


D.DEPN.6.1	Risks and Liability
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Abstract	<p>The Deployment Enablers sub-project of the CVIS project is researching into the non-technical issues which could create barriers to the safe and successful deployment of CVIS. The Risks and Liability topic within this sub-project is focusing on identification of the external risks and threats to the deployment of the CVIS project applications and to the CVIS system generally, whilst also providing a liability analysis for the Actors involved in delivering the CVIS applications using use cases evolved in the project itself. Recommendations will then be made as to the allocation and reduction of liability to smooth the path to deployment.</p>
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Control Sheet

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Table of Contents

CONTROL SHEET	3
TABLE OF CONTENTS.....	4
LIST OF TABLES	7
LIST OF FIGURES	8
ABBREVIATIONS AND DEFINITIONS	9
EXECUTIVE SUMMARY	11
1. INTRODUCTION	13
1.1. THE DEPN SUB-PROJECT	13
1.2. TOPIC 6: RISKS AND LIABILITY	13
1.3. SPECIFIC OBJECTIVES OF TOPIC 6: RISKS AND LIABILITY	14
1.4. METHODOLOGY USED FOR ACHIEVING THE OBJECTIVES	14
1.5. STRUCTURE OF THE DELIVERABLE	14
2. INVENTORY OF EXTERNAL RISKS AND THREATS.....	14
2.1. METHODOLOGY UTILISED	14
2.1.1. The Brainstorming Sessions.....	14
2.1.2. Creating the Risk Registers.....	14
2.1.3. Amalgamating the Risk Registers into the Overall Inventory	14
2.1.4. Creating the Inventory of Significant External Risks and Threats.....	14
2.2. ANALYSIS OF IDENTIFIED RISKS	14
2.2.1. The Inventory of External Risks and Threats.....	14
2.2.2. The Inventory of Significant External Risks and Threats	14
2.2.3. Methodology for Monitoring the Risks Identified	14
2.3. POLIS BRAINSTORMING SESSION	14
3. ANALYSIS OF ACTOR LIABILITIES	14
3.1. METHODOLOGY FOR ANALYSING THE LEGAL LIABILITY OF ACTORS IN CVIS	14
3.1.1. Legal Liability	14
3.1.2. The Law of Contract	14
3.1.3. The Law of Tort	14
3.1.4. Subrogation	14
3.1.5. The Use Cases	14
3.2. THE CO-OPERATIVE FREIGHT AND FLEET APPLICATION.....	14
3.2.1. The CF & F Urban Parking Zones Use Case (No.: CV-UC-SP3.3-0201).....	14
3.2.2. Legal Analysis.....	14
3.2.3. Implementation of the Urban Parking Zones Use Case	14
3.3. THE INTER-URBAN APPLICATION - CINT	14
3.3.1. CTA – Pre-trip Planning Use Case (CV-UC-SP3.2-0006)	14
3.3.2. Legal Analysis.....	14
3.3.3. The Urban Application – CURB	14
3.3.4. The Speed Profile Application – CV-UC-SP3.1-0013.....	14

3.3.5.	Legal Analysis.....	14
3.3.6.	Legal Analysis.....	14
3.4.	THE CO-OPERATIVE MONITORING APPLICATION – COMO	14
3.4.1.	COMO Use Case - Timely Traffic Conditions Detection to the Road User (CV-UC-SP3.4-0004).....	14
3.4.2.	Legal Analysis.....	14
3.5.	SUMMARY OF FINDINGS ON THE USE CASE ANALYSES AND FURTHER STUDY	14
3.6.	THE CVIS ACTOR QUESTIONNAIRE.....	14
4.	LEGAL ASPECTS.....	14
4.1.	APPLICABLE LAWS AND CONFLICTS OF LAWS	14
4.2.	STATUTORY LIABILITY	14
4.2.1.	Product Liability Directive.....	14
4.2.2.	Directive 95/46/EC.....	14
4.3.	THE USE OF EDR DATA IN CIVIL LAW PROCESS IN ENGLISH LAW.....	14
4.3.1.	Disclosure.....	14
4.3.2.	The “Black Box”	14
4.3.3.	The Digital Tachograph	14
4.3.4.	Implementation of EDRs.....	14
4.3.5.	Conclusions	14
4.4.	SALE OF GOODS AND SUPPLY OF SERVICES UNDER ENGLISH LAW	14
4.4.1.	Sales to Consumers	14
4.4.2.	Supply of Goods and Services to Consumers	14
4.4.3.	The Unfair Contract Terms Act 1977	14
4.4.4.	Unfair Terms in Consumer Contracts Regulations 1999	14
4.4.5.	Business to Business Contracts	14
5.	TOOLS TO MANAGE LIABILITIES	14
5.1.	MODEL CONTRACTS	14
5.2.	RELEVANCE OF INSURANCE	14
5.2.1.	European-Funded Research Projects.....	14
5.2.2.	IMPORTANT ISSUES FOR INSURERS TO CONSIDER	14
5.3.	CODES OF PRACTICE	14
5.4.	STANDARDISATION, CERTIFICATION AND VALIDATION	14
5.5.	ALTERNATIVE DISPUTE RESOLUTION	14
5.5.1.	Introduction	14
5.5.2.	General Characteristics of ADR Methods.....	14
5.5.3.	Types of ADR Proceedings.....	14
5.5.4.	Mediation	14
5.5.5.	The Mediation Process	14
5.5.6.	The Advantages of Mediation	14
5.5.7.	Mediation in Court Proceedings.....	14
5.5.8.	The UK Position.....	14
5.5.9.	The European Position	14
5.6.	“WITHOUT PREJUDICE” RESTORATION FUND	14
5.7.	RISK-SHARING POOLS	14
5.7.1.	What are the benefits of risk-sharing Pools?.....	14
5.7.2.	How Pools Work	14
5.7.3.	Examples of Existing Pools and Special Funding Mechanisms	14

6.	CONCLUSIONS.....	14
6.1.	THE INVENTORY OF POTENTIAL EXTERNAL RISKS AND THREATS	14
6.2.	ANALYSIS OF ACTOR LIABILITIES.....	14
6.3.	TOOLS TO MANAGE LIABILITIES.....	14
7.	REFERENCES.....	14
APPENDIX 1: CF & F BRIEFING NOTE.....		14
APPENDIX 2: DEFINITION OF “A RISK” AND RATING TABLES.....		14
APPENDIX 3: CVIS INVENTORY OF EXTERNAL RISKS AND THREATS		14
APPENDIX 4: CVIS INVENTORY OF SIGNIFICANT EXTERNAL RISKS AND THREATS		14
APPENDIX 5: POLIS PRESENTATION		14
APPENDIX 6: THE TORT OF NEGLIGENCE IN ENGLISH LAW IN THE CONTEXT OF ROAD TRAFFIC ACCIDENTS		14
APPENDIX 7: LIABILITY OF PUBLIC BODIES – NATIONAL LAW IN EU COUNTRIES		14
APPENDIX 8: CLAIMS AGAINST PUBLIC AUTHORITIES UNDER ENGLISH LAW		14
APPENDIX 9: CVIS ACTOR QUESTIONNAIRE.....		14
APPENDIX 10: SOME INSURANCE ASPECTS OF CODES OF PRACTICE.....		14

LIST OF TABLES

		Page No.
Table 1	Stakeholders and Actors in the CVIS Concept Definition v6	28
Table 2	Table of Contracts related to the CF & F Urban Parking Zones Use Case	45
Table 3	Table of Contracts related to the CINT Pre-Trip Planning Use Case	54
Table 4	Table of Contracts related to the CURB Speed Profile Use Case	60
Table 5	Table of Contracts – COMO Timely Traffic Conditions Detection to the Road User	64
Table 6	CVIS Actor Questionnaire – Summary of Findings	70

LIST OF FIGURES

		Page No.
Figure 1	The CF & F Urban Parking Zones Use Case	40
Figure 2	Urban Parking Zones, Functions and Data Flows	43
Figure 3	CF & F Urban Parking Zones Reference Service Process	44
Figure 4	Pre-Trip Planning and Support Trip Planning	53
Figure 5	Pre-Trip Planning Activities	54
Figure 6	CURB Application – Sequence of Activities	57
Figure 7	COMO Timely Traffic Conditions Detection to the Road User – Message Sequence	63
Figure 8	Diagram of a Digital Tachograph	95
Figure 9	Engineering Analysis of EDR Data in NHTSA’s NASS-CDS Database – Presentation Slide	98
Figure 10	NASS-CDS EDR Data Analysis	99
Figure 11	Proposed Framework for a Restoration Fund	122

Abbreviations and Definitions

Abbreviation	Definition
ADAS	Advanced Driver Assistance System
ADR	Alternative Dispute Resolution
AGORA-C	Methodology for map-based location referencing.
ANPR	Automatic Number Plate Recognition
API	Application Programming Interface
ART	Alternative Risk Transfer
AVG	Automated Vehicle Guidance
BCCI	Bank of Credit and Commerce International
CAHA	Claims Allocation and Handling Agreement
CALM	Provides a standardised set of air interface protocols and parameters for medium and long-range, high-speed ITS communications.
CCR	Caisse Centrale de Réassurance
CCS	Consortio de Compensacion de Seguros
CCTV	Closed Circuit TeleVision
CEDR	Centre for Effective Dispute Resolution, UK
CEMT	Conférence Européenne des Ministres des Transports
CERTECS	Sub-project of GST specifying, prototyping and validating a certification process for telematics components supported by relevant methods and information technology.
CF & F	Co-operative Freight and Fleet (Sub-Project)
CHS	Clearing House System
CINT	Co-operative Inter-urban (Sub-Project)
COMO	Co-operative Monitoring (Sub-Project)
CONSOB	Commissione Nazionale per le Società e la Borsa
CoP	Code of Practice
CPR	Civil Procedure Rules
CTA	Co-operative Travellers' Assistance
CURB	Co-operative Urban (Sub-Project)
DEPN	DEployment ENablers
DSRC	Dedicated Short-Range Communications
EDA	Enhanced Driver Awareness
EDR	Event/Electronic Data Recorder
ERTICO	European Road Transport Telematics Implementation Co-ordination Organisation
FOAM	CVIS sub-project whose objective is to create an open execution environment in which CVIS applications can be developed, delivered, executed and maintained during the lifecycle of in-vehicle and roadside equipment.
FMS	Fleet Management System
FSA	Financial Services Authority
HMI	Human Machine Interface
GAREAT	Le Groupement d'Assurance et de Réassurance des Risques Attenats et Actes de Terrorisme

Abbreviation	Definition
GMT	Greenwich Mean Time
GPRS	General Packet Radio Service
GPS	Global Positioning System
GST	Global System for Telematics
ISO	International Standards Organization
ISPS	International Ship and Port Facility Security Code
ITS	Intelligent Transport Systems
LDM	Local Dynamic Map
MARPOL	International Convention for the Prevention of Pollution from Ships
MDF	Mutual Discretionary Fund
NASS/CDS	National Automobile Sampling System/Crashworthiness Data System
NHTSA	National Highway Traffic Safety Administration
OBU	On-Board Unit
OEM	Original Equipment Manufacturer
PDA	Personal Digital Assistant
PIARC	Permanent International Association of Road Congresses
POLIS	Network of European cities and regions from across Europe which promotes and supports innovation in local transport.
RIDRC	Railway Industry Dispute Resolution Committee
RPM	Revolutions Per Minute
RSU	RoadSide Unit
SLA	Service Level Agreement
SOLAS	Safety of Life at Sea Convention 1974
TfL	Transport for London
TMC	Traffic Management Centre
TMS	Traffic Management System
TRIA	Terrorism Risk Insurance Act (in the US)
UMTS	Universal Mobile Telecommunications System
UTC	Universal Time Co-ordinated
VOSA	Vehicle and Operations Safety Agency
VU	Vehicle Unit
VII	Vehicle Infrastructure Integration Initiative
WTC	World Trade Center
XFCD	Extended Floating Car Data

EXECUTIVE SUMMARY

This report covers the work undertaken on risks and liability under Topic 6 of the DEPN (Deployment Enablers) sub-project of CVIS. It traces the development of the individual risk registers of the application sub-projects – CF & F, CINT, CURB and COMO – as they relate to deployment risks and their amalgamation into an overall Inventory of External Risks and Threats. At fifty-eight pages, the Inventory of External Risks and Threats was an unwieldy document, but useful for reference purposes, and a shorter, more compact version, the Inventory of Significant External Risks and Threats, was compiled.

A number of risks and threats to the safe deployment of CVIS were identified and mitigation strategies were assigned to those deemed significant. A mitigation strategy owner was chosen to implement the mitigation strategy and monitor its progress, whilst the DEPN co-ordinator had overall control of the identified risks, monitoring changes in the risk profile on a regular basis via telephone conference calls with the mitigation strategy owners.

One of the most important risks identified in the Inventory of External Risks and Threats was the lack of transparency in the legal liability exposure of each of the Actors involved in the CVIS system. The report looks at legal liability issues with which Actors might be faced in their relationships with each other and with third parties and provides an overview of contractual and non-contractual liabilities under English law. It also starts to build a methodology for mapping the legal liability exposure based on the web of technical dependencies as between the different Actors, each with their own responsibilities for the proper functioning of elements within a co-operative system and through involvement in delivering the CVIS applications. Individual use cases from the application sub-projects were utilised as a basis for the exercise in legal liability/responsibility mapping. More work will be undertaken on the use cases in the remaining part of the project to ensure that all Primary Actors have been included in the responsibility mapping exercise and to incorporate a number of incident and accident scenarios, including one involving a journey through European Member States to determine, according to the relevant laws, with whom liability will ultimately rest.

A small Actor survey was conducted to determine how Actors viewed legal liability and what measures they might find appropriate to reduce liability. The results were very informative and placed the desire for transparency of liability as one of the highest requirements of the Actors.

Legal aspects have been considered in this report, although more analysis will be undertaken in the next part of the project. The use of event/electronic data in civil law process in English law is discussed, as is the implementation of event data recorders in vehicles in the US.

A range of possible tools to manage liabilities have been suggested, including alternative dispute resolution, risk sharing pools, protected cell companies and segregated accounts companies. The feasibility of their implementation will be further researched in the coming months.

There are a number of European-funded research projects relating to ADAS which have addressed liability issues and insurance. These projects have provided useful indicators as to the risks and liabilities that might be faced by those involved in co-operative vehicle infrastructure systems. There will be differences, however, as a consequence of the number of parties involved in co-operative systems, each with their own responsibilities for the

proper functioning of specific elements within a co-operative system and because of the growing technical interdependencies between vehicles and between vehicles and the infrastructure which could lead to system failure.

The conclusions we have drawn on the basis of the work we have already undertaken are included in this report with indications as to further, more in-depth study being required during the remainder of the project.

1. Introduction

Research into road safety has formerly been concentrated on the development of Advanced Driver Assistance Systems (ADAS) which focus on autonomous sensor technologies (based on radar and video sensing). These sensors perceive the traffic situation surrounding the car and capture a real-time picture of the vehicle surroundings, enabling the driver to make more-informed choices about his driving behaviour. ADAS cannot, however, move beyond the operative range of the sensors. Research and development is now, therefore, also focusing on co-operative vehicle infrastructure systems which will enable vehicles to co-operate with other vehicles and with the roadside infrastructure to share traffic information and thereby increase safety and efficiency. The CVIS system is developing such a co-operative vehicle infrastructure system and is creating the core technologies, reference applications and test beds to make that a reality.

1.1. The DEPN Sub-project

The DEPN (DEployment ENablers) sub-project is a horizontal or co-ordinating activity addressing the essential non-technical issues the CVIS project has to resolve to ensure that obstacles to the widespread take-up of the system are identified and resolved. There are seven topics within DEPN addressing specific task areas:

- Openness and interoperability;
- Safe, secure and fault-tolerant design;
- Utility, usability and user acceptance;
- Costs, benefits and business models;
- Risks and liability;
- CVIS as a policy tool; and
- Deployment road-maps.

The aims of DEPN are to ensure that the core CVIS technologies and applications, as developed within the project, will be deployable; that the non-technical issues which could hinder successful deployment have been addressed; that there is a real understanding as to how to move from the current situation where vehicles are not CVIS-equipped to widespread take-up of the system; and how that migration will be phased. The DEPN sub-project is in a unique position of being able to address early on in the project the potential non-technical barriers or risks to deployment that might be experienced and to put in place solutions for them, the success of which can be monitored during the course of the project.

1.2. Topic 6: Risks and Liability

The Risks and Liability topic within DEPN plays an important role in identifying external risks and threats to deployment and ensuring that the significant risks are mitigated using defined strategies and monitored during the lifetime of the project and even beyond. The project's risk profile, as it relates to deployment, will change over time and it is essential that account is taken of these changes. Risks which may initially have been significant and in need of mitigation may well reduce in significance and be replaced by new risks which

were not perceived as risks initially. Other risks, initially regarded as small, may increase in significance and become in need of mitigating controls. The creation of an inventory or register of significant risks is the method by which significant risks may be monitored but it would also be crucial for those leading the sub-projects and the integrated project overall to consider reviewing all risks regularly to determine whether their profile has changed and whether they merit more or less attention in regard to their significance to create a deployment barrier to the CVIS system.

A first trial of mapping the liability exposure of Actors involved in delivering the CVIS system has been made, using specific use cases as a base. It will be necessary, however, for us to research the area of individual Actor liability in more depth during the remaining months of the project to ensure that all Actors have been addressed and that, as far as possible, all aspects of joint and several liability are researched. Further work will be undertaken on the use cases to introduce accident or incident scenarios in different European locations. The legal liability of Actors will then be considered on the basis of the laws of contract, tort and statutory liability to determine with whom ultimate liability will rest.

The first task in the mapping procedure is to identify how the Actors are linked technically and functionally and then to determine how they are connected legally. Transparency of liability and ultimate agreement between the Actors as to liability allocation are, we believe, key issues to be addressed if the CVIS system is to be deployed successfully. Different industry and public groups are represented within the project but the willingness of the critical mass within each of these groups to sign up to delivering the CVIS system has to be gauged and the need for their widespread education about the system assessed. Ongoing meetings, workshops and round-table discussions involving Actors and stakeholders are essential precursors to gain commitment from these parties prior to market deployment.

Actors will also be concerned as to how they might reduce the liabilities they face as a result of their involvement in CVIS. Recommendations as to what tools may be used to manage liability and how the effects of liability may be minimised will be suggested, taking into account the feasibility of model contracts; the benefits of Alternative Dispute Resolution (ADR); the role of insurance; and the potential to create a “Without Prejudice” Restoration Fund to manage first-party claims (i.e. claims made on the fund by the Actors themselves) and third-party claims (i.e. claims made on the fund by third parties damaged by the system). Our research in this area will also draw on the findings of other research into ADAS where liability issues and insurance aspects have been studied.

It can be seen that the scope of work of this topic area is wide. In this report we have sought to address as many aspects of our work plan as possible, given the time available and the progress that has been made in the technical sub-projects which has a significant bearing on the work on risks and liability. The second version of this report will provide a deeper analysis into areas which have not been addressed as closely as we would have wished in this report. For example, we intend to build on the work we have done on the use cases, as mentioned above, and there will be more in-depth discussions with Actors relating to the liability exposure we have mapped. These discussions will also attempt to gauge Actors’ acceptability of our proposed recommendations as to how liability might be managed and reduced, so that recommendations may be presented in our second report.

1.3. Specific Objectives of Topic 6: Risks and Liability

The specific objectives of this topic are:

- (i) To make an inventory of potential external risks and threats for the CVIS project applications and identify a mitigation strategy for each risk or threat judged to be substantial.
- (ii) To analyse the liabilities and map the legal exposure of each Actor in the CVIS deployment and operational service chain.
- (iii) To devise tools to manage liability (for example, model contracts) and draft recommendations for minimising the effects of liability which could create obstacles to deployment.

1.4. Methodology Used for Achieving the Objectives

For Task (i) we ran a series of brainstorming sessions with the application sub-projects in order to identify the external risks and threats to those applications, using a pre-determined methodology to rank the identified external risks and threats and select those which were significant. For those risks and threats judged to be significant, a mitigation or control strategy was developed to reduce or eliminate the impact of those risks and threats on the project. Each significant risk was assigned a mitigation strategy owner who was charged with monitoring the risks and determining effectiveness of the mitigation/control measures.

The outputs from this task included:

- a risk register for each of the application sub-projects – CF & F, CINT, CURB and COMO;
- an overall inventory of external risks and threats, comprising an amalgamation of the generic risks identified in the individual risk registers and inclusion of the specific risks related to the different applications being developed in the individual application sub-projects; and
- an inventory of significant external risks and threats, comprising only the significant risks. This was regarded as a more manageable document than the larger inventory of external risks and threats.

For Task (ii) we looked at all the Actors, as defined in Table 1 Stakeholders and Actors in the CVIS System Concept Definition v6 (see Section 3: Analysis of Actor Liabilities), so as to ensure that most, if not all, Actors were included in this phase of the responsibility/legal liability mapping exercise. For this exercise, we asked each application sub-project to choose one use case from their sub-project. A diagram of the technical/functional links as between the different Actors involved in each use case was developed over which a matrix showing the contractual and non-contractual legal liability exposure of the respective Actors was laid.

Having analysed the liabilities and mapped the legal exposure of each Actor, a questionnaire was created as a means of discussing with Actors how they would be affected by these liabilities; what measures they already had in place to mitigate them; and what additional measures they would be prepared to consider.

The outputs from this task included:

- Legal analyses of the CF & F Use case on urban parking zones; the CINT use case on co-operative travel assistance – pre-trip planning; the CURB speed profile application; and the COMO use case on timely traffic conditions detection to the road user.
- Nine completed questionnaires from companies both inside and outside the CVIS project.
- Analysis of questionnaires and preliminary conclusions.
- Consideration of legal solutions and basic patterns of the laws of contract and tort, including the relevance of fault.
- Initiation and maintenance of a dialogue with an insurance broker in respect of the types of insurance that might be needed to cover the system itself and the Actors delivering the system and with a financial entity in respect of the role of the financial markets in the development of a “Without Prejudice” Restoration Fund and potential funding for deployment of the system.

For Task (iii) we began to assess the scope of acceptability of standardisation through the use of model contracts, for example. Actors who have not been included in Table 1 “Stakeholders and Actors” in the CVIS System Concept Definition v6 such as parties who verify, validate, certificate or otherwise attest to the compliance, safety, quality, condition, suitability, fitness-for-purpose, interoperability or other features of any goods, products or services supplied or to be supplied and utilised or incorporated into any part of the CVIS system or their operation, renewal, improvement and maintenance have not yet had their legal liability exposure mapped. For this task it will be essential to understand fully how the CVIS project as a whole is addressing issues of certification, standardisation and validation. It is also necessary to assess whether those Actors who have already been identified in the table of stakeholders and Actors should assume responsibility for the components they use or bring to the CVIS system as their own offering and seek redress themselves from the suppliers of these components. As an exercise in liability allocation, however, this still remains an important and interesting issue to research.

We have also begun to assess the applicability and benefits of alternative dispute resolution and risk sharing pools where we have wide-ranging expertise within our participant grouping for this topic.

1.5. Structure of the Deliverable

DEPN’s work on risks and liabilities has been planned to provide a significant contribution to the smooth introduction and deployment of the CVIS system. The deliverable is structured into a series of chapters or sections, each of which reports on the specific work undertaken in respect of the various tasks mentioned above. They follow a logical sequence of activities, as follows.

- Section 1 provides an introduction to the work undertaken in this topic - Risks and Liability – and seeks to put that work into context against a background of the work being conducted in the rest of the CVIS project, whilst taking account that the research is a progression of work done in respect of ADAS.

- Section 2 takes the reader through the development of the inventory of external risks and threats and how this inventory will be used to monitor deployment risks throughout the course of the project.
- Section 3 focuses on legal liability/responsibility mapping of Actors involved in developing CVIS; reports on their responses to a questionnaire to assess further their attitudes to liability and the CVIS system generally; and begins to build up a set of methodologies as to how liability might be managed and reduced.
- Section 4 concentrates on consideration of legal aspects and the laws applicable to the Actors and to the CVIS system.

It is appreciated that the scope of work undertaken under sections 2, 3 and 4 – following as they do the three tasks of this topic area – is broad. To reduce any complexity and to ensure consistency of context for the reader, therefore, these sections include a number of sub-sections, rather than different chapter or section headings.

- Section 5 focuses on the tools to manage liabilities, including insurance and risk sharing pools.
- Section 6 brings together the conclusions of the report.
- Section 7 provides a list of references.

Ten appendices are provided as follows:

1. CF & F Briefing Note
2. Definition of “A Risk” and Rating Tables
3. CVIS Inventory of External Risks and Threats
4. CVIS Inventory of Significant External Risks and Threats
5. POLIS Presentation
6. The Tort of Negligence in English Law in the Context of Road Traffic Accidents
7. Liability of Public Bodies – National Law in EU Countries
8. Claims against Public Authorities under English Law
9. CVIS Actor Questionnaire
10. Some Insurance Aspects of Codes of Practice.

2. Inventory of External Risks and Threats

2.1. Methodology Utilised

Task 6.1 of DEPN Topic 6 – Risks and Liability – requires the creation of an inventory of potential external risks and threats for the CVIS project applications and the identification of a mitigation strategy for each risk or threat judged to be substantial.

2.1.1. The Brainstorming Sessions

The first stage of this work involved a series of brainstorming sessions with the application sub-projects – CF & F, CINT, CURB and COMO. Each session was conducted in a very similar way to provide consistency of results, although timing issues were critical, particularly as each session was arranged as part of a normal technical meeting of the sub-project

A briefing note was sent in advance to the participants of the session, describing what the session would focus on; the objectives of the particular sub-project; suggestions as to which categories of risk might be identified during the session (for example, political; legal; economic; financial; technological; market; social; and environmental) in order to stimulate the minds of participants; and how the session would be run. The objectives of the session were to create a risk register for the sub-project, whilst gaining a useful insight as to what could be potential external barriers to successful deployment, and creating a profile of external risks and threats. A sample briefing note, for example, the one sent to the CF & F sub-project can be found at Appendix 1 to this report. Each briefing note was tailor-made for the individual sub-project.

A handout was provided at the brainstorming session including the draft definition of a risk, taken from the Working Group developing the International Risk Standard:

“A risk is something that can happen and affect (the achievement of) objectives”.

A series of rating tables were also provided, together with a few sample risks for the risk register:

- Loss impact grading table
- Loss likelihood grading table
- Rating table – Effectiveness of Control Systems

The rating tables feature at Appendix 2 to this report.

The focus of the session was to determine what risks would prevent the achievement of the objectives of CF & F. The objectives are:

- To develop and successfully deploy an application for hazardous goods management.

- To develop and successfully deploy an application for priority booking and assignment of delivery zones/rest areas.
- To develop and successfully deploy an application for co-ordinating vehicle access to sensitive areas.

Each objective was written on a piece of flip chart paper, with an additional sheet for generic risks and threats (i.e. risks that were not specific to the application but were applicable to the safe deployment of the CVIS system as a whole).

The session started with an introduction to DEPN and an explanation as to how the session would be run, following the outline provided in the briefing note. The CF & F brainstorming session was held exactly according to the briefing note but we were conscious that our time allocation would not be sufficient to complete our agenda resulting in subsequent brainstorming sessions being run on a slightly different basis to make better use of the time available.

The session was run by members of Thomas Miller who encouraged the participants to think about deployment risks by discussing possible scenarios and identifying different risk categories which could give rise to deployment barriers. Each session participant was allocated Post-It Notes on which to write down whatever risks they thought of that could prevent the achievement of the sub-project's objectives. The Post-It Notes were collated as to the risk category they fell into under each objective and as to the generic risks identified.

Time was allocated to talk through the risks with participants and to understand exactly what the risks were that were being identified. Discussion then turned to the likelihood of the risk occurring (i.e. almost certain, probable, likely, unlikely or remote) and, if the risk did occur, what impact it would have on deployment. Impact was graded as to catastrophic, major, medium, minor or negligible. The different grades of risk were colour-coded to give an immediate view of their significance; the higher end of the spectrum being red, signifying a risk that was almost certain to occur causing catastrophic consequences through to a remote risk with negligible consequences being coloured green.

2.1.2. Creating the Risk Registers

The outcome of the session provided a consensus view of the risks to enable the key or most significant risks to be identified. In some sessions there was only time enough to have brief discussion about mitigation strategies for the significant risks.

After each brainstorming session, Thomas Miller created a risk register for each sub-project incorporating a list of generic risks to the CVIS project as a whole and more specific risks relating to the applications being developed within the project. The risks were listed in the register on an alpha-numeric basis in the following categories:

- A: Low User Acceptance
- B: Legal/Regulatory Issues
- C: Lack of Political Will
- D: Poor Deployment/Business Planning
- E: Competition

- F: Misuse of Data
- G: Lack of Equipped Infrastructure
- H: Communications Failure
- I: Over-reliance on External Systems (e.g. Galileo)
- J: Driver Deskillling
- K: Environmental Problems
- L: Inability to Market Effectively
- M: Criminal Acts
- N: Lack of Finance
- O: Physical Damage

In running the four risk brainstorming sessions, we determined which risks were significant by using the ratings tables at Appendix 2 to the report. If the impact of a risk was major/catastrophic, even if the likelihood of the risk occurring was remote, the risk would be regarded as a significant risk which required a mitigation strategy or control to reduce its impact on the project. The effectiveness of the controls was rated on the basis of whether the risks had been identified within the CVIS project and were being addressed. Many of the mitigation strategies were rated as ineffective or as having no controls, if it was not entirely clear that they were being addressed within the project. The individual risk registers have been posted on the CVIS portal.

2.1.3. Amalgamating the Risk Registers into the Overall Inventory

The next task was to incorporate the four risk registers into an overall inventory of external risks and threats and to remove any risks which had been duplicated. An additional column identifying the “Mitigation Strategy Owner” was incorporated into the inventory and the application risks which had been identified in the original brainstorming sessions remained unchanged. The Inventory of External Risks and Threats can be found at Appendix 3 to this report.

A telephone discussion involving ERTICO, CRF Fiat and Thomas Miller was arranged on 3 April 2007 to discuss the Inventory of External Risks and Threats. It was agreed that ERTICO, as the DEPN sub-project co-ordinator, would be the risk owner for all the risks in the inventory but that responsibility for the mitigation strategies of the risks which had been identified as being significant (denoted by the impact column being either orange or red) would be allocated to different sub-projects, particularly different topic areas within DEPN. Some of those mitigation strategies do, in fact, require further research, particularly in-depth market research to underpin and corroborate the business planning and deployment assumptions and to understand the business drivers for each of the parties involved in the CVIS system. It is only with the benefit of this research that solutions to potential deployment barriers can be identified and implemented.

2.1.4. Creating the Inventory of Significant External Risks and Threats

At fifty-eight pages the Inventory of External Risks and Threats was an unwieldy document. The consensus was that it should be retained for reference purposes but that a new inventory should be prepared which contained only the significant risks. It was felt unnecessary to retain the columns for likelihood and impact in this inventory, as these risks had already been identified as significant. The column for “Mitigation Strategy Owner” had been filled in to show the sub-projects which would be invited to implement the mitigation strategies

and monitor their progress – hence, the “Effectiveness” column has been left blank for the use of the Mitigation Strategy Owners.

The Inventory of Significant External Risks and Threats (Appendix 4) captures the main areas of risk as being related to:

- Competition
- Cost
- Criminal Acts
- Data and Privacy
- Environmental
- External Technology
- Human Machine Interface (HMI)
- Legal/Regulatory
- Political
- Poor Business/Deployment Planning

It was felt that these risk categories more closely described the risks and threats that had been identified whilst at the same time providing a more compact set of risk categories than had been used in the overall inventory of external risks and threats.

2.2. Analysis of Identified Risks

The objective of conducting the various risk brainstorming sessions with the application sub-projects was to determine the risks to deployment of the applications being developed as well as the risks and threats to the safe and successful deployment of the CVIS system. The very nature of the brainstorming sessions lead to a number of risks and threats being identified, not all of which were deployment risks but focused more generally on project management. These risks do not feature in the inventory of external risks and threats, nor in the inventory of significant external risks and threats as they do not relate to deployment. Potential project risks were, however, passed on to the DEPN project co-ordinator to include in the sub-project’s risk register and to the application sub-project leaders where they concerned their own sub-project.

2.2.1. The Inventory of External Risks and Threats

The overall inventory of external risks and threats is an amalgamation of the four risks registers from the application sub-projects, resulting in an extensive section on generic risks and maintaining the individual risks registers for the individual applications.

The risks contained in this inventory range from catastrophic (or real showstoppers) to negligible risks but the benefit of it is that it contains all the risks identified in the risk brainstorming sessions. It is always prudent to concentrate on the significant risks first, hence the creation of the inventory of significant external risks and threats. Small risks, however, can tend to become medium-sized risks and even significant risks, if left unchecked, so it would be prudent for the CVIS and DEPN project co-ordinators to monitor all risks to gauge on a regular basis their propensity to increase or reduce their impact on the project and address them accordingly. The inventory should be updated regularly to reflect more closely the risk profile of the project as far as deployment issues are concerned.

It is not our intention to comment on all the risks mentioned in this inventory, as we have concentrated on the significant risks in the next section.

2.2.2. The Inventory of Significant External Risks and Threats

Overwhelmingly, the last risk category in this inventory – **Poor Business/Deployment Planning** - contains the largest number of controls or actions to mitigate what is, in essence, a single, albeit massive risk of failing to create a valid business plan for the CVIS system and a business case for each of the CVIS Actors and stakeholders. The need to view the CVIS system from the perspective of each of the Actors involved in it and determine what would drive each Actor to want to be involved in a co-operative system and the benefits each would derive from it is essential to overcome potential deployment barriers.

Following closely behind is the number of controls needed to mitigate the risks associated with **lack of financial and technical control over external technology** (whether currently available or expected to be available (e.g. Galileo)) which will be utilised by the CVIS system. Our inclusion of this risk of reliance on external technology and the expectation that it will be available at a time and at a cost to accommodate the deployment of CVIS was picked up on by the Core Architecture Group (CAG) with whom we had planned to have a risk brainstorming session. Time constraints on both sides and the need to progress the technical aspects of the project precluded this brainstorming session being held, although a telephone discussion did take place between Thomas Miller and ERTICO which lead to a lengthy exchange of emails as between technical participants in the project regarding assumptions being made about IPv6 and other technical aspects, for example. This reaction corroborated to us the vital need for there to be an independent body within the project – namely the DEPN sub-project – to ask what may appear to be simple questions raising issues which are sometimes overlooked and which could pose significant risks. The fact that these issues have been identified early on in the project provides a better opportunity and a longer time span to seek the right solutions and thereby mitigate the risks.

Costs and privacy issues were also of significant importance. It will be imperative for costs to be transparent, warranted, cost-effective and affordable, not only costs of system implementation but also costs to the end-user – the driver. The real risks of data and privacy will need to be determined during the course of the project. **Data ownership, storage and access** are fundamental issues to be addressed. Contradictory issues will also need to be resolved; for example, data will be generated that would undoubtedly assist enforcement agencies and insurers to determine the activities leading up to an accident and assist in determining fault, however, data privacy issues must also be protected. As a consequence, it might be difficult to mass market a product that is, in essence, “a spy in the cab”. This could create a deployment barrier for some but perhaps not for all. Those who feel they have good driving skills and would have nothing to hide if an incident were to occur might well allow access to their data in return for a reduction in insurance premium, for example.

The processing of the data and its transfer to the driver (i.e. **the HMI issues**) are important . The system must be user-friendly and reliable, providing information to the driver which he can trust and in a way that enables him to act upon it and not be confused by it. CVIS is being developed to increase road safety and provide information to the driver to help him to make more informed decisions and not to bombard him with unstructured information that could confuse him and lead to an accident.

The **legal and regulatory risks** focus closely on the need for transparency of the legal liabilities attaching to the various Actors in the CVIS system which Topic 6 is addressing. Equally, the project should try to ensure that **political risks**, short-term political goals and the inability to maintain a friendly political framework for the acceptance and implementation of the CVIS system do not, unwittingly, become forgotten and that the project is proactive in reducing this potential deployment barrier to a minimum. Analogies could be drawn from the **VII¹ system in the USA**, particularly as to the contractual arrangements that are being effected under its name as between road operators and the private sector to ensure that each party carries out its relevant commitments to bring the system to market.

Whilst it may not seem that there is currently or likely to be much competition for CVIS, existing local authority initiatives may preclude its widespread take-up. Consideration needs also to be given to determine whether CVIS will ultimately be a Europe-wide or global system.

Security of the system will need to be ensured and robust stress testing will need to be undertaken to prevent **criminal acts such as terrorism, sabotage, blackmail, extortion and data hacking**. If any of these acts were to affect CVIS, public confidence in the system would be badly affected and might significantly slow down or even stop deployment.

Any of the risks in the Inventory of Significant External Risks and Threats could, if left unaddressed, create a potential showstopper to the safe deployment of CVIS. Only one **environmental risk** was judged to be significant. That is not to say, however, that environmental risks are the least important. The environmental impact of any new product or system needs to be considered and monitored. The Inventory of Significant External Risks and Threats is, to some extent, a snapshot of the current risk profile of CVIS which can change as a result of existing risks being minimised and perhaps even disappearing or as a result of new risks being identified.

At twelve pages, the Inventory of Significant External Risks and Threats is a much more user-friendly and manageable document than the overall inventory and should be used as a means to remove, or lessen the impact of, potential major deployment barriers to the CVIS system. The Inventory of Significant External Risks and Threats does not, however, contain the individual application risk registers which remain as discrete registers within the overall inventory which will still be of value.

2.2.3. Methodology for Monitoring the Risks Identified

The DEPN sub-project co-ordinator has now sought the agreement of the mitigation strategy owners identified in the Inventory of Significant External Risks and Threats that they will

¹ The Vehicle Infrastructure Integration (VII) Initiative is a co-operative effort between Federal and State departments of transportation (DOTs) and automobile manufacturers. Together they are evaluating the technical, economic and social/political feasibility of deploying a communications system that will be used primarily for improving the safety and efficiency of the US road transportation system. VII will support vehicle-to-infrastructure for a variety of vehicle safety applications and transportation operations, as well as enable the deployment of a variety of applications that support private commercial interests, such as vehicle manufacturers. It is supported by a radio spectrum at 5.9 GHz, specifically allocated for Dedicated Short-Range Communications (DSRC). On-board and roadside equipment, GPS, and wireless systems will also play a role in providing data to applications that will process it for different uses and then reverse the communications back to the users.

monitor the risks assigned to them and that they will participate in regular telephone conference calls to update the risks.

Thomas Miller and the DEPN co-ordinator agreed that the significance of each risk identified initially in the individual risk registers was determined by consensus and it could be that some of the other risks, if viewed by different parties, could also prove to be significant. Ideally, all the risks identified and recorded in the overall inventory should be made known to the areas of CVIS to which they apply and a methodology for monitoring them and ensuring that low or medium impact risks do not escalate to become significant should be developed. Whilst the risks in the Inventory of Significant External Risks and Threats are, in fact, focused primarily on the DEPN sub-project, it would be prudent, from a risk management perspective, to assign other less significant risks to the other sub-projects.

The conference calls held so far have not resulted in any changes in either inventory.

2.3. POLIS Brainstorming Session

Thomas Miller was asked to run a risk brainstorming session for the POLIS Traffic Efficiency and Mobility Working Group in Brussels on 27 April 2007. We were provided with a two-hour slot in what was otherwise a routine meeting for the working group.

POLIS is a network of European cities and regions which promotes innovation in local transport. It undertakes training and dissemination within the CURB sub-project and provides the conduit through which the input of European cities and local authorities can be channelled. POLIS is charged with the task of organising consultation and validation meetings with the CVIS Interest Group of Local Authorities who will be:

- informed about requirements, architecture and validated architecture and system requirements; and
- asked for advice at crucial stages in the project or on important issues, such as in relation to the system architecture, reference applications, and deployment aspects through consultation and validation meetings.

This brainstorming session was run in a similar way to the other brainstorming sessions for the application sub-projects. Those present, however, had the benefit of knowing that the Inventory of External Risks and Threats and the Inventory of Significant External Risks and Threats had already been compiled. The purpose of this brainstorming session was to determine with a large Actor group of public and city authorities what views they held on the CVIS project and what risks and threats they envisaged the project would have to face before it could become a market system.

We learned a great deal from this brainstorming session which can be summarised as follows:

- It was surprising that not many local/city authorities knew anything at all about CVIS. This could have occurred as a result of certain authorities being represented at a previous meeting who were aware of the project but could not attend this brainstorming session. This showed the need to raise awareness about the CVIS system within the local authority movement as a whole.

- A representative from a Brussels' local authority said that much of what they do is governed by law, so essentially their hands are tied as to the systems they use.
- Local authorities like to own the data generated in their road networks and be the owner of the chain of communication. They already have systems in place which have certain CVIS-like functionalities.
- It would be essential for local authorities to be aware of how much implementation of the CVIS system will cost, as well as the cost of upgrades, where and when necessary. The authorities present could not see themselves operating anything that took up any of their revenue resources.
- Local authorities work to five or ten-year strategies. Plans for CVIS implementation would have to feature in these strategies, indicating that perhaps change could be slow.
- A local political change could redirect the focus away from CVIS or, conversely, towards CVIS. The point is that local politics will play a huge part in whether CVIS can be implemented or not.
- Local authorities would be unlikely to implement any system that only benefited a proportion of the population. There would be greater interest if the system worked across all transport modes.
- Local authorities could, perhaps, be pressured into adopting a system if their neighbouring authorities had implemented it. It was likely that certain key areas would need to implement CVIS in order to convince other areas that it was a useful system to adopt.
- It would be difficult to implement a system that gathered information about drivers who might be breaking the law and not be in a position to use that information for enforcement. The suggestion was made that the data might not be collected by the local authority but by the private sector.
- The statement was made that public authorities were not entrepreneurs as to how they might enlarge their responsibilities. Their main concern is public safety and if a system does not work towards the achievement of that, they will not implement it. The suggestion is that CVIS would need to have a proven track record to substantiate its claims that it improves road safety and efficiency.
- A prescient statement was made that perhaps CVIS might help local authorities do what they currently do but more efficiently and more cheaply.
- Local authorities are not very clear about the benefits of Intelligent Transport Systems (ITS) generally. This will have to be taken into account unless CVIS is only looking to be implemented on the highways which are run by national governments.

- Various questions were raised, for example: How will CVIS be implemented? Who will provide training? Who will pay for the maintenance of the system? There are still many unknowns for the public authorities.
- The suggestion was made that public transport could be the first carriers of this system.
- The question was posed as to how much discussion there had to be about CVIS before a consensus view could be reached. In other words, who (and to what extent) has to sign up to CVIS for it then to be implemented?
- Local authorities were unclear as to whether the same parties who provided the investment into the system would see the benefit. Each local authority is unique, so for each co-operative application there would need to be a local cost and benefit description linking the benefits to the investing party.
- Local authorities are concerned about the additional roadside equipment necessary to implement CVIS. Their current systems are generally installed on main roads but CVIS would need full network coverage. This could cause institutional challenges as roads with a higher hierarchy can sometimes fall under the control of different road authorities.
- Local authorities need a clear understanding of how CVIS will affect their current legal liabilities.
- The dilemma as to whether the infrastructure investment precedes the vehicle investment puts local authorities in a key position as far as successful deployment of CVIS is concerned. The importance of the role of local authorities in the network of Actors and stakeholders concerned has to be recognised early on in the project.

Our conclusions were summarised as follows:

- There were many risks that needed further discussion.
- The most important issues for local authorities appeared to be cost, resources and liabilities.
- We were unclear as to how aware those developing the CVIS system were of the views of the local authorities and the problems they have to face.
- We were also unclear as to whether the fundamental question of whether local authorities, as an Actor group, had been asked whether they were actually prepared to meet the challenges and the risks involved in CVIS implementation.
- It was clear that local authorities have specific issues of their own. Whilst they can be viewed as a generic group for some issues, other issues will be viewed from an individual local authority's perspective and be peculiar to that particular area or Member State.

We identified the next steps as follows:

- Determining the benefits and alternatives from the perspective of local authorities.
- Determining how critical the buy-in of the local authorities into the CVIS system is; how that will be managed; and how general consensus will be achieved to ensure the CVIS system can be deployed Europe-wide.

A note identifying our findings was sent to the DEPN co-ordinator to enable an assessment of the implications of these findings on the deployment of CVIS and to take the appropriate action to ensure that these views were incorporated into the business planning aspects.

3. Analysis of Actor Liabilities

One of the most important risks identified in the overall inventory of external risks and threats was the lack of transparency in the legal liability exposure of each of the Actors involved in the CVIS system.

