Police Enforcement Policy and Programmes on European Roads

Contract No: 019744

Deliverable 12
Conceptual model for the European traffic law enforcement database

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<td>IBSR-BIVV Institut Belge Pour La Sécurité Routière</td>
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<td>CERTH,HIT Hellenic Institute of Transport</td>
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<td>7</td>
<td>BAsT Bundesanstalt für Strassenwesen</td>
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<td>8</td>
<td>CDV Transport Research Centre</td>
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<td>DTU Department of Transport, Technical University of Denmark</td>
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<td>IBDIM Road and Bridge Research Institute</td>
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<td>INRETS Institut National de Recherche sur les Transports et leur Sécurité</td>
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<td>12</td>
<td>KfV Kuratorium für Verkehrssicherheit (Co-ordinator)</td>
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<td>13</td>
<td>SWOV Institute for Road Safety Research</td>
<td>NL</td>
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<td>14</td>
<td>TØI Institute of Transport Economics</td>
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<td>TRL Limited</td>
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<td>16</td>
<td>UPM Universidad Politécnica de Madrid</td>
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<td>17</td>
<td>VTI Swedish National Road and Transport Research Institute</td>
<td>SE</td>
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<td>18</td>
<td>ETSC European Transport Safety Council</td>
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Abstract

Deliverable D12 aims at defining the conceptual model for an EU level Traffic Law Enforcement (TLE) monitoring database. To achieve this goal, first of all research has been performed to identify and analyse existing databases at EU level, mainly accident databases. Then, within the context of the PEPPER project, and WP2 in specific, a survey has been performed regarding data availability in the member states whose results are reported, which resulted in founding many gaps and inconsistencies between the data collection procedures of different countries.

To define the conceptual model for the EU TLE monitoring database, a short questionnaire has been composed in order to investigate the views of relevant experts. The structure of the questionnaire and its findings are presented, regarding content, organisation and functions of the database.

Regarding data collection, the main findings of the relevant PEPPER Deliverable 8 are mentioned here as part of the overall conceptual model. Regarding data needs, the views of the European Commission and relevant actors are included here following the consultation process after the Recommendation on enforcement in the field of road safety. Additionally, within PEPPER, a set of enforcement performance indicators have been selected, constituting the basis for the construction of a future EU-level database.

Concluding from the above, the conceptual model is being described here as a step-by-step procedure, specifying the needs in terms of the establishment of the database, the definition of the contents and the data collection process, the organisational framework and the functionality of the proposed EU-level TLE monitoring database.
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EXECUTIVE SUMMARY

In Deliverable 12 a conceptual model for the establishment of an EU level Traffic Law Enforcement (TLE) monitoring database is being proposed, based on the work performed in the PEPPER project.

In the Introduction (Chapter 1) the aim and the general framework are elaborated.

In Chapter 2, a review of existing EU level databases is presented (mainly accident databases), giving a short description for the most important (and relevant to the scopes of the Deliverable) among them.

In Chapter 3, the results of the TLE data availability survey in indicative member states is reported. The survey procedure, along with its results and conclusions are thoroughly presented.

Then, in Chapter 4, the questionnaire that has been used to gather the relevant stakeholders’ views is being presented and the outcomes of the survey are reported, regarding the identified needs for the content, the organisation and the functionality of the database.

The data collection model, as defined in PEPPER (see Deliverable 8), is also presented shortly in Chapter 5, as part of the overall conceptual model.

The views of the EC and the relevant discussion that has taken place within the context of the consultation phase for a relevant Recommendation are reported in Chapter 6. The data needs and availability in member states are one of the major issues discussed. Moreover, in Chapter 7 a set of enforcement performance indicators, as selected in PEPPER WP2, is listed.

In Chapter 8 then, the overall conceptual model is described, concluding from all the previous analysis.

Finally, in Chapter 9 conclusions are drawn.
### List of abbreviations

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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>CSS</td>
<td>Cascading Style Sheets</td>
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<td>D</td>
<td>Deliverable</td>
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<td>EPI</td>
<td>Enforcement Performance Indicators</td>
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<td>EU</td>
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<td>GB</td>
<td>Giga Bite</td>
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<td>GUI</td>
<td>Graphical User Interface</td>
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<td>ID</td>
<td>Identity</td>
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<td>ISA</td>
<td>Intelligent Speed Adaptation</td>
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<td>Mbit</td>
<td>Mega Bit</td>
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<td>MySQL</td>
<td>My Structure Query Language</td>
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<td>NEP</td>
<td>National Enforcement Plan</td>
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<td>OS</td>
<td>Operating System</td>
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<td>PHP</td>
<td>Personal Home Page</td>
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<td>RAM</td>
<td>Random Access Memory</td>
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<td>SPI</td>
<td>Safety Performance Indicator</td>
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<td>TLE</td>
<td>Traffic Law Enforcement</td>
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<td>UN</td>
<td>United Nations</td>
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<td>W</td>
<td>Working paper</td>
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<td>WP</td>
<td>Work Package</td>
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<td>XHTML</td>
<td>Extensible HyperText Markup Language</td>
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1 INTRODUCTION

1.1 Background

A lot of relevant work has already been performed within the PEPPER project towards the definition of a conceptual model for an EU TLE monitoring database.

In W27 [4], the first approach on the structure of the database was attempted, recognizing the needs and also identifying some technical specifications. Moreover, data collection had already started before, in several tasks of the project, in an attempt to identify the TLE data availability in representative EU member states (see W29 [11], W33 [12], W40 [13]. Moreover, in Work Package 4 of the PEPPER project a preliminary definition of data and data collection requirements for monitoring and evaluation of TLE has been performed (W24 [14]) and relevant performance indicators have been selected in WP2 (W26 [5]). Additionally, within the context of T2.4, research has been performed to identify and study relevant existing databases and a questionnaire has been composed to gather the views of affected stakeholders in terms of the creation of an EU level TLE monitoring database. Moreover, in D8 a data collection model has been defined, taking into account the needs of such a database and the broad spectrum of parameters to be taken into account for the collection of data from different countries and in different formats.

The Commission has also published a Recommendation, originally in 2003, which was later updated in 2004, regarding enforcement in the field of road safety. In this Recommendation, specific data items are identified which should be gathered by each country, as part of their National Enforcement Plan. These data constitute a good indication of the data that should be gathered for a possible EU level TLE monitoring database.

