



Project Report - months 1 – 18

Deliverable 1.2



Project Report - months 1 - 18

Work package 1, Deliverable 1.2

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Executive summary



This report, D1.2 Project Report - months 1 – 18, provides an overview of the work undertaken in the SafetyCube project. At the time of the preparation of the project the reporting requirements were not known and an internal mid-term evaluation of the project was considered to be helpful to the project team. Since then the formal project reporting requirements have become known and the internal mid-term evaluation of the project has been superseded by the Mid-term Project Review which covers M1 – M18.

The objectives for the first 18 months of the project were to:

1. Implement the **project management framework** to support communication between partners and achievement of project objectives.
2. Establish a project **dissemination and consultation platform** to ensure all stakeholders can remain informed of the project progress and can contribute to the DSS.
3. Develop the **methodological framework of the DSS**, and process for extracting data on risks and measures.
4. Estimate the numbers of **seriously injured traffic casualties** in Europe and the resulting health impacts.
5. **Define the functionality of the DSS** and prepare the underlying structure.

Very good progress has been made in the first 18 months of the project and all objectives have been achieved. Notably;

1. The project now has a very effective management framework that is focussed on:
 - The project coordinator and a dedicated project administrator.
 - Monthly Work Package (WP) Leaders meetings for routine decision making.
 - Regular WP partner meetings.
 - Periodic full partner plenary meetings.
 - A dedicated web conferencing system to facilitate communication together with a central web-based document repository.
2. A dissemination platform has been established to facilitate communication between the project and future DSS users.
 - The project website (www.safetycube-project.eu) provides information about the project and news of recent developments.
 - A newsletter, published typically four times each year, provides more detailed information to recipients.
 - A series of stakeholder consultation workshops have provided the project team with very useful guidance regarding the functionality and content of the DSS.
3. The methodological framework for the DSS has been established and data on risks has been evaluated and recorded for entry to the DSS.
 - The procedure to be used to record details of risks and measures from studies has been defined.
 - A sophisticated data entry template has been developed to provide a consistent means to gather data for entry onto the database and to enable an automatic quality check of template use.

- A total of 600 studies have been reviewed and data of 3,500 risks has been entered onto the templates. The studies cover road user, infrastructure and vehicle risks.
 - A total of 60 topic syntheses have been prepared to provide summaries and critical evaluation of the existing knowledge about road safety risks. The studies cover road user, infrastructure and vehicle risks.
4. Important advances have been made regarding the enumeration of serious injuries and the societal level impact.
- With the assistance of EC DG-MOVE a strong collaboration has been established with the EU CARE experts group representing the Member States.
 - The methods used across the EU to estimate the numbers of seriously injured casualties have been reviewed and the comparability assessed.
 - Recommendations for approaches to improve accuracy of serious injury counting have been made.
5. The structure and functionality of the DSS has been developed and a provisional “look and feel” prepared.
- A comprehensive taxonomy of risks and measures has been prepared to provide the internal structure of the DSS.
 - The basic functionality of the DSS has been specified and entry points, search methodologies and output descriptions have been prepared.
 - Wireframe screens have been prepared to illustrate the possible appearance of the DSS.

1 Introduction



1.1 SAFETYCUBE

Safety CaUsation, Benefits and Efficiency (SafetyCube) is a European Commission supported Horizon 2020 project with the objective of developing an innovative road safety Decision Support System (DSS) that will enable policy-makers and stakeholders to select and implement the most appropriate strategies, measures and cost-effective approaches to reduce casualties of all road user types and all severities.

SafetyCube aims to:

1. develop new analysis methods for (a) Priority setting, (b) Evaluating the effectiveness of measures, (c) Monitoring serious injuries and assessing their socio-economic costs, (d) Cost-benefit analysis taking account of human and material costs,
2. apply these methods to safety data to identify the key accident causation mechanisms, risk factors and the most cost-effective measures for fatally and seriously injured casualties,
3. develop an operational framework to ensure the project facilities can be accessed and updated beyond the completion of SafetyCube,
4. enhance the European Road Safety Observatory and work with road safety stakeholders to ensure the results of the project can be implemented as widely as possible.

The core of the project is a comprehensive analysis of accident risks and the effectiveness and cost-benefit of safety measures focusing on road users, infrastructure, vehicles and injuries framed within a systems approach with road safety stakeholders at the national level, EU and beyond having involvement at all stages.

1.1.1 Work Package 1

WP1 deals with the overall coordination of the project and the administrative work required for monitoring the progress of the project.

WP1 comprises a single task, Project Management, which runs continuously throughout the duration of the project. It is conducted by the Project Coordinator, Loughborough University (LOUGH), and comprises the following activities:

Provision of administrative and contractual infrastructure for project partners

- Liaison with European Commission concerning any contract amendments.
- Preparation of Consortium Agreement and any amendments.
- Periodic and final project reporting to European Commission.
- Distribution of project partner payments.
- Routine monitoring of partner time and budget expenditure.

Coordination of project activities

- Chair of project Steering Committee.
- Maintaining focus on project objectives.
- Monitoring of project progress against time-plan, adjustments to activities as required.
- Scrutiny of dependencies between Work Packages, identification of obstacles and opportunities.

Communication

- Routine communication with European Commission as required.

- Communication between partners – direction of project, achievements and progress.
- Coordination of annual project plenary meeting.
- Representing the project to the external reviewers.
- Coordination of end of project conference.
- Representing the project to external groups including related H2020 and national projects.

Quality Assurance

The Coordinator is responsible for managing the project procedures to ensure the quality of the results and deliverables. A quality assurance (QA) procedure has been established to ensure that each deliverable conforms to the specifications laid down in the Work Package descriptions and fully addresses the project objectives to advance the state of knowledge concerning accident causation, risks and the effectiveness of measures. Every member of the partnership is invited to support this QA process, as established in the Deliverable Review Process document. External reviews are also being conducted by external experts for those deliverables considered to be fundamental.

Risk management

The Coordinator has the responsibility to maintain the project risk management plan. The first version of the plan was included in the Proposal. Should any unexpected high impact events occur during the course of the project the coordinator holds responsibility for updating the plan and detailing the responses needed. The coordinator has established a monitoring procedure to detect problems at an early stage in sufficient time to react optimally.

Legal and ethical issues

Legal questions may arise at any time during the project. Normally these may be difficulties with legal changes affecting partners, changes of legal status or financial issues. There may be some aspects of the project that initiate ethical considerations although none have been identified at the current time. Should any occur they may need to be addressed under the guidelines laid down in the Consortium Agreement, and some may need amendments to the Grant Agreement. The Project Coordinator ensures that there is sufficient legal oversight of the project to enable any issues to be addressed properly, maintains full communication with the relevant project partners and where necessary the European Commission, and ensures that obstacles are addressed rapidly and efficiently by the project team.

1.2 PURPOSE OF THIS DELIVERABLE

At the time of the SafetyCube proposal preparation it was not clear what the future project reporting requirements would be. The proposal leadership team decided that regardless of EC requirements the project would benefit from a mid-term review that required all WP Leaders to compare actual project progress against the initial plan. It was decided that each partner would also benefit from a consideration of the contribution each had made against the workload required, resources available and the intellectual contribution to the project. It was therefore decided to include a specific deliverable, to be completed at the mid-point in the project, to act as a focus for this internal review.

Since the project started in 2015 the formal project reporting requirements have become known and the importance of D1.2 has reduced. Nevertheless the Deliverable is provided to ensure the commitment has been met.

It should be noted that the required date for submission of D1.2 is 31 October 2016 (M18) but since the Deliverable covers months 1 – 18 the Deliverable can only be submitted at M19.

2 Summary of the project and its progress



2.1 SUMMARY OF THE CONTEXT AND OVERALL OBJECTIVES OF THE PROJECT

The objective of SafetyCube is to develop a European road safety Decision Support System that will enable policy-makers and stakeholders to identify the most appropriate strategies to reduce casualties of all road user types and severities.

To achieve this SafetyCube will be based on a novel and comprehensive analysis of accident risk factors resulting in a major advance in the provision of information on road safety measures. The main project objective is to develop an innovative road safety Decision Support System (DSS) to guide policymakers. The project has five sub-objectives:

1. To develop new analysis methods for
 - (a) Priority setting,
 - (b) Evaluating the effectiveness of measures
 - (c) Monitoring serious injuries and assessing their socio-economic costs
 - (d) Cost-benefit analysis taking account of human and material costs
2. To apply these methods to safety data to identify the key accident causation mechanisms, risk factors and the most cost-effective measures for fatally and seriously injured casualties
3. To develop an operational framework to ensure the project facilities can be accessed and updated beyond the completion of SafetyCube
4. To enhance the European Road Safety Observatory

The project outputs will be framed according to the specific policy and stakeholder areas – infrastructures, vehicles and road users – so that the measures developed in the project can be most readily applied. A systems approach will ensure the linkage between these areas.

If all EC member States had the road safety levels of the best performing countries it is estimated that road traffic fatalities would have been reduced by over 10,000 in 2012. SafetyCube will support road safety policy-makers and industry stakeholders to adopt the evidence based policies of the most successful countries.

Therefore, SafetyCube will make an essential contribution to road safety and casualty reduction in support of the EC 2020 target of a 50% reduction in fatalities across the EU and the longer term vision of zero fatalities.

2.2 PROGRESS BEYOND THE STATE OF THE ART AND EXPECTED POTENTIAL IMPACT (INCLUDING THE SOCIO-ECONOMIC IMPACT AND THE WIDER SOCIETAL IMPLICATIONS OF THE PROJECT SO FAR)

The majority of the impact of SafetyCube will be realised once the project is complete and the DSS is fully functioning, however the project has already made several advances on the state of the art as exemplified in several of the deliverables and reports relating to milestones.

The reports relating to the following milestones have extended the state of knowledge by providing new and detailed approaches to the categorisation of crash risk factors and evaluation of the

effectiveness of measures across the road user, vehicle and infrastructure domains. Additional advances have been made regarding the evaluation of crash costs and societal impact.

- MS10 Preliminary guidelines for risk factors identification and evaluation of measures
- MS11 Preliminary guidelines for the estimation of safety effects
- MS12 Preliminary guidelines for estimation of crash- and measure costs and priority setting between measures

The following deliverables have provided a new syntax and taxonomy to be the basis of a new comprehensive classification of risks and measures.

- D4.1 Identification of road user related risk factors
- D5.1 Identification of infrastructure related risk factors
- D6.1 Identification of vehicle related risk factors

The following deliverable has provided a new review of the comparability of enumeration of serious injuries in EU Member States based on the new criterion of MAIS 3+.

- D7.1 Practical guidelines for the registration and monitoring of serious road injuries

3 Explanation of the work carried out by the beneficiaries and overview of the progress



This chapter details the work carried out during the reporting period in line with the Annex 1 to the Grant Agreement.

It includes an overview of the project results towards the objective of the project in line with the structure of the Annex 1 to the Grant Agreement, including summary of deliverables and milestones, and a summary of exploitable results and an explanation about how they can/will be exploited.

3.1 OBJECTIVES

List the specific objectives for the project as described in section 1.1 of the DoA (listed below) and describe the work carried out during the reporting period towards the achievement of each listed objective. Provide clear and measurable details.

The objectives for the first phase of the SafetyCube project focussed on identifying and structuring the basic information to be incorporated within the Road Safety Decision Support System (DSS).

The main areas of activity were:

- Implementing the **project management framework** to support communication between partners and achievement of project objectives.
- Establishing a **project dissemination and consultation platform** to ensure all stakeholders can remain informed of the project progress and can contribute to the DSS.
- Developing the **methodological framework of the DSS**, and extracting data on risks and measures.
- Estimating the numbers of **seriously injured traffic casualties** in Europe and the resulting health impacts.
- **Defining the functionality of the DSS** and preparing the underlying structure.

3.1.1 Project management framework

The project management framework establishes the organisation of the decision making, monitoring and communication procedures across the project. The core decision making group comprises the Work Package Leaders, Project Coordinator and Project administrator. Together this group coordinates the work conducted across the project ensuring timescales are adhered to and interdependencies between Work Packages are maintained. The group also reviews the periodic monitoring of project progress and resource expenditure against previous plans and project deadlines. Updates of resource utilisation are conducted across the project three times each year in advance of physical project plenary meetings where all partners meet.

