



Deliverable D4.5 Recommendations for Transparent and Independent Road Accident Investigation

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EXECUTIVE SUMMARY

These Recommendations for Transparent and Independent Road Accident Investigation present the conclusions of four years of combined efforts of more than 20 persons, involved in road safety research, representing seven different organisations from as many European Union Member States. They establish the requirements for conducting and promote the creation of transparent and independent road accident investigations in all Member States according to a common European investigation methodology. Such investigations would address the need to have detailed, public, transparent and independent road accident data available at European level.

The issues related to independence and transparency have been considered in detail in previous SafetyNet work package 4 Deliverables (SafetyNet, 2005 and 2006a). A set of Draft Recommendations addressing the investigation of *major* as well as a sample of *routine accidents*¹ was prepared (SafetyNet, 2006b). A consultation period culminating with a Workshop was organised for gathering feedback on those Draft Recommendations (SafetyNet, 2007). Finally, the Draft Recommendations were thoroughly reconsidered in light of that feedback and used to prepare this 'finalised' set of Recommendations, whose primary focus is on the investigation of a sample of *routine accidents*.*.

Redefining the scope of this 'finalised' set of recommendations to the investigation of a sample of *routine accidents** has allowed the recommendations to focus specifically on the issues most important to this level of investigation. The issues surrounding *major accident** investigations with regards to independence have previously been summarised (SafetyNet, 2005), while the issues that need addressing when it comes to *routine accident** investigations conducted by police forces mainly relate to transparency (SafetyNet, 2006a). Some aspects of independence remain very much topical when it comes to *safety oriented road accident investigation**. These investigations need to be conducted independently from conflicting regulatory, commercial or other interests. The accident investigators themselves need a specific legal status guaranteeing that they can accomplish their work. On the other hand, the transparency of *safety oriented road accident investigations** appears clearly as a "non negotiable" characteristic.

These shifts in the relative importance of issues are visible, for instance, when it comes to the amount of operational recommendations. These shifts are visible also in the major recommendations chapter. The primary focus of these Recommendations is on *safety oriented road accident investigation**, addressing the need to set up a European Programme for their investigation. The *major accident** investigation discussion merely points out the most salient differences which need to be considered, when addressing the need to set up an investigation scheme for major road accidents.

The Recommendations for Transparent and Independent Road Accident Investigation SafetyNet work package 4 has devised are:

¹ All terms in italics and marked with an * in this document appear in the definitions section (p7).

Recommendation 1

A European safety oriented road accident investigation programme should be established whereby Member States conduct safety oriented investigations and contribute data to a European road accident database.

Recommendation 2

Safety oriented road accident investigations should be conducted with as much openness and transparency as possible.

Recommendation 3

The European safety oriented road accident investigation programme should be independent. Accident investigations could be conducted in cooperation with, but should not be influenced by stakeholders whose vested interests lie in the data collected.

Recommendation 4

The European safety oriented road accident investigation programme should have sufficient financial resources and should not rely on external funding to conduct any individual accident investigation.

Recommendation 5

Each Member State should identify a geographical area in which they shall conduct safety oriented road accident investigations. Sampling plans should be developed, according to the European Programme, enabling harmonised data to be fed in a European database.

Recommendation 6

Safety oriented road accident investigations should be carried out by one or more dedicated, multidisciplinary teams. Each team should have a core group of permanent members with specialist knowledge across the relevant areas of accident investigation and sufficient road safety experience. Investigators should also receive comprehensive training in accident investigation to ensure uniform standard of investigation across the Member States.

Recommendation 7

The investigation team should be notified of accidents at the same time as the emergency services or as soon as reasonably possible to allow a timely response.

Recommendation 8

Data should be collected about the human, vehicle and environment components of a road accident in sufficient detail to conduct a safety oriented road accident investigation.

Recommendation 9

It is best practice to:

- a. visit the accident scene and examine the road environment as soon as is reasonably practical (either while vehicles are in their post crash rest position or within a few days of the accident),**
- b. examine the vehicle, either at the scene or in a recovery garage,**
- c. speak to the involved road users and witnesses and employ trained medical personnel to collect injury data (e.g. use hospital data).**



Recommendation 10

Investigators should use standardised tools and be provided with adequate equipment to collect data in a systematic way.

Recommendation 11

Safety oriented road accident investigation data should be kept separate from the judiciary inquiry. Investigators should not be called to court as expert witnesses on a case they are investigating or have investigated.

Recommendation 12

Member States should define, in the framework of their respective legal system, the legal status of the investigation that will enable the investigators to carry out their task in the most efficient way and within the shortest time. Road accident investigators should be given the right, either through legislation or otherwise and where appropriate in cooperation with the authorities responsible for the judicial enquiry including the police, to access all evidence relevant to the investigation.

Recommendation 13

The purpose of the investigation and criteria for data collection should be disclosed to all people and agents involved in the accident investigation. They should receive honest and open explanations about what the investigation is for and who will use the data collected. The answering of questions should be optional and the contact details of those conducting the investigation should be disclosed to the road users and witnesses involved.

Recommendation 14

A European investigation manual should be developed to document the common investigation methodologies and the data to be collected, enabling individual Member States to conduct safety oriented road accident investigations in a harmonised manner. The document should be published in the official languages of the European Union and be freely available in order to reinforce the openness and transparency of investigations.

Recommendation 15

A European road accident database should be developed to record the safety oriented road accident investigation data collected in each Member State. Each Member State should be responsible for the accuracy and completeness of their data.

Recommendation 16

Accident data that is collected for the purposes of safety oriented road accident investigation and the resulting analysis should not be used to give evidence about fault or blame including in a court of law.

Recommendation 17

No data containing information that would lead directly to the identification of persons involved in the accident should be released to a third party. Data may be made available for research or analysis purposes but this should be restricted to a format which does not permit identification or attribution.



Recommendation 18

Reports should be based on the analysis of the European road accident database. They should also include recommendations designed to prevent reoccurrence and document the evidence upon which these recommendations are based (for example, the number of accidents and type of statistical analysis).

Recommendation 19

An annual report concerning the investigation activities over the elapsed year should be published. These reports should include summary results of investigations conducted in Member States and information on recommendations developed at EU level.

Recommendation 20

Recommendations for countermeasures, developed from aggregate accident data, should be addressed to the European Commission, who shall take the necessary measures to ensure that these recommendations are duly taken into consideration, and, where appropriate, acted upon.

Recommendation 21

The aggregate and annual reports should be made publicly available within an appropriate time scale at both National and European level.

These Recommendations for Transparent and Independent Road Accident Investigation should be viewed as the starting point for future projects aiming to implement a European *safety oriented road accident investigation** programme and working towards a common European accident investigation methodology.

DEFINITIONS AND ABBREVIATIONS

*All terms defined here are written in italics and marked with * throughout this document.*

Road accident investigations are currently conducted by a number of different organisations and take a number of different forms. This document specifically addresses the safety oriented investigation of road accidents and the following definition should be applied:

Safety oriented road accident investigation¹:

- 1. is the acquisition of all relevant information and the identification of one or several of the following:**
 - a. the cause or causes of the accident**
 - b. injuries, injury mechanisms and injury outcomes**
 - c. how the accident and injuries could have been prevented**
- 2. is conducted by one or several investigators with specialised knowledge in accident investigation and other fields of knowledge, relevant for the purposes of the investigation;**
- 3. is aimed at preventing future accidents and injuries through the development of countermeasures**
- 4. does not contribute to any judicial enquiry or take a stand on responsibilities.**

The following definitions should also be applied to this document.

Cause(s)²: Actions, omissions, events or conditions, or a combination thereof, which led to the accident or incident.

Emergency Services: The services which can be accessed by dialling the Member States' emergency number (e.g. 112), including Police, Fire and Rescue, Ambulance service.

Fatal accident³: Injury accident in which at least one road user sustains a fatal injury.

Fatality³: Injury outcome resulting in death [within 30 days of the accident].

Injury accident³: Road vehicle accident in which at least one road user sustains an injury.

Major accident: Accident that has to be considered as particularly serious because of the number of killed or injured victims, or because of the damage caused to the environment or property.

¹ This definition does not preclude the identification of other accident consequences, such as financial or environmental consequences.

