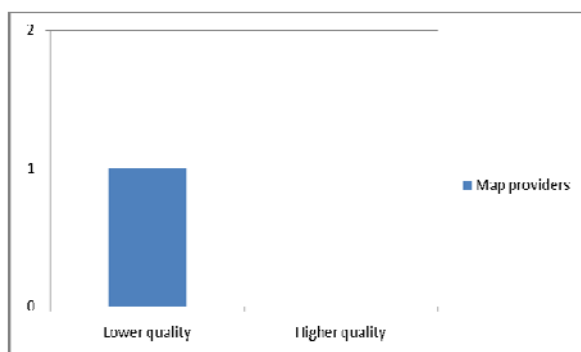
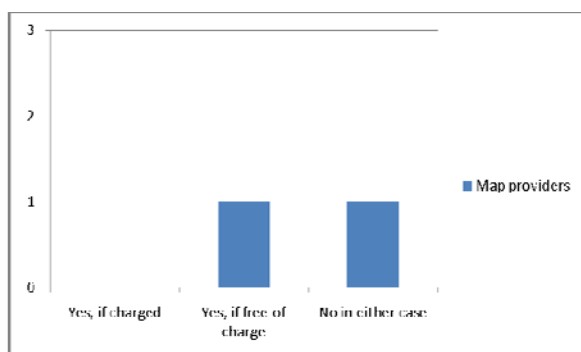
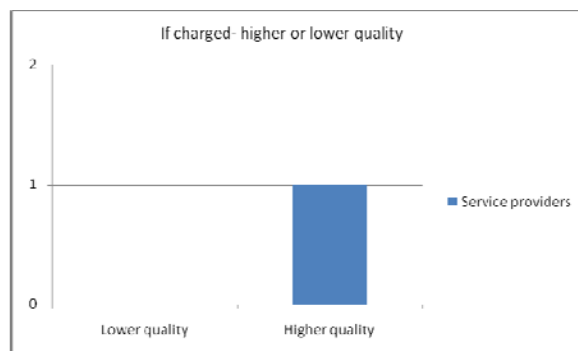
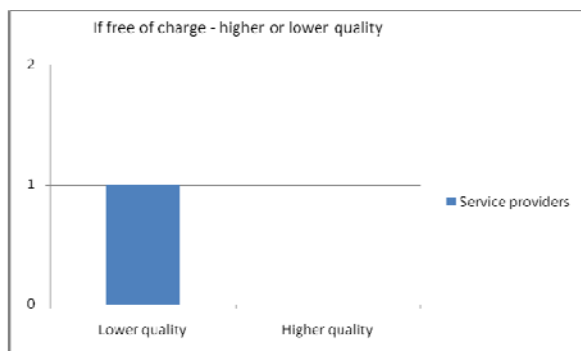
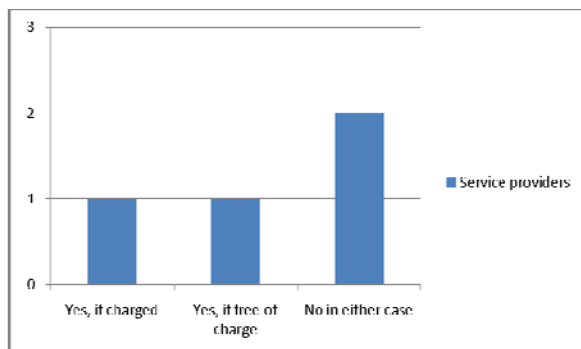
No in either case

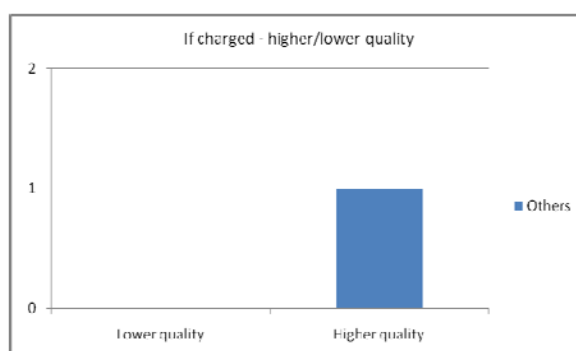
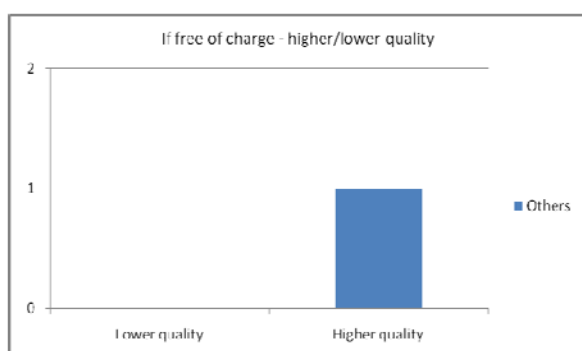
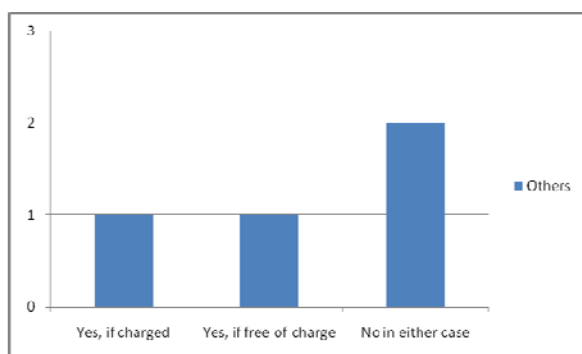
Yes, if free of charge

Higher quality

Lower quality

Yes, if charged
Higher quality
Lower quality





Dependence between data quality and cost for data.

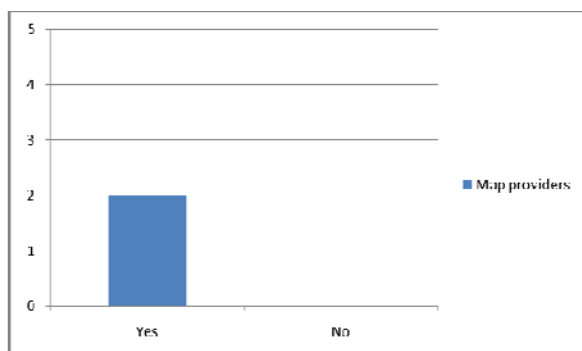
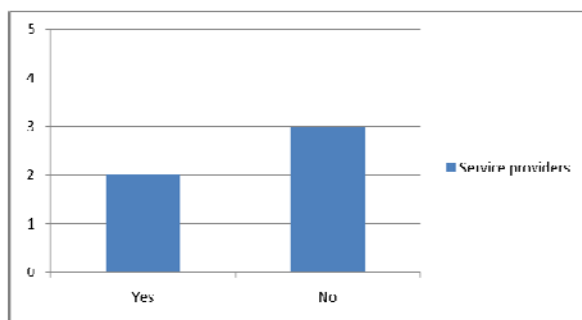
Have you decided to comply to a certain map database standard?

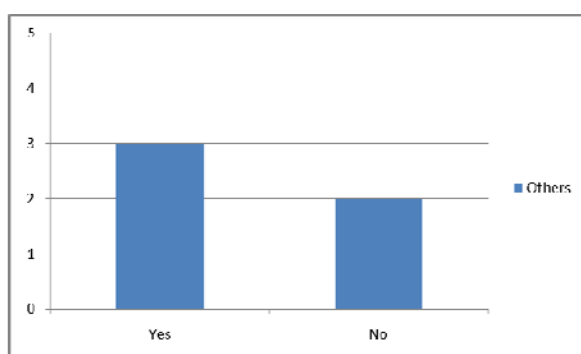
Yes (Map providers 100%, Service providers 40%, Others 100%)

Which one?

No (Map providers 0%, Service Providers 60%, Others 0%)

Why? Which exchange method/format do you use to manage geographical data?





Use of map database standards.

Comments on "Map database standards mentioned":
That provided by the big two map providers and ISO191xx

Comments on "Exchange method/format used":
use of different data management methods
Currently we maintain our own map database standard but we are also adapting other sources/standard (Open street map, GDF)
Depends on the format used by who delivers the data

Feedback on the survey

Service providers' comments about the survey:
The possible use of ROSATTE interface directly from ITS applications should be investigated.
Generally, we feel it is crucial to open up accessibility to data before putting too much quality requirements to the data. Viable and cheap methods for exchange network references between different map databases remain a major blockage to the access and use of data. So far, only exchange on merely geographic level is standardised.

APPENDIX 5 : Working models and legal aspects

This appendix gives a detailed overview of three possible working models for ROSATTE, currently in application in different parts of Europe:

1. State/local government controls (in use in Sweden and Flanders)
2. Service delegations (in use in Bavaria)
3. Public Private Partnership (in use in France)

1. State/local government controls - Sweden and Flanders

Two cases of state/government control will be described in this section: case of Sweden (1.1) and case of Flanders (1.2).

1.1 Case of state/local government controls - Sweden case

Swedish Transport Agency and Swedish Transport Administration are coordinating the Swedish national road database (NVDB) and the Swedish national database of traffic regulations (RDT). Descriptions of how these two databases work are provided in this section.

1.1.1 NVDB - The Swedish national road database

NVDB stands for the Swedish national road database and is the result of a government commission that the Swedish Road Administration got in 1996. NVDB includes a reference network and a large amount of data, features, connected to the network. It is used by both public and private actors.

The Swedish Transport Administration is the responsible authority for NVDB.

NVDB is operated in cooperation between the Swedish Transport Administration, Swedish municipalities and county councils, the forestry industry, the Swedish Transport Agency and the Swedish mapping, cadastral and land registration authority.

The NVDB activities are organized on the basis of a workflow - a process - that include the following main elements:

- **Collect and up-date data**
Data is collected and up-dated in collaboration between the cooperating parties - the Swedish Transport Administration is responsible for the coordination of the work needed.
- **Compile data**
The data is compiled, quality declare and stored in a central national road database operated by the Swedish Transport Administration.
- **Provide data/information**
The data/information is to be provided to meet the need for basic road data. Public and commercial operators are all able to use basic road data for their purposes without discrimination.

1. Motivation for collaborating in the working model

The government commission states that the operation of NVDB shall be consistent with demands and needs of all parties.

The NVDB Council is a joint forum, for the parties of NVDB, whose task is to deal with important issues concerning the operation and development of NVDB.

Increased availability, usage and quality of data are some of the most important benefits identified that motivates the participants to collaborate. Better use of data collected using public funding is also a comprehensive justification for collaboration.

The workflow - the process - also provides benefits such as quality controls (at data delivery) and ability to use of common routines to make data available to users.

2. Role of each actor in the system's creation phase

Roles according to D1.2 chapter 4.1 table 2.

Actor	Role				Comments
	Enacting Authority	Data Provider	Data Store Operator (local, regional)	Data Store Operator (national - NVDB)	
Swedish Transport Administration	X	X		X	
Swedish municipalities	X	X	X		A handful of selected municipalities participated as test partners in the creation phase.
Forestry industry		X	X		Participated as test partners in the creation phase.
Swedish Transport Agency	X	X		X	Data store operator of national database of traffic regulations.
Swedish mapping, cadastral and land registration authority		X			Supplier of road network data (and to some extent even road data) for road operators with which SRA had not yet established data supply agreements.

3. Role of each actor in the operation phase

Roles according to D1.2 chapter 4.1 table 2.

Actor	Role				Comments
	Enacting Authority	Data Provider	Data Store Operator	Data Store Operator (national -	

			(local, regional)	NVDB)	
Swedish Transport Administration	X	X		X	
Swedish municipalities	X	X	X		
Forestry industry		X	X		
Swedish Transport Agency	X	X		X	Data store operator of national database of traffic regulations.
Swedish mapping, cadastral and land registration authority		X			Still supplier of road network data (and to some extent even road data) for some road operators where data supply agreements still needs to be established.

4. Advantages/disadvantages of being involved in the working model for each actor

Actor	Advantages	Disadvantages
Swedish Transport Administration	<ul style="list-style-type: none"> • Common definitions for road data. • Common exchange formats. • Better use of data collected using public funding. • Better cooperation between actors contributing to the data chain. 	<ul style="list-style-type: none"> • Complex data chain from local authorities to the data store operator on national level. • Requires a solid business model. • May cause problems financially in the long run.
Swedish municipalities	<ul style="list-style-type: none"> • Common definitions for road data. • Common exchange formats. • Better use of data collected using public funding. • Increased access to data from neighboring municipalities and other road operators. 	<ul style="list-style-type: none"> • Complex data chain from local authorities to the data store operator on national level. • Requires a solid business model.
Forestry industry	<ul style="list-style-type: none"> • Common definitions for road data. • Common exchange formats. 	<ul style="list-style-type: none"> • Complex data chain from local parties to the data store operator on national level. • Requires a solid business

	<ul style="list-style-type: none"> Increased access to data from other road operators needed to manage the transport requirements of the forest industry. 	model.
Swedish Transport Agency	<ul style="list-style-type: none"> Common definitions for road data. Common exchange formats. Better use of data collected using public funding. 	<ul style="list-style-type: none"> Complex data chain from local authorities to the data store operator on national level. Requires a solid business model.
Swedish mapping, cadastral and land registration authority	<ul style="list-style-type: none"> Common definitions for road data. Common exchange formats. Better use of data collected using public funding. 	<ul style="list-style-type: none"> Complex data chain from local authorities to the data store operator on national level. Requires a solid business model.

1.1.2 RDT - The Swedish national database of traffic regulations

A directive from the Swedish government stipulates that a number of authorities (specifically the Road Administration, 21 regional authorities and 289 local municipalities) has to enter their traffic regulations into a database, and at the same time making them officially announced on a specific web site. The Swedish Transport Agency is responsible for the IT-application including the database and the web site. The directive enters into force on 1st July 2010.

Traffic regulations not published on the website are not valid. This makes it simple concerning the completeness - the system covers all valid traffic regulations. Either in advance or after the traffic regulation has entered into the database, key attributes (i.e. speed limit) are extracted from the regulation document and stored in a separate area. Also a connection to the digital road network based on the National Road Data Base is done.

In a second step the structured data for each traffic regulation is processed by the Swedish Transport Agency into applicable traffic rules. The result will be features (traffic rules) connected to the National Road Data Base.

The Swedish Transport Agency in cooperation with the Swedish Transport Administration provides a system for final distribution of the traffic rule data to end users, application providers and others. The system for dissemination is planned to be in operation from January 2012.

1. Motivation for collaborating in the working model

As there is a law in Sweden prescribing that all traffic regulations must be delivered to the national database of traffic regulations (RDT) - and the RDT database is operated by the Swedish Transport Agency - the problem of motivation has been solved.

2. Role of each actor in the system's creation phase

Roles according to D1.2 chapter 4.1 table 2.

Actor	Role				Comments
	Enacting Authority	Data Provider	Data Store Operator (national - NVDB)	Data Store Operator (national - RDT)	
Swedish Transport Agency	X	X		X	Data store operator of national database of traffic regulations.
Swedish Transport Administration	X	X	X		Data store operator of NVDB which is the database that holds traffic rules resulting from traffic regulations.
Swedish municipalities and Swedish county administrative boards	X	X			A handful of selected representatives of each stakeholder group participated as test partners in the creation phase.
Local Swedish police authorities	X	X			A handful of selected representatives of each stakeholder group participated as test partners in the creation phase.

3. Role of each actor in the operation phase

Roles according to D1.2 chapter 4.1 table 2.

Actor	Role				Comments
	Enacting Authority	Data Provider	Data Store Operator (national - NVDB)	Data Store Operator (national - RDT)	
Swedish Transport Agency	X	X		X	Data store operator of national database of traffic regulations.
Swedish Transport Administration	X	X	X		Data store operator of NVDB which is the database that holds traffic rules resulting from traffic regulations.
Swedish municipalities and Swedish county admin-	X	X			

istrative boards					
Local Swedish police authorities	X	X			

4. Advantages/disadvantages of being involved in the working model for each actor

Actor	Advantages	Disadvantages
Swedish Transport Agency	<ul style="list-style-type: none"> Nationally uniform handling of traffic regulations. Completeness <ul style="list-style-type: none"> All traffic regulations gathered in a national database. All traffic regulations officially announced on a specific web site. The resulting traffic rules connected to the national Road Data Base (NVDB). 	<ul style="list-style-type: none"> Complex data chain from local parties to the data store operator of traffic regulations (RDT) on national level.
Swedish Transport Administration	<ul style="list-style-type: none"> Nationally uniform handling of traffic regulations. Quality assured data supply of traffic rules to NVDB. 	<ul style="list-style-type: none"> Complex data chain from local parties to the data store operator of traffic rules (NVDB) on national level.
Swedish municipalities and Swedish county administrative boards	<ul style="list-style-type: none"> Nationally uniform handling of traffic regulations. 	
Local Swedish police authorities	<ul style="list-style-type: none"> Nationally uniform handling of traffic regulations. 	

1.2 Case of state/local government controls - Flanders case

Traffic sign database Flanders

The traffic sign database of Flanders contains all traffic signs along all roads in Flanders (the regional roads, highways, municipal roads).

This traffic sign database was made using the mobile mapping technology. The Flemish government has financed the development of this database.

Each respective road authority is responsible for keeping the database up to date.

1. Motivation for collaborating in the working model

The legislation on the Belgian road network is an authority of the federal government. However, the competence of the construction, the maintenance and management of the roads is assigned to the 3 regional governments (the Flemish region, the Brussels Capital region and the Walloon region), the provinces and the cities and municipalities. The regions are responsible for the motorways, highways, the regional and the main secondary roads. The provincial roads are partially secondary roads, and partially local roads. The rest of the road network is for the cities and municipalities.

In Flanders, it is planned in the coming years to divide all the provincial roads among the Flemish region (secondary roads) and the cities and municipalities (local roads).

2. Role of each actor in the system's creation phase

Roles according to D1.2 chapter 4.1 table 2.

Actor	Role				Comments
	Enacting Authority	Data Provider	Data Store Operator (local, regional)	Data Store Operator (national - NVDB)	
Flemish Ministry, Department Mobility and Public Works	X	X	X		
Flemish Ministry, Agency for Roads and Traffic	X	X	X		
Flemish Municipalities					

3. Role of each actor in the operation phase

Roles according to D1.2 chapter 4.1 table 2.

Actor	Role				Comments
	Enacting Authority	Data Provider	Data Store Operator (local, regional)	Data Store Operator (national - NVDB)	
Flemish Ministry, Department Mobility and Public Works	X	X	x		
Flemish Ministry, Agency for	X	X	X		

Roads and Traffic					
Flemish Municipalities	X	X	X		

4. Advantages/disadvantages of being involved in the working model for each actor

Actor	Advantages	Disadvantages
Flemish Ministry, Department Mobility and Public Works	<ul style="list-style-type: none"> Supporting and facilitating several operational processes for the road authorities (Design; Management; Traffic Management; Drawing up and control 'Supplementary regulations') Providing an overview on the actual situation of the traffic signs along all Flemish roads using the central data store Providing basic data for all kinds of purposes (Traffic guidance; Speed maps; Intelligent Transport Systems; Correlation parameters; Asset management) 	<ul style="list-style-type: none"> Cost of the implementation project Maintenance costs
Flemish Ministry, Agency for Roads and Traffic	<ul style="list-style-type: none"> Supporting and facilitating several operational processes for the road authorities (Maintenance and reparation; Design; Management; Follow-up of contracts); Providing an overview on the actual situation of the traffic signs along all Flemish roads using the central data store Providing basic data for all kinds of purposes (Speed maps; Intelligent Transport Systems; Correlation parameters; Asset management) 	<ul style="list-style-type: none"> Cost of the implementation project Maintenance costs
Flemish Municipalities	<ul style="list-style-type: none"> Supporting and facilitating several operational processes for the road authorities (Maintenance and reparation; Design; Management; Traffic Management; Follow-up of contracts; 	<ul style="list-style-type: none"> Maintenance costs

	Drawing up and control 'Supplementary regulations') <ul style="list-style-type: none"> • Providing an overview on the actual situation of the traffic signs in the neighbouring municipalities using the central data store • Providing basic data for all kinds of purposes (Traffic guidance; Speed maps; Intelligent Transport Systems; Correlation parameters; Asset management) 	
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2. Case of service delegation - France

Description of the French motorways service delegation

French private motorway companies are in charge of more than 8 500 km of the French motorway network under the rule of public service delegation. More precisely, private motorway companies are bound to the State by concession contracts. It means that motorways all belong to the French state but are granted to private companies. All operations of management and all investments are done by the motorway companies, and they pay themselves by applying a fee to the drivers using the motorway. The amount of the fee is defined in the service delegation contract.

Speed limit regulation and management

A speed limit regulation always outcomes from a local public authority ("département" = county). However, motorway companies can be associated to the decision of a regulation, and concretely motorway companies are (nearly) always at the origin of the regulation by proposing the speed limits to be applied.

A motorway company is responsible of the speed limit signs on its network. Each private motorway company manages its own speed limits database (different software and various internal formats).

Centralization of speed limits

ASFA is the association which gathers French private motorway companies.

In 2006 ASFA managed to start building up a national motorway speed limits database.

The central data store is operated by Autoroutes Trafic, a company which belongs to the nine most important French private motorway companies and which is already in charge of traffic data collection and delivery to service providers.

Even though ASFA focuses in the first place on speed limits, other safety attributes can be provided using the same mechanisms. This is included in their roadmap.

1. Motivation for collaborating in the working model "Service Delegation"

French Transport Administration grants the management and the extension investments of the motorway network to private companies. Thus they do not handle the maintenance of the network and the related investments. Motorway companies get the grant of the network for 20 or 30 years which allow them to build long term business models. Beside that

they owe a public services mission to the French Transport Administration; one of these services is to take actions for the improvement of road safety.

ASFA is the common voice of French motorway companies for the study of user's safety aspects and drives private motorway companies' common policy regarding safety aspects. Given the implication of motorway companies in ASFA, their collaboration to safety related projects is rather easy to obtain. Once ASFA has committed itself to tackle certain subject to the French State, its members (the motorway companies) take action to deal with this subject.

The will to tackle a subject can also come directly from a motorway company. In this case the collaboration of other companies can be more difficult to gain.