1.2 Objectives

The objective of this Deliverable is to present the activities conducted towards the definition of a conceptual model for an EU level TLE monitoring database and finally, describe such a conceptual model. The overview of existing databases, the results of the questionnaire survey, as well as the current situation of the relevant Recommendation are presented. These, together with the work already performed within PEPPER, constitute the basis for the final definition of the conceptual model.
2 REVIEW OF RELEVANT EXISTING DATABASES

The idea of an EU level database has already been elaborated in several areas of human activity. Such databases have been constructed and are already operating, gathering, keeping and updating, significant amount of data, coming from several EU countries in many different fields of interest. This is, obviously, also the case for the domains of transport and road safety.

In view of defining a conceptual model for the creation of an EU level Traffic Law Enforcement monitoring database, which is the purpose of Task 2.4 of the PEPPER project, an overview of transport-related EU databases was considered necessary. The processes and steps that were followed for the construction of these databases, the obstacles that were met on the way, the compromises that were necessary, as well as the experience of the everyday use of such database would be a valuable knowledge for the conceptual model of the TLE database, in order to avoid mistakes and adopt successful practices.

Through a web search, it was realised that most of the existing EU level databases had to do with road safety and accidents. A short overview of the findings is presented here.

2.1 Accident Databases

In the field of road safety, policy makers and researchers can make use of several accident databases to study the road safety problem and to make international comparisons. In the ERSO website [6], basic information about 10 European databases, 3 Global databases, and 11 National databases (coming from 5 countries - Finland, France, Germany, Italy and The Netherlands) is presented. For each database, information is given about how the data are collected, which institutes are responsible for collecting and maintaining the database, and the availability of data.

European Databases

- CARE
- CHILD
- EACS
- ECBOS
- ECMT
- ETAC
- Eurostat
- MAIDS
- PENDANT
- RISER

A number of databases concern data of specific road users or at specific locations: CHILD (children), ECBOS (coach and bus occupants), ETAC (truck accidents), MAIDS (motorcyclists) and RISER (highways accidents).
Global databases

- IRF
- IRTAD
- UNECE.

Additional information of the most indicative, as well as relevant to the purposes of this Deliverable databases, are provided below. Here, information on three databases (CARE, IRTAD and EUROSTAT) is included. The choice of these three was based on an attempt to provide three indicative examples of an EU level accident database (CARE), a global accident database (IRTAD) and an overall database including transport related data (EUROSTAT).

2.1.1 CARE [7]

CARE is a Community database on road accidents resulting in death or injury (there are no statistics on damage-only accidents). The major difference between CARE and most other existing international databases is the high level of disaggregation, i.e. CARE consists of detailed data on individual accidents as collected by the Member States. This structure allows for maximum flexibility and potential with regard to analysing the information contained in the system and opens up a whole set of new possibilities in the field of accident analysis.

The purpose of CARE system is to provide a powerful tool which would make it possible to identify and quantify road safety problems throughout the European roads, evaluate the efficiency of road safety measures, determine the relevance of Community actions and facilitate the exchange of experience in this field.


This database at Community level (CARE - Community database on Accidents on the Roads in Europe) would make it possible to identify and quantify road safety problems, evaluate the efficiency of road safety measures, determine the relevance of Community actions and facilitate the exchange of experience in this field.

National data sets should be integrated into the CARE database in their original national structure and definitions, with confidential data blanked out. The Commission provides a framework of transformation rules allowing CARE to provide compatible data.

A glossary defines the country variables and transformation rules.

History

- 1993–1996: pilot operation of the database
- Dealing with operational problems
- Preparing for overall evaluation
Positive results – further development of CARE into an integrated information system.


Compatibility of data variables and values thoroughly examined

38 variables and 488 common definition values proposed

1999 – today: full operation of the system

2005 – today: data from new EU members is being integrated.

**Access**

Restricted access: Certain organization or bodies, appointed by the High Level Group on Road Safety\(^1\), are allowed to create their own reports.

Public access: Static reports are published on the CARE website.

**Basic principals deriving from the relevant Council Decision**

- Establishment of National Databases
- Definitions of values and variables
- Communication of country data to a central depository (SOEC)
- Timing for communication of data
- Confidentiality issues for certain data
- Type and format of data
- Editing/Correcting already transmitted data
- Responsibility for quality of data (countries)
- Responsibility for processing of data (EC)
- Responsibility for dissemination of data (EC)
- Decision for access of data
- Publications
- Methodological and technical framework for facing consistency and comparability of data
- Statistical Program Committee: consulting the EC.

2.1.2 IRTAD [8]

Key historical facts

1988 The OECD Road Transport Research Programme established the International Road Traffic and Accident Database (IRTAD) as a mechanism for providing an aggregated database, in which international accident and victim injury data, as well as exposure data are collected on a continuous basis.

2004 The European Conference of Ministers of Transport (ECMT) and the Organisation for Economic Co-operation and Development (OECD) brought together their transport research capabilities in setting up the Joint Transport Research Centre. The Centre conducts co-operative research programmes addressing all modes of inland transport and their intermodal linkages, in support of policy-making processes in member countries.

2006 The Council of Ministers agreed to transform the ECMT into an International Transport Forum, which would include a much wider group of countries in its membership. The aim of the yearly Forum is to bring high-profile, international attention to the essential role played by transport in the economy and society.

About IRTAD Group

Background

Following the creation of the OECD/ECMT Transport Research Centre in January 2004, the former IRTAD Operational Committee was replaced by the Traffic Safety Data and Analysis Group, under the direct responsibility of the Transport Research Committee.

Organisation and Management

The Secretariat of the Transport Research Centre assists the IRTAD Group in organizing and administering its operations. The Group designates its Chair. A Strategic Sub-Group makes operational proposals for adoption by the Group.

Objectives of the Group

Make proposals on possible improvements to road accident and related traffic data collection and analysis, initially focusing on the complementarity of data available in existing international databases. This will ensure that data available to governments and researchers allow appropriate analyses and international comparisons of data on road accidents, and that road safety policies and research can be based on best quality and comparable data.

- Collect accident data, complementary to other sources, and conduct data analysis to provide advice on specific road safety issues.
- Contribute to international co-operation on road accident data and its analysis.
- Ongoing activities and tasks of the Group are specified in a Programme of Work developed by the Group for the period 2007-09.
About International Road Traffic and Accident Database

In 1988, the OECD established the International Road Traffic and Accident Database (IRTAD). Since 2006 the database is hosted by the Transport Research Centre.