² From Council Directive 94/56/EC of 21 November 1994 establishing the fundamental principles governing the investigation of civil aviation accidents and incidents (Article 3)

³ *ISO definition. The terms and definitions taken from ISO 12353-1:2002 Road Vehicles - Traffic accident analyses, Part 1: Vocabulary, are reproduced with permission of the International Organization for Standardization, ISO. This standard can be obtained from any ISO member and from the Web site of ISO Central Secretariat at the following address: www.iso.org. Copyright remains with ISO.*

Multidisciplinary investigation: If the investigators represent two or more fields of knowledge (E.g. "road environment", "vehicle", "human behaviour" etc.) the accident investigation is considered to be "multidisciplinary".

Raw data: Accident investigation data as it is collected and not yet processed or stored in a database.

Road user³: Person on the road. In this document, road user includes **Vehicle occupant**³: Road user in or on a vehicle.

Road vehicle accident³: Unintended event that involves at least one road vehicle in motion and leads to personal injury or property damage, or both.

Routine accident: an injury (including fatal) accident that is not considered **Major accident**.

Stakeholder: The groups and individuals who are in a position to take action, through policy or practice, to improve road safety or who gather, manage or hold accident related information, useful to road safety.

The following abbreviations are used in this document.

CCIS: Cooperative Crash Injury Study (UK). www.ukccis.org

EC: European Commission. http://ec.europa.eu/index_en.htm

EU15 are the 15 European Union Member States since 1st January 1995: Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland, Sweden and United Kingdom.

EU25 are EU15 plus the 10 countries joining the EU on 1st May 2004: Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovak Republic.

EU27 are EU25 plus Bulgaria and Romania joining the EU on 1st January 2007.

ERSO: European Road Safety Observatory web-site accessible at www.erso.eu

ETSC: European Transport Safety Council. www.etsc.be

GIDAS: German In-Depth Accident Study. <http://gidas.bast.de/eng/index.html>

OTS: On the Spot study (UK). www.ukots.org

SRA: Swedish Road Administration. www.vv.se

VALT: Finnish Motor Insurers' Centre. www.lvk.fi

1 INTRODUCTION

The European Commission 2001 White Paper, *European transport policy for 2010: time to decide*, acknowledges the fact that the bulk of current road accident investigation practices remain focused on the issues of liability and compensation for damages. The Commission further states that

such investigations are unable to stem the growing need felt in Europe and the United States for independent technical investigations geared towards revealing the causes of accidents and ways of improving the law. (EC, 2001: 69)

The White Paper goes on to propose that the latter type of accident investigation, already familiar in civil aviation, recently introduced or in the process of establishment in rail and maritime sectors, should eventually be implemented in road transport sector.

The European Commission 2003 paper, *Saving 20 000 lives on our roads*, recognises that investigations geared to the circumstances, *causes*¹ and consequences of road accidents, should be independent from investigations conducted by the judicial authorities or insurance companies. Notwithstanding the quality of *road vehicle accident** data contained in national statistics and the various uses it has, detailed *safety oriented road accident investigation** data must be gathered in an independent and transparent manner. The enhancement of road safety must be the only purpose of the investigation activity. There are, nevertheless, some important differences between transport modes, of which the Commission is fully aware.

However, it would not be possible to conduct a detailed investigation of each road traffic accident given that there are so many of them. It is more realistic to focus on the most serious accidents and on a representative sample of 'run-of-the-mill' accidents. (EC, 2003: 45)

The Commission reminds that such independent investigations should

make it possible to improve the current legislation and practices. They should be carried out at national level on the basis of a European methodology and their findings should be communicated for assessment by a group of experts meeting within the Commission. These investigations, relating to a limited number of accidents will supplement the general road accident statistics and the detailed accident case studies carried out by multidisciplinary teams. (EC, 2003: 45)

Thus the European Commission has formulated quite clearly the necessity of large scale coordinated European road accident investigation activities. The accident data collected can be used to identify (emerging) issues, design and assess countermeasures and therefore to determine future priorities for policymakers. Hence the need for *safety oriented road accident investigations** into a generalisable sample of road accidents has been established.

¹ All terms in italics and marked with an * in this document appear in the definitions section (p7).

The SafetyNet Contract *The European Road Safety Observatory - An Information System to support road safety policy in Europe*, summarises the task assigned to SafetyNet Work Package 4, in the process of implementing independent road accident investigation activities in European Union.

*The main objective of this WP is to elaborate guidelines for a good practice with the aim to ensure [database] independence in terms of data quality and also in terms of the output of these databases. Obviously, these guidelines will only concern public databases or public use of any European databases.*¹ (SafetyNet Contract, p. 28)

Thus, these recommendations address the need to have public, transparent and independent road accident data available at European level. They promote the introduction of transparent and independent accident investigation activities in all Member States according to a common European investigation methodology, in order to gather data for common European needs. These activities will be referred to as the *European safety oriented road accident investigation** programme (or simply European Programme) throughout this document.

A *safety oriented road accident investigation** aims to identify accident *causes** and contributing factors; injuries, injury mechanisms and injury outcomes; and how the accident and injuries could have been prevented. The investigation therefore needs to adopt a holistic view of accident analysis. In order to get a holistic picture of an accident the investigation adopts a broader perspective than investigations aimed to gather data for the judiciary system. It pays attention to aspects that a judicial enquiry might not consider: physical, psychological, social, political, economic or technical issues.

These recommendations therefore address the issues that seem fundamental for guaranteeing that such a holistic view can be obtained. They have no other aim than setting forth the conditions under which safety oriented transparent and independent road accident investigations can be efficiently conducted. The recommendations are divided in four sections:

- Institutional
- Operational
- Data storage and protection
- Reports, countermeasures and dissemination

These recommendations do not preclude the use of the same investigation programme for additional national safety oriented accident data needs, however such national needs have not been considered in the framework of this project.

It is acknowledged that Member States have different legal structures and are likely to have different concerns in implementing the European Programme. The recommendations therefore do not detail what kind of organisational structures could be put in place. They merely detail the basic requirements for the efficient conduct of *safety oriented road accident investigations**; requirements to be taken in consideration when individual Member States proceed to implement such investigations.

¹ CARE, SARAC and PENDANT were used as examples of existing European databases.

2 BACKGROUND OF SAFETYNET WP4

The recommendations in this document aim to pave the way for future EU scale accident investigation activities. They can be considered ‘finalised’ only in the sense that they represent the conclusions of WP4 of the SafetyNet project. These recommendations as they currently stand do not set out a European *safety oriented road accident investigation** programme or, specifically on the operational level, a detailed data collection methodology. They should be viewed as the starting point for future projects aiming to implement such a European Programme and working towards a common European *safety oriented road accident investigation** methodology.

As the recommendations detailed here are conclusions deriving from previous work (see SafetyNet 2005 [*Deliverable 4.1 Independent Accident Investigation. Legal status and investigation practices in five EU Member States*]; 2006a [*Deliverable 4.2 Road Accident Database Transparency*]; 2006b [*Deliverable 4.3 Draft Recommendations for Transparent and Independent Accident Investigation—A Working Paper*]; and 2007 [*Deliverable 4.4 Workshop Report*]), it is necessary to understand the process of their development. The following is a brief summary of this.

2.1 Road safety situation

In 2001, the European Commission published its white paper, *European Transport Policy for 2010: A time to decide*, detailing policy objectives for transport as a whole. In response to concerns raised about the number of road *fatalities** in EU Member States the Commission set the ambitious target of reducing the 40,000 road deaths in 2000 (EU15) to half that number by 2010 (EC, 2001). Reducing the number of road accident *fatalities** to 20,000 would also mean substantial overall enhancement of road safety across Europe. The European Commission estimates that one in three EU citizens will be injured in a road accident during their lifetime. The annual cost of *injury road accidents** in the EU25, including damage and socioeconomic and human costs, has been estimated to approach €200 thousand million (SafetyNet, 2006b).

According to the White Paper

the scattering of responsibilities and resources over a large number of organisations and authorities responsible for road safety ... tends to rule out large scale action and discourage the introduction of coordinated policies. (EC, 2001: 65)

This ‘scattering of responsibilities’ can be viewed as a result of a lack of clear, all encompassing road safety policy in most Member States. The lack of legal framework for road accident investigations as well as that of a recognised standard of investigation of road accidents across Europe—a direct contrast to the other transport modes—is of course a part of the problem (see annex 6.1 *Legal Framework and Accident Investigation Bodies in 8 European Countries* for more information on actual safety oriented transport accident investigation in Europe).