Autoroutes-Trafic is the frontend company of the system. It is the one who collects the data from all motorway companies and who can deliver up-to-date data to third parties. It is the one who builds up the business model regarding traffic data delivery or safety attributes delivery.

As Autoroutes-Trafic is a subsidiary of motorway companies, it also makes things easier to get collaboration from all parts. For example in the case of speed limits database management, all motorway companies provide static speed limits data to Autoroutes-Trafic to feed a central database.

2. Role of each actor in the system's creation phase

The only difference between creation and operation is that ASFA stops acting as data provider and local data store operator once the service has been started.

- French Transport Administration
 - Enacting authority
- Local registration authority(county)
 - Enacting authority
- Motorway companies
 - Enacting authority, Data provider, Local data store operator
- ASFA / Autoroutes-Trafic
 - Data provider, Local data store operator, Data store operator

ASFA originated the collection of speed limits information by motorway companies and its centralization through the Autoroutes-Trafic entity.

Roles according to D1.2 chapter 4.1 table 2.

Actor	Role					Comments
	Enacting Authority	Data Provider	Local Data Store Operator (motorway company)	Data Store Operator	Information Provider	
French Transport	X					

Administration						
Local registration authority(county)	X					
Motorway companies	X	X	X			
ASFA / Autoroutes- Traffic		X	X	X		ASFA and Autoroutes Traffic managed to convince motorway companies of the need to collect and centralize the speed limits information

3. Role in the operation phase

- Local registration authority(county)
 - Enacting authority
- Motorway companies
 - Enacting authority, Data provider, Local data store operator
- ASFA / Autoroutes-Traffic
 - Data store operator

Roles according to D1.2 chapter 4.1 table 2.

Actor	Role					Comments
	Enacting Authority	Data Provider	Local Data Store Operator (motorway company)	Data Store Operator	Information Provider	
French Transport Administration						
Local registration authority (county)	X					
Motorway companies	X	X	X			
ASFA / Autoroutes- Traffic				X		

4. Advantages/disadvantages of being involved in the working model "Service delegation"

Each actor can find advantages and disadvantages in the case of public service delegation:

French Transport Administration

Advantage: Still owns the motorways but is not in charge of the network maintenance and does not make any investment

Disadvantage: No control on the motorway companies management and organisational aspects

Local registration authority (county)

Advantage: The one who takes the decision of the speed limits regulations on the motorway network

Disadvantage: No other role than taking the decision

Motorway companies

Advantage: Users pay a fee for the use of the motorway network and services. Motorway companies' business model is built on it

Disadvantage: - Motorway companies have to do all financial investments

- Under the rule of the French Transport administration

- Business model built over 20, 30 or 50 years

- The public authority can ask for the ASFA safety attributes database for free as a part of the services owed by motorway companies

ASFA

Advantage: - Drives private motorway companies' common policy regarding safety aspects

- Is the common voice of motorway companies when discussing road safety issues with French transport administration

- Is the team leader in road safety European projects

Disadvantage: - Needs to make investments to build up and maintain the central data store

- Must convince motorways companies to stick to the project

- Hard work to keep up their motivation all the way long

Autoroutes-Traffic

Advantage: In charge of the central data store and data supplier for third parties. The one who can build a business model that would generate incomes for motorway companies and itself

Disadvantage: - Long process before providing data with full coverage to third parties

- Can initiate some strategy that will be rejected by the motorway companies

→ Its strategy is dependent on motorway companies' will

Actor	Advantages	Disadvantages

French Transport Administration	Still owns the motorways but is not in charge of the network maintenance and does not make any investment.	No control on the motorway companies management and organisational aspects.
Local registration authority (county)	The one who takes the decision of the speed limits regulations on the motorway network	No other role than taking the decision.
Motorway companies	Users pay a fee for the use of the motorway network and services. Motorway companies' business model is built on it.	<ul style="list-style-type: none"> - Motorway companies have to do all financial investments - Under the rule of the French Transport administration - Business model built over 20, 30 or 50 years - The public authority can ask for the ASFA safety attributes database for free as a part of the services owed by the motorway companies.
ASFA	<ul style="list-style-type: none"> - Drive the private motorway companies common policy regarding safety aspects - The common voice of motorway companies when discussing road safety issues with French transport administration - The team leader in road safety European projects 	<ul style="list-style-type: none"> - Need to make investments to build up and maintain the central data store - Must convince the motorways companies to stick to the project - Hard work to keep up their motivation all the way long
Autoroutes-Traffic	In charge of the central data store and data supplier for third parties. The one who can build a business model that would generate incomes for motorway companies and itself.	<ul style="list-style-type: none"> - Long process before providing data with full coverage to third parties - Can initiate some strategy that will be rejected by the motorway companies → Its strategy is dependent on motorway companies' will

3. *Case of public-private partnership - Bavaria*

1. *What is the motivation to the actors to engage in this collaboration model*

Central (road) authority	<ul style="list-style-type: none"> • Ensure with limited funds (in money and personnel) public functions, (which are not considered as core). In the case of ROSATTE, in particular of road data maintenance system operation and maintenance (for use by local enacting authorities) are the subject of 'outsourcing'. • Avoid build-up of additional, administrative capacity (with long term obligations) in times of budget scarcity • Public funding is focused on financing build-up phase of the data maintenance system (specification, development, implementation) according to predefined requirements. Some funding may be reserved to basic maintenance operations, where PPP-
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	<p>entity cannot generate own revenues.</p> <ul style="list-style-type: none"> • Expectations are that PPP-entity can bring in own assets (specific technology) and that will generate own revenues from the ppp activities. This implies that public funding needed may be lower than if build-up/operations were ensured by the public body itself.
Solution/Provider	<ul style="list-style-type: none"> • Availability of initial funding and sheltered market for longer term technological developments • By bringing own resources (technological, • Achieve a competitive advantage compared to the competitors • Chance to enter advantageous role for the supply of products and services in the region concerned
enacting authority	<ul style="list-style-type: none"> • Enacting authorities (on the ground) are not directly involved in the PPP. They are considered as users/customers of the system which operated under the ppp model

2. What is the role in the build-up phase?

Central (road) authority	<ul style="list-style-type: none"> • Central authority provides technical and organizational requirements on the system to be designed and operated • CA ensures access to other public resources needed for the PPP access (e.g. access to data ...) • CA provides funds for the build-up phase of the data maintenance system (specification, development, implementation) according to predefined requirements. • CA checks and approves the system implementation; • CA sets further conditions, rules and requirements for the operation phase (e.g. access conditions to ppp services for EA);
Solution/Provider	<ul style="list-style-type: none"> • Builds system and establishes organizational setup for the operations of the PPP and the system
Enacting authority	<ul style="list-style-type: none"> • Individual EAs are involved in the pilot operation phase for functional and acceptance tests

3. What is the role in the operation phase?

Central (road) authority	<ul style="list-style-type: none"> • Some funding by CA may be reserved to basic maintenance operations, where the PPP-entity cannot generate own revenues. • CA checks whether operational requirements are kept • No further involvement of CA outside agreed contributions during operation phase
Solution/Provider	<ul style="list-style-type: none"> • Operates system, markets ppp offerings to EA • May create further offerings on a commercial basis to customers
enacting authority	<ul style="list-style-type: none"> • Uses system

4. What are advantages/disadvantages of the PPP model

Advantages	Disadvantages
------------	---------------

PA can conceive and foster functions operations outside the restrictions of public administration framework	Long negotiation phase, limited further development of the functions over the PPP duration time after the investment phase, lock-in to initially chosen approach over the operation time.
PA increases range of manoeuvre/reach despite budget scarcity	Ensurance of quality and service levels in PPP operations is complex
Innovative approaches can be leveraged in the technical and organizational setup of service provision to EAs	Dependency/restriction to internal assets and developments of companies involved in PPP
Private paradigm of operation phase fosters functions/offerings with direct benefits to users (=costumers)	Incentives to EA for collaboration are missing

Appendix to D6

Etude juridique *(Legal study)*

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1 - Synthèse de l'étude

Le projet Rosatte vise à établir une chaîne d'approvisionnement efficace et de qualité entre autorités publiques et fournisseurs de cartes commerciales, en ce qui concerne les données relatives à la sécurité routière. En cela, il est pleinement cohérent avec la Directive INSPIRE qui impose l'échange, le partage, l'accès ainsi que l'utilisation de données géographiques interopérables et de services de données géographiques.

La viabilité d'un tel projet suppose la maîtrise pour les fournisseurs de services à l'usager des coûts d'utilisation des informations détenues par les autorités publiques en matière de sécurité routière.

Certaines contraintes juridiques peuvent en effet peser sur le modèle économique des projets de services notamment au niveau :

- D'éventuelles redevances afférentes à la propriété intellectuelle,
 - De la responsabilité des autorités en cas de non-conformité des informations recueillies et diffusées,
 - Des conséquences de l'introduction de technologies brevetées dans le cadre de normes.
- et ce, dans le cadre de la législation communautaire et internationale.

Il convient de mesurer leurs incidences et, dans la mesure du possible, de la minimiser, ce qui a justifié la présente étude, qui traite donc de ces 3 points :

1- La propriété intellectuelle dans le domaine des technologies de l'information et de la communication a fait l'objet d'une harmonisation européenne au travers de directives conjuguant à la fois droit d'auteur et libre circulation des biens en liaison avec des conventions internationales et plus particulièrement la convention de Berne sur le droit d'auteur et les ADPIC (l'Accord de l'OMC sur les aspects des droits de propriété intellectuelle qui touchent au commerce).

Cette législation européenne va permettre sous certaines conditions, peu contraignantes, de pourvoir, échanger, partager, accéder et utiliser :

- des données géographiques, codifiées par les organisations publiques exemptes des droits d'auteur,
- des séries de données géographiques et les services de données géographiques en disposant des autorisations nécessaires des organisations publiques dans le cadre de licence contractuelle.
-

L'étude tend à préciser les principaux cas de figures potentiellement inflationnistes et un cadre légal de maîtrise des coûts.

2 - En cas de remise en cause, par une organisation publique ou privée, ou par un utilisateur, de la qualité et de la validité d'une série de données émanant d'une autorité publique, l'interprétation des textes européens et nationaux pourrait engager la responsabilité de ladite autorité.

L'étude examine les fondements de ce risque, qui nécessite de toute façon de préciser la législation européenne en la matière.

3 - L'introduction de technologies brevetées dans le cadre de normes est acceptée par l'Union européenne à condition que le Titulaire dudit brevet accepte d'octroyer des licences à des conditions équitables, raisonnables et non discriminatoires en précisant notamment les taux maximum de redevances avant l'adoption de ladite norme. Les redevances à bas prix favorisent la valorisation des technologies. L'étude propose une stratégie à l'échelle européenne, en la matière.

2 - Problématique de l'étude

2.1 - Contexte

Le projet européen Rosatte « Road safety attributes exchange infrastructure in Europe » vise à mettre au point un ensemble cohérent de préconisations techniques et organisationnelles, propres à favoriser la mise en place, dans les pays membres de l'Union Européenne, de chaînes de centralisation des informations de sécurité routière, sous la forme d'un flux collaboratif de données géoréférencées.

Ce projet qui réunit les autorités publiques de plusieurs pays et les acteurs du marché a pour vocation de résoudre les difficultés essentiellement organisationnelles, techniques ou juridiques concernant les mises à jour des attributs de sécurité dans les cartes numériques.

L'étude Rosatte encourage la mise en œuvre de bases de données centralisées intégrant des données émanant des institutions publiques et des acteurs privés.

Dans un souci d'ouverture du marché et d'interopérabilité des applications à venir, il a été choisi de faire converger le flux collaboratif de données préconisé vers un format d'échange unique, appuyé sur la norme ISO 17572-3. Certains aspects relatifs au processus de codage et décodage ont fait l'objet de dépôt récent de brevets pouvant constituer un frein à la promotion du projet Rosatte.

Dans le cadre du projet Rosatte, le Service d'études sur les transports, les routes et leurs aménagements (Setra) est notamment en charge de la coordination de la tâche T6.3, relative aux aspects organisationnels du lot « aspects organisationnels et bénéfices attendus ».

2.2 - Objet de l'étude

Les prestations demandées sont des prestations de conseil dans le domaine du droit de la propriété intellectuelle.

Cette mission se déroule en plusieurs phases selon le CCP :

- Une phase de préparation,
- Une phase d'interviews
- Trois phases dites de parties techniques :
 - Partie technique N°1 : « coûts et contraintes attachés aux données » à savoir analyse de l'état du droit de la propriété intellectuelle
 - Partie technique N°2 : « responsabilité des contributeurs »
 - Partie technique N°3 : « brevets de méthodes - cadre de référence »

3 - Méthode d'analyse

Le Cabinet utilise une méthode interne dénommée « Partenaires Conseils » pour répondre à des consultations juridiques en matière de propriété intellectuelle :

- Précisions avec le responsable du projet des thèmes de la consultation juridique et de la problématique,
- Recherches documentaires ciblées internes et externes au Cabinet,
- Mutualisation des résultats et rédaction en commun par l'équipe dédiée au projet avec éventuellement en support les autres intervenants du Cabinet ou si nécessaire les partenaires du Cabinet,
- Analyse sur d'éventuels points spécifiques,
- Elaboration de mini questionnaires ciblés pour remplissage au cours des interviews permettant des adaptations si nécessaire,
- Réalisation d'interviews de préférence par téléphone voire par téléconférence pour permettre la présence d'un représentant du Client, cette démarche évite les déplacements,
- Rédaction des documents à livrer au fur et à mesure de l'avancement de l'étude en respectant le format adopté avec le client mais avec communication par étape de rédaction,
- Rédaction de la note de synthèse (résumé) dans sa version française et anglaise selon une logique de format identique phrase par phrase,
- Consolidation des documents produit au sein du rapport de l'étude,
- Présentation du rapport,
- Lecture commune du rapport provisoire avant remise du rapport définitif après d'éventuelles modifications ou corrections pour vérification.

4 - Inventaire des recherches juridiques relatives aux transpositions en France

Les recherches juridiques concernées par l'objet de l'étude ont permis de faire le lien entre la législation européenne et les transpositions en droit interne français. Chaque directive est citée avec les degrés de libertés jugés significatifs au regard de l'objet de l'étude.

Liens entre Directives européennes et transposition française concernant l'objet de l'étude	
Directives CE	Transposition en France
<p>Directive 96/9/CE du 11 mars 1996, concernant la protection juridique des bases de données</p> <p><u>Degré de liberté des états membres :</u></p> <ul style="list-style-type: none"> • Possibilité par la législation de l'État membre d'autoriser la qualité d'auteur de base de données à une personne morale (cf. article 4), • Possibilité par la législation de l'État membre de limiter des actes soumis à restrictions par l'auteur de bases de données (cf. article 6), • Possibilité par la législation de l'État membre d'autoriser les utilisateurs légitimes d'extraire et/ou de réutiliser une partie substantielle du contenu de celle-ci, sans autorisation du fabricant de la base, (cf. article 9). 	<p>Loi n°98-536 du 1 juillet 1998 portant transposition dans le code de la propriété intellectuelle de la directive 96/9/CE du Parlement européen et du Conseil, du 11 mars 1996, concernant la protection juridique des bases de données</p> <p>Avec introduction des dispositions dans le Code de la propriété intellectuelle de la RP Française :</p> <p>Articles : L112-3, L122-5, L311-1 à L311-12, L321-2 à L321-9, L331-1 à L331-4, L332-1 à L332-4, L333-1 à L334-1, L335-1 à L335-10, L341-1 à L342-5, L343-1 à L343-4.</p>
<p>Directive 2001/29/CE du 22 mai 2001 relative à certains aspects du droit d'auteur et des droits voisins dans la société de l'information</p> <p><u>Degré de liberté des états membres :</u></p> <ul style="list-style-type: none"> • Possibilité par la législation de l'État membre de prévoir des exceptions ou limitations au droit de reproduction prévu à l'article 2 dans des cas énumérés à l'article 5.2, • Possibilité par la législation de l'État membre de prévoir des exceptions ou limitations : <ul style="list-style-type: none"> ○ au droit de reproduction prévu à l'article 2, ○ au droit de communication d'œuvres au public et droit de mettre à la disposition du public d'autres objets protégés prévus à l'article 3 ○ dans des cas énumérés à l'article 5.3, ○ au droit de distribution visé à l'article 4, si application d'exceptions ou de limitations du droit de reproduction en vertu des 2 et 3 l'article 5 (cf.4 de l'article 5), • Possibilité par la législation de l'État membre de prévoir des exceptions à l'égard du bénéficiaire d'une exception ou limitation dans des cas limitatifs (cf. 4 de l'article 6). 	<p>Dispositions déjà existantes dans le Code de la propriété intellectuelle avec complément dans le cadre de la transposition par la Loi n°2006-961 du 1 août 2006 relative au droit d'auteur et aux droits voisins dans la société de l'information.</p>
<p>Directive 2003/98/CE du Parlement européen et du Conseil du 17 novembre 2003 concernant la réutilisation des informations du secteur public</p> <p><u>Degré de liberté des états membres :</u> Possibilité par la législation de l'État membre de prévoir la gestion collective obligatoire ou facultative du droit de suite (cf. 2 de l'article 6).</p>	<p>Loi n°78-753 du 17 juillet 1978 portant diverses mesures d'amélioration des relations entre l'administration et le public et diverses dispositions d'ordre administratif, social et fiscal.</p> <p>L'ordonnance n° 2005-650 du 6 juin 2005 relative à la liberté d'accès aux documents administratifs et à la réutilisation des informations publiques modifiant la loi 78-17 du 6 janvier 1978.</p> <p>Décret n° 2005-1755 du 30 décembre 2005 relatif à la liberté d'accès aux documents administratifs et à la réutilisation des informations publiques, pris pour l'application de la loi n° 78-753 du 17 juillet 1978.</p> <p>L'ordonnance n° 2009-483 du 29/04/2009 a modifié l'ordonnance 2005-650 et modifie la loi N° 78-753 du 17 juillet 1978.</p>

<p>Directive 2004/48/CE du 29-04-2004 rectifiée relative au respect des droits de propriété intellectuelle La présente directive concerne les mesures, procédures et réparations nécessaires pour assurer le respect des droits de propriété intellectuelle. <u>Degré de liberté des états membres</u> : Possibilité par la législation de l'État membre de :</p> <ul style="list-style-type: none"> • prévoir des éléments de preuve suffisants (cf. 1 de l'article 6), • de prendre des mesures pour protéger l'identité des témoins (cf. 5 de l'article 7), • prévoir d'ordonner le paiement à la partie lésée d'une réparation pécuniaire de substitution (cf. article 12), • d'ordonner le recouvrement des bénéfices ou le paiement de dommages-intérêts en cas d'activité contrefaisante involontairement (cf. 2 de l'article 13), • prévoir des mesures supplémentaires de publicité des décisions judiciaires (cf. article 15), • prévoir d'autres sanctions appropriées (cf. article 16). 	<p>Loi n°2007-1544 du 29 octobre 2007 de lutte contre la contrefaçon.+ rectification. A modifié le Code de la propriété intellectuelle - Décret no 2008-624 du 27 juin 2008 pris pour l'application de la loi no 2007-1544 du 29 octobre 2007 de lutte contre la contrefaçon et portant modification du Code de la propriété intellectuelle.</p>
<p>Directive 2006/115/CE du 12 décembre 2006 relative au droit de location et de prêt et à certains droits voisins du droit d'auteur dans le domaine de la propriété intellectuelle : • abroge la directive 92/100/CEE • modifie l'article 11, paragraphe 2 de la Directive 2001/29/CE du Parlement européen et du Conseil avec des degrés de liberté des états membres.</p>	<p>La date d'échéance de transposition de cette directive en droit interne par les Etats membres n'est pas précisée.</p>
<p>Directive 2006/116/CE du 12 décembre 2006 relative à la durée de protection du droit d'auteur et de certains droits voisins abroge la directive 93-98 <u>Degré de liberté des états membres</u> : Possibilité pour un État membre de prévoir des dispositions :</p> <ul style="list-style-type: none"> • particulières sur les droits d'auteur relatifs aux œuvres collectives ou la désignation d'une personne morale comme titulaire des droits, la durée de protection est de soixante-dix ans, • pour protéger les coauteurs d'œuvres cinématographiques ou audiovisuelles (cf. 1 de l'article 2), • pour protéger les éditions critiques et scientifiques d'œuvres : durée de protection maximale de trente ans (cf. article 5), • pour que les états membres qui disposaient d'une durée de protection plus longue du fait de conventions internationales puissent continuer à en bénéficier (cf. 3 de l'article 7). 	<p>Non transposée à ce jour. La date d'échéance de transposition de cette directive en droit interne par les Etats membres n'est pas précisée.</p>
<p>Directive 2007/2/CE du 14 mars 2007 INSPIRE établit une infrastructure d'information géographique dans la Communauté européenne. <u>Degré de liberté des états membres</u> : possibilité par la législation de l'État membre de :</p> <ul style="list-style-type: none"> • restreindre l'accès public aux séries et aux services de données géographiques dans le cas énuméré au 1 de l'article 13, notamment dans le cas où l'accès nuirait aux relations internationales, à la sécurité publique ou à la défense nationale, et selon des motifs interprétés de manière stricte, • d'autoriser une autorité publique fournissant un service de consultation à percevoir des droits, sous condition (cf. 2 de l'article 14), • donner accès à ces services de recherche par l'intermédiaire de leurs propres points d'accès (cf. 2 de l'article 15), • d'autoriser les autorités publiques qui fournissent des séries et des services de données géographiques à octroyer des licences d'exploitation et/ou à demander un paiement pour ces séries et services aux autorités publiques ou aux institutions et aux organes de la Communauté qui les utilisent... (cf. 3 de l'article 17), • assortir d'exigences relevant du droit national l'utilisation partagée des séries et des services de données (cf. 6 de l'article 17), • limiter le partage des séries et des services de données géographiques, si cela est susceptible de nuire à la bonne marche de la justice, à la sécurité publique, à la défense nationale ou aux relations internationales.(cf. 7 de l'article 17). 	<ul style="list-style-type: none"> • LOI n° 2009-526 du 12 mai 2009 de simplification et de clarification du droit et d'allègement des procédures (1) • Ordonnance no 2010-1232 du 21 octobre 2010 portant diverses dispositions d'adaptation au droit de l'Union européenne en matière d'environnement
<p>Règlement (UE) 268/2010 de la Commission du 29 mars 2010 portant</p>	<p>Ordonnance no 2010-1232 du 21 octobre</p>

<p>modalités d'application de la directive 2007/2/CE <u>Degré de liberté des états membres</u> : possibilité par la législation de l'État membre de définir les conditions dans lesquelles l'accès aux séries et aux services de données géographiques est restreint si cela est susceptible de nuire à la bonne marche de la justice, à la sécurité publique, à la défense nationale ou aux relations internationales. (cf. 2 de l'article premier).</p>	2010 portant diverses dispositions d'adaptation au droit de l'Union européenne en matière d'environnement
<p>Règlement (CE) 1205/2008 de la Commission du 3 décembre 2008 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne les métadonnées.</p>	Ordonnance no 2010-1232 du 21 octobre 2010 portant diverses dispositions d'adaptation au droit de l'Union européenne en matière d'environnement
<p>Directive 2009/24/CE du 23 avril 2009 concernant la protection juridique des programmes d'ordinateur Cette directive abroge la Directive n° 91/250/CE du 14 mai 1991 relative à la protection juridique des programmes d'ordinateur <u>Degré de liberté des états membres</u> : Possibilité par la législation de l'État membre :</p> <ul style="list-style-type: none"> • d'autoriser la personne morale comme étant le titulaire du droit d'auteur du programme (cf. 1 de l'article 2), • d'accepter les auteurs d'œuvres collectives si la législation de l'État membre le prévoit (cf. 1 de l'article 2), • prendre des mesures appropriées à l'encontre des personnes qui accomplissent des actes répréhensibles limitativement énumérés (cf. 1 de l'article 7), • prévoir la saisie des moyens ayant pour seul but de faciliter la suppression non autorisée ou la neutralisation de tout dispositif technique éventuellement mis en place pour protéger un programme d'ordinateur ») (cf. 3 de l'article 7). 	Non transposée à ce jour pour les compléments ou modifications à apporter aux textes existants. Loi n° 94-361 du 10 mai 1994 portant mise en œuvre de la directive n° 91-250 qui a été abrogée par la Directive 2009/24/CE. Avec introduction des dispositions dans le Code de la propriété intellectuelle de la RP Française : Articles : L112-2, L113-9, L121-7, L122-6, L122-5, L122-6-1, L122-6-2, L131-4, L132-34, L335-3, L331-3.
<p>Directive 2010/40/UE du Parlement européen et du Conseil du 7 juillet 2010 concernant le cadre pour le déploiement de systèmes de transport intelligents dans le domaine du transport routier et d'interfaces avec d'autres modes de transport <u>Degré de liberté des états membres</u> : Possibilité par la législation de l'État membre :</p> <ul style="list-style-type: none"> • de disposer du droit du déploiement des applications et services STI sur son territoire (cf. 1 de l'article 5). • d'établir des règles supplémentaires pour la fourniture de services STI sur une partie ou l'ensemble de leur territoire, pour autant que ces règles ne fassent pas obstacle à l'interopérabilité sans préjudice des procédures prévues par la directive 98/34/CE, (cf. 5 de l'article 6). 	Non transposée à ce jour.