The database – with around 500 data items – includes aggregated road safety data as well as relevant exposure from 30 countries (for 1965 and for every year since 1970):

- Population figures with a breakdown by age bands
- Vehicle population with a breakdown by vehicle types
- Kilometrage classified by road network areas or vehicle types
- Number of injury accidents classified by road network areas
- Fatality figures with a breakdown by types of road usage and/or age bands, by gender and age bands, or by network areas
- Car fatalities with a breakdown by driver and passengers and a split by age
- Hospitalised with a breakdown by types of road usage, age bands or network areas
- Accident involvement by road user type (e.g. HGVs, LGVs) and associated victim data
- Network length classified by network areas
- Modal split
- Area of state
- Seat belt wearing rates by road network areas
- Risk values: fatalities, hospitalised or injury accidents related to population or kilometrage figures
- Monthly accident data for selected countries (three key variables).

A key to the success of IRTAD is the process through which the information is collected as it comes directly from relevant national data providers in member countries. The data are provided in a common format, based on definitions developed and agreed by the IRTAD Group. This requires a clear understanding of national definitions in order to enhance international comparability, and when needed, the use of an appropriate correction factor.

Access

IRTAD is open to organisations from OECD/ECMT countries as well as to non-OECD/ECMT countries. Admission of new member countries will be decided by the IRTAD Group. Both public and private organisations can join IRTAD.

IRTAD is jointly financed and managed by its members. Membership is based on an annual subscription.

All members have to sign a Memorandum of Understanding with the OECD/ECMT Transport Research Centre, which specifies the role of the members and the Centre:
• National coordinating institutes from OECD/ECMT countries: provide national data; represent their countries in the IRTAD Group.
• National coordinating institutes from non OECD/ECMT countries: provide national data and are represented in the IRTAD Group as observers.
• Additional institutes from member countries: participate and are represented in the IRTAD Group.
• International organisations: participate and are represented in the IRTAD Group.

All member organisations have full access to the IRTAD Group as well as to the International Road Traffic and Accident Database.

Statistics
• Exposure data
• Death rates
• Injury accidents
• Road fatalities.

Activities
• Data analysis
• Data collection
• Development of IRTAD
• Coordination with OECD/ECMT.

2.1.3 EUROSTAT [16]

Eurostat is the Statistical Office of the European Communities, established in 1953. Its mission is to gather and analyse figures from the different European statistics offices in order to provide comparable and harmonised data to the European Institutions so they can define, implement and analyse Community policies.

The Eurostat data cover the European Union, its Member States and its partners, and are published under a variety of Themes and Collections.

The Eurostat website is updated daily and provides: Direct access to the latest and most complete statistical information available on the European Union, the EU Member States, the euro-zone and other countries.

Since 1st October 2004 Eurostat provides free of charge access to all its databases and electronic publications.

All data on the Eurostat website is structured under Themes and Collections. Themes are broad statistical categories, which include:
• Key EU policies indicators
• General and regional statistics
Data can also be accessed by browsing in 30 sub-themes.

Data are further categorised under various Collections, each of which represents a certain type of data or a way of presenting them.

The provided statistical information is accessible in both online and offline formats.

With fairly over 300 million statistical data, Eurostat is a mine of statistical information unique in the world and covers all areas of European society. As from October 2004 onwards, they are directly available from Eurostat’s Internet site.

Following the needs of the users, there are two ways to access the data: a general user can find the data he is looking for via the access through the ‘Key indicators’ entry, while a specialist can find more sophisticated data via the entry to detailed databases.

**Key-Indicators on EU Policy .**

‘Euro-indicators’ which show on some 300 tables the short-term economic data available for the euro-zone and the EU, as well as for Member States. They cover the following topics: balance of payments; business surveys; consumer prices; external trade; industry, commerce and services; labour market; monetary and financial indicators; national accounts.

Long-term indicators: Some 600 tables on many areas of life, work, the economy and the environment in the EU can easily be accessed.

Structural indicators: Some 100 tables extracted from the Commission’s synthesis report. The indicators cover the domains of employment, innovation and research, economic reform, social cohesion and the environment.

Sustainable development indicators: The indicators cover the following domains: economic development, poverty and social exclusion, ageing society, public health, climate change and energy, production and consumption patterns, management of natural resources, transport, good governance, global partnership.

**Databases and metadata**

The macroeconomic and social databases were created for all those who require high-quality statistical information as an aid to decision-making. Far more than 300 million data are available. They are subdivided into several domains, each covering a specific sector. Links to
the methodology applied following the common statistical documentation on dissemination standards (SDDS) provides full information to specialised users. The data are available in multidimensional tables. The dimensions of the table specify:

- countries;
- units;
- variables;
- periodicity, etc.

The data are organised into the nine areas covered by Eurostat.

Examples:

*Data on external trade* of the European Union and on trade between the Member States are based on the combined nomenclature and cover some 11,000 products traded each year with some 250 partner countries.

*Regional data* cover the main aspects of economic and social life for the regions and provinces of the European Community (NUTS classification levels 2 and 3) and relates to, among other things, population, economic accounts and employment.

**Key historical facts**

1953 The Statistics Division for the Coal and Steel Community established.

1958 The European Community founded and the forerunner of Eurostat established.

1959 The present name of Eurostat as the Statistical Office of the European Communities adopted. First publication issued - on agricultural statistics.


1970 The European System of Integrated Economic Accounts (ESA) published and the general industrial classification of economic activities (NACE) established.

1974 First domain in the Cronos databank installed.

1988 European Commission adopts a document defining the first policy for statistical information.


1990 The Council adopts a directive on transmission of confidential data to Eurostat, previously an obstacle to Community statistical work.

1991 Eurostat’s role extended as a result of the agreement on establishment of the European Economic Area and adoption of the Maastricht Treaty.

1993 The single market extends Eurostat’s activities e.g. Intrastat established for statistics on intra-EU trade. Eurostat starts issuing regular news releases.

1994 First European household panel held, analysing income, employment, poverty, social exclusion, households, health, etc.

1997 Statistics added for the first time to the Treaty of Amsterdam and the Statistical Law approved by the Council. Harmonised Indices of Consumer Prices published for the first time - designed for EMU convergence criteria.


1999 Start of EMU, 1st January 2001 Greece joins euro-zone,

3 DATA AVAILABILITY SURVEY IN REPRESENTATIVE MEMBER STATES

Within the framework of WP2, and more specifically in W5 [15], selected countries were investigated in terms of data availability.

A questionnaire was used for obtaining information regarding the availability of data related to Traffic Law Enforcement (TLE). In W5 the questionnaire itself and method used, the information received through the interview based on this questionnaire, an analysis of this information and conclusions based on this analysis can be found.