2.2 Accident investigation practices and assessed needs

The white paper stated that a Road Safety Action Programme was to be published that would detail the measures needed to meet its road death reduction target. This action programme, *Saving 20,000 lives on our roads – a shared responsibility* was published by the European Commission in 2003. It asserted that

The collection and analysis of data on accidents and physical injuries is essential to be able to make an objective evaluation of road safety problems, to identify the priority fields of action and to monitor the effects of the measures. (EC, 2003: 15)

Currently, across Europe, various types of investigations are conducted on road accidents by the police, insurance companies, researchers and other accident investigators. This produces a range of data including macroscopic data giving a general overview of the accident that is included in Member States' national statistics, and highly detailed data on the roadway, vehicles and/or injuries that results from in-depth investigations.

On a European level the need for macroscopic data is met through the development of the CARE database, a disaggregated pan-European accident dataset which incorporates the national statistics of the EU15 countries, with the exception of Germany. CARE is currently being expanded to include data from the 12 most recent EU Member States¹. In 2001 the European Transport Safety Council (ETSC) published a review of transport accident investigation in the European Union. This review asserted that there was a need for

real-world data resulting from in-depth accident investigation of representative samples of road crashes

in addition to CARE data, in order to

form a comprehensive understanding of EU accident and injury factors. (ETSC, 2001: 6-7).

Road accident investigation practices have been examined more recently by the Road Strategy for Accidents in Transport Working Group (ROSAT). ROSAT was part of a group of 12 experts set up by the European Commission in 2004 to assist in defining strategy for transport accident investigations. The ROSAT report and recommendations for road accident investigation was published in 2006. The ROSAT group identified four levels of accident investigation, as shown in Table 1.

¹ See SafetyNet WP1 at www.erso.eu.

Table 1 Levels of road accident investigation as proposed by ROSAT (2006)

Level	Definition	Examples
Statistical data collection	Collection of anonymous accident data elements that are used mainly for monitoring trends and priority identification	<ul style="list-style-type: none"> – National Statistics of traffic accidents – CARE database at EU level
Intermediate level investigations	Medium-level investigations between the statistical and the in-depth, suitable for black-spot management	<ul style="list-style-type: none"> – Qualified police reports – Insurance reports
In-depth investigations (independent as well as non-independent)	Detailed multidisciplinary investigation with a high number of variables (the number of variables usually varies from a few hundreds to more than a thousand). The aim is to prevent the reoccurrence of serious accidents by discovering structural failures and proposing corrective measures.	<ul style="list-style-type: none"> – CCIS in the UK (Cooperative Crash Injury Study) – German In-depth Accident Study (GIDAS)
Special accident investigations	Multidisciplinary investigations with case-tailored methodologies. The aim is to prevent similar serious accidents by discovering structural failures and proposing corrective measures.	<ul style="list-style-type: none"> – Investigations conducted after the Mont Blanc fire in 1999 – A bus accident with 11 fatalities occurring on 11th June 2004 near Poitiers (France)

The ROSAT group acknowledged that all these levels of investigation are important in making up a national investigation system, but that in-depth *multidisciplinary investigations** are required in addition to the collection of statistics and intermediate level data in order to fully learn from road accidents.

The Road Safety Action Programme asserted that in-depth judiciary or insurance investigations would not meet the need for in-depth road accident investigations as these are not primarily aimed at addressing the *causes** of *road vehicle accidents**. Therefore the development of independent road accident investigations was proposed by the EC.

There are plans to develop independent road accident investigations along the lines of the existing European civil aviation regulations. However, it would not be possible to conduct a detailed investigation of each road traffic accident given that there are so many of them. (EC, 2003: 45)

2.3 What are independence and transparency?

As part of the exploration of this, SafetyNet was tasked with developing a set of recommendations for independent road accident investigation. The starting point was examining the characteristics which made air, rail and maritime



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accident investigation boards 'independent' and comparing them with existing road accident investigation activities. This process allowed 'independence' in terms of accident investigation, to be defined. The concept of independence as defined by SafetyNet *Deliverable 4.1 Independent Accident Investigation. Legal status and investigation practices in five EU Member States* (SafetyNet, 2005) relates to the organisation responsible for investigating and the investigators themselves.

There are three dimensions to independence: structure, finances and functioning:

- Structural independence means that the body in charge of the investigation must not have regulatory tasks and that it must be permanent. Its investigators must have a clearly defined status. Preferably their rights should be stated by the law. The accident investigation they conduct must be separate from any judicial enquiry.
- The investigating body must have an autonomous and preferably as stable as possible budget for functioning and carrying out its investigations. It must not depend on external financing for any particular investigation—whatever the source of such financing might be. In general the body or its investigators must not have financial or other relationships, with any commercial or similar vested interests.
- The investigating body is functionally independent, when legislation governs the categories of accidents to be investigated but the organisation has the autonomy over the decision to investigate a particular accident and the focus and scope of the investigation. The organisation should also have the legal right to fully access all evidence and witnesses and be able to publish reports without external scrutiny

There are however some important differences between road accident investigation and that of the other modes as seen in the *Deliverable 4.2 Road Accident Database Transparency* (SafetyNet, 2006a). The rail, air and maritime transport modes are dominated by public service and commercial vehicles whereas the road network is used much more frequently for and by private transport. Subsequently, the responsibilities for safety lie with a more diverse range of individuals. There are also much larger numbers of road traffic accidents than there are in the other transport modes, as illustrated by Table 2.

Table 2 Fatalities* in 2004 for the Road, Rail and Air transport modes (EC, 2006)

	EU15 (population: 387,600,000)	EU25 (population : 461,700,000)
Road	32,637	43,472
Rail	75	105
Air	†	6 (135 in 2005)

Population information source:

http://europa.eu/abc/european_countries/eu_members/index_en.htm

† Figure not available

Figures for the Maritime transport mode are not available for EU25/15

These differences lead to a difference in perception with regards to the need for independent accident investigations. In most countries, the rail, air and maritime transport modes have independent bodies responsible for the



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investigation of accidents, however very few countries have an independent body responsible for road accidents. This does not mean that the investigation of road accidents has been viewed as unimportant. There are a great many different organisations in existence that conduct road accident investigations. Many of these however, would not be regarded as independent in the same way that the rail, air and maritime boards are independent.

By exploring the differences between the road and other transport modes which are likely to explain the differences in the perceived need for independence in investigation activities, SafetyNet highlighted the fact that the quality of road accident investigation data can be a more important issue than the status of the investigating entity. Good quality data is essential in producing effective countermeasures and therefore reducing the number of casualties. It is the transparency of the investigation process and of the subsequent data that allows a quality assessment to be made.

Transparency can be defined as the full, accurate, and timely disclosure of information. For accident investigations this means making available information on the conditions under which investigations are carried out, the way those investigation are carried out, as well as on the results of the investigations, including the ways in which data is managed.

2.4 Drafting recommendations

Based on its early work, SafetyNet WP4 began to develop a set of recommendations for transparent and independent road accident investigation across Europe. A review of the current procedures for the investigation of road accidents of commercial companies, police forces and existing independent accident boards was undertaken; key safety *stakeholders** were interviewed and a preliminary consultation exercise was carried out to further inform the production of *Deliverable 4.3 Draft Recommendations for Transparent and Independent Accident Investigation* (SafetyNet, 2006b).

The rationale behind the development of these Draft Recommendations was to enable Member States to achieve as much as it is possible, the best practice for investigating road accidents by building on existing procedures and expertise. These Draft Recommendations proposed that an independent organisation, operating along the lines of the rail, air and maritime investigation boards, should conduct road accident investigations and collect information to be entered into a database. This data could then be analysed and used to develop road accident countermeasures.

A larger *stakeholder** consultation was then undertaken in order to assess whether the Draft Recommendations were appropriate and necessary. This aimed to gather expert opinion from both national and European road safety *stakeholders**. The main consultation activity was a workshop where *stakeholders** representing a variety of professional backgrounds heard presentations on the Draft Recommendations and were invited to give their opinions by participating in discussion sessions and filling in a questionnaire (see *Deliverable 4.4 Workshop Report* [SafetyNet, 2007]).