Ces recherches reposent sur une démarche en trois phases :

- Identification des textes entrant dans le cadre de l'étude,
- Recherches juridiques descendantes allant des textes européens vers les textes français transposés,
- Recherches juridiques ascendantes allant des textes français transposés vers les textes européens.

Ces recherches ont reposées notamment sur les bases Eur-lex et Légifrance :

© Union européenne	http://eur-lex.europa.eu/ ».
Légifrance	http://www.legifrance.gouv.fr/

5 - Analyse

5.1 - Analyse de la circulation des données Rosatte

5.1.1 - Définitions relatives aux données géographiques

Plusieurs textes de la législation de l'Union européenne en vigueur donnent des définitions concernant les données géographiques :

- Directive 2007/2/ce du Parlement européen et du Conseil du 14 mars 2007 établissant une infrastructure d'information géographique dans la Communauté européenne (INSPIRE),
- Règlement (CE) 1205/2008 de la Commission du 3 décembre 2008 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne les métadonnées (Texte présentant de l'intérêt pour l'EEE),
- Règlement (CE) 976/2009 de la Commission du 19 octobre 2009 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne les services en réseau
- Règlement (UE) 268/2010 de la commission du 29 mars 2010 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne l'accès des institutions et organes communautaires aux séries et services de données géographiques des États membres dans des conditions harmonisées,

Les définitions et les dispositions suivantes ont été retenues pour examiner les aspects de propriété intellectuelle :

Termes	Définitions	Référence
Infrastructure d'information géographique	des métadonnées, des séries de données géographiques et des services de données géographiques; des services et des technologies en réseau, des accords sur le partage, l'accès et l'utilisation; et des mécanismes, des processus et des procédures de coordination et de suivi établis, exploités ou mis à disposition conformément à la présente directive	Article 3 Directive INSPIRE
Donnée géographique	toute donnée faisant directement ou indirectement référence à un lieu ou une zone géographique spécifique	
Métadonnées	l'information décrivant les séries et services de données géographiques et rendant possible leur recherche, leur inventaire et leur utilisation	
Services de données géographiques	les opérations qui peuvent être exécutées à l'aide d'une application informatique sur les données géographiques contenues dans des séries de données géographiques ou sur les métadonnées qui s'y rattachent	
Série de données géographiques	une compilation identifiable de données géographiques (base de données ¹)	
Informations contenues dans les métadonnées	a) la conformité des séries de données géographiques avec les règles de mise en œuvre prévues à l'article 7, paragraphe 1; b) les conditions applicables à l'accès et à l'utilisation des séries et des services de données géographiques et, le cas échéant, les frais correspondants; c) la qualité et la validité des séries de données géographiques; d) les autorités publiques responsables de l'établissement, de la gestion, de la maintenance et de la diffusion des séries et des services de données géographiques; e) les restrictions à l'accès public et les raisons de ces restrictions, conformément à l'article 13.	article 5 Directive INSPIRE
Création et maintenance des métadonnées	Les métadonnées décrivant une série de données géographiques, un ensemble de séries de données géographiques ou un service de données géographiques comprennent les éléments de métadonnées ou les groupes d'éléments de métadonnées figurant à la partie B de l'annexe et sont créées et mises à jour conformément aux règles énoncées aux parties C et D de l'annexe du règlement.	Règlement (CE) n°1205/2008 métadonnées

¹ Considérant 13 Directives 96/9/CE bases de données : considérant que la présente directive protège les recueils, parfois dénommés «compilations», d'œuvres, de données ou d'autres matières dont la disposition, le stockage et l'accès se font par des moyens qui comprennent des procédés électroniques, électromagnétiques ou électro-optiques ou d'autres procédés analogues

5.1.2 - Acteurs du Circuit des données

Au niveau des textes « INSPIRE », l'identification des organisations responsables de l'établissement, de la gestion, de la maintenance et de la diffusion des séries et des services de données géographiques² font l'objet de dispositions quant à leur mention dans les métadonnées. Pour ce faire, une liste d'organismes types³ a été définie.

Liste des Organisations responsables de l'établissement, de la gestion, de la maintenance et de la diffusion des séries et des services de données géographiques		
Réf.	Organisations	Rôle
6.1	Fournisseur de la ressource (resourceProvider)	Partie qui fournit la ressource ⁴
6.2	Gestionnaire (custodian)	Partie qui accepte d'assumer la responsabilité des données et d'assurer une maintenance appropriée de la ressource
6.3	Propriétaire (owner)	Partie à laquelle appartient la ressource
6.4	Utilisateur (user)	Partie qui utilise la ressource
6.5	Distributeur (distributor)	Partie qui distribue la ressource
6.6	Commanditaire (originator)	Partie qui a créé la ressource
6.7	Point de contact (pointOfContact)	Partie qu'il est possible de contacter pour s'informer sur la ressource ou en faire l'acquisition
6.8	Maître d'œuvre (principalInvestigator)	Principale partie chargée de recueillir des informations et de mener les recherches
6.9	Intégrateur (processor)	Partie qui a traité les données de manière telle que la ressource a été modifiée
6.10	Éditeur (publisher)	Partie qui a publié la ressource
6.11	Auteur (author)	Partie qui est l'auteur de la ressource

Au niveau de Rosatte, les principaux intervenants recensés dans le circuit des données au niveau de chaque étape sont :

Définitions Rosatte	
Organisations	Rôle
Auteur :	Partie qui a créé l'information
Acquéreur	Partie qui a acquis certains droits sur l'information, soit auprès de l'auteur soit auprès d'un précédent acquéreur
Prestataire	Partie qui a modifié l'information pour le compte d'un tiers, par voie contractuelle
Commanditaire	
Fournisseur de données	Partie qui dans le cadre de la phase de collecte nourrit le workflow.
Gestionnaire de base de données	Partie qui réceptionne les données collectées pour les intégrer dans une base de données homogène.
Intégrateur	Partie qui intègre les attributs de sécurité routière dans un référentiel cartographique (« décodage »)

² 9 de la Partie B Annexe : « Règles de mise en œuvre relatives aux métadonnées » du Règlement (CE) n°1205/2008 du 3 décembre 2008 portant modalités d'application de la directive 2007/2/CE INSPIRE.

³ Cf. 6 de la partie D de l'Annexe : « Règles de mise en œuvre relatives aux métadonnées » du Règlement (CE) n°1205/2008 du 3 décembre 2008 portant modalités d'application de la directive 2007/2/CE INSPIRE en ce qui concerne les métadonnées.

⁴ "Ressource": une ressource d'information faisant directement ou indirectement référence à un lieu ou une zone géographique spécifique, (cf. 1 de la Partie A Annexe du Règlement (CE) n°1205/2008 du 3 décembre 2008.

Les concordances entre la terminologie INSPIRE et celle de Rosatte s'analysent ainsi :

Liste des Organisations responsables de l'établissement, de la gestion, de la maintenance et de la diffusion des séries et des services de données géographiques				
Réf.	Organisations	Rôles INSPIRE	Rôles Rosatte	
6.1	Fournisseur de la ressource (resourceProvider)	Partie qui fournit la ressource ⁵	Fournisseur de données	
6.2	Gestionnaire (custodian)	Partie qui accepte d'assumer la responsabilité des données et d'assurer une maintenance appropriée de la ressource	Gestionnaire de base de données	
6.3	Propriétaire (owner)	Partie à laquelle appartient la ressource		
6.4	Utilisateur (user)	Partie qui utilise la ressource		
6.5	Distributeur (distributor)	Partie qui distribue la ressource		
6.6	Commanditaire (originator)	Partie qui a créé la ressource	Commanditaire	
			Fournisseur de données	Partie qui dans le cadre de la phase de collecte nourrit le workflow.
6.7	Point de contact (pointOfContact)	Partie qu'il est possible de contacter pour s'informer sur la ressource ou en faire l'acquisition		
6.8	Maître d'œuvre (principalInvestigator)	Principale partie chargée de recueillir des informations et de mener les recherches		
6.9	Intégrateur (processor)	Partie qui a traité les données de manière telle que la ressource a été modifiée	Intégrateur	Partie qui intègre les attributs de sécurité routière dans un référentiel cartographique (« décodage »)
			Prestataire	Partie qui a modifié l'information pour le compte d'un tiers, par voie contractuelle
6.10	Éditeur (publisher)	Partie qui a publié la ressource		
6.11	Auteur (author)	Partie qui est l'auteur de la ressource	Partie qui a créé l'information	

5.1.3 - Liens entre activité et étapes du Circuit des données

L'analyse du circuit avec des compétences techniques de l'équipe projet du Setra a permis de recenser les liens entre activité et étapes du Circuit des données :

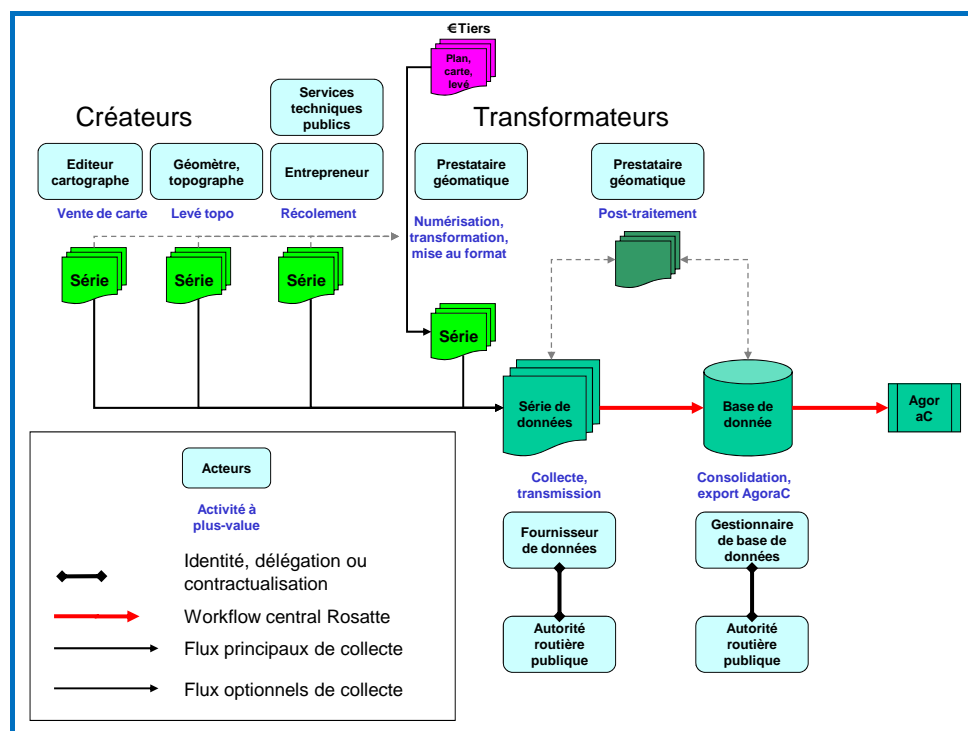
N°	Etape
1	Collecte et transmission
2	Consolidation et encodage
3	Intégration
4	Valorisation
5	Utilisation du service

⁵ "Ressource": une ressource d'information faisant directement ou indirectement référence à un lieu ou une zone géographique spécifique, (cf. 1 de la Partie A Annexe du Règlement (CE) n°1205/2008 du 3 décembre 2008.

Activités	Etapes	Observations
Acquisition (recueil de l'information)	E1	Collecte de données publiques
Post-traitement (contrôle, numérisation, structuration, harmonisation et/ou mise en base de données)	E1	facultatif
Mise en base de données	E2	
Codage (mise en format standard et classifié)	E2	
Décodage et constitution d'une carte numérique des attributs de sécurité	E3	décodage
Transmission des lots de données	E2 → E3	Service à Valeur Ajouté
	E3 → E4	
	E4 → E5	
Enrichissement	E1	éventuellement
	E2	éventuellement
	E3	Editeurs et fournisseurs de service enrichissent la donnée de leur propre plus-value
	E4	
Appauvrissement	E1	Dans le but d'une diffusion sans droit si possible
	E2	
	E3	
	E4	
Commercialisation d'un service	E4	

5.1.4 - Etapes du circuit des données ROSATTE

Schéma des phases 1 et 2 élaboré par le Setra



Par étape, il a pu être recensé les éléments entrant et sortant :

Etapes 1 Collecte et transmission				
Acteurs	Evénement	Services à valeur ajouté	Données en entrée	Données en sortie
fournisseur de données collectivité locale, concessionnaire par exemple en utilisant la cartographie IGN => problème d'identification de l'information d'origine	<ul style="list-style-type: none"> Organiser le recueil de l'information réelle vers des supports numériques. Positionner l'information recueillie sur le circuit de consolidation. <p>Il peut assurer cette prestation lui-même ou la confier à un prestataire externe S'il la fait faire, il peut la financer ou ne pas la financer lui-même</p>	maître d'œuvre de la collecte de données	données sources <ul style="list-style-type: none"> soit directement issues de la mesure du réel (Ex: plans de récolement, restitutions photogrammétriques, etc....) soit indirectement via des supports documentaires préexistants (Ex: cartes routières...) 	<ul style="list-style-type: none"> soit intégrer les données sources dans son propre système de gestion avant de les réexporter en respectant un cahier des charges convenu avec le Gestionnaire de Base de Données, soit les transmettre directement sous réserve d'avoir imposé ce même cahier des charges à ses propres prestataires fournisseurs. Soit les saisir en direct via un portail (méthode BALI) <p>Des lots partiels de données respectant un cahier des charges visant à faciliter leur intégration dans une base de données centralisée</p>
Etapes 2 Consolidation et encodage				
Acteurs	Evénement	Services à valeur ajouté	Données en entrée	Données en sortie
Gestionnaire de la base de données géoréférencées des attributs routiers de sécurité Etat, autorité fédératrice voire privée sous contrat	<ul style="list-style-type: none"> Organiser la consolidation des informations en une base de données homogène. Exporter les données en tant que de besoin de façon normalisée. habilité à diffuser le contenu de la base de données, et à en traiter les obligations légales afférentes. Confier éventuellement cette tâche à un prestataire technique Nécessité de faire un contrat avec l'intégrateur (étape 3) concernant l'utilisation du référentiel géographique éventuellement transmis partiellement ou totalement 	le maître d'ouvrage de la base de données consolidée	Données selon un cahier des charges. Des lots partiels de données respectant un cahier des charges visant à faciliter leur intégration dans une base de données centralisée	Export d'E1 Format standard Rosatte (conforme AGORA-C) <ul style="list-style-type: none"> Données Métadonnées Avec référent IGN

Etapes 3 Intégration				
Acteurs	Evénement	Services à valeur ajouté	Données en entrée	Données en sortie
Intégrateur (personne privée)	<ul style="list-style-type: none"> décoder les données normalisées intégrer les données dans un référentiel spatial de son choix. fabriquer ainsi une base de données enrichie, directement utilisable par un fournisseur de service. Intégrateur souvent éditeur de cartes routières	Inclut les bases de données d'attributs routiers de sécurité, dans des bases routières plus larges	Des lots de données sous format normalisé format standard Rosatte (conforme AGORA-C) <ul style="list-style-type: none"> Données métadonnées, utilisables par n'importe quel acteur pour créer un service d'aide à la conduite 	Cartographie avec attributs (au format utile au gestionnaire du service avec propre référentiel avec éventuellement appauvrissement) (plus de format IGN)
Etapes 4 Valorisation				
Acteurs	Evénement	Services à valeur ajouté	Données en entrée	Données en sortie
fournisseur de service à l'utilisateur (personne privée)	utiliser les cartes d'attribut de sécurité fournies par l'intégrateur pour appuyer un service à forte plus-value,	une information en temps réel sur les limites de vitesse. Le service de navigation embarqué est un autre exemple de service à l'utilisateur déjà opérationnel	Cartographie avec attributs (au format utile au gestionnaire du service)	une information en temps réel sur les limites de vitesse
Etapes 5 Utilisation du service				
Acteurs	Evénement	Services à valeur ajouté	Données en entrée	Données en sortie
usager de la route (personne privée)	bénéficier du service, que ce soit à titre gracieux ou onéreux.		une information en temps réel sur les limites de vitesse	Retour de l'utilisateur

5.1.5 - Liens entre activités, étapes et propriété intellectuelle

L'analyse a porté sur les cas les plus fréquents en excluant les cas rarissimes :

Activités	Etapes	Tâche	Eléments de propriété intellectuelle	
Acquisition (recueil)	E1	Acquisition de données brutes par l'autorité concernée pour transmission par lettre, fax, mail... suite à décision de la dite autorité	Droit Propriété préexistant avant la tâche	NON
			Droit Propriété préexistant transféré par la tâche	NON
			Droit Propriété créé par la tâche	NON
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	NON
			Prestation à valeur ajoutée	NON
			Services à valeur ajoutée	NON
		Acquisition par relevé terrain par un professionnel de la topographie ou de la cartographie avec matérialisation sous forme de plan avec un référentiel géodésique au format imposé par l'autorité qui commande.	Droit Propriété préexistant	NON
			Droit Propriété préexistant transféré par la tâche	NON
			Droit Propriété créé par la tâche	OUI
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	OUI
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON
		L'Acquisition par rattachement relatif à partir d'un référentiel de l'autorité concernée pour obtenir un plan de récolement : l'objet est alors repéré par rapport à son environnement immédiat : C'est la démarche routière en France.	Droit Propriété préexistant	OUI
			Droit Propriété préexistant transféré par la tâche	OUI
			Droit Propriété créé par la tâche	NON
			restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	OUI
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON
		Acquisition d'un document existant par base de données sans logiciel détenu par un tiers à l'autorité avec enrichissement <ul style="list-style-type: none"> Par digitalisation et/ou vectorisation Par livraison d'un fichier numérique décrivant un document existant. 	Droit Propriété préexistant	OUI
			Droit Propriété préexistant transféré par la tâche	OUI
			Droit Propriété créé par la tâche	OUI
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	OUI
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON
		Acquisition par base de données avec logiciel	Droit Propriété préexistant	OUI
			Droit Propriété préexistant transféré par la tâche	OUI
			Droit Propriété créé par la tâche	NON
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	OUI
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON
Post-traitement (contrôle et mise en base de données)	E1	Les techniques de post-traitement, et notamment de réinterprétation par recoupement peuvent apporter une forte plus-value aux informations descriptives d'objets numérisés.	Droit Propriété préexistant	OUI
			Droit Propriété préexistant transféré par la tâche	OUI
			Droit Propriété créé par la tâche	NON
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	NON
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON

Activités	Etapas	Tâche	Eléments de propriété intellectuelle	
Mise en base de données	E2	Les données sont nécessairement affectées tant par les processus de concentration que par les traitements qu'autorise une mise en base de données.	Droit Propriété préexistant	OUI
			Droit Propriété préexistant transféré par la tâche	OUI
			Droit Propriété créé par la tâche	NON
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	NON
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON
Codage /Constitution du fichier d'export standard	E2	mise en format standard Rosatte (conforme AGORA-C)	Droit Propriété préexistant	OUI
			Droit Propriété préexistant transféré par la tâche	OUI
			Droit Propriété créé par la tâche	NON
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	NON
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON
Décodage/ Constitution d'une carte numérique des attributs de sécurité	E3		Droit Propriété préexistant	OUI ⁶
			Droit Propriété préexistant transféré par la tâche	OUI
			Droit Propriété créé par la tâche	NON
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	NON
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON
Transmission des lots de données	E2→E3, E3→E4, E4→E5	Le flux collaboratif de données Rosatte suppose une transmission ascendante des lots (séries) de données vers une base de données fédératrice, de façon directe ou indirecte	Droit Propriété préexistant	OUI
			Droit Propriété préexistant transféré par la tâche	OUI
			Droit Propriété créé par la tâche	NON
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	NON
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON
Enrichissement		L'agrégation des séries de données en une seule base de données géoréférencées.	Droit Propriété préexistant	OUI
			Droit Propriété préexistant transféré par la tâche	OUI
			Droit Propriété créé par la tâche	OUI
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	OUI
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON
Appauvrissement	E1, E2, E3, E4	Centré sur l'information pour réduire tout lien de propriété de données	Droit Propriété préexistant	OUI
			Droit Propriété préexistant transféré par la tâche	NON
			Droit Propriété créé par la tâche	NON
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)	NON
			Prestation à valeur ajoutée	OUI
			Services à valeur ajoutée	NON

⁶ Les extractions du référentiel initial, introduites lors du codage, doivent impérativement ne pas être réintégrées lors du décodage.