This section of the report looks at legal liability issues with which Actors might be faced in their relationships with each other and with third parties and provides an overview of contractual and non-contractual liabilities under English law. It also starts to build a methodology for mapping the legal liability exposure based on the web of technical dependencies as between the different Actors, each with their own responsibilities for the proper functioning of elements within a co-operative system and involved in delivering the CVIS applications

Table 1 Stakeholders and Actors in the CVIS System Concept Definition v6 sets out a list of Actors involved in developing the CVIS system:

Stakeholder	Primary Actor [yes/no]	Description Role
Society	no	Has a legitimate interest in CVIS for: 1: The transport is a key Actor in modern societies. CVIS will improve the transport system in terms of throughput, safety, emissions and costs. 2: CVIS will enable new services that enhance travelling and enable people to participate in a connected mobile community.
Government Authorities	no ?	Are responsible for policy-making, enforcement and rescue operations in road transport. The target is to reduce or eliminate the negative effects of the current road transport system. May: - <i>define</i> (harmonised) CVIS requirements - <i>enforce</i> the use of CVIS applications or hardware.
Road Operators (Public and Commercial)	yes	Are responsible for providing and keeping the roads. They also have the responsibility of providing a smooth, accident-free traffic flow on those roads. May: - <i>generate</i> and <i>distribute</i> CVIS-compliant traffic data - <i>define</i> CVIS functional requirements and/or applications - <i>use</i> and <i>operate</i> CVIS applications and services - <i>pay</i> for CVIS applications and hardware.
Transport Operators (Public Transport and Freight)	yes (<i>user</i>)	Want its vehicles to travel from A to B in a fast, safe, efficient and effective way. Are interested in intelligent travel assistance and new services as long as they improve the performance of its business. May: - <i>define</i> CVIS functional requirements and/or applications - <i>use</i> CVIS applications and hardware <i>pay</i> for CVIS applications and hardware.

Stakeholder	Primary Actor [yes/no]	Description Role
Universities and Research Institutes	no	<p>Want to study (parts of) the traffic system and the interaction between the traffic system and the environment and/or society.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> CVIS functional requirements and/or applications - <i>use</i> CVIS data and results for study.
Private Motorists	yes (<i>user</i>)	<p>Want to travel from A to B in safe, comfortable and effective way. Are interested in intelligent travel assistance and new services.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>use</i> CVIS applications and hardware - <i>pay</i> for CVIS applications and hardware.
Associations of Motorists	yes	<p>Want to strengthen their position by offering value to motorists in defending their interests. Represent the interests of motorists and can, in some circumstances, act on their behalf.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> CVIS functional requirements.
Car Manufacturers	yes	<p>Want to increase the sales of their cars by offering cars with additional features that make them more attractive for the motorists. They are the ones primarily responsible for equipping cars with in-vehicle equipment.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> CVIS in-vehicle requirements - <i>install</i> CVIS in-vehicle devices.
OEMs	yes	<p>Want to increase vehicle sales by offering added-value in the form of “hard” and “soft” products.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> CVIS (in-vehicle) requirements - <i>design</i> (dedicated) CVIS applications and hardware - <i>implement</i> CVIS in-vehicle hardware and software components - <i>operate</i> and <i>maintain</i> CVIS control centres.
Roadside Equipment Suppliers	yes	<p>Want to increase equipment sales and service provision by offering added-value to the road operators and road users in terms of safety, throughput, comfort etc.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> CVIS (roadside) requirements - <i>design</i> (dedicated) CVIS applications and hardware - <i>implement</i> CVIS roadside hardware and software components - <i>operate</i> and <i>maintain</i> CVIS roadside systems.

Stakeholder	Primary Actor [yes/no]	Description Role
In-vehicle Equipment Suppliers	yes	<p>Want to increase in-vehicle equipment sales and service provision by offering added-value to the OEMs and drivers in terms of safety, comfort etc.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> CVIS (in-vehicle) requirements - <i>design</i> (dedicated) CVIS applications and hardware - <i>implement</i> CVIS in-vehicle hardware and software components
Traffic Management Equipment Suppliers	yes	<p>Want to increase management equipment sales by offering added-value to road operators and drivers in terms of safety, throughput, comfort etc.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> CVIS (traffic management-related) requirements - <i>design</i> (dedicated) CVIS applications and hardware - <i>implement</i> CVIS traffic management hardware and software components - <i>operate</i> and <i>maintain</i> CVIS traffic management systems.
System Service Providers	yes	<p>Offer necessary CVIS system services e.g. digital maps, security services, billing services etc.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> CVIS (system service) requirements - <i>design</i> (dedicated) CVIS system services - <i>implement</i> CVIS system services - <i>operate</i> and <i>maintain</i> CVIS system services.
Service Providers	yes	<p>Offer services in a broad sense to the CVIS users. One can distinguish several types of service providers e.g.:</p> <ul style="list-style-type: none"> • content providers (e.g. traffic info, map updates, navigation) • transport service providers (e.g. breakdown assistance, parking place reservation, car pooling) • process and payment providers (e.g. road tolling clearing, banks and clearing houses). <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> and <i>specify</i> services and applications - <i>design</i> CVIS applications and services - <i>implement</i> CVIS applications and services - <i>sell</i> CVIS applications and services - <i>operate</i> and <i>maintain</i> CVIS services.
Software providers = OEMs	no (supporting Actor)	<p>Want to increase sales of software products by offering products based on the possibilities that CVIS offer.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>define</i> and <i>specify</i> applications - <i>design</i> CVIS applications <i>implement</i> CVIS applications and services - <i>sell</i> CVIS applications.

Stakeholder	Primary Actor [yes/no]	Description Role
Network Operators & Providers	yes	<p>Offer wireless and wired connectivity to make CVIS devices able to communicate and exchange required data and information.</p> <p>May:</p> <ul style="list-style-type: none"> - <i>sell</i> connectivity - <i>deploy, operate</i> and <i>maintain</i> communication networks - <i>provide access</i> to selected “telco network capabilities” (e.g. identity management, AAA, billing, presence, mobile network location, ... etc.) to the Service Providers.

Table 1: Stakeholders and Actors in the CVIS System Concept Definition V6

3.1. Methodology for Analysing the Legal Liability of Actors in CVIS

Our methodology for analysing the responsibilities of the Primary Actors in CVIS to each other and to third parties and to begin to build up a picture of their legal liability exposure was to employ a use case drawn from each application sub-project – CF & F, CINT, CURB and COMO. The use cases were chosen by the sub-projects themselves and we used as reference documents the use cases and system requirements and architecture documentation prepared by each sub-project.

In analysing the legal exposure of Actors, it is important to understand fully the system functionality and its limitations; whether and how it will collaborate with infrastructure; and how data generated by the system will be collected, processed, stored and utilised to provide the driver with the relevant information. Table 1 Stakeholders and Actors in the CVIS System Concept Definition v6 sets out a brief description of the roles of both Primary Actors and Stakeholders which we shall build on in the course of our work on legal liability mapping.

Relationships between Actors may be based on the law of contract or tort. In English law tort denotes civil wrongs as distinct from criminal wrongdoings and is associated with compensating third parties who have suffered physical injury or property damage.

3.1.1. Legal Liability

Actors may be responsible/legally liable to other Actors and to third parties via their contractual arrangements or based on the law of tort. In English law, tort denotes civil wrongs independent of contract, as distinct from criminal wrongdoings.

3.1.2. The Law of Contract

Contractual agreements² give rise to rights and obligations which the law recognises and enforces. Certain agreements are not intended by the parties to be legally binding – every

² Law Made Simple 11th edition David Barker and Colin Padfield.

contract is an agreement, but not every agreement is a contract. The object of the law of contract is to identify those agreements which it will enforce and those it will not.

An agreement will be enforced when the following essential elements exist:

- (a) *Offer and Acceptance*. There must be an offer by one party and an acceptance of it by the other.
- (b) *Intention* to create legal relations.
- (c) *Capacity* of the parties. Each party must have the legal capacity to make the contract.
- (d) *Consent* must be genuine. The consent must not be obtained by fraud, or duress.
- (e) *Consideration* must be present (except in contracts under seal, i.e. by deed).
- (f) *Legality* of object. The object of the contract must not be one of which the law disapproves.
- (g) *Possibility* of performance.

All the above elements must be present. If one or more is absent the contract will be:

- void, that is, of no effect, as if it had never been;
- voidable, that is, capable of being treated as void, at the option of the innocent party; or
- unenforceable, that is, the contract remains but the parties cannot enforce it under the law.

Under English law, the central element of contractual liability is the duty to act in accordance with the terms of the contract. Failure to do so is a breach of contract. Breach of contract is a type of strict liability, in the sense that the innocent party does not have to prove that the party in breach acted deliberately or without due care. The fact of failure to meet the contractual commitment is enough of itself to provide the innocent party with a legal remedy. The precise nature of the remedy will depend on the terms of the contract and the circumstances of the breach. In the more serious cases, breach will render the contract voidable; in a less serious case, the remedy will be confined to the award of monetary damages. The principle behind the award of damages is to make good, in so far as money can, the expectations that the innocent party had on the basis that the contract had been performed in accordance with its terms.

Unless the standard of performance has been specified in the contract, liability under a contract for services generally entails that the service provider has violated the duty implied by the law to act with reasonable care and skill and has neglected the ordinary standard of professional diligence.

It has long been a principle of English common law that only the parties to a contract are entitled to its benefit and are subject to its burdens. That means that a third party cannot in its own right enforce a contract under which it is a beneficiary. At best, it has to persuade one of the parties to sue on his behalf. This doctrine, known as the doctrine of Privity of Contract, has given rise to a number of practical difficulties over the centuries and in certain branches of the law, such as the carriage of goods by sea, its effects have had to be modified

by statute.³ In other contexts, remedies originating in the courts of equity⁴ have mitigated the harsh effects of the doctrine, such as the development of the concept of a beneficial interest in a trust.

It was not until 1999 that the problems arising from the doctrine were comprehensively addressed. The Contracts (Rights of Third Parties) Act 1999 aimed to provide a simple mechanism by which two contracting parties could give a third party the right to enforce in its own name, a term of their contract. There are two tests of enforceability, either that the contract expressly provides for this right or that the contract term ‘purports to confer a benefit upon him’⁵. The latter does not apply if, ‘on a proper construction of the contract it appears that the parties did not intend the term to be enforceable by the third party’⁶. The third party ‘must be expressly identified in the contract by name, as a member of a class or as answering to a particular description’.⁷ Without such identification the Act will be of no assistance to the third party.

The limitation period in which claims for breach of contract have to be brought is six years from the date the cause of action arose. This will usually be the date of the breach. Where the breach has resulted in injury or death, the action has generally to be brought within three years of the accident occurring.

Depending on its terms, a contract may well impose duties on a party, responsibility for the performance of which it is unable to delegate. In such case, the contracting party (an Actor in the CVIS context) will be responsible for any breach resulting from the act or omission of its independent contractor.

The extent to which a party in the breach of contract can limit its responsibility by showing that the fault of the other contracting party is also in part causative of the breach is difficult to determine. Despite some judicial dicta to the contrary, the better view seems to be that the provisions for the apportionment of fault, introduced by the Law Reform (Contributory Negligence) Act 1945, are limited to tortious claims⁸.

3.1.3. The Law of Tort

Under English law, a tort is a civil wrong independent of contract, a concept equivalent to that of delict in the Civil Law. English law recognises a number of distinct torts but, in the CVIS context, the tort of negligence is the most important. For a more detailed explanation of the tort of negligence, see Appendix 6: The Tort of Negligence in English Law in the Context of Road Traffic Accidents.

The essentials of the tort of negligence are that:

³ See the Bills of Lading Act 1855 (now repealed) and the Carriage of Goods by Sea Act 1992.

⁴ Since the Judicature Acts 1873/1875, all courts have been empowered to apply the remedies previously developed either at common law or in equity.

⁵ S.1(1)(a) and (b)

⁶ S.1(2)

⁷ S.1(3)

⁸ S.1 of that Act provides:

1.—(1) Where any person suffers damage as the result partly of his own fault and partly of the fault of any other person or persons, a claim in respect of that damage shall not be defeated by reason of the fault of the person suffering the damage, but the damages recoverable in respect thereof shall be reduced to such extent as the court thinks just and equitable having regard to the claimant's share in the responsibility for the damage.

- (i) the wrongdoer (the tortfeasor) owes the victim a ‘duty of care’;
- (ii) the tortfeasor’s conduct, whether an act or an omission, amounts to a breach of that duty;
- (iii) the breach has caused the victim damage (that damage being injury or death or damage to property); and
- (iv) the damage is not so ‘remote’ a consequence of the tortfeasor’s conduct as to make it unfair to hold him responsible for it.

The judicial definition of the duty of care has been extensively refined in the case law since the seminal statement of Lord Atkin in the case of *Donoghue v. Stevenson*⁹:

“The rule that you are to love your neighbour becomes in law, you must not injure your neighbour; and the lawyer’s question, who is my neighbour? receives a restricted reply. You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour. Who, then, in law is my neighbour? The answer seems to be – persons who are so closely and directly affected by my act that I ought reasonably to have them in contemplation as being so affected when I am directing my mind to the acts or omissions which are called in question.”

The current position is as stated in the judgment of Lord Bridge in the case of *Caparo Industries plc v. Dickman*¹⁰

“What emerges is that, in addition to the foreseeability of damage, necessary ingredients in any situation giving rise to a duty of care are that there should exist between the party owing the duty and the party to whom it is owed a relationship characterised by the law as one of ‘proximity’ or neighbourhood’ and that the situation should be one in which the court considers it fair, just and reasonable that the law should impose a duty of a given scope on the one party for the benefit of the other.”

As we state later in this section in regard to the use cases, we think it unlikely – in a case where a third party suffers injury or damage to property in a CVIS-related accident - that the courts will see sufficient proximity in the relationship between the third party and the CVIS Actor(s) responsible to give rise to a duty of care and, even if this were so, we are not convinced that the courts would consider it ‘fair, just and reasonable’ to impose such a duty.

Where the victim has suffered financial loss in a CVIS-related accident but has not suffered injury or property damage, the chances of a successful claim in negligence are, in our view, further reduced. In addition to the factors of foreseeability, proximity and justice, the law is here looking for a further factor, sometimes described as a ‘dependency’ by the victim on the tortfeasor or an ‘assumption of responsibility’ by the tortfeasor to the victim. The text at Appendix 6: The Tort of Negligence in English Law in the Context of Road Traffic Accidents gives examples of the type of relationship in which a duty of care in regard to pure financial loss has been held to exist. These precedents seem rather far removed from the relationship between a motorist or a pedestrian struck by a vehicle in consequence of a

⁹ [1932] AC 562.

¹⁰ [1990] 2 AC 605, at pp.617/618.

CVIS malfunction and the provider of the CVIS service to the driver of the vehicle that caused the accident.

In a tort case, as in a claim for breach of contract, the initial burden is on the claimant to establish his case on the ‘balance of probabilities’ - is it more likely than not that the wrongful conduct of the defendant in fact resulted in the damage the claimant has suffered? Even if the claimant can establish that the balance of probabilities is only 51%/49% in his favour, he wins the case 100%. Save in the case of contributory negligence, as to which see below, judgments do not reflect proportionality of proof.

In certain cases, the claimant may be relieved from the full burden of proof by use of the evidential principle of *Res ipsa loquitur*.¹¹ Where this applies, it establishes a *prima facie*¹² case of fault and requires the service provider to explain the reasons for the damaging event occurring without negligence on his part.

In the law of tort causation can be sub-divided into factual causation and legal causation. “Factual causation is concerned with establishing the physical connection between the defendant’s wrong and the claimant’s damage.” Where the claimant’s damage has in fact been caused by a number of factors, only one of which is the defendant’s conduct, the court has to choose which is the effective or operative cause for the purpose of establishing the defendant’s liability. Where the defendant’s conduct has set off a train of events, which ends in damage to the claimant, the court has to decide whether there is a continuous chain between the defendant’s conduct and the claimant’s damage, or whether at some point, the chain has been broken so that, in law, the responsibility of the defendant has been brought to an end before the damage to the claimant resulted. This concept is called in Latin “*novus actus interveniens*” (literally, a new event comes between/intervenes).

The first step in establishing causation is to overcome the “but-for” test. “The ‘but-for’ test asks: would the damage of which the claimant complains have [not] occurred ‘but for’ the negligence of the defendant...Or to put it more accurately, can the claimant adduce evidence to show that it is more likely than not, more than 50% probable, that ‘but for’ the defendant’s wrongdoing, the relevant damage would not have occurred.”¹³ But, as explained above, that is not necessarily the end of the matter, particularly where there are a number of causes that have contributed to the damage, or the conduct of the defendant has set in motion a chain of events which ended in damage to the claimant.

What if the claim was caused in part by the conduct of the claimant? The Law Reform (Contributory Negligence) Act 1945 allows a reduction of the amount of damages where a claimant “suffers damage as a result partly of his own fault and partly of the fault of any other person”. As mentioned above, in the section on The Law of Contract Law, it is doubtful whether and to what extent the Act applies to claims in contract but it applies undoubtedly to claims in tort.

In computing the award of damages for negligence, the principle differs from that in cases of breach of contract. Whereas in the latter the court is trying to match, in money terms, the situation that would have prevailed had the breach of contract not occurred – sometimes

¹¹ Literally, “the thing speaks for itself”. Refers to situations when it is assumed that a person’s injury was caused by the negligent action of another party because the accident was of the sort that would not occur unless someone had been negligent.

¹² A presumption that can be rebutted by evidence to the contrary.

¹³ Clerk & Lindsell on Torts, 19th Edition, 2006, published by Sweet & Maxwell, at 2-07.

called the ‘expectation damages’ – in the former, the court sets out, in so far as money can do so, to ‘compensate’ the victim for the damages he has suffered. In consequence, the extent of damages in a negligence case can be wider than in a breach of contract case, particularly in cases involving injury to the person.

In order for the claimant to recover damages in negligence, the loss or damage he has suffered must have been reasonably foreseeable as a consequence of the tortfeasor’s conduct. In other words, if the loss that has actually occurred is too ‘remote’ a consequence of the tortious conduct, then the law will not burden the tortfeasor with responsibility for causing that loss. The test for remoteness is one of reasonable foreseeability¹⁴; if the kind or type of loss that occurred in fact was reasonably foreseeable as a consequence of the tortfeasor’s conduct, he will be held responsible for it, even if the extent of the loss is greater than would have been expected, or the loss occurred in a way that would not have been expected¹⁵.

These principles are applied particularly strictly in claims for injury or death. In these cases, the law has established clearly that the tortfeasor has to accept his victim as he finds him. A tortfeasor cannot limit the damages he must pay for a head injury to his victim (for example) by proving that his victim’s skull was less thick than normal – the so-called ‘egg-shell skull’ principle¹⁶. Similarly, the tortfeasor will be liable if his conduct exposed the victim to physical injury but in fact the victim suffered psychiatric harm¹⁷; or if, in the treatment of the physical injury, the victim suffers further harm consequent upon the failure of the medical services to treat him to the requisite standard of care¹⁸. The rationale is that, if a tortfeasor by his conduct exposes his victim to injury requiring medical intervention, he must accept the consequence that, sometimes, the medical intervention is less than optimal.

Damages for pecuniary loss resulting from injury covers costs such as medical expenses and losses like lost earnings. The court will also award general (that is, non-specific) damages as compensation for ‘pain and suffering’. Normally, an award is in the form of a lump sum payment, but with the passing of the Damages Act 1996 the courts acquired the right to order periodic payments with the consent of the parties. The need for the consent of the parties was removed by the Courts Act 2003¹⁹.

The general limitation period for claims in tort is six years from the date the cause of action arose, the same as it is in contract. Similarly, if the claim involves personal injury caused by negligence, the limitation period is three years from the date the cause of action arose.

¹⁴ Overseas Tankship (UK) Ltd v. Morts Docks Engineering Co Ltd – The “Wagon Mound” (No.1) – [1961] AC 388 (Privy Council).

¹⁵ Overseas Tankship (U.K.) Ltd. v. Miller Steamship Co. Pty. (Wagon Mound (No. 2)) [1967] 1 A.C. 617 (Privy Council); Hughes v. Lord Advocate [1963] AC 837, House of Lords.

¹⁶ Clerk & Lindsell, Op.Cit. at 2-132.

¹⁷ Page v. Smith [1996] AC 155, House of Lords.

¹⁸ Clerk & Lindsell, Op.Cit. at 2-94

¹⁹ S.100 of that Act reads:

“ (1) A court awarding damages for future pecuniary loss in respect of personal injury-

(a) may order that the damages are wholly or partly to take the form of periodical payments, and (b) shall consider whether to make that order.

3.1.4. Subrogation

Subrogation is the legal technique under the common law by which one party, commonly an insurer (A) of another party (X), steps into X's shoes, so as to have the benefit of X's rights and remedies against a third party such as a defendant (D). Subrogation most commonly arises in relation to policies of insurance but the legal technique is of more general application. Using the designations above, A (the party seeking to enforce the rights of another) is called the *subrogee*. X (the party whose rights the subrogee is enforcing) is called the *subrogor*.

In each case, because A pays money to X which otherwise D would have had to pay, the law permits A to enforce X's rights against D to recover some or all of what A has paid out. A very simple (and common) example of subrogation would be as follows:

1. D drives a car negligently and damages X's car as a result.
2. X, the insured party, has own-damage insurance and claims payment under his policy from A, his insurer.
3. A pays in full to have X's car repaired.
4. A then sues D for negligence to recoup some or all of the sums paid out to X.
5. A retains the full amount recovered in the action against D up to the amount to which A indemnified X. X retains none of the proceeds of the action against D except to the extent that they exceed the amount that A paid to him.

A will normally (but not always) have to bring the claim in the name of X. Accordingly, in situations where subrogation rights are likely to arise within the scope of a contract (i.e. in an indemnity insurance policy) it is quite common for the contract to provide that X, as subrogor, will provide all necessary cooperation to A in bringing the claim.²⁰

Or again, where, for example, two motorists, both comprehensively insured, collide as a result of their combined negligence and both vehicles are damaged, each motorist can claim against his own insurer for the damage to his vehicle; each insurer is then subrogated to the claims of its insured against the other driver and is entitled to recover from the other insurer the amount of the claim it paid to its own insured to the extent of the fault of the other insured.²¹

In the UK, the National Health Service and other hospital owners have statutory rights analogous to (but much less valuable than) subrogation rights under the Road Traffic Act 1988 against compulsory third party liability motor insurers (but not against tortfeasors). Under section 157 of the Act, an insurer who pays damages in respect of the death of or injury to a person in a road accident, whom it knows to have received treatment in a hospital, is liable to pay to the hospital the expenses reasonably incurred in treating the victim.

²⁰ Adapted from Wikipedia @ <http://en.wikipedia.org/wiki/Subrogation>

²¹ If a person is covered by two liability policies issued by different insurers and covering the same liability, neither insurer has subrogation rights against the other, but either or both can claim contribution from the other: *Austin v. Zurich Insurance Co.* [1945] KB 250. See also the Civil Liability (Contribution) Act 1978.

Insurance companies, who are the beneficiaries of the doctrine of subrogation, realise that it may not always be very useful. In cases where an employee renders the employer vicariously liable²² and is in law liable to reimburse the employer's insurers the amounts they have paid in settlement of the employer's liability, the insurance industry has, by agreement, voluntarily abandoned the right of subrogation even in relation to personal injuries.

In some countries subrogation is severely limited by law; for example, in Denmark, a person who has insured property against accident damage has no tort action against a person who damages it, and hence the insurers have no subrogation rights. Other Scandinavian countries permit a tort action, but the insurance proceeds are deducted from tort damages and there are no subrogation rights²³.

Insurers say that without subrogation rights, premiums would have to be higher; but others deny that subrogation rights are of much economic value overall, given the cost of enforcing them.²⁴

3.1.5. The Use Cases

Use cases are described within the application sub-projects as including the following elements:

- **GOAL:** In order to clarify why this use case is specified, a higher-level goal shall be given. It shall also help to clarify the context of the use case. The goal can also be a "user need" – as these are not formally collected in CVIS, they can be addressed here. If it seems very trivial, GOAL need not to be specified.
- **ACTORS** involved: This shows who is participating in the use case. Actors can be other system entities or stakeholders in a specific role.
- **PRE-CONDITION:** Specifies arrangements, states, or dependencies required in order to start this use case. This gives a more precise context to be clear from where the use case starts.
- **MAIN-FLOW:** The listing of execution steps which breaks down the use case into single transactions or commands. Execution steps tell in a non-technical language the sequence of steps for an application/use case. There are two types: service perspective scenario and supplier perspective scenario.
- **POST-CONDITION:** Specifies arrangements, states, or dependencies that will be fulfilled after the use case has ended (successfully). This gives a more precise definition where the use case ends and what state has been reached with it.
- **POSSIBLE EXCEPTIONS:** Description of possible abnormal occurrences.
- **EXCEPTION HANDLING:** Description of required action for abnormal occurrence handling.

This information, as it related to the use cases chosen for responsibility mapping, was used to create a diagram showing the technical linkages as between the different Actors involved in delivering the service specified. This section provides an analysis of four individual use cases as follows:

²² The principle under English law by which employers are held responsible, under the doctrine of *respondeat superior*, for the negligent acts or omissions of their employees committed in the course of their employment.

²³ Peter Cane Atiyah's Accidents, Compensation and the Law, 6th Edition.

²⁴ Peter Cane Atiyah's Accidents, Compensation and the Law, 6th Edition.

3.2. The Co-operative Freight and Fleet Application

The purpose of this sub-project is to assess and demonstrate the benefits to traffic efficiency and road safety of co-operative systems between vehicles and infrastructure in the field of freight transportation and fleet management, by applying the co-operation enabling technologies developed in the technology sub-projects of CVIS.

The main goal is the development of three reference applications aiming to:

- increase the safety of dangerous goods transportation;
- optimise delivery logistics and driver rest periods for transport companies; and
- reduce vehicle breakdowns inside sensitive areas.

The procedure of executing a specific service, which is defined by an application, defines the use case as “The specification of a sequence of actions, including variants that a system (or other entity) can perform, interacting with Actors of the system”²⁵.

3.2.1. The CF & F Urban Parking Zones Use Case (No.: CV-UC-SP3.3-0201)

The goal in this use case is to support the driver, fleet manager and road operator and parking zone operator in the booking, monitoring and management of urban parking zones for freight driver activities. These activities can be loading/unloading of both heavy vehicles and for parcel operators’ smaller vehicles.

It describes, from the driver’s and/or the fleet operator’s perspective, the booking of an urban parking zone in advance, specifying the delivery requirements; the planned delivery time; the loading/unloading time required; the vehicle type; any flexibility (e.g. +/- 15 minutes) in the delivery time and the estimated time to reach the parking zone (interaction with traffic management).

For the road operator, it describes how to optimise the management of parking zones²⁶ through better knowledge of the delivery time period and duration in order to:

- improve the flow of vehicles;
- make better use of existing street space;
- reduce congestion;
- reduce urban environmental impacts; and
- collect information on parking usage; delivery frequency; and other patterns to support future planning.

For the fleet operator, it describes how to optimise the delivery time to his customer; reduce driver stress; and anticipate congestion problems.

²⁵ D.CF&F.2.1 “Use Cases and System Requirements”.

²⁶ An important point is to define what a parking zone is. It can be a physical on/off street space or it can be a pedestrian street/area for example. The layout here is a section of road which is available for freight vehicles to stop, for a limited time, for loading/unloading purposes. It may be part of the main carriageway or an additional lane.

3.2.2. Legal Analysis

The following text relates to Figure 1: the CF & F Urban Parking Zones Use Case, and sets out the assumed relationships between the various Actors in this use case. Figure 2 is taken from the CF & F Architecture and System Specifications and depicts the urban parking zones, functions and data flows.

The text is based exclusively on English law. Whether the use case needs to be reviewed from the point of view of the law of other European Community countries and how this should be done, remains to be determined.

Figure 1: The CF & F Urban Parking Zones Use Case

(a) The Actors shown in Figure 1 are the following:

- (i) The Supplier (or Seller)
- (ii) Consignee (or Buyer – the Supermarket)
- (iii) The Delivery Fleet Operator
- (iv) The Delivery Vehicle (and its driver)
(The Electronic System deployed in managing the vehicle fleet, the “Fleet Management System” (“FMS”))
- (v) The Communications Provider, here designated “Satellite Comms”
- (vi) The Road Operator
(The Electronic System deployed in managing the area subject to the Road Operator’s control, the “Traffic Management System” (“TMS”))
- (vii) The Parking Zone Operator
- (viii) The Holding Area Operator
- (ix) The Enforcement Agency – whatever form that may take

- (x) The Clearing House System – an electronic system which matches demand for parking slots with their supply (“CHS”). In the use case, this function is described as “the Operator Aggregator”.
- (xi) The dotted lines shown on the diagram indicate that the various Actors are in electronic/telematic communication with one another.
- (xii) The light-bulb symbol indicates that the Actor concerned is connected to the communications network.
- (xiii) The red line between Actors indicates that there is a contract between them, described in the contractual matrix in sub-section (f) below.

(b) Booking the Parking Zone Slot

- (i) We assume that the seller has sold goods to the buyer and is obliged to arrange delivery to the buyer’s premises.
- (ii) The seller then engages the fleet operator to effect delivery. We envisage that there would be a written contract between them, setting out the terms of the engagement. The fleet operator, with the aid of its FMS, nominates a vehicle for the delivery run. The vehicle is loaded with the consignment, either at the fleet operator’s or the seller’s warehouse.
- (iii) The fleet operator applies to the CHS for a parking slot in the appropriate vicinity of the consignee. We assume that use of the CHS will be governed by a contract, most likely standard terms and conditions of business, to which all users would ‘adhere’. (By ‘adhere’ we mean that the users will not be able to negotiate the terms of their use of the CHS. If they want to use the CHS, they have to accept the CHS terms – subject to any ‘Unfair Contract Terms’ legislation or regulations in force.)
- (iv) A copy of the application is sent to the TMS. If the TMS cannot accommodate the vehicle in its system/territory at the time requested, the TMS so informs the fleet operator and the CHS, indicating when the vehicle can be accommodated. We envisage a standard form contract between the road operator and its customers, to which the latter adhere.
- (v) The CHS then interrogates its participating slot providers (its suppliers) – parking zone operators and holding area operators – to determine the availability of an appropriate slot. We envisage a contract between the CHS and its slot suppliers.
- (vi) Once availability had been confirmed, the CHS conveys this information as an offer to the fleet operator and the vehicle (the “user”). The user responds, either accepting the slot or rejecting it. If the slot is rejected, the user can renew the request, with updated data. The CHS repeats the interrogation and reporting cycle.
- (vii) All messages are copied to the TMS, which will intervene as necessary, if it cannot accommodate the vehicle in the revised slot time requested.

- (viii) Once the user has accepted the slot, it informs both the CHS and the TMS.
- (ix) The progress of the vehicle towards the designated slot is then monitored by satellite. All parties need access to the communications system, including the satellite positions. We envisage there being a contract between all parties and the communications services provider for the use of these systems, again on standard terms to which users adhere.
- (x) It is not clear to us who will own/operate the CHS or whether it will act as a clearing house for the payment for slots as well as the booking of slots. Clearly, the former is also an option.

(c) Arrival at the Designated Slot

- (i) The arrival of the vehicle at the designated slot may be delayed or prevented by a number of Actors:
 - a problem occurring with the vehicle, such as breakdown or delay;
 - a problem arising with the parking slot, such as the overstay of the previous vehicle assigned to that slot;
 - a problem with the road access to the parking slot, such as diversion and congestion arising from an accident.
- (ii) It is the responsibility of the party with whom the problem occurs to advise all other interested parties promptly.
- (iii) In all cases, the cycle of request, offer and acceptance between the user and the CHS must be repeated, with the TMS copied in as before. It may be appropriate for the CHS to offer a slot in a holding area, rather than a parking zone, but the same procedures would apply.

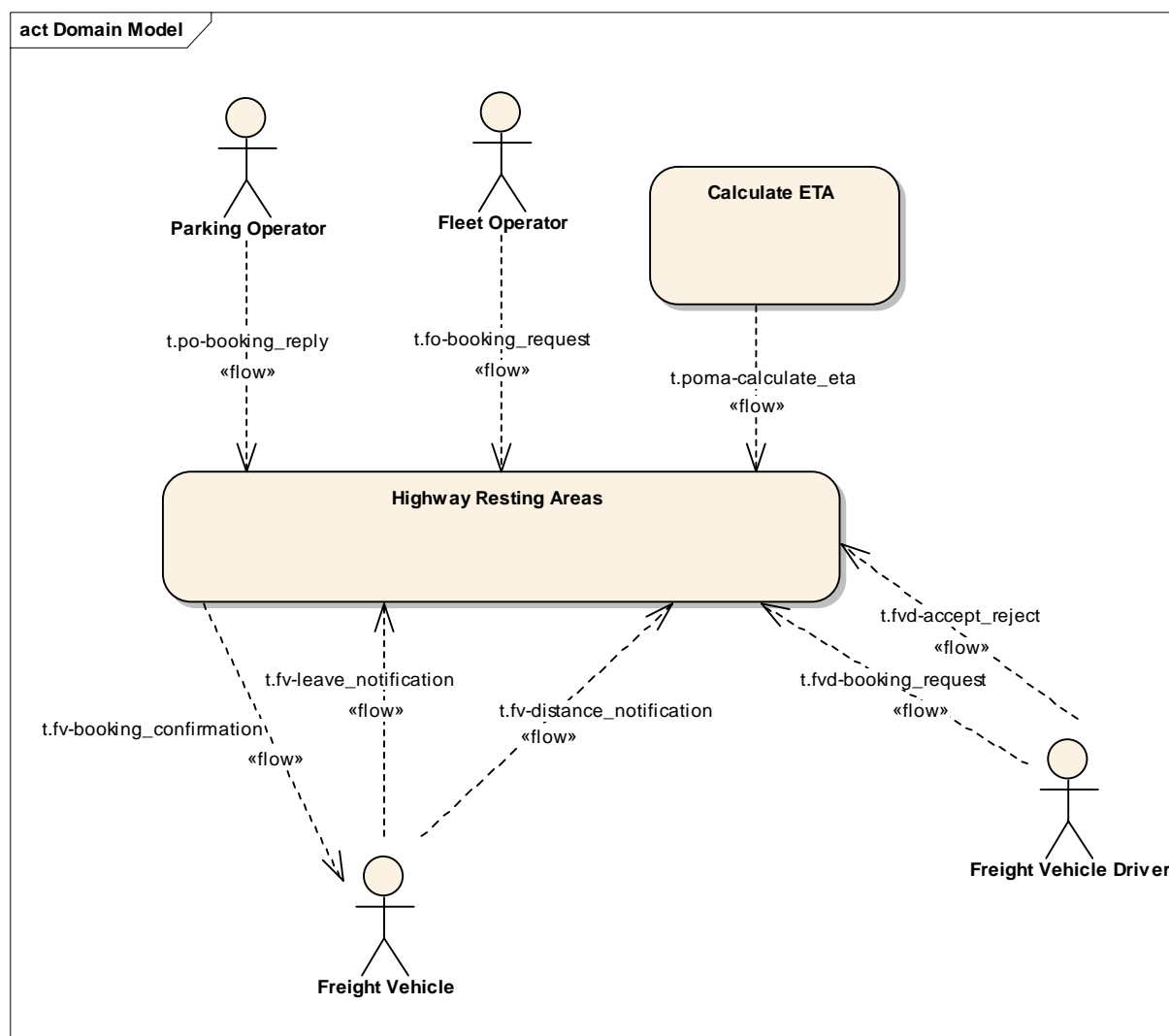


Figure 2: Urban Parking Zones, Functions and Data Flows

(d) Occupying and then Leaving the Slot

- (i) Once the vehicle has reached its agreed destination, the parking zone or holding area operator must operate any applicable access controls to allow the vehicle entry. We envisage again a contractual relationship between the user and the operator, which may be either a contract of adhesion²⁷ or an individually-negotiated arrangement or, indeed, part one and part the other – a “hybrid” contract.
- (ii) The operator monitors the time the vehicle is in its zone/area and alerts the vehicle when its agreed stay time is nearing its end. The vehicle must either then exit in the agreed time or agree an extension of time with the operator. The operator must update the CHS with the slot status.
- (iii) When the vehicle wishes to leave the zone/area, it contacts the operator to arrange its exit and the TMS to clear its route either to the parking zone (if the vehicle is leaving a holding area) or out of the road operator’s area.

²⁷ A contract to which one must ‘adhere’ or a contract the terms of which one must accept – or not use the service.

- (iv) On receipt of approval from the TMS, the vehicle can leave the zone/area. On leaving the zone/area, the vehicle informs the zone/area operator, the CHS, the TMS and, of course, its own FMS.
- (v) If the vehicle is en route to its parking zone, then the procedures in (d)(i) – (d)(iv) apply.

(e) Enforcement

- (i) In order to police the movements of the vehicle and to ensure the availability of the parking zone/holding area slot from unauthorised occupancy, some enforcement agency/facility will be required. This may be provided by either the public or the private sector, or a combination of both.
- (ii) As regards the policing of vehicle movements generally within the road operator's domain, we would expect the enforcement agency to be provided by the public sector, rather than the private sector. This may, or may not be done under contract. (We have in mind the analogy of football clubs paying for police security at home matches).
- (iii) As regards enforcement facilities at parking zones/holding areas, we would anticipate provision by the private sector, in which case we would expect to see an individually negotiated contract between the enforcement agency and the parking zone/holding area operator.

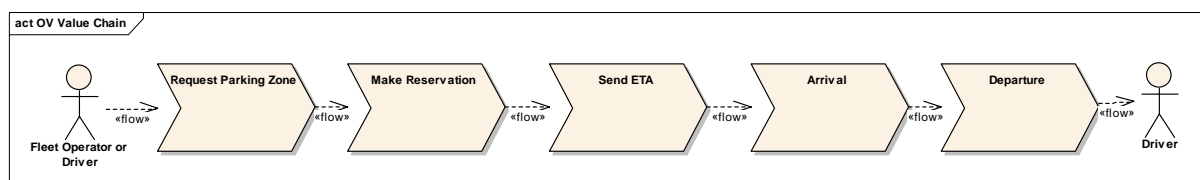


Figure 3: Reference Service Process

Figure 3 provides, in diagrammatic form, the reference value chain process for the urban parking zones application, encapsulating the sequence of events described above.

(f) The Contractual Matrix

- (i) It is clear from the functional description set out above that the principal Actors will be bound to each other through some form of contract. It follows, therefore, that their legal liabilities within the use case will be primarily contractual.
- (ii) The contracts to which the use case gives rise are set out in the following table:

Table of Contracts				
Contract No.	Party A	Party B	Contract Type	Comments
1	Seller of Goods	Buyer of Goods	Sale Contract	Not relevant to PZ Use-case
2	Seller of Goods	Fleet Operator	Hybrid	
3	Fleet Operator	CHS	Adhesion	
4	Road Operator	Fleet Operator	Adhesion	
5	CHS	Parking Zone/Holding Area Operator	Adhesion	
6	Communications Services Provider	All Actors	Adhesion	
7	Parking Zone/Holding Area Operator	Fleet Operator	Hybrid	
8	Road Operator	Enforcement Facility	?	Payment for Police Services?
9	Enforcement Agency	Parking Zone/Holding Area Operator	Individually negotiated	

Table 2: Table of Contracts related to the CF & F Urban Parking Zones Use Case

(g) Characteristics of the Contracts

- (i) On the assumption that they were governed by English law, we would anticipate all the contracts, whether adhesion, hybrid or individually negotiated, to contain, in addition to commercial information such as service levels and tariff/pricing, some standard terms to the following effect.
- (ii) They would define the agreed service levels to be provided, the obligation being to provide those services, not on an absolute or guaranteed basis but on the basis of ‘best endeavours’. The agreed service levels would address issues of security.
- (iii) They would include some ‘force majeure’ exceptions.
- (iv) They would exclude or (more likely) limit liability to a pre-determined amount, perhaps equivalent to or a multiple of the revenue related to the transaction concerned.
- (v) They would provide that no contracting party has the right to sue the other’s servants, agents or sub-contractors; the only party that a contracting party can sue in relation to a breach of contract would be the other contracting party itself.
- (vi) They would seek to provide the same level of protection for its servants, agents and sub-contractors as the contracting party itself has, in the event they are sued by the other contracting party. This might be achieved through a term in the contract, which – by virtue of the Contracts (Rights of Third

Parties) Act of 1999 – would now be enforceable at the suit of the beneficiary.

- (vii) If, contrary to (g)(v) and (g)(vi), a contracting party (A) is successful in suing a servant, agent or independent contractor of the other contracting party (B), they would require A to indemnify B against any liability that B might incur to its servant, agent or sub-contractor, to the extent that such liability exceeded the liability that B had under its contract with A – a ‘circular indemnity clause’. A clause of this type effectively deprives A of any advantage that he might gain by suing the servant, agent or sub-contractor of B, in breach of the contract between him and B.
- (viii) They would provide that neither contracting party could sue the other in tort and that all claims between the parties in relation to the particular service were to be brought under and pursuant to the contract. This would ensure that the terms and conditions of the contract could not be circumvented by either contracting party.
- (ix) They would provide that English law is the proper law of the contract.
- (x) They would provide for a dispute resolution procedure containing the following elements:
 - agreement in advance to the use of a designated neutral body for the determination of the facts in dispute;
 - agreement to mediate any dispute that cannot be settled in negotiation, in accordance with a pre-agreed mediation procedure of sufficient particularity to be legally enforceable under the principles of *Cable & Wireless Plc v. IBM (UK) Ltd* [2002] 2 All ER (Comm) 1041²⁸;
 - agreement to arbitrate in England any dispute that cannot be settled in mediation, including agreement to allow the arbitration proceedings to be consolidated with any other proceedings arising out of the same occurrence²⁹; and
 - the arbitration tribunal to be composed of three people, one nominated by each party and the third appointed by the two so nominated.
- (xi) They would require that, in the event of a breakdown in or serious impairment of the service provided, the defaulting party would restore the service within a pre-agreed timescale or, if this were not possible or that party so wished, withdraw the service entirely and agree to its substitution by

²⁸ The contractual clause in this case reads as follows:

“If the matter [in dispute] is not resolved by negotiation [in accordance with a detailed escalation procedure set out in the contract] the parties shall attempt in good faith to resolve the dispute through an Alternative Dispute Resolution (‘ADR’) procedure as recommended to the parties by the Centre for Dispute Resolution [‘CEDR’].

The judge held that “... if in the present case the words of [the mediation clause] had simply provided that the parties “should attempt in good faith to resolve the dispute or claim”, that would not have been enforceable. However, the clause went on to prescribe the means by which such an attempt should be made, namely “through an (ADR) procedure as recommended to the parties by CEDR. Resort to CEDR and participation in its recommended procedure are, in my judgment, engagements of sufficient certainty for a court readily to ascertain whether they have been complied with.”

The stay of proceedings was therefore granted, the court saying that the reference to ADR was analogous to an agreement to arbitrate.

²⁹ A specific agreement to this effect is needed, under section 35 of the Arbitration Act 1996, the tribunal has no power either to consolidate arbitrations or to order concurrent hearings, unless the parties agree to give it this power.

another (equivalent) service provider, on either a temporary (where the service is repairable) or permanent (where it is not or the service provider wishes to withdraw) basis.

(It is doubtful whether the requirement for withdrawal and substitution is appropriate for all service providers; it is probably necessary for the CHS and the communications provider, but not for an individual parking zone/holding area operator).

(h) Non-Contractual Exposure

- (i) The risk of an Actor actually incurring non-contractual liability to another Actor is, in our view, unlikely.
- (ii) One Actor may, however, attempt to sue another Actor in tort/delict in order to circumvent a contractual defence or limitation. Where the other Actor is a contractual partner, the terms of the contract should prohibit claims in tort between the contracting parties – see (g)(viii) above. Where the other Actor is not in contractual relationship with the Actor who is suing, then the general principles of the law of tort will apply.
- (iii) The likelihood is that the claim will be for pure financial loss, unconnected with physical loss or damage. Under English law, the circumstances in which a person can recover pure financial loss from the wrongdoer are severely restricted. There has to be what the courts describe as a ‘proximity of relationship’ between the claimant and the wrongdoer and, in addition, the court must be convinced that, in the circumstances of the case, it is ‘just, fair and reasonable’ that there should be such a remedy. The circumstances in which up to now the courts have held both Actors to exist differ widely from those envisaged in the parking zones use case.
- (iv) The leading case, in which the principle of liability for pure financial loss was first developed, *Hedley Byrne v. Heller & Partners*³⁰, concerned a banker’s reference given to a party contemplating making a financial commitment on behalf of the banker’s client. Later cases have extended the principle to a claim by members of a Lloyd’s syndicate against its managing agents for negligent underwriting (*Henderson v. Merrett Syndicates*³¹), by an intended beneficiary in a will against a solicitor (*White v. Jones*³²) and by a buyer of property against a surveyor engaged by a building society to value it (*Smith v. Eric Bush*³³). Given these precedents, we do not anticipate that English law will provide a remedy for such losses in the context we are considering.
- (v) In the event that one Actor did cause physical loss or damage to the person or property of another, then there would, in principle, be a right of recovery under the general law of tort. In such a case, financial loss consequential

³⁰ [1964] A C 465

³¹ [1995] A C 145

³² [1995] 1 AER 691

³³ [1990] 1 A C 831

upon the physical loss or damage would also be recoverable, if its occurrence were not deemed too 'remote' within the principles set out in (h)(vi) above.

