IMPLEMENTING THE EUROPEAN ROAD SAFETY OBSERVATORY IN THE SAFETYNET PROJECT

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Abstract

In 2004 there were over 43,000 people who were killed on the roads of the 25 member states of the European Union (EU), additionally around 3.3 million people were injured[1]. The costs to society exceeded €180 billion which is around twice the annual budget of the European Commission and 2% of EU GDP. In 2001 the European Commission adopted a target of reducing fatalities by 50%[2] within a decade and identified several areas where it could make a direct contribution within the constraints of subsidiarity. The target was reaffirmed in 2003[3] in the Road Safety Action Programme that provided further detail about actions it planned to introduce. A key element in the Programme concerned the development of a new European Road Safety Observatory to gather data and knowledge to inform future safety policies. The development of the Observatory was to be undertaken by the Sixth Framework funded project "SafetyNet". This paper describes the structure of the Observatory and the progress in developing new EU-wide accident data information within SafetyNet. The use of hot links in this paper provides access to all of the key results of the project at this pooint.

European Road Safety Observatory

The European Commission has decided to initiate the development of the Road Safety Observatory by funding the SafetyNet project under the Sixth Framework Programme to prepare a suitable framework. The project is an extensive one, lasting over four years, and will build the basic structure of the observatory as well as gathering new data at several levels. The Observatory will bring together harmonised data at several levels and eventually cover all 25 member states and further additional countries outside the EU. The data will provide a resource at EU and member state level and the outputs will be widely available

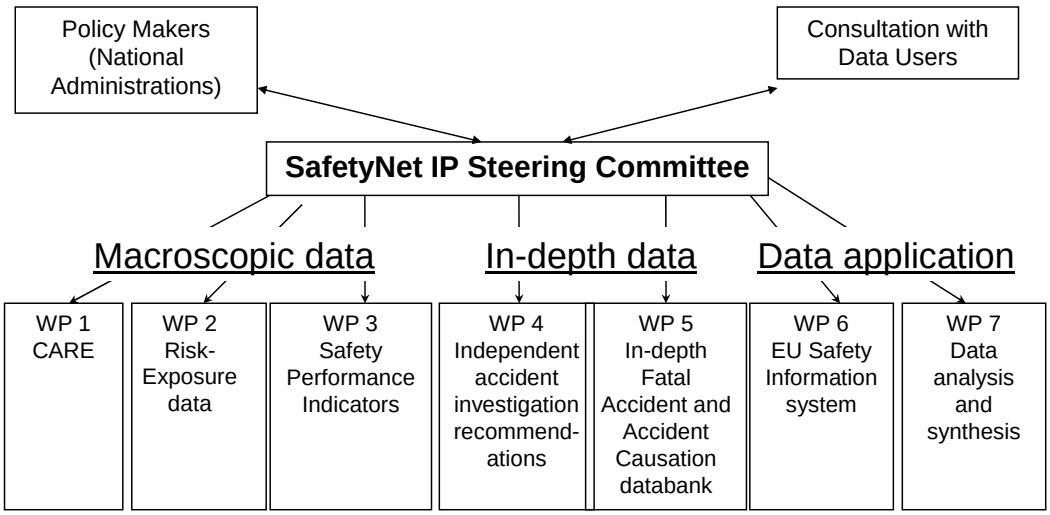
across the Web. The technical and management structure is shown below in Figure 1. The activity is categorised into three main areas with the work being conducted across seven Work Packages. Macroscopic data addresses issues concerning national level data and international comparisons, in-depth data provides much greater detail on accident. causation and supports new priority identification while the Data Application will provide a gateway to the accident information over the web and develop statistical approaches. The approach of the project is influenced by several reports from the ETSC[4] [5] [6].

Full details of the project can be found at the project website..

Macroscopic data

The three Work Packages addressing macroscopic data structures will together develop new harmonised methods for gathering and processing accident information and then apply them to populate the structures with data. The WPs themselves will not gather data but will work in close collaboration with Member States (MS). Data will be gathered at national level and supplied to the Project following a formal request by the European Council of Transport Ministers[7]. The EU CARE and the recently formed Safety Performance Indicators Working Groups will provide the umbrella in an effective manner. The project will provide the focus and technical direction for close cooperation between the European Commission, Member States and the research community.

Figure 1: SafetyNet Management and Technical structure



Work Package 1 - CARE Data

The CARE database is the only existing disaggregated pan-European accident data set, comprising the national accident databases from the first 15 EU Member States. A series of transformation functions have already been developed to produce a smaller but harmonised dataset for fatal crashes. WP1 is extending these transformations to include the data from the 10 new Member States (Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovakia and Slovenia), Switzerland and Norway. This Work Package has made publicly available, for the first time, statistical reports from CARE in the form of fact sheets and reviews of the combined accident data of 25 MS.