The variable that were aimed to be collected were categorised as follows:

- Variables regarding road safety
- Variables regarding the planning of enforcement
- Variables regarding actual enforcement

The above listed variable groups represent, in fact, the information that theoretically can or should be gathered and combined to give a complete overview of the efficiency of different TLE programmes.

Thus, the availability of these variables in four EU Member States (Belgium, Denmark Greece, and Spain) was investigated. The information was gathered by contacting various stakeholders on a judicial, governmental or police level and performing interviews based on this questionnaire.

The main conclusions of the data collection can be summarized as follows:

- Each country provides a very unique picture of the availability of information regarding TLE.
- It is necessary to provide a detailed definition list for National Enforcement Plans and clear distinctions between different types of plans need to be made.
- Little information regarding TLE in the fields of speeding, drink driving and, especially, restraint use is currently available.
- No distinction is made between domestic and foreigner driver violations and sanctions in any of the four countries.
- Very little or none information on recidivism, follow-up procedures and court decisions is available.

Despite of the uniqueness of each country’s picture, some common patterns had emerged. The findings of Working Paper 5 can be summarized as follows:

The availability of “General Information and information on the National Enforcement Plan” is high in all four Member States. All four countries have similar speed and BAC limits and obligatory restraint use for the driver and passengers of vehicles. “National Enforcement
Plans” do exist in all four countries although they cover different time periods and may have different contents. Therefore, some clarifications would be necessary to ensure that the requested information is clear and comparable between the different Member States.

- Road categories must be accurately defined according to their operational classification. The suggested road category definitions are:

1) Motorway: a contemporary, vehicle main road, with two or more lanes per direction plus emergency lane, divided by a median that separates the two directions of traffic movement, with controlled entrances and exits at grade separated intersections, allowing movement at high speeds.

2) Highway (or Expressway): a main vehicle road usually between towns or cities, with one or more lanes per direction plus emergency lane, with controlled entrances and exits at grade separated intersections.

3) Rural Road: a vehicle road in rural area, with one or more lanes per direction, intersections at grade, traffic controlled by traffic signals or priority signs.

4) Urban Road: a road in urban area, with junctions at grade, traffic controlled by traffic signals or priority signs, serving significant number human activities and large number of pedestrians.

- The “National Enforcement Plan” must also be accurately defined. It should refer to Traffic Law Enforcement and should include all actions and techniques required to be applied mainly by Traffic Police in order to achieve the targeted level of compliance. It should have a specific duration time period and it should include evaluation procedures. The National Enforcement Plan could be part of a “National Road Safety Plan” which would include the required actions from all Organizations and agencies involved in road safety, such as Ministry of Public Works responsible for road construction and maintenance, Ministry of Health responsible for first aid and medical care, Ministry of Justice responsible for the adjudication of traffic law violations, etc.

When examining the four focus areas (drink driving, speeding and restraint usage) it was found that, in general, limited amount of data is available. The information is usually scattered in different places and sources. No ready to use computer data files were available. Most data are available for speeding and drink driving, while restraint usage is the least documented area.

Information on Speed Related TLE is not readily available in the four Member States. 45% of the required information is available in Denmark, 34% in Spain, 29% in Belgium and 18% in Greece. The use of automated speed control methods are still in a preliminary state of application in Greece and the requested data in this domain is not currently collected and evaluated. Information on recidivism is only available in Spain. Domestic - foreign distinction and court decisions are not available in any of the countries examined.

Information on Drink Driving TLE is also not readily available. Denmark presents the higher rate of information availability as 45% of the questions asked have a positive (“Yes”) reply. 42% of the required information is available in Spain, 39% in Belgium and 30% in Greece.
Information on recidivism is only available in Denmark and Spain. Information on the distinction between violations by domestic and foreign citizens is not available in any country.

Very limited information on Restraint Use TLE is available in the four countries examined in this pilot study. Belgium presents a 0% of positive answers in this domain. Spain has 32% of positive (“Yes”) replies, Denmark has 24% and Greece has 16%.

Spain has indicated the need for information registration regarding the type approval of the method and instruments used for Automatic Speed Control applications. The usage of approved methods and instruments would provide protection to the police operation from legal attacks of the violators.

Information on recidivism (repeated violations) is available only for drink driving recidivism in Denmark and speeding recidivism in Spain.

No distinction is made between domestic and foreigner driver violations and sanctions in any of the four countries.

Information on follow-up procedures is only available to some extent in Denmark and Spain. Almost none information is available regarding follow-up procedures related to restraint use.

Information on court decisions is available only for drink driving in Denmark. No information about court decisions for speeding and restraint usage is available in any of the four countries.

Some problems may exist regarding the “Public Availability” of data from authorities such as the Justice Department, because this information is sometimes considered sensitive and confidential (it may expose to the public legal loops and gaps). If the issue is not resolved by the end of the information collection time period, the information should be considered unavailable for the questionnaire. The availability status may change during the course of the Pepper project.
4 QUESTIONNAIRE SURVEY ON THE NEEDS OF A POTENTIAL EU TLE MONITORING DATABASE.

Based on the findings of the project and on the review of existing databases, a questionnaire was composed, aiming to investigate the views of related stakeholders on the contents, the organisation and the functionality of a potential EU Traffic Law Enforcement monitoring database. The detailed results of the survey have been reported in W42 [10].

4.1 Questionnaire structure

The questionnaire was composed in a way to be as simple as possible and gather most of the necessary data quickly and without demanding much time and effort by the person who would fill it in.

It was structured in three sections, each covering one different aspect of the database features. The sections were:

- Content
- Organisation
- Functionality.

In the first section, the questions addressed the content needs, both at EU and national level. At national level, general content was differentiated from content related to the three specific areas of interest (speeding, driving under influence, restraint use). The second section dealt with the organisation of such a database. Issues like the physical location of the database, responsibilities for the collection, insertion, quality, maintenance, etc. of data and the overall coordination of the database were tackled. Finally, in the third section, questions regarding the functionality of the database (access, outputs, etc.) were included. The questionnaire itself can be found in Annex I of Working Paper 42.

The questionnaire was originally presented and distributed during the 2nd PEPPER Seminar in Madrid (November 2007) and was further sent via e-mail to the PEPPER User Forum members and other contacts (elaborate how contacts were obtained).