- (vi) The function of a test of remoteness is to set an outer limit to the damage for which a defendant will be held responsible, given that, from one point of view, the possible consequences of any human conduct are potentially endless³⁴. The correct test for remoteness is that the defendant should be liable only for damage of the kind that a reasonable man should have foreseen³⁵. Once, however, the type of damage is foreseeable, the likelihood of it occurring is irrelevant – *The Wagon Mound No. 2*³⁶, nor is it relevant that it occurred in an unforeseeable way³⁷
- (vii) We would expect each Actor to carry third party liability insurance to protect itself from claims of the nature indicated in (h)(v), and for that insurance to cover, in addition, the liability for the financial loss consequent upon the physical loss or damage.

3.2.3. Implementation of the Urban Parking Zones Use Case

Thomas Miller has had a number of discussions with Transport for London (TfL), a partner in the CVIS project, who is taking a keen interest in the development of the CF & F Urban Parking Zones Use Case for practical implementation in Camden High Street, London.

The Freight Unit within TfL has the responsibility of determining how best to utilise the road space under its control. There is apparently a limited amount of road space with areas given over to loading and unloading for commercial vehicles making their deliveries and TfL has been looking at the possibility of pre-booking parking bays for this purpose in order to relieve traffic congestion in Camden High Street.

Camden High Street was chosen because it is a narrow street in a retail area where many loading and unloading activities take place daily. Camden is an innovative council and prepared to try new ideas and this gave TfL the opportunity of undertaking trials with them in respect of real-time loading and unloading using telematics. The idea was to trial the booking of a space for unloading, agreeing a time for this with the driver, and providing alternative arrangements, or an alternative location for the vehicle to park if these arrangements were to go wrong.

TfL set up a trial involving a retail supermarket, Somerfield; a haulier (Wincanton); the driver; the enforcement activity on the street which would include a Closed Circuit TeleVision (CCTV) operator; the public at large; people who violated the parking system by parking in the bays without prior authorisation; other road traffic using the high street; and public transport.

All bookings would need to be held on a central server with physical monitoring and updates by CCTV. Traffic wardens would receive CCTV exception reports and the back office function for the Automatic Number Plate Recognition (ANPR) system would need to be

³⁴ Clerk & Lindsell on Torts, 19th Edition 2006, published by Sweet & Maxwell, at 2-107

³⁵ [1961] A C 388 (Privy Council) *Overseas Tankship v. Morts Dock & Engineering Co Ltd (The Wagon Mound No. 1)*

³⁶ [1966] 1 LLR 657 (House of Lords)

³⁷ *Hughes v. Lord Advocate* [1963] A C 837

able to identify the exceptions when the vehicle entered the pre-defined area. If a vehicle other than the vehicle that had pre-booked a parking bay turned up, then contact would have to be made with the haulier who had pre-booked the space to advise that there was already a vehicle in the parking bay. Traffic wardens would have to have a face-to-face dialogue with the driver of the “rogue” vehicle to determine how long the vehicle would be in the bay; to move it on; or tow it away. As a disincentive to park without pre-booking, notices in the bays could be erected to advise that unauthorised parking would result in a parking ticket being issued.

We also had discussions with the Transport Planning Operations Manager for Somerfield/Wincanton covering the south-east region of the UK who told us that supermarkets would want certainty that the booked bay would be available when needed. He also saw a potential drawback if the driver was put in the position of exceeding the number of hours he was legally allowed to drive if he was held up at a particular “drop” where he expected to be able to unload. It was not always possible to move onto the next “drop” because of the way in which the loading of the vehicle had been configured. He did not see parking tickets as a useful deterrent.

It was beneficial for us to gain an insight into the practicalities involved in setting up this system and to start to map out the legal issues that would need to be addressed to make the system work successfully. For example, TfL would need to draw up Terms and Conditions to control the parking and to determine whether a charge would be levied for its use; and there would need to be an amendment to secondary statutory legislation to change the dual usage of parking bays (currently also being used by members of the public).

3.3. The Inter-Urban Application - CINT

The inter-urban sub-project aims to develop and validate co-operative services to improve the efficiency, safety and environmental friendliness of traffic on the inter-urban road network and offer a comfortable journey to drivers and passengers. The co-operative concepts are based on the capabilities of the core technologies developed within the CVIS project, including advanced positioning and location referencing, seamless infrastructure-to-vehicle and vehicle-to-vehicle communications, as well as the basic services for monitoring.

The applications being developed within the CINT sub-project are:

- **Enhanced Driver Awareness (EDA)** which informs vehicle drivers directly by communication from a service centre, the roadside or even nearby motorists, about the relevant aspects of the dynamic traffic situation, current speed and other regulations, road and weather conditions in the journey ahead. It also enhances the effectiveness of advanced driver assistance systems (where available).
- **Co-operative Travellers' Assistance (CTA)** increases the transparency of the evolving traffic situation downstream on the road network; personalises the information to travellers (e.g. travel times for trucks differ from those for passenger vehicles; caravans may temporarily be banned from a bridge; travellers have different destinations; and toll and road charging fees may differ per road and vehicle) and enable them to make optimum use of the road network and assist the traveller with making the right choice. In some cases, this might be the cheap and long road but in others it could be the charged (tolled) road that is quicker. CTA supports voyage or on-trip planning and navigation through the road network.

3.3.1. CTA – Pre-trip Planning Use Case (CV-UC-SP3.2-0006)

This text relates to the pre-trip planning service sub-application of the CTA application. The text is based exclusively on English law. Whether the use case needs to be reviewed from the point of view of the law of other European Community countries and how this should be done, remains to be determined.

The CTA application consists of three main services/sub applications that will provide assistance to travellers and drivers of other vehicles, e.g. heavy goods vehicles, but not public transport and emergency service vehicles. The services provided by each of the CTA sub applications are as follows:

- **Pre-trip and On-Trip Planning:** Drivers can plan their trips across the inter-urban road network according to their need to travel, their specific origin and destination within the inter-urban road network, plus the current and forecast traffic conditions. In addition, drivers can change their previously prepared trip plans, or produce plans for the first time, whilst their journeys are in progress.
- **On-trip Seamless Service with Tracking and Rerouting (if needed):** The service centre takes care of drivers' requests providing information and (re)routing guidance depending on individual driver preferences and vehicle characteristics.

- **Vehicle Data feeding to Traffic Control Centres:** The collection of vehicle and planning data enhances the determination of current and forecast traffic conditions so that they can be combined and used in the preparation of trip plans. This data can also be used to calculate strategies to assist with the management of the traffic using the inter-urban road network.

Assistance is provided to drivers directly from the service centre to units in the vehicle, and information from drivers feeds traffic control centres.

As stated above, this text examines the liabilities and responsibilities of those entities involved in the delivery of the pre-trip planning sub-application.

3.3.2. Legal Analysis

(a) The Actors involved in the Pre-Trip Planning Use Case

The Actors involved in this sub-application are the same as those involved in other CTA applications. They are as follows:

- (i) **Traffic Manager:** This is a human entity that manages the operation of the CINT (and other) applications forming the traffic management system located in the traffic management centre (TMC) that is responsible for the inter-urban road network. The traffic manager is able to manage how the applications in the TMC operate and the information that is made available to vehicle drivers and travellers. Additionally the traffic manager can decide on the way that vehicles are able to use the network, e.g. OPEN/CLOSE lanes, and set speed limits, etc.
- (ii) **Traveller:** This human entity represents the vehicle driver when that entity is not driving its vehicle. Its main purpose is to enable the vehicle driver to carry out pre-trip planning from outside the vehicle. For this purpose, the traveller will interface with the CINT applications using a mobile system. This may be a personal digital assistant (PDA) or a static computer such as a PC. If the traveller chooses to do the trip planning whilst in the vehicle, then (s)he will become the vehicle driver human entity.
- (iii) **Road Operator:** The road operator is responsible for, in this case, the inter-urban road network; the condition his road network is in; the usage of this road network; and the road pricing schemes supporting traffic demand management.
- (iv) **Service Provider:** The legal organisation that provisions and provides services along the inter-urban road network to travellers and vehicle drivers on commercial basis and/or free of charge.
- (v) **Guard:** Guard for Mobility and Environment – mostly the policy departments of governmental bodies safeguarding over the longer term (5, 10, 15 years) the quality of mobility and environment in a country/region/municipality. Guard for financial flows – responsible for the

financial flows, e.g. as a consequence of making a charge for the usage of roads.

(b) The Sequence of Events

- (i) A traveller (vehicle driver, see (a)(ii) above) logs in at the service centre by means of traveller's device (either a PDA or an on-board unit).
- (ii) The traveller issues a request for a travel plan, including the ranking of Actors and values (amongst others, acceptable travel times and travel costs, choice of the cheapest or fastest route, the best means of travel, fixed destination or type of destination).
- (iii) The traveller is provided by the service centre with a set of potential and ranked travel plans, and an advice for the best personal choice (day/time/route/ destination) to start the trip on each of the routes.
- (iv) In addition, the traveller can open up information on "event types", specific events, destination types, specific destinations, etc. (information provided by the service provider).
- (v) The traveller selects a travel plan.
- (vi) The traveller confirms the selected travel plan, and explicitly thereby provides information on his/her intentions via the service provider to the traffic manager.
- (vii) The traveller starts the journey around the advised time of departure.
- (viii) These steps are illustrated in the following diagram, CV-UC-SP3.2-0006, pre-trip planning. Note that the numbering in the diagram does not follow the text in all respects, partly because the diagram includes an enquiry to the traveller/vehicle driver as to whether (s)he agrees to the vehicle being traced (presumably by satellite).

act Activity CV-UC-SP3.2-0006 & 0010 Pre-trip planning & Support on-trip planning

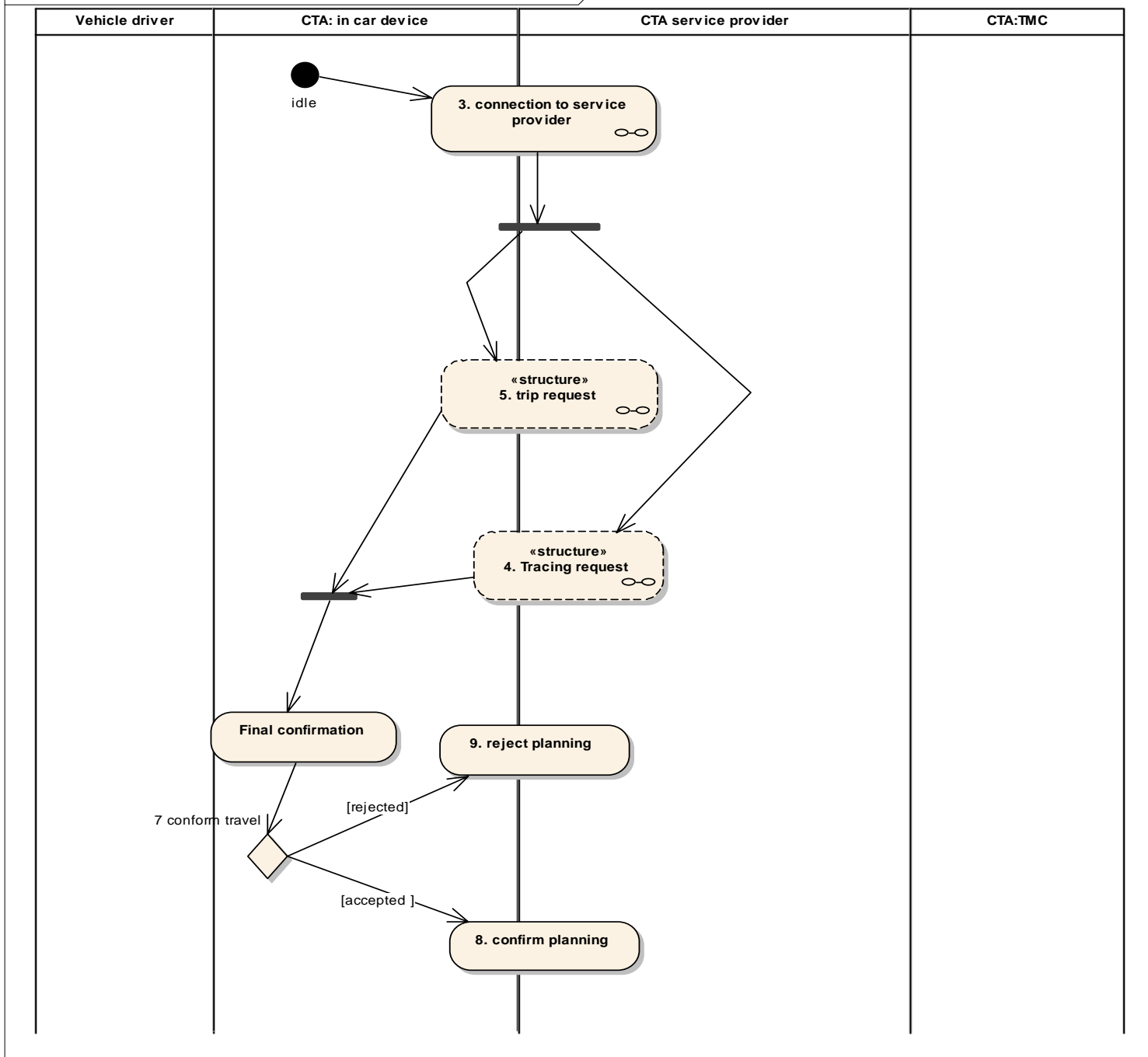


Figure 4: Pre-Trip Planning and Support Trip Planning

- (ix) There are only two parties shown in the diagram: the traveller/vehicle driver and the service provider. However, the service provider cannot provide the service required without information from outside sources. These we will term the road operator. Refer to (a)(iii) above for the functions of this Actor. The support that the service provider requires from third parties is illustrated in the following diagram.

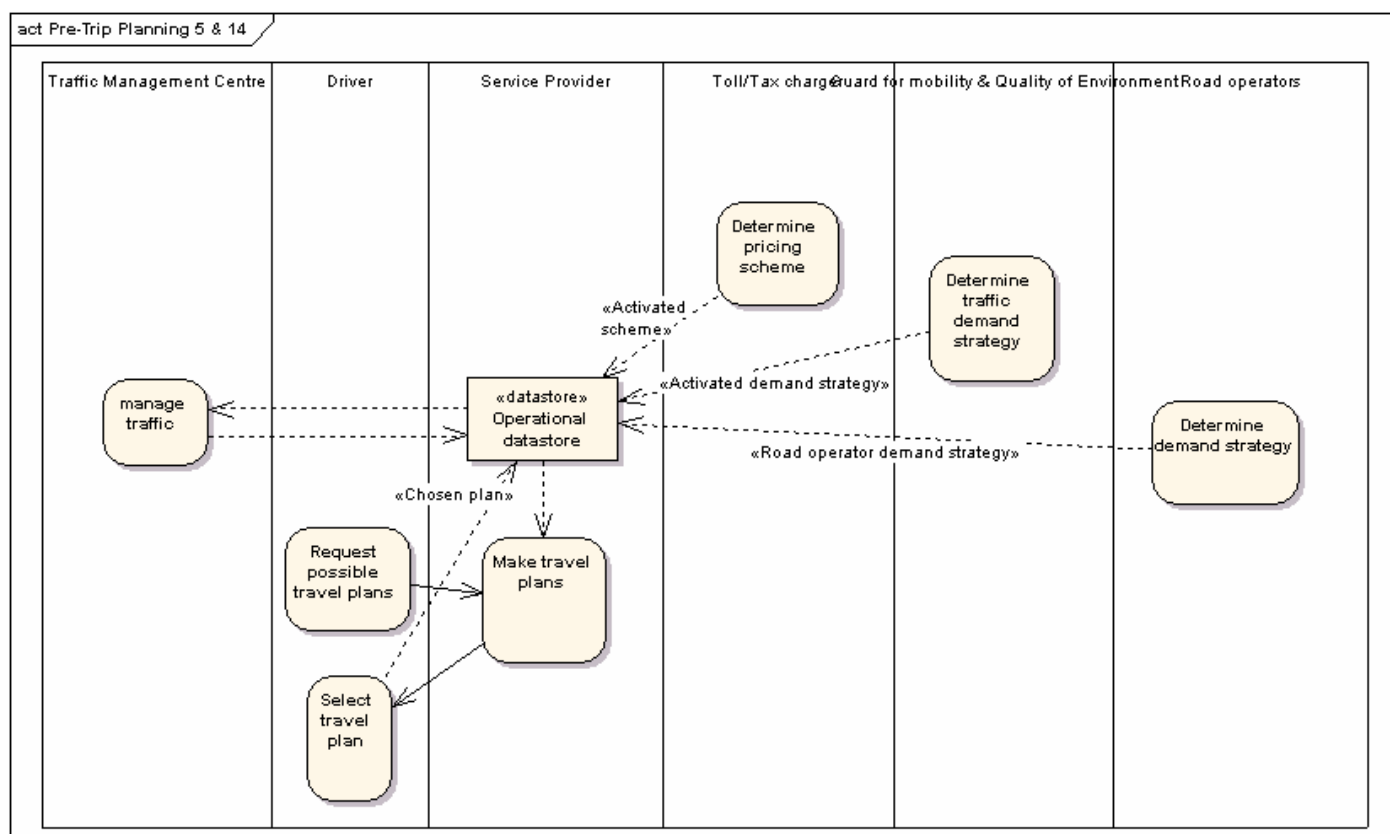


Figure 5: Pre-Trip Planning Activities

(c) The Contractual Matrix

- (i) It is clear from the functional description set out above that the principal Actors will be bound to each other through some form of contract. It follows, therefore, that their legal liabilities within the use case will be primarily contractual.
- (ii) The contracts to which the use case gives rise are set out in the following table:-

Table of Contracts				
Contract No.	Party A	Party B	Contract Type	Comments
1	Traveller/ Vehicle Driver	Service Provider	Service Contract	Contract of Adhesion
2	Service Provider	Road Operator	Standard	Regulations (?)
3	Service Provider	Traffic Manager	Standard	Regulations (?)

Table 3: Table of Contracts related to the CINT Pre-Trip Planning Use Case

- (iii) The first contract is a service contract between the end-user (traveller or vehicle driver) and the service provider. We would anticipate this to be a contract of “adhesion”, by which is meant a contract which is offered on a ‘take it or leave it’ basis, similar to the terms and conditions attaching to the use of software. If you

want to use the software, you *must* accept the conditions. If you do not accept the conditions, then you cannot use the service. Within an adhesion contract, it may still be possible to negotiate price and length of service – but usually within pre-defined parameters set by the service provider.

- (iv) In order to deliver the service the service provider contracts to deliver to the end-user, the service provider requires information from both the road operator and the traffic manager. We envisage that, to obtain this information, the service provider will be required to accept standard terms and conditions, set by the administrative or government agencies concerned or determined by regulations issued under powers of delegated legislation.

(d) **Characteristics of the Contracts** (please see section 3.2.2(g) of the CF & F Use Case.

(e) **Non-contractual Liabilities** (please see section 3.2.2(h) of the CF & F Use Case.

3.3.3. The Urban Application – CURB

The urban sub-project aims to develop and validate co-operative service components to improve the efficient use of the urban road network and also provide positive effects on traffic safety and the environment. The principal innovation will be the co-operative exchange of data as between individual vehicles and the roadside equipment and provision of dedicated, targeted services to individuals from the roadside.

The CURB sub-project will also consider the whole chain of information that will make this exchange of information possible, creating a co-operative system for detailed travel data collection, personalised travel information, enhanced management of traffic at urban level and promotion of the efficient use of road space. Co-operation with the vehicle will also allow the traffic manager to have a better view of how the urban transport service is working, allowing refinement to provide for a more efficient and safer use of the road network.

3.3.4. The Speed Profile Application – CV-UC-SP3.1-0013

The speed profile application aims to provide speed advice to the driver in order to increase comfort and to increase traffic safety. In the CVIS context, vehicles are equipped with an intelligent device that is able to communicate with the infrastructure and with other vehicles. This intelligent system can thus help the driver to choose the best speed to approach intersections controlled by traffic lights/signals.

The speed advice functionality would demonstrate that it is possible to communicate to the vehicles the best speed at which to approach the signals-controlled intersection to get the green light. The speed profile is different for each direction and for different distances from the intersection.

The CVIS-equipped infrastructure calculates the best approach speed considering the remaining green time (or the time to green) and the implemented strategy. Then it communicates to vehicles the best approach speed profile to maximise the intersection throughput (and also minimise travel time for the vehicles). In case of a red light, the infrastructure also communicates the remaining time of red to alert the driver to the light changing. Thus, the

computation of the best speed considers not only the optimisation of the driver's comfort, but also the optimisation of the throughput of the intersection.

The speed advice functionality is designed for a series of intersections that have a “preferential” axis for the traffic flow. In this way, it is possible to communicate to the vehicle not only the best speed for the next one intersection, but also for the next two (if the distance between the two intersections is not too great). It is not possible to calculate the speed at which to approach the third intersection, because the adaptive control changes control strategy each 3 seconds.

The system can be used for intersections where the distance from one to the next is not more than 50 metres, but it is not very useful because the distance between the intersections corresponds to about 3 seconds, and the traffic light phase cannot be modified.

(a) **Expected Benefits**

The service is expected to provide an overall improvement in the service level for urban roads because the priority of the system is to optimise the intersection throughput. In order to obtain this improvement in practice, a significant percentage of vehicles will have to be equipped with CVIS. If an adequate level of deployment is achieved, the speed profile system should be able to guarantee an overall harmonisation of traffic flow, with related safety and environmental benefits.

(b) **Application Short Definition**

The speed profile application is intended to calculate the best speed of approach to an intersection using available traffic data, and then to send the recommendation to CVIS-equipped vehicles. It processes the available floating car data in order to estimate the queue time at a certain intersection and provide suitable advice to the driver. This type of data can also be used for estimating the traffic flow and travel time, which is also useful for the traffic management system.

(c) **Value Chain of the Service/Application**

The added-value of the speed profile application consists of providing speed advice information to the driver in order to help him adapt to the current control strategy. The speed profile advice will help to improve traffic throughput at the intersections, so reducing congestion probability and decreasing the overall pollution caused by useless acceleration/deceleration phases. In addition, the application should also increase overall traffic safety, because of the smoothing of the traffic flow.

The picture below shows the high-level value chain for the speed profile application.

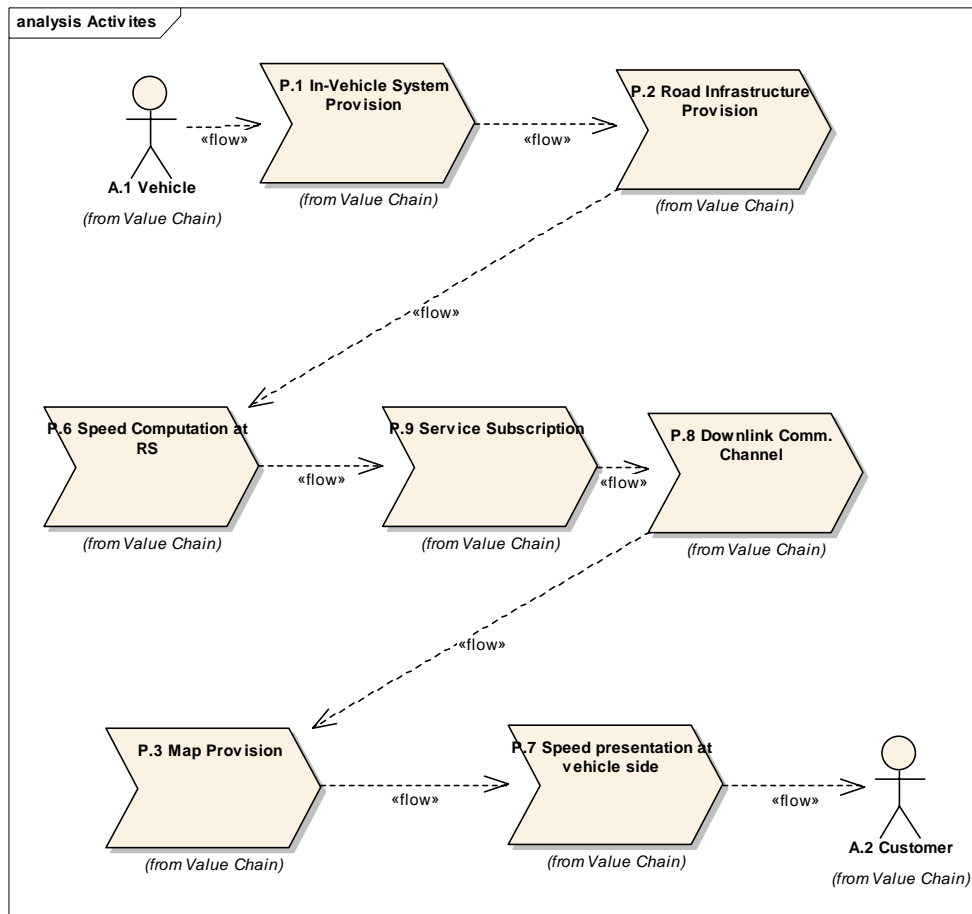


Figure 6: CURB Application: Sequence of Activities

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3.3.5. Legal Analysis

(a) Actor Roles

With reference to Figure 6, the following roles have been identified:

- **P.1 In-Vehicle System Provision** – This corresponds to the installation of the necessary CVIS platform in the vehicle, namely the in-car device. It includes the function of providing maintenance whenever necessary.
- **P.2 Road Infrastructure Provision** – This represents the provision of all the necessary equipment to be installed at the roadside (the roadside unit (“RSU”) and also includes the related maintenance service.
- **P.6 Speed Computation at RSU** - An application running in the RSU for measuring the best speed profile.
- **P.9 Service Subscription** - The registration service of the customer to the CVIS platform.
- **P.8 Downlink Comm. Channel** - The set of communication channels used to transmit and deliver information from the RSU to the vehicle.

- **P.3 Map Provision** – This represents the process of providing the map information to be used to display the different speed profiles (at road/lane level) to the driver.
- **P.7 Speed Presentation at Vehicle Side** – This represents an application for displaying the recommended speed profile in the vehicle.
- **A.1 Vehicle** – This is the entity where the CVIS applications are executed and the interaction with the driver is made possible.
- **A.2 Customer** – He is the final user of the application. Two types of customers are foreseen by CURB:
 - (1) the driver/traveller or, more generally, the road user; and
 - (2) the traffic manager, i.e. the person or body that controls and manages the traffic in the road network. Other Actors might be taken into consideration (e.g. public transport authority etc.), but they have not been considered in the scenario for this application.

(b) Sequence of Events in the CURB Application

We can see from the following that the sequence of events in this application is as follows:

- (i) The driver/customer obtains a CVIS-equipped vehicle from the dealer/manufacture.
- (ii) The road operator provides, installs and maintains the requisite roadside equipment.
- (iii) The road operator acquires from a software supplier the application needed to make the necessary speed computations. The road operator inputs to the application the relevant traffic control strategy that he wishes to implement.
- (iv) The road operator contracts with a service provider to provide the service provider with the output from the application, thus enriched.
- (v) The service provider contracts with a map provider to localise the output obtained from the road operator in a form readily intelligible to the driver.
- (vi) The service provider contracts with the driver to provide the speed profile service required; in return, the driver agrees to allow the sensors in his car to communicate with the roadside units.
- (vii) The driver, the road operator and the service provider all contract with a communications provider to gain access to the level and quality of communications required.

3.3.6. Legal Analysis

(a) The Contractual Matrix

- (i) From the functional description set out above, we can assume that the principal Actors will be bound to each other through some form of contract. It follows, therefore, that their legal liabilities within the use case will be primarily contractual.
- (ii) The contracts to which the use case gives rise are set out in table 4 below.
- (iii) The first contract is the contract by which the vehicle driver (owner) obtains a CVIS-enabled OBU in his vehicle. The driver's counterparty could be the car manufacturer (OEM) or more likely, his dealer, or an equipment supplier (particularly in the case of a retro-fit). This contract would be subject to relevant Sale of Goods Act provisions, particularly as regards 'fitness for purpose'. (See Section 4 Legal Aspects in particular section 4.2.7 on the Product Liability Directive and section 4.4. on the Sale of Goods and Supply of Services under English law).
- (iv) The second contract is between the vehicle driver (owner) and a service provider who supplies the CVIS functionality for the OBU. The service provider could be the same as the counterparty in Contract 1, but it could also be a different entity. This contract would, we anticipate, be on standard terms and in addition, a contract of "adhesion". By this we mean a contract which is offered on a 'take it or leave it' basis, similar to the terms and conditions attaching to the use of software. If you want to use the software, you *must* accept the conditions. If you do not accept the conditions, then you cannot use the service. Within an adhesion contract, it may still be possible to negotiate price and length of service – but usually within pre-defined parameters (tariffs) set by the service provider.

Table of Contracts				
Contract No.	Party A	Party B	Contract Type	Comments
1	Vehicle Driver	Supplier of CVIS OBU (OEM/dealer or Equipment Supplier)	Sale & Purchase/Supply Contract	Sale Contract subject to Sale of Goods legislation; supply of Product subject to Product Liability Directive.
2	Vehicle Driver	Service Provider	Standard Terms	Supplies the Speed Profile service to the OBU.
3	Vehicle Driver	Service Provider or (possibly) the Road Operator	Standard Terms	Terms cover exchange of information between vehicle sensors and RSU and between RSU and OBU (if service provider uses the RSU as the means of communication with the vehicle).
4	Road Operator	Application Software Provider	Standard terms	Road operator obtains application necessary to translate its traffic management strategies into specific speed advice for the driver.
5	Road Operator	Service Provider	Standard terms, or possibly regulations/licence	Road operator engages service provider to deliver the Speed Profile service to the driver.
6	Service Provider	Map Service Provider	Standard terms of the Map Service Provider	The contract through which the service provider can localise his application.
7	Driver, Road Operator, Service Provider	Communications Service Provider	Standard terms	All Actors contract for the ability to communicate with each other to the required speed and standard.

Table 4: Table of Contracts related to the CURB Speed Profile Use Case

- (v) The third contract is that between the vehicle driver (owner) and either the road operator or the service provider. It is the mechanism which governs the exchange of information between, on the one hand, the vehicle's sensors and the road operator's RSU and, on the other, between the RSU and the vehicle's OBU (assuming that the transmission facility used by the service provider is physically located in the RSU). Again, we envisage this contract being one of adhesion.
 - (vi) The fourth contract is between the road operator and the software provider. It is the means by which the road operator obtains the facility to integrate his preferred traffic management strategies within the floating car data that his RSUs are receiving. It is likely that this contract will be on the standard terms of the software supplier but that may not be the case where the software provider has been employed to develop bespoke software.
 - (vii) The fifth contract is between the road operator and the service provider, by which the road operator engages the service provider to deliver the speed profile product to the driver in the car, via the OBU. This contract is likely to be on standard terms but whether the terms are those of the road operator or of the service provider will, we suggest, depend on market forces.
 - (viii) The sixth contract is that between the service provider and the mapping service provider. By this contract, the service provider obtains the facility to present the speed profile application in relation to the roads on which the driver is then driving.
 - (ix) The final contract is that between all the relevant Actors and a communications service provider. Without the ability to communicate with each other at high speed and great accuracy, the speed profile application simply could not work.
- (b) **Characteristics of the Contracts** (please see section 3.2.2(g) of the CF & F use case.
- (c) **Non-contractual Liabilities** (please see section 3.2.2(h) of the CF & F use case.

3.4. The Co-operative Monitoring Application – COMO

The COMO sub-project has three major objectives:

- To provide co-operative applications with a communication service that enables them to access monitoring data anywhere and at any time, thus capturing the details of the underlying monitoring infrastructure of probe vehicles and infrastructure sensors. Inside CVIS the application interface will be used by the application-oriented sub-projects: urban (CURB); inter-urban (CINT); and co-operative freight and fleet (CF & F).

- To develop and provide a standardised interface providing raw or nearly raw data gathered by the vehicle as well as by the local sensor infrastructure that can be used by a qualified service provider for various purposes.
- To develop the distributed algorithms for data fusion that are required to provide the COMO service to the applications, based on the data delivered by the standardised interface. The data fusion methods will be developed in strong co-operation with the applications-oriented sub-projects in order to meet their requirements. COMO will also closely co-operate with the deployment enablers sub-project, DEPN, to establish a business case for the operation of COMO that addresses all non-technical issues.

3.4.1. COMO Use Case - Timely Traffic Conditions Detection to the Road User (CV-UC-SP3.4-0004)

The goal of this use case is to improve the road safety on a 5 km road section ahead of the current position of the approaching vehicle. The warnings are transmitted from a roadside unit to the CVIS vehicle unit within a delay of 5 seconds. For example, private motorists approaching a road intersection are notified of a queue that is starting to build up ahead because of an accident.

3.4.2. Legal Analysis

This text relates to use case CV-UC-SP3.4-0004 – Timely Traffic Conditions Detection to the Road User as set out in the COMO Architecture and System Specifications V.2.1 and D.COMO.2.1 – Use Cases and Systems Requirements.

The text is based exclusively on English law. Whether the use case needs to be reviewed from the point of view of the law of other European Community countries and how this should be done, remains to be determined.

(a) The Actors involved in the Timely Traffic Conditions Detection Use Case and Pre-Conditions

- (i) The Actors involved in this sub-application are:
 - (a) Private Motorists; and
 - (b) Road Operators.
- (ii) Pre-Conditions
 - (a) A private motorist equipped with CVIS technology is approaching road section with onboard unit and access control.
 - (b) The roadside unit is equipped with CVIS technology for processing instant data and low distance broadcasting.
 - (c) The motorist willing to be informed on instant traffic events on the relevant road section.
 - (d) The destination of the approaching vehicle lies in the same direction as the location of the traffic event.
 - (e) The positions of the approaching vehicles in the relevant area are available.

(b) The Sequence of Events

- (i) The roadside unit collects traffic state information on the downstream road sections using road side sensors (induction loops, radar, etc.) and XFCD (Extended Floating Car Data) from vehicles in that section.
- (ii) The CVIS-equipped approaching vehicle reports its destination and vehicle information to the roadside unit.
- (iii) The roadside unit processes instant data about road events (if available) in a few seconds (less than 4 sec.).
- (iv) The roadside unit transmits the relevant information to the CVIS-equipped vehicles nearby using GPRS/UMTS/DSRC.
- (v) The roadside unit broadcasts the information to the nearby roadside units for redundancy purposes using GPRS/UMTS or leased lines.
- (vi) The on-board car unit shows some warnings about the road events and suggests possible actions to the driver, who generates the possible actions suggested to the driver (RSU algorithm, vehicle algorithm).
- (vii) These steps are illustrated in the following diagram:

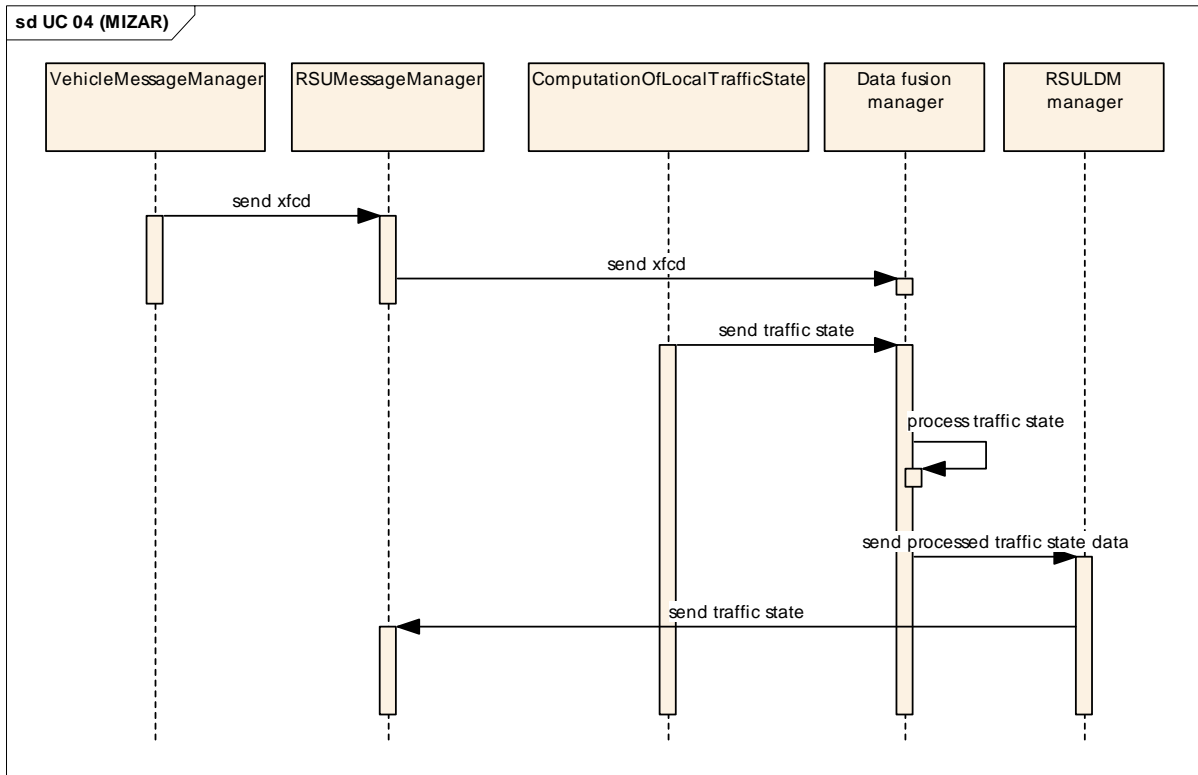


Figure 7: COMO Timely Traffic Conditions Detection to Road Users Use Case – Message Sequence

Key: RSU = Road Side Unit; LDM = Local Dynamic Map

- (viii) There are only two parties shown in the diagram – the vehicle driver and the road operator. There is at least one other, the party that provided the vehicle with its on-board unit (“OBU”). This could be an original equipment manufacturer (if the OBU was fitted in the car originally) or a system supplier, if it was retro-fitted.
- (ix) This model assumes also that the road operator has in-house access to all the data/information that it needs and does not need, therefore, to contract with third parties to provide it.

(c) The Contractual Matrix

- (i) From the functional description set out above, we can assume that the principal Actors will be bound to each other through some form of contract. It follows, therefore, that their legal liabilities within the use case will be primarily contractual.
- (ii) The contracts to which the use case gives rise are set out in the following table:

Table of Contracts				
Contract No.	Party A	Party B	Contract Type	Comments
1	Vehicle Driver	Supplier of CVIS OBU (OEM or Equipment Supplier)	Supply Contract	Sale Contract, subject to Sale of Goods legislation; supply of Product subject to Product Liability Directive
2	Vehicle Driver	Service Provider	Standard Terms	Supplies functionality of OBU
3	Vehicle Driver	Road Operator	Standard Terms	Terms cover exchange of information between vehicle sensors and RSU and between RSU and OBU

Table 5: Table of Contracts – COMO Timely Traffic Conditions Detection to the Road User

- (iii) The first contract is the contract by which the vehicle driver (owner) obtains a CVIS-enabled OBU in his vehicle. The driver’s counterparty could be the car manufacturer (OEM) or an equipment supplier (particularly in the case of a retro-fit). This contract would be subject to the Product Liability Directive and to

relevant Sale of Goods Act provisions. (See Section 4 Legal Aspects in particular section 4.2.7 on the Product Liability Directive and section 4.4. on the Sale of Goods and Supply of Services under English law).

- (iv) The second contract is between the vehicle driver (owner) and a service provider who supplies the CVIS functionality for the OBU. The service provider could be the same as the counterparty in contract 1, but it could also be a different entity. This contract would, we anticipate, be a contract of “adhesion”. By this we mean a contract which is offered on a ‘take it or leave it’ basis, similar to the terms and conditions attaching to the use of software. If you want to use the software, you *must* accept the conditions. If you do not accept the conditions, then you cannot use the service. Within an adhesion contract, it may still be possible to negotiate price and length of service – but usually within pre-defined parameters (tariffs) set by the service provider.
- (v) The third contract that we envisage is between the vehicle driver (owner) and the road operator. It is the mechanism which governs the exchange of information between, on the one hand, the vehicle’s sensors and the road operator’s RSU and, on the other, between the RSU and the vehicle’s OBU. Again, we envisage this contract being one of adhesion.
- (d) **Characteristics of the Contracts** (please see section 3.2.2(g) of the CF & F use case.
- (e) **Non-contractual Liabilities** (please see section 3.2.2(h) of the CF & F use case.

3.5. Summary of Findings on the Use Case Analyses and Further Study

What has been provided in this section is our first attempt to map out the legal liability/responsibility of Primary Actors in their relationship with other Primary Actors (and with third parties) involved in delivering the CVIS system to market in respect of their potential contractual and non-contractual relationships. We shall be researching into the use cases in more detail to ensure that those Primary Actor categories which have not been included in the use cases described in this section of the report, are addressed, using additional use cases in which they are involved. This will result in a compilation of scenarios in which Actors’ legal liabilities to each other and to third parties are mapped, as they relate to the delivery of the applications being enabled through the CVIS system.

Actors should only be required to be liable for what they can control. The offering they are providing to the system should be in modular form. By that we mean a compact entity where all the parties involved in delivering that module are controlled by the Primary Actor who takes responsibility for it. Creating a system such as CVIS, putting it onto the market and operating it will attract a range of liabilities. What we have to determine is the allocation of liabilities and who will own them.

To provide a comprehensive picture of Actors’ legal liability exposure, however, needs further analysis. It will be necessary for us to align the legal findings as to Actor liability with the technical development of the system to determine whether and how adjustments in the technical development can reduce the legal liability of an Actor who may not be able to cope with it. One answer may be to transfer it to another Actor who can cope with it; another might be to eliminate it altogether.

Discussions held at the COMO risk brainstorming session focused on the alternatives of aggregating data inside the car, where liability would reside with the OEM, and outside the car, where liability would be apportioned between a number of Actors. We are not suggesting that liability can be managed out of the system on a technical basis but rather that we take the opportunity, during the technical development of the system, to determine whether Actor liability can be more fairly apportioned on the basis of the technical development than if it were to be addressed when the system has been fully developed and cannot, through increased costs involved or technical complexity, be changed.

We shall also further investigate legal liability by creating a number of accident or incident scenarios, which we will evaluate under English law. We shall also introduce an incident scenario occurring during a journey through European Member States to determine where liability will ultimately rest, taking account of the different legal regimes of the countries through which the driver will pass. In this way, we aim to provide a more detailed picture of the legal position of different Actors/parties involved in the CVIS system, based not only on the laws of contract and tort but also with regard to statutory law.

An additional aspect of research which may or may not be necessary, depending on how the system will be developed over the next two years to the end of the project, will focus on the legal liability for the interfaces that would join together the different applications. Currently we understand that each application is stand-alone and that there is no exchange of data as between the different applications, even if the same user is signed up to specific services provided by the various CVIS applications. On these aspects, we shall have to be guided by the Core Architecture Group (CAG) to advise us on exactly how the system is being developed and whether such research in liability allocation relating to the interfaces will be necessary.

Another aspect on which we shall need to rely on the CAG is in relation to the verification, validation, certification, and attestation of the safety, quality, condition, suitability and fitness-for-purpose of the products and services to be supplied through the CVIS system and the roles of the parties who undertake these tasks (the “attestors”). They too will have a legal exposure which will have to be mapped, not only in respect of their own actual or potential clients but also in relation to any other party who may reasonably be expected to rely directly or contingently on their attestation. It is not entirely clear to us whether and how these issues are being addressed within the CVIS project but we understand that technical standardisation is being adopted as in, for example, the utilisation of CALM which provides a standardised set of air interface protocols and parameters for medium and long-range, high-speed ITS communications. And also in the re-use of specifications and data formats as, for example, from the GST³⁸ project. It is not clear whether new technical standards are being created or even if they are required in the development of a co-operative vehicle infrastructure system.

We have started to determine how Actors perceive the legal liabilities to which they would be exposed as a consequence of their involvement in co-operative vehicle infrastructure systems. We have created a questionnaire for that purpose. The following section reports on the results of those questionnaires.

³⁸ Global System for Telematics (GST) is an EU-funded integrated project that is creating an open and standardised end-to-end architecture for automotive telematics services. The purpose of GST is to create an environment in which innovative telematics services can be developed and delivered cost-effectively, and hence to increase the range of economic telematics services available to manufacturers and consumers.

3.6. The CVIS Actor Questionnaire

An example of the questionnaire can be found at Appendix 6 to this report. Nine questionnaires were completed out of a survey of twelve companies. Questionnaires were completed by six road operators/road authorities; one software design company; the development department of an automotive company; and a logistics association. As agreed, the identities of the respondents have been kept confidential and their contribution has been recorded on a non-attributable basis.

It was perhaps too early to canvass Actor groups. Our liability matrices were not entirely complete and lack of time prevented all the companies being interviewed personally, precluding us from using the questionnaire not merely as a guide but to probe more deeply into contractual and insurance issues. We were unable to acquire a clear picture of how Actors viewed legal liability; what measures they already had in place to minimise liability; how they felt their involvement in CVIS (when marketed) would affect their liability; what measures would they put in place to counter any increased liability; and whether they were confident that their current insurance cover for liabilities and economic loss was adequate. Some interviewees, unfortunately, misconstrued the purpose of the questionnaire and based their answers on their involvement in the project work rather than looking forward to when CVIS is marketed and their involvement in it became part of their own business.