Overall the results were positive with the majority of recommendations gaining support from over 70% of the attendees. However a number of issues were raised. *Stakeholders** believed that there was a mismatch between an independent 'board-like' organisation investigating road accidents and the collection of data to feed a database. The 'traditional' work of a safety oriented independent accident investigation board is to investigate a few accidents per year and to write an individual report for each investigation which includes recommendations for safety improvements. However such an organisation does not usually produce a database. Organisations which do, generally investigate many accidents and produce reports describing the results of a number of investigations.

Additionally, there is a difference in the 'type' of accident investigated. Independent investigation boards are often mandated to investigate the most severe or *major accidents** whereas a statistical sample of the accidents that occur everyday should be investigated to gain data to feed a database for evidence based policy making. The conclusion of the consultation period was that it is not appropriate to address the investigation of both types of accident in one set of recommendations.

It also became much clearer to the SafetyNet partners that although it is necessary for Member States to follow a common methodology for data collection in order to contribute to a European database, there is much difference in opinion about which methods are 'best practice' in terms of both data accuracy and cost. It appears that there is a need for a more detailed evaluation of the data collection methodologies of existing road accident investigation practices than that which SafetyNet can provide.

In developing the 'finalised' SafetyNet recommendations it was decided to focus primarily on developing a set of recommendations that address the investigation of a sample of *routine road accidents**. That is not to say that the investigation of *major accidents** is not important, but that it is more appropriate to focus on the most commonly occurring accidents when working towards the development of a European data collection methodology which is still lacking for *safety oriented road accident investigation**. Such a European data collection methodology is the backbone of a European Programme aiming to collect a large amount of data to identify priorities for future countermeasures and to monitor existing countermeasures.

3 RECOMMENDATIONS FOR SAFETY ORIENTED ROAD ACCIDENT INVESTIGATION

The aim of these recommendations is to set out the requirements for establishing *safety oriented road accident investigations** in all EU Member States. The recommendations specifically address the safety oriented investigation of a statistical sample of accidents, which aims ultimately to feed evidence based policy making. However many—the most noteworthy exception being the recommendations which concern the European Programme—of these recommendations apply also to safety oriented investigation of *major accidents** (See chapter 4 for more details). This can be seen as the start of the process for establishing throughout Europe road accident investigations which operate according to a common methodology. The exact characteristics of this common methodology, in terms of the specific data to be collected, are beyond the scope of this document.

3.1 European safety oriented investigation programme

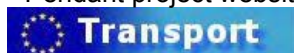
A European *safety oriented road accident investigation** programme should be established to fulfil the need for data to feed evidence based policy making. *Safety oriented road accident investigations** should be carried out in each Member State according to the methodology developed by the European Programme. This programme should identify the sampling criteria needed to collect data that can be generalised to accidents in Europe. A European database should be developed to compile the data collected by Member States. The European Programme should determine the variables and values to be collected and entered into the database.

Member States may individually collect additional data or have additional sampling criteria; however the data to be entered into the European database must be compatible as set out in the European Programme.

Different policy aims require different types of data, for example, developing vehicle safety systems, improving driver education or for the setting of targets for the reduction of *fatal accidents**. Previous European projects have demonstrated that *safety oriented road accident investigations** can produce data to meet policy needs. For example the Pendant project¹ combined detailed injury data with detailed information about vehicle damage both externally and inside the passenger compartment. This type of data allows the development of secondary safety systems and subsequently a reduction in severity of injuries.

SafetyNet WP5 has developed an accident causation database that includes data about the driver behaviour immediately before the accident occurred. This type of data will be useful in determining what kind of contributing factors occur most frequently and allow the targeting of driver education to address this.

¹ Pendant project website: www.vsi.tugraz.at/pendant/



Before a European *safety oriented road accident investigation** programme can be developed, an evaluation of European and national databases should assess which variables will be most useful for policy making processes.

Recommendation 1

A European safety oriented road accident investigation programme should be established whereby Member States conduct safety oriented investigations and contribute data to a European road accident database.

3.2 Institutional

The aim of the institutional recommendations is to define the characteristics of the European Programme. The institutional recommendations do not aim to impose a certain type of structure for conducting road accident investigations as the organisational characteristics will depend upon the national context. Instead they identify the requirements that ensue from the need for transparency and independence and therefore present the principles under which the investigation programme should be established.

These recommendations do not advocate changes to the missions of existing accident investigation bodies. In particular, if a Member State already has established a board to investigate major road accidents:

1. the board should not be replaced by the European Programme activities;
2. the board's mission should not be modified to encompass the European Programme at the expense of major and special case investigation.

The main reason for the co-existence is simple: the quantities of investigated accidents are not at all the same, varying from five or ten for a board to several hundreds of *routine accidents** for a European Programme. So, when the board exists, the two systems should remain separate; the board having a more rigid independent status. However, useful experience and knowledge should not be lost either. The board could well be represented in the supervising structure of the *safety oriented road accident investigation** programme at national level, alongside other *stakeholders**.

During the consultation on the Draft Recommendations (SafetyNet, 2006b & 2007), it was suggested that it is necessary to involve *safety stakeholders** in the process of *safety oriented road accident investigation**. Their involvement would lead to a broadening of the acceptance of the programme and widen the understanding of its validity. Ultimately this would result in better quality data and more appropriate countermeasures. However it is necessary for the European Programme to retain a certain level of independence to prevent investigation results being influenced by commercial concerns. As the level of involvement of *stakeholders** increases, there is a need for greater transparency, so that the European Programme remains trustworthy.

The accident investigators need to have a legal status and certain specific rights—starting with the right to access the accident scene—guaranteeing that they can accomplish their work. The issue of conflicting interests between *safety oriented road accident investigation** activities and other *stakeholder** requirements needs to be considered.

3.2.1 Transparency

Transparency applies to the investigation activities and results. It can be defined as the full, accurate, and timely disclosure of information. For *safety oriented road accident investigations** this means making available information on what the investigators do and how they do it as well as on the results of the investigations. It is necessary for *safety oriented road accident investigation** to be transparent so that assessments can be made about whether any resulting database contains good quality data. Investigators must be transparent in their practices, so that the public can trust them and the results of their investigations.

Recommendation 2

Safety oriented road accident investigations should be conducted with as much openness and transparency as possible.

3.2.2 Independence

The *safety oriented road accident investigation** programme should be independent in its structure, function and finances.

This does not mean that *stakeholders** cannot cooperate in the framework of the European Programme. However, the ways in which this cooperation is organised, must be clearly documented. *Stakeholders** could be involved in the management and steering of investigation activities; their involvement would be important for instance for determining the sampling procedures and even more so in case of additional national investigation activities conducted in the framework of the same programme. However, actual investigation activities should not be conducted by the *stakeholders**, but through the European Programme established for that effect. Employees of *stakeholders** could take part in *safety oriented road accident investigations** but they should investigate according to the conditions imposed by the European Programme, rather than their usual professional obligations where the latter are in conflict with the programme's aims. It is important that safety *stakeholders** are not in a position to influence and therefore bias the outcome of investigations.

Recommendation 3

The European safety oriented road accident investigation programme should be independent. Accident investigations could be conducted in cooperation with, but should not be influenced by stakeholders whose vested interests lie in the data collected.

Investigation activities conducted according to the European Programme should be granted sufficient financial resources. Although actual annual investigation numbers might vary, the level of financial resources should remain relatively stable over time, allowing it to consolidate valuable knowledge and expertise (see annex 6.2 *Financing of Road Accident Investigation* for an example on a possible way to finance road accident investigation activities).

Recommendation 4

The European safety oriented road accident investigation programme should have sufficient financial resources and should not rely on external funding to conduct any individual accident investigation.



3.2.3 Sampling procedure

It is clearly impractical for any country to conduct safety oriented investigations into all of the road accidents that occur therefore a sample of accidents to be investigated must be identified. It is unlikely that all Member States will have the resources to set up teams that operate throughout the whole country. In those cases where a sample based on the total national accident population is impractical, an operational area should be identified. In order to design countermeasures which will be effective on an EU scale (or in an individual country), there is a need for accident data from all EU Member States that can be generalised. It is therefore important that investigators operate in an area where the characteristics and distribution of accidents is known so the relationship between the investigated accidents and those occurring nationally can be established. Whether sampling occurs on the national accident population or on a regional sub-population, a statistically valid sampling plan should be developed which takes into account the practical aspects of its application.