Fact sheets present accident data describing a number of road user groups including

- Main Figures
- Children (Aged <16)
- Young People (Aged 16-24)
- The Elderly (Aged >64)
- Pedestrians
- Bicycles
- Motorcycles and Mopeds
- Car Occupants
- Heavy Goods Vehicles & Buses
- Motorways
- Junctions

This range will continue to develop and be updated annually over the course of the project. The Annual Statistical Report 2006 comprises 81 Tables and Figures that describe the most recent available accident situations available from the 25 Member States. The WP 1 Team is also developing the specification of a set of recommended data fields for potential future adoption in MS as national data systems are developed and revised. It will also conduct an initial assessment of the issues of under-reporting of non-fatal casualties counts using data gathered in 5 MS. The full results of the work are available at http://www.erso.eu/safetynet/content/wp_1_care_accident_data_1.htm and will continue to develop as further results become publicly available.

Work Package 2 – Risk Exposure Data (RED)

International comparisons are frequently best conducted using risk evaluations rather than numeric comparisons. Many MS do gather exposure data, in order to calculate risk, however these measurements are frequently not comparable between countries. This WP is developing a methodology according to the state of the art, organise the data gathering and develop new transformation rules that will be applied to data from the Member States permitting harmonised comparisons. The WP has established an ideal list of key metrics of exposure which include the following parameters:-

- Road length
- Vehicle x kilometres
- Person x kilometres
- Fuel consumption
- Population
- Drivers population
- Vehicle fleet
- Number of trips
- Time in traffic

Initial reviews of the data available from MS and Eurostat indicate that the majority of these data are available in a variety of forms from many EU MS. Current work will develop a series of transformations to bring the available measures to a common comparable framework and a pilot set of exposure data concerning 7 EU MS is being assembled. A review of the state of the art of exposure data has been published (State of the art report) and the availability of exposure data within the EU has been assessed (First classification of the EU member states on Risk and Exposure Data).

The full set of results addressing exposure data is available at http://www.erso.eu/safetynet/content/wp_2_risk_exposure_data_1.htm.

Work Package 3 - Safety Performance Indicators

Safety performance indicators are support tools to understand better the causes of accidents and to monitor policy interventions. Examples include measurements of seatbelt usage rates, road speeds and alcohol in drivers. They are needed in addition to a count of crashes or injuries for several reasons:

- crashes and injuries are subject to random fluctuations and a recorded number does not necessarily reflect the underlying 'expected' number;
- recording of crashes and injuries is incomplete
- a count of crashes says nothing about the processes that produce crashes

This WP is building a new framework within which data gathered by Member States will be brought together in a comparable format. A broad group of SPIs has been defined that will cover all of the key aspects of the safety management process, each area has a number of sub-areas that describe aspects of each SPI.

Broad areas include:-

- Alcohol and drug-use
- Speeds
- Protection systems
- Daytime running lights
- Vehicles (passive safety)
- Roads
- Trauma management

A State of the art Report on Road Safety Performance Indicators has been produced describing previous work on SPIs with a separate reports on the theory and algorithms used in the Observatory. Two major reports describing country comparisons and country profiles have been produced and are publicly available. Further research results concerning Safety Performance Indicators will be found at http://www.erso.eu/safetynet/content/wp_3_safety_performance_indicators_1.htm as they are released.

In-depth data

Work Package 4 – Independent Accident Investigation Recommendations

Previous analyses of accident data for policy purposes have sometimes been contradictory and the independence of the investigation and of subsequent data has been questioned. Additionally in many countries, it is considered the public response to establishing the causes of serious traffic crashes does not match the response to major aviation or rail crashes. This WP is examining these issues and produce recommendations for assuring the optimum independence and transparency of accident investigation processes, investigation data and other results. It will give guidance on particular requirements in the investigation of major accidents. Early results are the completion of a review of Accident Investigation practises in Europe across transport modes and for several countries involved in the project, illustrating the range of approaches utilised, and a review of European databases. Further work has addressed the issues of transparency in accident investigation. defined the necessary practises

for the investigation of different types – major, fatal, injury or material damage only – of road crashes in MS. Draft recommendations for a future European structure for accident investigation have also been published for comment.