The questionnaire was divided into seven sections:

- Background to the Need for this Questionnaire
- General Categorisation of the Interviewee
- Contractual and Jurisdiction Characteristics
- Technical Matters
- Risk Transfer, including Insurance
- Public Authority and Community Aspects
- Contribution to Further Debate

A summary of findings from the survey, as they relate to the last five sections, can be found in Table 6 Actor Questionnaire – Summary of Findings. Broadly, looking at each section of the questionnaire, the following conclusions can be made:

Contractual and Jurisdiction

- Generally Actors insisted on their national jurisdiction and national law governing their contracts.
- There was some evident confusion amongst respondents regarding how their technical relationships with other Actors would be formalised, believing that this was already accomplished in the Technical Annex and the Consortium Agreement. The relevance of model contracts was highlighted as well as non-disclosure agreements and Engineering Service Agreements.
- Actors felt that in contractual arrangements, they would only be responsible for what they could control but felt that liability for technical products would lie with the supplier.
- Two of the three Actors who responded settled disputes by compromise, mediation or arbitration rather than going through the courts.

- Two Actors had knowledge of Alternative Dispute Resolution and the other was aware of it but had had no experience. Almost half had not heard of it.

Technical Matters

- Almost all Actors expressed some anxiety about the robustness and resilience of the CVIS system.
- As far as standardisation, certification and validation are concerned, six Actors either did not respond at all or did not respond to the actual question, agreeing that these issues were important but not knowing how they related to the CVIS system itself.
- Most thought the issues in the bullet point above were important and some believed adherence to them would reduce the risks of liability exposure.
- The responses to the question about how a technical fault in the system could best be put right suggested that there was not a full understanding of what was behind the question – perhaps the way in which the question was posed did not focus on the answers we were expecting. What we really wanted to find out was what systems should be put in place to identify a fault; how and by whom would the fault be rectified; how would the repair be funded; and how would the system function while the fault was being rectified. In our next questionnaire we shall ensure that technical questions are more appropriately framed.
- Liability issues seemed to be the most important non-technical issues Actors perceived would cause major deployment barriers to CVIS, followed by the need for the benefits to Actors and stakeholders being more clearly defined.
- Issues causing anxiety included the integration level of street furniture required by the system; the clarification of legal liabilities; and the need to manage the overall system.

Risk Transfer, including Insurance

- Only one Actor felt confident that his insurers and brokers really understood the risks and liabilities involved with his work in co-operative vehicle infrastructure systems. Two Actors were self-insured; one felt that insurers would raise the insurance premium when the system was high risk and not substantially reduce it when the risks of the system were reduced; and another felt that insurers would deal with the system when the possible benefit exceeded the risks and liabilities.
- Only one Actor felt confident that his current insurers would cover him for the liabilities and economic losses which could be caused by his involvement in CVIS.
- None of the respondents was able to comment on whether there might be difficulties with insurers as to limits, duration or appropriateness of cover.
- Only two respondents were definite in their response that they required sub-contractors or affiliates to have and maintain fully adequate insurance cover.
- No Actors appeared to provide performance bonds whether supported by insurance or not.

Public Authority and Community Aspects

- Four respondents felt that implementation of CVIS would or could achieve better road safety. One said it would provide more precise and reliable information about traffic on the network and another that it would provide urban traffic control.

- Only two Actors commented on how they would license or charge for the installation of CVIS boxes in their area. One said using road user charging; the another by automatic user payment with a licence-based fee for vehicle fleets.
- The National Verkehrssicherheitsabschluss for Europe; CEMT, ERTICO, PIARC, ITS (worldwide) were the names of the public authorities suggested by respondents.
- As regards what legal liability exposure Actors would have in CVIS, respondents mentioned the storage and dissemination of personal data; defects in the system that could cause an accident; interfering with the vehicle's commands; and data privacy contractual issues.
- Actors felt that the level of liability would increase the more complex CVIS-like systems became. One Actor commented that liability is perceived to be far greater than ever known before because of the potential extent of damage and because much was still unknown.

Contributions to Further Debate

- A question related to the significance of a “Without Prejudice Restoration Fund” provided a range of answers, for example, that each Actor would be responsible only for what he produced/commercialised – it would be the responsibility only of those Actors who commercialised the system to provide recompense for damage caused by it. One Actor felt that the implementation of such a restoration fund would give rise to implications relating to equality of payments. Public authorities would not expect to contribute to a fund intended to cover technical failures for which no party in particular would take initial responsibility. One Actor felt that a collective restoration fund may help to determine how a failure had occurred and another Actor felt that only insurance would be able to solve the problem.
- Only one Actor suggested how claims on the CVIS system could be funded and processed - through the civil or criminal courts.
- Only one Actor felt that insurers would have joint and several recourse to Actors in the CVIS system.
- Only two Actors saw advantages in sharing risks with other Actors in the CVIS system, saying that reasons for conflict would be reduced and that good relationships with commercial partners would be promoted.

Whilst we only surveyed a small cross section of the Actor categories operating within CVIS, we were able to determine some areas where increased understanding would be beneficial. These included clarification of legal liability exposure; the lack of real understanding of the insurance perspective on co-operative vehicle infrastructure systems; the benefits of sharing risk; the level of confidence in and knowledge of the CVIS system generally; and the awareness of tools that might assist in reducing liability, including the “Without Prejudice” Restoration Fund.

Table 6: CVIS Actor Questionnaire - Summary of Findings

Question	Response
Contractual and Jurisdiction	
Do you typically insist on your national jurisdiction and your national law governing your contracts?	<ul style="list-style-type: none"> • 5 x yes. • 1 x national jurisdiction preferred. • 1 x national/European. • 2 x different possibilities.
If you are involved in developing an application through one of the CVIS application sub-projects, how do you envisage your technical relationships with other Actors involved being formalised (for example, by contract or using standard business terms)?	<ul style="list-style-type: none"> • 2 x not applicable. • 1 x by public contract. • 1 x by model contracts with specific provisos. • 2 x no response. • 1 x technical relationships are defined in the Technical Annex and the Consortium Agreement. • 1 x by non-disclosure agreement then by means of an Engineering Service Agreement. • 1 x on a consultancy basis to transportation companies in the field of telematics.

Question	Response
In contractual arrangements, do you generally find that you are only responsible for what you can control, as opposed to being responsible for other people's products and services?	<ul style="list-style-type: none"> • 4 x yes. • 1 x with an additional clause denying liability. • 1 x on a case by case basis depending on the contract and the circumstances. • 1 x liability for technical products lies with the supplier. • 1 x only responsible for what is specified in the collaboration contracts drawn up under national and European legislation. • 1 x only one responsible contractual party.
Do you more often settle disputes by compromise, mediation or arbitration than by going through the courts?	<ul style="list-style-type: none"> • 7 x yes. • 1 x no. • 1 x usually by arbitration.
Do you have experience of Alternative Dispute Resolution (ADR) ³⁹ ? If so, what were the advantages/disadvantages compared with litigation?	<ul style="list-style-type: none"> • 4 x no. • 2 x no response. • 1 x aware but no experience. • 2 x yes – one had adopted a template of ADR which is similar to the principal rules of the International Chamber of Commerce for Arbitration. As for its effectiveness, this depends on the situation; the other says it is very similar to arbitration.

³⁹ Alternative dispute resolution, usually referred to as ADR, is the collective term for the ways that parties can settle civil disputes, with the help of an independent third party and without the need for a formal court hearing.

Question	Response
Technical Matters	
Do you have any anxieties about the robustness and resilience of the CVIS system? If so, why?	<ul style="list-style-type: none"> • 1 x yes interaction with legacy systems IPv4 and IPv6 elements that are not seamless (POMA not dealing with all navigation issues). • 1 x yes worried that the prototypes are far from a real solution. • 1 x yes has confidence in the system but safety must be built in. • 1 x yes fear that the system may not prove 100% reliable. • 1 x yes the operator of such a system must ensure a secure transmission of security-relevant data from the infrastructure to all vehicles. The accuracy and reliability of used sensors and sensor systems must be satisfactory (compared to present sensors). • 1 x yes being innovative they are not yet tried and tested in real-life conditions. Where they concern safety the situation is very sensitive. • 1 x yes the level of preparation and formation of the operators in the field is low and will lead to use and acceptance difficulties. Thus, training and education are important. • 2 x no response.
Do you think issues of standardisation, certification and validation are being adequately dealt with in the CVIS project?	<ul style="list-style-type: none"> • 6 x no response (probably as a consequence of interviewees not knowing enough about the CVIS project). Two 'no response' did make the comment that the more standardisation, the better. Standardisation and certification help limit the risks for all parties involved therefore it is of paramount importance. Theoretically, these issues can reduce the possibility of litigation. • 1 x yes providing the GST model is followed. • 1 x yes. • 1 x yes these aspects are fundamental and should be dealt with adequately.

Question	Response
What importance, if any, do these issues have in relation to minimising Actors' legal liability exposure in respect of the system?	<ul style="list-style-type: none"> • 1 x vital provides quality assurance for both the device and commissioning of the system. • 1 x very important issues. • 1 x reinforced point made under previous question. • 2 x no response. • 1 x liability aspects (insurance, product liability, certification . . .). • 1 x they help to reduce the risks of exposure. • 1 x they may reduce the relevant legal risk. • 1 x fundamental.
If a technical fault were to be found within the system, how best could that be put right (both in a project-based prototype, for example, and in a fully-fledged commercial product)?	<ul style="list-style-type: none"> • 1 x depending on the type of problem, the solution could be different. • 1 x not an easy question to answer; it depends on many factors including technical defect typology, degree of fault, etc. • 1 x for CVIS prototypes, the partner responsible for development will have to do any bug fixing and revise the requirements, if necessary). • 1 x should be a remote fix, but certification is vital. • 4 x no response. • 1 x depends on the problem and on whether it is connected with the vehicle or the infrastructure or the interaction (communication) between the two.

Question	Response
<p>From your own company's perspective, what non-technical issues do you perceive could cause major deployment barriers to CVIS?</p>	<ul style="list-style-type: none"> • 2 x liability aspects (insurance, product liability, certification . .). Modification of traffic organisation (the system will act as guardian in different traffic situations and restrict the individual driving freedom of users). Modification of road traffic regulations (political aspects). • 1 x establishing legal and organisational responsibilities. Who is in charge of detection and of the reaction? Technical reliability is also important. • 2 x no response. • 1 x integration level of street furniture required. • 1 x the adoption of non-homogeneous approaches to applications and services in the EU. As a driver, I need to be able to have access to the same services wherever I am when using the same device. • 1 x no CVIS benefit perception. • 1 x the mean dimension of transportation companies in Italy is low and the level of preparation and formation is low.
<p>Which issues cause you the most anxiety?</p>	<ul style="list-style-type: none"> • 1 x the mean dimension of transportation companies in Italy is low and the level of preparation and formation is low. • 4 x no response. • 1 x not anxious. • 1 x the overall system should remain manageable. Administration wants to keep overall control but there are many other influences. • 1 x establishing legal and organisational responsibilities. Who is in charge of detection and of the reaction? Technical reliability is also important. • 1 x integration level of street furniture required.

Question	Response
Risk Transfer, including Insurance	
Do you find that your insurers and any brokers involved really understand the risks and liabilities involved in this work?	<ul style="list-style-type: none"> • 1 x yes confident about this aspect because, as a research centre, and not the manufacturer of the product, it cannot be held liable for any product liability or relating risks. The manufacturer of the product will be liable for any product liability related to the product. • 2 x no response. • 1 x no. • 1 x CVIS involvement is covered by the Consortium Agreement. Real-life commercial deployment is of course another matter (this response applied to all questions in this section). • 2 x self-insured. Insurers new to a product or service needing insurance will tend to be over-cautious in assessing the risks. • 1 x insurers will deal with this system when the possible benefit exceeds the risks and liabilities. • 1 x it is the job of government to give guidelines to insurers. Insurers will raise the insurance premium on their part when such systems can produce a higher risk potential. On the other hand, they will not substantially cut the premium when such systems reduce the overall risks for insurers.

Question	Response
<p>Are you confident that your current insurers cover you for the liabilities and economic losses which could be caused by your involvement in CVIS?</p>	<ul style="list-style-type: none"> • 2 x not sure. • 3 x no response but one responded advanced systems, such as CVIS, will enable the reduction in the number of incidents. Insurance companies will have an interest in these systems. The main liable entities will be those who industrialise it and who will be the overall owner of the CVIS system. The dynamics of accidents will be used by insurance companies and will support a decrease in insurance premiums. • 1 x self-insured. • 1 x no. • 1 x CVIS involvement is covered by the Consortium Agreement. Real-life commercial deployment is of course another matter (this response applied to all questions in this section). • 1 x yes confident about this aspect because, as a research centre, and not the manufacturer of the product, it cannot be held liable for any product liability or relating risks. The manufacturer of the product will be liable for any product liability related to the product.
<p>If not, are the difficulties in this respect as to limits of cover; its duration; as to exclusions from cover; or as to the price or effectiveness of appropriate cover?</p>	<ul style="list-style-type: none"> • 1 x CVIS involvement is covered by the Consortium Agreement. Real-life commercial deployment is of course another matter (this response applied to all questions in this section). • 7 x no response. • 1 x not applicable.

Question	Response
<p>Do you require that your affiliates or sub-contractors have and maintain fully adequate insurance cover, so that they can respond properly if you have a claim for recovery (i.e. for a monetary contribution) against them?</p>	<ul style="list-style-type: none"> • 1 x CVIS involvement is covered by the Consortium Agreement. Real-life commercial deployment is of course another matter (this response applied to all questions in this section). • 3 x no response. • 1 x yes. In most cases affiliates are asked for comprehensive general liability of sub-contractors. Affiliates have their own casualty insurance. • 1 x yes in all cases. • 1 x insurance is not strictly required. Contractors have a permanent official “acknowledgement” granted by authorities which encompasses solvency and other guarantees. Where a contractor has no acknowledgement, a bank guarantee is usually required. • 1 x unknown. • 1 x it depends.
<p>Do you provide performance bonds instead of insurance or are your performance bonds covered/supported by insurance?</p>	<ul style="list-style-type: none"> • 1 x CVIS involvement is covered by the Consortium Agreement. Real-life commercial deployment is of course another matter (this response applied to all questions in this section). • 1 x tends to favour the partners with best practices or behaviour. • 4 x no response. • 1 x unknown. • 1 x the Administration could require performance bonds from its contractors but this presumes the need to control. Certification (by a third party) fills this gap. • 1 x in some cases we call for performance bonds but do not cover these with insurances.

Question	Response
Public Authority and Community Aspects	
As a public authority, what do you see as the most important incentives for equipping the road management infrastructure in your area with sensors (or the CVIS box)?	<ul style="list-style-type: none"> • 1 x the Ministry of Transport is committed to establishing a sustainable, efficient and safe transport system. Every system which can contribute to this general framework is worth considering. • 4 x no response. • 1 x technological innovation and market pressure represent the key incentives. • 1 x the expectation that CVIS will fill a gap in the Administration's know-how. CVIS can help achieve key objectives better than the Administration ever could (present objectives are (i) road safety and (ii) mobility). • 1 x urban traffic control. • 1 x access to more precise and reliable information about traffic on the network.
As a public authority/road operator, how would you license/charge for installation of CVIS boxes in your area?	<ul style="list-style-type: none"> • 5 x no response. • 1 x road user charging technology. • 1 x not known. • 1 x automatic user payment or if a leasing company requested a specific application for its fleet of vehicles, a licence-based fee would probably apply. • 1 x the public authority has only the judgement on benefits for the national economy and the individual traffic participant.

Question	Response
<p>Is there a forum where public authorities can discuss these and other issues related to CVIS deployment?</p>	<ul style="list-style-type: none"> • 1 x national Verkehrssicherheitsabschluss and for Europe: CEMT, ERTICO, PIARC, ITS Conferences. • 4 x no response. • 1 x several for a in Belgium (ITS Belgium and Europe CEDR). • 1 x CEDR (Conference of European Road Directors). • 1 x ITS UK (ITS groups are worldwide). • 1 x not known.
<p>Within the CVIS system, vehicles and infrastructure will both receive and give out information. To what legal liabilities would you believe you are exposed to as a public authority if you were to install the CVIS system in your area?</p>	<ul style="list-style-type: none"> • 2 x no response. • 1 x they would be limited to compliance with the level of quality specified in the contract. • 1 x data privacy contractual issues, liability issues on malfunction. • 1 x not known. • 1 x as long as only information is concerned, things should remain under control. Should CVIS evolve in systems fixing distance between vehicles or interfering with the vehicle's commands, the risks will be far greater and so will the liabilities. • 1 x liability lies in any fault on our part of the system which, if proven defective, may cause an accident. • 1 x the storage and dissemination of personal data in Austria is forbidden. An exception is when this data is used for legitimate public tasks (for example, section control data and road charging). • 1 x modification of the data transmission interference regulations and regulations for storage and dissemination of personal data.

Question	Response
<p>Are these potential liabilities any greater or fewer than exist currently? If yes, please give a brief explanation as to why.</p>	<ul style="list-style-type: none"> • 3 x no response. • 1 x the question of liability will increase with more complex systems such as CVIS. • 1 x it is perceived as far greater than any past or present liability, essentially because of the potential extent of damage (chain of disasters). Perceived, because much is still unknown. • 1 x far greater. A well-known paradox: the better informed a driver, the more confident he/she becomes, with the inherent reduction of attention. • 1 x not known. • 1 x yes regarding the operation of the system and possible malfunction causing collision. • 1 x not in principle.

Question	Response
Contributions to Further Debate <p>If the CVIS system were to fail, would you be prepared to contribute to a “Without Prejudice” Restoration fund (as there could be instances of failure where fault cannot easily be attributed to a particular Actor) to get the system up and running and to participate, also without prejudice, in the actions needed to achieve system restoration?</p>	<ul style="list-style-type: none"> • 1 x no response. • 1 x to answer all the questions in this group, we think that the principal liable entities will be those who industrialise and become the owner of the overall CVIS system. These entities will be responsible for executing all the contracts (through a generic industrialisation contract with all the CVIS Actors involved) in order to make the functioning of the CVIS system possible. Within this general responsibility, each Actor involved will be responsible only for what they produce/commercialise and will be responsible for making a refund for any malfunctioning of their product/service). • 1 x no particular thoughts on this at present. • 1 x huge implications related to equality of payments. • 1 x not known. • 1 x public bodies are expected to compensate for natural disasters, epidemics etc. and “appropriate” funds are set aside accordingly. It is not the Administration’s role to contribute to a fund intended to cover technical failures for which no party in particular will take initial responsibility. • 1 x traditionally, road authorities are somewhat unadventurous. It may, however, be possible at some stage in the future to contribute to a restoration fund. It is difficult to understand, however, how disputes will be settled if a failure cannot be attributed to a specific party. In this case, a collective restoration fund may be the determining factor. • 1 x no. It would be hard to think that we would contribute to such a fund. • 1 x no. This problem will only be solved with adequate insurance.

Question	Response
<p>How do you think claims on the CVIS system by parties who may have been damaged by it will be funded and processed?</p>	<ul style="list-style-type: none"> • 1 x to answer all the questions in this group, we think that the principal liable entities will be those who industrialise and become the owner of the overall CVIS system. These entities will be responsible for executing all the contracts (through a generic industrialisation contract with all the CVIS Actors involved) in order to make the functioning of the CVIS system possible. Within this general responsibility, each Actor involved will be responsible only for what they produce/commercialise and will be responsible for making a refund for any malfunctioning of their product/service). • 1 x no particular thoughts on this at present. • 5 x no response. • 1 x not known. • 1 x civil or criminal courts.
<p>Do you think insurers will see recourse against Actors in the CVIS system either individually or as a co-operative group?</p>	<ul style="list-style-type: none"> • 1 x to answer all the questions in this group, we think that the principal liable entities will be those who industrialise and become the owner of the overall CVIS system. These entities will be responsible for executing all the contracts (through a generic industrialisation contract with all the CVIS Actors involved) in order to make the functioning of the CVIS system possible. Within this general responsibility, each Actor involved will be responsible only for what they produce/commercialise and will be responsible for making a refund for any malfunctioning of their product/service). • 1 x no particular thoughts on this at present. • 3 x no response. • 1 x both the Actors and the system. • 1 x insurers will seek recourse first against the road operator because he is the most visible member of the CVIS system or group (assumption). • 2 x not known.

Question	Response
<p>What advantages or disadvantages do you see in sharing risks with other Actors in the CVIS system?</p>	<ul style="list-style-type: none"> • 1 x to answer all the questions in this group, we think that the principal liable entities will be those who industrialise and become the owner of the overall CVIS system. These entities will be responsible for executing all the contracts (through a generic industrialisation contract with all the CVIS Actors involved) in order to make the functioning of the CVIS system possible. Within this general responsibility, each Actor involved will be responsible only for what they produce/commercialise and will be responsible for making a refund for any malfunctioning of their product/service). • 1 x no particular thoughts on this at present. • 2 x no response. • 1 x feeling of less duress; reasons for conflict should be reduced; sharing risks allows parties to maintain good relations; more advantages will surface over time. • 1 x co-operation with commercial partners, thereby promoting progress through innovation. • 1 x not known. • 1 x the biggest risk is achieving parity in the deployment of the system. • 1 x it is essential to understand the nature of the service (type, functioning etc.). Any malfunction of the system will have to be covered by the CVIS owner through specific refunds.

Question	Response
<p>Are there any questions we have not asked that you believe would be relevant to our enquiries?</p>	<ul style="list-style-type: none"> • 1 x to answer all the questions in this group, we think that the principal liable entities will be those who industrialise and become the owner of the overall CVIS system. These entities will be responsible for executing all the contracts (through a generic industrialisation contract with all the CVIS Actors involved) in order to make the functioning of the CVIS system possible. Within this general responsibility, each Actor involved will be responsible only for what they produce/commercialise and will be responsible for making a refund for any malfunctioning of their product/service). • 1 x no particular thoughts on this at present. • 6 x no. • 1 x a few remarks on the evolution of knowledge in Belgium in the last decade. Until a few years ago, the Administration was catalysing most of the road engineering knowledge. Its engineers were creating specifications, making elaborate calculations on material resistance or bridge stability etc. Private companies were merely executing the works under the Administration's supervision and control. All the key knowledge was concentrated in the Administration's hands. Most of these intellectual tasks have now been gradually transferred to private engineering companies, design departments, surveyors, supervising bodies, consultants, etc. (with, in most cases, the Administration's assistance). Knowledge is now dispersed among many Actors. Obviously, the Administration's knowledge level is proportionately reduced.

4. LEGAL ASPECTS

In this section, we will only touch upon the legal aspects which will impact on the CVIS system and Actors, as we shall be undertaking more in-depth study during the remaining part of the project.

4.1. Applicable Laws and Conflicts of Laws

Applicable laws and conflicts of laws will need to be addressed, as will their effect on insurance provision. Section 5.2 of this report looks at the relevance of insurance and its availability to cover both the CVIS system itself and the Actors involved in delivering it to the market. One of the main roles of the DEPN sub-project is to bring the consideration of insurance to the forefront of the research to ensure that the technical development of the system is sufficiently transparent to enable insurers to feel comfortable about the risks involved in insuring the system and the Actors involved in delivering it.

For the purposes of demonstrating the applicable laws, it would be beneficial to provide a series (perhaps two or three) of scenarios and follow them through from the injury or loss to the allocation of final responsibilities. These scenarios should include one whose law is based on the Napoleonic Code Civil and one from an Anglo-Saxon system.

It is also recognised that insurers have to pay particular attention to any exposure which could lead to the insured either having to face legal suit in the USA or having to compensate another party who has had to face such suit. This is because the American legal systems, both federal and at state level, are dominated by the wide-ranging powers of juries, particularly in the award of damages. The American systems have a much greater propensity to award punitive or exemplary damages (which are very rarely, if ever, insurable) than do their European counterparts.

We shall need to determine whether there is to be an express policy as to the overriding application of any particular legal system or submission to any particular jurisdiction in regard to contractual disputes relating to the system. We will also look at the extent to which the system will accommodate any element of choice that may be available under the Rome I Convention⁴⁰ as to the resolution of conflicts of law in contracts.

The European Union's initiative to bring about harmonised rules on law applicable to civil liability (the Rome II Regulation)⁴¹ stems from the need to regularise issues concerning civil liability for damage caused to others, particularly in the event of an accident and applies to road accidents, defective products and environmental pollution. As the European Community expands in size, increasing the number of Member States, disputes of this kind will become more frequent. Currently Member States have no common rules to designate the applicable law in non-contractual matters and each court will observe its national rules. As a consequence, the legal solutions are likely to vary widely from one Member State to another and parties could be tempted to refer the dispute to the court which will apply the law most favourable to them.

⁴⁰ On 15 December 2005 the European Commission adopted a proposal for a Regulation to convert the Rome Convention of 1980 into a Community Regulation (COM(2005)650 final).

⁴¹ EC website <http://europa.eu>.

The Rome II Rules aim to strike a reasonable balance between the interests of the party causing the damage and the victim. The Regulation adopts the solution applied in the majority of Member States and establishes a general rule that the law of the country in which the damage occurs (for example, the law of the place of the road accident) will apply, unless the parties both have their habitual residence in another country, in which case the law of that country will apply.

It must be recognised that different legal systems have different traditions as to the power of precedent. As far as insurers are concerned, the worst outlook would come if no logical prognosis could be made as to the legal treatment of claims.

In certain countries, perhaps including France, it may be expected that judicial examination of any complex failure of an ITS system would include the early appointment of an accredited Court Expert. The rules and practice by which such appointments are made and such Court Experts act vary widely as between the jurisdictions involved. Insurers may also be aware that the way in which a Court Expert approaches and treats evidence may vary greatly as between different jurisdictions.

Anglo-Saxon courts operate on the basis that the parties involved in a case have to comply with wide-ranging and strict rules as to the discovery of documents pertinent to the case. In other jurisdictions, including France, discovery is much narrower. In some jurisdictions the court (or arbitration panel, etc.) may order the parties to hold discussions with a view to reaching agreement as to significant issues of law or fact in the case, thereby reducing dramatically the scope of enquiry of the court or arbitration panel itself.

In insurance disputes in the UK, a pattern is emerging of policies requiring the parties to mediate disputes, as a pre-condition to arbitration or legal proceedings. If the obligation to mediate is expressed in sufficiently clear and detailed terms, the courts will give it effect. Further, where a dispute is already the subject of litigation, the court frequently encourages the parties to engage in some form of Alternative Dispute Resolution and has the power to apply costs sanctions against a party which unreasonably declines to do so.

Lack of clarity regarding these issues could cause concern to insurers and add to the legal and technical costs following a failure of the CVIS system. Many insurance covers are worded as “costs inclusive” which means that the limit of cover includes legal and technical costs as well as the actual costs of reimbursing the insured for the loss itself.

4.2. Statutory Liability

4.2.1. Product Liability Directive⁴²

The European Council Directive (85/374/EEC, OJ 1985, L. 210/29) on liability for defective products was introduced in 1985 to harmonise product liability law in Europe and to provide consumer protection. It was transposed into UK law through the Consumer Protection Act 1987.

Under the Directive, the producer (defined as the manufacturer of a finished product, the producer of any raw material or the manufacturer of a component part and any person who, by

⁴² Product Liability by Jane Stapleton, published by Butterworths.

putting his name, trade mark or other distinguishing feature on the product presents himself as its producer) is liable for damage caused by a defect in his product. Any person importing into the EC a product for sale, hire, leasing or any form of distribution in the course of his business shall also be regarded as a producer and shall be responsible as a producer. Where a producer of the product cannot be identified, each supplier of the product shall be treated as its producer unless he informs the injured person of the identity of the producer or of the person who supplied him with the product.

The injured person is required to prove the damage, the defect and the causal relationship between defect and damage. A product is defective when it does not provide the safety which a person is entitled to expect, taking all circumstances into account, including:

- The presentation of the product;
- The use to which it could reasonably be expected that the product would be put; and
- The time when the product was put into circulation.

The producer has a number of defences open to him:

- that he did not put the product into circulation; or
- that the defect causing the damage did not exist at the time the product was put into circulation or that this defect came into being afterwards; or
- that the product was neither manufactured by him for sale or any form of distribution for economic purposes; or
- that the defect is due to compliance of the product with mandatory regulations issued by the public authorities; or
- that the state of scientific and technical knowledge at the time he put the product into circulation was not such as to enable the existence of the defect to be discovered (the development risks defence); or
- in the case of a manufacturer of a component, that the defect is attributable to the design of the product in which the component has been fitted or to the instructions given by the manufacturer of the product.

“Damage” means:

- Damage caused by death or by personal injuries.
- Damage to, or destruction of, any item of property other than the defective product itself, with a lower threshold of 500 ECU, provided the item of property:
 - is of a type ordinarily intended for private use or consumption; and
 - it was used by the injured person mainly for his own private use or consumption.

The Article shall be without prejudice to national provisions related to non-material damage.

The limitation period is three years beginning from the day on which the plaintiff became aware of the damage, the defect and the identity of the producer. Rights to sue are extinguished after a period of ten years from the date the producer put the product into circulation.

Whilst the national legislation enacting the Directive in Member States provides that the producer is strictly liable for a defective product, actions can still be brought in contract and in tort.

4.2.2. Directive 95/46/EC

Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data.⁴³

One of the principal risks to successful deployment of CVIS identified in the overall inventory of external risks and threats was related to privacy of data collected by the system, and ownership, use, access and storage of that data. European legislation has been developed to address specific privacy issues; namely;

- Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications).
- Directive 97/66/EC concerning the processing of personal data and the protection of privacy in the telecommunications sector.
- Regulation (EC 45/2001) on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies on the free movement of such data.
- Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data.

Directive 95/46/EC includes the free movement of personal data. One of the principal reasons why this was introduced was to make easier transactions relating to cross-border trading, and the internal market for goods, services and capital. In fact, the scope of the Directive includes that Member States cannot restrict or prohibit the free flow of personal data between Member States even for reasons connected with the protection of personal data. The right to privacy is laid down in Article 8 of the European Convention for the Protection of Human Rights and Fundamental Freedoms.

The list of definitions includes:

Personal Data

Any information relating to an identified or identifiable natural person (the data subject). Identifiable means one can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his/her physical, physiological, mental, economic, cultural or social identity.

Processing of Personal Data

Any operation or set of operations which is performed upon personal data, whether or not by automatic means, such as collection, recording, organisation, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, blocking, erasure or destruction.

⁴³ E-Call Driving Group: Issues on Privacy, Jan Malenstein, 8 April 2005.

Personal Data Filing System

Any structured set of personal data which are accessible according to specific criteria, whether centralised, decentralised or dispersed on a functional or geographical basis.

Controller

The natural or legal person, public authority, agency or any other body which alone or jointly with others, determines the purposes and means of the processing of personal data; where the purposes and means of processing are determined by national or Community laws or regulations, the controller or the specific criteria for his nomination may be designated by national or Community law.

Processor

A natural or legal person, public authority, agency or any other body which processes personal data on behalf of the controller.

Third Party

Any natural or legal person, public authority, agency or any other body other than the data subject, the controller, the processor and the persons who, under the direct authority of the controller or the processors, are authorised to process the data.

Recipient

A natural or legal person, public authority, agency or any other body to whom data are disclosed, whether a third party or not; however, authorities which may receive data in the framework of a particular enquiry shall not be regarded as recipients.

Data Subject Consent

Any freely given specific and informed indication of his wishes by which the data subject signifies his agreement to personal data relating to him being processed.

The processing of the data has to be carried out in an establishment of the controller in the Member State's territory; not in the Member State's territory but in a place where its national laws apply; or the controller is not established in Community territory but uses equipment, automated or otherwise, situated in the territory of the Member State.

The Directive lists a number of principles concerning data quality. Member States shall provide that personal data:

- is processed fairly and lawfully;
- collected for specified, explicit and legitimate purposes and not further processed in a way incompatible with those purposes;
- adequate, relevant and not excessive in relation to the purposes for which they are collected and/or further processed;
- accurate and, where necessary, kept up-to-date. Inaccurate data to be erased or rectified; and
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data were collected or for which they are further processed. Member States shall lay down appropriate safeguards for personal data stored for longer periods for historical, statistical or scientific use.

Compliance in the above respects is the responsibility of the controller.

Legitimacy of personal data processing is determined on the following criteria:

- the data subject has unambiguously given his consent;
- processing is necessary for the performance of a contract to which the data subject is a party;
- processing is necessary for compliance with a legal obligation to which the controller is subject;
- processing is necessary in order to protect the vital interests of the data subject;
- processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller or in a third party to whom the data are disclosed; and
- processing is necessary for the purposes of the legitimate interests pursued by the controller or by the third party or parties to whom the data are disclosed, except where such interests are overridden by the interests for fundamental rights and freedom of the data subject, such as data relating to racial or ethnic origin; political opinion; religious or philosophical beliefs; trade union membership; and health or sex life.

There are exceptions including specific rights of the controller in the field of employment law and authorisation is by national law providing adequate safeguards.

In relation to the processing of data concerning offences, criminal convictions or security threats, these may only be carried out:

- under the control of an official authority; or
- subject to derogations which may be granted by the Member State under national provisions providing there are suitable specific safeguards under national law.

The data subject is to be advised of data held relating to himself including:

- the identity of the controller and of his representative;
- the purposes of the processing for which the data are intended; and
- any further information including the recipients or categories of recipients of the data; whether replies to the questions are obligatory or voluntary; and the existence of the right of access to and the right to rectify the data concerning him.

The data subject also has the right to obtain from the controller confirmation as to whether or not data relating to him are being processed.

Article 17 of the Directive concerns the security of processing and provides that the controller must implement appropriate technical and organisational measures to protect personal data against accidental or unlawful destruction or accidental loss, alteration, unauthorised disclosure or access, in particular where processing involves the transmission of data over a network and against all other unlawful forms of processing. The controller has to provide sufficient guarantees in respect of technical security measures.

Member States must provide for the right of every person to a judicial remedy for any breach of the rights guaranteed to him by the national law applicable to data processing and

compensation from the controller is payable to any person who has suffered damage as a result of an unlawful processing operation.

The Directive contains rules for the transfer of personal data to third countries under Article 25 with Article 27 providing a number of provisions for a code of conduct.

The Directive does not clearly define the conditions under which the processing of personal data is lawful and leaves this obligation to Member States to determine.

Whilst the Directive does appear to have addressed issues relating to data processing, there are still data issues relating to CVIS and the personal data which will be collected and passed on through the system which will need to be resolved. The inference is that when purchasing a car equipped with the CVIS system, agreement is implicit that the driver/owner has given consent to his personal data being processed. We shall have to determine whether there is a need to ask anyone else who may be driving the car for their permission as well. Other issues relating to data will also have to be resolved, for example, how and for what purposes will data be stored and who is entitled to access it.

Further work will be undertaken on privacy issues in the second half of the project.

4.3. The Use of EDR Data in Civil Law Process in English Law⁴⁴

(Note that “EDR” is used in the generic sense of “Electronic Data Recorder”, rather than in the sense of “Event⁴⁵ Data Recorder” used by the VERONICA (Vehicle Event Recording based on Intelligent Crash Assessment) Project Final Report, November 2006)

4.3.1. Disclosure

English Civil Law is based on the principle that it is the responsibility of the claimant to prove his case ‘on the balance of probabilities’. To this end, a party is entitled to seek ‘disclosure’ from the other party. The process of disclosure is addressed in the Civil Procedure Rules (1998). These require the parties to give advance notice to their opponents of all the documentation in their possession relevant to the issues between them. Thus, CPR Rule 31.6 describes standard disclosure as requiring a party to disclose:

- (a) the documents on which he relies;
- (b) the documents which –
 - (i) adversely affect his own case;
 - (ii) adversely affect another party’s case; or
 - (iii) support another party’s case; and
- (c) the documents which he is required to disclose by a relevant practice direction.

Such listing must include documents in respect of which the party claims ‘privilege’, namely, that they need not be disclosed because they fall within certain categories of documents that are protected from disclosure under the law, such as communications between lawyers and their

⁴⁴ Text used in SAFESPOT deliverable D6.4.2 Legal Aspects of SAFESPOT Systems and amended to reflect applicability to CVIS.

⁴⁵ ‘Event’ is defined in section 7.1.2.1 of the Final Report of the VERONICA Project.

‘Event’ is to be understood as an ‘accident event’. ‘Accident’ means an unwanted or unintended sudden event of a specific chain of such events which have harmful consequences. This includes own or third party material damages, light and severe personal injuries and fatalities”.

clients, or documents which tend to incriminate the person disclosing them – the principle that no person can be obliged to incriminate himself.

The word ‘document’ is defined in the Civil Evidence Act 1995 s.13 as meaning “anything in which information of any description is recorded, and “copy”, in relation to a document, means anything onto which information recorded in the document has been copied, by whatever means and whether directly or indirectly.” This definition is clearly wide enough to include files of electronic data.

It has long been established that an English court can order the disclosure of information on a computer database. Thus, the head note to the case of *Derby & Co. Ltd & Others v. Weldon & Others (No.9)* reads in part:

Held, that the database of a computer, in so far as it contained information capable of being retrieved and converted into readable form, and whether stored in the computer itself or recorded in backup files, was a "document" within the meaning of R.S.C., Ord. 24⁴⁶ and that the court accordingly had power to order discovery of what was in that database.

The disclosure granted in that case was limited by the principle of proportionality, in that “...the discretion to order production for inspection and copying would not be exercised so as to give unrestricted access to the other party's computer.”

In the context of the CVIS system, a litigant would be under a duty, subject to the claim of ‘privilege’ to disclose data recorded on the CVIS log and that duty can be enforced by the court. The consequences of successful reliance on the no self-incrimination privilege differ as between criminal and civil cases. In the latter, there is a long-standing rule of the common law that no inference can be drawn from taking the privilege, although it has long been recognised that life is never that simple in practice⁴⁷. By contrast, “although in criminal proceedings the defendant is not obliged to say anything and thus is entitled at police interview to remain silent and to decline to give evidence, these are matters on which the judge can comment and on which the jury may draw inferences⁴⁸”

The fact that the CVIS logs are disclosable documents in a civil law suit under English law could have a number of consequences. Most importantly, CVIS manufacturers/suppliers must recognise that fact and, having done so, must then inform their customer, the motorist, of that fact. In the same way, manufacturers/suppliers must alert their customers to the fact that, if a log exists, then the authorities, such as the police, would be entitled to access it, for the purposes of a possible criminal investigation.

How will the motorist react to the fact that, with a CVIS box on board, there is, in effect, a ‘spy in the car’? The optimist may accept this, in the belief that (s)he has nothing to fear, since (s)he always drives to a high standard, which CVIS will be able to confirm. A less optimistic customer may, on the other hand, prefer not to buy, because (s)he does not want to take the risk of the CVIS box recording him/her driving in a less than optimal manner! In selling the CVIS system to the consumer user, therefore, - at least for so long as the use of the CVIS system

⁴⁶ Now Civil Procedure Rule 31.4

⁴⁷ Hollander, *Documentary Evidence*, 9th Edition, 2006, at p. 329.

⁴⁸ *Ibid*, at p. 329.

remains optional rather than compulsory - much emphasis will have to be placed on the *advantages* that the system – and its possible enhancements – afford, in order to overcome the aversion of many potential customers to surveillance.

4.3.2. The “Black Box”

In the context of English law, there are references to devices similar to the CVIS box in a number of regulations governing different modes of transport. For example, in regard to:

Shipping

The Merchant Shipping (Accident Reporting and Investigation) Regulations 2005⁴⁹, refers to a voyage data recorder (“black box”). S.9 of those Regulations provides:

“Preservation of Evidence

- 9.- (1) Following an accident involving a United Kingdom ship which is reportable under regulation 6, the persons mentioned in paragraph (3) shall so far as is practicable ensure that all
- (a) charts;
 - (b) log books;
 - (c) *electronic and magnetic recording and video tapes, including information from a voyage data recorder or recording system* relating to the period preceding, during and after the accident; and
 - (d) all documents or other records which might reasonably be considered pertinent to the accident are kept and that no alteration is made to any recordings or entries in them.
- (2) In the case of an accident involving a United Kingdom ship, the persons mentioned in paragraph (3) shall also ensure that –
- (a) *all information from a voyage data recorder or recording system relating to the circumstances of an accident is saved and preserved*, in particular by taking steps, where necessary, to prevent such information from being overwritten . . .”.

Section 9.7 specifically empowers the Chief Inspector – at his discretion - to hand over to the police or other official authorities, copies of information obtained from a voyage data recorder or from other recording systems, pertinent to the accident, including voice recordings, video recordings and other electronic or magnetic recordings and any transcripts made from such information or recordings.

As for the Inspector’s report, section 13(9) provides:

“(9) If any part of the report or analysis therein is based on information obtained pursuant to an inspector's powers [of investigation], the report shall be inadmissible in any judicial proceedings whose purpose or one of whose purposes is to attribute or apportion liability or blame unless a Court or tribunal determines otherwise.

⁴⁹ SI 2005/881.

There is, accordingly, a constraint upon the use of the *report* of the Maritime Accident Investigation Branch in judicial proceedings relating to issues of liability for the accident. On the other hand, there does not appear to be any restraint upon the parties' access to the *data recorder* itself. In practice, the data recorder, being the property of the shipowner, is usually returned to him at the conclusion of the accident investigation. The problem for the parties in accessing the data on the data recorder is that it is a complex technical task to interpret it, requiring the assistance of expert witnesses.

Civil Aviation

The situation regarding the 'black boxes' carried by aircraft is governed by The Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 1996. These provide that no relevant record (an expression that would include the Flight Data Recorder) shall be made available by the Secretary of State to any person for purposes other than accident or incident investigation, save that the Secretary of State may make a relevant record available to any person where, in a case where that person is a party to or otherwise entitled to appear at judicial proceedings, the relevant court has ordered that the record be made available to him for the purpose of those proceedings (Regulation 18(1) and (2)). Furthermore, by Regulation 18(4), the court shall not order that a record be made available "unless the court is satisfied that the interests of justice in the judicial proceedings or circumstances in question outweigh any adverse domestic and international impact which disclosure may have on the investigation into the accident or incident to which the record relates or any future accident or incident investigation undertaken in the United Kingdom."

It would appear, therefore, that it is more difficult for parties to get access to the 'black box' in the aviation industry than it is in the maritime industry. This may not, however, be of any great practical importance, since the reports issued by the Air Accidents Investigation Branch (in which the evidence from the Flight Data Recorder and the Cockpit Voice Recorder is carefully examined) are usually in the public domain. Thus, in the United Kingdom, the reports of the Branch are published on its website at:

http://www.aaib.dft.gov.uk/sites/aaib/publications/formal_reports.cfm

As for the black box itself, this will usually be returned to the airline that owns it, after the investigation has been concluded. Once the box is made available, the problems of its interpretation by parties to litigation, already mentioned above, remain to be addressed.

In civil litigation regarding airline claims arising from events that do not trigger an investigation under the 1996 Regulations, the Flight Data Recorder would be regarded as material evidence that the airline or operator would be obliged to disclose, subject to the no self-incrimination privilege. It is difficult to imagine circumstances in which such privilege could be validly claimed.

Railways

In the railway industry, questions of access to data are governed by The Railways (Accident Investigation and Reporting) Regulations 2005, where the approach is similar to that under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, set out above.

Roads

What then, is the position likely to be in the event that EDRs are introduced into the motor industry? In this context, EDRs, in the form of tachographs, have been present for some time in the road freight industry, pursuant to various Directives of the EU.

4.3.3. The Digital Tachograph

A digital tachograph comes in two separate parts, a vehicle unit and a speedometer. The Vehicle Unit (VU) is located within the driver's area of the vehicle cab. It sends a signal to the speedometer/odometer unit that is located where the driver has a clear view of it. The vehicle unit still receives a signal from the vehicle (usually from the gearbox) via a cable.

The VU is the brains of the system. It is able to hold data on drivers of the vehicle and their periods of driving and duty for about a 12-month period. It will also hold data relating to faults, attempts to tamper with the system, over-speeding, calibration details, and when data has been accessed, for example, by Vehicle and Operations Safety Agency ("VOSA") staff or Police.

The VU and the motion sensor from the gearbox will be encoded as a pair and the signals from the sensor will be fully encrypted so any attempt to interfere with them will be registered and recorded in the vehicle unit. The VU will be set to Universal Time Co-ordinated (UTC) - as another name for Greenwich Mean Time (GMT) - all records will be against this time. The visual display will probably be set to the local time, but this will not affect the internal time.

Drivers, companies (operators), workshops (tachograph calibration centres) and enforcement officers (VOSA and police) will each have smart cards according to their specific needs. These enable them to use and/or give access to the data stored in the VU.