5.1.6 - Liens entre étapes et propriété intellectuelle

Etapes	Intitulés	Données en sortie	Eléments de propriété intellectuelle		
1	Collecte et transmission	<ul style="list-style-type: none"> soit les intégrer dans son propre système de gestion avant de les réexporter soit les transmettre directement Soit les saisir en direct via un portail (méthode BALI) Des séries partielles de données respectant un cahier des charges	Droit Propriété préexistant		OUI
			Droit Propriété préexistant transféré au cours de la phase		OUI
			Droit Propriété créé au cours de la phase	Données brutes	NON
				Métadonnées	OUI
				Documents	OUI
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)		NON
2	Consolidation et encodage	export d'E1 au format standard Rosatte (conforme AGORA-C) <ul style="list-style-type: none"> Données Métadonnées Avec référent IGN	Droit Propriété préexistant		OUI
			Droit Propriété préexistant transféré au cours de la phase	Données brutes	NON
				Métadonnées	OUI
				Documents	OUI
			Droit Propriété créé au cours de la phase	Données brutes	NON
				Métadonnées	OUI
				Documents	NON
3	Intégration	Cartographie avec attributs (au format utile au gestionnaire du service avec propre référentiel avec éventuellement appauvrissement) (plus de format IGN)	Droit Propriété préexistant		OUI
			Droit Propriété préexistant transféré au cours de la phase	Données brutes	OUI
				Métadonnées	OUI
				Documents	NON
			Droit Propriété créé au cours de la phase	Données brutes	OUI
				Métadonnées	OUI
				Documents	NON
4	Valorisation	Information en temps réel sur les limites de vitesse.	Droit Propriété préexistant		NON
			Droit Propriété préexistant transféré au cours de la phase	Données brutes	NON
				Métadonnées	NON
				Documents	NON
			Droit Propriété créé au cours de la phase	Données brutes	NON
				Métadonnées	NON
				Documents	NON
5	Utilisation du service	Retour de l'utilisateur	Droit Propriété préexistant		NON
			Droit Propriété préexistant transféré au cours de la phase	Données brutes	NON
				Métadonnées	NON
				Documents	NON
			Droit Propriété créé au cours de la phase	Données brutes	NON
				Métadonnées	NON
				Documents	NON
			Restriction de destination des résultats issus de la tâche (utilisation, diffusion, commercialisation...)		NON
			Moyens sujet à droit de propriété (référentiel public ou propriétaire)		OUI

5.2 - Comptes rendus des entretiens

Pour compléter le travail effectué avec le groupe de travail, des entretiens ont été effectués.

5.2.1 - Entretiens avec le Certu

Le centre d'études sur les réseaux, les transports, l'urbanisme et les constructions publiques (Certu) est chargé de conduire des études dans le domaine des réseaux urbains, des transports, de l'urbanisme et des constructions publiques, pour le compte de l'État ou au bénéfice des collectivités locales, établissements publics ou entreprises chargés de missions de service public ou des professions en cause.

Le Certu héberge le Pôle géomatique du ministère qui intervient essentiellement sur des aspects transversaux de la géomatique (organisation, juridique, compétences, données de références et méthodes) et la standardisation des données géographiques. La géomatique thématique pour la ville est principalement développée pour la connaissance des territoires.

L'interview CERTU avait pour objectif de connaître :

- les préconisations du CERTU en matière de propriété intellectuelle concernant les données géographiques,
- l'état des prospectives du CERTU en la matière notamment dans le cadre des données de sécurité ROSATTE,
- Le niveau d'information concernant les délais statistiques de mise à jour des données,
- L'état des connaissances de problématiques similaires, notamment dans le domaine des données composites, et interprétation en termes de propriété intellectuelle.

L'interview, effectuée au début de cette étude, a permis de vérifier les problématiques de l'étude.

Les préconisations du CERTU en matière de propriété intellectuelle concernant les données géographiques reposent notamment sur le guide intitulé « Échanger des données localisées" diffusé par le CERTU (Voir site en annexe). Ce Guide juridique (Version 2 - sept. 2007) a été rédigé par un cabinet d'avocat pour le compte du CERTU.

Cet entretien a permis de recueillir de l'information sur les politiques des pouvoirs publics français notamment au travers du Conseil National de l'Information Géographique et des travaux du Ministère de l'écologie, du développement et de l'aménagement durables.

5.2.2 - Entretiens avec l'ASFA

L'ASFA, Association des Sociétés Françaises d'Autoroute, est un contributeur du projet Rosatte

L'interview de l'ASFA avait pour objectif de connaître :

1. L'intervenant dans le circuit des informations des attributs de sécurité géré par l'ASFA
2. La qualification des données sortantes au regard de la propriété intellectuelle : données et métadonnées :
 - Données protégées par propriété intellectuelle ?
 - Données commerciales et payantes vis-à-vis des tiers avec quelles destinations ?
 - Données gratuites pour la tutelle de par la convention de concession ?
3. les délais statistiques de mise à jour des données en fonction du type d'information,
4. les préconisations de l'ASFA et des sociétés d'autoroute en ce qui concerne les données dans le cadre du projet ROSATTE au niveau des intervenants dans le processus :

Cette interview effectuée à la fin de l'étude a permis d'échanger sur les conclusions de cette étude et d'en conforter les résultats.

Notamment, les sociétés d'autoroute, par convention avec l'état français, sont engagées à fournir les données publiques. Par contre, toutes les données à valeur ajoutée, élaborées par ces opérateurs, au niveau, par exemple, de la régulation ou de l'information trafic, entrent dans la catégorie des données privées soumises à rémunération avec ou sans attribut de propriété intellectuelle.

5.3 - Domaine d'analyse

L'examen des documents remis permet d'identifier divers domaines de la propriété intellectuelle concernés de près ou de loin :

- Données (originale ou non),
- Cartographie,
- Métadonnées,
- Base de données,
- Référentiel géographique,
- Réutilisation des données publiques,
- Service à valeur ajouté avec ou sans droit de propriété intellectuelle transmis,
- Norme et licence de brevet,
- Logiciel/ programme d'ordinateur.

Toutefois, l'analyse des circuits d'information Rosatte amène à ne retenir, comme pertinents, que les domaines de propriété intellectuelle relatifs :

- Aux données (originale ou non),
- A la cartographie,
- Aux métadonnées,
- Aux bases de données.

du fait du périmètre du projet Rosatte centré sur les attributs de sécurité.

Les séries de données d'attributs de sécurité n'intègrent pas de donnée à caractère personnel. De ce fait, les aspects juridiques de ce type de données n'entrent pas dans cette étude.

5.4 - Partie technique N°1 : « coûts et contraintes attachés aux données »

La présence ou non de données grevées de droits de propriété intellectuelle a une incidence sur les coûts et contraintes attachés aux données, objet du projet Rosatte.

Le cadre des législations de la propriété intellectuelle concernant les attributs de sécurité traités par les processus de collecte, consolidation et codage, objet de l'étude ROSATTE s'analyse au niveau :

- International,
- Européen,
- National.

5.4.1 - Conventions internationales

En matière de propriété intellectuelle, les législations communautaires et nationales des états membres reposent notamment sur des conventions internationales majeures cf.⁷) :

- la Convention de Berne pour la protection des œuvres littéraires et artistiques du 9 septembre 1886 complétée et modifiée,
- la Convention de Paris pour la protection de la propriété industrielle du 20 mars 1883 révisée,
- la Convention de Rome sur la protection des artistes interprètes ou exécutants, des producteurs de phonogrammes et des organismes de radiodiffusion, (faite à Rome le 26 octobre 1961) ; cette convention ne doit pas être confondue avec le Traité de Rome,
- le traité de l'OMPI sur le droit d'auteur adopté à Genève le 20 décembre 1996,
- l'Accord de l'OMC sur les aspects des droits de propriété intellectuelle qui touchent au commerce (ADPIC).

Tous les états membres de l'Union européenne ont adhéré à ces quatre conventions internationales. L'Union européenne n'a adhéré qu'aux traités de l'OMPI et à l'ADPIC. En effet, pour les conventions qui concernent cette étude, Berne et Paris, seuls des états peuvent être membres. C'est pour cette raison que l'Union européenne n'a pu adhérer.

Principales conventions internationales intéressantes au regard de l'objet de l'étude				
Pays de l'union européenne	Convention de berne (Droit d'auteur)	Convention de Paris (brevet)	Traité de l'OMPI du (Droit d'auteur)	ADPIC (Droit d'auteur)
			Union européenne	Union européenne
Allemagne	⊙	⊙	⊙	⊙
Autriche	⊙	⊙	⊙	⊙
Belgique	⊙	⊙	⊙	⊙
Bulgarie	⊙	⊙	⊙	⊙
Chypre	⊙	⊙	⊙	⊙
Danemark	⊙	⊙	⊙	⊙
Espagne	⊙	⊙	⊙	⊙
Estonie	⊙	⊙	⊙	⊙
Finlande	⊙	⊙	⊙	⊙
France	⊙	⊙	⊙	⊙
Grèce	⊙	⊙	⊙	⊙
Hongrie	⊙	⊙	⊙	⊙
Irlande	⊙	⊙	⊙	⊙
Italie	⊙	⊙	⊙	⊙
Lettonie	⊙	⊙	⊙	⊙
Lituanie	⊙	⊙	⊙	⊙
Luxembourg	⊙	⊙	⊙	⊙
Malte	⊙	⊙	⊙	⊙
Pays-Bas	⊙	⊙	⊙	⊙
Pologne	⊙	⊙	⊙	⊙
Portugal	⊙	⊙	⊙	⊙
République tchèque	⊙	⊙	⊙	⊙
Roumanie	⊙	⊙	⊙	⊙
Royaume-Uni	⊙	⊙	⊙	⊙
Slovaquie	⊙	⊙	⊙	⊙
Slovénie	⊙	⊙	⊙	⊙

⁷ Notamment cité dans le considérant de la directive 2004/48/ : les trois premières conventions sont citées dans le considérant de la directive 2004/48/ Directive 2004/48/ce du parlement européen et du conseil du 29 avril 2004 relative au respect des droits de propriété intellectuelle (Texte présentant de l'intérêt pour l'EEE).

Suède	⊙	⊙	⊙	⊙
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5.4.1.1 La Convention de Berne pour la protection des œuvres littéraires et artistiques

La Convention de Berne pour la protection des œuvres littéraires et artistiques du 9 septembre 1886 complétée et modifiée, est le fondement du droit d'auteur dans les pays membres de l'Union européenne. Cette convention a pour objet d'aider les ressortissants des États signataires à obtenir la protection internationale de leur droit d'exercer un contrôle sur l'utilisation de leurs œuvres originales et de percevoir une rémunération à cet égard, qu'il s'agisse :

- de romans, de nouvelles, de poèmes, de pièces de théâtre,
- de chansons, d'opéras, de comédies musicales, de sonates,
- de dessins, de peintures, de sculptures, ou d'œuvres d'architecture.

5.4.1.2 L'ADPIC

L'Accord de l'OMC sur les aspects des droits de propriété intellectuelle qui touchent au commerce (ADPIC), négocié au cours du Cycle d'Uruguay, qui s'est tenu de 1986 à 1994, a introduit pour la première fois des règles relatives à la propriété intellectuelle dans le système commercial multilatéral notamment avec comme référentiel en matière de droit d'auteur la Convention de Berne. L'Union européenne a signé cet accord. Cette signature introduit désormais la convention de Berne dans le processus de création législative européen et ce, depuis l'entrée en vigueur de l'ADPIC le 1er janvier 1995.

L'ADPIC recouvre les domaines de la propriété intellectuelle suivants :

- Droit d'auteur et droits connexes,
- Marques de fabrique ou de commerce,
- Indications géographiques (origine géographique),
- Dessins et modèles industriels,
- Brevets,
- Schémas de configuration (topographies) de circuits intégrés,
- Protection des renseignements non divulgués.

L'ADPIC repose avec une approche économique sur la Convention de Berne considérée comme la référence de base en matière de protection du droit d'auteur au niveau des articles 1 à 21 conformément aux dispositions de fond de l'Acte de Paris de 1971.

Par contre, sont exclus les droits conférés par l'article 6bis de la Convention, en ce qui concerne

- les droits moraux (droit de revendiquer la paternité de l'œuvre et de s'opposer à toute atteinte à cette œuvre qui serait préjudiciable à l'honneur ou à la réputation de l'auteur),
- les droits qui en sont dérivés.

Néanmoins, le texte fait référence, par exemple, dans son article 10 (cf. extrait en annexe) aux programmes d'ordinateur en précisant que « Les programmes d'ordinateur, qu'ils soient exprimés en code source ou en code objet, seront protégés en tant qu'œuvres littéraires en vertu de la Convention de Berne (1971) ».

Le texte va plus loin que la convention de Berne en introduisant des dispositions relatives aux compilations de données (cf. article 10 mentionné en annexe). En effet, cet article précise :

- que les compilations de données constituent des créations intellectuelles protégeables,
- que cette protection se différencie de celle des données elles-mêmes susceptibles de protection par le droit d'auteur de la convention de Berne.

L'ADPIC ne s'applique pas en l'état, il nécessite une transposition au niveau de chaque signataire. Cette transposition concerne tout autant :

- le droit communautaire pour l'Union européenne,
- et/ou le droit interne pour chaque Etat membre de l'Union européenne.

Toutefois, l'ADPIC n'est applicable que dans le cadre de transpositions de droit communautaires pour l'Union européenne ou internes pour chaque état.

5.4.1.3 Le traité de l'OMPI sur le droit d'auteur adopté à Genève le 20 décembre 1996.

Le traité de l'OMPI sur le droit d'auteur adopté à Genève le 20 décembre 1996 constitue un arrangement particulier au sens de l'article 20 de la Convention de Berne. Ce Traité déroge à la Convention de Berne dans la mesure où il confère aux auteurs des droits plus étendus que ceux accordés par la Convention de Berne et où il renferme d'autres stipulations non contraires à la Convention de Berne.

Les parties membres du Traité, dont l'Union européenne, dès qu'ils seront signataires, ont l'obligation de se conformer à l'essentiel des dispositions de la Convention de Berne.

Ce Traité:

- a été signé le 20 décembre 1996,
- a été ratifié 14 décembre 2009 par l'Union européenne,
- est entré en vigueur 4 mars 2010.

Ce traité contient un article, l'article 5, relatif aux compilations de données (bases de données) qui stipule que « Les compilations de données ou d'autres éléments, sous quelque forme que ce soit, qui, par le choix ou la disposition des matières, constituent des créations intellectuelles sont protégées comme telles. Cette protection ne s'étend pas aux données ou éléments eux-mêmes et elle est sans préjudice de tout droit d'auteur existant sur les données ou éléments contenus dans la compilation. »

Ce Traité permet aux auteurs de pouvoir bénéficier d'une protection juridique en ce qui concerne :

- la distribution,
- la location commerciale,
- la communication au public de leurs œuvres sur réseau.

5.4.2 - Analyse de l'application de la législation européenne en matière de droit d'auteur

La législation européenne évolue dans le temps complétée par une jurisprudence faisant primer le droit communautaire sur les conventions internationales et sur les droits nationaux de chaque membre et ce, en s'appuyant sur le Traité afin de mettre en œuvre un « système uniforme de sauvegarde des droits de propriété intellectuelle » au sein de l'Union européenne.

La législation en matière de droit d'auteur a été harmonisée au niveau des aspects économiques afin :

- d'éliminer les entraves aux échanges,
- de mettre en œuvre des règles relatives à l'accès à la justice, les sanctions et les solutions en cas d'infractions,

tout en laissant aux états membres une certaine latitude dans le cadre de la convention de Berne.

En la matière, l'harmonisation s'effectue à minima tant qu'il n'y a pas de disparité entre les états membres ou des risques de non respect du Traité de l'Union européenne sur la libre circulation des biens sous réserve du respect des droits d'auteur au sens de l'article 6 bis de la convention de Berne.

Le traité prévoit l'établissement d'un marché intérieur et l'instauration d'un système propre à empêcher les distorsions de concurrence dans le marché intérieur. L'harmonisation des dispositions législatives des États membres sur le droit de propriété intellectuelle contribue à la réalisation de ces objectifs.

Pour répondre aux objectifs de l'étude, l'analyse de directives, propres au domaine du droit d'auteur, fait ressortir progressivement des liens entre la législation européenne et la convention de Berne surtout depuis la ratification par l'Union européenne du traité de l'OMPI sur le droit d'auteur.

5.4.2.1 Le droit européen relatif à la propriété intellectuelle

Le droit d'auteur au sens de la convention de Berne instaure un monopole à son auteur mais aussi au propriétaire des droits patrimoniaux. Ce monopole restreint la libre circulation et commercialisation des créations. Ces restrictions s'opposent à la libre circulation des biens prévue par le Traité de Rome.

La Cour de justice de l'Union européenne juge depuis sa création que le Traité prime sur tout texte international ou national d'un Etat membre. Le droit d'auteur de la convention de Berne souffrait de cette jurisprudence.

Le traité de Lisbonne est entré en vigueur le 1er décembre 2009 avec la création de l'Union européenne à la place de la Communauté européenne. Le traité sur l'Union européenne garde son nom et le traité instituant la Communauté européenne devient le traité sur le fonctionnement de l'Union européenne. A ces textes, s'ajoute la Charte des droits fondamentaux de l'Union européenne proclamée à Strasbourg le 12 décembre 2007 par le Parlement européen, le Conseil et la Commission (JO C 303 du 14.12.2007, p. 1). Ce texte, en vertu de l'article 6 du traité sur l'Union européenne, présente la même valeur juridique que les traités. Cette Charte dispose dans son article 17-2 que la propriété intellectuelle est protégée.

Des directives relatives au droit d'auteur harmonisent désormais le paysage législatif européen avec un certain niveau d'application de la convention de Berne au travers du traité de l'OMPI.

Les diverses directives, objet des recherches juridiques (cf. 4), s'intègrent dans le processus d'harmonisation législative :

- Directive 96/9/CE du 11 mars 1996, concernant la protection juridique des bases de données,
- Directive 2001/29/CE du 22 mai 2001 relative à certains aspects du droit d'auteur et des droits voisins dans la société de l'information,
- Directive 2004/48/CE du 29-04-2004 rectifiée relative au respect des droits de propriété intellectuelle,
- Directive 2006/115/CE du 12 décembre 2006 relative au droit de location et de prêt et à certains droits voisins du droit d'auteur dans le domaine de la propriété intellectuelle,
- Directive 2006/116/CE du 12 décembre 2006 relative à la durée de protection du droit d'auteur et de certains droits voisins (abroge la directive 93-98),
- Directive 2009/24/CE du 23 avril 2009 concernant la protection juridique des programmes d'ordinateur.

La Cour de Justice de l'union européenne, du fait des directives des dix dernières années faisant référence à la convention de Berne et à l'ADPIC, s'appuie, en cas d'absence de disposition communautaire relative à la propriété intellectuelle, sur les accords internationaux auxquels les directives font référence⁸.

⁸ Arrêt de la Cour de justice de l'Union européenne du 11-09-2007 Affaire C431/05 : «48 Dans ces conditions, il convient de répondre aux questions posées que, en l'état actuel de la réglementation communautaire dans le domaine des brevets, le droit communautaire ne s'oppose pas à ce que l'article 33 de l'accord ADPIC soit directement appliqué par une juridiction nationale dans les conditions prévues par le droit national. ».

5.4.2.2 Les directives principales liées à la propriété intellectuelle des données géographiques.

La directive INSPIRE et les trois règlements et la décision y afférent⁹ font référence à certains éléments susceptibles de protection par la propriété intellectuelle :

- Donnée géographique,
- Série de données géographiques,
- Métadonnée,
- Informations contenues dans les métadonnées.

Ces éléments s'analysent, dans le cadre du droit de propriété intellectuelle de l'Union européenne, en fonction de la problématique de l'étude concernant :

- Droit d'utilisation,
- Droit de diffusion gratuite,
- Droit de commercialisation (diffusion payante).

Néanmoins, cette terminologie explicite n'est pas complètement reprise dans le cadre de la législation européenne entrant dans le champ de cette étude. D'autres droits recouvrant des aspects similaires sont édictés et définis.

5.4.2.2.1 La directive Base de données

La Directive 96/9/CE du Parlement européen et du Conseil, du 11 mars 1996, concernant la protection juridique des bases de données permet de mettre place un système de protection harmonisé :

- de droit d'auteur pour la création intellectuelle,
- de droits économiques pour les investissements effectués (financier, en ressources humaines, efforts et énergie) dans l'obtention, la vérification ou la présentation du contenu d'une base de données.