A series of project tools have been established to support communication. GoToMeeting, a web conferencing tool, is used for WP leaders, individual WP meetings and ad-hoc meetings. The system enables participants to discuss project issues and share documents in real time. A web-based

document repository, Sharefile, is used as a file storage facility capable of being accessed by all partners and ensuring that different versions of working documents do not diverge.

WP Leaders meetings occur monthly as do most individual WP meetings.

Relevant milestones and deliverables:

MS1 Project Kick-off meeting

D1.1 First exploitation workshop – collaboration with other H2020 projects

D1.2 Project Report – months 1 – 18

3.1.2 Project dissemination and consultation platform

The concept of the SafetyCube DSS was outlined in the project proposal, however a programme of stakeholder consultation was required in order to clarify the key functional requirements of the system and to set in place a group that would continue to support the project over its duration. To achieve this, the project website (www.safetycube-project.eu) was established to provide information about the project and its progress to the general public. The home page provides the latest news of SafetyCube activities while other tabs give access to information about the project objectives, partnership, publications and all presentations made at project workshops and dissemination events. A further link enables interested groups to register for the project News Letter which is distributed typically four times each year. More than 3,500 users have visited the SafetyCube project website since its opening in June 2015 with more than 700 sessions and 1,400 page views per month.

Consultations with separate stakeholder groups have taken place over the course of the first phase of the project and will continue until completion. Dedicated workshops have been held to gather stakeholder views regarding the concept of the DSS, the content, functionality and hot topics – specific areas of high current interest to road safety practitioners. Some of these workshops were held in Brussels but others took place in conjunction with other road safety meetings.

The SafetyCube project has been eager to establish links with the other projects funded under MG 3.4 – InDev, Prospect, Seniors and Xcycle. SafetyCube has organised dedicated collaboration meetings and a special session at the TRA conference to build links.

Relevant milestones and deliverables

M5 Kick-off workshop with stakeholders

M5 Launch of the project website and corporate identity

M7 Mid-term workshop(s) D2.1 Definition of user needs and “hot topics”

D2.2 Dissemination Material template

D2.3 Project Dissemination Plan

D2.4 Interactive stakeholders’ platform

3.1.3 Developing the methodological framework of the DSS and extracting data on risks and measures

The underlying concept of the DSS is that it will incorporate a large quantity of information about road safety risks and the effectiveness of measures that will be systematically gathered from published material. To achieve this a number of challenges have had to be overcome:-

- Deriving comparable results from studies across the research domains of road user behaviour, infrastructure and vehicle safety.
- Ensuring the results of studies, which will be presented in a number of different forms, can be comparable.

- Ensuring that study constraints can be properly identified within the DSS.
- Developing a standardised coding protocol for derivation of risks and measures from studies together with suitable software to incorporate the data into the DSS back-end database.
- Developing a standard method to synthesise the studies in each topic.
- Commencing the development of an additional tool for the DSS to enable stakeholders to estimate the cost-effectiveness of measures.

Using the coding protocols and software previously developed, a major and work-intensive challenge has been to review a large number of studies and to extract estimates of risks. The SafetyCube project has adopted a broad definition of the term 'risks' that includes an estimate of the chance of a crash occurring or an injury being sustained, but also it is used to indicate a road safety problem that may be due to numbers of casualties or the weight society attributes to it.

The selection and review of the studies to be incorporated within the DSS are based on methodology typically used for a systematic review and are fully documented. The search terms and literature databases that have been used are specified for each topic. In many cases the numbers of available studies are too great to be covered and SafetyCube does not claim to be completely comprehensive. Instead priority is given to meta-analyses, European studies and more recent work. In fact the numbers of available studies for risks varied considerably across area. For example there are typically a large number of quantitative evaluations of infrastructure risks, often disaggregated by road user type or other factors. On the other hand there are relatively few risks associated with vehicles and the prevalence of specific crash events is more frequently considered. Following the suggestion of the external reviewers it was decided that SafetyCube should also include an assessment of risks and measures associated with post-impact care that will be addressed in the second half of the project.

So far over 600 studies with over 3,500 risk estimates have been identified across the areas of behaviour, infrastructure and vehicle safety and details of each have been recorded for entry into the DSS. To achieve this, a standard template has been developed as a data entry tool to ensure that each piece of information recorded from each study complies with a standard format to ensure comparability. Each template incorporates over 80 fields for each study to describe the nature and methodology of the study, its main results and any limitations. It should be noted that typically each study may include several estimates of risks, each of which is entered into the DSS.

A database has been developed as a repository of the coded data. Dedicated software automatically retrieves the data from each template and enters the data into the appropriate section of the database and then checks the data for consistency and validity. Once verified the data is then transferred to a second database which forms the basis and back-end of the DSS.

The development of this methodology and the coding of the large number of studies have been the major activity of the project partners and have occupied most of the first part of the project. The synopses of studies are considered to be live documents and it is intended that the number of synopses will further increase during the period of the SafetyCube project.

Relevant milestones and deliverables

- MS10 Preliminary guidelines for risk factors identification and evaluation of measures
- MS11 Preliminary guidelines for the estimation of safety effects
- MS12 Preliminary guidelines for estimation of crash- and measure costs and priority setting between measures
- MS15 List of road user behaviour priorities - input from stakeholders ("hot topics")
- MS19 List of infrastructure safety priorities – input from stakeholders ("hot topics")
- MS23 List of vehicle safety priorities – input from stakeholders ("hot topics")
- D3.1 Description of data-sources used in SafetyCube

- D4.1 Identification of road user related risk factors
- D5.1 Identification of infrastructure related risk factors
- D6.1 Identification of vehicle related risk factors

3.1.4 Estimating the numbers of seriously injured traffic casualties in Europe and the resulting health impacts

The estimation of the numbers of people who are seriously injured in traffic casualties is an important topical issue across Europe. Shortly before the project commenced the European Commission adopted a new standardised definition of seriously injuries in order to enumerate the total numbers in a comparable manner. This definition of serious injury as any injury with a minimum value of three on the Abbreviated Injury Scale is a major advance in understanding the wider impact of traffic crashes. Nevertheless the practical application across EU Member States is less clear and so the SafetyCube project incorporated an evaluation of the comparability of estimates.

With the support of the European Commission DG-MOVE the project team was able to gather detailed information about the estimation methods used across the Member States. The results show that the improved approach provides a much more accurate estimate of total numbers of serious injuries, however further convergence in how best to apply the approach and consistency between countries is necessary.

Further work has been conducted to improve the understanding of the health impacts and economic costs of seriously injured casualties. The H2020 MG 3.4 project InDev has a parallel objective to estimate the economic costs of serious injury so the two projects collaborated in order to minimise duplication of effort and to ensure compatible results.

A current task within the project is to integrate this knowledge of economic costs and health impacts into the structure of the DSS.

Relevant milestones and deliverables

- D7.1 Practical guidelines for the registration and monitoring of serious road injuries.

3.1.5 Defining the functionality of the DSS and preparing the underlying structure.

The SafetyCube Decision Support System comprises a web-based interface to the back-end database containing the risks and measures. The operation of this interface is critical for an effective search process and the success of the project relies on achieving a DSS that enables users to search for information in a way that is best for them and to find the information in the most appropriate format and with the right level of detail. The entry points into the DSS were anticipated to be predominantly risks or measures but searches can be further based on a text keyword, accident scenario or individual road user groups.

While the database provides a space into which data from the studies can be entered, the structure is defined by the relationships between risks, measures and other entry points into the DSS. These relationships are defined on a composite taxonomy that comprises a comprehensive list of all risks and measures and the relationships between them. Both risks and measures cover the road user, infrastructure, vehicles and post-impact care and it was observed that a risk deriving in one area might be addressed by a measure in another area. For example speeding, which is a road user related risk, might be addressed by section speed control (infrastructure) or vehicle based speed limitation. To ensure that the relevant measures are associated with each risk a systems based approach has been adopted to ensure that relationships are not overlooked and for each risk a complete set of measures will be identified.

Each user who accesses the DSS could want one of several different types of output. In many cases it was considered that the user would wish to see an overview of the main characteristics of the selected risk, measure or other entry query group. Therefore the main search output would make available a synopsis about the risk/measure/scenario etc. of interest, that summarises the research knowledge available. Links will be made available to enable the search to be refined, to see the related measures and to access individual studies within the database, copyright permitting.

The project team have prepared wireframes (mock-ups) of the DSS web pages to illustrate possible search and output screens in order to facilitate consultation. These have been refined and a full DSS website will be prepared during the second phase of SafetyCube.

Relevant milestones and deliverables

- M28 Systems based framework for risk analysis coordination
- M29 List of evaluated risks available
- D8.1 The application of systems approach for co-ordinated accident analyses

3.2 EXPLANATION OF THE WORK CARRIED OUT PER WORK PACKAGE

3.2.1 WP1 "Project Management" – LEADER: LOUGH

Loughborough University (LOUGH) as Project Coordinator is the only contributor for WP 1.

During the first 6 months of the project the main tools for the project management were set up: file sharing system, conference call system, deliverable and milestone calendars, contact lists, etc. The partners have been proactively involved in the use of the tools in order to establish an effective communication system: the WP Leaders group (project steering committee) is holding regular monthly web-meetings and within each WP technical meetings have been periodically organised.

Starting with the Kick off meeting (Milestone 1) hosted by the Project Coordinator in Loughborough, periodical technical plenary meetings and stakeholders' workshops have been hosted by different partners who have been supported by the Project Administrators in the coordination activities and logistics.

In the second part of the reporting period, the enrolment of a dedicated Project Administrator had brought the opportunity both to develop and implement management processes (Deliverable review process and internal financial monitoring process), and to enhance the supervision of the implementation of the project both financially and in terms of person-months. Administrative and contractual advices have been provided by the Project Coordinator Team to partners.

The main objectives for the first half of the project have been successfully achieved and the results of the management of the project are satisfactory: all commitments with the European Commission (deliverables and milestones) have been fulfilled on time; good communication among partners has been established; the prepayment has been paid to each partner soon after LOUGH received the payment from the EC; technical objectives of the project have been effectively carried out along the reporting period; and at every technical plenary meeting project results and road maps have been presented and updated.

As documented in D1.1, LOUGH as project coordinator established collaboration between SafetyCube and other projects supported under the H2020 Topic MG-3.4-2014 'Traffic Safety Analysis and Integrated Approach towards the Safety of Vulnerable Road Users'. A series of joint activities have been conducted including; a joint Session at the Transport Research Arena Conference (Warsaw April 2016), informal joint project meeting at TRA, specific Joint Work Package meetings with InDeV in relation to the estimation of accident costs, and joint meetings with other projects within the context of Prospect.

LOUGH coordinated the following plenary meetings:

- May 2015 - Kick off meeting in Loughborough
- November 2015 – Technical plenary meeting in Gothenburg
- March 2016 – Technical plenary meeting in Barcelona
- June 2016 – Technical plenary meeting in Athens
- November 2016 – Technical plenary meeting in Den Haag

3.2.2 WP2 “Dissemination and stakeholder consultation” – LEADER: CHALMERS/SAFER

WP2 activities started from the first month of the project and the dissemination activities were conducted as planned. The first year of the project was used to plan, prepare, and implement the project infrastructure that is needed to spread the information and results from the project. An additional challenge for the SafetyCube project is to collect information from road safety stakeholders using different dissemination channels.

The WP was designed to address the main functions for a two way information flow between the project and the stakeholders. A general strategy was developed in the first task, developing a dissemination plan for the project. The templates for main the project products (presentations and documents) were created in a dissemination materials task. This task also addresses ongoing project dissemination products like posters, rollups, etc. A task was assigned for developing and maintaining a project webpage. Finally, a core task was developed to coordinate the different workshop activities within the project.

Chalmers/SAFER is responsible for the overall WP and is supported by task leaders for the materials (SWOV), and webpage (NTUA).

In the first 18 months of the project, WP2 has completed 4 deliverables and 3 milestones. All Deliverables were delivered on time. Deliverable 2.1 is identified as being delivered late, but the consortium requested that the first version be rejected so that updates could be officially registered.

Communication in WP2 is maintained by physical meetings in conjunction with the project general assembly meetings and web meetings when key activities require contact. WP2 is represented in the WP leader meetings held regularly.

The activities in the specific tasks are as follows:

Task 2.1 Dissemination Plan

The dissemination plan described the key activities that will be used to spread and gather information during the project. The dissemination plan describes the key stakeholders, general stakeholders, and a strategy for arranging workshops, webpages, and project publications. The role of the webpage as a focal point for project information is also described.