Work Package 5 - Independent Accident and Injury Databases

This WP will develop a framework for two new representative accident databases and populate them with data gathered by the Project. A database of approximately 1300 fatal accidents will be assembled to describe the key characteristics of these crashes, with some interpretation of causation. The data will be comparable to the US FARS dataset. Data will be compiled from existing police accident investigation records and recorded using a standard format detailed in the Fatal Accident data collection protocol specification and the results of a pilot study are now available . The second database will provide an in-depth description of the causation of around 1000 crashes and identification of key risk factors. In particular the data gathering will focus on infrastructure safety and the needs of eSafety technologies. Specialist teams will attend the scenes of crashes to gather volatile data using a very detailed protocol for in-depth accident causation data currently being piloted. The protocols are based on the Cognitive Reliability and Error Analysis Method developed by Hollnagel[8] and are expected to provide new insights into transport systems failures that result in collisions.

Data Application

Work Package 6 - European Road Safety Information System

WP 6 will assemble an extensive range of information and data related to traffic accidents including the results of other SafetyNet WPs. It will provide a single source for policy makers and researchers wishing to obtain details of accident related information. Examples include analyses of the data gathered or assembled in SafetyNet, results and reports from other projects, comparisons of regulations for EU MS and comments on enforcement activities. An extensive web interface will provide public access to the assembled safety information although the target user groups are predominantly policy-makers and their research advisors.

The website is now available at www.erso.eu and will continue to develop during the life of the project. Once completed it will become part of the European Commissions website.

Work Package 7 - Data analysis and synthesis

Accident statistics in themselves are not sufficient to model the complexity of the accident process and road safety in general. It is necessary to link accident data with various relevant databases dealing with road safety in order to enable a multivariate analysis, based on these co-ordinated data sources. In particular the clustered nature of many accident datasets implies that traditional statistical modelling methods may be insufficient to adequately identify relationships. This Work Package applies multi-level modelling and time series methods to the accident data and has produced new training resources for future accident data analysts. A report on the methodology of ,multi-level and time series modelling applied to traffic safety research has been produced and a user manual prepared for practitioners.

Project Implementation

The project started in summer 2004 and over the first 18 months has laid down the framework of the new data systems and the Observatory. It will not be developed in isolation but seek to develop links with other EU and national activities. It will form links to other EU and national level safety data activities and to future data users including policy makers, the eSafety and infrastructure safety communities.

The SafetyNet consortium comprises 21 leading road safety organisations from 15 EC Member States under the coordination of VSRC at Loughborough University. Together the SafetyNet team provides the wide-ranging, multidisciplinary range of skills necessary to face the high complexity of the task.

Challenges of the European Road Safety Observatory

The creation of a common independent gateway that will bring together EU accident and injury safety data as well as road safety information and support activities is the primary challenge of the European Road Safety Observatory. This Observatory will be constructed for the benefit of road safety practitioners and the general public. Part of the establishment of such an organisation will be the development of new tools for gathering and analysing EU road safety data in the 25 EU Member States according to impartial and open procedures.

The challenge for the SafetyNet Integrated Project is to provide for the first time to the European Community (EU, national, regional and local authorities, enterprises and other organisations) the necessary scientific support for the intensification of efforts towards safer roads in Europe. Exchange of experience, as well as stimulus from the multi-country comparisons within the SafetyNet pan-European road safety platform are fundamental benefits of all those struggling every day for the improvement of road safety at local, regional, national and European level.

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Partnership

The full SafetyNet partnership comprises the following organisations:-

Project Steering Committee

- Vehicle Safety Research Centre, Loughborough University, UK — VSRC
- National Technical University of Athens, Greece — NTUA
- Centre d'Etudes Technique de l'Equipement du Sud Ouest, France — CETE-SO
- SWOV Institute for Road Safety Research, Netherlands — SWOV
- Institut National de Recherche sur les Transports et leur Sécurité, France — INRETS
- Institut Belge pour la Sécurité Routière, Belgium — IBSR

Partner Organisations

- Bundesanstalt für Straßenwesen, Germany — BASt
- Centrum Dopravního Vvýzkumu (Transport Research Centre), Czech Republic — CDV
- Chalmers University, Sweden — CTH
- Department 'Idraulica Transporti Strade' University of Rome, Italy — DITS
- Finnish Motor Insurers' Centre, Finland — VALT-FMIC
- Institute of Transport Economics, Norway — TOI
- Közlekedéstudományi Intézet Rt (Institute for Transport Sciences Ltd), Hungary — KTI
- Kuratorium für Schutz und Sicherheit, Austria — KuSS
- Laboratório Nacional de Engenharia Civil, Portugal — LNEC
- Medical University of Hanover, Germany — MUH
- Road Directorate - Ministry of Transport - Denmark — DRD
- Swiss Council for Accident Prevention, Switzerland — BFU
- Technion - Israel Institute of Technology, Israel — TECHNION
- TNO, Netherlands — TNO
- TRL Limited (Transport Research Laboratory), UK — TRL

Subcontractor

- Agencia de Salut Publica de Barcelona — ASPB

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