⁹

- Règlement (CE) 1205/2008 portant modalités d'application de la directive 2007/2/CE en ce qui concerne les métadonnées,
- Règlement (UE) 268/2010 du 29 mars 2010 portant modalités d'application de la directive 2007/2/CE en ce qui concerne l'accès des institutions et organes communautaires aux séries et services de données géographiques des États membres dans des conditions harmonisées,
- Décision 2009/442/CE de la Commission du 5 juin 2009 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne le suivi et le rapportage [notifiée sous le numéro C(2009) 4199].
- Règlement (CE) n° 976/2009 de la Commission du 19 octobre 2009 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne les services en réseau

Directive 96/9/CE du 11 mars 1996 concernant la protection juridique des bases de données		
Textes autre que la Directive 2001/29/CE	ITEM	Références de la Directive 96/9/CE
Convention de Berne article 6 bis	Droit moral	considérant 28
Droit national		
Convention de Berne	Exceptions aux actes soumis à restrictions portent sur la structure de la base de données	considérant 37
Convention de Berne	§1 de l'article 10 de la convention n'est pas affecté par la directive (citation)	considérant 35 de la
Convention de Berne	Les possibilités de limitations nationale de l'article 6.2 ne peuvent être interprétées dans un but de porter un préjudice injustifié aux intérêts légitimes du titulaire du droit ou qui porte atteinte à l'exploitation normale de la base de données	Article 6-3
	L'auteur de la base de données dispose d'un droit exclusif de faire ou d'autoriser : a) la reproduction permanente ou provisoire, en tout ou en partie... b) la traduction, l'adaptation, l'arrangement et toute autre transformation... c) toute forme de distribution au public de la base ou de ses copies... d) toute communication, exposition ou représentation au public... e) toute reproduction, distribution, communication, exposition ou représentation au public des résultats des actes visés au point b)	Article 5
	Le fabricant (producteur) d'une base de données peut interdire l'extraction et/ou la réutilisation non autorisées du contenu d'une base de données	Article 7
	Les droits économiques du fabricant, peuvent être transférés, cédés ou donnés en licence contractuelle (droit d'utilisation)	article 8
	L'utilisateur légitime peut, sans autorisation, extraire ou réutiliser des parties non substantielles du contenu de la base sans léser de manière injustifiée les intérêts légitimes du fabricant	Article 7-5
Directive 91/250/CEE	protection juridique des programmes d'ordinateur	considérant 2 et article 2
Directive 92/100 CEE	Location et prêt	considérant 24 et article 2
Directive 93/98/CEE	Durée de protection	considérant 25 et article 2

Les droits économiques du fabricant d'une base de données, personne physique ou morale, dénommés droits « sui generis », se conçoivent indépendamment du droit d'auteur de la base de données, des données incluses dans la base.

Cette étude fait ressortir notamment les droits suivants:

- Pour les auteurs de base de données le droit d'autoriser ou d'interdire
 - la reproduction,
 - la transformation,
 - la distribution,
 - la communication au public,
- Pour les fabricants de base de données :
 - Le droit d'interdire l'extraction¹⁰ et la réutilisation¹¹.
 - Le droit de transfert, de cession et de concession de licence,

¹⁰ Art 7-2-a «extraction»: le transfert permanent ou temporaire de la totalité ou d'une partie substantielle du contenu d'une base de données sur un autre support par quelque moyen ou sous quelque forme que ce soit;

¹¹ Art 7-2-b «réutilisation»: toute forme de mise à la disposition du public de la totalité ou d'une partie substantielle du contenu de la base par distribution de copies, par location, par transmission en ligne ou sous d'autres formes.

5.4.2.2.2 La directive d'harmonisation de certains aspects du droit d'auteur

L'objectif de cette directive est de transposer les principales obligations internationales découlant notamment du Traité de l'OMPI sur le droit d'auteur (WCT), adopté dans le cadre de l'Organisation mondiale de la propriété intellectuelle (OMPI) en décembre 1996, au niveau communautaire.

La directive 2001/29/CE du 22 mai 2001 concerne le droit de reproduction, le droit de communication et le droit de distribution des auteurs.

Directive 2001/29/CE du 22 mai 2001 sur l'harmonisation de certains aspects du droit d'auteur et des droits voisins dans la société de l'information		
Textes autre que la Directive 2001/29/CE	ITEM	Référence de la directive 2001/29/CE
Traité de l'OMPI	Droit moral	considérant 19
Convention de Berne article 6 bis		
Droit national		
	L'auteur du droit exclusif d'autoriser ou d'interdire pour les auteurs la reproduction provisoire ou permanente	Article 2 de la
	Droit de communication d'œuvres au public et droit de mettre à la disposition du public d'autres objets protégés	Article 3 de la
	Droit de distribution	Article 4 de la
Directive 91/250/CEE	protection juridique des programmes d'ordinateur	considérant 20 et Article 1 de la
Directive 92/100 CEE	Location et prêt	considérant 20 et article 1
Directive 93/98/CEE	Durée de protection	considérant 20 et article 1
Directive 96/9/CE	la protection juridique des bases de données	considérant 20 et article 1

Avec cette directive d'harmonisation, les auteurs bénéficient d'un droit exclusif

- de reproduction directe ou indirecte provisoire ou permanente de leurs œuvres originales et de leurs copies,
- de distribution au public de l'original de leurs œuvres ou de leurs copies,
- de communication au public y compris la mise à disposition du public de leurs œuvres de manière à ce que chaque membre du public puisse y avoir accès de l'endroit et au moment qu'il choisit individuellement.

5.4.2.2.3 La directive INSPIRE

Les aspects de propriété intellectuelle examinés dans le cadre de cette étude nécessitent de recenser la terminologie afférente à ce domaine juridique dans la directive INSPIRE.

Il a déjà été recensé au 5.1.1 – « Définitions relatives aux données géographiques » de cette étude, les éléments couverts par la Directive INSPIRE. Parmi ces éléments, certains peuvent être sujet à protection par le système d'harmonisation législatif européen et notamment les deux directives analysées ci-dessus, la Directive 96/9 et la Directive 2001/29/CE :

- Donnée géographique,
- Métadonnées,
- Informations contenues dans les métadonnées,
- Série de données géographiques,
- Services de données géographiques.

Ces éléments font l'objet d'actions relevées dans INSPIRE :

Actions mentionnées dans INSPIRE liées aux éléments	Référence
accès public aux séries et aux services de données géographiques avec ou sans restriction	5 de l'article 4 article 13
collecte ou la diffusion	Considérant 11 Article 4-5
mises à disposition d'informations nécessaires (y compris les données, les codes et les classifications techniques,) des conditions qui ne restreignent pas leur utilisation à cette fin	Considérant 6 Articles 10 1 et 14-1
utilisation des données, des séries et des services de données géographiques avec ou sans frais	art 5-2 Considéranants 3, 5, 6, 12, 16 ...
échange, partage	Considérant 2
recherche et consultation des séries de données géographiques	Considérant 19
reproduction et de la dissémination	Considérant 23
interopérabilité	

Ces différentes actions :

- si elles concernent des données et des métadonnées peuvent être protégeables par le droit d'auteur,
- si elles concernent des séries de données à savoir éventuellement des compilations de données peuvent constituer des créations intellectuelles protégeables par le droit d'auteur ou par les droits afférents au fabricant de la base de données.

A ce titre, notamment

- le considérant 9 mentionne que « la présente directive ne devrait pas affecter l'existence ou la titularité de droits de propriété intellectuelle par des autorités publiques ».
- L'article 2-2 précise que « la présente directive n'affecte pas l'existence ou la titularité de droits de propriété intellectuelle par des autorités publiques ».
- L'article 4-5 précise aussi que « dans le cas de séries de données géographiques conformes à la condition fixée au paragraphe 1, point c), mais à l'égard desquelles un tiers détient des droits de propriété intellectuelle, l'autorité publique ne peut agir en application de la présente directive qu'avec le consentement de ce tiers, »
- L'article 13-1-e stipule que « les États membres peuvent restreindre l'accès public aux séries et aux services de données ... lorsqu'un tel accès nuirait aux aspects suivants : e) les droits de propriété intellectuelle ».

Ainsi la directive INSPIRE prend bien en compte des aspects de propriété intellectuelle au travers des diverses directives examinées dans le présent rapport.

Cette directive est complétée par des règlements et décision de mise en œuvre :

Règlements	Référence de la directive INPIRE (Directive 2007/2/CE).
Règlement (CE) 1205/2008 portant modalités d'application de la directive 2007/2/CE en ce qui concerne les métadonnées	article 5, paragraphe 2, point b article 11, paragraphe 2, point f
Décision 2009/442/CE de la Commission du 5 juin 2009 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne le suivi et le rapportage [notifiée sous le numéro C(2009) 4199]	article 19, paragraphe 2 article 21, paragraphes 1, 2 et 3
Règlement (CE) n o 976/2009 de la Commission du 19 octobre 2009 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne les services en réseau	article 16
Règlement (UE) 268/2010 du 29 mars 2010 portant modalités d'application de la directive 2007/2/CE en ce qui concerne l'accès des institutions et organes communautaires aux séries et services de données géographiques des États membres dans des conditions harmonisées	article 17

5.4.2.2.4 Directive ITS

la Directive 2010/40/UE du 7 juillet 2010 concernant le cadre pour le déploiement de systèmes de transport intelligents dans le domaine du transport routier et d'interfaces avec d'autres modes de transport, Texte présentant de l'intérêt pour l'EEE, a été analysée par le Sétra. Cette analyse fait ressortir les principaux éléments significatifs mentionnés dans cette directive qui concernent le projet Rosatte.

Items		Référence dans directive
Domaines prioritaires	<ul style="list-style-type: none"> I. l'utilisation optimale des données relatives à la route, à la circulation et aux déplacements, II. la continuité des services STI de gestion de la circulation et du fret, III. les applications de STI à la sécurité et à la sûreté routières, IV le lien entre le véhicule et les infrastructures de transport. 	Article 2
Action prioritaire	<ul style="list-style-type: none"> b) la mise à disposition, dans l'ensemble de l'Union, de services d'informations en temps réel sur la circulation, c) les données et procédures pour la fourniture, dans la mesure du possible, d'informations minimales universelles sur la circulation liées à la sécurité routière gratuites pour les usagers. 	Article 3
Conformité aux spécifications	Les spécifications prévoient, le cas échéant, une évaluation de la conformité, conformément à la décision no 768/2008/CE.	Article 6.6 §2
Responsabilité	les questions de responsabilité des acteurs en ce qui concerne le déploiement et l'utilisation d'applications et de services STI visés dans les spécifications sont traitées en conformité avec le droit de l'Union, y compris en particulier la directive 85/374/CEE en matière de responsabilité du fait des produits, ainsi qu'avec la législation nationale pertinente.	Article 11
Domaines et actions prioritaires	Rosatte est pratiquement concerné par tout le texte, à l'exception des questions de stationnement.	Annexe

Cette directive récente fait mention d'informations minimales universelles sur la circulation à fournir à titre gratuit, si possible, pour les usagers. (cf. considérant 14 et article 3-c). Ainsi cette directive, met en avant les informations universelles sur la circulation et leurs accessibilités par l'utilisateur. Cette directive précise bien que le traitement et l'utilisation desdites données respectent la directive 2003/98/CE du 17 novembre 2003 concernant la réutilisation des informations du secteur public.

Cette directive met en avant les aspects de responsabilité en ce qui concerne le déploiement et l'utilisation d'applications et de services STI.

A ce titre, la directive assimile, par référence à la directive 85/374/CEE modifiée relative à la responsabilité du fait des produits défectueux, les applications et les services à des produits pouvant en cas de défectuosité être considérés comme défectueux. En conséquence, l'éditeur d'applications géographiques et/ou le fabricant de bases de données géographiques peuvent se trouver responsable du dommage causé par un défaut de leur produit¹².

5.4.3 - Déclinaison succincte dans le cadre de la législation française

¹² Article 1 Directive 85/374/CEE du Conseil du 25 juillet 1985 en matière de responsabilité du fait des produits défectueux

La législation française dans le domaine du droit d’auteur et des bases de données repose notamment sur les directives européennes, la convention de Berne, le traité de l’OMPI, l’ADPIC et d’autres conventions internationales signées par la France au niveau de la Propriété intellectuelle dont la France est signataire avec les autres Etats membres avec ou sans l’Union européenne en tant que telle.

Le droit français relatif au données et séries de données se révèle conforme aux directives européennes. Les dispositions nationales spécifiques sont celles dont la législation européenne réserve aux Etats membres le soin de légiférer en la matière et notamment au niveau du droit moral de l’auteur.

Toute la législation et la réglementation française sont rassemblées au sein d’un code dénommé « Code de la Propriété Intellectuelle ».

Au niveau des organismes public français, l’Institut de Géographique National (IGN) gère, pour le Compte de l’Etat français, des référentiels géographiques dont le Référentiel à Grande Echelle (RGE®). A ce titre, l’IGN accorde des licences d’utilisation payantes tout en précisant, selon ses conditions générales de licence¹³, que la réutilisation de « données métier ainsi géolocalisées ne permettent pas conventionnellement « la reconstitution, totale ou d’une partie substantielle, des données de l’IGN » sauf à payer une licence à l’IGN. L’IGN a prévu un modèle d’avertissement¹⁴.

5.4.4 - Application des droits constitués, acquis, conservés ou perdus dans les étapes Rosatte

Le circuit d’information relatif à Rosatte fait émerger des éléments susceptibles de protection par la propriété intellectuelle :

- Donnée géographique,
- Métadonnées,
- Informations contenues dans les métadonnées,
- Série de données géographiques,
- Services de données géographiques.

Pour utiliser ces éléments, les intervenants dans le circuit Rosatte utilisent des moyens logiciels dits propriétaires ou des logiciels libres, des référentiels géographiques (base de données)... L’utilisation de ces moyens devient incontournable et tout intervenant doit se conformer aux droits et obligations mentionnés dans les licences contractuelles afférentes auxdits moyens. Ces moyens sont ceux notamment utilisés par les organismes publics de géographie.

Le codage est une activité qui génère en principe des données et métadonnées formatées et classifiées, à l’exclusion des champs libres de données ou les textes libres des métadonnées. Le codage fait, en principe, disparaître toute forme de créativité et donc d’originalité au sens de la législation européenne telle qu’examinée précédemment.

L’examen complémentaire des grandes activités, déjà analysées dans le cadre du 5.1.5 permet de bien identifier sur la base du constat relatif au codage que les attributs de propriété relatifs aux données et métadonnées concernant la sécurité perdent toute trace de droit d’auteur dès ledit codage.

Ainsi, des attributs de droit d’auteur peuvent apparaître au niveau des activités :

- d’acquisition (recueil),
- de post-traitement (contrôle et mise en base de données),
- de mise en base de données.

Par contre, ces attributs vont disparaître au niveau :

- du décodage / Constitution du fichier d’export standard,
- du décodage/ Constitution d’une carte numérique des attributs de sécurité,

¹³ Conditions générales de licences disponibles sur le site de l’IGN.

¹⁴ Modèle d’avertissement consultable sur le Site de l’IGN

- Transmission des lots (séries) de données.

Néanmoins, des attributs de propriété :

- pourraient être introduits à nouveau au niveau de l'enrichissement,
- disparaîtraient totalement en cas d'appauvrissement, sauf si par mégarde un intervenant introduit de tels attributs pour optimiser l'appauvrissement.

Ces attributs de droit d'auteur se différencient des aspects de propriété économique des bases de données géographiques qui suivent des règles propres. Ainsi il est important conformément à la législation européenne de veiller à respecter les exigences mentionnées dans les licences contractuelles afférentes aux bases de données utilisées et aux moyens logiciels.

Au regard des étapes, les attributs de droit d'auteur disparaissent au niveau du passage à l'étape 3 :

- Etapes 1 Collecte et transmission
- Etapes 2 Consolidation et encodage
- **Etapes 3 Intégration**
- Etapes 4 Valorisation
- Etapes 5 Utilisation du service

Ainsi, toutes les activités créatrices initiales avant le codage s'effectuent sous l'emprise de la législation nationale.

Un droit national peut s'appliquer différemment de tout autre droit national au niveau des droits attachés à la personne de l'auteur, à savoir le droit moral au sens de la convention de Berne.

A ce stade, les limitations et les exceptions à l'harmonisation émises par les directives n'ont pas d'incidence au niveau du circuit d'échanges et de partages Rosatte en ce qui concerne les données et métadonnées.

Ainsi, les attributs de propriété intellectuelle disparaissent lors de l'activité de codage du fait du formatage et de la classification...

Après le codage, les séries de données entrent dans le processus d'échanges et/ou de partages communautaires, ou transfrontières. A cette étape du circuit Rosatte, l'application des lois nationales harmonisées peut se réaliser hors limites et restrictions nationales autorisées par les directives car, du fait du codage, les données et métadonnées sont devenues dépourvues d'attribut de propriété intellectuelle.

Par contre, restent seuls des aspects de propriété économique des données et métadonnées extraites des bases de données qui se gèrent uniquement au niveau¹⁵ :

- de la rémunération ou de la gratuité de l'utilisation,
- de la gratuité de la diffusion issue d'une extraction pour une réutilisation,
- de la rémunération de la commercialisation des données extraites et diffusées aux fins de réutilisation.

Toutefois, les référentiels géographiques s'analysent comme des bases de données. Ces moyens servent à la fois au codage et au décodage. Au niveau du codage, l'organisation dispose de la licence contractuelle sur le référentiel géographique et le logiciel de SIG. Au niveau du décodage, l'utilisation d'un référentiel apparaît indispensable. L'analyse du circuit a permis de savoir que cette activité

¹⁵ Directive 96/9/CE protection juridique des bases de données Article 7 2 « on entend par:

a) «extraction»: le transfert permanent ou temporaire de la totalité ou d'une partie substantielle du contenu d'une base de données sur un autre support par quelque moyen ou sous quelque forme que ce soit;

b) «réutilisation»: toute forme de mise à la disposition du public de la totalité ou d'une partie substantielle du contenu de la base par distribution de copies, par location, par transmission en ligne ou sous d'autres formes. La première vente d'une copie d'une base de données dans la Communauté par le titulaire du droit, ou avec son consentement, épuise le droit de contrôler la revente de cette copie dans la Communauté.

pouvait s'effectuer avec un autre référentiel sans avoir besoin de celui du Codage. **Une telle possibilité de non utilisation du référentiel du codage dépend des dispositions conventionnelles de la licence du fabricant dudit référentiel mais aussi de son niveau d'interopérabilité en conformité avec la directive base de données et INSPIRE.**

Le tableau mentionné ci-dessous permet une visualisation rapide des cas étudiés au niveau des données et des métadonnées.

Attributs de droit d'auteur attachés aux données et métadonnée Rosatte créés au cours de l'acquisition				
Intervenants dans le processus d'acquisitions Rosatte	Au terme de l'étape n°1 "collecte et transmission"	Au terme de l'étape n°2 "consolidation et encodage"	Au terme de l'étape n°3 "Intégration"	Au terme de l'étape n°4 "valorisation" (**)
le propriétaire et/ou l'auteur du référentiel cartographique utilisé (*)	Attribut propriété	OUI	OUI	OUI
l'acquéreur de droits sur le référentiel cartographique utilisé (*)	Attribut propriété	OUI	OUI	OUI
le prestataire de relevé sur le terrain,	Attribut propriété	NON	NON	NON
le commanditaire du travail précédent (*)	Attribut propriété	NON	NON	NON
les prestataires de numérisation et de post-traitement	Attribut propriété	NON	NON	NON
le commanditaire du travail précédent.	Attribut propriété	NON	NON	NON
le fournisseur de Données, du fait de sa plus-value propre	Attribut propriété	NON	NON	NON
Parmi les autres intervenants dans le reste du processus	Au terme de l'étape n°1 "collecte et transmission "	Au terme de l'étape n°2 "consolidation et encodage"	Au terme de l'étape n°3 "Intégration"	Au terme de l'étape n°4 "valorisation" (**)
le gestionnaire de la Base de Données Rosatte ¹⁶ (autorité publique)	Sans objet	NON	NON	NON
l'intégrateur	Sans objet	Sans objet	OUI	OUI
le fournisseur de Service (autorité publique) ¹⁷	Sans objet	Sans objet	Sans objet	NON

(*) De façon générale, le commanditaire est le fournisseur de données, mais il peut aussi exister un fonctionnement en cascade du fait de la sous-traitance.

(**) Cette étape n'est pas approfondie dans l'étude "Rosatte", mais est un élément du flux collaboratif dont elle conditionne globalement le modèle économique.

Ainsi, les informations relatives aux contraintes d'accès et d'utilisation devront figurer dans les métadonnées¹⁸ conformément à la législation européenne tant au niveau :

- de conditions applicables à l'accès et à l'utilisation et, le cas échéant, les frais correspondants, « conformément à l'article 5, paragraphe 2, point b), et à l'article 11, paragraphe 2, point f), de la directive 2007/2/CE »
- de restrictions concernant l'accès public « au titre de l'article 13 de la directive 2007/2/CE »

5.5 - Partie technique N°2 : « responsabilité des contributeurs »

Les données géographiques, les métadonnées géographiques, les séries de données géographiques peuvent contenir des erreurs qui ont pu apparaître à une étape quelconque du circuit d'information Rosatte.

¹⁶ Ne concerne que les données brutes

¹⁷ Ne concerne que les données brutes

¹⁸ Cf. 8 « Contraintes en matière d'accès et d'utilisation » de Partie B de Annexe « règles de mise en œuvre relatives aux métadonnées » du Règlement (CE) n°1205/2008 de la Commission du 3 décembre 2008 portant modalités d'application de la directive INSPIRE 2007/2/ en ce qui concerne les métadonnées

5.5.1 - Qualité et validité

La directive INSPIRE mentionne dans son considérant 2 que « Un certain nombre de problèmes se posent en ce qui concerne la disponibilité, la qualité, l'organisation, l'accessibilité et la mise en commun des informations géographiques nécessaires pour atteindre les objectifs fixés dans ledit programme ». La directive stipule dans son article 5 2 et 5-2-c que « Les métadonnées comprennent des informations sur les aspects suivants: ... c) la qualité et la validité des séries de données géographiques; ». Tout en ajoutant aussi à l'article 5-3 que « Les États membres prennent les mesures nécessaires pour garantir que les métadonnées sont complètes et d'une qualité suffisante pour satisfaire à l'objectif visé à l'article 3, point 6 ». Ceci est complété par l'article 21-2-a qui parle d'assurance qualité.