This task was completed within the allotted time and was finalized with the Dissemination plan, Deliverable 2.3. The final dissemination activities of the project will be updated in M36.

- Chalmers coordinated and wrote D2.3 with support from most WP2 members.
- LOUGH contributed to the development and implementation of the dissemination plan including participation in physical and web meetings, review of materials prepared by other partners and preparation of common text for all deliverables. LOUGH has presented the project at the International Cycling Safety Conference in Bologna and briefly at the H2020 Transport information day September 2016.
- NTUA contributed actively to the project dissemination plan (Deliverable 2.3).
Furthermore, NTUA disseminated on several occasions the project activities through its website (www.nrso.ntua.gr) and the related monthly newsletter, to its wide network of road safety experts and stakeholders in Europe and worldwide.

- SWOV contributed to the dissemination plan.
- AVP cooperated with the WP leader and other project partners in planning the dissemination of the projects information and results. AVP regularly share the progress of the project with different stakeholders on every working meeting, organized by their Agency.
- ERF contributed to the development of the dissemination plan by providing: general input on target audiences; events at which SafetyCube could be presented; list of contacts with the specialised press; general remarks on the final draft of the plan.

Task 2.2 Project Material

SWOV is the task leader and has coordinated the development of a corporate identity for the project, including a logo, colours and fonts. These elements have been applied to templates for Deliverables and PowerPoint presentations, including instructions on how to use them. Besides deliverables and PowerPoints, elements of the corporate identity have been applied to the project-website, invites to stakeholder consultations and other project events, banners, and other promotional materials. SWOV created a newsletter template, based on which three newsletters have been composed and sent out (December, April, and July), illustrating the progress of the project and promoting workshops. The list of addresses has grown through website sign-ups, attendees of workshops and other contacts. The list now counts 287 members.

The “corporate identity” for SafetyCube is described in D2.2 which was delivered on time. This deliverable was mostly written by SWOV.

The newsletter distributed by SafetyCube is made up of news items that are continuously added to the webpage. These news items are predominantly written by the WP2 members SWOV, NTUA, ERF, LOUGH, and Chalmers/SAFER.

Task 2.2 continues throughout the project and has no more formal deliverables.

- SAFER supported SWOV, the task leader, for deliverable D2.2. With support from SWOV and other WP2 partners, news items are uploaded to the website continuously.
- LOUGH has contributed to the development of materials for the project newsletters and website as well as printed material for distribution at conferences and with groups including EUCAR and FERSI.
- NTUA contributed actively to the SafetyCube project newsletters and the other templates and elements of the project's visual identity.
- ERF contributed to the material development by providing advice on the creation of the corporate identity, and input on the development of the newsletter format and material for the different versions.

Task 2.3 Stakeholder Consultations

Key elements of the dissemination plan are the various workshops that are run in the project. The workshops in the first half of the project were essentially information gathering activities, where the project partners reached out to the stakeholders to get guidance and identify priorities for the project. This task is led by Chalmers/SAFER who was the main organiser of the Kick-off and Midterm workshops. These two workshops had dissemination scopes spanning the whole project. Additional workshops with a specific focus have also been organised in the project, where individual WPs have a more central role in the thematic workshops.

SafetyCube members have also taken part in workshops and conferences organised externally to the project. These activities are reported on the project website to further identify links between the project and stakeholders.

The workshops to date have been:

1) Organiser-SafetyCube, Kick-off Workshop/Stakeholder input (Brussels, BE, June 2015):

The workshop was used to collect the main priorities of the stakeholders and to identify "hot topics" relevant for the project. The workshop was documented in Deliverable 2.1. Many partners attended the workshop and significant contributions came from WP2 partners LOUGH, NTUA, SWOV, BRSI, and ERF. Key stakeholders from throughout Europe were in attendance.

2) Organiser-SafetyCube, Workshop/Stakeholder input (Ljubljana, SI, Oct 2015):

The partner AVP organized (in cooperation with WP leaders) a SafetyCube stakeholder workshop in Ljubljana in conjunction with IRTAD and Slovenian Traffic official workshops. Information was distributed prior to the workshop describing the project and an invitation to the workshop. More than 150 stakeholders participated in the workshop and contributed by collecting additional "hot topics". The event was also covered by the media. The Slovenian Press Agency (STA) prepared an article about the project and about the aim of the event, and a lot of other public media in Slovenia summarized their information. Chalmers, NTUA, KfV, and SWOV supported the workshop.

3) Co-Organiser-SafetyCube-InDeV, Workshop on Crash Costs (Den Haag, NL, Jan 2016):

A liaison meeting/workshop was held in The Hague with experts from the SafetyCube and InDeV H2020 projects. The workshop was used to identify tools and methodologies for assessing the costs of crashes.

4) Organiser-SafetyCube, Infrastructure Workshop/Stakeholder input (Brussels, BE, Feb 2016):

The SafetyCube partners ERF and NTUA held a workshop addressing infrastructure safety issues to support the WP5 activities. ERF used its partnership to support the project workshop. Chalmers/SAFER, LOUGH, and SWOV supported the event.

5) Co-Organiser-SafetyCube-FERSI, TRA conference special session. (Warsaw, PL, April 2016):

LOUGH was a co-organiser of a special road safety session. The session allowed five EU projects, including SafetyCube, to present their activities. NTUA presented the SafetyCube project. LOUGH chaired the session.

6) Organiser-SafetyCube, Workshop on Serious Injuries (Den Haag, NL, May 2016):

The activities in SafetyCube WP7 were the topic of a workshop held in conjunction with an ETSC PIN event. The focus of the event was the reporting of MAIS 3+ road injuries to the commission. A review of current practice and proposals for guidelines was presented to improve the interpretation of the results of the CARE expert group.

7) Organiser-SafetyCube, Midterm Workshop and Decision Support System preview (Brussels, BE, Sept 2016):

A well-attended workshop was held at the BRSI facilities to review the progress in the project and introduce the functionality of the Decision Support System (DSS). The event was planned by Chalmers/SAFER with support from BRSI, LOUGH, NTUA, ERF, and SWOV. Additional support from LAB, TÖI, and KfV was also provided. The results of this workshop are being prepared in Deliverable 2.5.

SafetyCube partners have also presented the project results in external conferences and workshops. These include:

- a. Transportation Research Board Annual Meeting (Jan 2016) – Presentation by NTUA.
- b. Annual meeting of the European Association of Motor-cycle Manufacturers (April 2016) – Presentation by LOUGH.
- c. TRA Conference EU information booth (April 2016) – Presentation by Chalmers/SAFER.
- d. International Cycling Safety Conference in Bologna (Oct 2016). Presentation by LOUGH.

- e. H2020 Transport information day (Sept 2016). Presentation by LOUGH.
 - f. CARE experts group meeting (Oct 2015). Presentation by NTUA.
 - g. European Symposium on Accident Reconstruction (Hannover, June 2016). Presentation by LOUGH.
 - h. Safety 2016 World Conference (Helsinki, FI, Sept 2016) Presentations by NTUA and ASPB.
 - i. IRTAD Meeting (Oct 2016) – Presentations by NTUA, KfV, and a joint SafetyCube/InDeV presentation.
 - j. ERF European Road Infrastructure Congress (Leeds, UK Oct 2016) Presentation by NTUA.
- Chalmers provided support in the Ljubljana and Brussels Infrastructure workshop. Chalmers presented the project at the TRA conference in Warsaw at the EC information centre. Deliverable 2.1 was prepared by Chalmers, documenting the stakeholder survey. Deliverable 2.5 is now in preparation for submission in December 2016.
 - LOUGH has participated in stakeholder consultation events in Brussels (June 2015, June 2016) and organisation of special session at the TRA conference (Warsaw, April 2016). It has presented the project at the annual meeting of the European Association of Motor-cycle Manufacturers.
 - NTUA assisted in the organisation and implementation of several stakeholders' workshops: Brussels June 2015, Ljubljana June 2015, Brussels February 2016, Mid-term workshop Brussels September 2016. NTUA made key presentations and contributions in all these stakeholders' workshops and coordinated specific sessions.
 - SWOV contributed to the preparation of the Kick off workshop and the Midterm workshop by taking part in discussions on the contents and form of the workshops. Moreover, SWOV chaired one of the 'break-out' groups during the kick-off workshop and reported about the discussion in that break-out group.
 - BRSI participated in stakeholder engagement activities, including active involvement in the stakeholder workshops. BRSI co-organised the workshop in Brussels on the 23rd of September.
 - AVP organized (in cooperation with the WP leader) SafetyCube stakeholder workshop in Ljubljana on 14.10.2016. Before the meeting they prepared the invitation with all the information about the aim of the project and about the aim of the workshop. More than 150 stakeholders participated in the workshop and contributed by collecting the "hot topics". The event was also covered by the media. The Slovenian Press Agency (STA) prepared an article about the project and about the aim of the event, and a lot of other public media in Slovenia summarized their information.
 - As a Brussels based association with a large network of contacts, ERF promoted the workshops to selected contacts and provided a list of infrastructure experts to the workshop organisers

Task 2.4 Website and Social Media

The website for SafetyCube was designed and is maintained by NTUA. A professional website is in place that contains all relevant project information with a list of news items to keep the project information current.

NTUA as leader of Task 2.4 developed the SafetyCube project website (already available since the third month of the project duration), a very modern and ergonomic website incorporating the outputs of the project as they become gradually available, and the contribution of road safety stakeholders at the various stages of the project. Moreover, an interactive platform for the stakeholders' contribution was created within the website, including online survey facilities for collection of information on user needs.

NTUA is in charge of the continuous update of the SafetyCube project website, (to date includes more than 30 content and news items).

NTUA also contributed to the development and the continuous update of the list of stakeholders maintained by the SafetyCube project for the dissemination of the project newsletter and all the project outputs and news. NTUA disseminated on several occasions the project activities through its website (www.nrso.ntua.gr), and the related monthly newsletter, to its wide network of road safety experts and stakeholders in Europe and worldwide.

NTUA coordinated the drafting of Deliverable 2.4, which was submitted on time.

- Chalmers/SAFER contributed to the website by providing images, documents, and articles. The website launch was not a formal deliverable but a milestone. Chalmers/SAFER contributed to Deliverable 2.4 "Interactive stakeholders' platform" which is an interactive platform that will allow SafetyCube members to develop surveys or online tools to bring information from the stakeholders to the researchers.
- LOUGH has contributed to the specification and definition of the project website and has contributed text and images to disseminate the project to stakeholders.
- SWOV contributed ideas for a user-friendly project website, posted several news items and tweeted about the SafetyCube project.
- AVP contributed to creating content of the SafetyCube Website, put the link of the SafetyCube website on AVP's website, and also informed stakeholders about the website and asked them to participate in the website survey.
- ERF provided input into the creation of the website and reviewed its initial content.

3.2.3 WP3 "Methodological framework" – LEADER: BRSI

WP3 had a very intensive start, producing 2 Deliverables and 4 Milestones in the first 18 months and has already put down substantial work for the last two deliverables. The main challenge is to come up with a methodological framework that is broad enough to allow the registration, comparison, and summary of studies from different domains, addressing different topics, measuring different type of phenomena, and using fundamentally different research designs. The methodology needs to be detailed enough to capture important aspects of each study, flexible enough to be applied to many different types of studies, methodologically sound enough to allow the scientific evaluation of studies, and accessible enough to be understood by partners and users of the DSS.

Obviously, the establishment of such a framework is based on intensive discussions, entails many compromises, and is an iterative process with the methodology being refined as it is applied by all partners. WP3 has successfully bundled the expertise of its various partners and although the methodological framework, the instructions to partners, and the tools provided by this work package are still being refined, it has laid the basis for all further activity in the SafetyCube Project within the first year.

The results of WP3 are excellent. All deliverables and milestones have been submitted on time and are of high quality.

The WP3 group of partners participated in the following meetings:

- May 2015 - Kick off meeting in Loughborough
- September 2015 – WP3 technical meeting in Brussels
- November 2015 – Technical plenary meeting in Gothenburg
- January 2016 – Technical meeting Task 3.3/7.3 with InDev
- March 2016 – Technical plenary meeting in Barcelona

- April 2016 – Technical meeting Task 3.3/3.4/7.3
- June 2016 – Technical plenary meeting in Athens
- November 2016 – Technical plenary group in Den Haag

Telephone conferences (Task 3.3/7.3):

11.02.2016; 10.03.2016; 14.04.2016; 29.04.2016; 20.05.2016; 02.06.2015; 06.06.2016; 17.06.2016; 30.06.2016; 29.07.2016; 17.08.2016; 09.09.2016; 07.10.2016

Task 3.1 Identification of risk factors / Task 3.2 estimation of safety effects

The identification of risk factors and the evaluation of safety effects have a fundamental common core: both estimate the change in probability for a crash or a particular crash outcome to occur. For each goal, different methodologies exist for the identification of risk factors and the estimation of safety effects – and the most important ones are used for both risk factors and measures. The objective of tasks 3.1 and 3.2 was to generate a broad analytical framework that allowed the inclusion of studies with different kind of designs. As the differences within each area (risk factor and safety effects) are much greater than the differences between them, it was not considered useful to treat them both separately. As a consequence Task 3.1 and 3.2 were conducted jointly.