4.2 Questionnaire survey results

In total, 15 questionnaires were returned. Although the sample was not large, it was quite indicative, since there are several different stakeholders’ groups represented. In particular, the sample was of the following composition:

- 6 research institutes’ representatives
- 4 police representatives
- 2 automotive technology developers
- 1 policy maker
- 1 academic
1 driver and automotive association representative.

The opinions of the people that have participated in the questionnaire survey could be concluded in the following points:

- The EU level data included in the Database should at least include:
  - EU legislation
  - EU Directives
  - EU actors on TLE and their activities.

- The National level data (general) should at least include:
  - Traffic enforcement technologies and aids
  - Cross border rules and state of practice
  - Actors on TLE and their opinions on enforcement measures
  - National Enforcement Plans
  - Campaigns undertaken at National level

- The National level data (specific) should at least include:
  - Violations
  - Compliance
  - Sanctions
  - Follow-up procedures
  - Court decisions.

- The EU level TLE monitoring database should be physically located centrally at DGTREN or another relevant DG, or at an independent EU organisation.

- The National data should be reported to the Database by the Ministry of Transport or Interior or the National Traffic Police.

- The communication of data should be done at a yearly basis.

- The quality of the communicated data should be a responsibility of the countries.

- The EC should be responsible for the data processing.

- The EC should be responsible for the maintenance of the database.

- The dissemination of the data and results of the Database should be a responsibility of the EC with the assistance of the participating countries.

- A steering committee, which would be assigned with the overall coordination and consultancy on the operation of the Database should be established, comprising of country and EU experts, as well as representatives of independent EU organisations.

- The access to the database should be restricted, allowing only part of it for public access. Special access rights should be available for country and EU representatives.

- The outputs of the database should be primarily a website, allowing for data queries and, secondly, statistical tables and yearly publications.

- The database would rather not be linked with other databases. If, however, this would be the case, the CARE and ERSO are considered as the most relevant ones.
5 DATA COLLECTION

The most essential part of a database is the data that it contains. This data is however not random. The kind of data as well as the methodology of how to collect and organise it, are very complicated issues that should be taken into account very carefully. This task has been undertaken within W40 [13] and Deliverable 8 specifically [9] of the PEPPER project. A conceptual model of a data collection system for EU TLE data has been studied and developed. Here, some main points will be mentioned, while the detailed analysis can be found in the above mentioned documents.

The necessity of considering the whole data chain (from input to output data) in developing the data collection system was specifically stressed out. This principle has been followed in the PEPPER approach on developing a data collection system.

It was pointed out that designing a data collection system implies a series of challenges, such as:

The substantial difference in the amount of data available and their level of detail in the different member states.

The difference between data availability now and data availability in the future.

The very different focus on the output side between the more aggregated reporting that authorities on the national level and on the EU-level wishes and the more detailed analysis that researchers wish to perform.

Baring these into account, the data model should follow a set of principles:

The model has to be flexible, and it must be easy to incorporate new “areas” of data.

The model has to be able to handle issues concerning different levels of detail (data granularity).

Certain security issues have to be considered, especially when considering the future scenario where data are imported from databases on a “single offence”-level.

The data collection is to be performed in two primary dimensions: temporal and geographical. From all the above assumptions, the following overall model has derived.
Regarding the interface, a web-based interface is considered as most appropriate. Each user should be able to use a personalised questionnaire while, at the same time, there should be guidance and clarity on how to use it.

Organisational, as well as security and confidentiality issues should also seriously be taken into account. Roles and responsibilities should be clearly defined and followed. Security of the data collected should be ensured by the system, while certain sensitive data items should be classified as “confidential” and access should be limited only to authorised users.

The whole conceptual model is analysed in detail in Deliverable 8. The aim here was just to present its main principles, as part of the whole conceptual model for an EU TLE monitoring database.
6 EC VIEWS ON THE CREATION OF A TLE MONITORING DATABASE AT EU LEVEL

Since 2003, the European Commission has been working on the Recommendation on enforcement in the field of road safety. As reported in the recent Expert Group meeting, the progress within these years has been significant. More specifically:

After adoption of the Commission Recommendation of 21 October 2003 on enforcement in the field of road safety (2004/345/EC), the Expert Group on road safety enforcement was established, as a sub-group of the High-Level Road Safety Group. The first meeting of the plenary group was held on 23 June 2004.

At this meeting 3 sub-groups for the exchange of best practice between Member States in the fields of speeding, drink driving and non use of seat belts / child restraint systems were established.

Further meetings of the Plenary Group took place on 22 March 2005 and 20 July 2006. The objective of these meetings was to exchange information and views on enforcement practices in the fields covered by the Recommendation.

The information required from Member States concerning recommendation point 1 (national enforcement plan) and point 12 in conjunction with the annex was meant to give an over-all view of how the recommendation was implemented and with which results.

In 2005, a Working Group referred to as ‘the Small Group’ had drafted a revised text for the annex with a view to concentrating on the main issues. The document (“simplified text”) resulting from this work, was adopted by the Experts of the Member States in the plenary meeting on 22 March 2005 and sent to all Member States on 19 July 2005.

From the experience reported from the countries that have tried to apply the recommendation, it has been concluded that the data items required by the Annex is in some cases difficult to gather, mainly due to the non-conformity of the data collected in each country, or even in different regions of the same country. Moreover, the need for the existence of a database to gather these data and provide performance indicators has also been expressed.

The Annex of the Recommendation is a good guide for the specification of data at National level to be gathered for the EU TLE monitoring database. As some countries are already working on aligning their National Enforcement Plans with the requirements of the Recommendation, the existence of an EU level database which would gather, organise and handle this data, is considered to be a useful tool for the better introduction of these procedures to the rest of the countries and the fine tuning of the already on-going initiatives.

As was also expressed during the Expert Group meeting, the need still exists for a further simplification of the data requirements, due to the difficulties that have been met and reported by the addressed countries.
6.1 Contents of data to be communicated to the EC according to the simplified Annex of the Recommendation.