La définition de la « conformité » édictée par la directive INSPIRE est précisée dans d'autres textes communautaires concernant les séries de données géographiques et les services de données géographiques. Les règles de mise en œuvre ont fait l'objet de trois règlements et de la décision :

- les métadonnées avec le Règlement (CE) 1205/2008 du 3 décembre 2008 (réf. article 5, paragraphe 2, point b et article 11, paragraphe 2, point f de la directive INSPIRE),
- le suivi et le rapportage avec Décision 2009/442/CE du 5 juin 2009 (réf. article 19, paragraphe 2 et article 21, paragraphes 1, 2 et 3 de la directive INSPIRE)
- les services en réseau avec le Règlement (CE) 976/2009 du 19 octobre 2009 (réf. article 16 de la directive INSPIRE)
- l'accès des institutions et organes communautaires aux séries et services de données géographiques des États membres dans des conditions harmonisées avec le Règlement (UE) 268/2010 du 29 mars 2010, (réf. article 17 de la directive INSPIRE).

Les Etats membres doivent respecter la conformité aux règles de mise en œuvre édictées par ces règlements et cette décision.

Les Etats membres en vertu de la Directive INSPIRE « prennent les mesures nécessaires pour garantir que les métadonnées sont complètes et d'une qualité suffisante pour satisfaire à l'objectif visé à l'article 3, point 6 » de la Directive à savoir : rendre possible la recherche, l'inventaire et l'utilisation des séries et services de données géographiques (cf. article 5-3 de la directive).

Le Règlement n° 1205/2008 de la Commission du 3 décembre 2008 relatif aux métadonnées INSPIRE¹⁹ définit que la « qualité » est la totalité des caractéristiques d'un produit qui lui confèrent l'aptitude à satisfaire des besoins exprimés ou implicites, conformément à la norme EN ISO 19101.

Le Règlement précise aussi²⁰ que les « références à la validité des séries de données géographiques doivent s'entendre comme concernant l'un des aspects suivants:

- l'intervalle d'espace et de temps qui est pertinent pour les données,
- la question de savoir si les données ont été vérifiées par rapport à une norme de mesure ou de performance,
- le niveau d'adéquation des données par rapport à l'utilisation prévue,
- le cas échéant, la valeur légale de la série de données géographiques ».

Le Règlement mentionne que les exigences de conformité²¹ doivent figurer dans les métadonnées au niveau :

- de la référence des règles de mise en œuvre adoptées (spécifications),

¹⁹ Cf. 1 de la Partie A de son annexe « règles de mise en œuvre relatives aux métadonnées » Règlement (CE) n° 1205/2008 de la Commission du 3 décembre 2008 portant modalités d'application de la directive 2007/2/CE en ce qui concerne les métadonnées

²⁰ Cf. 2 de la Partie A de son annexe « règles de mise en œuvre relatives aux métadonnées » Règlement (CE) n° 1205/2008 de la Commission du 3 décembre 2008 portant modalités d'application de la directive 2007/2/CE en ce qui concerne les métadonnées

²¹ Les exigences définies à l'article 5, paragraphe 2, point a), et à l'article 11, paragraphe 2, point d), de la directive 2007/2/CE en ce qui concerne la conformité et le degré de conformité avec les règles de mise en œuvre adoptées au titre de l'article 7, paragraphe 1, de la directive 2007/2/CE. Cf. 7 « Conformité » de Partie B de Annexe « règles de mise en œuvre relatives aux métadonnées » du Règlement (CE) n°1205/2008 de la Commission du 3 décembre 2008 portant modalités d'application de la directive INSPIRE 2007/2/CE en ce qui concerne les métadonnées

- du degré de conformité de la ressource²²²³ par rapport aux règles de mise en œuvre.

Ainsi pour palier à de telles difficultés, la législation européenne demande de mettre en œuvre un processus d'assurance qualité au niveau, de préférence, de chaque intervenant et de mentionner la qualité et la validité dans la métadonnée y afférent. Le fait de faire figurer des messages d'alerte vis à vis de tout utilisateur afin de se décharger de toute responsabilité, ne peut être apprécié comme une démarche d'assurance qualité.

Une donnée ne doit pas, en principe, être

- erronée dès l'origine,
- falsifiée au cours des échanges Rosatte,
- être modifiée dans son intégrité

lors d'une activité Rosatte.

Néanmoins, la mise à jour en temps réel des données n'apparaît pas évidente. De plus, des modifications temporaires sur le terrain pour différentes raisons, comme par exemple la signalisation temporaire de travaux ou d'accident, peuvent aussi devenir contradictoires temporairement. Dans ce cas, la métadonnée devrait garantir la valeur probante de l'information à une date donnée et la non modification de la donnée au cours des activités Rosatte.

Le projet Bali démontre une approche assurance qualité :

- des contrôles de l'information effectués lors de l'acquisition,
- des ajustements effectués par les forces de police et de gendarmerie,
- des mises à jour réalisées par les autorités prenant les décisions relatives aux limitations de vitesses.

5.5.2 - Responsabilité

En cas de diffusion et/ou de commercialisation de données erronées, falsifiées ou modifiées qui engendrent des situations accidentogènes, la responsabilité des différents intervenants (contributeurs) d'une chaîne de consolidation de données, peut elle être engagée ?

La non qualité et la non validité peuvent s'apprécier notamment :

- en fonction d'une erreur d'acquisition ou du non respect de l'intégrité de la donnée au travers des activités Rosatte,
- en fonction de l'obsolescence de la donnée ou du manque de données fournies dans un délai à fixer.

Pour éviter que les intervenants de la chaîne Rosatte (autorité publique et des tiers)²⁴ soient mis en cause inutilement, ces intervenants cherchent à mettre en œuvre des solutions pour tenter de se protéger notamment :

- des clauses conventionnelles de limitation et/ou d'exonération de responsabilité dans leurs contrats,
- des avertissements au niveau des applications et des services à destination des utilisateurs,
- des campagnes de communication,
- des processus d'assurance de la qualité tels que stipulés par la Directive INSPIRE.

²² "Ressource": une ressource d'information faisant directement ou indirectement référence à un lieu ou une zone géographique spécifique définit au 1 de la Partie A de son annexe « règles de mise en œuvre relatives aux métadonnées.

²³ Les types de ressources :

1.1. Ensemble de séries de données géographiques (series),

1.2. Série de données géographiques (dataset),

1.3. Service de données géographiques (services), selon le 1 « Éléments de métadonnées » Partie D de l'Annexe règles de mise en œuvre relatives aux métadonnées du Règlement (CE) n°1205/2008 de la Commission du 3 décembre 2008 portant modalités d'application de la directive INSPIRE 2007/2/CE en ce qui concerne les métadonnées.

²⁴ Au sens de du 9 et du 10 de l'article 2 de la Directive INSPIRE

Les juridictions nationales pourraient juger que ces précautions ne s'avèrent pas suffisantes.

Rosatte présente aussi des aspects de responsabilité concernant les utilisateurs conducteurs. En effet, au cas où il y aurait une différence entre la limitation :

- mentionnée dans une décision d'une autorité publique nationale ou locale,
- constatée sur le terrain
- émanant d'informations figurant dans le véhicule,

l'autorité judiciaire nationale aura toujours tendance, surtout en cas d'accident :

- à se référer à la décision voire à prendre en compte aussi si le panneau de vitesse matérialisant la décision de l'autorité concernée, était visible et lisible,
- plutôt qu'à accepter de prendre en compte l'information figurant dans le véhicule de l'utilisateur.

Les attributs de sécurité routières géolocalisés, s'ils s'avèrent erronés, falsifiés, modifiés, sont-ils assimilables...à des produits défectueux entrant dans le cadre de la Directive 1999/34/CE du Parlement européen et du Conseil, du 10 mai 1999, modifiant la directive 85/374/CEE du Conseil relative au rapprochement des dispositions législatives, réglementaires et administratives des États membres en matière de responsabilité du fait des produits défectueux ?

La directive 2010/40/UE du 7 juillet 2010 « Systèmes de Transport Intelligents » stipule des règles générales de responsabilité au niveau de la fourniture des applications et des services avec application des règles afférentes aux produits défectueux^{25,26} notamment sur les produits défectueux bien que les applications et les services soient des systèmes d'aide à la navigation et non pas des moyens de navigation. Il semblerait que cette responsabilité de produits défectueux ne porte pas sur les données et métadonnées.

Néanmoins, des dispositions du Règlement n° 1205/2008 du 3 décembre 2008 concernant les métadonnées INSPIRE identifient des organisations responsables de l'établissement, de la gestion, de la maintenance et de la diffusion des séries et des services de données géographiques, lesdites organisations, listées au 5.1.2 de ce rapport²⁷,

Cette dénomination « organisations responsables » pourrait porter à conséquence alors que cette responsabilité semble porter plus sur la conformité aux exigences de la mise en œuvre stipulées par la Directive que sur la qualité des données. En outre, cette responsabilité pourrait être atténuée en vertu de l'article 14-4 de la Directive INSPIRE qui semble octroyer une possibilité de limitation de responsabilité au travers de clauses de non-responsabilité au niveau des services de données géographiques fournis par une autorité publique.

En conséquence, aucun statut pénal dans le cadre de la Directive INSPIRE ne fixe les limites et/ou des exonérations éventuelles de responsabilité des autorités et organisations publiques au niveau des données et des métadonnées sauf s'il s'avérait qu'une faute, prouvée avec lien de causalité entre la faute et le dommage, leur était reprochée.

Ce statut reste-t-il à déterminer au niveau communautaire ou est-il laissé aux juges nationaux ?

5.6 - Partie technique N°3 : « brevets de méthodes - cadre de référence »

Pour assurer la convergence du flux collaboratif, le projet Rosatte s'appuie sur la méthode dynamique "Agora C", correspondant à la norme 17572-3. La norme ISO 17572 recouvre plusieurs normes

²⁵ Article 11 Règles concernant la responsabilité de la Directive 2010/40/UE du 7 juillet 2010 concernant le cadre pour le déploiement de systèmes de transport intelligents dans le domaine du transport routier et d'interfaces avec d'autres modes de transport.

²⁶ Directive 85/374/CEE du Conseil du 25 juillet 1985 relative au rapprochement des dispositions législatives, réglementaires et administratives des États membres en matière de responsabilité du fait des produits défectueux

²⁷ 9 de la Partie B Annexe : « Règles de mise en œuvre relatives aux métadonnées » du Règlement (CE) n°1205/2008 du 3 décembre 2008 portant modalités d'application de la directive 2007/2/CE INSPIRE.

ISO 17572		
Norme	intitulé	date
ISO 17572-1:2008	Systèmes intelligents de transport (SIT) - Localisation pour bases de données géographiques - Partie 1 : exigences générales et modèle conceptuel	Décembre 2008
ISO 17572-2:2008	Systèmes intelligents de transport (SIT) - Localisation pour bases de données géographiques - Partie 2 : localisations précodées (profil précodé)	Décembre 2008
ISO 17572-3:2008	Systèmes intelligents de transport (SIT) - Localisation pour bases de données géographiques - Partie 3 : localisations dynamiques (profil dynamique)	Décembre 2008
SO 17572-3/AC1:2009	Rectificatif technique 1 à la norme ISO 17572-3 de décembre 2008	Juillet 2009

Un dépôt récent de brevets relatifs à un processus dit de codage et décodage, derniers maillons du processus central de l'étude Rosatte reposant sur une norme ISO 17572 relative aux Méthodes de localisation (méthodes de géoréférencement d'attributs liés aux transports) a été effectué par un pool de sociétés.

Lesdits brevets ont peut être été intégrés dans ladite norme. Dans ce cas, les industriels ont dû les déclarer à l'organisme de normalisation de rattachement.

Des conflits peuvent surgir entre brevets et normes lorsque l'application de la norme requiert l'utilisation d'une technique protégée par au moins un brevet. Le but d'un organisme de normalisation, ainsi que des entreprises participantes à la rédaction d'une norme, est d'élaborer une norme utilisable par le plus grand nombre. Le titulaire d'une demande de brevet ou d'un brevet ne peut empêcher l'application d'une norme en refusant la concession d'une licence ou en demandant des redevances trop élevées.

Nombre d'organismes de normalisation demandent aux parties au processus de normalisation de divulguer des informations concernant les brevets concernés (et parfois également les demandes de brevet) afin d'inclure les informations pertinentes dans le processus.

Face à une telle problématique, de nombreux organismes de normalisation demandent au titulaire du brevet de :

- divulguer des informations concernant les brevets concernés,
- d'accepter l'octroi de licences à des conditions équitables, raisonnables et non discriminatoires (licence Reasonable and Non Discriminatory Licensing dénommée RAND), voire sans redevance.

Au niveau de l'Union européenne, le transfert d'engagements relatifs à l'octroi de licences à des conditions équitables, raisonnables et non discriminatoires s'avère nécessaire.

Les organismes de normalisation internationaux ISO, CEI et UIT ont élaboré des règles relatives à la normalisation de produits ou de process brevetés (règles de licence RAND) ; à ce titre, voir sur le site de UIT « Common Patent Policy for ITU ».

Selon ces règles, l'existence d'un brevet doit être signalée le plus en amont possible lors de l'élaboration d'une norme. Dans ce cas, le détenteur des droits s'engage, vis-à-vis de l'organisme de normalisation concerné, à négocier des licences avec des demandeurs du monde entier, à des termes et conditions raisonnables et non discriminatoires.

Pour l'Union européenne : « La normalisation garantit une certaine égalité des chances en matière d'innovation du fait qu'elle permet l'interopérabilité et la concurrence entre les produits, services et procédés ». De plus, la Commission précise que la normalisation prendre en compte les corrélations existantes entre les droits de propriété intellectuelle et la normalisation.

La Commission²⁸ propose « que les organismes de normalisation dans le domaine des TIC mettent en œuvre des politiques claires et non discriminatoires à l'égard des droits de la propriété intellectuelle et qui garantissent la concurrence. La Commission souhaite également que les organismes de normalisation envisagent une déclaration des conditions de licence les plus restrictives, en précisant notamment les taux les plus élevés de redevances avant l'adoption d'une norme ».

En effet, la politique européenne de normalisation autorise actuellement l'intégration, dans des normes, de technologies propriétaires grevées de droits de propriété intellectuelle. Toutefois, les textes relatifs à la concurrence stipulent qu'une norme ne devrait pas « conduire à une restriction de la concurrence et devrait se fonder sur des procédures non discriminatoires, ouvertes et transparentes ».

Dans le même ordre d'esprit, si à l'issue de la publication d'une norme, un industriel venait à chercher à bloquer sa mise en œuvre en s'arrogeant un monopole grâce à l'obtention d'un brevet, ce monopole pourrait se voir qualifié d'anti concurrentiel car reposant sur un brevet dit essentiel restreignant la concurrence²⁹.

²⁸ Livre blanc de la Commission, du 3 juillet 2009, intitulé « Moderniser la normalisation dans le domaine des technologies de l'information et de la communication (TIC) dans l'UE: vers l'avenir »

²⁹ Arrêt du Tribunal de première instance (grande chambre) du 17 septembre 2007 affaire T T-201/04 : « L'article 82 CE entend interdire à une entreprise dominante de renforcer sa position en recourant à des moyens autres que ceux qui relèvent d'une concurrence par les mérites ».

6 - Préconisations

6.1 - Préconisations au niveau des droits de propriété intellectuelle

Rosatte est un projet européen qui nécessite une approche commune des états membres.

6.1.1 - Recommandations globales

L'examen des Directives, dans le cadre de cette étude, fait ressortir qu'une partie des dispositions juridiques afférentes à la propriété intellectuelle reste encore un peu au niveau des prérogatives des Etats membres du fait de leurs disparités nationales qui ne se révèlent pas contraires au Traité. Il faut rappeler que toute harmonisation reste un compromis entre les Etats membre et ce, dans le respect du Traité de l'Union européenne.

La problématique juridique que soulève le projet Rosatte quant au circuit de transfert des données et des métadonnées amène à conseiller les intervenants dans le circuit Rosatte :

- à retenir une approche au plus près des textes harmonisés des Directives au niveau de la propriété intellectuelle,
- à gérer les exceptions et les limitations des Directives relatives à la propriété intellectuelle, revenant aux Etats membres, qui impactent le circuit des attributs dans le cadre de licences contractuelles,
- à mettre en place des spécifications d'échanges permettant d'exclure tout aspect de propriété intellectuelle via notamment le format et les classifications de données et de métadonnées pour réaliser un modèle de données utilisable gratuitement,
- à considérer que les attributs de sécurité, propres au projet Rosatte, extraits des bases de données ne portent pas atteinte au droit économique du fabricant.

Les droits moraux, non économiques et propres à l'auteur, restent à la libre appréciation de chaque Etat membre dans le respect de la convention de Berne, du traité de l'OMPI et de l'ADPIC, comme il a été vu dans cette étude. Ces limites et exceptions réservées aux Etats membres, par les directives, pourraient apparaître comme des freins à une mise en œuvre transfrontière.

6.1.2 - Argumentaires

Au contraire, les droits économiques qui reposent sur le tronc commun des directives, disposent d'une législation harmonisée dans chaque Etat membre. Cette harmonisation législative devrait favoriser l'échange, le partage, l'accès, l'utilisation des données Rosatte en écartant au maximum les restrictions³⁰.

En conséquence, il apparaît intéressant dans le cadre de la coordination nationale³¹ et la coordination communautaire³² que soient suggérées, notamment à la Commission européenne, des mesures complémentaires aux spécifications de mise en œuvre figurant dans les trois règlements et dans la décision afférents de la directive INSPIRE afin que, les données et métadonnées soient formatées, classifiées ... de telle sorte que toute forme de créativité soit exclue par le codage. Cette exclusion supprimerait toute revendication d'originalité et donc tout attribut de droit d'auteur en la matière. Cette suggestion n'a pas pour but d'exclure toute forme de créativité lors de l'acquisition mais bien de fixer une destination aux données et séries de données. Cette solution organisationnelle et technique éviterait toute forme de revendication de droit d'auteur.

Dans le cas où il y aurait eu transfert de droit, l'intervenant devrait autoriser par contrat de licence avec les organisations publiques et privées l'extraction des données et métadonnées avec une destination ciblée pour toute exploitation dans les circuits Rosatte et au-delà chez l'utilisateur final. De

³⁰ Cf. article 17-2 Directive 2007/2/CE du 14 mars 2007 INSPIRE qui précise « Les mesures prévues au paragraphe 1 (mesures concernant le partage) excluent toute restriction susceptible de créer des obstacles pratiques... au partage de séries et de services de données géographiques.

³¹ Cf. article 18 de la Directive 2007/2/CE du 14 mars 2007 INSPIRE qui précise que « Ces structures coordonnent, entre autres, les contributions des utilisateurs, des producteurs, des fournisseurs de service à valeur ajoutée et des organismes de coordination en ce qui concerne l'identification des séries de données pertinentes, les besoins des utilisateurs, la fourniture d'informations sur les pratiques existantes et un retour d'information sur la mise en œuvre de la présente directive ».

³² Cf. article 19 de la Directive 2007/2/CE du 14 mars 2007 INSPIRE 1. La Commission est responsable de la coordination au niveau communautaire d'INSPIRE et est assistée à cette fin.

telles exigences conventionnelles devront figurer au niveau de chaque contrat de licence qui est à établir entre chaque intervenant du processus.

Les données et métadonnées du projet Rosatte ne recouvrent que des attributs de sécurité routière et non des attributs de sécurité publique, de défense nationale... De ce fait ces données et métadonnées devraient pouvoir circuler dans l'ensemble du circuit Rosatte de façon non restrictive³³.

Le projet BALI du Ministère de l'écologie, du développement et de l'aménagement durables de la République Française utilise une standardisation des données grâce à une interface utilisateur connectée à un espace cartographique. Néanmoins, le référent géographique et les moyens s'utilisent dans le respect des droits détenus. L'équipe du projet BALI ne semble pas s'être prononcée, à l'heure actuelle sur « le statut de la base de données et les aspects juridiques concernant la propriété intellectuelle des données ».

6.1.3 - Suggestions de clauses

Ainsi, les organisations publiques peuvent faire le nécessaire pour « éviter de transférer de droit de propriété intellectuelle ».

Pour chaque donnée et métadonnée faisant l'objet d'une série ou service de données, il sera aussi nécessaire accorder une licence contractuelle entre chaque intervenant successif du circuit Rosatte. Cette licence devrait intégrer des dispositions types dès la codification comme par exemple tout en respectant le Règlement (UE) n° 268/2010 de la Commission du 29 mars 2010³⁴.

La licence accordée autorise l'extraction d'attributs de sécurité des séries de données pour l'échange, le partage, l'accès ainsi que l'utilisation mais uniquement pour les activités du circuit Rosatte (notamment reproduction, traduction intégration, adaptation, transformation, codage et décodage) pour une distribution au public et une utilisation par le public. Les séries de données codifiées sont formatées et classifiées... En conséquence, ces séries ne sont pas originales. Toutefois, chaque référentiel géographique utilisé pour coder et décoder est un moyen (base de données et/ou logiciel) dont l'utilisateur doit posséder une licence d'utilisation. Dans le cas où, lors le codage, des éléments d'un référentiel seraient transférés avec la série, l'intervenant ne peut utiliser les éléments du référentiel pour décoder sauf à disposer des droits y afférents.

Au niveau de tout intervenant du circuit Rosatte dont une des activités serait génératrice de droit de propriété intellectuelle, la démarche centrée sur les attributs de sécurité devrait être similaire. En effet, il est suggérer d'intégrer, dans les contrats de prestations de services, les dispositions suivantes :

Les attributs de sécurités fournis avec les prestations sont des données brutes non créatives du fait qu'elles ne sont pas originales car formatées et classifiées sans possibilité de créativité. Ainsi, ces données ou informations brutes ne sont donc pas protégées par le droit d'auteur. Si toutefois, volontairement ou involontairement, le prestataire introduisait des attributs de sécurité susceptibles de droit d'auteur, dans ce cas, le prestataire accorde d'office une licence gratuite sur de tels attributs. Cette licence accordée autorise l'échange, le partage, l'accès ainsi que l'utilisation mais uniquement pour les activités du circuit Rosatte (notamment reproduction, traduction intégration, adaptation, transformation, codage et décodage) pour un accès ou une distribution au public et une utilisation par le public. Les données brutes ainsi transmises restent gratuites quelle que soit l'activité du circuit Rosatte.