After 6 months, the milestone MS10 “Preliminary guidelines for risk factors identification and evaluation of measures” was completed. These are comprehensive guidelines aimed at coding studies for a repository of results on risk factors and safety effects. The most important challenge for coding studies for the DSS repository is the big variety of topics addressed, which also means that the studies addressing the topics tend to have different designs. The guidelines contained a description of different ways to analyse risk factors and safety effects, a taxonomy of study designs, and a detailed description of the most important designs – including a list of typical statistical biases associated with the design in question. Together with these general instructions for the evaluation of studies, a coding template was programmed in Excel in which studies could be coded. This coding template was made to be very flexible, so that all different kinds of quantitative evaluation studies can be entered, preserving the information about study-design and type of information collected, but also allowing to compare the results. The coding template was accompanied by detailed instructions and annotated examples of coded studies.

At month 12, milestone MS11 “Preliminary guidelines for the estimation of safety effects” was distributed to WPs 4, 5, 6. While the first guidelines were focused on coding studies for the repository, these guidelines were focussed on the whole process of reviewing the literature, selecting studies for coding, summarising them in a meta-analysis or vote-count analysis, and describing the results in a synopsis that contains very detailed information for the expert as well as very compact summaries for policy makers. In this task it was also considered how crash data from different databases (in particular from partners LAB and MUH) could be analysed for the identification of risk factors and for the evaluation of countermeasures.

- As Leader of Task 3.1, NTUA contributed to the coordination and discussion of methodological issues on the identification of risk factors and assumed the writing for several chapters in Milestone 10 “Preliminary guidelines for identification of risk factors and evaluation of safety measures”. NTUA contribution focused on experimental studies design and assessment, as well as guidelines for performing meta-analysis.

NTUA contributed to the preparation of the guidelines regarding the common methodology for estimating safety effects (study design analysis, taxonomy, coding) within MS11 “Preliminary guidelines for priority setting between measures”, with particular emphasis on the guidelines for summarising study results (synopses) and carrying out meta-analysis and meta-regression analysis.

- BRSI, as work package leader, led the discussion on the joint Task 3.1 and 3.2. They designed and programmed the Coding Template, produced several examples for partners, supplied instructions, organized the feedback from partners, conducted training sessions for filling in the coding template and delivered the manual.

They led the discussion on evaluation, coding, and summarizing studies for the repository and coordinated the writing of MS10 and MS11 which are dedicated to these processes. A major part of the instructions that were delivered for these milestones were written by BRSI.

BRSI also organised the feedback process for continuous improvement of the instructions and template.
- LOUGH was involved in developing the methodologies and tools for identifying risk factors. In particular, LOUGH contributed to all development and pilot activities in the creation of the coding template (joint activity with WP4,5,6) and contributed text that described system approaches to the analysis of crash causation for MS10.

LOUGH participated in the working group to finalise the contents and appearance of synopses. LOUGH contributed to MS11 by developing the text explaining synopses and writing the first draft of text summarising the literature search strategy.
- SWOV commented on preliminary versions of the excel coding sheet and on the preliminary guidelines for risk factors identification and evaluation of measures.
- KfV within Task 3.2 has achieved the following: different coding sessions to improve the coding sheet and learn how to code studies within the sheet. Development of guidelines for a standardised literature search and guidelines for writing the synopsis.

Contribution to the development of:

 - a standardised literature search, prioritisation and selection
 - the coding template
 - guidelines for synopsis writing (summarizing risk factors and measures)
 - analysis of in-depth data for the identification of risk factors

KfV also contributed a chapter (on SPIs) to MS10 (preliminary guidelines for risk factor identification and evaluation of measures).

Participation in a workshop (Brussels, June 2015) dedicated to developing WP3's methodology.

Participation in WP3 web-meetings and project meetings.
- IFSTTAR contributed in tasks 3.1 and 3.2 with text proposed by S Lassarre, and a presentation at Athens in May 2016 on Exploratory review about physical vulnerability and seat belt use effectiveness. The text concerning advanced methods on cohort matching for injury data analysis will be part of D3.3, the methodological framework. IFSTTAR also presented some research work on text mining applied on Cochrane evaluation in medicine and suggested to test it for a possible transfer to our problem of coding road safety scientific papers.
- THE INSTITUTE OF TRANSPORT ECONOMICS (TØI): Contributed to the development and writing of the initial guidelines for identification of risk factors and evaluation of safety measures, including leading the writing for several chapters. Leading up to this, TØI was involved in the selection of measures and criteria to assess study quality and summarizing studies. Involvement in activities to pilot test and adapt the tool for encoding studies to the repository. TØI attended all relevant meetings.
- ASPB contributed by discussing the criteria to assess the quality of existing studies and guidelines for new studies, and to the guidelines on how to calculate the population attributable risk from different types of study results. ASPB contributed also in writing some sections about epidemiologic studies and measures of association for MS10, reviewed different sections on methods, and reviewed the excel file developed for coding studies.

- MHH has contributed to the development of WP3 methodology by conducting pilot studies of case coding and by contributing to a section on in-depth crash analysis in MS10. Moreover it has prepared parts of D3.3. For the synopses of WP 4 and 5 in-depth accident data from the GIDAS database has been analysed. Together with the partners of WP3 MHH have developed a common analysis method to provide specific crash data for the respective Work Packages.
- LAB participated in the different technical meetings (Loughborough, Gothenburg, Barcelona, Athens, Den Haag) and in the training session (Gothenburg).

Task 3.3 Estimating crash and measure costs

The preparatory work for D3.2 "Crash cost estimates for European countries" (Due in Month 24) has started in January 2016. To get information on the estimated crash costs in different European countries, efforts were joined with task 7.3 (Costs of injuries) and with the EC H2020 project InDev. On the basis of a literature review, possible components of crash costs were determined and a questionnaire was designed, checking for each component the subcomponents that it includes, the methods applied to estimate it, and the resulting estimate. An expert on the estimation was found for each of the 32 European countries, who then filled in the questionnaire. In SafetyCube WP3, the focus is on comparing the resulting crash-cost estimates, linking this to the methods used, and supplying values for countries that do not have an estimate. All questionnaires have been filled in, the analyses are ongoing.

- SWOV is task leader and coordinated the work concerning the estimation of crash and measure costs. SWOV made an overview of the state of the art concerning guidelines, international studies and European studies on costs of crashes and subsequently made an overview of costs components and methods to estimate them. Those contributions will be part of D3.2 and D3.4. Moreover, SWOV was involved in developing the questionnaire for collecting information from the EU member states and additional countries and collected information for The Netherlands and Switzerland. At the moment SWOV is part of a working group that is analysing the data.
- BRSI coordinated the contacts with the InDev Project and co-chaired the meetings for this task. BRSI contributed to the design of the questionnaire to European countries. It gave feedback on the literature review "Crash cost components", and collected the crash costs for Iceland, Serbia, Hungary, Belgium.
BRSI also generated a script for reading the resulting excel files into a database.
- KfVs contributions to Task 3.3 are described also below under Task 7.3: Contribution to the development and testing of the "Cost-Questionnaire" (excel sheet) on the scope and the methodology of the calculation of cost of road crashes in the EU (and beyond). Coordination of the dissemination and retrieval of the "Cost-Questionnaire" with the "Cost Working group" (regular telecons). Follow up of the "Cost-Questionnaire" with experts from SI, CZ, SK and GR.
- IFSTTAR contributed to the discussion, building and the writing of the chore document concerning the methodology related with the definition of road crashes. More specifically, this task concerning the identification of cost components, their justification, and the identification of different available methodologies for their estimation. IFSTTAR contributed also to review and to comment on the contribution of other partners dealing with the cost-benefit methodology and issues. IFSTTAR was also involved in exchanges with other partners (through meetings and electronic communications) related with these items and concerning the effective use of the cost-benefit approach for the present project.
- TØI contributed to the collection of crash cost data in European countries; provided cost data for Norway and contributed to the cost data for Finland. TØI contributed with a text on the definition and estimation of costs of road safety measures. TØI attended all relevant meetings.
- ASPB searched data for all costs related to accidents for Spain through literature review and contacting national experts. Data was included in the excel file and a final check was asked to

the expert from the National Traffic Authority (DGT). ASPB coordinated with INTRA from the InDev project to avoid overlap on the tasks.

Task 3.4 Priority setting between measures

At month 17, D3.4 "Preliminary guidelines for prioritisation of measures" was delivered, setting the methodological framework for the economic efficiency assessment of road safety countermeasures.

It describes the general principles of economic efficiency analysis with different criteria for prioritising road safety countermeasures (cost benefit, cost effectiveness, cost utility), and a description of the underlying assumptions and when to use which method.

Moreover, the input to cost-benefit analyses is discussed, as well as the monetary valuations of crashes and countermeasures. The meaning of "costs" in the framework of the economic welfare theory is explained, as it is not the same as it is in everyday language. The estimation of measure costs and crash costs are described. The implementation of economic efficiency analyses in the SafetyCube Decision Support System is discussed, indicating which decision criteria are included and why and discussing the practical implementation.

- BRSI, as WP and task leader, chaired the meetings and led the discussion on the methodology underlying the economic efficiency assessment within the SafetyCube project.
BRSI presented an outline for D3.4, instructed partners to write parts, and integrated the resulting texts into a comprehensive but compact and readable text.
BRSI gave input for the first version of the EEA tool and the accompanying instructions (MS12). It led the following discussion and developed and finalised MS12 accordingly.
- SWOV designed the first version of the EEA Tool (MS12) in excel and contributed to its further development. SWOV has contributed to most of the chapters in Deliverable 3.4 and MS12.
- TØI: Contributed as one of the authors of the deliverable. This included contributions to defining components of crash costs, collecting crash cost data from European countries and estimation of unknown components, as well as defining components of costs of measures. TØI attended all relevant meetings.
- IFSTTAR: Contributed as one of the authors to Deliverable 3.4 (chapter on discount rate) and to discussions about the EEA tool.
- LOUGH: Contributed to Deliverable 3.4 by proofreading it.

Task 3.5 Data management

The first Deliverable (D3.1) "Description on data-sources" was completed after 6 months. This is a comprehensive list of crash-data and other data-sources available in the consortium. It contained the variables included, access procedures, and information on size, sampling procedure and time frame covered by the data.

- CHALMERS/SAFER, as task leader, contributed to Deliverable 3.1 describing the project data sources. They designed, analysed and reported upon a questionnaire circulated among all partners. This involved liaison with WP6.
- BRSI gave instructions & feedback for design of a questionnaire into which partners could enter the details of the data-sources that they have access to.
BRSI also gave input and feedback on D3.1.
- LOUGH provided details of the crash databases that they have access to or have used previously for D3.1 and conducted the review and English language check for the same deliverable.
- NTUA contributed to Deliverable 3.1 "Description of data-sources used in SafetyCube" by providing information and meta-data.
- SWOV contributed to the identification of data sources and specifically looked at data sources that were collected in projects in which SWOV has been involved. Moreover, SWOV contributed

to the questionnaire on which D3.1 was based by adding the WP7 perspective and by giving an overview of data sources.

- Part of the KfV contribution shifted to tasks 3.3 / 7.3.
- MHH contributed details of German data to D3.1 and gave feedback on the questionnaire. MHH have contributed to the preparation of the deliverable D3.1. MHH have participated at the following WP3 meetings and Workshops: Loughborough (May 2015), Brussels (June 2015), Gothenburg (November 2015), Barcelona (March 2016) and Athens (June 2016).
- LAB participated in the different technical meetings (Loughborough, Gothenburg, Barcelona, Athens, Den Haag) and in the training session (Gothenburg).

3.2.4 WP4 “Road user behaviour analysis” – LEADER: KfV

The main objectives for the first half of WP4 have been successfully achieved.