In terms of contents of the data to be communicated to the EC, following Recommendation point 12, the following are included per area of focus (speeding, driving under influence, restraint use). The data was meant to be communicated on a yearly basis.

i. Speed enforcement

a. Method of speed enforcement (automated, traditional, both)
b. Automated speed enforcement equipment (number and kind)
c. Violations (number violations registered by automated equipment and total)
d. Sanctions (number of sanctions imposed for violations registered by automated equipment, sanctions effectively executed)
e. Detection, prosecution, sanctioning (process description and how far is automated procedures are involved)
f. Court decisions (number of court decisions imposed for violations registered by automated equipment, court decisions effectively executed)
g. Changes in the national legal regime on speed limits during the reporting period
h. Other relevant information (up to each country).

ii. Drink - driving

a. Random breath testing (RBT) and evidential breath testing (number of alcohol screening devices used, number of checks carried out in the course of RBT, number of check with evidential breath test device)
b. Violations (number of registered violations)
c. Sanctions (number of imposed sanctions, number of effectively executed sanctions)
d. Court decisions (number)
e. Changes in the national legal regime on drink-driving during the reporting period
f. Other relevant information.

iii. Restraint use

a. Intensive enforcement actions (number of persons checked, duration, number of times per year, periods when they are held)
b. Violations (number of registered seat belt and child restraint violations)
c. Sanctions (number of imposed sanctions for seat belt and child restraint violations, number of effectively executed sanctions)

d. Court decisions (number of relevant court decisions)

e. Changes in the national rules of restraint use during the reporting period

f. Other relevant information.

Apart from the above, other information is requested. More specifically:

- Information on publicity campaigns (subject, number, duration, periods, target groups, places where held, media used, authorities in charge, others involved)

- Roadside enforcement information (subject, type of road, duration period, authorities in charge, others involved)

- Enforcement actions not communicated to the public (actions and equipment on which the public is not informed)

- Other information considered relevant

- Information on the effects of the intensive enforcement actions (number of accidents before/after intensive enforcement and information actions, influence of separate types of enforcement/information actions on these numbers).

- Drugs driving
  - National situation (national rules, drugs covered, legal limits, testing methods, sanctions, enforcement practice, similar effect rules)
  - Actions undertaken (concrete actions and best practices with respect to drugs-driving).

As can be observed, the content of the requested information in the EU Recommendation [2] is more or less the same as the content that would be appropriate for the TLE monitoring database that was indicated by the outcome of the questionnaire survey presented in Chapter 4, as well as throughout the whole WP2 approach. Moreover, during the high level group meeting the need it was expressed for a means of systematisation of the gathered data. Thus, the concept of a TLE monitoring database is completely in line with the current needs in the development of the EU Recommendation.
7 ENFORCEMENT PERFORMANCE INDICATORS

Another issue that has been very seriously elaborated within PEPPER is the Enforcement Performance Indicators (EPIs). These indicators serve in enabling the monitoring of TLE and TLE efficiency, similarly with road safety indicators. They would also allow for the comparison of different TLE techniques between countries and the eventual identification and selection of appropriate, effective TLE techniques for particular road safety and enforcement problems. In this concept a selection of a series of the most important indicators has been made in PEPPER and is briefly presented hereafter [5]. It is also important to state that also during the high level meeting the need for the extraction of EPIs has been underlined.

7.1 Speeding

The following indicators (16 main, i.e. no details, which can be expanded to 36 if all information is available) were selected to measure speed enforcement (national annual figures):

i. Legislation

- Legal Speed Limit (km/h)
  - Urban Road (km/h)
  - Rural Road (km/h)
  - Highway (km/h).

ii. National Enforcement Plan (NEP)

The following indicators describing NEP related to speeding are suggested:

- Existence of a NEP (yes/no)
  - Start Year / End Year (detail)
  - Quantitative Targets [yes (details)/no] (detail: for example number of vehicles to be checked)
  - Local TLE Operation related to speeding (yes/no) (detail: for example related to operation in different regions of the country).

iii. Planning of enforcement:

The planning can be described by the following indicators. When information is available, a distinction can be made between the number of hours that controls are effectively “on the spot” and the total number of hours spent on controls:

- Number of planned control periods per year (for example: 2 control periods of 1 month each to be performed, one in the summer and one in the winter).
- Number of planned controls
  - How many times enforcement actions will take place
  - Number of vehicles to be checked.
v. **Violations:**

Manual speed control is usually performed by the police, while automated speed control can be performed also by other organizations. The indicators given here are intended as the total number of violations, registered both by the police and/or other organizations.

- **Number of violations (number of vehicles exceeding the speed limits)**
  - By automated speed control
  - By manual speed control

- **Number of violations as % of number of motor vehicles (or number of driving licenses) in the country**
— By automated speed control
— By manual speed control.

NB: Variables expressed as % (called also rates) are indispensable in order to be able to compare the different Member States, given the differences in the numbers of inhabitants and motor vehicles.

vi. Sanctions:

For the countries using penalty point system, it can be useful to collect more detailed information on the number of fines or penalty points that are given.

- Number of sanctions issued
  - Number of fines issued
  - Number of penalty points given % of all penalty points given (example: approximately 80% of all penalty points are given for speeding)
- Number of sanctions as % of number of violations
- Number of sanctions as % of number of motor vehicles (or of driving licences) in the Country.

NB: Variables expressed as % are indispensable in order to be able to compare the different Member States, given the differences in the numbers of inhabitants and motor vehicles.

7.2 Drink-driving

In terms of drink-driving, 17 main (no details), which can be expanded to 28, if information on all details is available, indicators were selected to measure drink driving enforcement (national annual figures):

i. Legislation:

Differences in legislation regarding the legal BAC limit, random breath testing and evidential breath testing exist between Member States. The EPI’s suggested here are needed in order to compare the general legislation in the different countries.

- Legal BAC limit (per cent or gr/l) (optional: BAC limits for various driver’s groups, i.e. novice, professional drivers etc.)
- Random Breath Testing (RBT) is legal (yes/no)
- Evidential Test can be used (yes/no).

ii. National Enforcement Plan (NEP):

Indicators describing the NEP on drink-driving:

- Existence of a specific NEP related to drink-driving (yes/no)
  - Start Year / End Year / Duration
iii. Planning of enforcement:

Similarly to the area of speeding, a distinction should be made between the number of hours spent effectively on controls “on the spot” and the total number of hours spent on controls as well as time spent on random and targeted controls.

- Number of planned control periods per year (e.g. two control periods: one in summer, one in winter)
- Number of controls (how many times enforcement actions will take place)
  - Random controls
  - Targeted controls
- Number of hours to be used
  - Control hours (total hours for all controls) (detail)
  - Person hours (total hours used by all personnel involved in the controls) (detail)
- Number of measurements (number of drivers/vehicles to be checked).

iv. Actual enforcement:

Given the particular properties of the drink-driving problem, the number of random and targeted controls that were done (if information is available) is considered to be a useful indicator.