Recommendation 5

Each Member State should identify a geographical area in which they shall conduct safety oriented road accident investigations. Sampling plans should be developed, according to the European Programme, enabling harmonised data to be fed in a European database.

The consultation process highlighted strong support for the autonomy of individual countries to investigate accidents according to national priorities. This would allow the utilisation of existing investigation capacity for national or regional needs too. Additional activities may therefore be oriented towards national or regional data needs.

3.2.4 Investigation Team

Good quality data can only be gained through good quality investigations. This requires investigators to have undertaken training to ensure that they gain both specialist knowledge of conducting *safety oriented road accident investigations** and adequate experience. This can be achieved in established teams by novice investigators working alongside experienced investigators. Where a Member State does not have established *safety oriented road accident investigation** teams, it may be necessary to retrain investigators experienced in other types of accident investigation (see annex 6.3 *Setting up safety oriented road accident investigation teams in Italy* for an example).

There is currently no officially recognised standard for *safety oriented road accident investigation**. It is important that the good practice and expertise of existing investigation organisations is shared between countries to enable countries who do not currently conduct *safety oriented road accident investigations** to gain the experience and expertise to do so.

It is necessary for investigation teams to be multidisciplinary. In other words to possess collectively the relevant expertise to investigate all three components of a *road vehicle accident**: human, vehicle and environment. This can be achieved in a variety of ways. Each team member may have expertise in a

specific area or the investigators all may have a broad knowledge of all three components of an accident but be assisted by a specialist in another area, often medical knowledge (see annex 6.4 *Investigation Team*).

Recommendation 6

Safety oriented road accident investigations should be carried out by one or more dedicated, multidisciplinary teams. Each team should have a core group of permanent members with specialist knowledge across the relevant areas of accident investigation and sufficient road safety experience. Investigators should also receive comprehensive training in accident investigation to ensure uniform standard of investigation across the Member States.

3.3 Operational

The operational recommendations relate to the actual investigation process. An important issue is the relationship between the *safety oriented road accident investigation** and the standard police accident investigation. The first adopts a broader perspective than the judiciary enquiry and it does not gather data with the intent to determine liabilities. As the aim and scope of the two investigation processes differ, a distinction between the two should be clearly made.

Depending on the legislative processes, *safety oriented road accident investigations** might have a distinct legal status when the European Programme is implemented in a Member State or they may gain such a status at a later stage. Nevertheless, the relations of the two investigation processes need to be clearly documented.

The *safety oriented road accident investigations** should be conducted in a standardised way throughout Europe. The specific practices adopted by a European methodology will affect the investigation processes in terms of notification, access to the accident site and evidence and the rights and obligations of the investigators. Because of this the following recommendations focus on good practice rather than very specific methods.

3.3.1 Notification

Notification refers to how the investigation team is initially informed of the occurrence of an accident. The recommendation addressing notification does not address the need to communicate and cooperate with the *emergency services** at the scene of an accident.

Currently many road accident investigation activities in Europe have local arrangements with the *emergency services** that are not protected with legislation. The procedures for notification differ according to the methodologies used (see annex 6.5 *Notification* with examples on GIDAS, SRA and CCIS). Whichever methods are adopted for the common European methodology, timely notification is important so that the investigation team can quickly identify accidents that meet their sampling criteria.

Recommendation 7

The investigation team should be notified of accidents at the same time as the emergency services or as soon as reasonably possible to allow a timely response.

3.3.2 Investigation Methodologies

The aim of *safety oriented road accident investigations** is to identify opportunities for the development of countermeasures and provide policy makers or those in a position to improve safety, with supportive evidence for formulating these. To achieve this, the data collected should allow investigators to understand as much about the accident as possible. The investigation should therefore be holistic in its data collection approach. Data should be collected about each of the three components of a *road vehicle accident**; human, vehicle and environment. This includes general information about the accident as a whole (e.g. date and time of accident); as well as information about the roadway environment (e.g. carriageway information, weather conditions); vehicles (e.g. physical characteristics, information on damage) and *road users** (e.g. behaviour, details of injuries).

Recommendation 8

Data should be collected about the human, vehicle and environment components of a road accident in sufficient detail to conduct a safety oriented road accident investigation.

There are many differing investigation methods in existence. The methods of investigation adopted by individual countries are influenced by a number of variables including the available resources, the investigation area and the aim of the investigation. A full evaluation of the methods currently employed by national and European road accident investigation studies is required in order to establish the most appropriate methods for the European Programme.

It is not within the scope of this document to present a detailed analysis of the specific data collection methods to be employed by the investigators, however the following 'best practice' recommendations relating to the three components of a *safety oriented road accident investigation** can be made:

Recommendation 9

It is best practice to:

- a. visit the accident scene and examine the road environment as soon as is reasonably practical (either while vehicles are in their post crash rest position or within a few days of the accident),**
- b. examine the vehicle, either at the scene or in a recovery garage,**
- c. speak to the involved road users and witnesses and employ trained medical personnel to collect injury data (e.g. use hospital data).**

The length of time taken for investigators to get to the accident scene is likely to vary depending upon the resources available and the local agreements with *emergency services**. Current practices range from arriving at the accident scene within 20 minutes using a rapid response vehicle to visiting the scene a few days later. Similarly, vehicle examinations currently take place within a very

short time or up to a week following the accident. If a very detailed vehicle examination is required it may be necessary to examine vehicles in recovery garages, even if the vehicles are initially examined at the accident scene.

Talking to the involved *road users** and witnesses immediately following an accident is likely to produce the best quality data. If this is not possible investigators should aim to make arrangements to talk to the involved *road users** and witnesses at a later time. Investigators should be given access to police witness statements.

3.3.3 Data recording and Equipment

Data should be recorded in a systematic way, using the most efficient tools. Standardised data collection forms should be developed to ensure consistency in data collection. Consideration should be given to the use of portable computers however this does not preclude paper recording methods.

Investigators should take photographs of the involved vehicle(s) and the accident scene. These photographs should record the extent of damage and if possible the post crash resting positions of the involved vehicles. Taking video recordings of the accident scene and the approach routes of the involved vehicles can also be a useful source of data.

It is necessary for investigators to collect evidence from a variety of different locations therefore it is important that they have access to an appropriate vehicle to convey them and their equipment.

Recommendation 10

Investigators should use standardised tools and be provided with adequate equipment to collect data in a systematic way.

3.3.4 Legal status of the investigation

Accident investigation for safety purposes needs to be independent to a certain extent and fully transparent so that the quality of the resulting accident data can be assessed (see annex 6.3 *Setting up safety oriented road accident investigation teams in Italy*). The quality of the data very much depends on the quality of the accident data gathering process. Ultimately the knowledge the public has that the *safety oriented road accident investigation** is a separate process and the trust the public has that data gathered specifically for it will not be used for judicial purposes, determine the quality of the data. Therefore, it is important that witness statements and other data that are specific to it are not communicated to or used in the judicial inquiry. Data that is freely available, for example physical evidence such as traces on the road or resting positions, generally are not affected by this restriction. In their work, the investigators' aim is not to determine responsibilities and they should not be involved in the judicial process for determining those responsibilities as this could undermine the quality of the safety oriented investigation.

Recommendation 11

Safety oriented road accident investigation data should be kept separate from the judiciary inquiry. Investigators should not be called to court as expert witnesses on a case they are investigating or have investigated.



All road accident investigations will require cooperation with the police and other *stakeholders** such as hospitals. Procedures need to be put in place for safety oriented road accident investigators to gain access to the information they require without adversely affecting the work of the *emergency services**.

If investigators cannot access the information they require then the quality of investigations is questionable. Many current investigation activities have local arrangements with the *emergency services** and other *stakeholders**. However, it is not always possible to make such arrangements or established relations break down leading to an interruption in the flow of data. Setting out legal conditions under which the evidence and information required for an investigative programme can be accessed, along the lines of the legislation already in existence for accident investigations for the air and rail transport modes, would protect the gathering of data. This would increase the likelihood of a good quality investigation.