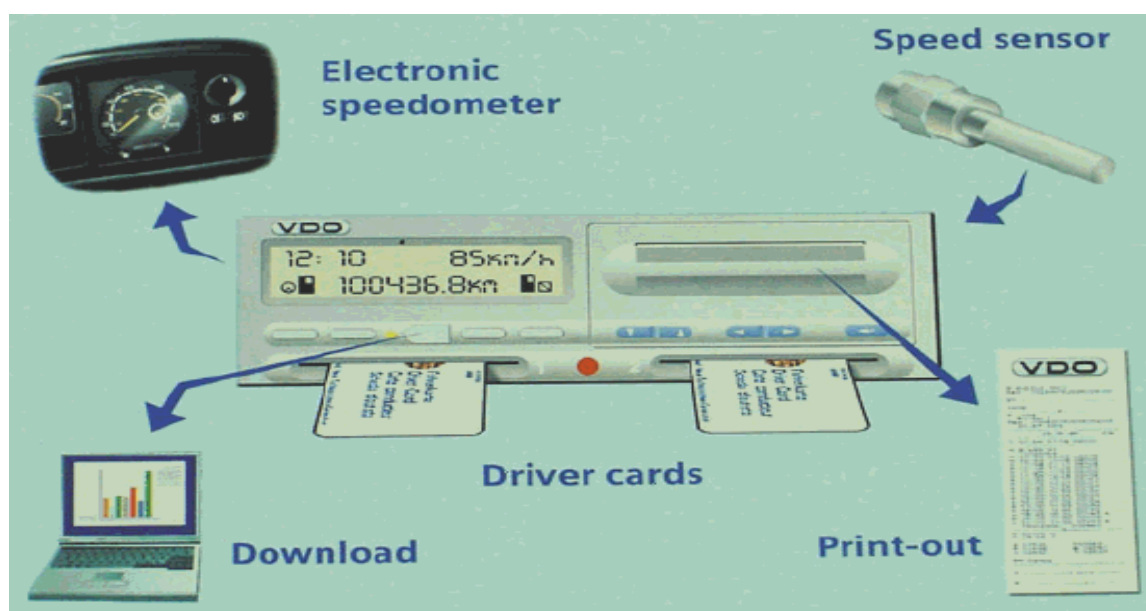


Figure 8: Diagram of a Digital Tachograph

Tachograph data has no privileged status in the context of criminal proceedings. Indeed, the principle of public policy underlying the introduction of tachographs was the enforcement of certain road traffic regulations, such as those governing driving hours. Hence, the admission of tachograph evidence is essential for the fulfilment of this purpose. As regards civil proceedings, tachograph evidence is, in principle, disclosable, subject to the privilege of no self-incrimination.

The Final Report of the VERONICA project (November 2006) notes at 4.10:

“Digital Control Device for Commercial Vehicles and Buses

. . . device that has started to replace the mechanical tachograph version in May 2006 could be the platform for event data recording in this class of vehicles. The mechanical version with the diagram sheet had already frequently been used for collision investigation and for delivering expert opinions for legal purposes”.

The Conclusions from the VERONICA Report (5) are that “European EDRs are to be widely used for the benefit of society and the individual, by a large number of users, from different user groups, who are aware of EDR. The dominant purpose of EDRs should be to provide reliable information on vehicle collision causation, available on site, or wireless, for further processing by certified experts, for dedicated road safety, *legal* (emphasis added), security and crime fighting applications.”

4.3.4. Implementation of EDRs

The introduction of EDRs in private cars in addition to commercial vehicles, presents no problems of principle, but maybe many of practice! In this regard, the Conclusions for Implementation, Section 6 of the VERONICA Final Report make very interesting and pertinent reading.

In Section 6.2.1, the VERONICA Report states:

“there is no reason why the personal right of data privacy should supersede public obligations of correct accident and crime investigation. Police and courts then have the obligation to state the facts of a specific collision or crime, at the later disposal of victims or third parties in civil claims. There is no doubt that EDR data can fill important information gaps.”

Particularly important is the conclusion (at 6.2.2, Private Users) that “under data privacy perspective there should be no disclosure problems (in the context of official collision and EDR experts) as data would only be used on a contractual basis.”

Under the heading of Third Parties, Section 6.2.2 states:

“Third parties, in particular victims as plaintiffs, should have the right to obtain data access by means of a court warrant or a court order. Dependent on national civil procedure law, the court would have to examine if the applying Third Party provides reasonable arguments that he was involved in an accident with the vehicle in question and that this vehicle might contain data which could clarify causes and liability for the collision and the damage alleged by the Third Party. In such case, there should be no problem to permit access, in parallel to already established legitimate access to written

documents held by the defendant. A court warrant or decision would also be required if the data are already downloaded by a public user (Police) subject to safeguards not to compromise an ongoing criminal investigation.”

As regards insurance companies, the report continues at 6.2.2 as follows:

“Insurance companies will have a contractual right to request accident data from their clients as they are obliged to cooperate as close as possible with their insurers. This applies to both Third Party and insured motor insurance and would also comprise information on who the driver was. Data of the driver identity would not be possible from the EDR but would otherwise be required from owner supplied information.”

The VERONICA Project produced, at section 7.3.3.2, some useful guidelines for user-related access rights. It concluded that data access rights should be defined along established civil and criminal procedures and information self-determination laws. Its recommended levels are as follows:

1. Driver: Full access rights.
2. Contractual Partners (Holders, Insurance Companies): According to contract.
3. Police: By respective Member State rules of evidence.
4. Third Parties in Litigation (Plaintiff/Defendant, Manufacturer and their representatives): Court warrant.
5. Testing, research (databases): Anonymised with no names of driver and holder, no Vehicle Identification or Registration Number.

For some time now, Event Data Recorders have, in fact, been installed in some makes of private automobiles, often in relation to the functioning of the air-bag system. Information from the website of Harris Technical Services, an organisation based in Florida, USA, which provides (according to its website) “internationally recognized, published and court qualified traffic accident reconstruction experts for the analysis of auto, truck, motorcycle and pedestrian accidents”, states the following:

“When a traffic crash reconstructionist wanted to know the speed of a car in the seconds before it crashed into the side of a school bus, he found that information, and more, in the car's Event Data Recorder (EDR), a feature quickly becoming standard on all cars. The recorder, a four-inch square metal box, is currently installed in most recent GM vehicles and select 2000 and later Ford vehicles.

In some ways similar to data recorders used on airplanes and trains, the car's recorder springs into action as part of the air bag system. Originally designed to improve air bag performance based on the severity of the collision, the event data recorder can tell traffic accident investigators about the car's speed, engine RPMs, how far the accelerator pedal was pressed, if the brakes were applied, whether the driver's seatbelt was buckled and what warning lights were on - all from about five seconds before impact.

When an air bag deployment collision accident occurs, the data is recorded onto a computer chip. The data can be retrieved and is presented in a report. The data download from the EDR will usually contain 6 to 8 pages of information. A second

impact can be recorded in the secondary, or non-deployment, file depending upon the circumstances of the collisions and the time interval between them.”

In August 2006, the US National Highway Traffic Safety Administration, a part of the Department of Transport, issued a Final Notice of Rule Making under Title 46 Part 563 of the US Code of Federal Regulations, setting out the requirements for EDRs to be included in vehicles manufactured after 1 September 2010.

In relation to court proceedings, the Harris Technical Website cites some 36 criminal cases and 9 civil cases in the United States where the introduction of EDR evidence was permitted by the court. Only in one criminal case and one civil case was such evidence not admitted. As regards Canada, EDR evidence was admitted in two criminal cases and not admitted in a further two. No figures are given for civil cases in Canada.

Considerable research is now being conducted in the US on the performance of EDRs in accident events, such as this report dating from May 2007.

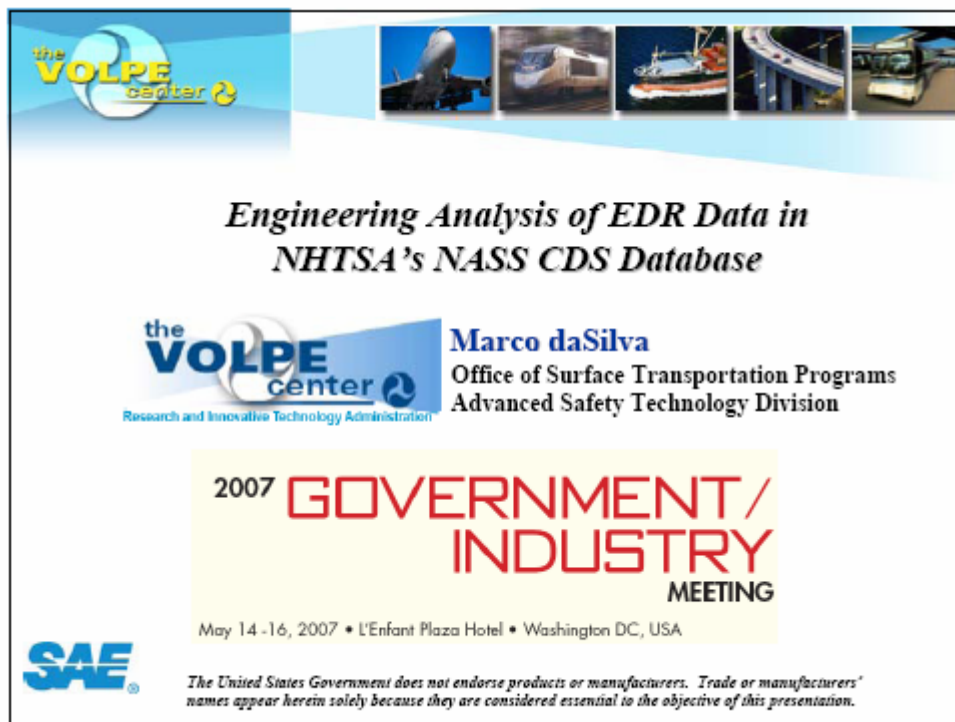


Figure 9: Engineering Analysis of EDR Data in NHTSA's NASS CDS Database – Presentation Slide

This report examined data from 2,283 EDR files, relating to 2,137 crash files. All data came from EDRs fitted in cars manufactured by General Motors.

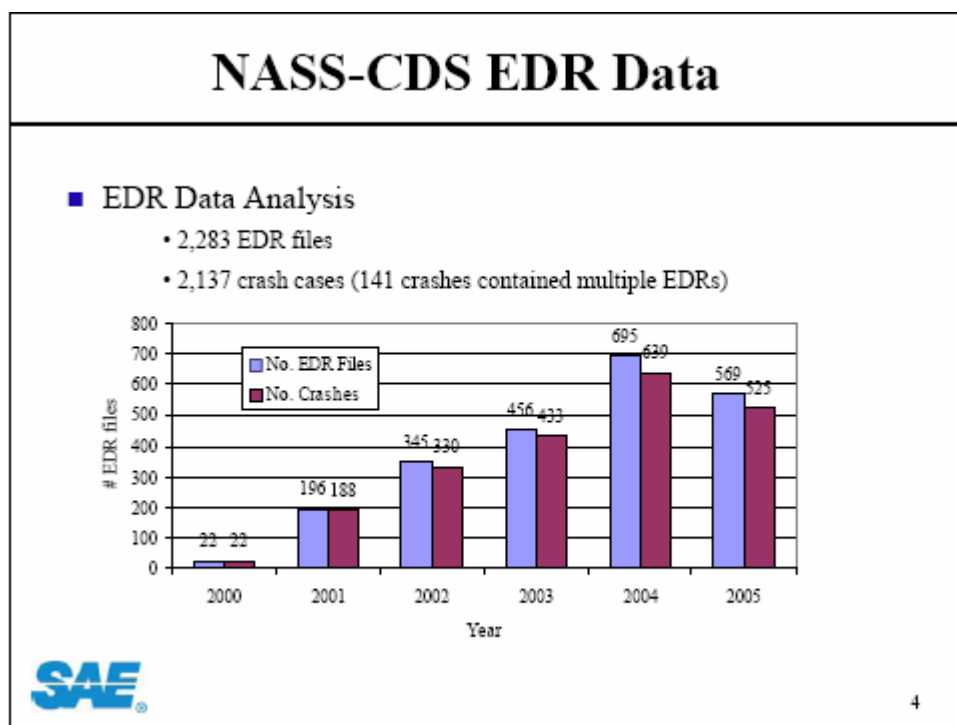


Figure 10: NASS-CDS EDR Data Analysis

4.3.5. Conclusions

In relation to the implementation of EDR, the following conclusions were drawn.

1. The survey we have conducted leads us inexorably to the conclusion that EDRs in private motor vehicles will become a standard fitment – if, indeed, that it not already the case.
2. The data contained in them, at least for the time period immediately before, during and immediately following an accident, will be accessible by criminal investigation authorities, principally the police.
3. Data protection legislation will not prevent the disclosure of such information, because:
 - (a) the data subject will be regarded as having consented to the disclosure, through his purchase/acquisition of a car equipped with such a capability; or
 - (b) by virtue of legislation/regulation requiring the disclosure of that information in given circumstances.
4. The data contained in an EDR will be disclosable in civil proceedings although, in certain cases where there has been a formal accident enquiry, only on application to the court.
5. Developments in relation to Event Data Recorders, particularly in the United States, will strongly influence the treatment for legal purposes of other types of Electronic Data Recording devices.

6. The private motorist will have to come to terms with a “spy in the car”. Unless and until the installation of EDR devices becomes mandatory, the car manufacturer/system seller will have the sales task of persuading the buyer of his car/his system, that its benefits outweigh the surveillance that it inevitably entails.

4.4. Sale of Goods and Supply of Services under English Law

4.4.1. Sales to Consumers

- (a) The law regarding the sale of goods is effectively codified by the Sale of Goods Act 1979 (replacing the Sale of Goods Act 1893) and its later amendments, the most significant of which is the Sale and Supply of Goods to Consumers Regulations 2002⁵⁰. These regulations implemented in English law the European Community Directive 1999/44/EC, on ‘certain aspects of the sale of consumer goods and associated guarantees’.
- (b) The emphasis of these regulations, as their name implies, is on the rights of consumers as buyers. A consumer is defined as “any natural person who...is acting for purposes which are outside his trade, business or profession’. For the purposes of this section, we will concentrate on the consumer, since a user of CVIS services, such as the driver or owner of the car, will most often fall into this category.
- (c) For the purposes of a contract between motorist and supplier for the sale of an On-Board Unit equipped with CVIS functionality, the following provisions of the Act are probably the most important. They apply both to a sale by a person (such as a dealer) who in the course of a business acts as agent for another as they do to a sale by the principal (such as an OEM) in the course of a business⁵¹:
- (i) Section 12(1), which implies into the contract a term that the seller has the right to sell the goods;
 - (ii) Section 13(1), which - where there is a sale of goods by description - implies into the contract a term that the goods will correspond with their description;
 - (iii) Section 14(2), which - where the seller sells goods in the course of a business (as will be the case in the CVIS context) - implies into the contract a term that the goods supplied are of satisfactory quality.
 - (iv) Section 14(2A) which states that goods are of ‘satisfactory quality’ if they ‘meet the standard that a reasonable person would regard as satisfactory, taking account of any description of the goods, the price (if relevant) and all the other relevant circumstances’.
 - (v) Section 14(2B) which provides that the quality of goods includes their state and condition and that the following (amongst others) are in appropriate cases aspects of the quality of goods:
 - fitness for purpose for which goods of the kind in question are commonly supplied;
 - appearance and finish;
 - freedom from minor defects;
 - safety; and

⁵⁰ SI 2002/3045

⁵¹ See Section 14(5)

- durability.

- (vi) Section 14(2D) which provides that the relevant circumstances mentioned in section 14(2A) above include ‘any public statements on the specific characteristics of the goods made about them by the seller, the producer or his representative – particularly in advertising or on labelling.

This last has, of course, particular relevance in the context of CVIS.

- (d) The remedies available to a consumer in the case where the goods do not conform to the contract of sale at the time of delivery⁵² are set out in section 48 of the Act. Section 48A(2) gives the buyer the right to require the seller to repair or replace the goods, or to require the seller to reduce the purchase price of the goods by an appropriate amount or to rescind (set aside) the contract with regard to the goods in question. In this last instance, any reimbursement of the purchase price to the buyer may be reduced to take into account the use he has had of the goods since they were delivered to him.

4.4.2. Supply of Goods and Services to Consumers

- (a) In addition to the Sale of Goods Act provisions, the supply of goods and services to consumers is regulated by the Supply of Goods and Services Act 1982, as amended by the Sale and Supply of Goods Act 1994. The purpose of the Act is to imply a number of terms into contracts for the supply of services, where the supplier is acting in the course of a business. Thus, a service provider offering CVIS applications to the motorist would be subject to the Act, which implies into the supply contract an obligation to carry out the service with reasonable skill and care. Where the time for performance is not fixed in, or by reference to the contract, the Act implies a term that the supplier will carry out the service in a reasonable time.
- (b) The Act goes on to provide that ‘where a right, duty or liability would arise under a contract for the supply of a service by virtue of [the Act], it may be negated or varied by express agreement, or by the course of dealing between the parties, or by such usage as binds both parties to the contract.’ In other words, the Act permits the supplier to contract out of the terms that the Act implies into the service contract.
- (c) That freedom to contract out is, however, constrained by two other pieces of legislation. The first is the Unfair Contract Terms Act 1977 and the second is the Unfair Terms in Consumer Contracts Regulations 1999.

4.4.3. The Unfair Contract Terms Act 1977

- (a) In the consumer context, the 1997 Act renders void any term in a contract that purports to reduce or exclude the obligations as to title, conformity with description and quality or fitness set out in sections 12, 13 and 14 of the Sale of Goods Act 1979.

⁵² Section 48A(3) provides that ‘goods which do not conform to the contract of sale at any time within the period of six months starting with the date on which the goods were delivered to the buyer must be taken not to have so conformed at that date’. This provides the buyer with a rebuttable presumption (see s.48A(4)(a)) that goods which prove defective within six months of delivery were defective at the time of delivery).

- (b) Limitation or exclusion clauses in regard to other matters are dealt with in different ways. Thus, section 2(1) of the Act provides that a person cannot, by reference to a contractual term or to a notice given to persons generally, exclude his liability for injury or death arising from his negligence. Section 2(2) provides that, in the case of other loss or damage, a person can only exclude his liability for negligence if the term or notice ‘satisfies the requirements of reasonableness’. Similarly, section 3 provides that a party who is in breach of contract cannot exclude or restrict any liability of his unless the contract term ‘satisfies the requirement of reasonableness’.
- (c) Reasonableness is defined in section 11 as a term that is a ‘fair and reasonable one to be included having regard to the circumstances which were, or ought reasonably to have been, known to or in the contemplation of the parties when the contract was made’. Guidance in determining whether a given clause meets this test is set out in Schedule 2.⁵³
- (d) Where the clause in question is not an exclusion, but a limitation, of liability in financial terms, s.11(4) provides that particular regard shall be had to
- “the resources which [the party seeking to rely on the limitation] could expect to be available to him for the purpose of meeting the liability should it arise; and
 - how far it was open to him to cover himself by insurance.”

Under s.11(5), the burden of establishing reasonableness is on the party seeking to rely on the clause.

- (e) One of the perceived deficiencies of the 1977 Act was that it covered only exclusion and limitation clauses whereas there were many other contract terms that were seen to be unfair from the perspective of the consumer. These deficiencies were addressed at the European level and resulted in Directive 93/13/EEC of 1994 on Unfair Terms in Consumer Contracts.

4.4.4. Unfair Terms in Consumer Contracts Regulations 1999

- (a) These Regulations enacted in English law the provisions of Directive 93/13/EEC. They apply in relation to unfair terms in contracts concluded between a seller or a supplier and a consumer. ‘Consumer’ is defined as in the Sale of Goods Act 1979, see section 4.4.1(b) above. What amounts to an ‘unfair term’ is set out in section 5, as follows:
- (b) (i) A contractual term which has not been individually negotiated shall be regarded as unfair if, contrary to the requirement of good faith, it causes a significant

⁵³ The factors that the court is to take into account include:- the relative strength of the parties’ bargaining positions, taking into account (among other things) alternative means by which the [other party’s] requirements could have been met;
- whether any inducement was offered to the [other party] to persuade him to agree the term or whether, in accepting it, he had the opportunity to enter into a similar contract with other persons without having to accept a similar term;
- whether the [other party] knew or ought to have known of the existence and extent of the exclusion clause (having regard to any trade, custom or previous dealing between the parties);
- if failure to comply with a condition excludes or restricts the other party’s rights, whether it was reasonable to expect that, when the contract was made, compliance with the condition would be practical;
- whether the goods were made, processed or adapted to the special order of the other party.

imbalance in the parties' rights and obligations arising under the contract, to the detriment of the consumer.

- (ii) A term shall always be regarded as not having been individually negotiated where it has been drafted in advance and the consumer has therefore not been able to influence the substance of the term.

Note the requirement that the term be not 'individually negotiated'. Many standard contract terms will fall within this description and will accordingly be subject to the Regulations.

- (c) Section 6(1) provides that the unfairness of a contractual term shall be assessed, taking into account the nature of the goods or services for which the contract was concluded and by referring, at the time of conclusion of the contract, to all the circumstances attending the conclusion of the contract and to all the other terms of the contract or of another contract on which it is dependent. Schedule 2 to the Act sets out a non-exhaustive list of terms that may be regarded as unfair.⁵⁴
- (d) Section 8(1) provides that an unfair term in a contract concluded with a consumer by a seller or supplier shall not be binding on the consumer.

⁵⁴ Indicative and non-exhaustive list of terms which may be regarded as unfair:

1. Terms which have the object or effect of-
 1. (a) excluding or limiting the legal liability of a seller or supplier in the event of the death of a consumer or personal injury to the latter resulting from an act or omission of that seller or supplier;
 2. (b) inappropriately excluding or limiting the legal rights of the consumer vis-à-vis the seller or supplier or another party in the event of total or partial non-performance or inadequate performance by the seller or supplier of any of the contractual obligations, including the option of offsetting a debt owed to the seller or supplier against any claim which the consumer may have against him;
 3. (c) making an agreement binding on the consumer whereas provision of services by the seller or supplier is subject to a condition whose realisation depends on his own will alone;
 4. (d) permitting the seller or supplier to retain sums paid by the consumer where the latter decides not to conclude or perform the contract, without providing for the consumer to receive compensation of an equivalent amount from the seller or supplier where the latter is the party cancelling the contract;
 5. (e) requiring any consumer who fails to fulfil his obligation to pay a disproportionately high sum in compensation;
 6. (f) authorising the seller or supplier to dissolve the contract on a discretionary basis where the same facility is not granted to the consumer, or permitting the seller or supplier to retain the sums paid for services not yet supplied by him where it is the seller or supplier himself who dissolves the contract;
 7. (g) enabling the seller or supplier to terminate a contract of indeterminate duration without reasonable notice except where there are serious grounds for doing so;
 8. (h) automatically extending a contract of fixed duration where the consumer does not indicate otherwise, when the deadline fixed for the consumer to express his desire not to extend the contract is unreasonably early;
 9. (i) irrevocably binding the consumer to terms with which he had no real opportunity of becoming acquainted before the conclusion of the contract;
 10. (j) enabling the seller or supplier to alter the terms of the contract unilaterally without a valid reason which is specified in the contract;
 11. (k) enabling the seller or supplier to alter unilaterally without a valid reason any characteristics of the product or service to be provided;
 12. (l) providing for the price of goods to be determined at the time of delivery or allowing a seller of goods or supplier of services to increase their price without in both cases giving the consumer the corresponding right to cancel the contract if the final price is too high in relation to the price agreed when the contract was concluded;
 13. (m) giving the seller or supplier the right to determine whether the goods or services supplied are in conformity with the contract, or giving him the exclusive right to interpret any term of the contract;
 14. (n) limiting the seller's or supplier's obligation to respect commitments undertaken by his agents or making his commitments subject to compliance with a particular formality;
 15. (o) obliging the consumer to fulfil all his obligations where the seller or supplier does not perform his;
 16. (p) giving the seller or supplier the possibility of transferring his rights and obligations under the contract, where this may serve to reduce the guarantees for the consumer, without the latter's agreement;
 17. (q) excluding or hindering the consumer's right to take legal action or exercise any other legal remedy, particularly by requiring the consumer to take disputes exclusively to arbitration not covered by legal provisions, unduly restricting the evidence available to him or imposing on him a burden of proof which, according to the applicable law, should lie with another party to the contract.

4.4.5. Business to Business Contracts

- (a) Where the contracting parties are business enterprises, falling therefore outside the definition of ‘consumer’, the traditional English common law rule of freedom of contract still prevails in large measure. Where the contract has been concluded in circumstances untainted by misrepresentation, fraud, mistake, illegality or duress the courts will, in general, enforce its terms of the contract, even if they seem unreasonable or, indeed, harsh. The courts have never regarded it as part of their task to re-write contracts so as to balance the terms more equitably between the parties.
- (b) This contractual freedom has now been restrained to some extent by the Unfair Contract Terms Act of 1977, at least so far as exclusion and limitation clauses are concerned in the context of standard terms of business contracts⁵⁵. Thus s.3(2) provides that, as against that party, (namely, the party being presented with standard terms of business) the other cannot by reference to any contract term—
- (i) when himself in breach of contract, exclude or restrict any liability of his in respect of the breach; or
 - (ii) claim to be entitled—
 - to render a contractual performance substantially different from that which was reasonably expected of him, or
 - in respect of the whole or any part of his contractual obligation, to render no performance at all, except in so far as...the contract term satisfies the requirement of reasonableness.

The requirements of reasonableness have been addressed in section 4.4.3(b) to (e) above.

- (c) Note that, as regards the various requirements of ss.12 – 15 of the Sale of Goods Act 1979, liability for breach of the obligations arising from section 12 of the Act (seller's implied undertakings as to title) cannot be excluded or restricted by reference to any contract term. As regards liability for breach of the obligations arising from section 13, 14 or 15 of the Act (seller's implied undertakings as to conformity of goods with description or sample, or as to their quality or fitness for a particular purpose), it can be excluded or restricted by reference to a contract term, but only in so far as the term satisfies the requirement of reasonableness.
- (d) Any contract between business entities involved in CVIS applications and services will, to the extent that it is subject to English law, have to respect the provisions referred to in this section at (b) and (c) above.

⁵⁵ S.3(1)

5. Tools to Manage Liabilities

The tools to manage liabilities mentioned in this section of the report include:

- Model Contracts
- Insurance
- Electronic/Event Data Recorders
- Codes of Practice
- Standardisation, Certification and Validation
- Alternative Dispute Resolution
- A “Without Prejudice” Restoration Fund
- Risk Sharing Pools, including Protected Cell Companies/Segregated Accounts Companies

This section of the report will be developed during the remaining part of the project to determine which tools might be more feasible than others, through a survey of Actors whose liability exposure has been mapped.

5.1. Model Contracts

One of the areas we shall be exploring during interviews with Actors principally relating to their legal liability exposure will be the acceptability of standardisation using models and templates, particularly model contracts where all the different heads of agreement are included, whilst still providing the opportunity for parties to tailor-make their contractual arrangements. The inclusion of certain standard or model contractual clauses also offer safeguards to the parties who might well have forgotten such details in their own contractual drafting.

We shall take the opportunity to review some typical contractual alignments in the fields of construction and other industries in order to derive useful precedents.

5.2. Relevance of Insurance⁵⁶

Insurance offers people and companies the opportunity to transfer financial risks to insurers, thereby alleviating the burden of liability inherent in certain activities which could include bringing ADAS or co-operative vehicle systems to market or as a legal prerequisite for driving a motor car. The availability of insurance could be regarded as a crucial facilitator in the deployment of these systems and, equally, the absence of its availability a barrier to success.

5.2.1. European-Funded Research Projects

Insurance issues have been addressed in several European-funded research projects, focusing on ADAS, including:

RESPONSE 2 which provided an insurance focus throughout directed mainly towards whether motor insurers would reduce premiums for vehicles fitted with ADAS. It was also recognised that established procedures of third-party recovery by subrogation would necessitate that a focus also be developed on the corporate liabilities and insurance exposures of Actors in the

⁵⁶ Acknowledgement: this section also appears in SAFESPOT D6.4.2 – Legal Aspects of SAFESPOT Systems.

event of a failure of an ADAS system or of any significant component. Research was also commissioned into the possible advantages of risk-sharing pools.

RESPONSE 3, a horizontal sub-project of the PReVENT Integrated Project, continued to research into liability issues and created a Code of Practice for the Design and Evaluation of ADAS (see Appendix 10 (Some Insurance Aspects of Codes of Practice) to this report).

ADVISORS included a statement to the effect that insurers can, through their policies, influence the behaviour and decisions of drivers/car owners and, at least in theory, strongly influence the development of ADAS.

AWAKE ran a survey of liability issues, insurance and legal aspects and established the liability of the driver, the vehicle owner and the manufacturer in the context of use of AWAKE from the perspective of traffic law and product liability.

STARDUST assessed the extent to which ADAS and AVG (Automated Vehicle Guidance) systems could contribute to sustainable urban development. Liability issues were also researched, identifying a potential need for liability insurance to be made available.

The RESPONSE 2 project notes that insurers may be expected to gravitate towards two fundamental questions:

- Will ADAS work?
- What will it cost to put it right if it does not?

The report goes on to state that the answer to the first question must lie in ensuring the highest-quality engineering, testing, monitoring, recording and technical integration. Such factors would form the basis of effective risk recognition, evaluation and minimisation. The second question depends on how far the parties who introduce, finance and regulate ADAS would require it to be made to work efficiently despite any early setbacks.

A strategy to establish from inception ring-fenced risk-sharing pools and/or special claims settlement funds could emerge as a good way to protect the brands and reputations and funds/resources of parties associated with ADAS while building up public confidence and responding to political and public-sector expectations. Such a fund could be structured by the parties involved in bringing ADAS/co-operative vehicle infrastructure systems to market to cover both first-party claims (i.e. claims made by the parties themselves for the costs of product recall or business interruption) or third-party claims (i.e. claims made by third parties who had been damaged in some way by the system, either by way of personal or property damage, caused by an accident which may have resulted from a malfunction of the system).

Insurers of the owners, keepers and drivers of vehicles would seek subrogated recovery for claims payments from the insurers of vehicle manufacturers, suppliers and operators of the systems.

Objective, though confidential, resolution/adjudication of responsibilities between potential co-defendants could save substantial legal and technical costs and enable money set aside for insurance purchase to be utilised for procuring higher-level and aggregate liability and

economic loss insurance and establishment of funding mechanisms, including alternative risk transfer (ART)⁵⁷.

The RESPONSE 2 project further noted that if the approach to good risk management, as outlined, were to be presented in a carefully-integrated way, there was every likelihood of achieving effective and sustainable risk transfer to support ADAS. One indicator of such realisation could be possible reductions of insurance premiums for individual owners, keepers and drivers of vehicles equipped with ADAS. The suggestion was that dialogue should be initiated as soon as possible with leading insurers and brokers with a view to thereby consolidating marketing advantage even ahead of such time as ADAS could be shown to make a substantial contribution to the reduction of traffic accidents on European roads.

5.2.2 Important Issues for Insurers to Consider

(a) ADAS

These project commentaries touched upon important categories of insurance, particularly motor vehicle insurance. Motor insurers could play a key role in actively promoting the use of safety-enhancing technologies such as ADAS through insurance policies. If these systems were to contribute to the reduction of traffic accidents, this would commercially benefit motor vehicle insurers. Furthermore, promoting safety enhancing technology would be a way to show their commitment to the resolution of traffic safety problems, although insurers are generally very traditional/conservative entities who would need to be convinced that the technologies had the promised effect.

To promote safety, insurers would generally prefer “soft” instruments initially (e.g. educational campaigns and driver training). “Hard” instruments are less welcome and would include premium reduction if the driver drove an ADAS-equipped vehicle; and bonus-malus (or no-claim discount in the UK) arrangements.

The AWAKE project identified the following factors as hindering an “optimal role” being played by the insurance industry in promoting new safety systems through their insurance policies:

- premium-setting is based on statistical principles, resulting in a time-lag problem;
- the need for market appeal of an insurance product;
- competition/sensitive relationships with clients;
- investment costs (e.g. in after-market installations);
- administrative costs; and
- market regulation.

Differences between countries and insurers show the potential for a more active role for insurance companies in terms of establishing active premium policies to support and reflect a safety culture. Insurance products for fleet owners appear to offer the best potential because of a better cost/benefit ratio and a more business-like relationship with the client.

⁵⁷ ART: Alternative Risk Transfer describes a range of solutions that can assist companies in the financial management of their business by using methodologies used in the insurance and banking sectors. It helps companies to absorb the effects of the hard market or to manage risk exposures that are difficult to insure conventionally.

In the Final Report of the ADVISORS project, it was stated that insurance companies, before taking the decision to support or promote a certain type of ADAS, would most likely want to:

- have some guarantees as far as liability was concerned. For example, if the ADAS malfunctioned and this malfunction was the primary cause of a car accident for which the insured driver could be held liable according to legislation, the insurance company would want to be able to refer the injured party to the ADAS manufacturer;
- have data on high user acceptance of the specific ADAS (i.e. to ensure that there would be high user take-up);
- have scientific and statistical evidence of the potential safety benefits, as motor vehicle insurance premium setting is based on statistical systems; and
- integrate easily the new policy into their administrative system.

ADAS are autonomous and are systems within the car to assist the driver in the driving process. The ADAS systems which have been introduced could pose some difficulties for insurers, as they could have the potential to influence the driver's task and thereby blur the transparency of liability if a traffic accident were to occur. Was the driver at fault or did the car take over? The Code of Practice for the Design and Evaluation of ADAS, created by the RESPONSE 3 project, provides a checklist which includes questions on controllability of the car which must always remain with the driver.

The question has to be asked: To what extent may the use of such a system shift liability from drivers to manufacturers or to other parties involved (service providers, road authorities, etc.) and may the liability implications form a barrier for the introduction of ADAS?

There are no clear-cut answers to these questions. Relevant liability regimes are often characterised by vague concepts such as: standards of care to be applied by drivers; the safety a person is entitled to expect from a product; or the standards that may be set for public roads. The advantage of such vagueness is that it does not restrict the ability of judges to deal with matters on a case-by-case basis, taking all relevant circumstances into account. On the other hand, such concepts fail to provide clear and objective standards to enable manufacturers, road authorities or other parties to assess acceptable levels of performance of their products, services road designs, etc..

ADAS has raised a number of questions for insurers – co-operative systems will raise more.

(b) Co-operative Vehicle Infrastructure Systems

Co-operative systems, as currently being researched in the CVIS (Co-operative Vehicle Infrastructure System) and SAFESPOT projects involve communication as between vehicles and other vehicles and vehicles and infrastructure. Co-operative systems raise additional and fundamental questions and would complicate legal disputes and, therefore, make insurance more difficult. This could be for a number of reasons, all of which affect the insurer:

- there are more parties involved, all with their own responsibilities for the proper functioning of elements of a co-operative system;
- growing technical interdependencies between vehicles and between vehicles and the infrastructure could lead to system failure or a freak accident. This could be countered with greater transparency of development, technical linkages and responsibilities which would be of great benefit in reducing the technical and legal complexity;
- risks that cannot be influenced by the people who suffer the consequences tend to be judged less acceptable by society and, likewise, from a legal point of view; and
- apart from questions of compensation of the losses of road users or other third parties, there would also be the question of how risks would be distributed between Actors in the chain of manufacturing, sales and operation of these systems, which is mainly covered by contract law and insurance. These issues would also include other types of damages of a more commercial nature, such as recall costs and losses of sales. Liability of a driver using ADAS (towards other road users) would, in principle, be without prejudice to the question of other parties such as manufacturers or road authorities who may also be held liable for part of the damage (by joint or joint and several liability), leaving it then to be decided or agreed as to what extent they should respectively contribute.

In connection with co-operative systems, insurers will need answers to a number of questions, including:

(i) Who are the insurable parties?

All parties or Actors involved in creating and using the CVIS system will need some form of insurance to cover the risks they are taking on. For example:

- those investing in the project (e.g. banks);
- those involved in the construction (e.g. builders and engineers);
- the system manufacturers (e.g. for liabilities towards third parties or business interruption insurance);
- operators and owners (e.g. for property, business interruption and liabilities policies); and
- the end user – the driver (installing the system in his vehicle may reduce his insurance premium).

As regards the driver, insurers may well even be able to reduce car premiums for the driver if, through the use of the CVIS system, claims reduce in number and quantum. Insurers work on the basis of having an overall pot of premium and if claims experience diminishes the pot, then premiums will rise but if claims reduce over a period and insurers are satisfied that this is an ongoing trend, it could be that insurance premiums would reduce.

To minimise or eradicate this lack of certainty about the position of insurers and their perspective on the use and validity of safety-enhancing technologies, it may well be that insurers should become stakeholders in the CVIS project to enable them to determine what return they would want from the system in exchange for a reduction in drivers' motor vehicle insurance. One suggestion might be that for drivers who are prepared to

provide insurers with access to the data collected by the system, they receive a premium reduction from insurers but those who want to keep their data private (if that were possible), do not receive such a reduction.

To ensure we are on the right track, Thomas Miller is maintaining a dialogue with brokers in the telecommunications field who would be well-acquainted in the requirements of insurers in this particular industry. When CVIS is a market product, then insurers should be aware of how it has been developed; what components have been used; their reliability and robustness; and the potential to insure the system. Insurers would want assurances that the system was reliable and hard evidence that it had high user acceptance and a good track record.

(ii) What types of insurance might be needed and are they available?

There will need to be a wide range of insurance available for these parties/Actors, including:

- constructors/contractors all risks, including public liability risks (i.e. insurance for which latter risks relate to damages awarded to members of the public because of an injury or damage to their property);
- professional negligence and errors and omissions cover;
- public liability for death/injury and damage to property;
- product liability;
- product recall;
- business interruption cover;
- latent defects cover; and
- terrorism.

These insurances might well already be available on the market but there is nothing at the moment to suggest that most, if not all, these covers could not be included in a risk sharing pool which are described in more detail in section 5.7 of this report.

(iii) Are the technical linkages and responsibilities to reduce the technical and legal complexity transparent?

The need for insurance, both for the system itself and for the Actors involved in creating it, has been recognised at the outset of the project. The development of the system is therefore being undertaken on the basis that it will provide full transparency. Actors roles will be researched as to how they are technically linked and individual Actor's responsibilities/liabilities will be mapped by using application scenarios as a basis.

(iv) Who "owns" the risks?

The spread of legal liability as between the different Actors involved in CVIS is being researched during the course of the project. The idea is that risks and liabilities would be owned and that recommendations as to how the risks might be mitigated and the liability exposure reduced be made.

(v) What contractual alignments are in place as between the participating Actors?

During the course of the project, we are determining what contractual arrangements will need to be in place as between the various Actors in CVIS and how parties potentially

damaged by the system will be compensated. This work will include options available to the Actors to adopt model contracts.

(vi) What is the position of the Public Sector?

It will be important to examine elements of the potential liability of public authorities in relation to the development, licensing and operations of networked and complex ITS applications. Some research will be done during the course of the project but much more will need to be done before the system is launched (see Appendix 7 Liability of Public Bodies – National Law in EU Countries and Appendix 8 Claims Against Public Authorities Under English Law).

(vii) What will it cost to put the system right if it does not work in whole or in part?

The CVIS project is researching into the possibility of setting up a “Without Prejudice Restoration Fund” to which Actors would contribute. If part of or the whole system were to fail, the Restoration Fund would step in and make the necessary repairs, irrespective of whose fault it was; compensate parties who had been damaged by the system; and ensure that lessons were learned as to why the failure occurred in the first place.

The fund (whether that is a market insurance, captive or mutual fund) would then take subrogated rights to determine who was at fault – the transparency of the technical development should enable a useful audit trail to be available – and seek recompense from them. Such a fund would ensure that public confidence in the system was maintained and that the system learned from its failures to become even more robust. Construction wrap-up cover⁵⁸ could be regarded as an analogy to such a fund. Wrap-up cover on large construction projects can either be owner-controlled or contractor-controlled. Either wrap-up enables the owner to reduce risks and provide a comprehensive insurance programme for all participants in the project.

Being able to put a financial figure on the cost of failure of the system (whether in whole or in part) would also help insurers to assess the risks of insuring the system.

The feasibility of creating and utilising a Without Prejudice Restoration Fund will very much depend upon the business planning aspects and how the CVIS system will be brought to the market. Whether the system will be based on a set of guidelines and principles, providing standards for those who want to participate without any formal company structure where Actors deal with their own liabilities and insurance or whether there will be a traditional, shareholding company where overall provision will be made for these eventualities will determine the feasibility of such a fund.

(viii) Have pre-agreed investigative processes been developed which can be deployed in the event of any significant system failure (a probable pre-requisite for a well-structured insurance response)?

There will be a need for pre-agreed investigative processes to be developed which can be deployed in the event of any significant system failure (a probable pre-requisite for a

⁵⁸ With a wrap-up programme, the owner furnishes a single insurance programme for all parties involved in the project for the duration of the project term. This insurance relates to the exposures of the project and protects the project owner, contractors, and all tiers of sub-contractors. Most wrap-ups include workers' compensation, general and excess liability, and builder's risk covers (motor, liability and contractor's equipment are not included). Wrap-ups can include project architects/engineers errors and omissions coverage and other optional covers.

well-structured insurance response). Agreed claims protocols would also need to be in place. A claims protocol would provide a written sequence of events which would need to be completed in order for a claim to be made on an insurance company. An example of this could be the UK rail industry's CAHA (Claims Allocation and Handling Agreement) which sets out a code of practice for the handling of claims made by the public against the railway industry and allocates liability, on a pre-agreed basis, to the CAHA parties involved. Liability is based on the type of claim being made and the licensed CAHA parties are listed in the CAHA Agreement. The CAHA Agreement could, in fact, provide a useful template on how liabilities could be apportioned in a co-operative system for claims made by the general public (see section 5.7.3(a) of this report).

Implementation of a good risk management system would also provide insurers with the confidence they would need to contemplate covering the system and/or the Actors.

(ix) Where is the scientific and statistical evidence of the potential safety benefits?

If this were to be available there would be a better chance of insurers providing reductions in premiums for use of CVIS. Premium-setting is based on statistical principles and there would be an obvious time lag problem to achieve that. Results of the test sites will give some comfort to insurers.

(c) The Use of EDR

(Note that "EDR" is used in the generic sense of "Electronic Data Recorder", rather than in the sense of "Event"⁵⁹ Data Recorder" used by the VERONICA (Vehicle Event Recording based on Intelligent Crash Assessment) Project Final Report, November 2006) (see section 4.3 of this report).

The **VERONICA** project explored the development of Event Data Recorders (EDR) for enhanced understanding of collision investigation data whilst recognising the potential benefits for road safety. The project also looked at the benefits of EDR to the insurance industry in two respects:

- (i) usage-based insurance premiums (pay-as-you-drive); and
- (ii) accident reconstruction for negligence assessment.

The use of EDR devices would provide insurers with more information about accidents and assist in their claims settlement and risk assessment procedures.

Norwich Union in the UK has introduced a new insurance called "Pay As You Drive" which uses the latest GPS (Global Positioning System) technology to calculate monthly insurance premiums based on how often, when and where the motorist drives his car. In this way, they say that the motorist's monthly premium is based on his own individual driving habits and not everyone else's and provides a fairer deal enabling the motorist to keep control of the premium.

⁵⁹ 'Event' is defined in section 7.1.2.1 of the Final Report of the VERONICA Project.

'Event' is to be understood as an 'accident event'. 'Accident' means an unwanted or unintended sudden event of a specific chain of such events which have harmful consequences. This includes own or third party material damages, light and severe personal injuries and fatalities".

Legal issues relating to data privacy, usage and storage and the spread of legal liabilities will need to be resolved before insurers will consider providing cover for either the Actors involved or the system itself. It is clear, however, that the availability of insurance will play a crucial role in the successful deployment of CVIS.

5.3. Codes of Practice

The Executive Summary of Deliverable D11.2 Code of Practice for the Design and Evaluation of ADAS (CoP) of the RESPONSE 3 project states that:

“... The Code of Practice is intended for automotive manufacturers and suppliers dealing with specification, realisation and assessment of ADAS. The CoP has been compiled by gathering best practices of the partner companies together with legal requirements and the RESPONSE 2 results. The CoP deals with the specification and assessment of ADAS during the entire development phase but will not address issues arising after the start of production.

The Code of Practice structure allows implementation as part of a company specific development or quality process. Requirements are supplied for each development stage and are clearly separated from checklists and method descriptions in the annex of the document to provide an overview for each task. The use of the checklist procedure assists in the specification of ADAS in order to consider aspects, which may not be obvious right from the beginning. The hazard and risk analysis procedure provides assistance in setting up a systematic analysis of the driving situation in order to determine potential risks. The Code of Practice also comprises the description of methods and tools for the assessment of ADAS safety.

The Code of Practice should not stipulate a uniform ADAS design. It should be valid for various vehicle types and systems with many complexity and integration levels to allow the application for all ADAS.

All these aspects are collected and the CoP aims at serving as a guideline assisting persons involved in ADAS development to adhere to the state-of-the-art knowledge with respect to risk identification and risk assessment as well as methodology for the evaluation of driver controllability.”

It may well be that a Code of Practice will, in time, be developed for the co-operative vehicle infrastructure systems. Codes of Practice are utilised in a number of industries; most trade associations operate codes of practice which are tailor-made to deal with common problems of the trade but, in fact, do not have the force of law behind them and there are no direct methods of enforcement.

As far as insurance is concerned, would an Actor be able to rely on the fact that he had adhered to the code of practice to mitigate the legal liability exposure he might be facing if there was a claim against him? Appendix 10 looks at some insurance aspects of codes of practice which were written by Thomas Miller for the RESPONSE 3 project.