- Number of control periods per year
- Number of controls done (how many times enforcement actions took place during the year)
  - Random (optional: details related to location, etc.)
  - Targeted (optional: details related to location, etc.)
- Number of hours
  - Control hours (actual hours used in control actions) (detail)
  - Person hours (hours used by the personnel involved in the controls) (detail)
- Number of locations (or stretches) where the controls took place.

v. Violations:

The following indicators are suggested to describe drink-driving violations. Indicators holding information on the number of detected violation that were the result of random breath testing and the number of violations that could be used as evidence in court are also useful to have.

- Number of violations (number of drivers not complying to the law)
  - By Random breath tests (RBT)
– By targeted breath tests
– Number of violations confirmed by evidential breath testing

• Number of violations as % of number of motor vehicles (or of driving licenses).

NB: Variables expressed as % are indispensable in order to be able to compare the different Member States, given the differences in the numbers of inhabitants and motor vehicles.

**vi. Sanctions:**

We suggest the following indicators:

• Number of sanctions issued
  – Number of fines
  – Number of penalty points % of all penalty points given

• Number of sanctions as % of number of motor vehicles (or of driving licences)

• Number of sanctions as % of number of violations.

NB: Variables expressed as % are indispensable in order to be able to compare the different Member States, given the differences in the numbers of inhabitants and motor vehicles.

### 7.3 Restraint use

Here a set of 15 main (if no details are available), which can be expanded to 32 (if information on all details is available) indicators in the field of restraint use, are suggested:

**i. Legislation:**

• Mandatory Restraint Use (yes/no)
  – Driver
  – Children
  – Passengers Front Seat
  – Passengers Back Seat.

**ii. National Enforcement Plan (NEP):**

• NEP specific to restraint use exists (yes/no/planned)
  – Start Year / End Year / Duration
  – Quantitative Targets [yes (details)/no] (optional: detail for example number of vehicles to be checked)
  – Regulates local TLE operations (yes/no) (detail).

**iii. Planning of enforcement:**

All consideration made on planning of enforcement in the previous sections are valid also here.

• Number of control periods per year
iv. **Actual enforcement:**

Given the particular properties of restraint use violations, it is advisable to create indicators related to location (e.g. built-up vs. rural areas).

- Number of control periods per year
- Number of controls done (how many times enforcement actions took place during the year)
- Number of hours
  - Control hours (actual hours used in control actions)
  - Person hours (hours used by the personnel involved in the controls)
- Number of locations (or stretches) where the controls took place
  - Built-up areas
  - Rural areas.

v. **Violations:**

Here, indicators on the number of detected violation for the different types of car occupants can be useful:

- Number of violations (number of non-restrained car occupants)
  - Number of drivers
  - Number of children
  - Number of front passengers
  - Number of back seat passengers
- Number of violations as % of number of motor vehicles (or of driving licenses).

NB: Variables expressed as % are indispensable in order to be able to compare the different Member States, given the differences in the numbers of inhabitants and motor vehicles.

vi. **Sanctions:**

The number of restraint use related sanctions that are issued provides an insight into the restraint use compliance in itself.

- Number of sanctions issued
- Number of fines
- Number of penalty points given % of all penalty points given (detail: i.e. 20% of all penalty points are given for non-restraint use)
  - Number of sanctions as % of number of motor vehicles (or of driving licenses)
  - Number of sanctions as % of number of violations.

NB: Variables expressed as % are indispensable in order to be able to compare the different Member States, given the differences in the numbers of inhabitants and motor vehicles.

Thus, the EPI’s describing restraint use enforcement suggested here constitute a set of 15 main variables (if no details are available), which can be expanded to 32, if information on all details is available.

Additional information on compliance to the traffic laws can be combined with the selected EPIs in order to assess and monitor risky behaviour in the three key areas:

a. **Speed:**
   - Average observed speed for different road types (urban/ Rural/Highway)
   - Compliance rate: Number of drivers exceeding the limits per number of motor vehicles (or number of driving licenses)
   - Number of accidents and injuries due to speeding.

b. **Drink-driving:**
   - Compliance rate: number of drivers with BAC above the limit per number of motor vehicles (or number of driving licenses)
   - Number of accidents and injuries due to drink-driving.

c. **Restraint use:**
   - Compliance rates (% of car occupants using them) for drivers / front seat / back seat / Children
   - Number of injuries due to non-use.

Some of these variables are already available in IRTAD and the SARTRE databases.
8 TLE MONITORING DATABASE

It is now becoming clear, after all the work performed in PEPPER WP2, the research in countries, the investigation of related stakeholders’ opinions and the definition of the data collection model, what a potential EU level TLE monitoring database could look like. Of course, in order to define how this database could come into reality, i.e. the “conceptual model”, different aspects need to be considered.

Four different aspects need to be considered when describing the TLE monitoring database:

- Establishment of the Database
- Database contents and data collection
- Database organization
- Database functionality

8.1 Establishment of the Database

The first and most essential step towards the creation of such a database is its establishment. This involves political decision making from the EU. The EC, probably through a relevant Directive, should set the framework for the establishment of a TLE monitoring database at EU level, providing the member states with the obligation, but also with the guidance, of collecting the necessary data at National level. To achieve that, significant resources should be reserved, to help the countries organize their National data collection practice (which may indeed take significant time), as well as for the needs of the database itself (personnel and technical equipment should be engaged, etc.). However, the most important and probably the most difficult task would be to organize the National data collection procedures, so as to be compatible with the needs of the Database.

8.2 Database contents and data collection

In terms of contents, these are meant to be data which would be valuable for researchers, policy makers, the police and justice departments in order to draw the picture of the TLE situation in each country and in the EU as a whole, identify weak points, compare good and bad example cases and decide upon measures to heal existing problems as well as to further ameliorate the situation where a well function TLE-system already exists.

This kind of data is well described by the enforcement performance indicators (chapter 7) and refined during the EC Directive consultation process (chapter 6), as well as by the results of the experts’ questionnaire survey performed within PEPPER (chapter 4).

Of course there is a big gap between defining the data needed and actually having it. First of all, there are the local factors that are making this process difficult. As identified in the limited (however indicative) collection of data from some member states (see chapter 3), the data that is being collected in each county is quite different and, at the same time, even if similar data is gathered, the actual data content in each case may differ (either in terms of time, road category,
regularity, etc.). Thus, a first target to be achieved is that common rules for data collection should be defined as well as transformation rules to render the collected data sets comparable between countries.

A thorough conceptual model for data collection has been worked out within PEPPER WP 2 (see chapter 5 and Deliverable 8), where it is described in detail how the data would be collected and organized. As mentioned in the relevant Deliverable, the specific model has been designed to be complex one, as thus, it would work in all cases (either complex or simple).