It is acknowledged, however, that generating legislation can be a lengthy and costly process. *Safety oriented road accident investigations** cannot be successfully conducted without access to evidence. In the short term Member States should facilitate the setting up of new investigation activities, for instance by allowing and encouraging local arrangements to be made between the investigators and the police and other *stakeholders** as an interim measure. Member States should however examine ways of legislating that will secure the right of investigators to gain access to evidence.

Gaining access to evidence involves a number of *stakeholders** including the police, hospitals and local governments. A key access requirement is the access to the whole of the accident scene and involved vehicles. This includes taking photographs and/or video recordings as well as visiting recovery garages if the vehicles are no longer at the scene when it is examined. Vehicle data recorders store much information that could be critical to gaining additional information about the accident. Efforts should be made to negotiate access to this information—this is likely to involve agreements with vehicle manufactures. It is also important to have the right to talk to involved *road users** and witnesses and to have access to police witness statements. The results of medical examinations and post mortem reports are essential in order to understand injuries and how these could be prevented. Depending upon the variables collected, it may be necessary to access records on roadside installations (e.g. street lighting, crash barriers), traffic regulatory systems, the road layout design and road surface materials and maintenance.

Recommendation 12

Member States should define, in the framework of their respective legal system, the legal status of the investigation that will enable the investigators to carry out their task in the most efficient way and within the shortest time. Road accident investigators should be given the right, either through legislation or otherwise and where appropriate in cooperation with the authorities responsible for the judicial enquiry including the police, to access all evidence relevant to the investigation.

3.3.5 Ethical procedures

*Road users** are more likely to provide accurate information to investigators if they understand that their statements will be used in scientific work to further road safety as opposed to the judiciary enquiry. It is important that investigators clearly explain what they are doing and why they are asking questions. Investigators will of course be expected to use their own judgement as to when it is appropriate to question witnesses and *road users**.

Recommendation 13

The purpose of the investigation and criteria for data collection should be disclosed to all people and agents involved in the accident investigation. They should receive honest and open explanations about what the investigation is for and who will use the data collected. The answering of questions should be optional and the contact details of those conducting the investigation should be disclosed to the road users and witnesses involved.

3.3.6 Investigation Manual

Data should be collected in a harmonised way throughout Europe, according to common European data collection methodology, still to be developed and documented in a manual. This manual should detail the variables and values to be collected by each Member State and the specific data collection methodologies which will allow data to be collected in a consistent way. This manual should also include guidelines for the training of accident investigators.

Recommendation 14

A European investigation manual should be developed to document the common investigation methodologies and the data to be collected, enabling individual Member States to conduct safety oriented road accident investigations in a harmonised manner. The document should be published in the official languages of the European Union and be freely available in order to reinforce the openness and transparency of investigations.

3.4 Data storage and protection

The processing and storage of accident investigation data is an important and sensitive issue. It is acknowledged that individual Member States have strict rules about what types of data can be stored and how data must be stored.

*Raw data** should be collected and processed according to common methodologies. It must also be stored in a database to enable easy retrieval and analysis. Therefore it will be necessary to develop a database system that will allow each Member State to enter data, resulting from the processing of *raw data**, into the European database.

3.4.1 Data Storage

A European database should be developed which allows the linking and easy retrieval of *safety oriented road accident investigation** data. Existing European and national road accident databases must be evaluated as part of the

development of a common European database (see annex 6.6 *European Databases* with examples on SafetyNet WP5).

Any system which requires Member States to contribute to a central source and/or facilitates the sharing of *safety oriented road accident investigation** data is likely to need legal agreements, for example along the lines of the agreements that exist for Member States to provide national data to the CARE database (CARE inter-ministerial agreement).

Recommendation 15

A European road accident database should be developed to record the safety oriented road accident investigation data collected in each Member State. Each Member State should be responsible for the accuracy and completeness of their data.

3.4.2 Legal status of the data

There is a need for protection of certain types of data from being used in a court of law. Safety oriented investigations are more likely to gain accurate information if they are seen as separate from the judicial enquiry. Personal data must be protected and ideally data collected for safety purposes should not be used in a court of law. However if the data can be considered as 'public', e.g. skid marks, rather than private, e.g. witness statements, it may be appropriate to share data to facilitate another *stakeholder's** investigation. Whether or not data should be passed to a third party therefore depends on the type of data.

Recommendation 16

Accident data that is collected for the purposes of safety oriented road accident investigation and the resulting analysis should not be used to give evidence about fault or blame including in a court of law.

3.4.3 Protection of data

Data stored in the European database should be anonymous. As part of the process of *safety oriented road accident investigation**, in particular in developing countermeasures, this data should be shared between safety *stakeholders**.

Recommendation 17

No data containing information that would lead directly to the identification of persons involved in the accident should be released to a third party. Data may be made available for research or analysis purposes but this should be restricted to a format which does not permit identification or attribution.

3.5 Reports, countermeasures and dissemination

In the process of *safety oriented road accident investigation** the data is ultimately used for drafting reports and developing effective countermeasures. The reports should be disseminated widely so that accurate data on road safety is available both to the public and policy-makers, creating the conditions for future road safety enhancement.

3.5.1 Reports

Investigations for the rail, air and maritime transport modes result in most cases in reports for each accident investigated, however this would not be appropriate or necessary for the majority of road accident investigations. It would be more appropriate to produce aggregate data reports and explore possible recommendations for countermeasures using data from the many accidents that will be stored in the database. Aggregate data reports should be published on issues of particular interest to road safety.

Recommendation 18

Reports should be based on the analysis of the European road accident database. They should also include recommendations designed to prevent reoccurrence and document the evidence upon which these recommendations are based (for example, the number of accidents and type of statistical analysis).

An annual report on all investigation activities conducted in the Member States should also be published to promote openness and establish trust of the general public in those investigations.

Recommendation 19

An annual report concerning the investigation activities over the elapsed year should be published. These reports should include summary results of investigations conducted in Member States and information on recommendations developed at EU level.

3.5.2 Countermeasures

The European database should be analysed with a view to identifying areas of priority and potential countermeasures. The results of these analyses should be used to devise recommendations for countermeasures which should then be passed to the European Commission.

Recommendation 20

Recommendations for countermeasures, developed from aggregate accident data, should be addressed to the European Commission, who shall take the necessary measures to ensure that these recommendations are duly taken into consideration, and, where appropriate, acted upon.

3.5.3 Dissemination

Widespread and timely dissemination of reports is necessary for the transparency of road accident investigations, to retain the trust of the general public and to share information with the greatest number of *stakeholders**. The European Road Safety Observatory (ERSO) would be an excellent medium to employ in order to achieve this.

Recommendation 21

The aggregate and annual reports should be made publicly available within an appropriate time scale at both National and European level.

4 MAJOR ACCIDENT AND SPECIAL CASE INVESTIGATION

It was within the original scope of SafetyNet to address the investigation of a variety of road accidents including the most severe or *major accidents**. The Draft Recommendations (SafetyNet, 2006b) however, did not distinguish between sample based investigations to feed a database and *major accident** investigation, as it was believed that the issues surrounding a safety oriented investigation of *major accidents** would be very much the same as those involved in conducting safety oriented investigations into any road accident. However one of the important outcomes of the consultation with safety *stakeholders** (SafetyNet, 2007) was the need to clearly distinguish between the investigation of a generalisable sample of road accidents and *major accident** investigation.

*Major accidents** are currently the most common type of road accident to be investigated by an investigation board. The outcome of such investigations is usually a detailed report on the accident and recommendations of how to prevent the reoccurrence of a similar accident in the future. Investigations into a sample of the broad range of accidents that occur everyday usually result in an analysable database from which recommendations for safety improvements are generated. From the perspective of data collection on a European scale, data resulting from safety oriented investigations of a sample of road accidents is the most useful and efficient, hence being the main focus of this document. However if a major road accident does not fall within the sampling criteria of the European Programme, it may still be important for a Member State to investigate that accident.

Generally speaking, *major accident** investigations are conducted in order to determine accident *causes** and contributing factors. What makes these accident investigation practices particular is the conjunction of high levels of interest from the human interest perspective (e.g. the media) as well as the judiciary and safety perspectives in the results of one single accident investigation.

From a safety point of view, *major accidents** must be investigated because such investigations are essential for establishing a relationship based on trust between the public and the entire transport system (Giddens, 1990). Aviation, maritime, rail or pipeline transport accidents automatically qualify as *major accidents**. In road transport, coach accidents, accidents with several *fatalities** or accidents involving transport of dangerous goods, for instance, are treated as *major accidents** in many countries.