The objective of work package 4 is to analyse data, and implement developed methodologies (WP3) concerning accident risk factors and road safety measures related to the road users. It examines accident risks and safety measures concerning all types of road users including Vulnerable Road Users (VRU). For this task a tight collaboration both with the parallel work packages WP5 (infrastructure) and WP6 (vehicle), and with WP3 (methodology) and WP8 (European Road Safety Policy Decision Support System) was established. Discussions and decisions about how to implement the methodology in WP4, WP5 and WP6 and present the results in the DSS was an iterative process and took place during the WP-leader web meetings and the project meetings. Within the WP4 web meetings and the project meetings discussions about approaches and decision making about implantation of the methodology for the risk factors related to the road users took place.

In the first part of the project the focus was on identifying and assessing human related risk factors (tasks 4.1). The following steps have been carried out:

- Definition of risk factor.
- Identification of human related risk factors – creation of a taxonomy, the topics of the taxonomy were distributed to all WP4 partners.
- Consultation of relevant stakeholders and policy papers for identification of topics with high priority ('hot topics').
- Systematic literature search and selection of relevant studies on identified risk factors.
- Systematic coding of studies with the coding sheet created by WP3.
- Analysis of risk factors on the basis of the coded studies.
- Making use of in-depth accident data.
- Writing synopses for risk factors, including accident scenarios.

The core output of task 4.1 is 186 coded and analysed studies and 25 synopses, which will be available through the DSS.

At the end of the reporting period the work on task 4.2 and 4.3 has started, aiming at identifying measures for addressing the identified risk factors and assessing the effect of these measures. Consultation with stakeholders – identification of relevant road safety measures within WP4 (hot topics) – took place at the Midterm Workshop. Additionally the consultation of international experts (workshop follow-up) concerning measures has started. The taxonomy for measures has been created and a first literature search and test coding has been carried out.

The results of WP4 are satisfactory. Deliverable 4.1 was submitted on time. The following milestones were achieved:

- MS15 List of priorities – input from stakeholders (“hot topics”) (month 12)
- MS16 Stakeholder Workshop: presenting mid-term results (month 20)

Project meetings

- May 2015 - Kick off meeting in Loughborough
- November 2015 – Technical plenary meeting in Gothenburg
- March 2016 – Technical plenary meeting in Barcelona
- June 2016 – Technical plenary meeting in Athens
- November 2016 – Technical plenary meeting in Den Haag

Midterm Workshop

- August 2016 WP2 web meeting preparation of MIDTERM Workshop
- September 2016 – Midterm Workshop in Brussels

Web meetings WP4 all partners

- April 2015
- February 2016
- May 2016

Web meetings with task leader(s)

- February 2016
- April 2016
- June 2016
- July 2016 (twice)
- August 2016 (twice)
- September 2016 (twice)
- October 2016 (twice)

Consultation web meetings with single partners

- January 2016 with MUH
- February 2016 with BRSI
- May 2016 with BRSI and SWOV
- June 2016 with MUH
- August 2016 WP2 web meeting preparation of MIDTERM Workshop

Task 4.1 Identification of Road User related Risk Factors

Within Task 4.1 the following has been achieved: the tasks completed within WP4-7 have been coordinated; a taxonomy of risk factors and measures has been developed; the methodologies developed in WP3 have been applied to WP4-5 ensuring that the results are comparable and can be treated in combination.

For task 4.1 the following contributions have been made:

- LOUGH was the task leader and responsible for coordinating the production of D4.1. LOUGH assisted the work package leaders in developing the taxonomy for road user related risk factors and took part in the review of policy documents to identify 'hot topics'. These contributions formed part of MS15. LOUGH contributed to the piloting and developing of the coding template from the perspective of road user behaviour and were responsible for conducting the systematic literature review, coding and writing of two synopses for the risk factor 'Fatigue' which formed part of D4.1.

Contribution to D4.1: Contribution to the main text, responding to reviewer comments and coordinating the partner contributions in terms of synopsis production, reviewing, editing and revision of these.

LOUGH attended WP4 technical meetings at the Kick off, Gothenburg (Nov 15); Barcelona (March 16) and Athens (June 16) as well as hosting regular web meetings with the WP leaders and partners.

- As work package leader KfV has coordinated the synthesis of Deliverable 4.1 in cooperation with the task leader LOUGH including leading the writing for several chapters. Development of the core structure and content of WP4's taxonomy of risk factors and measures. Decision making on how to consider and include vulnerable road users, road user groups and age groups in the taxonomies in WP4. Consultation of relevant stakeholders, policy papers and project outcomes for identification of topics with high priority ('hot topics') have been carried out in coordination with the task leader and WP2. Application of methodology developed in WP3. Coordination of systematic literature search and selection of relevant studies on identified risk factors and the coding of studies has been carried out. For this task a shared excel file for all coded studies has been developed. In cooperation with WP3 and WP5, KfV created the structure of the synopsis and tested this structure with examples of WP4. WP4 partners were guided in coding the studies (FAQ file, web meetings) and in analysing risk factors and writing the synopsis. In-depth risk factor analysis in cooperation with MHH and inclusion in synopses. Regular meetings have been hosted to ensure the smooth completion of Task 4.1. Participation in WP leader meetings, close cooperation between WP3, 5, 6, and 8. In addition to leading the WP, KfV has carried out the following tasks: literature search (incl. documentation); coding of several studies (in total 45); writing of four synopses, covering the following topics:
 - Speeding and inappropriate speed
 - Emotions
 - Risk taking – overtaking
 - Risk taking – close following
- NTUA contributed to Task 4.1 by assisting in the achievement of three targets: (i) contribution to taxonomy of behaviour related risk factors; (ii) quality studies of the relevant taxonomy risk factors were screened, tracked, identified, comprehended and coded as per the common SafetyCube coding template and (iii) synopses were developed on the relevant risk factors. More specifically, NTUA was assigned the topic "Distraction and Inattention", including the following specific risk factors: conversation with person- passenger/co-driver, music-entertainment systems, cell phone use - talking - handheld, cell phone use - talking - hands-free, cell phone use - texting, operating devices (IVIS, navigation systems etc.), animals - insects - others, consumption of goods (eating, drinking, smoking), watching persons - situations - static objects (advertisement, traffic management information), sun - other vehicles' lights, distraction through state of mind (pondering etc.) - cognitive overload, inattention - daydreaming. Within this assignment, 40 studies were coded, 8 synopses were created and 2 original meta-analyses were carried out, included in Deliverable 4.1.
- SWOV, as a partner, contributed to the development of the WP4 taxonomy and subsequently worked on the risk factors diabetes, sensation seeking and red light running. Based on a literature search a vast amount of potentially relevant studies were identified and screened. A total of 72 studies were coded. SWOV contributed to the set-up of the risk factor synopses and the instructions, and drafted its own synopsis and the related sections in D4.1 for each of the three risk factors.
- In Task 4.1, BRSI was responsible for the "driving under the influence of drugs" risk factor. The work has been divided into different steps. A literature research on the subject was performed,

consisting of a screening of different databases in order to identify scientific articles suitable for analyses. Based on title, abstract and article reading, a total of 50 papers were selected. The second part of the collaboration consisted of coding the selected studies in formatted sheets which highlighted the paper results, its strengths and its weaknesses. The third step was the writing of the synopsis related to driving under the influence of legal and illegal drugs (28 pp.). Regular web meetings were attended in order to keep everything on schedule, and the synopsis was prepared on time.

- For task 4.1 SAFER/VTI has identified and coded risk factors related to visual impairments and hearing impairments. Contributions to D4.1 on visual and hearing impairments were provided.
- IFSTTAR was in charge of the literature review and the coding of the articles related to the crash risk associated with cognitive impairment and attentional deficit and hyperactivity disorder (ADHD).

The synthesis of the effect of these risk factors on road safety outcomes (such as crashes, injuries, or driving performance) were presented in two synopses, available with (or parts of) deliverable 4.1.

- CTL worked on risk factors related to “Insufficient knowledge and skills” by performing the following: contributing to the development of the taxonomy related to this risk factor, systematic literature review, screening and prioritising coding, coding of relevant studies identified according to dedicated Guidelines and coding Template, summarising the existing effects of risk factors in a related synopsis. Participation in regular meetings and call-conferences.
- AVP searched for the domestic and foreign literature on driving under the influence, with the subtopic of alcohol. This involved focussing on studies where alcohol was a risk factor for road traffic accidents, identifying the most useful and valuable studies from all over the world (giving priority to studies from Europe), and coding them. After the coding process, AVP analysed the results and prepared accordingly a synopsis on the topic of driving under the influence of alcohol.
- MHH have contributed to the task of identifying road user related risk factors and measures and of creating a taxonomy based on these factors and measures. In a second step MHH have conducted a literature search on the topic of observation errors and misjudgement errors and the relevant studies have been coded. For each topic of risk factors assigned to MHH synopses were written to give an overview of the respective influence on road safety and the studies were coded by MHH.

Additionally MHH have conducted an analysis of the in-depth accident database GIDAS to indicate the influence of risk factors on the accident circumstances. This analysis was conducted for all identified risk factors of WP4 and the WP4 partners were provided with data of significant findings of their risk factors to add this information in the respective synopses.

MHH have contributed to the preparation of the deliverable D4.1.

MHH have participated at the following WP4 meetings: Loughborough (May 2015), Gothenburg (November 2015), Barcelona (March 2016) and Athens (June 2016).

Task 4.2 Identification of Road User related Measures

- As WP leader KfV has achieved following tasks: Consultation with stakeholders – identification of hot topics at the midterm workshop Brussels, September 2016, consultation of international experts (workshop follow-up), starting the process of identifying road user related measures with the WP4 task leaders (web meeting), development of the taxonomy for road user related measures, first literature search and test coding, screening of project results such as DRUID, SUPREME etc.
- By searching different literature on driving under the influence of alcohol, KfV also identified some studies related to countermeasures. A few of them were already coded.

3.2.5 WP5 “Infrastructure safety analysis” – LEADER: NTUA

The main objectives for the first half of WP5 have been successfully achieved. NTUA coordinated this WP and assured the smooth and efficient cooperation of partners and achievement of various targets set.

In the beginning of the reporting period activity was moderate because it was first necessary for the work of WP3 on the methodologies and tools to be used to be established. Early WP5 activity included the development of the risks and measures taxonomy to be used as the basis of the work; this was an iterative process and several adjustments took place, also as a result of stakeholders consultation. Moreover, WP5 pilot tested the methodologies and tools of WP3 (pilot coding of several studies) and contributed comments and feedback.

WP5 organised, together with WP2, a dedicated infrastructure stakeholders’ workshop (ERF, Brussels, February 22nd, 2016) to get feedback on the user needs for the SafetyCube DSS and finalise the identification of ‘hot topics’ on road infrastructure.

Activity was intensified during the second part of the reporting period, mainly concerning Task 5.1, in which the taxonomy was finalised, the literature was reviewed, studies were selected and coded for each risk topic, and relevant synopses were created. As a result, the first deliverable (Deliverable 5.1) was successfully submitted on time.

The WP5 group of partners participated in the following meetings:

- May 2015 - Kick off meeting in Loughborough
- November 2015 – Technical plenary and WP5 meetings in Gothenburg
- March 2016 – Technical plenary and WP5 meetings meeting in Barcelona
- June 2016 – Technical plenary and WP5 meetings plenary meeting in Athens
- September 2016 - Technical dedicated WP5 meeting in Vienna
- November 2016 – Technical plenary and WP5 meeting in Den Haag

Moreover, between November 2015 – July 2016, five WP5 web-meetings were carried out to monitor progress about taxonomy, coding issues, synopses etc.

Task 5.1 Identification of Infrastructure related Risk Factors

Within task 5.1 the WP5 taxonomy was finalised (59 risk factors within 15 infrastructure areas), the literature was reviewed, studies were selected and coded for each risk topic, and relevant synopses were created. In total, more than 270 studies were coded and 37 synopses were created, including 6 original meta-analyses of effects of risk factors on safety outcomes. Deliverable 5.1 was successfully submitted on time.

- LOUGH, as task leader, contributed to the piloting and developing of the coding template from the perspective of infrastructure. LOUGH also attended and assisted at the three workshops (2x wp2 coordinated; 1x wp5 specific) that were held to gain stakeholder opinion of the infrastructure hot topics (reported in MS19).