5.4. Standardisation, Certification and Validation

It is not currently clear to us how issues of standardisation, certification and validation will be dealt with within the CVIS project. We understand that, in terms of standardisation, POMA implements the location referencing mechanism AGORA-C which is currently proposed as the ISO standard. POMA also uses ActMap standards in order to provide incremental updates. From the perspective of FOAM, several parts of GST are being reused including the specification (APIs and data formats) and the reference implementation of the specification. The parties who actually developed the reference implementation within the GST project are utilising them in CVIS. The CALM standardised set of air interface protocols and parameters are also being utilised.

The findings from our analysis of the use cases (section 3 of this report), however, point to the need to ensure that these issues are dealt with, not least because of the potential need to determine the roles of parties who verify, validate, certificate or otherwise attest to the compliance, safety, quality, condition and fitness-for-purpose of any goods, products or services supplied or to be supplied or incorporated into the CVIS system. A question might also be raised as to who will act in these roles. The commentary provided in Appendix 10 to this report looks at the role of the marine Classification Societies and their applicability to ADAS development; such applicability could also be directed to the development of co-operative vehicle infrastructure systems.

It was reported in Lloyd's List (a specialist insurance daily newspaper in the UK) that:

“The High Court has recently given judgment in a case which, as the opening words of Mr Justice Cresswell make clear, “raises important issues about the duties owed by inspection companies in domestic and international trade”.

In AIC Ltd v. ITS Testing Services (UK) Ltd [2005] EWHC 2122 (Comm) one of the world's largest inspection companies was found liable to AIC Ltd, an oil trading company, for negligence and deceit.

The judgment emphasises the crucial role of inspection certificates in international trade, and is likely to have an important effect on the practices and procedures of inspection companies, particularly in the handling of samples and the reporting of mistakes to customers and interested parties.

The case in question shows that in certain circumstances buyers and sub-buyers may have recourse against the inspection company responsible for issuing the certificates. The case is also instructive in demonstrating the scope of an inspection company's duties and consequences of its failures.

In respect of standardisation and certification, it is assumed that the results of the CERTECS sub-project of GST will be utilised but it is not understood to what level. These aspects will be more fully researched in the second part of the project and reported upon in the next deliverable.

5.5. Alternative Dispute Resolution

5.5.1. Introduction

In Western society, the classic means of resolving civil disputes between parties is either litigation, meaning proceedings in the courts, or arbitration. Each involves a decision being made by a third party - either a judge (or panel of judges) or an arbitrator (or a panel of arbitrators). The ultimate decision is, therefore, out of the hands of the parties.

Whilst civil court facilities have been a part of the structure of Western society for centuries and even for millennia, dissatisfaction with their inflexibility, procedural complexity, professional competency and, at times, their bias, combined with the cost and the delay involved in reaching a final decision, spurred certain interests, particularly merchants, to seek an alternative. This alternative was arbitration, which had the advantages of flexibility, procedural informality, speed, affordable cost and – depending on the choice of the parties - a tribunal composed of people with an in-depth knowledge of the practices of the particular industry or trade concerned.

However, as arbitration developed, at least in some jurisdictions, it began to lose some of its inherent advantages; the proceedings became more legalistic, as lawyers began to dominate the process, and the legal costs incurred by the parties were not infrequently greater than the amounts at stake in the dispute itself.

In recent years, dissatisfaction with both litigation and arbitration has spurred the development of other means of resolving civil disputes, which are collectively described as Alternative Dispute Resolution or ‘ADR’ methods.

5.5.2. General Characteristics of ADR Methods

The various methods of ADR differ from one another in their modality but they all share the same general characteristics. They are very informal and their procedure is entirely flexible, there being no set rules to follow. Unlike litigation, there is no imposed solution; there is no judge to rule or arbitrator to decide. The outcome of any form of ADR is determined entirely by the parties; their negotiations may be facilitated by a third party, such as a mediator, but the end result is the parties’ responsibility. If they decide to agree, they draw up a settlement agreement; if they decide to disagree, they are free to commence or continue legal or arbitration proceedings.

This is made possible by the fact that all types of ADR are conducted on a ‘without prejudice’ basis. Under this principle, nothing said at and no document produced at, an ADR proceeding may be referred to by either party in any later court or arbitration proceedings. The entire proceedings are private and confidential. Only the settlement agreement itself, if one results from an ADR proceeding, is a legally binding document.

The range of solutions open to the parties in an ADR proceeding is far wider than that available to a judge or arbitrator. In litigation or arbitration proceedings, it is usually the case that the most that the court or tribunal can do is award monetary damages. The outcome of an ADR proceeding on the other hand, may include monetary damages but it is not limited to them. Frequently it will contain other factors, such as an apology, the value of which cannot be measured in money but may nevertheless be of great psychological significance. Or the

outcome may be an agreement for future business between the parties, or a gift to a certain charity, or simply an agreement to abandon all claims and restore the position as it was before the cause of the dispute arose. These various outcomes are only possible because, in an ADR proceeding, it is the parties who remain in control throughout and who determine the end result.

This is perhaps the key reason why ADR proceedings can facilitate further or ongoing business relationships between the parties. Unlike litigation or arbitration, where one party wins and the other loses, it is genuinely possible in an ADR proceeding to reach a result in which both parties can see themselves as winners. On this basis, dignity and self-respect are preserved and the other party is no longer the enemy to be defeated but another commercial partner with whom business can be done, at the appropriate time.

ADR proceedings enjoy several additional advantages when compared with litigation or arbitration proceedings. In the first place, they are quick. They do not, in the majority of cases, last more than one day and they can be set in place within a week, if speed is of the essence. This represents a significant saving in management time, releasing management time and energy from sorting out the affairs of the past for the pursuit of opportunity in the future. It also represents a significant saving in legal costs and expenses; even if legal advisers have to be paid to prepare for and attend the ADR proceedings, this is a great deal cheaper than having them prepare for and attend a trial.

Given these advantages, do ADR proceedings work? The answer, although difficult to measure scientifically, is overwhelmingly “yes”. The figures indicate that ADR proceedings end in settlement, either on the day or shortly afterwards, in some 75 to 80 percent of cases.

5.5.3. Types of ADR Proceedings

ADR proceedings can take many forms, given their inherent informality and flexibility, but the following are the most common, at least in the common law jurisdictions: Early Neutral Evaluation; Mini-Trial; and Mediation.

Early Neutral Evaluation is, as its name implies, a proceeding in which a neutral party, often a judge or senior lawyer, is asked to appraise the case and advise the parties of his views. It is “a preliminary assessment of facts, evidence or legal merits designed to assist parties in avoiding unnecessary further stages in litigation, or at the very least to serve as a basis for further and fuller negotiations.”⁶⁰ The advice is, as the above implies, not binding and tends to focus on the relative merits of the parties’ positions rather than the possibilities of resolution.

A Mini-Trial is a more formal procedure, in which each party will present its case to a tribunal consisting, in the normal case, of one senior executive from each party not directly involved with the case, and a neutral person as chairman. The proceedings are conducted on lines similar to a court hearing in a civil case, but without the legal constraints as regards evidence and examination of witnesses that would normally apply.

At the conclusion of the hearing, the senior executives will then undertake negotiations between them, with a view to settling the case. The neutral chairman will facilitate these negotiations, acting in many cases as a ‘facilitative mediator’ would do. A Mini-Trial can be a

⁶⁰ Commercial Dispute Resolution, An ADR Practice Guide, by Mackie, Miles and Marsh, Butterworths, 1995, at 1.3.4.

very effective way of unlocking corporate positions but it does entail a significant commitment of time, energy and resources on each side. A typical Mini-Trial may last three days.⁶¹

Of all the forms of ADR, Mediation is the most widely used and to this we now turn in more detail.

5.5.4. Mediation⁶²

Mediation is a structured process aimed at finding practical and commercial solutions to disputes with the assistance of a neutral but proactive person acting as mediator. Its key aspects are:

(a) A negotiated, not an imposed settlement

The neutral mediator helps the parties to reach a negotiated settlement. The mediator does not impose a settlement on the parties. Indeed, the mediator usually will not express a view on the merits of the dispute but will press each side to examine closely the reality of the position it is adopting.

(b) Confidentiality and privacy

Nothing said in the mediation and no documents prepared specifically for the mediation – except for those that would have to be disclosed in court in any case – can be disclosed outside the mediation process. Everything that is said or done at the mediation is “without prejudice”. The fact that a mediation has taken place at all is confidential to the participants, except of course where the court has requested mediation.

(c) Voluntary

Unless the court has requested the parties to mediate, the mediation process is entirely voluntary. The parties decide whether they want to go to mediation and any party to the mediation can decide to withdraw once the mediation is under way – or even before it starts! Of course, the mediator will do his/her utmost to persuade the parties to stay with the process until completion.

(d) Non-binding

As said in (c) above, the process of mediation is not binding, in the sense that any party is free to bring it to an end at any time. Once an agreement has been reached however, that is then written down and signed by the parties. At that point, but not before, the parties have a binding settlement.

5.5.5. The Mediation Process

Usually a whole day is set aside for the mediation, in some convenient and neutral venue. The parties arrive early in the day and should be prepared to stay as long as it takes to reach

⁶¹ Ibid, at 9.3.2.

⁶² Taken from an Article written by David Martin-Clark, published in *Forwarder Law*, May 2001.

agreement. Sometimes this can take more than one day; usually one day is enough – although it is often a very long day!

The mediator controls the process of the mediation – but not its outcome. That responsibility remains with the parties. He/she will generally conduct the mediation by holding a series of joint meetings between and private meetings with the parties. In these meetings, the mediator is trying to facilitate communication, to assist the parties to reach a more comprehensive understanding of the real issues in dispute and to move them towards a dispassionate, commercial and pragmatic assessment of the possibilities for a negotiated settlement. Often that entails letting the passions flow, at least in the early stages.

Each party should be represented by a person who has full authority to settle and that person should be present throughout the whole mediation session. The great majority of mediations are successful, some 75 to 80 percent. When they do fail, it is often because the person attending the mediation does not have sufficient authority to do the deal when the deal finally emerges. That may well be late in the day. It usually is. So the ideal is for each party to be represented by its principal and for that person to stay the course.

The size of each party's team attending the mediation should be kept to the minimum effective; between two to four persons is best. It is usually helpful for the parties to have their legal advisers present. But this is not essential since the aim of the process is to find a commercial settlement, not to adjudicate on the legal merits of the parties' positions.

5.5.6. The Advantages of Mediation

Compared with legal proceedings or arbitration, mediation has these advantages:

- Because it is usually concluded within the day, it is quicker.
- Because it reaches a quicker conclusion, it is cheaper.
- Because it is a negotiated, not an imposed solution, the parties remain in control.
- Because it is a negotiated solution, it is more likely to be a win/win one, rather than a win/lose one.
- Because it is a negotiated solution, the relationship between the parties is usually preserved.
- Because the parties' relationships are preserved, they can continue doing business together in the future.

5.5.7. Mediation in Court Proceedings

The use of mediation in civil court proceedings is probably most advanced in the United States and Australia but it is beyond the scope of this report to deal with this in any detail.

5.5.8. The UK Position

As regards the United Kingdom, the Civil Procedure Rules ("CPR") encourage mediation and other forms of ADR in a number of ways.

Parties in dispute are actively encouraged to consider ADR, even before the court proceedings are started, by "Pre-Action Protocols". The general pre-action protocol, which provides a guide

to best practice prior to the issue of proceedings in all cases not covered by a sector-specific pre-action protocol, contains the following in relation to ADR:

“The parties should consider whether some form of alternative dispute resolution procedure would be more suitable than litigation, and if so, endeavour to agree which form to adopt. Both the Claimant and Defendant may be required by the Court to provide evidence that alternative means of resolving their dispute were considered. The Courts take the view that litigation should be a last resort, and that claims should not be issued prematurely when a settlement is still actively being explored. Parties are warned that if this paragraph is not followed then the court must have regard to such conduct when determining costs.

It is not practicable in this Practice Direction to address in detail how the parties might decide which method to adopt to resolve their particular dispute. However, summarised below are some of the options for resolving disputes without litigation:

- Discussion and negotiation.
- Early neutral evaluation by an independent third party (for example, a lawyer experienced in that field or an individual experienced in the subject matter of the claim).
- Mediation – a form of facilitated negotiation assisted by an independent neutral party.

It is expressly recognised that no party can or should be forced to mediate or enter into any form of ADR.”

Whilst the final paragraph of this advice recognises that “no party can or should be forced to mediate”, the practical outcome is that it is now extremely difficult for a party faced with a mediation proposal to refuse to engage in the process.⁶³

Following the issue of proceedings, the Civil Procedure Rules give the Courts the power to manage cases actively, to ensure that they are dealt with justly, proportionately, expeditiously and fairly in accordance with the Overriding Objective “to deal with cases justly”⁶⁴. The activities which constitute active case management include encouraging parties to co-operate, to use ADR and to settle (CPR1.4(2)). The CPR provides a further opportunity for the parties to consider ADR shortly after written arguments have been filed. At this stage the parties are given the opportunity to request a short stay of approximately a month to attempt to settle the matter by ADR. A Judge may order a stay if only one party requests it and may direct which type of ADR is appropriate (CPR 26.4). Typically these orders will refer the parties to mediation rather than any other form of ADR.⁶⁵

The general pre-action protocol contained the warning that “if this paragraph is not followed then the court must have regard to such conduct when determining costs.” This is no idle threat; there are a number of cases where a party’s attitude to mediation has been reflected in the costs award. Perhaps the most famous case in this regard is that of *Dunnett v. Railtrack* [2002] 2 AER 850, where the rail authority, although successful in the Court of Appeal, failed

⁶³ See generally with regard to the above, the article “A Review of the Trend towards Court-imposed Mediation in England and Wales, published by solicitors Field Fisher Waterhouse, 30 July 2007.

⁶⁴ See CPR 1998 Rule 1.

⁶⁵ *Ibid* at 5.

to recover its costs⁶⁶ from Ms Dunnett, on the ground that it had unreasonably refused to participate in a mediation with her.

5.5.9. The European Position

On 22 October 2004, the European Commission published the draft of a Directive “on certain aspects of mediation in civil and commercial matters”, in which the objective was expressed as follows:

Ensuring better access to justice

Better access to justice is one of the key objectives of the EU’s policy to establish an area of freedom, security and justice, where individuals and businesses should not be prevented or discouraged from exercising their rights by the incompatibility or complexity of legal and administrative systems in the Member States. The concept of access to justice should, in this context, include promoting access to adequate dispute resolution processes for individuals and business, and not just access to the judicial system.

The proposed directive contributes to this objective by facilitating access to dispute resolution through two types of provisions: first, provisions that aim at ensuring a sound relationship between mediation and judicial proceedings, by establishing minimum common rules in the Community on a number of key aspects of civil procedure. Second, by providing the necessary tools for the courts of the Member States to actively promote the use of mediation, without nevertheless making mediation compulsory or subject to specific sanctions.”

The explanatory note to the Draft contains the following:

“The value of increasing the use of mediation rests principally in the advantages of the dispute resolution mechanism itself: a quicker, simpler and more cost-efficient way to solve disputes, which allows for taking into account a wider range of interests of the parties, with a greater chance of reaching an agreement which will be voluntarily respected, and which preserves an amicable and sustainable relationship between them. The Commission believes that mediation holds an untapped potential as a dispute resolution method and as a means of providing access to justice for individuals and business.”

The Draft Directive has yet to come into force.

As regards the position of mediation in the Member States of the European Union, reference can be made to The EU Mediation Atlas: Practice and Regulation⁶⁷, which provides a guide to the present status of mediation in certain Member States of the EU, namely, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. It focuses on commercial disputes and deals specifically with court annexed mediation.

⁶⁶ Under English law, a successful litigant would expect to recover some 70% of its costs from the losing party.

⁶⁷ Written by Jayne Singer, Solicitor, CMS Cameron McKenna and edited by Karl Mackie, Chief Executive, CEDR (Centre for Effective Dispute Resolution, UK), Tim Hardy, Partner, CMS Cameron McKenna and Gordon Massie, Director, CEDR; ISBN: 1405701870.

5.6. “Without Prejudice” Restoration Fund

In researching the risks associated with successful deployment, it was evident that CVIS, as an innovative system, would need to gain and retain public and political confidence in it. Since it is safe to say that all engineered solutions have a potential to fail, we started to think of ways in which the CVIS system could be restored as quickly as possible in order to maintain its public and political profile for safety. Thomas Miller worked with a financial expert in its Investments Department to prepare an outline diagram (see Figure 11 Proposed Framework for a Restoration Fund) and brief commentary to illustrate a possible mechanism for establishing and maintaining a restoration fund for CVIS which would be activated in the event of any significant system failure.

Our work is still in its early stages, as we do want to canvass the willingness of Actors to contribute to such a fund before taking our thinking further. We had initially thought the potential income streams would be available through, for example:

- tariffs, tolls, and technology sales;
- licence membership fees; and
- investment income.

The idea behind the fund would be to create a Special Purpose Vehicle (SPV)⁶⁸. Income would be generated through sales, tariffs, tolls and licence fees generated through the CVIS system. This income is paid into the Business Management Company which would pass it to the SPV. The income could be used to incentivise the participants through the payment of dividends/interest. The SPV would issue a bond which would generate interest for the investors. The fund would be managed by independent financial advisers. The position of the government is not entirely clear but road safety is a key priority for national governments and there is an opportunity for government to “kick-start” the whole process or guarantee the system.

Ring-fenced funds would be available to the CVIS system and/or its Actors, if a system failure were to occur, but without seeking to apportion blame in the first instance. The speedy recovery of the system would be crucial; allocating liability for the fault would take place once the system was restored. The audit trail should reveal the fault and the responsibility for the fault, as well as providing an opportunity to make the system more robust, if it were found that there was some inherent latent weakness which had compounded the fault.

As the income stream stabilises, the SPV would increasingly look to external investors for funding and strive to increase the involvement of external investors, thereby phasing out and eventually eliminating the Actors’ obligation to hold the bonds. The fund would have to retain an appropriate level of funding to meet claims.

If Actors do express an interest in the development of a restoration fund, we shall look at the wider aspects of securitisation and insurance securitisation (see section 5.7.3(e) of this report) to determine how best to create the system.

⁶⁸ A company set up for the sole purpose of dealing with the CVIS Without Prejudice Restoration Fund.

Figure 11: Proposed Framework for a Restoration Fund

5.7. Risk-Sharing Pools

Thomas Miller prepared and presented for the Ingolstadt workshop of the RESPONSE 2 project in February 2003 a comprehensive paper on this topic entitled “RESPONSE 2 Project Risk Sharing Pools For ADAS” dated January 2003.

5.7.1. What are the benefits of risk-sharing Pools?⁶⁹

- A Pool may cover risks with which the commercial insurance markets are not comfortable, or to which the commercial markets have no long-term commitment. Such risks may be specific to a particular industry or profession or so volatile as to be difficult to assess consistently.
- A Pool can provide security, in the form of bonds or guarantees, on behalf of a member or a category of members, facing possible liabilities or exposures under a relevant jurisdiction to enable them to continue their commercial or other operations uninterrupted and avoid having to provide cash as collateral security to regulators or other authorities.
- A Pool can achieve good-quality risk identification, analysis and containment, on a firm and objective basis. This is indeed essential to the success of a Pool, as are sound management of the funds; maintenance of buoyant solvency margins; and transparent and well-maintained dialogue with the relevant national and international regulators.
- As Pools do not set out to make a profit (whereas commercial insurers and banks must), they can be characterised as providing at-cost solutions.

5.7.2. How Pools Work

- A Pool may be defined as a confederation or co-operative of organisations or individuals (members) who share a common interest in bearing the cost of each other’s operational or legacy risks.
- So far as possible, members’ risks and potential losses are shared on an equitable basis by ensuring that the contributions charged for each member equate to the risks that the member poses to the Pool. This entails risk assessment before the member joins the Pool and periodic (usually annual) review of the member’s rating in the light of the ongoing record of the claims paid and estimates held in relation to the member. All these assessments and reviews should be confidential to each individual member.
- The Pool is controlled by its own Board of Directors, ideally elected and/or co-opted from amongst the membership. Often, the management is delegated to an independent contractor under a contract of management or

⁶⁹ Text taken from “Risk Sharing Pools For ADAS” by Thomas Miller & Co Ltd January 2003.

engagement, which may be semi-permanent or renewable periodically. Certain strategic responsibilities must be retained by the Board and, by law, cannot be delegated to the managers.

- The overall responsibility for ensuring that the Pool maintains sufficient funds must rest with the Board which, especially if the Pool is classified as insurance, will usually expect to be advised by specialist actuaries and investment experts. The relevant financial service regulators (primarily those in the country in which the Pool is domiciled) must of course be kept fully aware of the Pool's finances, the adequacy and quality of its investments, and its ongoing prospects. It is frequently required, or at least appropriate, that members who sign up to a Pool should remain in it for an initial period, such as three to five years.
- The Pool should attempt to achieve and maintain a balance, namely:

contributions plus investment income = losses plus expenses.

- A principal potential advantage of a risk-sharing Pool is that the contributions not required to pay losses will stay within the economy of its members. Other than losses, the principal outgoings should relate to the purchase of reinsurance and to the cost of management.
- Subject first to the creation and maintenance of proper solvency margins and reserves, the Board may distribute the surplus on any risk year to members in ratio to their contributions and/or loss records.
- Conversely, if the contributions are not sufficient to cover the Pool's actual and potential losses and costs, the Board may decide to increase contribution rates from the following renewal, either for all members or only for certain categories of members whose activity has been adversely affecting the Pool. If a risk year shows signs of becoming inadequately funded, the Board may levy a supplementary contribution to capitalise the Pool sufficiently to meet its obligations.

The report focuses on a broad range of pooling and other mutual risk-sharing structures, established both nationally and internationally, and in respect of primary and reinsurance risks:

- The strategic aims of parties with a common interest, working together to deal with all or part of their risks through pooling arrangements.
- The different structures through which such aims can be achieved.
- The location, control and management of risk-sharing Pools.
- The international and national regulatory regimes and constraints under which Pools operate, including any investment restrictions.

- The financial constraints, solvency margins etc., applied in respect of Pools.
- Overall capacity created by Pools reinsuring each other or by utilising the reinsurance markets and relationships with each other.
- Trends in pooling risks and significant loss histories over the last few years.
- Issues of mutuality between different types of members of pooling arrangements.
- Robustness of pooling systems in the face of adverse and/or long-tail loss records.
- Distribution of any surplus funds not required for risk financing purposes, whether related to specific risk years or in general.

5.7.3. Examples of Existing Pools and Special Funding Mechanisms

(a) CAHA – The Claims Allocation and Handling Agreement of the UK Railway Industry Dispute Resolution Committee (RIDRC)

On privatisation of Britain's railways, the network was divided up among some 25 franchise areas for passenger operations, three freight-operating companies, three rolling-stock leasing companies, and Railtrack. All these entities have each been obliged to maintain liability insurance up to limits (initially £155 million) set by statute. CAHA was not established as an insurance system nor to take liability itself, but to be a procedure or mechanism to help ensure that third parties with claims against the railway industry were not prejudiced as a result of the privatisation and fragmentation of activities previously undertaken by the British Railways Board; and to minimise the scope for and time needing to be spent on disputes over allocation within the industry of liability for third-party claims. To achieve these aims, CAHA has provided an identified entity against whom claims against the industry may validly be made and has focused on avoiding delay in settlement of a claim while liability is allocated within the industry.

(b) Discretionary Funds

It is possible in some jurisdictions to establish a Mutual Discretionary Fund (MDF), whose principal advantage is that, since it is not classified as insurance, it is less rigorously regulated (as to solvency margins etc.) and contributions to it do not attract certain levies. Contributions may nonetheless still be tax deductible, since they have been rationally made to further the purpose of the business.

Reimbursement under such funds is not a matter of right (i.e. of guaranteed indemnity (which would make such a scheme an insurance) but of discretion which is entrusted to the Board.

There are MDFs in various jurisdictions covering agriculture, motor trade dealerships, hotels, retirement villages and schools for example. Most are set up to deal with lower-end property risks but some do include the simpler end of liability risks.

(c) Terrorism Risk Pools

Following the destruction of the World Trade Center (WTC), terrorism insurance and reinsurance cover was withdrawn across significant areas of the world's insurance industry. This was a particularly acute problem for commercial property insurance in the USA whereas, in the UK, Pool Re had for the last ten years been providing reinsurance cover for commercial property damage and business interruption costs resulting from an act of terrorism which causes fire or explosion (though not, until now against other forms of terrorist attack).

Under the US Terrorism Risk Insurance Act of November 2002 (TRIA), property and casualty insurers serving the USA are obliged to bring terrorism risk into their policies from which it was excluded after the WTC atrocities, as long as their clients agree. TRIA⁷⁰ is scheduled to expire at the end of 2007 but a bill to renew TRIA for another fifteen years has recently been passed in the US. The measure maintains the current conventional attack deductible, or amount of losses an individual insurer must pay before the federal program kicks in, at 20 percent of commercial property/casualty insurance premiums and creates a five-point sliding scale for co-payments, or the percentage insurers must pay above the deductible, depending on the size of the loss, from 15 percent for losses under \$10 billion to 5 percent for losses over \$60 billion. The industry's aggregate retention, or the maximum amount the entire industry must pay, remains at \$27.5 billion.

There is currently no EC equivalent to TRIA. Individual governments within Europe and elsewhere have also been active in setting up terrorism Pools to cover property risks. The front runner has been the UK model, Pool Re, which has operated successfully since 1993, when it was set up as a result of the two explosions at the Baltic Exchange in 1991 and Bishopsgate in London in 1993. From inception the Pool Re facility was available to all UK insurance market participants, including Lloyd's and was accorded a unique advantage because of the urgent need to establish it; namely, that it is exempt from normal solvency requirements. The UK government supports Pool Re by retrocession in the form of a loan facility. In the event of a government payment being necessary under the Retrocession Agreement, then the amount advanced becomes liable for repayment.

⁷⁰ The information on TRIA has been updated from the original report.

Pool Re extended its cover from January 2003 to an All-Risks basis but still does not cover liability, as to which the UK government has said it will only change the relevant legislation if the commercial market is deemed to have failed to provide such cover.

France⁷¹ was among the first to take the initiative after the WTC tragedy by forming Le Groupement d'Assurance et de Reassurance des Risques Attentats et Actes de Terrorisme (GAREAT) which went live on 1 January 2002 to cover aggregate annual property and business interruption losses. Direct insurers cede terrorism risks above €6 million. They bear the first €250 million layer of annual losses. The next €750 million layer is placed with international insurance and reinsurance markets. The next €500 million layer is guaranteed by the French government at no additional cost. The final layer in excess of €1.5 billion is placed with CCR, the institution that reinsures the French insurance industry against events declared as natural catastrophes under state law.

In **Germany**, Extremus was set up in the wake of the WTC destruction, providing cover for terror-related losses in fire and loss of profit on an excess basis above €25 million, with a limit of €13 billion. It cedes 100% of its premiums. Its first reinsurance layer of €1.5 billion is provided by German industry, the next €1.5 billion by international reinsurance led by Berkshire Hathaway, and the final €10 billion layer by the German government (in exchange for a slice of the insurance premiums paid by businesses).

Spain has made use of the CCS system. Its Consorcio de Compensación de Seguros (CCS) is a state insurance facility that guarantees cover for “extraordinary risks”, including terrorism and civil commotion as well as various natural catastrophes. This cover forms part of policies issued by commercial insurers and a component of the premium they collect goes to CCS coffers. If EC policy is driving the car manufacturers, component suppliers and provincial authorities together to accelerate ADAS, such levies could be a powerful pointer to an EU-wide fund mechanism.

In **Austria** insurance companies agreed to set up their own terrorism Pool, with effect from 2002, given €200 million cover in the property and casualty sectors.

The analogies of terrorism insurance are not obvious in the context of the introduction of ADAS. However, the examples they give of a joint response by commercial entities, primary insurers, reinsurers and the national government have reflected the fact that if an insurance deficiency becomes such as to affect adversely the strategic interests of a country and its economy, still more as to

⁷¹ Information regarding France, Germany, Spain and Austria has not been updated from the text in the original report.

international trade, a hierarchy of shared effort between the private and public sectors can emerge.

(d) Segregated Accounts Companies in Bermuda and Protected Cell Companies in the Channel Islands.

In both these systems, the advantage is that the individual assureds can maintain their own financial fund under protection of a much larger capital fund which extends its strength across each of the individual funds. Perhaps it may be easiest to illustrate these systems by likening them to a condominium or to sheltered accommodation for the elderly or infirm whereby each has his/her own room, but the central facilities are for the benefit of all.

(e) Alternative Risk Transfer (ART)

Examples of ART include:

- **Finite risk insurance**⁷² is usually structured over a three to five-year period, during which a significant portion of the risk potential is funded by premiums. During this period, the insurer's balance sheet is utilised to absorb the loss, thereby affording full protection on day one of the programme. The insurer absorbs the timing risk and normally a limited amount of event risk.
- **Securitisation** is a financing technique consisting of first choosing some assets, receivables, inventories, buildings, consumer loans, or mortgages, etc. based on the quality of the collateral they offer or their level of risk. To reduce risk the assets are then grouped into an SPV so as to pool the risks and take advantage of the law of large numbers. The SPV buys the assets and finances itself by issuing securities to outside investors⁷³ (see section 5.6 of this report on the Without Prejudice Restoration Fund).

Securitisation of insurance risk allows insurers to benefit from the availability of alternative capital sources, especially at times when the cost of reinsurance is expensive or there is a shortage of capacity. It also provides a means by which investors in the securities markets can invest directly in insurance risk as a distinct asset class, rather than taking an equity stake in an insurer.

The text of this sub-section 5.7.2 has been taken from the report prepared by Thomas Miller entitled "Risk Sharing Pools For ADAS" for the RESPONSE 2 project. It shows the different mechanisms used for parties to share risk in circumstances where there is no or very little market insurance available. The number of Actors involved and the potential complexity of liabilities and other risks faced by them as a consequence of involvement in co-operative systems such as CVIS, coupled with the likelihood of needing to make a joint and several

⁷² Finite risk insurance is a method of funding liabilities, typically those of a longer-term nature, for which a corporation is either unable or unwilling to purchase traditional guaranteed cost insurance. The underlying principal behind finite risk insurance is to allow for the matching of current and potential liabilities against assets over an appropriate length of time. While this is an objective of traditional insurance, finite risk can improve accessibility to the time value of money. Finite risk insurance is flexible and can be structured to meet a corporation's unique cash flow, exposure, tax and financial reporting requirements. There is a formal recognition that the corporation will pay the majority of its losses over time, but in the event it has a favourable loss experience, it will share not only in the underwriting profit but also in a portion of the investment that accrues on its premiums.

⁷³ Definition taken from the Vernimmen.com website.

response to claims from third parties injured by the system are good reasons why these mechanisms should be considered.

6. Conclusions

As mentioned in the introduction to this report, the scope of work of Topic 6: Risks and Liability is wide. We have sought to address as many aspects of our work plan as possible and are now able to consider which areas of our work require more detailed research. We feel we are well on track to achieve the objectives of Topic 6, which are:

- (i) To make an inventory of potential external risks and threats for the CVIS project applications and identify a mitigation strategy for each risk or threat judged to be substantial.
- (ii) To analyse the liabilities and map the legal exposure of each Actor in the CVIS deployment and operational service chain.
- (iii) To devise tools to manage liability (for example, model contracts) and draft recommendations for minimising the effects of liability which could create obstacles to deployment.

6.1. The Inventory of Potential External Risks and Threats

Our principal task in creating this inventory was to identify the potential non-technical barriers or risks to deployment and seek mitigation strategies for the significant risks. The methodology used to do this is traced in section 2 of this report. Of particular importance to us was the collaboration we had from the technical sub-projects – CF & F, CINT, CURB and COMO – in the development of their individual risk registers. Working alongside these technical groups gave us a useful opportunity to understand the technical development of the CVIS system and that, in turn, assisted us in addressing the liability exposure of the Actors.

The risks contained in the inventory range from catastrophic (or real showstoppers) to negligible risks. Whilst it was evident that the significant risks, some of which had the potential to halt deployment completely if not addressed, would need to take priority, it was essential that the smaller risks should be monitored as well, in case they escalated into a higher risk category. We recommended, therefore, that it would be prudent for the CVIS and DEPN project co-ordinators to monitor all risks to gauge on a regular basis their propensity to increase or reduce their impact on the project and address them accordingly. This is now being done through regular telephone conference calls as between the mitigation strategy owners and the DEPN co-ordinator and, to date, there have been no changes in the inventory.

Poor business/deployment planning was identified as one of the significant risks which could become a showstopper, if left unchecked. It is crucial for CVIS to create a valid business plan for the CVIS system and a business case for each of the CVIS Actors and stakeholders. There has to be a fundamental understanding as to what would drive the different parties involved in delivering CVIS to market to join together in a co-operative system – every party will need to be able to determine “what is in it for them”, whether that is from a commercial, political or societal perspective. The brainstorming session we held with members of POLIS supported this view and many local and city authorities present identified the difficulties they would have in implementing CVIS, both in terms of the systems they were already operating; the costs they may incur; and their lack of understanding as to what the system could deliver.

Lack of financial and technical control over external technology (whether currently available or expected to be available (for example, Galileo)) was another significant risk that was

identified. The risk of over-reliance on external technology and the expectation that it will be available at a time and at a cost to accommodate the deployment of CVIS was something the Core Architecture Group picked up on and this led to a series of discussions surrounding, for example, IPv6.

Privacy issues, particularly as to data ownership, storage and access, are of significant importance. Contradictory issues, such as data being generated that would assist enforcement agencies and insurers to determine the activities leading up to an accident and assist in determining fault, and the need for data privacy, will need to be resolved, otherwise there is a real risk in the CVIS system being regarded as a “spy in the cab” which could create a deployment barrier.

The legal and regulatory risks focus closely on the need for transparency of the legal liabilities attaching to the various Actors in the CVIS system which we are addressing in this topic area. Political risks, short-term political goals and the inability to maintain a friendly political framework for the acceptance and implementation of the CVIS system should be addressed proactively by the project to reduce this potential deployment barrier to a minimum. If there are other systems in use that have faced these potential problems, then we should draw analogies from them. In particular, the VII system in the USA which is a co-operative initiative between Federal and State departments of transportation and automobile manufacturers. Together they are evaluating the technical, economic and social/political feasibility of deploying a communications system that will be used primarily for improving the safety and efficiency of the US road transportation system. Road operators and the private sector are entering into contractual relationships with each other to ensure that each party carries out its relevant commitments to bring the system to market.

The security of the system is another significant risk. Criminal acts such as terrorism, sabotage, blackmail, extortion and data hacking are very real threats and the system needs to be sufficiently robust to withstand them. There are also a number of environmental impacts associated with the implementation of CVIS which will also need to be addressed and are featured in the overall inventory.

The conclusions we drew from creating the inventory included:

- The need to utilise to the full the information gathered during the risk identification phase of this work and to put in place measures to address the significant risks and, where necessary, other less significant risks, which could have the propensity to escalate to significant risks. Ongoing monitoring of risks and threats and implementation of the mitigation strategies to reduce their impact on the project if they were to occur is important, as is the need to update the inventory on a regular basis.
- We should not assume that technology will be in place, as and when required, and at an affordable cost but to have contingency plans for the use of alternative technologies that could also deliver the system safely and efficiently.
- There is a need for an education programme to make Actors and Stakeholders, not involved in CVIS, more aware of the benefits of CVIS and to provide them with an opportunity to voice their views as to what they would like to derive from it. The stakeholder workshops are one way of undertaking this task.

- We should be realistic as to what might be preventing Actors from implementing the system. The points raised at the POLIS meeting provided useful evidence as to the constraints under which most local authorities operate and the CVIS project must take account of these constraints and factor them into the business planning. Generally, local authorities are bound by five or ten-year strategies which may mean that adoption of CVIS might be slow.
- The need to determine how critical the overall support of local authorities within Europe is to the success of CVIS and address the results accordingly.

6.2. Analysis of Actor Liabilities

We have made our first attempt to map out the legal liability/responsibility of Primary Actors in their relationship with other Primary Actors (and with third parties) involved in delivering the CVIS system to market in respect of their potential contractual and non-contractual relationships. More research into the use cases will be required to ensure that Primary Actor categories which were not included in the initial analysis are addressed through the use of additional use cases in which they are involved.

We have used a consistent methodology for the responsibility/liability mapping exercise starting with a diagram showing how the Actors are linked technically in a particular use case and then looking at their liability towards each other and to third parties and overlaying a legal liability matrix upon the technical diagram. Each use case has its own particular contractual matrix, whilst the contractual and non-contractual characteristics are, in the main, common to all.

At section 3.6 of this report our findings on the use case analyses have been summarised. A key point in that summary is that Actors should only be required to be liable for what they can control. The offering they are providing to the system should be in modular form. By that we mean a compact entity where all the parties involved in delivering that module are controlled by the Primary Actor who takes responsibility for it. Creating a system such as CVIS, putting it onto the market and operating it will attract a range of liabilities, all of which have to be owned by one Actor or another. Our role is to determine the allocation and ownership of the liabilities.

We now have to build on the responsibility/liability mapping we have already done to create a more comprehensive picture of Actors' legal liability exposure and to align the legal findings as to Actor liability with the technical development of the system to determine whether and how adjustments in the technical development can reduce the legal liability of an Actor who may not be able to cope with it. One answer may be to transfer it to another Actor who can cope with it; another might be to eliminate it altogether.

At the COMO risk brainstorming session, we discussed how liability might be allocated in respect of data aggregation: if data were to be aggregated inside the car, liability would reside with the OEM but for aggregation outside the car, liability would be apportioned between a number of Actors. We are not suggesting that liability can be managed out of the system on a technical basis but rather that we take the opportunity during the technical development of the system to determine whether Actor liability can be more fairly apportioned on the basis of the technical development than if it were to be addressed when the system has been fully developed and cannot, through increased costs involved or technical complexity, be changed.

We intend to investigate further legal liability of Actors by creating a number of accident or incident scenarios which we will evaluate under English law. We shall also introduce an incident scenario occurring during a journey through European Member States to determine where liability will ultimately rest, taking account of the different legal regimes of the countries through which the driver will pass. This will enable us to provide a more detailed picture of the legal position of different Actors/parties involved in the CVIS system, based not only on the laws of contract and tort, but also with regard to statutory law.

We have conducted a survey on a small cross section of the Actor categories in an attempt to determine how Actors viewed legal liability in respect of their involvement CVIS; what measures they already had in place to minimise liability; how they felt their involvement in CVIS (when marketed) would affect their liability exposure; what measures would they put in place to counter any increased liability; and whether they were confident that their current insurance cover for liabilities and economic loss was adequate.

The conclusions we have drawn in relation to our work on Actor liabilities are as follows:

- Whilst we now have a good understanding of contractual and non-contractual relationships as between Actors themselves and as between Actors and third parties, we shall be looking at incident scenarios to determine how other laws will be applicable to Actors. This will give us a better insight into how harmonised transport and traffic law is in Member States and whether there are any conflicts of law.
- Actors generally insist on their national jurisdiction and national law governing their contracts and felt that they would only be responsible for what they could control.
- Some Actors settled disputes by compromise, mediation or arbitration rather than going through the courts. Those Actors had knowledge of Alternative Dispute Resolution (ADR) but the majority of those surveyed had no knowledge of it.
- The results of the questionnaire confirmed to us that liability issues were the most important non-technical matters Actors perceived would cause major deployment barriers to CVIS, followed by the need for the benefits to Actors and stakeholders being more clearly defined. This supports the commentary under section 6.1 of this report relating to business planning.
- As far as risk transfer and insurance were concerned, only one Actor felt confident that his insurers and brokers really understood the risks and liabilities involved with his work in co-operative vehicle infrastructure systems. This could be as a result of this particular Actor working closely alongside his insurers but it also shows that other Actors have not discussed the possibility that they might be facing a different set of liabilities in working in co-operative vehicle infrastructure systems and whether that would have any impact on their existing insurance cover.
- Respondents to the questionnaire felt that they would face liability in respect of storage and dissemination of personal data; defects in the system that could cause an accident; interfering with the vehicle's commands; and data privacy contractual issues. This supports our findings as to data issues in the creation of the inventory of external risks and threats.
- There does not appear to be any real understanding of how claims on the system from third parties damaged by it would be dealt with. This is probably as a result of there being no real clarity as to how CVIS will be marketed. Will it be a traditional company with all the Actors as shareholders or will it be a system of guidelines and

operating principles open to those who would like to provide services within it? What organisation will be in place to deal with claims and how will claims be paid? We have begun to look at the framework of a Without Prejudice Restoration fund which may or may not be applicable to CVIS, as much will depend on how the system is brought to market.

Section 4 of this report deals with Legal Aspects and identifies some of the laws that will be applicable to CVIS Actors, including the Product Liability Directive (85/374/EEC); Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data; the use of EDR data in civil law process in English law; a broad overview of “black boxes” currently in use in shipping, civil aviation, railways and road; the use of the digital tachograph for recording data on vehicle drivers and their periods of driving; and the implementation of event/electronic data recorders in vehicles in the US. We have also looked at the Sale of Goods and Supply of Services under English Law; the Unfair Contract Terms Act 1977; the Unfair Terms in Consumer Contracts Regulations 1999; and Business to Business contracts.

Our work on the legal aspects is not so advanced as to enable us to draw conclusions on it now but we shall be able to do so in our second report scheduled for delivery towards the end of the project.

6.3. Tools to Manage Liabilities

Similarly, we have listed in section 5: Tools to Manage Liabilities a list of potential ways in which Actors could help to reduce their liabilities and for which precedent is available for their use. These tools include model contracts; insurance; electronic/event data recorders; codes of practice; standardisation; certification and validation; alternative dispute resolution; a without prejudice restoration fund; and risk sharing pools, including protected cell companies/segregated accounts companies. More work will be undertaken in the second half of the project to assess the feasibility of implementing any or all of these options for the benefit of Actors.

We have included a number of appendices in this report to describe more fully some aspects that have been raised in the main report. We believe these documents, which are perhaps too unwieldy to be included in the main report, are useful for reference purposes. These documents include the Inventory of External Risks and Threats (Appendix 3); The Tort of Negligence in English Law in the Context of Road Traffic Accidents (Appendix 6); and Claims Against Public Authorities under English Law (Appendix 8).

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APPENDIX 1: CF & F Briefing Note

CF & F BRAINSTORMING SESSION

**at the Office of
Volvo Technology France – Renault Trucks
29 September 2006**

BRIEFING NOTE

Introduction

Thomas Miller & Co. Ltd is a world leader in providing insurance solutions to the international shipping and transport industry. It serves more than 125 million tonnes of merchant shipping globally, with a particular emphasis on the high-profile and technically demanding sectors of liquefied gas transport, passenger ships and large-scale oil tankers.

The company includes a Risk Management consultancy, which is versatile in risk identification and assessment; risk control; risk financing; business continuity planning; captive management; and the management of protected cell and segregated accounts companies. These areas of expertise enable Thomas Miller to understand and develop solutions to complex and long-term challenges of professional and commercial exposure and of liability attribution (and third-party recovery) in conglomerate project and service areas.

As you are aware the DEPN (Deployment Enablers) sub-project is researching into the essential non-technical issues the CVIS project needs to resolve to ensure that there are no obstacles to the widespread uptake of the technology and that the solutions developed can be made and sold affordably. DEPN will provide the strands that integrate the core technical work to the consideration of these non-technical questions. To ensure that the CVIS core technologies can and will merit the widest acceptance, work on the main deployment enablers will be embedded in the design and development of every phase of the CVIS project and of every technology and application sub-project. In essence, therefore, DEPN is a horizontal activity addressing a number of task areas.

Thomas Miller is participating in DEPN and leading WP6 – Risks and Liability - one of the task areas mentioned above. The first task within that work package is to make an inventory of potential external risks and threats for the CVIS project applications and identify a mitigation strategy for each risk or threat judged to be substantial. Our experience in risk identification, characterisation and mitigation has led us to the conclusion that the best way to identify risk is through brainstorming sessions with the client and, in the CVIS project, our clients are the application sub-projects.

This brainstorming session will be the first of a number of sessions that will be held with the various application sub-projects. Thomas Miller is running this one and the session at the CINT meeting in Florence on 20 October.

What will the brainstorming session focus on?

The brainstorming session will allow us to come together as a group to focus on the objectives of CF & F and try to flush out the external risks and threats that could prevent the successful deployment of the applications you are creating. Participants need to have an open mind when thinking of what risks and threats could derail CF & F and the session will be structured to facilitate spontaneous participation.

Thomas Miller will also introduce some probing questions to enable the thought processes to be as proactive as possible during the session for us to derive as much benefit as possible from it.

CF & F Objectives

From the perspective of deployment enablement, the outline objectives of CF & F are:

1. To develop and successfully deploy an application for hazardous goods management.
2. To develop and successfully deploy an application for priority booking and assignment of delivery zones/rest areas.
3. To develop and successfully deploy an application for co-ordinating vehicle access to sensitive areas.

The creation of these applications will, in many respects, depend on the successful development of the core technology block: COMM, POMA and FOAM. Risks and threats to the development of those technologies are, in our view, being dealt with on a project management basis and are not external and so will not be targeted during the brainstorming session.