³³ Cf. restriction des articles 13 et 16 de la Directive 2007/2/CE du 14 mars 2007 INSPIRE

³⁴ Règlement (UE) n° 268/2010 de la Commission du 29 mars 2010 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne l'accès des institutions et organes communautaires aux séries et services de données géographiques des États membres dans des conditions harmonisées

6.1.4 - Schémas de synthèse

Attributs de droit d'auteur attachés aux données et métadonnées Rosatte par type d'intervenant								
Intervenants	Attribut de propriété Au terme de l'étape							
Intervenants dans le processus d'acquisition Rosatte	Etape-1 "collecte et transmission"		Etape-2 "consolidation et encodage"		Etape-3 décodage et Intégration"		Etape-4 "valorisation" (**)	
	Constat	Conseil	Constat	Conseil	Constat	Conseil	Constat	Conseil
le propriétaire et/ou l'auteur du référentiel cartographique utilisé (*)	OUI	OUI	OUI	NON	OUI	NON	OUI	NON
l'acquéreur de droits sur le référentiel cartographique utilisé (*)	OUI	OUI	OUI	NON	OUI	NON	OUI	NON
le prestataire de relevé sur le terrain,	OUI	OUI	NON	NON	NON	NON	NON	NON
le commanditaire du travail précédent (*)	OUI	OUI	NON	NON	NON	NON	NON	NON
les prestataires de numérisation et de post-traitement	OUI	OUI	NON	NON	NON	NON	NON	NON
le commanditaire du travail précédent.	OUI	OUI	NON	NON	NON	NON	NON	NON
le fournisseur de Données, du fait de sa plus-value propre	OUI	OUI	NON	NON	NON	NON	NON	NON
Parmi les autres Intervenants dans le reste du processus	Etape-1 "collecte et transmission"		Etape-2 "consolidation et encodage"		Etape-3 décodage et Intégration"		Etape-4 "valorisation" (**)	
	Constat	Conseil	Constat	Conseil	Constat	Conseil	Constat	Conseil
le gestionnaire de la Base de Données Rosatte ³⁵ (autorité publique)	Sans objet		NON	NON	NON	NON	NON	NON
l'intégrateur	Sans objet		Sans objet		OUI	NON	OUI	NON
le fournisseur de Service ³⁶ (autorité publique)	Sans objet		Sans objet		Sans objet		NON	NON

(*) De façon générale, le commanditaire est le fournisseur de données, mais il peut aussi exister un fonctionnement en cascade du fait de la sous-traitance.

(**) Cette étape n'est pas approfondie dans l'étude "Rosatte", mais est un élément du flux collaboratif dont elle conditionne globalement le modèle économique.

(***) Sous réserve que d'autres intervenants n'introduisent pas de nouveaux attributs de propriété intellectuelle.

³⁵ Ne concerne que les données brutes

³⁶ Ne concerne que les données brutes

Attributs de droit d’auteur attachés aux données et métadonnées Rosatte par étape					
Etapes	Données en sortie	Eléments de propriété intellectuelle dans le circuit Rosatte			
Intitulés	Types de données	Type de droit	Type d’information ou moyen	Attribut de propriété	
				constat	conseillé
Etape 1 Collecte et transmission	soit les intégrer dans son propre système de gestion avant de les réexporter soit les transmettre directement Soit les saisir en direct via un portail (méthode BALI) Des séries partielles de données respectant un cahier des charges	Droit Propriété préexistant	Documents	OUI	NC
			Données brutes	NON	NON
		Droit Propriété préexistant transféré au cours de la phase	Documents	OUI	NC
			Données brutes	NON	NON
		Droit Propriété créé au cours de la phase	Données brutes	NON	NON
			Métadonnées	OUI	NON
			Documents	OUI	NC
		Restriction de destination des résultats de la tâche			NON
Référentiel cartographique public ou propriétaire			OUI	OUI	
Etape 2 Consolidation et encodage	export d’E1 au format standard Rosatte (conforme AGORA-C) : <ul style="list-style-type: none">DonnéesMétadonnées Avec référent IGN	Droit Propriété préexistant	Documents	OUI	NC
			Données brutes	NON	NON
		Droit Propriété préexistant transféré au cours de la phase	Données brutes	NON	NON
			Métadonnées	OUI	NON
			Documents	OUI	NC
		Droit Propriété créé au cours de la phase	Données brutes	NON	NON
			Métadonnées	OUI	NON
			Documents	NON	NC
Restriction de destination des résultats de la tâche			NON	NON	
Référentiel cartographique public ou propriétaire			OUI	OUI	
Etape 3 Décodage et Intégration	Cartographie avec attributs (au format utile au gestionnaire du service avec propre référentiel avec éventuellement appauvrissement) (plus de format IGN)	Droit Propriété préexistant	Données brutes	NON	NON
			Métadonnées	OUI	NON
			Documents	NON	NC
		Droit Propriété préexistant transféré au cours de la phase	Données brutes	OUI	NON
			Métadonnées	OUI	NON
			Documents	NON	NC
		Droit Propriété créé au cours de la phase	Données brutes	OUI	NON
			Métadonnées	OUI	NON
Documents	NON		NC		
Restriction de destination des résultats de la tâche			OUI	NON	
Référentiel cartographique public ou propriétaire			AC	AC	
Etape 4 Valorisation	Information en temps réel sur les limites de vitesse.	Droit Propriété préexistant	Données brutes	NON	NON
			Métadonnées	NON	NON
			Documents	NON	NC
		Droit Propriété préexistant transféré au cours de la phase	Données brutes	NON	NON
			Métadonnées	NON	NON
			Documents	NON	NC
		Droit Propriété créé au cours de la phase	Données brutes	NON	NON
			Métadonnées	NON	NON
Documents	NON		NC		
Restriction de destination des résultats de la tâche			NON	NON	
Référentiel cartographique public ou propriétaire			AC	AC	
Etape 5 Utilisation du service	Retour de l’utilisateur	Droit Propriété préexistant	Données brutes	NON	NON
			Métadonnées	NON	NON
			Documents	NON	NC
		Droit Propriété préexistant transféré au cours de la phase	Données brutes	NON	NON
			Métadonnées	NON	NON
			Documents	NON	NC
		Droit Propriété créé au cours de la phase	Données brutes	NON	NON
			Métadonnées	NON	NON
Documents	NON		NC		
Restriction de destination des résultats de la tâche			NON	NON	
Référentiel cartographique public ou propriétaire			AC	AC	

NC : ne circule pas au-delà du Codage

AC : au choix : le référentiel utilisée à l'étape précédente et transmis partiellement ou un autre mais dans le respect de la légalité

6.2 - Préconisations au niveau de la « responsabilité des contributeurs »

Les préconisations portent :

- D'une part sur l'assurance de la qualité à la charge des autorités publiques selon les dispositions de la Directive INSPIRE,
- D'autre part sur la limitation et l'exonération de responsabilité au niveau des textes européens.

6.2.1 - Assurance de la qualité

Le projet Rosatte sert de plate forme d'expérimentation pour présenter des suggestions pour tenter une harmonisation au niveau du contrôle de la qualité et validité des séries et services de données géographiques.

Actuellement, l'information relative à la circulation routière émane des autorités publiques et des opérateurs avec ou sans réel contrôle en temps réel des opérateurs. Les mises à jour au niveau des GPS s'effectuent notamment via :

- des mises à jour périodiques que l'utilisateur acquiert ou non de certains aspects géographies routières
- de la communication en temps réel relatif à des aspects de trafics.

Demain, en matière de limitation de vitesse, les mécanismes seront-ils les mêmes ? Les pouvoirs publics ont-ils la possibilité d'imposer l'acquisition de mise à jour par les utilisateurs du système ? L'information sur les limites de vitesses venant exclusivement de l'autorité publique (au sens de la Directive INSPIRE), cette autorité va-t-elle devenir responsable ?

Les Etats membres doivent mettre en œuvre « l'organisation de l'assurance de la qualité » au niveau des données et métadonnées³⁷.

Une ou plusieurs démarches serait à retenir pour respecter les règles de la mise en œuvre de l'assurance qualité, notamment :

- une certification par un organisme tiers de la qualité au niveau de chaque étape du circuit Rosatte entre l'acquisition et l'accès au public,
- une charte qualité ou un plan d'assurance qualité à respecter par chaque intervenant dans le circuit Rosatte avec de l'autocontrôle de chacun et de préférence par un contrôle des données et métadonnées entrantes et sortantes,
- un cahier de tests type pour un contrôle interne ou indépendant,
- et/ou un outil de contrôle logiciel comme « Chouette » dans le domaine de l'information de transport public³⁸.

6.2.2 - La limitation et l'exonération de responsabilité

Pour répondre à la situation constatée au 5.2, à savoir l'incertitude au niveau de la limite et/ou l'exonération éventuelle de responsabilité des autorités et organisations publiques nationales en matière de la qualité et la validité des données à échanger et à partager dans un environnement communautaire, transfrontalier et transnationaux (cf. considérants 5 et 35 de la Directive INSPIRE), une harmonisation communautaire semble utile et nécessaire pour ne pas freiner un tel processus.

Il paraît aussi nécessaire d'étendre aussi cette limitation et exonération au niveau des séries et des services de données géographiques disposant d'attributs de sécurité.

³⁷ Cf. article 21-2-a de la directive 2007/2/CE INSPIRE

³⁸ « CHOUETTE (Création d'Horaires avec un Outil d'Echange de données TC selon le format Trident Européen) est un logiciel libre financé par le Ministère du Développement Durable (MEEDDM/lien), qui sert à saisir et échanger des données décrivant l'offre théorique de réseaux de transport collectif conformément à un profil d'échange normalisé. » cf. site <http://www.chouette.mobi/>

En attendant un avenir législatif européen incertain, il devient particulièrement utile de mettre en place un maximum de précautions en renforçant notamment :

- les clauses conventionnelles de limitation et/ou d'exonération de responsabilité dans les contrats,
- les avertissements au niveau des applications et des services à destination des utilisateurs,
- les campagnes de communication,
- les processus d'assurance de la qualité tels que stipulés par la Directive INSPIRE.
- En précisant la validité de l'information aux usagers,

pour que les usagers utilisent l'information en tant qu'outil d'aide à la navigation qui n'a pas vocation à remplacer la vigilance du conducteur.

6.3 - Préconisations au niveau des : « brevets de méthodes - cadre de référence »

6.3.1 - Recommandations globales

Les demandes de brevet déposées avant ou après la publication de la norme ISO 17572-3 rectifiées, cherchant à réserver un monopole technologique, peuvent s'avérer un frein à la valorisation d'un projet.

Cette situation nécessite que les autorités promoteurs du projet :

- s'assure que ledit brevet ne soit pas monopolistique,
- **négocie avec les Titulaires des brevets des licences types** (clauses minimum avec un tarif maximum) en fonction des évolutions du marché et par exemple dans le cadre de la coordination communautaire INSPIRE.
- mener une campagne de communication pour promouvoir le projet et donc de favoriser le déploiement des technologies dont une licence type a été négociée.

6.3.2 - Argumentaires

Les projets européens sont sources de débouchée économiques notamment pour le Titulaire de brevet portant sur une norme.

La dimension communautaire du projet Rosatte offre une perspective économique conséquente pour les industriels et les opérateurs si le circuit Rosatte devient totalement interopérable au niveau des séries de données géographiques et des services et des moyens associés.

Même si des engagements de licence émanant des Titulaire de titre de propriété industrielle figurent dans la norme, il apparaît nécessaire de mener à bien dans le cadre de la coordination communautaire INSPIRE une négociation afin que la minoration des licences procure un bénéfice aux autorités publiques mais aussi au détenteur des brevets.

Les redevances à bas prix favorisent la valorisation des technologies. Les tarifs prohibitifs sont un frein à la réalisation de tels projets à l'échelon de l'Union européenne.

L'eupéanisation du besoin couplé avec une campagne de communication par les instances européennes devrait laisser présager de forts débouchés économiques au niveau des moyens :

- Développement d'applications informatique
- Développement de services,
- Fourniture de services,
- Fabrication de nouveau terminaux GPS,

...

Les industriels et les opérateurs devraient en tirer des bénéfices. Les autorités publiques devraient aussi faire des économies.

7 - Synthèse/conclusion :

Synthèse Conclusion en français	Synthesis / Conclusion - English
<p>Le projet Rosatte vise à établir une chaîne d'approvisionnement efficace et de qualité entre les autorités publiques et les fournisseurs de cartes commerciales, en ce qui concerne les données relatives à la sécurité routière. En cela, il est pleinement cohérent avec la Directive INSPIRE qui impose l'échange, le partage, l'accès ainsi que l'utilisation de données géographiques interopérables et de services de données géographiques.</p> <p>La viabilité d'un tel projet requiert la maîtrise pour les fournisseurs de service à l'usager des coûts d'utilisation des informations détenues par les autorités publiques en matière de sécurité routière.</p> <p>Certaines contraintes juridiques peuvent en effet peser sur le modèle économique des projets de service notamment au niveau :</p> <ul style="list-style-type: none"> • D'éventuelles redevances afférentes à la propriété intellectuelle, • De la responsabilité des autorités en cas de non-conformité des informations recueillies et diffusées, • Des conséquences de l'introduction de technologies brevetées dans le cadre de normes. <p>et ce, dans le cadre de la législation communautaire et internationale.</p> <p>Cette étude a été menée pour répondre aux questions en recherchant comment minimiser l'impact des coûts de la propriété intellectuelle au travers d'un projet collaboratif.</p>	<p>The ROSATTE project aims at establishing an efficient and quality-assured supply chain from public authorities to commercial map providers with regard to road safety related content. As such it is fully consistent with the INSPIRE Directive, which requires the exchange, sharing, access and use of interoperable spatial data and spatial data services.</p> <p>For such a project to be viable, the providers of services to users must be able to control the costs of using the road safety information held by the public authorities.</p> <p>Certain legal constraints may bear on the economic model of the service projects, in particular at the level of:</p> <ul style="list-style-type: none"> • Possible licence fees relating to intellectual property; • The liability of the authorities in the event of inaccuracy of the information collected and distributed; • The consequences of the introduction of patented technologies within the framework of standards; <p>all within the framework of Community and international legislation.</p> <p>This study has been carried out to answer these questions with a view to minimising the impact of intellectual property costs through a collaborative project.</p>
<h3>7.1 - Propriété</h3> <p>La propriété intellectuelle dans le domaine des technologies de l'information et de la communication a fait l'objet d'une harmonisation européenne au travers de directives. Ces directives prennent en compte désormais le droit d'auteur tout en respectant la libre circulation des biens.</p> <p>La propriété intellectuelle n'apparaît plus comme un frein à la libre circulation des biens. L'Union européenne considère désormais qu'à défaut de dispositions communautaires d'harmonisation, il fallait appliquer le droit national ainsi que conventions internationales et plus particulièrement la convention de Berne sur le droit d'auteur et les ADPIC (l'Accord de l'OMC sur les aspects des droits de propriété intellectuelle qui touchent au commerce).</p>	<h3>7.1 - Property</h3> <p>Intellectual property in the area of the information and communication technologies has been subject to European harmonisation by means of directives. These directives now take account of authors' rights while respecting the free circulation of goods.</p> <p>Intellectual property is no longer seen as a hindrance to the free circulation of goods. The European Union has taken the view that, in the absence of Community provisions for harmonisation, it was necessary to apply national law as well as international conventions, in particular the Berne Convention on the rights of authors and the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).</p>

Ainsi, les Etats membres disposent d'une liberté législative pour limiter et de restreindre les directives afin de continuer à appliquer leurs spécificités nationales. Ces spécificités nationales ne peuvent toutefois être en contradiction avec les règles d'harmonisation.

En ce qui concerne les séries de données géographiques (bases de données au sens de la directive du même nom³⁹), cette législation européenne, fait une distinction :

- entre le droit d'auteur attaché à tout créateur d'une œuvre originale : donnée, métadonnée, base de données...
- et le droit « sui generis » (économique) attaché au fabricant de bases de données.

La Directive INSPIRE⁴⁰, les trois règlements et la décision⁴¹ qui l'accompagnent, édictent des règles relatives à la mise en œuvre des données et métadonnées associées afin de les codifier, les classer... pour les transférer. L'activité de codification des données et métadonnées dans un format standard Rosatte (conforme AGORA-C) permet de transformer les attributs de sécurité en données démembrées de tout droit d'auteur sans causer de tort à leur auteur.

Les auteurs restent totalement titulaires de leur droit de propriété intellectuelle sur les éléments créatifs de leur travail.

Thus Member States are free to legislate to limit and restrict the Directives so as to continue to apply their national specificities. These national specificities must not, however, be in conflict with the harmonisation rules.

As regards spatial data sets (databases in the sense of the directive of the same name³⁹, this European legislation distinguishes between:

- the author's right that is attached to any creator of an original work (data, metadata, database, etc.) and:
- the sui generis (economic) right attached to the manufacturer of databases.

The INSPIRE Directive⁴⁰ and the three Regulations and Decision⁴¹ that accompany it lay down rules regarding the implementation of data and the associated metadata so as to encode and classify them, etc. in order to transfer them. The process of encoding data and metadata in a standard Rosatte format (AGORA-C compliant) makes it possible to transform safety attributes into data stripped of all author rights without detriment to their author.

Authors retain in full their intellectual property right over the creative elements of their work.

³⁹ Directive 96/9/CE du Parlement européen et du Conseil, du 11 mars 1996, concernant la protection juridique des bases de données

³⁹ directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases

⁴⁰ Directive 2007/2/CE du Parlement européen et du Conseil du 14 mars 2007 : établissant une infrastructure d'information géographique dans la Communauté européenne (INSPIRE)

⁴⁰ Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 : establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

⁴¹

- Règlement (CE) 1205/2008 portant modalités d'application de la directive 2007/2/CE en ce qui concerne les métadonnées,
- Règlement (UE) 268/2010 du 29 mars 2010 portant modalités d'application de la directive 2007/2/CE en ce qui concerne l'accès des institutions et organes communautaires aux séries et services de données géographiques des États membres dans des conditions harmonisées,
- Décision 2009/442/CE de la Commission du 5 juin 2009 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne le suivi et le rapportage [notifiée sous le numéro C(2009) 4199],
- Règlement (CE) n° 976/2009 de la Commission du 19 octobre 2009 portant modalités d'application de la directive 2007/2/CE du Parlement européen et du Conseil en ce qui concerne les services en réseau.

⁴¹

- Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata (Text with EEA relevance),
- Commission Regulation (EU) No 268/2010 of 29 March 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the access to spatial data sets and services of the Member States by Community institutions and bodies under harmonised conditions,
- Commission Decision (2009/442/EC) of 5 June 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards monitoring and reporting (notified under document number C(2009) 4199) (Text with EEA relevance),
- Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the Network Services.

Cette législation européenne va aussi permettre sous certaines conditions, peu contraignantes, de pouvoir, échanger, partager, accéder et utiliser :

- des données géographiques, codifiées par les organisations publiques exemptes des droits d'auteur,
- des séries de données géographiques et des services de données géographiques en disposant des autorisations nécessaires des organisations publiques dans le cadre de licences conventionnelles.

Cette réalité va obliger les autorités et organisations publiques et privées à insérer, dans les contrats avec leur prestataire chargés de tâches d'acquisition, des clauses :

- pour identifier les aspects créatifs de leurs tâches s'il y a création intellectuelle au sens du droit d'auteur,
- pour exiger que les données et métadonnées, concernant les attributs de sécurité, ne contiennent pas d'attribut de propriété intellectuelle,
- pour préciser la destination de ces données et métadonnées

tout en protégeant les auteurs sur leur création.

De plus, dans le cadre du projet Rosatte, des licences contractuelles vont devoir être signées entre les organisations responsables de l'établissement, de la gestion, de la maintenance et de la diffusion des séries et des services de données géographiques⁴² mais aussi entre chaque intervenant successif de la chaîne Rosatte y compris l'utilisateur final.

Ces licences permettront de transférer le droit d'échange, de partage, d'accès, d'utilisation de données géographiques interopérables et de services de données géographiques dans le cadre du projet Rosatte sans impact financier quant à la propriété intellectuelle des données et métadonnées codifiées avec le format standard Rosatte (conforme AGORA-C).

This European legislation will also permit the provision, exchange, sharing, access and use, subject to some fairly undemanding conditions, of:

- spatial data encoded by public organisations, exempt from authors' rights;
- spatial data sets and spatial data services, by obtaining the necessary authorisations from the public organisations within the framework of contractual licences.

This reality will require public and private organizations to insert, in the contracts with the services providers responsible for data acquisition work, clauses that:

- identify the creative aspects of their work if there is intellectual creation in the sense of authors' rights,
- require the data and metadata regarding safety aspects to contain no intellectual property attributes,
- specify the purpose of these data and metadata while protecting the authors as regards their creation.

Moreover, within the Rosatte project, contractual licences will have to be signed between the organisations responsible for the establishment, management, maintenance and distribution of spatial data sets and services,⁴² and also between each successive participant in the Rosatte chain including the end-user.

These licences will make it possible to transfer the right to exchange, share, access and use interoperable spatial data sets and services within the framework of the Rosatte project with no financial impact as regards the intellectual property of data and metadata encoded in the standard Rosatte format (AGORA-C compliant).

⁴² 9 - Partie B Annexe : « Règles de mise en œuvre relatives aux métadonnées » - Règlement (CE) n°1205/2008 du 3 décembre 2008 portant modalités d'application de la directive 2007/2/CE INSPIRE.

⁴² Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata (Text with EEA relevance) Annex ("Metadata implementing rules"), Part B. § 9)

Les référentiels géographiques utilisés par les divers intervenants lors de l'acquisition et du codage nécessitent aussi de disposer de licence contractuelle d'utilisation. La particularité technique du décodage offre la possibilité d'utiliser le référentiel à l'origine du codage ou un autre référentiel compatible. Cette liberté technique ne peut exempter les 'organisations chargées du décodage de disposer d'une licence contractuelle sur le référentiel utilisé :

- celui d'origine dont une partie est transférée avec les éléments codés conformément à AGORA-C,
- ou le compatible non utilisé pour le codage ; dans ce dernier cas, les données et métadonnées peuvent être libérées des contraintes de propriété intellectuelle afférentes au référentiel de codage.