In order to ensure the continuous flow of data, a Directive would be needed, obliging the countries to collect and communicate the related data to the database. It is up to the Commission whether it decides to proceed with the establishment of such a database. PEPPER will provide the conceptual model on how this could be implemented. From there on, a political decision would be the next step towards the creation of an “EU TLE monitoring database”. Funds and effort should be reserved and also the countries should be convinced on cooperating in such a mission and the benefits that may come from it.

8.3 Database organization

As indicated already, this kind of database should be centrally located (most preferably in the DGTREN or another European Commission instrument). The data flow would come directly from the member states. For this data communication to be effective, so that the correct data is communicated, timely and avoiding duplicates, certain rules must be set:

Timing of data communication: the data should preferably communicated once a year from each country to the Commission.

National data collection: the data in each member state should be collected according to specification that would be set by the EU (of course relevant adaptations to each country’s needs should be possible). Every country should have a so called “National data collection point” where each involved authority should send data, data would be primarily refined and sent to the central database. The quality of the National data should and would be a responsibility of the National collection point.

After receiving data from the counties, the EC would be further responsible for the data processing, as well as for the whole maintenance of the database. Moreover, the Commission would have the responsibility of disseminating the data and results coming from the data process and analysis to all related parties as well as to the general public. The countries may assist by undertaking further National level dissemination actions.

A Steering Committee, responsible of coordinating the whole procedure as well as consult the Commission on the operation of the Database should be established. In this Committee, representatives from each member state, as well as of major actors on road safety and TLE (i.e. independent EU organizations, such as FERSI, ECTR, TISPOL, etc.) should participate. The role of this Committee would be crucial in terms of continuously monitoring the operation of
the Database, as well as identifying problems in time and suggesting effective mitigation actions.

8.4 Database functionality

In terms of functionality of the Database, there are four main issues that should be taken into account: the access rights, the security and confidentiality of the contents, the output and the links to other databases.

Regarding the access rights, different levels should be set. Full access should be permitted only to the administrator of the Database (i.e. the Commission) and the Steering committee. At a second level would be related stakeholders with TLE issues and finally some parts of the database should be available for public access. This would ensure the well functioning of the database and the avoidance of data leaks to unauthorized parties.

Regarding security and confidentiality issues, a concrete data security systems should be set up, excluding the access of unauthorized users to each data cluster, as well as prevent intruders. Confidentiality is also an important factor, since the majority of the collected data could be subject to personal data legislation. In addition, police and other institutions’ data are also protected by confidentiality restrictions. Thus, especially in the stage of data collection, the data providers should be assured that the Database would respect their confidential data.

It is therefore important to have a set of built in mechanisms in the DCS which can make sure that confidential data are treated in the right way. One solution could be to apply the following rules:

1. That a certain amount of data or a certain result is permanently made available for one or more groups of users - only public users/public users + certain groups of PEPPER-users/users outside specific countries/users outside specific authorities, etc.

2. Data is entered into the system, but is in a certain period of time for restricted use only.

3. Data is entered into the system, but must only be available to certain groups on specific levels of aggregation.

4. Data is entered into the system, but shall always be aggregated before use. This could be the case with very detailed data from national databases, automatic enforcement equipment, and statistical databases with data on an individual level, etc.

The output of the database is mainly considered in terms of a website (which would again have a public and a restricted area), which would allow for data queries, statistical analysis of data, etc. Moreover, yearly publications of the collected data, in the form of statistical tables and illustrating figures, as well as useful conclusions deriving from the collected data should be planned. Information days and relevant workshops for the information of interested parties could also be organized, as part of the dissemination strategy undertaken by the Commission or the National authorities.
Finally, a two-way link could be established with other databases, and mostly accident databases, such as the ERSO database, CARE, etc. This interconnection could be valuable, especially if comparability of results—at least to a certain extent—could be achieved, providing the possibility to compare and combine the accident and enforcement data and produce combined results, even in terms of combined performance indicators, which could be an interesting and useful perspective. Apart from that, the fact that accident databases at EU level already exist and function for significant amount of time, their experience would be of valuable help during the set up, as well as the routine work to the EU level TLE monitoring database.
9 CONCLUSIONS

Today, a number of databases exist at EU level, collecting, organising and disseminating several data items and working with immense amounts of data. Thus, the idea of having also an EU level TLE monitoring database has been generated and the PEPPER project was invited to set up the conceptual model for such a perspective.

First of all, data availability had to be investigated. Performing a survey in a small number of representative member states, has led to the conclusion that currently, most of the countries do not have a formal data collection and management system for TLE data. Certain amounts of data are being collected; however they differ significantly, not only in terms of contents, but also in terms of aggregation and detail. Differences are also identified between countries as well as between regions within the same country. Thus, the problem of data availability and collection is the first to be overcome.

A detailed and concrete data collection system is proposed by PEPPER. The aim for it is to be as comprehensive as possible, in order to be applicable in different situations, according to the needs and status of each member state.

In order to investigate the needs of a potential database at EU level, a number of stakeholders have participated in a questionnaire survey, answering questions regarding the content, organisation and functionality of such a database.

Additionally, the EU has already hold discussions on data content needs and availability in member states and the need of extracting Enforcement Performance Indicators has risen. A set of the most important ones has been reviewed.

Based on these findings, it is suggested that a centrally located database (most probably hosted by the EC) is created for which countries will annually donate their National data on several items regarding TLE and also more data at EU level will be added by the EC and other independent EU organisations. The database would most likely be accessed through a web-interface, offering several possibilities for data research and analysis, as well as annual publications of the data in the form of statistical analysis. The need for several levels of data access permission has also been identified, thus keeping part of the data confidential for security and data privacy reasons. The whole process will be coordinated by a committee, in which EC and member states representatives would participate, as well as other key stakeholders (such as FERSI, ECTRI, TISPOL, etc.)

From all the above it can be concluded that the establishment of an EU level TLE monitoring database is a complex and demanding task. However, it is not impossible but it requires significant effort and commitment, as well as resources. Political will and relevant decisions at EU as well as at National level is required. This, together with a good coordination of the involved authorities and the establishment of a uniform and concrete data collection system would be the key parameters that would lead to the success of this goal.
10 REFERENCES


6. www.erso.eu


11. Siren, A., Meng, A., Orozova-Bekkevolt, I., List of enforcement data to be collected, PEPPER W29.