A *major accident** investigation can therefore be considered to be a specific type of *safety oriented road accident investigation**. The following sections will discuss safety oriented *major accident** investigations and highlight any additional considerations for the investigation of *major accidents** that need to be made over and above those made when conducting *safety oriented road accident investigations** into a sample of road accidents.

4.1 Organisational considerations

As discussed in chapter 3, it is important that *safety oriented road accident investigations** are both independent and operate in a transparent way. As public scrutiny is usually great in the aftermath of a *major accident**, the independence of an organisation conducting *major accident** investigation is critical. Ideally, the characteristics of the organisation responsible for *major accident** investigation should be similar to what is set out in the international conventions or the European directives on *major accident** investigation in the aviation, maritime or rail transport modes.

An independent road accident investigation board should not be subject to outside control in the pursuit of its mission. It should be separate from other bodies, public or private, having financial or other interests in the results of its investigations. It should not take instructions from other bodies or outside personalities. It should have adequate control over the use of its investigation results. Finally, it should be financially autonomous and its members qualified and independent themselves.

Although it would be impractical to suggest that Member States should create a new investigation board dedicated to the investigation of major road accidents, the incorporation of such an activity in an existing board would be ideal. In some cases additional national legislation might be necessary even though this is a costly process.

4.1.1 What to investigate?

The air, rail, and maritime investigation boards are mandated to investigate certain accidents. As there is no EU legislation for the investigation of major road accidents, the exact criteria for the investigation of such accidents would vary from country to country. Ideally, it should be possible for a *major accident** occurring in any part of the country to be investigated. The organisation responsible for the investigation of major road accidents should have the autonomy to decide when an investigation should be opened. However the safety authority or other competent authorities should also have the right to submit an accident case (or series of accidents or incidents) to the attention of the investigation organisation, if they consider that important safety lessons might be learned through their investigation.

4.1.2 Investigators

The number of investigators investigating a *major accident** is very much dependent upon the nature and magnitude of the accident. Investigators should be highly experienced in *safety oriented road accident investigation**. As *major accidents** are likely to occur infrequently, it is unlikely to be cost effective to have a fixed team of investigators. Therefore for each *major accident** investigation, the most appropriate investigation team should be established. This may involve drawing on the expertise of other organisations, including those employed as part of a European Programme.

4.2 Conducting Investigations

4.2.1 Notification

Notification of *major accidents** is likely to take place in a similar way to the notification of accidents for a European Programme. However, as a *major accident** could occur anywhere in a Member State and the investigation programme is likely to operate in a specific geographical area, the notification criteria for a *major accident** should be more widely known. Sources other than the *emergency services**, such as the media, may also play a role in notification.

4.2.2 Data collection

It is especially important in the case of *major accident** investigation to visit the accident scene as soon as possible following its occurrence. In this way investigators can collect the more volatile data in the shortest possible time. The speed at which investigators can travel to a *major accident** scene will vary according to the geography of the country and the number and location of investigators available. *Major accidents** inevitably have a large impact on the transport network and there is always a balance to be found between investigating accidents and clearing the road so as normal traffic flow can resume. The aim should be for investigators to attend the scene while the vehicles are still in their post crash resting positions, however in some cases this will not be possible and the investigation will have to be conducted retrospectively. In this case the passing of information from the *emergency services** to the investigators is important.

As discussed in the previous chapter, investigations as part of a European Programme should collect data according to a European manual that sets out the variables and values to be collected. This is to allow comparisons between accidents to be made and countermeasures to be developed from many similar accidents. The collection of data for a *major accident** investigation does not need to operate to such restrictions. Investigators should collect all the data that they feel is relevant to that specific accident. This means that additional data to that specified by a European data collection manual can be collected and the investigators may choose to focus on a specific element of the accident. For example if it was believed that a fault in the road surface was responsible for the occurrence of an accident, then detailed records of repair and maintenance may need be examined in detail.

Although *major accident** investigators may not operate to a manual, there will be procedures and practices common to each investigation. It is important that the general public understand why *safety oriented road accident investigations** are conducted into *major accidents** and how recommendations are developed. Information about operational procedures should therefore be published either in explanatory literature and/or on the internet. Written information should be given to those who are asked to participate in a *major accident** investigation either as involved persons, witnesses or providers of specific information. It is important for the investigation of major road accidents to be open in this way in order to retain the trust of the general public. An additional benefit from publishing information on general procedures is that this could be used to

facilitate the sharing of best practice between Member States. This is also something which is encouraged by the European Commission in the other transport mode investigations.

4.2.3 Legal Considerations

Currently there is no EU legislation regarding the investigation of major road accidents nor are there plans to develop such legislation. Therefore any legal status that is granted to *major accident** investigators will be due to national laws. At the very least *major accident** investigators should be given the same rights of access to the scene and evidence as investigators working as part of a European Programme. The *major accident** investigators are more likely to require additional rights of access, for example to maintenance records and/or design specifications.

As *major accident** investigations are likely to have a high profile both in terms of media interest and the significance of recommendations, the relationship between the safety oriented investigation and the judicial enquiry has to be established. The ROSAT report (ROSAT, 2006) suggested that consideration should be given to the UK Memorandum of Understanding (MoU). The MoU is an agreement between the UK Crown Prosecution Service (CPS) and the Air, Rail and Marine Accident Investigation Branches. It sets out the roles and responsibilities of the CPS and the Branches. The MoU states that information can be shared between them except where there are legal bars and that unless there is strong evidence of criminality (e.g. sabotage) the safety investigation has priority.

4.3 Data use and protection

The conditions for use and the protection of data described in chapter 3 (section 3.3.4 & 3.4) equally apply to the investigation of *major accidents**. As investigations are safety oriented, they do not aim to apportion blame or responsibilities and the data collected should not be used for that purpose.

The storage of data from *major accident** investigations is likely to differ from that collected as part of a European Programme. Data should be stored in a systematic way which enables future retrieval and according to the data confidentiality requirements of the Member State. However there is not a requirement to store *major accident** investigation data in a European database.

4.4 Reports and Countermeasure Development

Investigations of individual major road accidents are likely to differ substantially so a report should be written for each accident. These investigation reports should be written in the form most appropriate to the investigation and should be produced and published within an appropriate time scale.

As a minimum individual accident reports should:

- a. Briefly state how the investigation was undertaken and what evidence, including witness reports, the conclusions were based upon.

- b. Set out the identified *cause(s)** of the accident and other factors which may have increased the severity of the accident.
- c. Make recommendations designed to prevent reoccurrence.

The recommendations generated as a result of a *major accident** investigation may be very specific or more general in their application. It is necessary that Member States have a system whereby recommendations are passed to the relevant authorities (e.g. road administration) to allow the development of countermeasures. There should be a specific timeframe within which these authorities should respond to the recommendations. This response should include how any resulting countermeasure would be implemented and how its effects will be monitored.

5 REFERENCES

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6 ANNEX

6.1 Legal Framework and Accident Investigation Bodies in 8 European Countries

The table on the following page summarises information gathered for and presented in *Deliverable D4.1 Independent Accident Investigation. Legal status and investigation practices in five EU Member States* (SafetyNet, 2005) and *Deliverable D4.3 Draft Recommendations for Transparent and Independent Road Accident Investigation—A Working Paper* (SafetyNet 2006b), as well information from *Road Accident Investigation in the European Union* (ROad Strategy for Accidents in Transport Working Group, 2006). For more thorough descriptions of international and national legal frameworks and actual accident investigation practices please refer to the original documents.