LOUGH has coordinated the synthesis of Deliverable 5.1, including coordinating in-depth data synthesis for crash scenarios, leading the writing for some chapters and providing review of all chapters. Each synopsis of the appendix to D5.1 has been reviewed by Loughborough and feedback provided to relevant partners. Loughborough conducted a literature search, study coding and synopsis writing for 2 infrastructure risk factors. Regular WP5 meetings (in person and teleconference) have been attended and actively participated in.

- NTUA coordinated the development of the taxonomy of infrastructure related risk factors. In addition, quality studies of the relevant taxonomy risk factors were screened, tracked, identified, comprehended and coded as per the common SafetyCube coding template, and synopses were developed on the relevant risk factors. More specifically, NTUA was responsible

for a number of specific risk factors included in the following topics: Horizontal/vertical alignment deficiencies (high grade, vertical curve radius, tunnel, etc.), interchange deficiencies (inadequate ramp capacity, insufficient ramp length, acceleration / deceleration lane length, etc.), work zones (work zone length, work zone duration, insufficient signage) and poor junction readability (uncontrolled junctions). In total, 46 studies were coded, 7 synopses were developed and finally 4 meta-analyses and 2 meta-regression models were carried out, included in Deliverable 5.1.

NTUA coordinated the organization and implementation of the infrastructure stakeholders' consultation workshop in Brussels (February 22nd, 2016).

- SWOV contributed to the development of the taxonomy and provided inputs in the drafting of the guideless for coding and drafting the synopses. As part of the coding SWOV was assigned 11 specific risk factors of which ultimately 9 were coded. Two topics (Cross-slope and poor sight distance) were considered unsuitable for coding since there were either insufficient studies reporting effects or the results of the studies were too diffuse. In total 187 studies covering the 9 remaining topics were reviewed and of these 47 were eventually coded for inclusion in the DSS. Synopses, based on the coded studies related literature, were drafted in accordance with the prescribed guidelines for each of the 9 topics. Following an internal and external review, the synopses were finalised and submitted for inclusion in Deliverable 5.1 and the DSS. Furthermore, SWOV provided input into Deliverable 5.1.

- BRSI was in charge of the analysis of 5 risk factors, 2 about adverse weather conditions (rain, snow/ice) and two about bad sight conditions (darkness and fog). BRSI has conducted a literature review for each of the factors, prioritised studies for coding, coded 25 studies, and summarized them in 4 synopses.

An early version of the synopsis on rain was conducted in M24 to further develop and homogenize the template for synopses. This synopsis has served as an example for all partners in the further process of writing the synopses.

- TØI reviewed studies on a selection of risk factors related to traffic flow, and wrote related synopses. This included systematic literature search and reporting of results according to the guidelines developed in WP 3. TØI attended all relevant meetings.
- KfV, within Task 5.1, has achieved the following: literature search have been completed (incl. documentation); several studies have been coded (in total 75); synopses have been written. KfV covered the following topics: At-grade junctions deficiencies (high number of conflict points, type of junction, skewness, poor sight distance, gradient), Poor junction readability (absence of road markings, absence of marked crosswalks), uncontrolled rail-road crossing.

KfV co-organised a workshop for infrastructure-related stakeholders in Brussels (ERF, February 2016) the results of which fed into the design of the DSS and the prioritisation of hot topics for the literature search.

Participation in WP5 web-meetings and project meetings. Hosting of the WP5 meeting in Vienna, September 2016.

- ERF contributed to the identification of infrastructure related factors by feeding in content from its different working groups, previous projects and studies available to its disposal. Moreover, they organised a specific expert workshop that was aimed at identifying 'hot topics' for infrastructure safety that would subsequently feedback into the work of task 5.1.

ERF was responsible for performing an extensive literature review of two hot topics, i.e. speed management and work zones. Based on the methodology created in WP3, studies were searched via TRID, Google Scholar and Science Direct which resulted in selected studies being identified as worthy for coding in the SafetyCube DSS systems. With the assistance of NTUA, the studies were coded and a synopsis on work zone safety was also created.

- CTL worked on risk factors related to “Median / barrier deficiencies” (Narrow median, Undivided roads) and “Shoulder and roadside deficiencies” (Absence of guardrail, roadside obstacles, absence of clear zone, sight obstruction) by performing the following: contributing to the development of the taxonomy for these risk factors, systematic literature review, screening and prioritising coding, coding of relevant studies identified according to dedicated Guidelines and coding Template, summarising the existing effects of risk factors in a related synopsis. Participation in regular meetings and call-conferences.
- AVP searched for the domestic and foreign literature on road surface, focussing on studies where road surface was a risk factor for road traffic accidents. AVP identified the most useful and valuable studies from all over the world (giving priority to studies from Europe) and coded them. After the coding process, AVP analysed the results and prepared accordingly a synopsis on the topic road surface – inadequate friction.

Task 5.2. Identification of safety effects of infrastructure related measures

Activity on Task 5.2 has started, by finalising the related taxonomy of infrastructure measures (99 measures in more than 20 infrastructure areas), and by revisiting and updating existing meta-analyses (from the Handbook of Safety Measures).

- KFV, as task leader, within Task 5.2, has achieved the following: preliminary literature search for measures.
- NTUA coordinated the development of the taxonomy of infrastructure road safety measures.
- TØI have, in their work on continuously updating The Handbook of Road Safety Measures, access to thorough and updated reviews and meta-analyses of the effects of various road safety measures. The majority of the topics in the Handbook that are relevant for WP5 have been made available for the SafetyCube repository. This includes coding, translating and summarizing the results of meta-analyses. Remaining topics will be made available later in the project. TØI attended all relevant meetings.
- By searching different literature on road surface, AVP also identified some studies related to countermeasures. They will be coded later.

3.2.6 WP6 “Vehicle safety analysis” – LEADER: LAB

The main objectives for the first half of WP6 have been achieved.

Activity in WP6 had intensified during the second part of the reporting period. Less activity occurred in the first part of the reporting period because it was first necessary for the work of WP3 (methodological aspect and guidelines) to be established.

In the second part of the reporting period, WP6 activities increased for the completion of task 6.1 related to the risk factors, first because the scope was lower than WP4 and WP5, and secondly to take advantage of the WP4 and WP5 initial works (clearing of the methodology and update of the guideline) to avoid loss of time. In this period the main activities have been based on literature selection and review, codification of the relevant articles using the WP3 coding template and writing synopses for the DSS.

LAB developed the risk factor and countermeasure taxonomy related to the vehicle point of view.

As Work Package leader, LAB was in charge of deliverable D6.1.

Participation & WP6 coordination within the following meetings:

- May 2015 - Kick off meeting in Loughborough
- November 2015 – Technical plenary meeting in Gothenburg
- December 2015 – web meeting about Taxonomy
- January 2016 – web meeting about Accident scenarios

- March 2016 – Technical plenary meeting in Barcelona
- June 2016 – Technical plenary meeting in Athens
- September 2016 – Stakeholder consultation on DSS
- November 2016 – Technical plenary meeting in Den Haag

Participation and progress report on WP6 activities during monthly progress report web-meeting.

Task 6.1 “Identification of vehicle related risk factors”

Task 6.1 aimed to identify and evaluate vehicle related risk factors and related road safety problems by (i) presenting a taxonomy of vehicle related risks, (ii) identifying “hot topics” of concern for relevant stakeholders and (iii) evaluating the relative importance for road safety outcomes (crash risk, crash frequency and severity etc.) within the scientific literature for each identified risk factor.

- LAB was in charge of the development of the vehicle risk factor taxonomy and to study the risk factors related to the Passenger car. For each identified risk factor, the work consisted of selection of relevant articles, literature review, codification of selected studies, creation of the synopses for the DSS and contribution to deliverable D6.1 (Scenarios, Passenger car part). LAB took the lead of this task instead of CIDAUT.
- CIDAUT was in charge of studying the risk factors related to Powered Two Wheelers (PTW) and pedestrians jointly with LOUGH. For each identified risk factor, the work consisted of selection of relevant articles, literature review, codification of selected studies, creation of the synopses for the DSS and contribution to deliverable D6.1 (PTW & Pedestrians).
- In the process of working on task 6.1 LOUGH has contributed towards the development of the vehicle risk factor taxonomy. Loughborough completed the literature search, study coding and synopsis writing for 3 vehicle related risk factors. The literature search and some initial coding was undertaken for further risk factors, however insufficient papers were identified for synopsis writing. In-depth crash data analysis from the UK RAIDS database has been provided for use in D6.1. Contribution has been made to chapter writing for some sections of D6.1. WP6 meetings at plenary sessions have been attended and actively participated in.

For M23 List of vehicle safety priorities – input from stakeholders (“hot topics”), LOUGH has contributed to the analysis of information gathered from all stakeholder workshops in relation to the Hot Topics including review and synthesis of stakeholder requests for information on specific topics gathered in stakeholder consultations within WP2.

- MHH, in the first task of WP6, has contributed to the task of identifying vehicle related risk factors and measures and creating the taxonomy based on these factors and measures. In a second step MHH have conducted a literature search for the risk factors of cyclists and the relevant studies are being coded. For the risk factors assigned to MHH synopses are being written to give an overview over the respective influence on road safety and the studies are being coded by MHH.

MHH has contributed to the preparation of deliverable D6.1.

MHH has participated at the following WP6 meetings: Loughborough (May 2015), Gothenburg (November 2015), Barcelona (March 2016) and Athens (June 2016).

- CEESAR was in charge in task 6.1 of identifying risk factors related to Light Commercial Vehicles. Based on the taxonomy, CEESAR applied a systematic literature search process which addresses light good vehicle risk factors. All eligible articles were coded using the coding template established by WP3. According to CEESAR’s experience in coding, feedback has been sent to WP3 (in order to update the guidelines). Finally, CEESAR has made a synthesis of the results and contributed to deliverable D6.1.

CEESAR attended the following meetings: Loughborough (May 2015), Gothenburg (November 2015), Barcelona (March 2016) and Athens (June 2016).

- CHALMERS/SAFER has collected WP6 inputs to D3.1 (data sources in SafetyCube). Together with DEKRA, Chalmers has provided input on Bus and Truck risks to D6.1. Chalmers has conducted a literature review and is in the process of coding studies related to this area. Chalmers has also contributed in the discussions of scenarios as an entry point to the DSS.
- DEKRA supported the preparation of the accident scenario definitions adopted to the user expectations. The “new” accident scenario definitions were presented during the workshop in September 2016. Another contribution is coming from the given task to analyse literature concerning the safety of trucks (n=634 titles) and buses/coaches (n=276 titles). The relevant literature is partly transferred to the developed Excel-Sheet. A synopsis is on the way.

3.2.7 WP7 “Serious injuries, analysis and strategy” – LEADER: SWOV

The main objectives for the first half of WP7 have been successfully achieved. Deliverable 7.1 has been submitted on time and Deliverable 7.2 has been sent out for review to an external partner according to schedule and will be uploaded to the EC participant portal before the end of December. Furthermore, some activities were carried out to consult stakeholders and to disseminate results. These activities included presentations at two CARE experts meetings, an IRTAD meeting and the 12th World Conference on Injury Prevention and Safety Promotion, the organisation of a workshop at which we presented and discussed our preliminary guidelines for the registration and monitoring of serious road injuries and a paper submitted to a special issue of Accident Analysis and Prevention.

During the first half of the project, as expected, the work within WP7 mainly focussed on Tasks 7.1 and 7.2. We developed guidelines for the estimation of the number of serious road injuries, defined as MAIS₃₊ road traffic casualties, and looked at physical, psychological and social impacts of road traffic injuries. Moreover, we developed a taxonomy for post-impact care measures and searched for literature on the selected topics. Work on post-impact care measures were initially not part of the proposal, but added at the request of the EC. Finally, together with WP3 and the H2020 project InDeV, activities were carried out to collect information on costs of serious road injuries from the EU member countries and some additional countries.

The WP7 group of partners joined in the following meetings:

- May 2015 - Kick off meeting in Loughborough
- November 2015 – Physical meeting in Gothenburg
- March 2016 – Physical meeting in Barcelona
- May 2016 – physical meeting in The Hague
- November 2016 – Physical meeting in The Hague
- web meetings on: sept 29th 2015, Oct 30th 2015, Dec 3rd 2015, Dec 15th 2015, Jan 19th 2016, Feb 16th 2016, Feb 25th 2016, march 10th 2016, April 19th, 2016, May 10th 2016, June 21st, Sept 6th
- web meetings on costs of crashes on: Feb 11th 2016, March 29th 2016, April 14th 2016, April 29th, May 20th 2016, June 2nd, June 17th, June 30th, July 29th, Aug 17th, Sept 9th.