7.2 - Conformité - responsabilité

Les directives européennes distinguent la conformité aux règles de mise en œuvre de la directive INSPIRE et les règles relatives à la conformité et la validité d'une série de données.

Les premières règles nécessitent de se conformer aux trois règlements et à la décision édités depuis la directive INSPIRE.

Par contre, les règles concernant la qualité et la validité stipulent que les Etats membres doivent mettre en place un processus d'assurance qualité le plus commun possible avec les autres Etats membres car les flux sont transfrontaliers.

Cette assurance de la qualité suffira à minimiser les risques de non qualité mais pourra t elle servir à limiter la responsabilité voire à exonérer totalement l'autorité ou l'organisation publique ?

Au cas où, par exemple, il y aurait une différence entre la limitation :

- figurant dans une décision d'une autorité publique nationale ou locale,
- constatée sur le terrain
- émanant d'informations figurant dans le véhicule,

l'autorité judiciaire nationale aura toujours tendance à se référer à la décision voire à prendre en compte aussi si les panneaux de vitesse matérialisant, la décision de l'autorité concernée, était visibles et lisibles, plutôt qu'à l'information figurant dans le véhicule de l'utilisateur et surtout en cas d'accident.

The spatial reference systems used by the various participants in acquisition and encoding also require possession of a contractual licence for use. The technical particularity of the decoding makes it possible to use the reference system from which the encoding is derived or another compatible reference system. This technical freedom does not exempt the organisations responsible for the decoding from the obligation to possess a contractual licence for the reference system that is used:

- either the original one, part of which is transferred with the encoded elements in compliance with AGORA-C,
- or the compatible one, not used for the encoding. In the latter case, the data and metadata can be freed from the intellectual property constraints relating to the reference system used for encoding.

7.2 - Compliance – responsibility

The European directives distinguish between compliance with the implementing rules of the INSPIRE Directive and the rules relating to the compliance and validity of a data set.

The first rules require compliance with the three Regulations and the Decision published subsequent to the INSPIRE Directive.

By contrast, the rules concerning quality and validity stipulate that Member States must set up a quality assurance process that is as common as possible since the flows are cross-border.

This quality assurance will suffice to minimise the risks of inadequate quality, but will it serve to limit liability or even totally exonerate the public authority or organisation?

For example, in the case of a difference between a speed limit:

- contained in a decision by a national or local public authority,
- displayed on the road, or
- emanating from information displayed in the vehicle,

the national legal authority will always tend to refer to the decision or also to take into account whether the speed limit signs displaying the decision of the authority concerned were visible and readable, rather than refer to the information displayed in the user's vehicle, especially in the event of an accident.

La législation européenne ne donne cependant pas de réponse précise relative à la responsabilité des autorités publiques qui échangent, partagent, et permettent l'accès et l'utilisation des séries de données géographiques.

La directive 2010/40/UE du 7 juillet 2010 « Systèmes de Transport Intelligents » stipule des règles générales de responsabilité au niveau de la fourniture des applications et des services avec application des règles afférentes aux produits défectueux^{43,44}. Et pourtant ces applications et ces services ne sont que des « systèmes d'aide à la navigation ».

Néanmoins, des dispositions du Règlement n° 1205/2008 du 3 décembre 2008 concernant les métadonnées INSPIRE mentionnent des organisations responsables de l'établissement, de la gestion, de la maintenance et de la diffusion des séries et des services de données géographiques,⁴⁵ dont la responsabilité porte plus sur la conformité aux exigences de la mise en œuvre de la Directive que sur la qualité des données. En outre, cette responsabilité pourrait être atténuée en vertu de l'article 14-4 de la Directive INSPIRE qui semble octroyer une possibilité de limitation et/ou exonération de responsabilité au travers de clauses de non-responsabilité au niveau des services de données géographiques fournis par une autorité publique.

En conséquence, aucun statut pénal dans le cadre de la Directive INSPIRE ne fixe de limites ou d'exonérations éventuelles de responsabilité des autorités et organisation publiques au niveau des données et des métadonnées.

Ce statut reste t-il à déterminer au niveau communautaire ou est-il laissé aux juges nationaux ?

European legislation, however, gives no precise response regarding the liability of the public authorities that exchange, share and permit access to and use of spatial data sets,

Directive 2010/40/EU of 7 July 2010 on "Intelligent Transport Systems" lays down general rules on liability at the level of the supply of applications and services with application of the rules relating to defective products.^{43,44} However, these applications and services are only "Navigation Systems".

Nonetheless, some provisions of Regulation No. 1205/2008 of 3 December 2008 regarding INSPIRE metadata mention organisations responsible for the establishment, management, maintenance and distribution of spatial data sets and services,⁴⁵ whose liability relates more to compliance with the implementation requirements of the Directive than the quality of the data. Moreover, this liability could be reduced by virtue of Article 14-4 of the INSPIRE Directive, which seems to grant a possibility of limitation and/or exoneration of liability through disclaimers at the level of the spatial data services provided by a public authority.

As a consequence, no penal statute within the framework of the INSPIRE Directive sets any limitations or exoneration of liability of the public authorities and organisations at the level of the data and metadata.

Does this statute remain to be determined at Community level or is it left to national judges?

⁴³ Article 11 Règles concernant la responsabilité de la Directive 2010/40/UE du 7 juillet 2010 concernant le cadre pour le déploiement de systèmes de transport intelligents dans le domaine du transport routier et d'interfaces avec d'autres modes de transport.

⁴³ Article 11 "Rules on Liability" of Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport

⁴⁴ Directive 85/374/CEE du Conseil du 25 juillet 1985 modifiée relative au rapprochement des dispositions législatives, réglementaires et administratives des États membres en matière de responsabilité du fait des produits défectueux

⁴⁴ Council Directive (85/374/EEC) of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products

⁴⁵ 9 de la Partie B Annexe : « Règles de mise en œuvre relatives aux métadonnées » du Règlement (CE) n°1205/2008 du 3 décembre 2008 portant modalités d'application de la directive 2007/2/CE INSPIRE.

⁴⁵ Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata (Text with EEA relevance). – Annex ("Metadata implementing rules"), Part B, § 9

Cette absence semble augurer des risques de conflits de lois au niveau des échanges transfrontières.

En attendant un avenir législatif européen incertain, il devient particulièrement utile de mettre en place un maximum de précautions en renforçant notamment :

- les clauses conventionnelles de limitation et/ou d'exonération de responsabilité dans les contrats,
- les avertissements au niveau des applications et des services à destination des utilisateurs,
- les campagnes de communication,
- les processus d'assurance de la qualité tels que stipulés par la Directive INDPIRE, .
- en précisant la validité de l'information aux usagers,

pour que les usagers utilisent l'information en tant qu'outil d'aide à la navigation qui n'a pas vocation à remplacer la vigilance du conducteur.

7.3 - Brevets

De plus en plus, les industriels intègrent leurs technologies au niveau des normes. Ces technologies font l'objet de demande de brevet au cours de l'élaboration des normes, en général.

Dans le domaine des technologies de l'information et de la communication, l'Union européenne encourage les organismes de normalisation à demander au Titulaire d'une demande de brevet ou d'un brevet, lié à la norme en cours d'élaboration, d'octroyer une licence dans le texte de la norme. Cette licence doit offrir des conditions équitables, raisonnables et non discriminatoires en précisant notamment les taux maximum de redevances avant l'adoption de ladite norme.

Dans le cadre de la coordination communautaire, il apparaît nécessaire de mener à bien une négociation, avec chaque Titulaire des brevets.

Cette négociation est nécessaire, car ce projet :

- s'étend sur toute la communauté,
- offre un immense marché aux industriels et opérateurs,
- devra reposer en échange, sur une forte communication pour promouvoir ce projet.

This absence seems to entail risks of conflict of laws at the level of cross-border exchanges.

Pending an as yet uncertain European legal framework, it becomes particularly desirable to put in place the maximum possible number of precautions, particularly by strengthening:

- the disclaimer clauses in contracts,
- warnings at the level of applications and services intended for users,
- information campaigns,
- quality assurance processes as stipulated by the INSPIRE Directive, and
- by specifying the validity of the information to users,

so that users use the information as an aid to navigation that is not designed to take the place of the driver's vigilance.

7.3 - Patents

Manufacturers are increasingly integrating their technologies at the level of standards. These technologies are subject to patent applications generally in the course of the definition of standards.

In the area of information and communication technologies, the European Union is encouraging the standards organisations to ask the owner of or applicant for a patent linked to the standard that is being defined to grant a licence within the text of the standard. This licence must offer fair, reasonable and non-discriminatory conditions, in particular specifying the maximum fees before adoption of the said standard.

Within the framework of Community coordination, it appears necessary to conclude a negotiation with each patent holder.

This negotiation is necessary, because this project:

- is Community-wide
- opens up a vast market for manufacturers and operators
- should in exchange be based on strong communication to promote this project

Cette négociation devrait aboutir pour le projet Rosatte à:

- une minoration du montant des redevances avec un tarif maximum en fonction des évolutions futures du marché,
- des licences types adaptables en fonction des spécificités de chaque projet de licence.

Les industriels et les opérateurs devraient en tirer des bénéfices. Les autorités publiques devraient faire des économies.

Ainsi, les aspects de propriété intellectuelle ne devraient plus être un frein économique, financier et organisationnel.

For the Rosatte project, this negotiation should lead to:

- a reduction of licence fees with a maximum rate based on future developments of the market, and:
- template licences that can be adapted to the specificities of each licence project.

Manufacturers and operators should profit from this. The public authorities should make savings.

Intellectual property rights should thus no longer be an economic, financial and organisational hindrance.

8 - Annexes

8.1 - Glossaire

ADPIC	L'Accord de l'OMC sur les aspects des droits de propriété intellectuelle qui touchent au commerce (, négocié au cours du Cycle d'Uruguay, qui s'est tenu de 1986 à 1994, a introduit pour la première fois des règles relatives à la propriété intellectuelle dans le système commercial multilatéral. Cet accord fixe des niveaux minimums de protection de la propriété intellectuelle que chaque gouvernement doit assurer aux autres membres de l'OMC. Site ONIC
Convention de Paris pour la protection de la propriété industrielle du 20 mars 1883	<ul style="list-style-type: none"> révisée : <ul style="list-style-type: none"> à Bruxelles le 14 décembre 1900, à Washington le 2 juin 1911, à La Haye le 6 novembre 1925, à Londres le 2 juin 1934, à Lisbonne le 31 octobre 1958 et à Stockholm le 14 juillet 1967, modifiée le 28 septembre 1979. Site OMPI
Convention de Berne pour la protection des œuvres littéraires et artistiques du 9 septembre 1886	<ul style="list-style-type: none"> complétée à PARIS le 4 mai 1896, révisée à BERLIN le 13 novembre 1908, complétée à BERNE le 20 mars 1914, révisée : <ul style="list-style-type: none"> à ROME le 2 juin 1928, à BRUXELLES le 26 juin 1948, à STOCKHOLM le 14 juillet 1967, à PARIS le 24 juillet 1971, modifiée le 28 septembre 1979. Site OMPI
Convention internationale sur la protection des artistes interprètes ou exécutants, des producteurs de phonogrammes et des organismes de radiodiffusion (faite à Rome le 26 octobre 1961)	Site OMPI
OMPI/WIPO	l'Organisation Mondiale de la Propriété Intellectuelle Site OMPI
OMC	l'Organisation mondiale du commerce Site OMC
Traité de l'OMPI sur le droit d'auteur (adopté à Genève le 20 décembre 1996)	Site OMPI
Traité de coopération en matière de brevets (PCT) fait à Washington le 19 juin 1970	Modifié : <ul style="list-style-type: none"> le 28 septembre 1979 le 3 février 1984 le 3 octobre 2001 Site OMPI
Traité sur l'Union européenne et du traité sur le fonctionnement de l'Union européenne	Version consolidée parues au Journal officiel de l'Union européenne, Communications et informations 30 mars 2010 ; Ce texte constitue un outil de documentation n'engageant pas la responsabilité des institutions de l'Union européenne. Site eur-lex.europa.eu/fr/index.htm

8.2 - Références bibliographiques

8.3 - Extrait de Textes

8.3.1 - Convention de Berne pour la protection des œuvres littéraires et artistiques

- du 9 septembre 1886,
- complétée à PARIS le 4 mai 1896,
- révisée à BERLIN le 13 novembre 1908,
- complétée à BERNE le 20 mars 1914 et révisée à ROME le 2 juin 1928, à BRUXELLES le 26 juin 1948, à STOCKHOLM le 14 juillet 1967 et à PARIS le 24 juillet 1971
- et modifiée le 28 septembre 1979

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Article II:	Limitations du droit de traduction: 1. Possibilité d'octroi de licences par l'autorité compétente; 2. à 4. Conditions auxquelles ces licences peuvent être accordées; 5. Usages pour lesquels des licences peuvent être accordées; 6. Expiration des licences; 7. Œuvres composées principalement d'illustrations; 8. Œuvres retirées de la circulation; 9. Licences pour les organismes de radiodiffusion
Article III:	Limitations du droit de reproduction: 1. Possibilité d'octroi de licences par l'autorité compétente; 2. à 5. Conditions auxquelles ces licences peuvent être accordées; 6. Expiration des licences; 7. Œuvres auxquelles s'applique le présent article
Article IV:	Dispositions communes aux licences prévues aux articles II et III: 1. et 2. Procédure; 3. Indication du nom de l'auteur et du titre de l'œuvre; 4. Exportation d'exemplaires; 5. Mention; 6. Rémunération
Article V:	Autre possibilité de limitation du droit de traduction: 1. Régime prévu par les Actes de 1886 et de 1896; 2. Impossibilité de changer de régime après avoir choisi celui de l'article II; 3. Délai pour choisir l'autre régime
Article VI:	Possibilités d'appliquer ou d'accepter l'application de certaines dispositions de l'Annexe avant de devenir lié par cette dernière: 1. Déclaration; 2. Dépositaire et date à laquelle la déclaration prend effet

8.3.2 - ADPIC Partie II — Normes concernant l'existence, la portée et l'exercice des droits de propriété intellectuelle

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Section 1: Droit d'auteur et droits connexes

Article 9 Rapports avec la Convention de Berne

1. Les Membres se conformeront aux articles premiers à 21 de la Convention de Berne (1971) et à l'Annexe de ladite Convention. Toutefois, les Membres n'auront pas de droits ni d'obligations au titre du présent accord en ce qui concerne les droits conférés par l'article 6bis de ladite Convention ou les droits qui en sont dérivés.

2. La protection du droit d'auteur s'étendra aux expressions et non aux idées, procédures, méthodes de fonctionnement ou concepts mathématiques en tant que tels.

Article 10 Programmes d'ordinateur et compilations de données

1. Les programmes d'ordinateur, qu'ils soient exprimés en code source ou en code objet, seront protégés en tant qu'œuvres littéraires en vertu de la Convention de Berne (1971).

2. Les compilations de données ou d'autres éléments, qu'elles soient reproduites sur support exploitable par machine ou sous toute autre forme, qui, par le choix ou la disposition des matières, constituent des créations intellectuelles seront protégées comme telles. Cette protection, qui ne s'étendra pas aux données ou éléments eux-mêmes, sera sans préjudice de tout droit d'auteur subsistant pour les données ou éléments eux-mêmes.

Article 11 Droits de location

En ce qui concerne au moins les programmes d'ordinateur et les œuvres cinématographiques, un Membre accordera aux auteurs et à leurs ayants droit le droit d'autoriser ou d'interdire la location commerciale au public d'originaux ou de copies de leurs œuvres protégées par le droit d'auteur. Un Membre sera exempté de cette obligation pour ce qui est des œuvres cinématographiques à moins que cette location n'ait conduit à la réalisation largement répandue de copies de ces œuvres qui compromettent de façon importante le droit exclusif de reproduction conféré dans ce Membre aux auteurs et à leurs ayants droit. Pour ce qui est des programmes d'ordinateur, cette obligation ne s'applique pas aux locations dans les cas où le programme lui-même n'est pas l'objet essentiel de la location.

Article 12 Durée de la protection

Chaque fois que la durée de la protection d'une œuvre, autre qu'une œuvre photographique ou une œuvre des arts appliqués, est calculée sur une base autre que la vie d'une personne physique, cette durée sera d'au moins 50 ans à compter de la fin de l'année civile de la publication autorisée, ou, si une telle publication autorisée n'a pas lieu dans les 50 ans à compter de la réalisation de l'œuvre, d'au moins 50 ans à compter de la fin de l'année civile de la réalisation.

Article 13 Limitations et exceptions

Les Membres restreindront les limitations des droits exclusifs ou exceptions à ces droits à certains cas spéciaux qui ne portent pas atteinte à l'exploitation normale de l'œuvre ni ne causent un préjudice injustifié aux intérêts légitimes du détenteur du droit.

...

Section 2: Marques de fabrique ou de commerce

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8.3.3 - Traité sur le fonctionnement de l'union européenne

Extraits de la version consolidée du traité sur le fonctionnement de l'union européenne FR 30.3.2010
Journal officiel de l'Union européenne C 83/47

Article 19

1. La Cour de justice de l'Union européenne comprend la Cour de justice, le Tribunal et des tribunaux spécialisés. Elle assure le respect du droit dans l'interprétation et l'application des traités.

Article 118

Dans le cadre de l'établissement ou du fonctionnement du marché intérieur, le Parlement européen et le Conseil, statuant conformément à la procédure législative ordinaire, établissent les mesures relatives à la création de titres européens pour assurer une protection uniforme des droits de propriété intellectuelle dans l'Union, et à la mise en place de régimes d'autorisation, de coordination et de contrôle centralisés au niveau de l'Union.

Article 207 (ex-article 133 TCE)

1. La politique commerciale commune est fondée sur des principes uniformes, notamment en ce qui concerne les modifications tarifaires, la conclusion d'accords tarifaires et commerciaux relatifs aux échanges de marchandises et de services, et **les aspects commerciaux de la propriété intellectuelle**, les investissements étrangers directs, l'uniformisation des mesures de libéralisation, la politique d'exportation, ainsi que les mesures de défense commerciale, dont celles à prendre en cas de dumping et de subventions. La politique commerciale commune est menée dans le cadre des principes et objectifs de l'action extérieure de l'Union.

2. Le Parlement européen et le Conseil, statuant par voie de règlements conformément à la procédure législative ordinaire, adoptent les mesures définissant le cadre dans lequel est mise en œuvre la politique commerciale commune.

3. Si des accords avec un ou plusieurs pays tiers ou organisations internationales doivent être négociés et conclus, l'article 218 est applicable, sous réserve des dispositions particulières du présent article. La Commission présente des recommandations au Conseil, qui l'autorise à ouvrir les négociations nécessaires. Il appartient au Conseil et à la Commission de veiller à ce que les accords négociés soient compatibles avec les politiques et règles internes de l'Union. Ces négociations sont conduites par la Commission en consultation avec un comité spécial désigné par le Conseil pour l'assister dans cette tâche et dans le cadre des directives que le Conseil peut lui adresser. La Commission fait régulièrement rapport au comité spécial, ainsi qu'au Parlement européen, sur l'état d'avancement des négociations.

4. Pour la négociation et la conclusion des accords visés au paragraphe 3, le Conseil statue à la majorité qualifiée. Pour la négociation et la conclusion d'un accord dans les domaines du commerce de services et **des aspects commerciaux de la propriété intellectuelle**, ainsi que des investissements étrangers directs, le Conseil statue à l'unanimité lorsque cet accord comprend des dispositions pour lesquelles l'unanimité est requise pour l'adoption de règles internes. Le Conseil statue également à l'unanimité pour la négociation et la conclusion d'accords: a) dans le domaine du commerce des services culturels et audiovisuels, lorsque ces accords risquent de porter atteinte à la diversité culturelle et linguistique de l'Union; b) dans le domaine du commerce des services sociaux, d'éducation et de santé, lorsque ces accords risquent de perturber gravement l'organisation de ces services au niveau national et de porter atteinte à la responsabilité des États membres pour la fourniture de ces services. 5. La négociation et la conclusion d'accords internationaux dans le domaine des transports relèvent du titre VI de la troisième partie, et de l'article 218. FR C 83/140 Journal officiel de l'Union européenne 30.3.2010

8.3.4 - CHARTE DES DROITS FONDAMENTAUX DE L'UNION EUROPÉENNE

Extrait de la Charte des droits fondamentaux de l'union européenne

Article 17

Droit de propriété

1. Toute personne a le droit de jouir de la propriété des biens qu'elle a acquis légalement, de les utiliser, d'en disposer et de les léguer. Nul ne peut être privé de sa propriété, si ce n'est pour cause d'utilité publique, dans des cas et conditions prévus par une loi et moyennant en temps utile une juste indemnité pour sa perte. L'usage des biens peut être réglementé par la loi dans la mesure nécessaire à l'intérêt général.

2. La propriété intellectuelle est protégée.

L'exercice des compétences attribuées par le présent article dans le domaine de la politique commerciale commune n'affecte pas la délimitation des compétences entre l'Union et les États membres et n'entraîne pas une harmonisation des dispositions législatives ou réglementaires des États membres dans la mesure où les traités excluent une telle harmonisation.

8.4 - Sites institutionnel

Commission européenne	http://ec.europa.eu/ http://ec.europa.eu/index_fr.htm
© Union européenne	http://eur-lex.europa.eu/ ».
EUR-Lex	http://eur-lex.europa.eu/fr/index.htm
OMPI	http://www.wipo.int http://www.wipo.int/portal/index.html.fr
Légifrance	http://www.legifrance.gouv.fr/
Ministère de l'écologie, du développement et de l'aménagement durables	http://www.developpement-durable.gouv.fr/
Certu Centre d'études sur les réseaux, les transports, l'urbanisme et les constructions publiques	http://www.certu.fr/
Setra Service d'études sur les transports, les routes et leurs aménagements	http://www.setra.equipement.gouv.fr/