Recommendations for Transparent and Independent Accident Investigation

Legal Framework and Independent Accident Investigation Bodies in 8 European Countries

	AVIATION	MARITIME	RAIL	ROAD	OTHER
GERMANY	Flugunfall-Untersuchungs-Gesetz / FIUUG August 26th, 1998	Seesicherheits-Untersuchungs-Gesetz / SUG June 22nd, 2002			
	BFU (1998)	BSU (2002)	EBA (1994)		
FRANCE	Law 99-234 of 29/3/1999; Decree 2001-1043 of 8/11/2001	Law 2002-3 of 3/1/2002; Decree 2004-85 of 26/1/2004			
	BEA civil aviation (1946)	BEAmer (1997)	BEA-TT (2004)		
ITALY	Legislative decree 25-02-1999, n. 66		Directive 2004/49/EC is in the process of adaptation		
	ANSV (1999)				
NETHERLANDS	Kingdom Act concerning Safety Investigation Board (2 December 2004); Safety Investigation Board Decree Dutch Safety Board (2005)				
FINLAND	The Accident Investigation Act (373/1985); Decree 12.2.1996/79			Act on the investigation of road and cross-country traffic	
	Accident Investigation Board (1996)			Road Accident Investigation Delegation and Teams (2001)	
SWEDEN	Accident Investigations Act (1990: 712); Accident Investigations Ordinance (1990: 717); Instructions for SHK Ordinance (1996: 282)				
	Swedish Accident Investigation Board [SHK] (1978)				
UNITED KINGDOM	The Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 1996	The Merchant Shipping (Accident Reporting and Investigation) Regulations 1999	Railways and Transport Safety Act 2003; Railways (Accident Investigation and Reporting) Regulations 2005		
	AAIB	MAIB	RAIB		
NORWAY	Regulations on notification and reporting of aviation accidents and incidents FOR-2006-12-08-1393		Railways Act of 11 June 1998; Regulations concerning official investigation of rail accidents and serious rail incidents, 29 January 2002	Road Traffic Act (amended in 2005); Regulations concerning official investigation and notification of road traffic accidents	
	Accident Investigation Board Norway (2005)				

Sources: SafetyNet (2005), SafetyNet (2006b) and ROSAT (2006)



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6.2 Financing of Road Accident Investigation

The Finnish Motor Insurers' Centre (FMIC) is a statutory organisation, and participates in road safety work, as provided by the Motor Liability Insurance Act (Finland, 1959). FMIC has set up the Traffic Safety Committee of Insurance Companies (VALT) for the promotion of road safety. VALT organises the actual *safety oriented road accident investigation** activities. 20 statutory investigation teams investigate all *fatal accidents** (around 370 per year) as well as other accidents as defined by VALT for specific safety research purposes. In all, the investigation teams study well over 400 accidents per year.

Among other recipients in the field of road safety, FMIC receives each year around 1 M€ from the Ministry of Social Affairs and Health for financing investigation work and other safety related initiatives. The Ministry Of Social Affairs and Health is responsible for distributing money collected by road safety charges loaded into motor liability insurance premiums.

For further information see: <http://www.lvki.fi>

6.3 Setting up safety oriented road accident investigation teams in Italy

As part of the SafetyNet project, DITS, (Department 'Idraulica, Transporti & Strade', University of Rome) worked with the local authorities to establish a safety oriented investigation programme in the Marche region of Italy. One of the initial problems was a lack of personnel experienced in road accident investigation. This was overcome by retraining investigators of work related accidents. In their evaluation DITS found that the majority of investigators believed that the quality of their training was high (94%) but still found the task of investigating road accidents difficult (62%). DITS identified a number of areas where training could be improved including the identification of in-vehicle safety systems and how to approach involved *road users** at the accident scene. This highlights the need for comprehensive training in road accident investigation even if the investigators are experienced accident investigators.

The assessment, made by investigators, concerning their relations with the institutional actors present at an accident site is also very interesting. In terms of institutional cooperation, the relations with the police, compared to other *emergency services**, are difficult. With police, 50% of the investigators estimated that the cooperation was very low, 32% that it was low and only 18% that it was quite high. With other *emergency services**, the cooperation was very low for 7%, low for 7% also, quite high for 47% and very high for 40%. DITS concluded that the absence of legal status of the investigation and of the investigators constitutes a clear problem for the conduct of *safety oriented road accident investigations**.

Source: Persia, L (2008) In-depth data collection in Italy. Presentation at the 2nd SafetyNet Conference, Rome, 17-18 April 2008. For presentation see www.erso.eu

6.4 Investigation Team

German In-Depth Accident Study (GIDAS)

The GIDAS accident investigation teams consist of two parts: The **Technical Investigators** and the **Medical Investigator**.

The **Technical Investigators** usually have a technical background and are specially trained in accident investigation techniques. They collect information at the accident scene on the following topics: traffic environment; weather conditions; documentation and measurement of accident traces for scaled drawings; pictures of the accident site, vehicles and damage; vehicle condition before the accident; detailed deformation data of the inside and outside of the vehicles; damage to the environment and the use of safety equipment. The investigators also collect data on the driving habits of those involved in the accident.

The **Medical Investigator** has a medical background (medical student) and collects personal information about the *road users**, including detailed injury information and previous medical conditions and accident causation data. Data is also collected about the way in which emergency aid is administered by the *emergency services**.

For further information see: <http://gidas.bast.de/eng/index.html>

Finnish Motor Insurers' Centre (VALT)

Each member of the VALT accident investigation team acts as the expert in their own field and is the contact person for the authorities and organisations in their area of knowledge. They work together to investigate traces on the road, the environment and vehicles and to draw conclusions about sequences of events. The VALT accident investigation teams consist of:

Police Member: contact person whom the *emergency services** can notify that an accident has occurred; leads the investigation at scene; organises the production of photographs and scene sketches; communicates vehicle and *road user** information to other members of the team.

Vehicle Specialist: investigates technical condition of vehicles and damage, the use of vehicle safety equipment and injury causation.

Road Specialist: investigates issues relating to traffic environment, weather and conditions; prepares a scene sketch based on measurements of the onset of braking, sliding and impact traces, vehicle and loose object positions.

Physician: investigates injury causation; the physical and psychological condition of involved *road users**; and the severity of injury.

Psychologist: evaluates the actions of involved parties and the psychological state of involved *road users**, and obtains historical information about the health of the involved parties.



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If the accident investigation requires expertise that is beyond that of the team members, an external expert is invited to perform a specific investigation or make a statement about a topic.

For further information see: <http://www.lvk.fi>

On-The-Spot study (OTS)

Accident Investigators attend the accident scene within 20 minutes of the accident occurrence. They collect data on the roadway, vehicles and *road users**.

In addition, personnel are employed to provide follow-up support to the investigation team, including **medical specialists** and clerical officers. These specialists collect and code medical data from hospitals as well as coordinating the collection of questionnaire data, but do not attend the accident scene.

For further information see: <http://www.ukots.org/index.html>

6.5 Notification

German In-Depth Accident Study (GIDAS)

The German In-Depth Accident Study (GIDAS) investigation team in Hanover is automatically notified by the *emergency services** computer system, which allows the team to travel to the accident site immediately after the notification of the accident's occurrence.

For further information see: <http://gidas.bast.de/eng/index.html>

Swedish Road Administration (SRA)

The Swedish Road Administration is informed about fatal road accidents as and when they occur and aim to examine the accident scene retrospectively within 1-5 days. In this case the police and Traffic Information Central know the sampling criteria of the SRA in-depth study and only notify them about relevant accidents.

For further information see: www.vv.se

Cooperative Crash Injury Study (CCIS)

The Cooperative Crash Injury Study (CCIS) team in Loughborough (UK) collect 'notification' (basic) information about accidents from the local police forces within 2-5 days of the accident occurring. The team receives information about all accidents which were reported to the police and select accidents to be investigated according to the CCIS sampling criteria. Vehicles are examined at recovery garages as soon as possible following notification.

For further information see: <http://www.ukccis.org/>

6.6 European Databases

Work Package 5—Independent Accident Databases

SafetyNet Work Package 5 has developed two main databases—a *fatal accident** database and an accident causation database. The data collection areas for the databases are from northern, western and southern Europe—Germany, France (Fatal database only) Italy, Netherlands, Finland, Sweden and UK. Independent groups with no interest in commercial aspects of the study outcomes conducted all data gathering and accident investigation activities.

The *fatal accident** database contains approximately 1300 *fatal accidents** with around 130 variables describing the key characteristics of these accidents. Data has been compiled from existing sources including police accident investigation reports, court and insurance files and recorded in the database according to a detailed manual. The accident causation database provides a detailed description of the causation of around 1000 crashes. Specialist teams conducted *safety oriented road accident investigations** to gather data. Many of the variables recorded in the accident causation database are the same as those for the *fatal accident** database. As well as this, additional variables are coded according to the accident causation coding system (SNACS) manual.

For further information see: www.erso.eu