The categories of external risks and threats we have currently identified are:

- Political
- Legislative
- Economic
- Financial
- Technological
- Market
- Social
- Environmental

If you can think of any additional categories, we shall be happy to include them.

How will the brainstorming session be run?

Our plan will be to have all the categories of risk listed on a flipchart. Each CF & F objective will be written on a separate piece of flipchart paper and put on the wall. Since we feel that many of the individual external risks and threats to the individual objectives will be common

to the individual applications, we will also have a piece of flipchart paper for “Common External Risks and Threats”.

Stage 1

Each participant will be allocated Post-It Notes on which they will write down whatever risks they think of that might prevent the achievement of the CF & F objectives – one risk per Post-It Note – and place it on the sheet showing the particular objective to which it refers. If the risk identified is common to all applications, then the Post-It Note should be placed on the “Common External Risks and Threats” sheet. This exercise should last for fifteen minutes maximum.

Stage 2

Thomas Miller will then put the Post-It Notes in order and ensure that there is no duplication, retaining them on the sheet denoting the individual CF & F objective.

Stage 3

Thomas Miller will then lead a discussion on the external risks and threats that have been highlighted to get a better understanding of them and this exercise will involve more probing questions and discussion from both sides.

Stage 4

Participants will then be asked to rank the risks in order of the severity of the loss that would result from the impact they might have on the particular CF & F objective. This will be done using different coloured dots to signify the severity of the loss:

Red would denote **catastrophic risk**

Orange would denote **serious risk**

Yellow would denote **moderate risk**

Blue would denote **minor risk**

Green would denote **negligible risk**

If the severity of the loss is, for example, minor, a blue dot will be put on the left-hand side of the Post-It Note.

Stage 5

This stage will involve looking at the probability of the loss occurring on the basis of:

High probability of loss – the rating would be **High (Red)**

Significant probability of loss – the rating would be **Significant (Orange)**

Medium probability of loss – the rating would be **Medium (Yellow)**

Moderate probability of loss – the rating would be **Moderate (Blue)**

Low probability of loss – the rating would be **Low (Green)**

We shall use the same coloured dots to signify probability of loss. If the probability of loss is, for example, significant, an orange dot will be put on the right-hand side of the Post-It Note.

Stage 6

This stage will involve categorising the risks under the pre-determined list mentioned earlier in this briefing note. If risks are identified for which we do not have a category, additional or different categories may be included.

Consideration of identification of controls/mitigation strategies and assigning an effectiveness rating to each control would be the next stage in the process. We do not think, however, that there will be sufficient time in the session to undertake this task.

An analysis will be made of the information gathered at the brainstorming session. The spreadsheet will be populated with all the information gathered at the session and will then be sent to each participant, via the application sub-project leader, so that the participant may insert what he feels might be a useful control.

CRF, as DEPN WP6 Task 1 leader, will undertake the analysis of the information gathered at the brainstorming session. The output will provide input to the overall inventory of external risks and threats to the CVIS applications.

We are looking forward to meeting all the participants of the CF & F application sub-project and to working with you during the brainstorming session. Through our work together, we shall gain a useful insight as to what could be potential external barriers to successful deployment and a profile of external risks and threats which might well change over the duration of the project. In this regard, we would like to maintain some form of regular contact with you during the course of the project to update the risk profile we shall develop together.

Marion Robery
Thomas Miller & Co. Ltd

APPENDIX 2: Definition of “A Risk” and Rating Tables

Definition of “A Risk”

**A risk is something that can happen and affect
(the achievement of) objectives**

(Draft definition from the Working Group developing the International Risk Standard)

LOSS IMPACT GRADING TABLE		
Colour Code	Consequence of Loss	Potential Impact
	Catastrophic	Will prevent deployment entirely
	Major	Will cause significant problems with deployment in terms of delay or over-spend
	Medium	Will cause <u>some</u> problems with deployment that are unlikely to be contained within forecasts or budget
	Minor	Will cause detectable problems but ones that will not necessarily involve delay or over-spend beyond forecasts or budget
	Negligible	Will have no noticeable effect on deployment

LOSS LIKELIHOOD GRADING TABLE		
Colour Code	Rating	Definition
	Almost Certain	Event is almost certain to occur
	Probable	Event is highly likely to occur
	Likely	Event may occur
	Unlikely	Event is unlikely to occur
	Remote	Event is highly unlikely to occur

RATING TABLE – EFFECTIVENESS OF CONTROL SYSTEMS		
Colour Code	Rating	Effectiveness of Rating
	Full	Controls fully effective – no action required
	Substantial	Controls substantially effective – some remedial action required to achieve full effectiveness
	Partial	Controls partially effective – system requires enhancement for full effectiveness to be achieved
	Ineffective	Controls ineffective – significant enhancement required if full effectiveness is to be achieved
	None	Controls totally ineffective or no controls exist

APPENDIX 3: CVIS Inventory of External Risks and Threats

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
A1	Low User Acceptance	Vehicle manufacturers and others that develop equipment to implement what CVIS has demonstrated need to consider how many devices could require attention from drivers and how to minimise any unnecessary and/or dangerous distractions that they may cause.			[For inclusion in the Final Project Report]	
A2	Low User Acceptance	Initial cost too high (not being cost-effective).			A clear definition of what is “cost-effective” needs to be determined through market research. The result needs to be factored into the technical design to ensure that what is developed will be “cost-effective” both in production (i.e. in the type and quality of materials used to manufacture the CVIS boxes and in number of services provided for a particular cost). [For inclusion in the Final Project Report].	
A3	Low User Acceptance	Lack of perceived benefit (from end users – haulage companies).			[For inclusion in the Final Project Report]	

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A4	Low User Acceptance	Users unwilling to adapt their behaviour to co-operative systems.					DEPN Topic 4
A5	Low User Acceptance	The public is not made fully aware of the benefits of using co-operative systems which results in lack of take-up of these systems.					DEPN Topic 7
A6	Low User Acceptance	Drivers are swamped with so much information that they are unable to cope and become confused.			The CVIS system will need to address the HMI issues and how the driver will be fed with the most important information first, with other less important information filtering through as and when needed. The project also needs to address whether the information will be provided visually or audibly or both and where, if at all, any screen will be located so as not to become a distraction.		DEPN Topic 4, Test Sites, CINT, CURB, CF&F and POMA
A7	Low User Acceptance	Invasion of Privacy – Users being resistant to perception of driver monitoring ('Big Brother' syndrome) and how personal data will be used.			Market research needs to be undertaken early on to determine the public's attitude to the collection and use of personal data and what needs to be in place to give them confidence that such data will be protected. Such research will include current laws on data protection and use and current political viewpoints. The information gathered should inform a strategy to address these issues in the development of CVIS.		DEPN Topic 3

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A8	Low User Acceptance	The end user not being prepared to pay for information.			There has to be a business case for the CVIS system and a determination as to whether and how much end users will be prepared to pay for the services provided through it.		DEPN Topics 4 and 5
A9	Low User Acceptance	The system not providing useful applications for the end user.					DEPN Topic 4
A10	Low User Acceptance	Equipment becoming obsolescent within a short time-frame leading to the need for constant upgrades.					DEPN Topic 2 and CAG
A11	Low User Acceptance	The high cost of fuel inhibiting the take-up of the CVIS system.					DEPN Topics 5, 7 and 8
A12	Low User Acceptance	The CVIS system not being perceived as being cost-effective or beneficial and drivers being unwilling to pay for its use.			While designing the system and services, cost-effectiveness has to be kept in mind. Only services that will lead to noticeable benefits should be designed and developed. Ensure effective representation from the wider user community to ensure understanding of the		DEPN Topic 5 and Test Sites

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
					products proposed. Cost benefit analyses need to be undertaken. Calculations of savings when using the system might be a feature for discussion in the future.	
A13	Low User Acceptance	Cost precluding use in all vehicles.			Enhance the usability of the system for punctual and localised problems and specific fleets. Cost-effective communication technologies should be used to prevent costs becoming too high.	DEPN Topic 5, CAG, COMM, POMA, FOAM and CURB
A14	Low User Acceptance	Objectives being met by other means – clean vehicles or legal enforcement.			Road authorities may find low-tech solutions to benefit their own road problems. DEPN must continue to ensure that the project continues to monitor a fast-moving scenario.	DEPN Topics 4, 5, 7
A15	Low User Acceptance	Cost of services provided through CVIS being deemed too expensive.			Calculations of savings when using the system might be a feature for the future. Low cost service provision. While designing the system and services cost effectiveness has to be kept in mind. Only services that will lead to noticeable benefits	DEPN Topics 4 and 5, CAG, COMM, POMA and FOAM

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
					<p>should be designed and developed.</p> <p>Cost-effective communication technologies should be used to prevent costs becoming too high.</p>	
A16	Low User Acceptance	Drivers finding the system too complicated and unreliable.			User friendliness has to be evaluated in the test site implementations.	DEPN Topics 3 and 4, CURB, CINT and CF&F
A17	Low User Acceptance	Failure to validate the data provided to the driver.			<p>Implementation of suitable controls on the software application required.</p> <p>Services have to be designed in such a way that only validated information is provided to the driver.</p> <p>The business case must ensure data validation.</p> <p>Enhance data quality and data validation procedures.</p>	DEPN Topic 3, CAG, COMM, FOAM, CURB, CINT, CF&F
A18	Low User Acceptance	Failure to implement safety application through CURB, as compared to other existing systems.				
A19	Low User Acceptance	Failure of the CVIS system to provide solutions for specific problems precluding investment in the solution on a small scale.				

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A20	Low User (HGV manufacturers) Acceptance	Cost precluding use in lower end of the vehicle market.			A clear definition of what is “cost-effective” (in this instance particularly for the lower end of the vehicle market) needs to be determined through market research. The result needs to be factored into the technical design to ensure that what is developed will be “cost-effective” both in production (i.e. in the type and quality of materials used to manufacture the CVIS boxes and in number of services provided for a particular cost).		DEPN Topic 5 and CAG
A21	Low User (haulage companies) Acceptance	Cost of upgrades too high (not being cost-effective).			A clear definition of what is “cost-effective” (in this instance particularly for upgrades) needs to be determined through market research. The result needs to be factored into the technical design to ensure that what is developed will be “cost-effective” both in production (i.e. in the type and quality of materials used to manufacture the CVIS boxes and in number of services provided for a particular cost).		DEPN Topic 5 (concerning market research) and CAG
A22	Low User (haulage companies) Acceptance	Concerns that commercially-sensitive data will not be adequately protected and/or could be misused by EU member states.					

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A23	Low User (haulage companies and truck drivers) Acceptance	System being insufficiently user-friendly.			User-friendliness is a user requirement and is being addressed in the project. Controlling this risk highlights the need to ensure that user requirements are represented in the development of the technical specification.		DEPN Topic 4, CAG, Test Sites, FOAM, CURB, CINT and CF&F
A24	Low User (haulage companies) Acceptance	Adherence to system resulting in increased operating costs for commercial companies as it could potentially force them to comply with a different manner of operating.					
A25	Low User (HGV manufacturers/ haulage companies/ drivers) Acceptance	Lack of user confidence in technology.			The end users will need to be educated about the technology in order to have confidence in it. User needs will need to be effectively represented in the development of CVIS.		DEPN Topic 4, Test Sites, COMO, COMM, POMA, CURB, CINT and CF&F

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A26	Low User (haulage companies/ drivers) Acceptance	Lack of user confidence in the validity of the warnings/information given by the system.			The system specification needs to be sufficiently robust to ensure that the information provided through it is reliable and meets the end users' expectations. Particular attention must be given to the early phase of implementation when take-up levels are likely to be low and the flow of information into the system may not be sufficient to provide regular, reliable warnings when required.		DEPN Topic 3,Test Sites, CURB, CINT, CF&F
A27	Low User (HGV manufacturers/ haulage companies/ drivers) Acceptance	Lack of user confidence that the system will increase road safety.					
A28	Low User (haulage companies/ drivers) Acceptance	Failure to incorporate a comprehensive range of “routine” applications resulting in too many devices in vehicle (e.g. toll collection; Tom-Tom; radio; fleet management systems etc.).					

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
A29	Low User (haulage companies/ drivers) Acceptance	Haulier interest groups, looking after the best interests of the members, are reluctant to embrace the CVIS concept because it would impose more of "Big Brother" control over the drivers.			The CVIS system should be positioned in the market in such a way as to encourage haulier interest groups to adopt it as a means of driving out bad practice in the haulage industry and encourage best practice.	
A30	Low User Acceptance	Infrastructure owners finding the cost of CVIS boxes too high.			Avoid the use of heavy roadside infrastructure and determine ways in which the boxes can be made more cheaply. Cost models must reflect the desire to penetrate the market. While designing the system and services cost effectiveness has to be kept in mind. Only services that will lead to noticeable benefits should be designed and developed. Cost effective communication technologies should be used to prevent costs becoming too high.	
A31	Low User Acceptance	Drivers being swamped with so much information that they are unable to cope and become confused.			Information has to be structured and fully configurable, so that each driver is able to use what he really needs. Implementation of suitable controls on the software application required.	

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
					<p>Services have to be designed in such a way that only validated information is provided to the driver.</p> <p>The business case must ensure data validation.</p> <p>Enhance data quality and data validation procedures.</p>	
A32	Low User (haulage companies) Acceptance	Lack of perceived benefit (from end users – haulage companies).				
B1	Legal/Regulatory Issues	Potential legal liabilities attaching to the various Actors not identified or poorly defined and/or understood.			Legal liabilities attaching to the various Actors are being addressed in the project by Thomas Miller & Co. in DEPN Work Package 6, Task 2.	DEPN Topic 6
B2	Legal/Regulatory Issues	Inability to comply with regulations as a result of lack of consistent standards/requirements (e.g. technical/regulatory) across EU member states. (There could be a case for introducing co-operative rules for traffic management).			The DEPN Sub-Project must make recommendations about the standards that must be created and enforced for Co-operative Systems to be implemented in a consistent manner across the whole of the EU.	
B3	Legal/Regulatory Issues	There are no regulatory drivers to install CVIS boxes.				

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
B4	Legal/Regulatory Issues	Failure to allocate and use a common frequency (or set of frequencies) to be used by CVIS across the whole of the EU.			The DEPN Sub-Project must ensure that the frequencies selected for use by the CVIS communications are available across the whole of the EU.		
B5	Legal/Regulatory Issues	Adoption of a system in which bus lane space is allocated on a dynamic basis not complying with the road authority's policy.			Ensure effective representation from the wider user community to ensure understanding of the products proposed.		DEPN Topic 7
B6	Legal/Regulatory Issues	Legislation/regulation to reduce CO ₂ emissions discourages use of vehicles to the extent that CVIS is not considered to be financially viable.			The Polluter Pays Principle could, at some stage, embrace the need to reduce the number of vehicles on the road to reduce toxic emissions which aggravate the effects of global warming/climate change. The CVIS system is being built to address only road transport, so there is no really effective control if this happens. If we can exert any influence over the legislature in member states and monitor the effects, this could count as a control/mitigating strategy which would need to be put in place during the planning stage of the project.		DEPN Topic 7

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
B7	Legal/Regulatory Issues	Inability to comply with regulations as a result of lack of consistent standards/requirements (e.g. technical/regulatory) across EU member states.					
C1	Lack of Political Will	Short-term political goals and the inability to maintain the political framework through development and delivery (over, say, ten to twenty years) to support the project.			The institutional framework might well go beyond the timeframe of this project. High-level discussions with government need to be undertaken to determine the longevity of the system and to raise sufficient awareness of it in the minds of government institutions that, even if governments change, the CVIS system should remain.		DEPN Topic 7
C2	Lack of Political Will	Failure by some member states to implement system because they do not see any advantages in doing so.					
C3	Lack of Political Will	Failure by some member states to implement system as a result of different perception of road safety needs and whether/how such needs should be met.			Account needs to be taken of this risk during the planning stage. As part of a marketing research exercise, member states should be interviewed to determine whether their road safety needs could be met by using the CVIS system. Analogies could be drawn from the VII system in the USA about how to tie in the local authorities.		DEPN Topic 7

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
C4	Lack of Political Will	Failure by some member states to support or implement the system because they have already made heavy investments in different systems.			<p>CVIS should be promoted as the most important system of the future. Increase modularity, plug and play and use of existing infrastructure and integration of existing services of CVIS.</p> <p>Raise political awareness. Raise public and political acceptance. Involve member states in deployment of systems.</p> <p>No single voice in Europe at this time. EC needs improved co-ordination.</p> <p>Early integration of stakeholders in the processes of planning and designing to make sure that the objectives of public authorities are met. Organise workshops with organisations like e.g. POLIS.</p> <p>EU research projects should always aim at flexible and easily deployable and open systems that counteract rigid proprietary systems.</p> <p>Involvement of all EU members should also be respected in order to avoid working with different systems.</p>	
D1	Poor Deployment/Business Planning	Failure on the part of OEMs to include in their deployment/business planning the means by which			Each Actor/stakeholder in the CVIS system should be determining early in the project what return on investment they	

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
		they could plan for a quick return on investment.			would be seeking and how that might be achieved. A cost-benefit study should be undertaken to determine whether those people paying for the CVIS system will, in fact, be deriving the most benefit or, alternatively, who will derive the most benefit and who will pay (they may not be the same Actors/stakeholders).		
D2	Poor Deployment/Business Planning	Failure on the part of road operators to open up their legacy systems to become interoperable with the CVIS system.			There should be an early dialogue with different road operators within Europe to determine their attitude to make their legacy systems interoperable with the CVIS system to determine any potential barriers for which solutions should be sought.		DEPN Topic 2
D3	Poor Deployment/Business Planning	Failure to phase deployment of infrastructure to attract initial users (i.e. initial users will require the system to cover a certain area if they are to be sufficiently attracted to purchase it). The risk is failing to understand what initial users need; the areas in which the infrastructure first needs to be installed to attract potential users and the			Market research needs to be undertaken early on to determine the will of the infrastructure owners to equip the infrastructure with CVIS boxes and to understand what would be the business case to ensure they make the investment.		DEPN Topic 8

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
		areas in which such users travel and hence will require the system to cover.				
D4	Poor Deployment/Business Planning	Failure to identify on an ongoing basis the needs of the user in the short, medium and long term.			Market research needs to be undertaken on an ongoing basis to keep pace with changing user demands if the system is going to respond and anticipate user needs.	
D5	Poor Deployment/Business Planning	A co-operative vehicle system proves not to be an adequate solution to the targeted problems.			There could be a number of reasons why a co-operative system is not adequate: (i) drivers ignore the advice – in which case consideration might be given to making non-compliance with CVIS mandatory through legislation; (ii) the business case for developing a co-operative system is flawed and potential Actors/stakeholders in practice cannot or do not wish to endorse a co-operative system – in which case discussions should already be taking place with individual stakeholders to gauge their willingness to endorse/adopt a co-operative system; or	

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
					(iii) new technological developments provide a swifter and better answer to the targeted problems – in which case ongoing market research should be undertaken to create awareness of what developments are being made on the market.		
D6	Poor Deployment/Business Planning	Barriers to implementation of a co-operative system which are evident today are also viewed as being future barriers to deployment.			All barriers to deployment will have to be identified and addressed and each will have its own mitigation/control strategy. Some barriers evident today may, during the course of the project, become less important but new ones will arise. The key will be to address them as soon as they become evident and not rely on the fact that they will not be there when CVIS is launched.		DEPN Topics 4 and 7
D7	Poor Deployment/Business Planning	The wide range of different Actors and stakeholders in the CVIS project means that there is a spectrum of interests, some of which might have opposing interests. Failure to create business models for each of the stakeholders.			Actors and stakeholders have come together in the CVIS project to research the feasibility of whether a co-operative system will work and how it can be made to work. If the project shows that everything is in place for a co-operative vehicle system to be successful, each Actor/stakeholder will need to have his own business case prepared (i.e. if he participates, what will be his financial or other return for being involved). Actors		DEPN Topic 5

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Mitigation Strategy Owner
					and stakeholders should be encouraged during the course of the project to think very clearly about the benefits they will derive from their contribution, so that these ideas can be fed into the business planning aspects of DEPN.	
D8	Poor Deployment/Business Planning	Lack of global business case for CVIS.			<p>Whilst each Actor/stakeholder needs to develop a business case/plan for his involvement in CVIS, a Marketing Plan and Business Plan for selling the system also need to be developed.</p> <p>The Marketing Plan should take into account the phasing of CVIS deployment in the market it has identified. Return on investment for the stakeholders would also be a pre-requisite for the CVIS Business Plan.</p>	DEPN Topic 5
D9	Poor Deployment/Business Planning	Failure of Actors/stakeholders to agree on IPR issues.				
D10	Poor Deployment/Business Planning	Failure to define level of take-up for system to be viable (e.g. critical mass).			The CVIS system should be deployed on a phased basis in order to provide sufficient benefit to end users in each phase until such time as critical mass is reached.	DEPN Topic 8

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
D11	Poor Deployment/Business Planning	Failure to determine how many vehicles need to be equipped to provide a consistent and reliable V2V service without any appreciable loss of function of the system when <i>ad hoc</i> networks are set up.			Market research needs to be undertaken early on to determine the percentage market penetration needed to provide a system that will work on the basis of V2V before there is a 100% take-up.	
D12	Poor Deployment/Business Planning	Failure to carry out a proper cost-benefit analysis leading to Actors/stakeholders not realising their required return on investments.			A cost-benefit analysis needs to be undertaken on the feasibility and viability of co-operative systems both from the perspective of the end-user and from the perspective of those involved in providing such systems.	
D13	Poor Deployment/Business Planning	Failure to determine which entity or group of entities involved in CVIS will take responsibility for owning data.			All issues relating to data ownership, storage and use and EDR need to be resolved during the course of the project.	
D14	Poor Deployment/Business Planning	The absence of a Marketing Plan to address the fragmentation of the market caused by the decentralisation of public authorities hampering local and national implementation of the system.			<p>Early integration of stakeholders in the processes of planning and designing to make sure that the objectives of public authorities are met. Organise workshops with organisations like e.g. POLIS.</p> <p>CVIS should be promoted as the most important system of the future. Increase modularity, plug and play and use of existing infrastructure and integration of existing services of CVIS.</p> <p>DEPN must continue to ensure that the project continues to monitor a fast moving scenario.</p>	

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
D15	Poor Deployment/Business Planning	Actors/stakeholders not having the necessary money to invest in the CVIS system.			<p>DEPN must continue to ensure that the project continues to monitor a fast moving scenario.</p> <p>Low cost system.</p> <p>Public Private Partnership management models and template contracts.</p> <p>While designing the system and services cost effectiveness has to be kept in mind. Only services that will lead to noticeable benefits should be designed and developed.</p>	
D16	Poor Deployment/Business Planning	Actors/stakeholders not perceiving the benefits and rewards of being involved in a co-operative system.			<p>Cost benefit analysis methodology should be in place.</p> <p>Calculate savings while using the system.</p> <p>Ensure effective representation from the wider user community to ensure understanding of the products proposed.</p> <p>Only services that will lead to noticeable benefits should be designed and developed.</p>	

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
D17	Poor Deployment/Business Planning	Failure to determine a viable business case for the provision of in-car telematics services.			This affects not only CVIS but all in-car technology. Cost models must reflect the desire to penetrate the market.	
D18	Poor Deployment/Business Planning	Failure to phase deployment of the system to reach the penetration level required to provide a reliable service at all times.			Basic, low-cost robust start-up services that can handle punctual, localised problems for specific fleets. DEPN and those working on the CVIS business case must be aware of these issues.	
D19	Poor Deployment/Business Planning	Different Actors having different perspectives of efficiency (what is efficient for the driver may not be efficient for the road operator) leading to a potential conflict of public service objectives and the private motorist's objectives.			DEPN and those working on the CVIS business case must be aware of these issues. When designing CURB services different perspectives of efficiency are considered e.g. by combining the strategy management and the dynamic routing, the objectives of individual drivers and public authorities can be matched.	
D20	Poor Deployment/Business Planning	Partial deployment or deployment which has not been well thought through endangering the emergency services.			The effects of partial deployment on the overall system should be evaluated on the test site implementations. DEPN and those working on the CVIS business case must be aware of these issues.	

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
D21	Poor Deployment/Business Planning	Failure to determine the synergy between the objectives of the service provider and the local road authority in adopting a co-operative system.			DEPN and those working on the CVIS business case must be aware of these issues. When designing CURB services different perspectives of efficiency are considered e.g. by combining the strategy management and the dynamic routing, the objectives of individual drivers and public authorities can be matched.	
D22	Poor Deployment/Business Planning	Failure to take account of current challenges for road authorities in respect of pricing and enforcement to provide a seamless service.			DEPN and those working on the CVIS business case must be aware of these issues.	
D23	Poor Deployment/Business Planning	Failure to make a valid business case for each of the CVIS Actors/stakeholders to engender the necessary co-operation to make the system work.			Actors and stakeholders have come together in the CVIS project to research the feasibility of whether a co-operative system will work and how it can be made to work. If the project shows that everything is in place for a co-operative system to be successful, each Actor/stakeholder will need to have his own business case prepared (i.e. if he participates, what will be his financial or other return for	

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
					being involved). Actors and stakeholders should be encouraged during the course of the project to think very clearly about the benefits they will derive from their contribution so that these ideas can be fed into the business planning aspects of DEPN.	
D24	Poor Deployment/Business Planning	Failure to phase deployment of vehicles and infrastructure to attract initial users (i.e. initial users will require the system to cover a certain area if they are to be sufficiently attracted to purchase it). The risk is failing to understand what initial users need; the areas in which the infrastructure first needs to be installed to attract potential users and the areas in which such users travel and hence will require the system to cover.			Market research needs to be undertaken early on to determine the will of the infrastructure owners to equip the infrastructure with CVIS boxes and to understand what would be the business case to ensure they make the investment.	DEPN Topic 8
E1	Competition	Non-European countries develop competing systems with superior benefits (e.g. in terms of cost; facilities; global user acceptance).			To avoid "superior benefits" being provided by competing systems, the CVIS system should be open enough to be integrated with new functionalities/services; in a medium to long-term period technologies change and improve.	DEPN Topic 5, CAG, COMO, COMM, POMA and FOAM

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Mitigation Strategy Owner
E2	Competition	Other systems are available which provide a similar service to CVIS.				
E3	Competition	Inability to supplant existing solutions (e.g. Tom-Tom and radio) as sources of information.				
E4	Competition	Actors/stakeholders decide to invest in competing technologies (e.g. people trackers instead of vehicle-based technology).				
E5	Competition	Local initiatives, providing solutions to local issues, are adopted earlier than CVIS.			<p>CVIS has to guarantee interoperability because a European solution with a high deployment rate will always be more cost-effective than a local solution.</p> <p>DEPN and those working on the CVIS business case must be aware of these issues.</p> <p>Bring local initiatives together at EU level to address the situation and bring possible harmonisation projects to be followed by new innovative research activities.</p> <p>Develop applications which should be integrated with local initiatives.</p>	DEPN Topic 2, CAG, COMO, COMM, POMA and FOAM

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
F1	Misuse of Data	Failure to protect privacy of data and data exchange security.			It must be a mandatory part of the design specification of everything that CVIS is developing to protect the privacy of data that is collected All personal attributes included in collected data such as names, addresses, vehicle identities, etc. must be processed so that privacy is completely protected. This processing shall take place where and when the data is collected so that personal data is not transmitted within the System. This processing shall make it impossible to trace the identity of a person or vehicle from the processed data. The only exception shall be where data is needed to prosecute someone for breaking a law.		DEPN Topic 3, COMO (Data containing personal information must not be transmitted and/or processed by whatever the other sub-projects are developing) and FOAM
F2	Misuse of Data	Breach of data security – inability to protect personal data.			It must be a mandatory part of the design specification of everything that CVIS is developing to protect the privacy of data that is collected All personal attributes included in collected data such as names, addresses, vehicle identities, etc. must be processed so that privacy is completely protected. This processing shall take place where and when the data is collected so that personal data is not transmitted within the System. This processing shall make it impossible to trace the identity of a		DEPN Topic 3, COMO and FOAM

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
					person or vehicle from the processed data. The only exception shall be where data is needed to prosecute someone for breaking a law.		
F3	Misuse of Data	Breach of data security – inability to protect commercially- sensitive data.					
F4	Inability to Collect Data	Failure to provide accurate data input to the system.			It must be a mandatory part of the design specification of everything that CVIS is developing that data must be checked for accuracy. Tests must be included in the work at the Test Sites to verify the accuracy of all the data that CVIS collects. Where possible, collected data must be cross-checked with other collected data to establish its accuracy.		DEPN Topic 3, COMO (Data needs to be checked for accuracy as close to the point of collection as possible. The CURB, CINT and CF&F Sub-Projects must also check the accuracy of the data they are using (e.g. by comparing data from different sources)).
F5	Misuse of Data	Failure to protect privacy of driver/company.			Market research needs to be undertaken early on to determine the public's attitude to the collection and use of personal data and what needs to be in place to give them confidence that such data will be protected. Such research will include current laws on data protection and use and current political viewpoints. The information gathered should inform a strategy to address these issues in the development of CVIS.		DEPN Topic 3 Sub-Project

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
F6	Misuse of Data	Failure to comply with member state legislation (e.g. Data Protection Act).			Market research needs to be undertaken early on to determine the public's attitude to the collection and use of personal data and what needs to be in place to give them confidence that such data will be protected. Such research will include current laws on data protection and use and current political viewpoints. The information gathered should inform a strategy to address these issues in the development of CVIS.		DEPN Topic 7
F7	Misuse of Data	Confusion over ownership of data; purposes of use; by whom; and whether data should be stored in the system.			The project should seek advice from the Data Protection Group established by the EC. Thomas Miller & Co. is also addressing responsibility/liability mapping in DEPN WP6, Task 2.		DEPN Topic 3
G1	Lack of Equipped Infrastructure	Lack of finance for Public Authorities to install/implement system (budget constraints).			At an early stage in the project a determination of the initial cost should be made and agreed with the Public Authorities. The escalation/reduction of such putative cost should be monitored during the course of the project and the Public Authorities need to be kept informed of such changes and confirm that they would, in principle, still be prepared to pay such costs.		DEPN Topic 7
G2	Lack of Equipped Infrastructure	Lack of continuing finance for Public Authorities to maintain system to acceptable level			At an early stage in the project some determination of the initial cost should be made and agreed		DEPN Topic 7

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
		(budget constraints).			with the Public Authorities. The escalation/reduction of such putative cost should be monitored during the course of the project and the Public Authorities need to be kept informed of such changes and confirm that they would, in principle, still be prepared to pay such costs.	
G3	Lack of Equipped Infrastructure	Public Authorities unwilling to equip infrastructure out of fear of attracting liability.			Thomas Miller is addressing risks and liabilities in DEPN WP6 and will be mapping the responsibilities/liabilities of the different Actors involved in the CVIS value chain during the course of the project. Once the responsibility/liability mapping exercise has been completed, there will be discussions with the various Actors involved, including Public Authorities, about the liabilities they will attract by being involved in co-operative systems and how those liabilities, once identified, might be mitigated.	DEPN Topic 7
G4	Lack of Equipped Infrastructure	Public authorities/road operators find it difficult (technologically or through lack of space) to incorporate the CVIS boxes in their existing roadside furniture.			Cost models must reflect the desire to penetrate the market. In addition, the platform development must take into account the environmental sensitivity of some cities. Co-ordination between developers, designers and public authorities,	DEPN Topic 7

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
					road operators, perhaps through workshops.		
H1	Communications Failure	Insufficient licensed bandwidth to handle data traffic seamlessly without creating bottlenecks.			Those involved in the technical development of CVIS will need to assess the maximum level of data transmission that is likely to occur through the CVIS system during the different phases of deployment and ensure that they have sufficient licensed band-width to cope with that level of data transmission effectively. This needs to be dealt with in the technical specification.		CAG and COMM
H2	Communications Failure	Insufficient communications range to allow system to operate efficiently.			This needs to be dealt with in the technical specification.		COMM
H3	Communications Failure	Failure of communications system (breakdown).			There is always a possibility that any engineered system will fail at some time. The technical specification should build in multiple redundancy features and be able to isolate areas that fail to avoid the whole system going down, whilst ensuring that, in building the system, it is as resilient and reliable as possible.		DEPN Topic 6, COMM and FOAM

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
					If the system does fail, there should be continuity plans in place to ensure a swift restoration of the system to ensure public confidence in it is maintained with a "without prejudice" restoration fund to finance the restoration as quickly as possible. Thomas Miller will be looking at how such a restoration fund could be set up and managed in DEPN WP6.	
H4	Communications Failure	Inability to exchange data in all geographic areas (e.g. tunnels, urban canyons, indoor or underground car parks).			These issues should be dealt with in the technical specification.	DEPN Topic 2, COMM, POMA and CAG
I1	Over-reliance on External Systems (e.g. Galileo)	Inability to control/influence external systems utilised within CVIS e.g.: (i) non-availability of the system within the expected timeframe; (ii) unforeseen closure/collapse of the project; (iii) unfavourable terms and conditions on which the concession is operated when in commercial usage; and			Service Level Agreements with suppliers and determining alternative suppliers to call upon if need be which should be included in business continuity planning. The technical specification for the CVIS system should take account of the availability and timing of third-party services to ensure they match with the phased deployment of the CVIS system. The specification should be sufficiently flexible to enable delivery of services through the CVIS system using alternative suppliers.	DEPN (as to the Service Level Agreements).? The rest of the strategy should be owned by the other sub-projects.

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
		(iv) unexpected or uncontrolled downtime.			Key potential deficiencies in the system should be identified.		
J1	Driver Deskilling	Over-reliance on system leading to driver complacency and increased prospects of accident.					
J2	Driver Deskilling	Reduced driver skills in environments (countries) where CVIS is not implemented (e.g. non-equipped vehicles) leading to increased potential for accidents.					
J3	Driver Deskilling	Drivers from non-CVIS countries/territories being distracted by need to cope with CVIS technology whilst driving (e.g. in rental vehicles).					
K1	Environmental Problems	Compliance with the CVIS system causes inadvertent infringement of air quality standards in particular areas.			It shall be a mandatory part of the design process that the System shall determine what is the least energy-consuming advice to be given to drivers or instructions given to vehicles before they are actually sent. For example, it may		CAG, COMM,CURB, CINT and CF&F

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
					be better for vehicles to slow down rather than to accelerate so that they can merge at junctions or cross at intersections.		
K2	Environmental Problems	Waste disposal problems might be experienced as a result of the type of material used to make the CVIS boxes.			The physical design of components to be used in the CVIS demonstrations must be such that existing hardware is used wherever possible. Where this cannot be done, then recyclable materials must be used.		CAG, CURB, CINT, CF&F, COMO and POMA
K3	Environmental Problems	The CVIS equipment being unable to cope with excessive temperature fluctuations caused by climate change.					
K4	Environmental Problems	The carbon footprint of road transport generally is being monitored more closely and could lead to a downturn in the number of vehicles on the road.					
K5	Environmental Problems	Driver/passenger exposure to dangerous Electromagnetic Fields and/or Electromagnetic Radiation.			The EMC assessment will address this risk.		DEPN Topic 7
L1	Inability to Market Effectively	System being reliant on attraction of future benefits which cannot be realised in acceptable timeframes.			The Marketing Plan should take account of the expectations of all end users of the system. In the early years the system will not be fully developed and the marketing		DEPN Topics 5 and 8

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
					strategy will have to address this in the phasing of the deployment of the system. The Marketing Plan may well inform the technical development of the system.		
L2	Inability to Market Effectively	Absence of a comprehensive marketing plan, addressing the expectations of all the potential Actors in the CVIS system: for example, drivers, hauliers and road operators leading to those expectations not being properly evaluated and the CVIS system having low user acceptance.			The Marketing Plan should take account of the expectations of all end users of the system. In the early years the system will not be fully developed and the marketing strategy will have to address this in the phasing of the deployment of the system. The Marketing Plan may well inform the technical development of the system.		DEPN Topic 5
L3	Inability to Market Effectively	Owners of roadside units being unwilling to allow access to their systems.			The Marketing Plan should gauge the willingness of all parties to work on a co-operative basis and to allow access to their existing systems to enable the CVIS system to work effectively.		DEPN Topic 4
L4	Inability to Market Effectively	Inability to implement the system in certain areas (for example some rural areas).			Technological solutions such as the use of GPRS connections which make the prices of the services very high.		DEPN Topic 3 and COMM

GENERIC RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
L5	Inability to Market Effectively	Failure to integrate non-CVIS-equipped vehicles.			The European car fleet cannot be changed in a short space of time. 10 years+ will be required to begin to effect change.		COMO, COMM, POMA, FOAM and CAG
L6	Inability to Market Effectively	Inability to convince public of credibility of system in early years when number of equipped cars will be few and infrastructure sensors are not widely installed or are restricted to “pilot” areas.			The Marketing Plan should take account of the expectations of all end users of the system. In the early years the system will not be fully developed and the marketing strategy will have to address this in the phasing of the deployment of the system. The Marketing Plan may well inform the technical development of the system.		DEPN Topics 4 and 7
L7	Inability to Market Effectively	System being reliant on attraction of future benefits which cannot be realised in acceptable timeframes.			The Marketing Plan should take account of the expectations of all end users of the system. In the early years the system will not be fully developed and the marketing strategy will have to address this in the phasing of the deployment of the system. The Marketing Plan may well inform the technical development of the system.		DEPN Topic 8
L8	Inability to Market Effectively	Full benefit of CVIS unlikely to be realised by initial purchaser, but will be more			The Marketing Plan should take account of the expectations of all end users of the system. In the early years the system will not be		DEPN Topic 8

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
		fully realised through on-sale of the vehicle to subsequent purchasers some years later when CVIS achieves greater market penetration.			fully developed and the marketing strategy will have to address this in the phasing of the deployment of the system. The Marketing Plan may well inform the technical development of the system.	
M1	Criminal Acts	Terrorism, Sabotage, Blackmail, Extortion, Data Hacking etc. Example 1 – Terrorist or blackmailers disrupt CVIS causing traffic chaos in high-profile locations such as major cities. Example 2 – Terrorist or blackmailers use CVIS to re-route petrol tankers into a tunnel whereupon they are prevented from leaving and subsequently blown up.			The system should be stress tested (i.e. part of the development should include trying to break into/hack into the system and to try to break it down). This should be done at key development stages in the project which have been previously identified. The technical specification includes security of the system and the effectiveness of the security (which should be tested). The security architecture will be crucial and in CALM is a generic issue.	DEPN Topic 6, CURB, CINT, CF&F, COMO, POMA and FOAM
N1	Lack of Finance	Caused by global (or regional) economic downturn.			At an early stage in the project a determination of the initial cost should be made and agreed with the Public Authorities. The escalation/reduction of such putative cost should be monitored during the course of the project and the Public Authorities need to	DEPN Topic 5

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
					be kept informed of such changes and confirm that they would, in principle, still be prepared to pay such costs.	
N2	Lack of Finance	Cost to equip infrastructure to the extent required to attract initial users is prohibitive (i.e. users will require a certain degree of infrastructure coverage from the outset if they are to be attracted to the system prior to other vehicles becoming equipped. The cost of installing this initial phase of infrastructure may be too high when the prospects of the ultimate success of CVIS are still uncertain).			At an early stage in the project a determination of the initial cost should be made and agreed with the Public Authorities. The escalation/reduction of such putative cost should be monitored during the course of the project and the Public Authorities need to be kept informed of such changes and confirm that they would, in principle, still be prepared to pay such costs.	DEPN Topic 5
N3	Lack of Finance	The cost of the CVIS boxes is too expensive, leading to low system coverage.				
N4	Lack of Finance	High communication costs, since coverage is not sufficient on secondary road networks.				
N5	Lack of Finance	Communication costs being too high.			Agreement with telecommunications companies. Service should be designed in such a way that communication costs will be low. Harmonisation with COMM.	DEPN Topic 5 and COMM

GENERIC RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Mitigation Strategy Owner
N6	Lack of Finance	Lack of mechanism to provide swift restitution of the system, fairly attribute costs of system failure and/or accidents arising from such failure (disputes could extend system outage periods leading to customer dissatisfaction).				
N7	Lack of Finance	Road or local authorities not having the initial or ongoing budget to invest in equipping the road infrastructure and to maintain it in the future.			<p>This is related to the development of an effective business case. Public authorities are far more flexible in the development of new technologies, such as Private Finance Initiatives.</p> <p>While designing the system and services, cost-effectiveness has to be kept in mind. Only services that will lead to noticeable benefits should be designed and developed.</p> <p>Promotional campaign.</p> <p>Low-cost infrastructure, using existing technical equipment.</p> <p>This could be a big problem when you look at the maintenance of current RSU, some of the intersection controllers in The Netherlands and maybe other countries are more than 20 years old. No action as yet defined.</p>	DEPN Topics 5 and 7

CINT CO-OPERATIVE TRAVELLERS' ASSISTANCE CTA							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Low User Acceptance	CTA will not be marketable, as earlier implementations have failed.			Market research should be undertaken to determine the potential level of take-up of CTA and to understand what it is about CTA that makes it unsuccessful. This would provide indications as to what remedial actions should be taken during the development phase to redress the image that CTA is "unmarketable".		DEPN Topic 4 (liaison with CINT will be necessary)
A2	Low User Acceptance	The end users would not be prepared to pay for information (as they expect information to be provided free of charge) and so would not pay for CTA or CINT itself.			There has to be a business case for each application being provided through the CVIS system. An application will have to fill a gap in the market. If competition is fierce, then it might call into question the validity of developing a system that will never make it on the market. If research finds that there is a market for this application, a unique selling point has to be found to make it good enough for people to want to buy it.		DEPN Topics 4 and 5
A3	Low User Acceptance	The application does not fulfil the end-user's expectations. There is a risk that an application is provided through CVIS but the requirements for that application to work have not			Discussions should be held with traffic managers in different countries to determine their appetite to collaborate with such a system or the system should be limited to the areas where there is such collaboration.		DEPN Topic 4

CINT CO-OPERATIVE TRAVELLERS' ASSISTANCE CTA							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
		been fully thought through (for example, arrangements will need to be in place to ensure collaboration as between different regional/country traffic managers to allow a co-operative travellers' assistance application to be feasible).					
A4	Low User Acceptance	Invasion of Privacy – Users being resistant to perception of driver monitoring ('Big Brother' syndrome) and how personal data will be used.			Market research needs to be undertaken early on to determine the public's attitude to the collection and use of personal data and what needs to be in place to give them confidence that such data will be protected. Such research will include current laws on data protection and use and current political viewpoints. The information gathered should inform a strategy to address these issues in the development of CVIS and the applications.		DEPN Topic 3

CINT CO-OPERATIVE TRAVELLERS' ASSISTANCE CTA						
Risk Category	Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
D1	Poor Deployment/Business Planning	Lack of designated responsible entities to determine who will provide the information for use in this application			The CVIS Business Plan will need to include reference as to which data sources will be used to provide the relevant travel information for the CTA application and all other applications relying on third-party data to provide their services. An appropriate due diligence process will also need to be undertaken on the companies providing the data and their methods of doing so.	DEPN Topic 5

CINT ENHANCED DRIVER AWARENESS EDA							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Low User Acceptance	Lack of trust in the system and the technology.			The end users will need to be educated about the technology in order to have confidence in it. User needs will need to be effectively represented in the development of this application.		DEPN Topic 3 will have to implement the mitigation strategy initially as part of its work at the Test Sites in order that the tests can be properly carried out. The lessons that are learned from this work will then have to be put into some form of guidance or recommendations for the future deployment of the results from CVIS.
A2	Low User Acceptance	Vehicle manufacturers and others that develop equipment to implement what CVIS has demonstrated need to consider how many devices could require attention from drivers and how to minimise any unnecessary and/or dangerous distractions that they may cause.			[For inclusion in the Final Project Report].		CINT
G1	Lack of Equipped Infrastructure	There could be a number of reasons why Public Authorities/road operators do not equip the infrastructure: (i) lack of political will; (ii) budgetary constraints as to initial			As to (i) As part of a marketing research exercise, member states should be interviewed to determine whether their road traffic/safety needs could be met by using EDA through the CVIS system. As to (ii) At an early stage in the project a determination of the initial and ongoing costs should be made		DEPN Topic 7

CINT ENHANCED DRIVER AWARENESS EDA						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
		(iii) investment and as to continuing maintenance; or cannot see the benefits of the system.			and agreed with Public Authorities. The escalation/reduction of such putative costs should be monitored during the course of the project and Public Authorities kept informed of such changes to give them the opportunity to confirm or otherwise their willingness to pay such costs. As to (iii) as in (ii) above but discussions should focus on the benefits of EDA.	

**COMO
OPEN-SOURCE REFERENCE
IMPLEMENTATION RISKS**

Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
D1	Poor Deployment/Business Planning	<p>The nature of an open-source platform can give rise to a number of risks:</p> <ul style="list-style-type: none"> (i) the generation of a huge amount of data exchange (ii) How would that data be managed, stored, used? (iii) Is the system capable of dealing with high data volumes and providing the correct level of quality control? (iv) Can a valid business case be made for an open-source system? 					