Task 7.1 “assess and improve the estimation of the numbers of serious road injuries”

Within Task 7.1 practical guidelines have been developed for the estimation and monitoring of serious road injuries, defined as MAIS₃₊ casualties. Deliverable 7.1 was uploaded to the EC portal on September 29th and:

- Describes the current state of collection of data on serious traffic injuries across Europe on the basis of a survey carried out among experts in EU Member States.
- Provides practical guidelines for the estimation of the number of serious traffic injuries for each of the three ways identified by the High Level Group on the basis of practices and experiences from a number of countries.

- Examines how the estimated number of serious traffic injuries is affected by differences in methodology by means of applying different methods to the same data.

For task 7.1 the following contributions have been made:

- ASPB, as task leader, coordinated the tasks to provide final guidelines on how to report serious injuries, established the outline of the deliverable, distributed the work among partners, followed each step, wrote some sections and compiled all sections, and reviewed and improved it. Moreover ASPB contributed by reviewing the scientific literature about the topic, contributed to the survey to pass to all EU countries, described the experience about using hospital data from Spain and the Netherlands, contributed with specific analyses to the practice on severity convertors, wrote conclusions and recommendations, executive summary, reviewed the summary leaflet. Discussion and consensus was reached for specific questions through monthly teleconferences and meetings.

In addition ASPB led a first paper that is currently under review at the Journal of Accident Analysis and Prevention.

ASPB attended the CARE experts meeting on 8th March 2016 in Brussels and explained and participated in the discussion about reporting serious injuries.

ASPB collaborated in organizing and presenting the results of the task at the Workshop on serious injuries in Den Haag on the 24th May 2016.

ASPB presented the guidelines in the 12th World Conference on Injuries (Safety 2016) in Tampere, Finland (18-21 September).

- SWOV (WP leader), was involved in developing guidelines for use of hospital data and for linking police and hospital data, and coordinated the analysis that compared the results for different choices concerning the selection of MAIS₃₊ casualties in hospital data. Moreover, SWOV was heavily involved in drafting the Deliverable (chapter on the use of hospital data, conclusions, recommendations and executive summary) and in communicating (draft) results (co-organizer and host of the workshop in the Hague, presentation at the CARE experts meeting, contribution to paper AAP). SWOV also was the main author of the leaflet that summarized the main results. Finally, SWOV organised and chaired meetings to monitor progress and discuss results and actively participated in these meetings.
- LOUGH co-ordinated the development of the chapter of D7.1 which compared methods for estimating the number of serious injuries. Loughborough reviewed the complete report and contributions to the conclusions and completed the D7.1 survey with UK information from the DfT. The stakeholder meeting in The Hague was attended, minutes were taken and a report summarising the meeting produced. Loughborough has also contributed towards developing a journal paper from D7.1. Regular WP7 meetings (in person and teleconference) have been attended and actively participated in.
- BRSI provided a case study illustrating the method adopted in Belgium for the correction of the number of serious injuries in police data on the basis of hospital data, and was responsible for chapter 5 ("Applying correction factors to police data") of Deliverable 7.1 ("Practical guidelines for the registration and monitoring of serious road injuries"). More generally, BRSI contributed to this deliverable through participation in the technical discussions and the provision of comments throughout its development. BRSI also took part actively in the Workshop organized in Den Hague on the 24th of May: "Determination of the number of serious road injuries".
- KfV, within 7.1, has achieved the following: Survey on serious injuries MAIS₃₊ assessment in all EU and EFTA countries carried out and an overview on data & practices in Member States provided. Good practices were assessed in detail in the course of Case Studies in some of the participating countries. On this basis, guidelines for the registration and monitoring of serious road injuries were developed (D7.1).

KFV set up the Excel-based survey on MAIS₃₊ assessment, sent it to a network of experts in all EU and EFTA countries (partly in cooperation with DG-MOVE), gathered responses from 27 partners and collated them into a database. Presentations on the (interim) results were given at the CARE Experts Group (DG-MOVE) in Brussels (March 2016), at a SafetyCube stakeholder workshop in The Hague (May 2016) and at the IRTAD meeting in Rome (October 2016). KFV wrote chapter 3 of Deliverable 7.1 (Practical guidelines for the registration and monitoring of serious road injuries). The results of the questionnaire fed into several chapters of this deliverable. KFV also contributed to creating a leaflet, summarising the key findings & messages of the deliverable.

- IFSTTAR contribution: participation in the writing of Deliverable 7.1 (“Practical guidelines for the registration and monitoring of serious traffic injuries”), in particular chapter 7 about “Using linked/matched police and hospital data”, and Appendix A (“Methods to derive correction factors”) and D (“Record linkage methods”) for the description of the French case. Participation in WP7 telephone meetings, technical WP7 meetings in Barcelona and in The Hague. Presentation of the guidelines about the use of linked police and hospital data in the workshop on the “Determination of the number of serious road injuries” in The Hague.
- MHH contributed to task T7.1 by providing ICD codes for RTC with known direct coded AIS injury severities for comparison between different conversion tools and the direct coded MAIS values. Furthermore the differences were analysed. The activities are included in D7.1. MHH participated in all the relevant meetings.
- AVP searched for the domestic and foreign literature on the estimation of the numbers of serious road injuries. AVP analysed the situation in Slovenia where different data exist but are not linked. They also organized a working meeting for representatives from Police, National Institute of Public Health and Ministry of health, familiarizing them with the objectives of the project and asking them for the available data. In Slovenia, in-patient data were linked to the police data solely for the needs of the project SafetyCube. With their help, AVP were able to contribute to Deliverable 7.1 with Slovenian case study on Record linkage methods.

Task 7.2 “ Determine and quantify health impacts of serious road injuries”

Within task 7.2, impacts of (serious) road traffic injuries for individual casualties and their relatives, as well as for society as a whole, were analysed by means of:

- a literature review,
- additional studies (ESPARR, Spain, UK follow-up studies, MyLAC study and data collected by MUH on casualties of crashes in the GIDAS database) on impacts of crashes for casualties, and
- calculation of the burden of injury for Austria, Belgium, England, The Netherlands, Spain and the Rhone region in France, applying the INTEGRIS method.

Deliverable 7.2 was sent out for external review on 31st October 2016.

Within task 7.2 some work is done on post impact care measures as well. We developed a taxonomy and did a literature search covering the following topics: ambulances/helicopters, extraction from vehicle, pre-hospital medical care and triage and allocation to trauma facilities.

For task 7.2 the following contributions have been made:

- SWOV as WP and task leader coordinated the work in this task and was responsible for drafting D7.2 and for the taxonomy on post-impact care measures. SWOV was heavily involved in the calculation of the burden of injury; SWOV provided the method description and draft template for discussing results, calculated the burden of injury for the Netherlands, drafted the burden of injury body profiles and drafted the chapter that summarized the results from the six countries. SWOV also provided a template for the discussion of results of additional studies and drafted the discussion and conclusion of the Chapter that discusses the results of these additional

studies. Finally, SWOV drafted the Chapter with conclusions and recommendations in D7.2 as well as the executive summary. Regular WP7 meetings (in person and teleconferences) were organised and chaired by SWOV.

- LOUGH has completed two main tasks for D7.2 (i) provided a UK case study to contribute towards the understanding of long term health impacts of road crashes, (ii) undertaken burden of injury analysis on England hospital admissions data. This has included liaising with external stakeholders to gain access to data. For UK hospital data this is a lengthy process to prove data security. Loughborough has also reviewed the draft D7.2 report. Regular WP7 meetings (in person and teleconference) have been attended and actively participated in.
- The main contributions of BRSI within this task were (1) the redaction of a literature review concerning the long-term health and psychological consequences of road traffic injuries, (2) the provision of a case-study based on an international survey (conducted in collaboration with the European Federation of Traffic Victims) focusing on the long-term health, economical, professional, social and emotional consequences of traffic crashes for the victims and (3), calculation of the burden of injury (YLD) for Belgium. More generally, BRSI contributed to this deliverable through participation in the technical discussions and the provision of comments throughout its development.
- KfV contributed with a YLD case study based on the INTEGRIS method.
- IFSTTAR performed several contributions: 1- participation in the literature review of deliverable 7.2 "Physical and psychological consequences of serious Road injuries", and specifically in writing the case study from France: the ESPARR Study. 2- provided an evaluation of the burden of MAIS₃₊ casualties from the Rhone Registry of road casualties through the methodology developed in the INTEGRIS project: The disability weights and the proportions of injuries with lifelong consequences defined for the 39 EUROCOST injury groups were combined with incidence data on serious road injuries to estimate the health impact of early death expressed in Years of Life Lost (YLL) and the impact of injuries expressed in Years Lived with Disability (YLD). The results are described in Appendix C. 3- performed a bibliographic research for the evaluation of the post-impact care measure: IFFSTAR were in charge of the literature review on the triage of casualties when arriving to hospitals. Codification of the publications is ongoing. 4- participated in WP7 telephone meetings and a technical meeting in the Hague.
- ASPB developed a case study analysing and reporting the results with data from the Spanish National Survey on Disabilities to assess the health impact of traffic accidents.
ASPB also contributed to calculate Years Lived with Disability (YLD) using data from the Spanish National Hospital Discharge Register, and contributed to writing the results in Appendix C.
ASPB also reviewed deliverable 7.2.
ASPB did a review of scientific literature of measures related to pre-hospital care to codify and include in the DSS.
- MHH contributed to T7.2 by analysing long term consequences of road traffic injuries and a literature review on post-crash care measures, which is included in D7.2. MHH participated in all the relevant meetings.
- AVP organised several meetings with representatives from the National Institute of Public Health to check whether it is possible (on the basis of their database) to calculate YLDs (Years Lived with Disability). They prepared a few tables but none contained all the necessary information.

Task 7.3 "Estimation of costs related to serious road injuries"

Within this task, information is collected on costs of serious road injuries in all EU member states and a number of additional countries. Information is collected in cooperation with WP3 and InDeV and is now being processed to be included in Deliverable 7.3. We now start working on collecting

additional information on medical costs and costs related to unemployment for a number of countries.

For task 7.3 the following contributions have been made

- SWOV was involved in drafting the questionnaire and in collecting information in EU member states and additional countries. SWOV collected information for The Netherlands and Switzerland.
- LOUGH has completed the data collection and validation with in-country experts for estimation of cost of crashes in the UK and Ireland. Regular WP7 meetings (in person and teleconference) have been attended and actively participated in.
- BRSI has the co-leadership of a task force from SafetyCube (tasks 3.3. and 7.3) and the H2020 project InDev, which has now collected crash cost estimates (+ the methodology applied) from 30 European countries. The analysis of the data is in progress, BRSI has read in the data from the questionnaire into a database and developed an analysis plan.
- KFV contributed to the development and testing of the "Cost-Questionnaire" (excel sheet) on the scope and the methodology of the calculation of cost of road crashes in the EU (and beyond). Coordination of the dissemination and retrieval of the "Cost-Questionnaire" with the "Cost Working group" (regular telecons). Follow up of the "Cost-Questionnaire" with experts from SI, CZ, SK and GR.
- IFSTTAR contributed to the writing of the documents concerning the break-even of the costs for roads crashes (writing, comments, bibliography).
IFSTTAR made a special contribution about the discount rate.
IFSTTAR contributed to the collection of data about the costs of road crashes and contributed also to the constitution of the questionnaire.
IFSTTAR checked the consistency of figures collected for the different European countries.
- TØI has been involved in the joint work between WP3 and WP7, and has been involved in WP7 telephone meeting discussions.
- After the decision to cooperate with the InDev Project on T7.3 MHH decided to reduce the efforts in this task because the German specialists on this topic were included in the work by the InDev Project. Subsequently resources were transferred to T7.1 where MHH expertise was required. MHH participated in all the relevant meeting.

Task 7.4 "Identification of key risk factors related to serious road injuries and their health impacts"

According to schedule, this task hasn't started yet. However, some first discussions took place between WP7 and WP8 on how to include the work of WP7 in the Decision Support System. SWOV, LOUGH and MHH have been involved in these discussions.

LOUGH (task leader) has contributed towards the development of WP7 taxonomy of post impact care measures. For the measure extraction from vehicle a literature search is currently underway to identify papers for coding. Activities for T7.4 will increase in the coming months.

3.2.8 WP8 "European road safety policy Decision Support System" – LEADER: LOUGH

The main objectives for the first half of WP8 have been successfully achieved.

Activity in WP8 had intensified during the second part of the reporting period. Less activity occurred in the first part of the reporting period because it was first necessary for the work of WP2-7 to be established. Early WP8 activity included assisting the development of the risks and measures taxonomy to be used as the basis of the work for WP4-6.

In the second part of the reporting period, the regularity of WP8 meetings increased and energies were focused on understanding user needs, embedding the systems approach, creating accident scenarios as an entry point to the DSS, and developing the DSS structure and front end interface. The DSS will become a major source of information for industry, policy-makers and the wider road safety community. Therefore, it must be easy to use and provide access to the information of most relevance to the road safety community. Many important decisions were taken in the later part of the reporting period which will shape the final DSS. These decisions were subject to much intellectual debate and all possible options were considered. It was important to take the time to make the best decisions so that the DSS structure could be finalised ready for population in the second half of the project. The proposed structure for the DSS has been presented to stakeholders at the midterm workshop, and subsequent feedback is being taken into consideration.

Work is underway to establish links between the risks and measures (problems and solutions) identified within each of WP4-6. The process for uploading coded studies into the DSS has also been established. This will continue as WP4-6 move on to considering measures (solutions).

The results of WP8 are satisfactory. Deliverable 8.1 has been submitted on time.

The WP8 group of partners participated in the following meetings:

- May 2015 - Kick off meeting in Loughborough
- August 2015 – WP8 leader team meeting
- November 2015 – Technical plenary meeting in Gothenburg
- December 2015 – web meeting about Taxonomy
- January 2016 – web meeting about Accident scenarios
- February 2016 - web meeting about Crash Case studies
- March 2016 – Technical plenary meeting in Barcelona
- April 2016 – WP meeting in Athens about DSS
- June 2016 – Technical plenary meeting in Athens
- July and August 2016 – web meetings about Accident scenarios
- November 2016 – Technical plenary meeting in Den Haag

Task 8.1 “Coordination of analyses of risks and measures using a systems framework”

Within Task 8.1 the following has been achieved: the tasks completed within WP4-7 have been coordinated; a taxonomy of risk factors and measures has been developed; the methodologies developed in WP3 have been applied to WP4-6 7 ensuring that the results are comparable and can be treated in combination.

For task 8.1 the following contributions have been made:

- LOUGH, as work package and task leader, has coordinated the synthesis of Deliverable 8.1, including leading the writing for several chapters and applying a systems perspective. Through active engagement with WPs 4-7 Loughborough has facilitated the interactions between work packages to assist in harmonising the outputs. LOUGH has also monitored the development of the taxonomies in WPs 4-7 and facilitated the distribution of work where topics were relevant to multiple work packages. The taxonomies produced in WP4-7 were compiled by LOUGH to produce MS19. Regular meetings have been hosted to ensure the smooth completion of Task 8.1.
- NTUA contributed to the harmonisation of the taxonomies of WPs 4-6. NTUA drafted several sections of Deliverable 8.1, with emphasis on the way the DSS under development will integrate and highlight the systems approach implemented.
- SWOV was involved in the drafting of Deliverable 8.1 and contributed to the Chapter on Evidence based decision making and the systems approach.

- KfV contributed to designing the DSS, especially its Graphical User Interface, in cooperation with the NTUA (concurrent drafts for visualisation of taxonomies during queries, user friendly provision of research results and design of adequate entry points for the search). KfV made initial recommendations for the collection of relevant accident scenarios and participated in the accident scenarios working group. Contribution of several chapters to deliverable 8.1, especially WP4 taxonomy and conclusions. Participation in meetings to harmonise approaches to link the front and back end of the DSS. Development of 'FAQs' for study coding. Contribution to establishing links between risks and measures. Participation in WP8 web-meetings and project meetings. Hosting of the WP8 meeting in Vienna, September 2016.
- LAB participated in the different technical meetings, worked with MHH on the elaboration of the scenarios to be used in DSS, and contributed to deliverable D8.1.

Task 8.2 Compilation of the outputs of WP 4 -7

Within Task 8.2 the following has been achieved to date: the groundwork for development of the DSS is underway, the backend database has been established and effectively extracts information from the WP3 developed coding sheets, common errors in the coding and the uploading process have been identified and measures put in place to address these, the links between risks and measures are being considered, regular engagement with stakeholders has been undertaken, accident scenarios as an entry point to the DSS have been constructed.

For task 8.2 the following contributions have been made:

- BRSI, as task leader, designed and implemented the DSS backend, i.e., a relational database of coded studies. Development of an automated procedure for populating the database with content of individual coding templates. Coordination of database server setup and debugging of coding errors by partner CTL.
- LOUGH coordinated the communication during problem solving for the uploading of coded studies into the database and feedback of progress to WP Leaders. Participation in the accident scenarios working group and the coordination of partners' involvement and web-meetings. Participation in meetings to harmonise approaches to link the front and back end of the DSS.
- NTUA participated in the accident scenarios working group and provided related feedback. NTUA carried out a preliminary linking between risks and measures, to be finalised at the next stages of the project. The main NTUA activity within the Task was the development of principles for linking the back-end database with the front-end DSS.
- CTL is uploading the coded studies into the database, of information recorded in the coding templates. Run of the Python script "cuber.py" to identify common errors in the coding and the uploading process. Measures put in place to address these errors. Feedback of progress of available studies recorded in the database to WP8 leader. Participation in regular meetings and call-conferences.
- TØI: Participation in in-meeting discussions in Vienna.

Task 8.3 "Decision Support System of road safety risks and measures"

Within Task 8.3 the following has been achieved to date: the structure of the DSS has been finalised, this has been informed by the work of all WPs and stakeholder engagement. A user friendly interface has been designed with consideration of how best to present the information from WPs 4-7. The website design process is underway.

For task 8.3 the following contributions have been made:

- NTUA as Leader of Task 8.3 designed the road safety DSS in terms of structure, levels of outputs, and user interface. These were presented in several ad hoc meetings with partners and stakeholders, and the feedback received was exploited to further improve the design of the DSS. NTUA coordinated all the related discussions between the SafetyCube partners but also

between SafetyCube and the stakeholders and incorporated all suggestions to the various stages of the SafetyCube DSS design and development.

NTUA developed the static prototype of the DSS (wire-frames) including examples of DSS use from different user entry points. The prototype of the DSS is under development by NTUA.

- LOUGH participated in stakeholder engagement activities, and worked with the partnership to consider possible DSS structures and identify the approach which most meets user needs while being feasible and an appropriate manner to display SafetyCube results.
- BRSI played an active role in the identification of potential users and the reflection and formulation of questions of different users that the DSS ought to be able to answer, directly and indirectly. Contributed strongly to the discussion and development of the search system and the design of the outputs of the queries (in relation to the underlying structure of the database). BRSI also played an active role in the definition of accident scenarios that serve as an entry point for users to the DSS.
- KfV: participated in stakeholder engagement activities (e.g. workshops). Worked with the partnership to consider possible DSS structures and identify the approach which most meets user needs while being feasible and an appropriate manner to display SafetyCube results. Participating in the stakeholder workshop, Ljubljana, October 2014, moderation of one session.
- CTL supported BRSI in making available a shared file system for repository of coded templates and a server. Participation in regular meetings and call-conferences.
- Chalmers/SAFER has been part of the WP8 discussions on the DSS development. Participation in telephone meetings.
- LAB contributed to the different requests from WP4, WP5 and WP6 with French accident data.
- SWOV participated in discussions on the structure and user interface of the DSS and in stakeholder engagement activities.

3.3 IMPACT

Include in this section whether the information on section 2.1 of the DoA (how your project will contribute to the expected impacts) is still relevant or needs to be updated. Include further details in the latter case.

There is no relevant information to be updated.

3.4 UPDATE OF THE PLAN FOR EXPLOITATION AND DISSEMINATION OF RESULT

Include in this section whether the plan for exploitation and dissemination of results as described in the DoA needs to be updated and give details.

There is no relevant information to be updated.

3.5 DEVIATIONS FROM ANNEX 1

Explain the reasons for deviations from the DoA, the consequences and the proposed corrective actions.

3.5.1 Tasks

Include explanations for tasks not fully implemented, critical objectives not fully achieved and/or not being on schedule. Explain also the impact on other tasks on the available resources and the planning.

WP3

Joining Task 3.1 and 3.2:

The identification of risk factors and the evaluation of safety effects have a fundamental common core: both estimate the change in probability for a crash or a particular crash outcome to occur. For each goal, different methodologies exist for the identification of risk factors and the estimation of safety effects– and the most important ones are used for both risk factors and measures. The objective of tasks 3.1 and 3.2 was to generate a broad analytical framework that allowed the inclusion of studies with different kind of designs. As the differences within each area (risk factor and safety effects) are much greater than the differences between them, it was not considered useful to treat them both separately. As a consequence Task 3.1 and 3.2 were conducted jointly.

MS10 (Identification of risk-factors) was dedicated to the evaluation and coding of studies for repository and MS11 (estimation of safety effects) was dedicated to analysing and summarising the studies for the synopses.

WP6

Task 6.1 started later than expected due to the additional challenges of relating vehicle risks to the normal vehicle engineering and regulatory process. This delay with regard to the WP4 and WP5 activities had the advantage to use a methodology and tools (coding template) validated by these WPs.

3.5.2 Use of resources

Include explanations on deviations of the use of resources between actual and planned use of resources in Annex 1, especially related to person-months per work package.

WP6

In spite of the fact that the initial objective changed to follow the common approach given by WP3, there was no deviation of the use of resources.

WP7

Some of the partners spent more time on WP7 than expected during the first half of the project, but we are confident that this will be solved by spending a little less time on the remaining activities and by changes in the average monthly personnel costs.

4 Conclusion



This report, D1.2 Project Report - months 1 – 18, provides an overview of the work undertaken in the SafetyCube project. At the time of the preparation of the project the reporting requirements were not known and an internal mid-term evaluation of the project was considered to be helpful to the project team. Since then the formal project reporting requirements have become known and the internal mid-term evaluation of the project has been superseded by the Mid-term Project Review which covers M1 – M18.

The objectives for the first 18 months of the project were to:

1. Implement the **project management framework** to support communication between partners and achievement of project objectives.
2. Establish a project **dissemination and consultation platform** to ensure all stakeholders can remain informed in the project progress and can contribute to the DSS.
3. Develop the **methodological framework of the DSS**, and extracting data on risks and measures.
4. Estimate the numbers of **seriously injured casualties** in Europe and the resulting health impacts.
5. **Define the functionality of the DSS** and prepare the underlying structure.

Very good progress has been made in the first 18 months of the project and all objectives have been achieved. Notably

1. The project now has a very effective management framework that is focussed on
 - The project coordinator and a dedicated project administrator
 - Monthly Work Package Leaders meetings for routine decision making
 - Regular WP partner meetings
 - Periodic full partner plenary meetings
 - A dedicated web conferencing system to facilitate communication together with a central web-based document repository.
2. A dissemination platform has been established to facilitate communication between the project and future DSS users.
 - The project website (www.safetycube-project.eu) provides information about the project and news of recent developments
 - A newsletter, published typically three times each year, provides more detailed information to recipients
 - A series of stakeholder consultation workshops have provided the project team with very useful guidance regarding the functionality and content of the DSS
3. The methodological framework for the DSS has been established and data on risks has been recorded for entry to the DSS.
 - The procedure to be used to record details of risks and measures from studies has been defined
 - A sophisticated data entry template has been developed to provide a consistent means to gather data for entry onto the database and to enable an automatic quality check of the codes.
 - A total of 600 studies have been reviewed and data of 3,500 risks has been entered onto the templates. The studies cover road user, infrastructure and vehicle risks.

- A total of 60 topic syntheses have been prepared to provide summaries of the existing knowledge about road safety risks. The studies cover road user, infrastructure and vehicle risks.
4. Important advances have been made regarding the enumeration of serious injuries and the societal level impact
 - With the assistance of EC DG-MOVE a strong collaboration has been established with the EU CARE experts group representing the Member States
 - The methods used across the EU to estimate the numbers of seriously injured casualties have been reviewed and the comparability assessed.
 5. The structure and functionality of the DSS has been developed and a provisional “look and feel” prepared
 - A comprehensive taxonomy of risks and measures has been prepared to provide the internal structure of the DSS
 - The basic functionality of the DSS has been specified and entry points, search methodologies and output descriptions have been prepared
 - Wireframe screens have been prepared to illustrate the possible appearance of the DSS