COMO COMMON MONITORING ONTOLOGY RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
D1	Poor Deployment/Business Planning	The percentage of CVIS-equipped vehicles on the network is too low for accurate traffic information to be generated arising from failure to phase deployment of infrastructure to attract initial users (i.e. initial users will require the system to cover a certain area if they are to be sufficiently attracted to purchase it). The risk is failing to understand what initial users need; the areas in which the infrastructure first needs to be installed to attract potential users and the areas in which such users travel and hence will require the system to cover.			Market research needs to be undertaken early on to determine the will of the infrastructure owners to equip the infrastructure with CVIS boxes and to understand what would be the business case to ensure they make the investment.		DEPN Topic 3
D2	Poor Deployment/Business Planning	Data quality different in different regions leading to no standardised data quality and application not being able to run consistently in all regions.					

COMO ALGORITHM SPECIFICATIONS TO ACCESS CO-OPERATIVE MONITORING RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Low User Acceptance	Instability and unreliability of application as a result of lack of full coverage of communication.					
D1	Poor Deployment/Business Planning	Failure to define the level of take-up and the market size for the system/application to be viable (e.g. critical mass).			Market research needs to be undertaken to ascertain the real size of the market for co-operative systems generally and individual applications. Having determined the size of the potential market, research also needs to be undertaken to determine whether a system covering that market (and all that it entails in respect of amount of data generated, processes and procedures employed and ownership and storage of data) has the capacity to do so.		DEPN Topics 5 and 8
D2	Poor Deployment/Business Planning	Cost of roadside units and technical roll-out too expensive.					

COMO INTERFACE SPECIFICATION RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
D1	Poor Deployment/Business Planning	Data stream gathered from road network will be too large to handle with current technology.					
D2	Poor Deployment/Business Planning	Centres do not supply interface to CVIS leading to CVIS boxes not being implemented.					
D3	Poor Deployment/Business Planning	Car manufacturers unwilling to provide all relevant data.					
M1	Criminal Acts	Terrorism, Sabotage, Blackmail, Extortion, Data Hacking etc. Example 1 – Terrorists or blackmailers disrupt CVIS causing traffic chaos in high-profile locations such as major cities. Example 2 – Terrorists or blackmailers use CVIS to re-route petrol tankers into a tunnel whereupon they are prevented from leaving and subsequently blown up.			The system should be stress tested (i.e. part of the development should include trying to break into/hack into the system and to try to break it down). This should be done at key development stages in the project which have been previously identified. The technical specification includes security of the system and the effectiveness of the security (which should be tested).		Test Sites and COMO
N1	Lack of Finance	The cost of adapting the CVIS roadside box to different interfaces is too high, leading to no implementation being undertaken in roadside units.					

CURB IMPROVEMENT OF URBAN ROAD TRAFFIC EFFICIENCY, SAFETY AND ROADSIDE ENVIRONMENT RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Low User Acceptance	Drivers resisting any type of “control” over their driving and wanting to maintain the “freedom of the road”.			The CVIS system will provide the driver with advice as to speed but will not overrule his freedom of will.		DEPN Topics 4 and 7 and CURB
A2	Low User Acceptance	Drivers being overloaded with information with which they are unable to cope and become confused.			Ensure effective representation from the wider user community to ensure understanding of the products proposed. Public authorities find this overload of information too dangerous. They may require special attention to ensure that they understand how the system works and that drivers will not be overloaded with information or become confused.		DEPN Topic 4, CURB and Test Sites
A3	Low User Acceptance	Drivers finding the system too difficult to handle.			User friendliness has to be evaluated in test site implementations. Ensure effective representation from the wider user community to ensure understanding of the products proposed.		DEPN Topic 4 and Test Sites
A4	Low User Acceptance	Drivers receiving information from different content provides which is contradictory and confuses them.			A major problem if contradicting information is provided by CVIS applications. The in-vehicle system should guarantee that no contradicting CVIS information is provided (there should be some kind of in-vehicle validation). Contradictions to other services outside the CVIS system might occur but cannot be avoided.		DEPN Topics 2 and 3, CURB and COMM

CURB IMPROVEMENT OF URBAN ROAD TRAFFIC EFFICIENCY, SAFETY AND ROADSIDE ENVIRONMENT RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
					DEPN and those working on the business case must be aware of these issues.		
A5	Low User Acceptance	Drivers having a tendency to respect in-vehicle information rather than external driving regulations (e.g. speed limits).			Effective enforcement application.		DEPN Topic 7
A6	Low User Acceptance	Invasion of Privacy – Users being resistant to perception of driver monitoring ('Big Brother' syndrome) and how personal data will be used.			<p>The project to continue to work with the information commissioner as a major stakeholder.</p> <p>Inform users about the CVIS concept, why driver monitoring is necessary and how personal data will be handled.</p> <p>No vehicle IDs. Inform user how data will be used.</p> <p>The system must be developed to meet the objectives of EU privacy legislation.</p>		DEPN Topic 3
A7	Low User Acceptance	Lack of willingness on the part of the driver to share data with a third-party (i.e. his destination and position).			<p>Inform user how data will be used. Raise awareness and arrange acceptance campaigns. Make data sharing mandatory by law.</p> <p>Project to continue to work with the information commissioner as a major stakeholder. In addition, the business model could reflect those who are willing to share data.</p> <p>The use of CVIS will require the driver to sign an agreement allowing CVIS to</p>		DEPN Topic 4

CURB IMPROVEMENT OF URBAN ROAD TRAFFIC EFFICIENCY, SAFETY AND ROADSIDE ENVIRONMENT RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
					use the driver’s destination and position data. Public awareness campaigns.		
A8	Low User Acceptance	Lack of awareness/understanding on the part of the driver as to the value of the service (information/routing advice).			Pilot, campaigns and education. Ensure effective representation from the wider user community to ensure understanding of the products proposed.		DEPN Topic 4 and 5
D1	Poor Deployment/Business Planning	Lack of willingness on the part of Actors to share information as between each other (e.g. road operators/public authorities not being willing to share traffic data with service providers).			Develop a Code of Practice. Project to continue to work with the information commissioner as a major stakeholder. In addition the business model should reflect those who are willing to share data. Public authorities have to be integrated in the process of designing CURB services in order to understand that all parties participating in a co-operative system benefit. There has to be a benefit for all Actors. The system is being built in such a way that stakeholders have to share information (at least for CVIS members).		DEPN Topics 3 and 4

CURB IMPROVEMENT OF URBAN ROAD TRAFFIC EFFICIENCY, SAFETY AND ROADSIDE ENVIRONMENT RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness
F1	Misuse of Data	Breach of data security – inability to protect personal data.			<p>System should be designed to conform to EU legislation.</p> <p>Data protection has to be guaranteed. Vehicle IDs should only be stored until the trip is completed.</p> <p>Project to continue to work with the information commissioner as a major stakeholder.</p> <p>Clear legislation on this risk should be provided.</p>	
						DEPN Topic 3

CURB TOOLS FOR ADVANCED (DESTINATION-BASED) TRAFFIC OPTIMISATION SCENARIOS RISKS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Low User Acceptance	Failure/unwillingness of the driver to follow the route advice received.			A clear decision has to be made as to whether CVIS is a decision-making tool or merely provides advice to the driver.		DEPN Topic 4
A2	Low User Acceptance	Drivers resisting any type of “control” over their driving.			Strong marketing plan. Slow and precise implementation path (where and when). Mandatory introduction with some exclusions. No problem if the driver understands that the advice is not a must but just a better way to go from point a to point b.		DEPN Topic 4
A3	Low User Acceptance	Failure to determine whether any additional driving skills might be required to drive a CVIS-equipped vehicle.					
B1	Legal/Regulatory Issues	Lack of consistency in defining the meaning of a “priority vehicle” on an EU-wide basis.			At national and EU level, priority vehicles (emergency cars, police cars, etc.) should be listed. Vehicle type will be transmitted, thus every city will be able to define which vehicle types are treated as priority vehicles. Determine an EU standard.		DEPN Topic 7

CURB TOOLS FOR ADVANCED (DESTINATION-BASED) TRAFFIC OPTIMISATION SCENARIOS RISKS						
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Mitigation Strategy Owner
					This is an EC/Member State government issue which should be picked up by DEPN.	
B2	Legal/Regulatory Issues	Data protection organisations not allowing the use of floating car data.			Project to continue to work with the information commissioner as a major stakeholder. Code of Practice.	DEPN Topic 3
L1	Inability to Market Effectively	Failure to prevent a black market in the sale of CVIS equipment caused as a result of everyone wanting to control approaching intersection controllers.			<p>DEPN and those working on the business case should look at measures to prevent this happening.</p> <p>This could be a major problem. CVIS equipment will need to be well protected (perhaps by means of a patent) to prevent copying or inadequate use.</p> <p>Authentication key within the green request.</p> <p>Maintain low cost of management.</p>	DEPN Topic 5

CURB DYNAMIC ALLOCATION OF BUS LANE SPACE							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Low User Acceptance	Abuse of bus lane by non-licensed drivers.			Apply effective regulation and enforcement (such as penalties). Determine who will enforce compliance: police, public authorities or road operators?		DEPN Topic 7 and CURB
A2	Low User Acceptance	Failure to determine on an EU-wide basis which vehicles are permitted to use the bus lane (other than buses).			Apply effective regulation and enforcement (such as penalties). As part of the project research, determine which vehicles are permitted on a state-by-state basis. This is an EC/Member State government issue which should be picked up by DEPN.		DEPN Topic 7
B1	Legal/Regulatory Issues	Failure to determine on an EU-wide basis the penalty/sanction on drivers entering the bus lane without authority.			This is an EC/Member State government issue which should be picked up by DEPN. The imposition of a unified penalty is not strictly necessary but could form part of a challenge through proportionality. The VERA 3 project could assist with this risk. Legal initiatives should go in parallel with Technical EU projects. Determine an EU standard.		DEPN Topic 7

CURB DYNAMIC ALLOCATION OF BUS LANE SPACE							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
B2	Legal/Regulatory Issues	Adoption of a system in which bus lane space is allocated on a dynamic basis not complying with the road authority's policy.			Ensure effective representation from the wider user community to ensure understanding of the products proposed.		DEPN Topic 7
B3	Legal/Regulatory Issues	Potential legal liabilities attaching to operators of the application in identifying and communicating to the driver the road conditions that determine that it is safe for the driver to use the bus lane.			The system should deliver credible information. This must form part of the system development.		DEPN Topic 7 and CURB
L1	Inability to Market Effectively	Failure to determine the feasibility of dynamic bus lane allocation.			Feasibility of dynamic bus lane allocation should be defined by DEPN. Clear methodology on implementation of dynamic lanes (not only technical aspects but also traffic organisational aspects). Decision support system to determine feasibility.		CURB

CF & F HAZARDOUS GOODS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Low User (haulage companies/drivers) Acceptance	Adherence to system could result in increased operating costs for commercial companies as it could potentially force them to comply with a different manner of operating.			The CVIS system should be positioned in the market in such as way as to encourage haulier interest groups to adopt it as a means of driving out bad practice in the haulage industry and encourage best practice.		DEPN Topic 5
A2	Low User (haulage companies/drivers) Acceptance	Frequency of false alarms caused when vehicles leave CVIS coverage areas and inability to differentiate from genuine alarms reduce user confidence in system.			<p>The system specification needs to be sufficiently robust to ensure that the information provided through it is reliable and meets the end users' expectations. Particular attention must be given to the early phase of implementation when take-up levels are likely to be low and the flow of information into the system may not be sufficient to provide regular, reliable warnings when required.</p> <p>The transport/haulage unions might well not want their members exploited. To encourage the unions to accept/promote the system, discussions need to be held with them early on in the project.</p>		CURB, Test Sites, COMO, POMA and COMM
B1	Legal/Regulatory Issues	Inadvertent creation of an unlicensed/uncontrolled COMAH site when arranging/booking parking slots/rest areas for trucks carrying dangerous goods.					

CF & F HAZARDOUS GOODS							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
B2	Legal/Regulatory Issues	Inability to progressively adapt system in a cost-effective way to remain compliant with changes in legislation/regulation in EU members states, both as to transportation issues and hazardous goods that may be transported by road.					
B3	Legal/Regulatory Issues	Potential legal liabilities attaching to the various Actors not identified or poorly defined and/or understood.			Legal liabilities attaching to the various Actors are being addressed in the project by Thomas Miller & Co. in DEPN Work Package 6, Task 2.		DEPN Topic 6

CF & F PRIORITY BOOKING							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Low User (road operator) Acceptance	Cost of equipping infrastructure and managing/maintaining system not cost-effective.			There needs to be a robust business case for the road operator.		DEPN Topic 5 and CAG
A2	Low User (road operator) Acceptance	Inadequate return on road operator's investment from equipping zones.			There needs to be a robust business case for the road operator.		DEPN Topic 5
A3	Low User (road operator) Acceptance	Road operator fails to perceive the need for priority booking on certain roads.					
A4	Low User (haulage company) Acceptance	Transport company does not perceive sufficient benefit to justify purchase of system.					
A5	Low User (haulage companies) Acceptance	Insufficient benefits for haulage companies caused by poor or inefficient enforcement of the booking system (e.g. insufficient traffic wardens to physically ensure compliance).					
A6	Low User (haulage companies/drivers) Acceptance	Unacceptability of charging scheme for priority booking (if applicable).					

CF & F PRIORITY BOOKING							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
B1	Legal/Regulatory Issues	Potential legal liabilities attaching to the various Actors not identified or poorly defined and/or understood.			Legal liabilities attaching to the various Actors are being addressed in the project by Thomas Miller & Co. in DEPN Work Package 6, Task 2.		DEPN Topic 6
D1	Poor Deployment Planning	Business case for priority booking/rest area application has not been accurately identified or quantified.					
E1	Competition	Too many schemes competing for the limited number of designated rest areas.					
G1	Lack of Equipped Infrastructure	Lack of continuing finance for Road Operator to maintain system to acceptable level (budget constraints).					
K1	Environmental Problems	Traffic brought into controlled parking/rest areas breach Local Authority air quality standards.					

CF & F PRIORITY BOOKING							
Risk Category		Description/Cause	Like.	Impact	Controls/Actions	Effectiveness	Mitigation Strategy Owner
O1	Physical Damage	CVIS equipment at parking zone lost, damaged or stolen.					

CF & F SENSITIVE AREAS							
Risk Category		Description/Cause	Like.	Imp act	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Low User (haulage companies/drivers) Acceptance	Insufficient acceptance of a system that controls public access and movement in the absence of legislative support.			Market research will be needed to determine the acceptability of this application.		DEPN Topic 4, 7 and CF&F
A2	Low User (haulage companies) Acceptance	Application does not provide sufficient efficiency gains to warrant the cost.			A cost-benefit analysis will be needed to determine at what level of cost the application might be sold.		DEPN Topic 5 and CF&F
A3	Low User (haulage companies/drivers) Acceptance	Adherence to system could result in increased operating costs for commercial companies as it could potentially force them to comply with a different manner of operating.			The CVIS system should be positioned in the market in such a way as to encourage commercial companies to adopt it as a means of driving out bad practice and encourage best practice.		DEPN Topic 5
B1	Legal/Regulatory Issues	Potential legal liabilities attaching to the various Actors not identified or poorly defined and/or understood.			Legal liabilities attaching to the various Actors are being addressed in the project by Thomas Miller & Co. in DEPN Work Package 6, Task 2.		DEPN Topic 6
B2	Legal/Regulatory Issues	Inability to achieve EU-wide compliance with existing regulations/policies due to cost and technical problems.			This risk needs to be taken account of in the technical specification.		DEPN Topic 7, COMM, COMO, POMA and FOAM

CF & F SENSITIVE AREAS							
Risk Category		Description/Cause	Like.	Imp act	Controls/Actions	Effectiveness	Mitigation Strategy Owner
D1	Poor Deployment Planning	Lack of consistency in defining a 'sensitive area' on an EU wide basis.			Member states need to be consulted early on in the project work to reach a consensus on the definition.		DEPN Topic 7
D2	Poor Deployment Planning	Lack of harmonisation of regulations concerning sensitive areas on a local/regional basis (as defined for CVIS).					
D3	Poor Deployment Planning	Public resistance to controlled access to local (sensitive) areas.					
D4	Poor Deployment Planning	Insufficient or inadequate enforcement regime.					
H1	Communications Failure	Inability to exchange data in sensitive geographic areas (e.g. tunnels).					

APPENDIX 4: CVIS Inventory of Significant External Risks and Threats

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
A1	Competition	Non-European countries develop competing systems with superior benefits (e.g. in terms of cost, facilities and global user acceptance).	<ul style="list-style-type: none"> To avoid “superior benefits” being provided by competing systems, the CVIS system should be open enough to be integrated with new functionalities/services; in a medium to long-term period technologies change and improve. 		DEPN Topics 2 and 5, CAG, COMO, COMM, POMA and FOAM
A2	Competition	Local initiatives, providing solutions to local issues, are adopted earlier than CVIS.	<ul style="list-style-type: none"> CVIS has to guarantee interoperability because a European solution with a high deployment rate will always be more cost-effective than a local solution. Local initiatives should be brought together at EU level to address the situation and create possible harmonisation projects to be followed by new innovative research activities. CVIS applications should be developed so that they can be integrated with local initiatives. 		DEPN Topic 2, CAG, COMO, COMM, POMA and FOAM
A3	Competition	Objectives are being met by other means (e.g. clean vehicles or legal enforcement).	<ul style="list-style-type: none"> Road authorities may find low-tech solutions to benefit their own road problems. 		DEPN Topics 5, and 7
B1	Cost	Costs relating to the CVIS system being regarded as too high, unwarranted or not cost-effective.	<ul style="list-style-type: none"> Users may not be prepared to pay for information. The Business Plan should research whether and how much end users will be prepared to pay for the services provided through the CVIS system. 		DEPN Topics 4 and 5

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
B1	Cost		<ul style="list-style-type: none"> The cost of implementation and upgrade needs to be cost-effective. Market research should be undertaken to determine what is "cost-effective" and the result should be factored into the technical design to ensure that what is developed will be "cost-effective" both in production (i.e. in the type and quality of materials used to manufacture the CVIS boxes and in the number of services provided for a particular cost). Only services that will lead to noticeable benefits should be designed and developed so that the system is regarded as being cost-effective. The Business Plan should define what each Actor/Stakeholder will have to invest initially and on an ongoing basis to ensure, for example, local authorities can equip infrastructure to the extent that will make the system viable and be financially able to maintain it. Communication costs need to be monitored and agreements with telecommunications companies forged. The CVIS service should be designed so that communication costs will be as low as possible. Cost-benefit analyses need to be undertaken. Calculations of savings made when using the system might be a feature for discussion in the future. The usability of the system for punctual and localised problems, specific fleets and low-cost communications should prevent cost precluding use in all vehicles. 		<p>DEPN Topic 5 (market research), future co-operative systems (factoring into the technical design)</p> <p>Future co-operative systems</p> <p>DEPN Topics 5 and 7</p> <p>DEPN Topic 5 and COMM</p> <p>DEPN Topic 5 and Test Sites</p> <p>DEPN Topic 5, CAG, COMM, POMA, FOAM and CURB</p>

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
C1	Criminal Acts	<p>Terrorism, Sabotage, Blackmail, Extortion, Data Hacking etc.</p> <p>Example 1 – Terrorists or blackmailers disrupt CVIS causing traffic chaos in high-profile locations such as major cities.</p> <p>Example 2 – Terrorists or blackmailers use CVIS to re-route petrol tankers into a tunnel whereupon they are prevented from leaving and subsequently blown up.</p>	<ul style="list-style-type: none"> The system should be stress tested (i.e. part of the development should include trying to break into/hack into the system and to try to break it down). This should be done at key development stages in the project which have been previously identified. The technical specification includes security of the system and the effectiveness of the security (which should be tested). 		DEPN Topics 3 and 6, COMO, POMA, FOAM and COMM
D1	Data and Privacy	Failure to identify and resolve all issues relating to data generated and used by the CVIS system.	<ul style="list-style-type: none"> All issues relating to data, ownership, storage and use and EDR need to be resolved during the course of the project. It must be a mandatory part of the design specification of everything that CVIS is developing to protect the privacy and security of data that is collected. This processing shall make it impossible to trace the identity of a person or vehicle from the processed data. The only exception will be where data is needed to prosecute someone for breaking a law. The project should seek advice from the Data Protection Group established by the EC as to whether data should be stored in the system. 		<p>DEPN Topics 2 and 3 and CAG</p> <p>DEPN Topic 3, COMO (data containing personal information must not be transmitted and/or processed by whatever the other sub-projects are developing) and DEPN Topic 3</p> <p>DEPN Topic 3</p>

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
D1	Data and Privacy		<ul style="list-style-type: none"> Market research needs to be undertaken early on to determine the public's attitude to the collection and use of personal data and what needs to be put in place to give them the confidence that such data will be protected. Such research will include current laws on data protection and use to avoid invasion of privacy and breach and current political viewpoints. The information gathered should inform a strategy to address these issues in the development of CVIS. It must be a mandatory part of the CVIS design specification that data is checked for accuracy. Tests must be included in the work at the Test Sites to verify the accuracy of all the data that CVIS collects. Where possible, collected data must be cross-checked with other collected data to establish its accuracy. Suitable controls on the software applications will be required. Services should be designed so that only validated information is provided to the driver. The business case must ensure data validation. 		<p>DEPN Topics 3 and 4</p> <p>DEPN Topic 3, COMO (Data needs to be checked for accuracy as close to the point of collection as possible). The CURB, CINT and CF&F sub-projects must also check the accuracy of the data they are using (e.g. by comparing data from different sources).</p> <p>DEPN Topic 5, CAG, COMM, FOAM, CURB, CINT and CF&F</p>
E1	Environmental	Driver/passenger exposure to dangerous electromagnetic fields and/or electromagnetic radiation.	<ul style="list-style-type: none"> The EMC assessment will address this risk. 		Future co-operative systems activities

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
F1	External Technology	Failure to control financially or technically any external technology (whether currently available or expected to be available (e.g. Galileo) which will be utilised in the CVIS system	<ul style="list-style-type: none"> Technological solutions will need to be sought to ensure that the system works in all areas (including rural areas). The cost of such solutions (e.g. GPRS connections) could render the service expensive. The technical specification for the CVIS system should take account of the availability and timing of third-party services to ensure they match with the phased deployment of the CVIS system. The specification should be sufficiently flexible to enable delivery of services through the CVIS system using alternative suppliers. Key potential deficiencies in the system should be identified. Service Level Agreements should be taken out with suppliers. Business continuity planning should include a list of alternative suppliers to call upon if the need arises. There is always a possibility that any engineered system might fail at some time. If the system does fail, the business continuity plan should ensure swift restoration of the system on a "without prejudice" basis. Thomas Miller will be looking at how such a restoration fund could be set up and managed in DEPN Topic 6. The technical specification should build in multiple redundancy features and be able to isolate areas that fail to avoid the whole system going down. 		<p>DEPN Topics 2 and 5, COMM and POMA</p> <p>DEPN Topic 8</p> <p>CAG, CINT, CURB, CF&F, COMO, COMM, POMA and FOAM</p> <p>Future co-operative systems</p> <p>DEPN Topic 5</p> <p>DEPN Topic 6</p> <p>COMM, FOAM, POMA, COMO and DEPN Topic 3</p>

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
F1	External Technology		<ul style="list-style-type: none"> The system should be built to be as resistant and reliable as possible. The technical specification should ensure that communications have sufficient range to allow the system to operate efficiently. Cost models must reflect the desire to penetrate the market. In addition, the platform development must take into account the environmental sensitivity of some cities. Co-ordination as between developers, designers, public authorities and road operators could be encouraged through workshops. The technical specification should address the potential inability to exchange data in all geographic areas (e.g. tunnels, urban canyons, indoor or underground car parks). The technical specification should address the need for there to be sufficient licensed bandwidth to handle data traffic seamlessly without creating bottlenecks. 		CAG COMM DEPN Topic 5 Done throughout the project COMM, POMA and CAG COMM
G1	HMI	Failure to address potential HMI issues which may arise.	<ul style="list-style-type: none"> User requirements need to be represented in the development of the technical specification to ensure that the system is being developed on a user-friendly basis. 		DEPN Topic 4, Test Sites, CURB, CINT, CF&F and COMO

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
G1	HMI		<ul style="list-style-type: none"> The system specification needs to be sufficiently robust to ensure that the information provided through it is reliable and meets the end users' expectations. Particular attention must be given to the early phase of implementation when take-up levels are likely to be low and the flow of information into the system may not be sufficient to provide regular, reliable warnings when required. Information has to be structured and fully configurable, so that each driver is able to use what he really needs. Implementation of suitable controls on the software application to ensure that the driver is fed with the most important information first, with other less important information following, is required to ensure that drivers are not swamped with information that they are unable to cope and become confused. The technical specification needs to address whether the information will be provided to the driver visually, audibly or haptically (or by all three methods) and where, if at all, any screen will be located so as not to become a distraction. 		<p>DEPN Topic 3, Test Sites, CURB, CINT, CF&F</p> <p>DEPN Topic 4, CAG, FOAM</p> <p>Test Sites, future deployment</p>

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
H1	Legal/Regulatory	Failure to address the existing and impending laws which will affect the CVIS system and the Actors and stakeholders involved in it.	<ul style="list-style-type: none"> Legal liabilities attaching to the various Actors in the CVIS system are being addressed in the project by Thomas Miller & Co in DEPN Topic 6. Recommendations to limit legal liability exposure should be suggested. The legal status of the CVIS system itself should be researched. Account should be taken of the effects of motoring and road use on climate change and the possible regulations that might be brought in to regulate company/individual carbon footprints. 		DEPN Topic 6 DEPN Topic 6 DEPN Topic 5 DEPN Topic 5
I1	Political	Failure to reach a consensus view as between the various Member States to implement CVIS Europe-wide.	<ul style="list-style-type: none"> Proactive canvassing of governmental support for the system should be undertaken to ensure that short-term political goals and the inability to maintain a friendly political framework to see through the implementation and deployment of CVIS do not create an insurmountable deployment barrier. As part of the marketing research, Member States should be interviewed to determine whether their road safety needs could be met by using the CVIS system. Analogies could be drawn from the VII system in the USA about how to tie in the local authorities. 		DEPN Topic 7 DEPN Topic 7

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
I1	Political		<ul style="list-style-type: none"> • Early involvement with Member States to promote CVIS to ensure they have common objectives. Workshops to be organised e.g. with POLIS. • Raise public and political acceptance of the system. • Ensure effective representation of wider user community to ensure understanding of the products being developed. • Increase modularity, plug and play and use of existing infrastructure and integration of existing services of CVIS to avoid Member States who have already made heavy investments in different systems being disadvantaged. 		DEPN Topic 7 DEPN Topic 7 DEPN Topic 7 DEPN Topic 7
J1	Poor Business/ Deployment Planning	Failure to create a valid business plan for the CVIS system and a business case for each of the CVIS Actors/stakeholders.	<ul style="list-style-type: none"> • Actors and stakeholders should think very clearly about the benefits they will derive from their contribution, so that these ideas can be fed into the CVIS Business Plan. • Cost-benefit analyses to be undertaken. • Analyses of contingent savings to be undertaken. 		DEPN Topic 5 DEPN Topic 5 DEPN Topic 5

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
J1	Poor Business/ Deployment Planning		<ul style="list-style-type: none"> Effective representation from the wider user community to be provided to ensure understanding of the products proposed. Only services that will lead to noticeable benefits should be designed and developed. Implement a Marketing Plan to identify the correct phasing of CVIS deployment to ensure user expectations are met and user confidence instilled in the technology and confidence in the system, even when the system is not fully developed in the early years. Marketing Plan to address the fragmentation of the market caused by the decentralisation of public authorities which could hamper local and national implementation of the system. Market research to determine the percentage market penetration needed to provide a system that will work on a V2V basis without 100% take-up. Marketing Plan to address the effects of partial deployment on emergency services. To be evaluated on test sites. Organise workshops with local authorities (e.g. through POLIS). 		<p>DEPN Topic 4</p> <p>DEPN Topic 5</p> <p>DEPN Topics 4 and 8</p> <p>DEPN Topics 7 and 8</p> <p>DEPN Topic 5</p>

07/11/2007

Risk Category		Description/Cause	Controls/Actions	Effectiveness	Mitigation Strategy Owner
J1	Poor Business/ Deployment Planning		<ul style="list-style-type: none"> The Business Plan must take account of the current challenges for road authorities in respect of pricing and enforcement to provide a seamless service. The Business Plan should ensure that CVIS does provide a valid solution to the targeted problems. Research will be needed into: <ul style="list-style-type: none"> how to change driver behaviour (if advice given through the system is ignored); all potential Actors and stakeholders will give the system their full support; and those developing the system should monitor new technological developments in the market. 		DEPN Topic 5 DEPN Topic 5 DEPN Topic 5 DEPN Topic 5

APPENDIX 5: POLIS Presentation

Thomas Miller Risk Management - History

- Established in 1975 as Commercial Union Risk Management Ltd
- Risk management consultancy arm of CU/CGU group
- Acquired by Thomas Miller - 1/9/2001
- Independent & impartial – Risk Management specialist

1

Thomas Miller Risk Management

- Assignments in over 60 countries for clients in:
 - Government & State-Owned Utilities
 - Local Authorities
 - Construction & Infrastructure
 - Telecommunications & Transport
 - Manufacturing & Financial Services
 - Petro-Chemicals & Pharmaceuticals
 - Housing Associations

2

Thomas Miller Risk Management

- Services include:
 - Strategic Risk Management reviews
 - Risk identification & assessment
 - Risk indexing & benchmarking
 - Risk control
 - Risk engineering & Business continuity planning
 - Risk financing

3

Deployment Enablers

DEPN is a horizontal/co-ordinating activity covering the following Topic Areas:

- Openness and interoperability
- Safe, secure and fault-tolerant design
- Utility, usability and user acceptance
- Costs, benefits and business models
- Risks and liability
- CVIS as policy tool
- Deployment Road Maps

4

DEPN: Objectives

- To ensure that the CVIS core technologies and applications are deployable
- To ensure that non-technical issues have been identified, their potential impact understood and, if necessary, mitigated
- To create road maps on how to migrate from today's situation to one with widespread take-up of CVIS, based on transparent deployment, co-operative business models and sharing of responsibilities and liabilities.

5

Risk Registers

- Brainstorming sessions with the four application sub-projects – CF&F, CINT, CURB and COMO
- Creation of individual risk registers for the sub-projects including generic risks and specific risks for the applications
- Amalgamation of the risk registers into one overall inventory of external risks and threats – now a reference document
- Focus on the significant risks and mitigation strategy owners

6

The CURB Risk Register

- Questions on the existing risk register
- Suggestions for inclusion of additional risks
- How might city/local authorities identify and understand their own unique risks?
- How might the cost issues for local authorities be countered by potential savings?

7

Risk Brainstorming

And now for the risk analysis . . .

8

POLIS

Risk Brainstorming Session

Thomas Miller Risk
Management (UK) Ltd
27 April 2007
Brussels

9

APPENDIX 6: The Tort of Negligence in English Law in the Context of Road Traffic Accidents

1. Civil liability under English law in the context of road traffic accidents is heavily dependent on the tort of negligence. “A loose synonym for ‘negligence is carelessness. To behave negligently is to be careless.’”⁷⁴ But not all careless or faulty conduct will give rise to legal liability. “The tort of negligence, it is sometimes said, cannot be committed ‘in the air’. A person will be liable for negligent conduct only if that person owed the [claimant] a duty to take care. In the famous case of *Donoghue v Stevenson*⁷⁵ Lord Atkin enunciated the equally famous ‘neighbour principle’ according to which a duty of care was owed to persons whom one ought reasonably to foresee as likely to be injured if one did not take reasonable care.”⁷⁶ On the basis of this principle it was, for many years, said that the test of duty of care was foreseeability. However, in recent years the House of Lords [the Supreme Court of the English legal system] has become dissatisfied with this test and in a series of cases it has developed a threefold test for the imposition of a duty of care; first, was it foreseeable that the [claimant] might suffer damage if the defendant did not take reasonable care? Secondly, was there a sufficient relationship of proximity between the [claimant] and the defendant? And thirdly, is it just and reasonable in all the circumstances of the case to impose a duty of care?”⁷⁷

2. The English common law has, however, recognized for centuries the concept of negligence as a source of civil liability in relation to accidents on the highway. “There has never been any doubt that those using the highways are under a duty of care in so doing, and the legal position today is quite plain: any person using the road, whether as a motorist, pedestrian or cyclist, will be liable if, by positive action, that person negligently causes physical injury [or property damage] to anybody else.”⁷⁸

3. In considering the application of the concept in the context of road accidents, it is open to the court to infer negligence from the circumstances in which the accident occurred.⁷⁹ This has traditionally been described by the phrase “*res ipsa loquitur*” – the thing speaks for itself, which was explained by Morris LJ in *Roe v Minister of Health* [1954] 2 QB 66 as “generally a short way of [the claimant] saying: ‘I submit that the facts and circumstances that I have proved establish a *prima facie* case of negligence against the defendant...’ There are certain happenings that do not normally occur in the absence of negligence and upon proof of these a court will probably hold that there is a case to answer. Thus, a court is not likely to require expert evidence before it concludes that a car veering across the carriageway suggests negligence on the part of the driver.”⁸⁰

4. The cases on *res ipsa loquitur* are, however, simply illustrations of the way in which the courts infer negligence from circumstantial evidence. “The essential element is that the mere fact of the happening of the accident should tell its own story so as to establish a *prima facie* case against the defendant. This is commonly divided into two parts on the basis of Erle C.J.’s famous statement in *Scott v London and St Katherine Dock Co* [1865] 3 H&C 596:

⁷⁴ Atiyah’s *Accidents, Compensation and the Common Law*, Sixth Edition 2004, edited by Peter Cane

⁷⁵ [1932] AC 562

⁷⁶ [insert relevant passage from the judgment] [consider extract from Atiyah p.59 – “The real importance of *Donoghue v Stevenson*...”]

⁷⁷ Atiyah op.cit. p.57

⁷⁸ Atiyah op.cit. p.59

⁷⁹ Winfield on Torts [give full title and edition date] p.260

⁸⁰ Winfield op.cit. pp. 260,261

“There must be reasonable evidence of negligence, but when the thing is shown to be under the management of the defendant or his servants, and the accident is such as in the ordinary course of things does not happen if those who have the management use proper care, it affords reasonable evidence, in the absence of explanation by the defendants, that the accident arose from want of care.”

So the elements are (a) control and (b) an accident of a type which does not normally occur without the defendant’s fault. In reality, however, the two parts are closely interconnected: “control” is required because the absence of control by the defendant makes it less likely that the accident arose from *his* fault.

As [to] the nature of the accident, one cannot lay down any hard and fast rules, for the inference arises from all the evidence before the court. If a car strikes a pedestrian on the pavement that suggests negligence on the driver’s part, nor does it help the driver to show that the car skidded, for an unexplained skid is itself evidence of negligence; but if a car leaves a dirt road in unexplained circumstances in very bad weather, that does not necessarily support the same inference.”⁸¹

5. It is always open to the defendant to rebut the inferences arising from the application of the *res ipsa loquitur* principle. Its application does not shift the formal burden of proof to the defendant, in the sense that he stands condemned unless he can prove that, on the balance of probabilities,⁸² the event was not due to any fault on his part. “The explanation offered by the defendant must be at least a plausible one but at the end of the day the court must ask itself whether, taking the evidence as a whole, it is more likely than not that the accident is attributable to the defendant’s fault. If the defendant cannot offer any explanation of how the accident occurred but seeks to show that he has exercised all due care in any event his evidence must be a complete answer to the claim.”⁸³

6. There are, of course, many factual situations that can be envisaged where the principle of *res ipsa loquitur* would have no application. Thus in a case of a head-on collision between two vehicles in the middle of the road, the inference, in the absence of any other evidence enabling the court to draw a distinction between them, was that each driver was committing almost the same acts of negligence - failing to keep a proper look out and to drive his vehicle on the correct side of the road - and accordingly both were equally to blame.⁸⁴

7. Where the doctrine has no application, the claimant has the burden of proving that the accident was caused by the negligence of the defendant. In many cases, the evidence may show that the accident was caused in part by the negligence of the defendant but also in part by the negligence of the claimant. In such a case, the responsibility for the accident will be apportioned between the parties in accordance with the court’s assessment of their respective degrees of blame. The right to apportion blame was not recognized at common law since the rule there was that any negligence on the part of the claimant negated his claim against the defendant, however negligent the latter might have also been. In the face of such a potentially unjust rule, the courts developed a number of devices to avoid its application but the problem

⁸¹ Winfield op.cit. pp.261/3

⁸² “The balance of probabilities” is the standard of proof required of a claimant in a civil action under English law

⁸³ Winfield op.cit. pp.264/5

⁸⁴ *Baker v Market Harborough* [1953] 1 W.L.R 1472

was not effectively remedied until the passing of the Law Reform (Contributory Negligence) Act of 1945. This introduced the principle of relative fault, section 1 of that Act providing:

“.—(1) Where any person suffers damage as the result partly of his own fault and partly of the fault of any other person or persons, a claim in respect of that damage shall not be defeated by reason of the fault of the person suffering the damage, but the damages recoverable in respect thereof shall be reduced to such extent as the court thinks just and equitable having regard to the claimant's share in the responsibility for the damage.”

8. In the context of road traffic accidents, case law has provided a number of examples of contributory negligence. Thus, in *Froom v. Butcher*⁸⁵, a claimant's damages were reduced by twenty per cent by reason of his failure to wear a seat belt, there being evidence that his injuries would have been less severe if he had done so. Similarly, a motor-cyclist riding with an unfastened or insecurely fastened helmet will be held responsible to some degree for head injuries he sustains in an accident, where his injuries have been aggravated by the absence of protective headgear.⁸⁶

⁸⁵ *Froom v Butcher* [1976] QB 286

⁸⁶ *Capps v Miller* [1989] 1 W.L.R 839; note that the failure to fasten the helmet securely in this case was also a breach of a statutory duty under the Motor Cycles (Protective Helmets) Regulations 1980.

APPENDIX 7: Liability of Public Bodies – National Law in EU Countries

The position under the Law of the Netherlands: (From an essay by Professor Cees C. van Dam of the Vrije University, Amsterdam)

According to the law of **The Netherlands**, a public body is liable for damage caused to a third party if an administrative court holds an order or decree of the public body to be unlawful. In principle, neither culpability nor foreseeability is required. In a manner similar to the underlying principles of French law, public authorities in the Netherlands are answerable, for example, for severe economic loss caused to individual farmers by an agricultural order.

Two large accident cases (explosion at a fireworks factory in Enschede in May 2000 and fire in a café at Volendam on New Year's Eve 2001) have shown that a Dutch public authority could be liable if it does not check whether operators of companies or establishments respect the terms of their licences and if it does not implement enforcement procedures.

It must be borne in mind that the liability of the public authority is not mutually exclusive with that of the relevant private sector defendant (such as the operators of the firework factory or the owners of the café). However, in both those cases, as would often occur, the resources and insurance cover limits of the private defendants were nowhere near enough to compensate all the victims. Hence it was essential for the claimants to turn to their rights of recovery against the public authorities, in which endeavour they succeeded. In the Volendam case, the municipality admitted liability because its executives had known that the café did not conform to the conditions of their licence as to fire precautions, etc., but they had, nonetheless, decided to tolerate the situation.

Article 162 of Book 6 of the Dutch Civil Code sets out three grounds for liability as to the conduct of public bodies: the infringement of a right; a breach of statutory duty; and a breach of duty that follows from unwritten law. These equate to the rules governing the conduct of every person and every private body also.

Public bodies in Holland are entitled to inspect the safety of public buildings and thus to enforce compliance with the licensing provisions but they do not have a general statutory duty to do so. In contrast they do have a duty to inspect and control compliance with safety rules, etc., under the Seveso Directive that was enacted by the EU after the major accident in a chemical plant at Seveso, Italy in 1976. As such, the authorities must organise a system of inspections and other measures of control, sufficient for planned and systematic examination of the systems being employed at the relevant establishment, whether technical, organisation or managerial, involving at least annual inspection on site.

Under the Environment Conservancy Act (Article 18.2) an administrative body that is entitled to grant permits has a codified duty to enforce the legal rules as to the building and activities conducted within those permits. It is not clear whether similar codified duties have yet been confirmed in other contexts in the Netherlands. The central policy point seems to be that the public may rely on the local authority, that issued a licence, to carry out safety checks, etc.. Certainly, this has been highlighted as to the protection of the public and specifically of

individuals who might foreseeably suffer through lack of supervision by public sector watchdogs of banks and insurance companies.

It has been stated as persuasive that the public body has far more information about the safety of enterprises serving the public than does the potential victim, who would in any case be unlikely to be able or entitled himself to prevent, restrict or remove such risks.

So, in summary, under Dutch law, public bodies are not immune from liability with respect to their public acts or omissions. In principle, they have a duty to inspect, to control, and to enforce compliance with the safety rules.

The rights of claim against the public authorities seem to be based largely on the unwritten law that the authority must protect the safety and economic interest of the individual citizen by doing well the tasks which are entrusted to it. Besides the rights of claimants which flow from the duties of public authorities, it is strongly argued that there is in Dutch law a fundamental right of safety, arising through commentary on the draft text of Article 174 of Book 6 of the Civil Code, which provides a strict liability for the possessor of a defective building, including roads. The Minister of Justice, in his Commentary, stated that in cases of liability of a highway authority, the courts might take into account the restricted financial means of the authority. But that has been taken as no justification for an unsafe policy.

One of the principal defences of a public body in the Netherlands is that it ought to be free to make its own decisions. But this defence fails if the act or omission was so unreasonable that no reasonable body would have taken it. A public body must not abuse its powers, nor use its powers in cases in which it was reasonably not allowed to do so. If a public body does not act in compliance with the general principles of good governance, it breaches its duty of care, and this duty is held to be much the same as a breach of statutory duty. So a public body is not allowed to act arbitrarily or abuse its powers, has a duty to act fairly and equitably, must give reasons for its decisions and must be careful and reliable.

Dutch law distinguishes between policy (which is unlikely to found a liability) and operation. In Diemen, a small village near Amsterdam, the authorities decided on a bus lane constructed in such a way as to prevent other traffic from using it. A number of drivers of cars tried to cross the obstacle and landed heavily in the gap, causing damage to their vehicles and/or a risk of injury. When the municipality defended itself by stating that the construction of the obstacle was a matter of policy, the Supreme Court disagreed, holding that the safety of the obstacle was merely an operational issue and had to be judged on the basis of a normal duty of care. A public body is not allowed to make choices that lead to an unacceptably low safety standard.

Under Article 162 of Book 6 of the Civil Code, a highway authority has a duty to control the highway and to take sufficient safety measures (taking into account the nature and the amount of the risk on the one hand and the burden of taking those measures and the financial means of the body on the other). It is considered that a highway authority can escape from liability for omissions if it can prove that it has a well-considered plan as to how to control the safety of the highway and that it operates this plan in a proper way.

Because public bodies in the Netherlands have a duty to enforce, it is difficult for them to come up with strong arguments why they failed to enforce compliance with safety rules.

Following from jurisprudence in the Council of State, it may be argued in certain cases that lack of enforcement is acceptable if restricted in time and extent; or if enforcement would be evidently unreasonable; if the protective interest is better served with non-enforcement; or if an important interest justifies non-enforcement.

For liability to be established against the public body, it must be proved that, as the alleged author of the damage, the public body knew or ought to have known about the risk. If one part of an organisation has information, this knowledge could be attributed to the whole organisation. That applies equally to receipt of information from third parties, such as private citizens, pointing out a dangerous situation. That could well impose on the public body a duty to act by examining the extent of the risk and, if necessary, taking adequate measures to restrict or remove the risk. Merely receiving the information does not in itself create liability for the public body but it does deprive the public body of its defence that it did not know about the risk. The same applies if the public body ought to have known about the risk, even if in fact it did not. It is fair to say that most of the Dutch local authorities have an adequate third party insurance. This means that public bodies, in the same way as persons or private bodies, dare to take risks and are not seriously limited in their freedom to act or omit. These freedoms and exposures to liability have not opened the floodgates to claims against public authorities in the Netherlands.

The Position under the Law of Germany (from essays by Professor Walter van Gerven of the Universities of Leuven and Maastricht, Professor Dr Gert Bruggemeier of the University of Bremen and Ralph-Andreas Surma, Legal Counsel, Jungheinrich-group, Hamburg).

Liability of public authorities in Germany is, we understand, to be seen against the background of the fact that some federal laws such as the BGB (i.e. The German Civil Code, have to be considered alongside, for example, Article 34 of the Constitution (GG)). It is also clear that consideration must be given to the precepts of liability of public officials and public entities under the laws of the individual Länder, although in 1994 the general competence to enact State liability was shifted to the Federal Republic. In any event, it would be important to recognise in the project work that there does appear to be a constant stress between public law and private law in Germany which has made more complicated the manner in which their respective elements have been interpreted, refined and adapted by the Courts.

In general it may be noted that to establish liability against a public authority in Germany, there must be an official duty owed towards an identifiable third party or a limited group of people worthy of protection, not merely to the community as a whole. Much depends on whether the official can be shown to have wilfully or negligently breached his or her duty. Damages can reflect pecuniary losses, and also pain and suffering in personal injury cases.

The number of cases involved is very small but it is clear that public liability is in Germany an important means of controlling public bodies through the indirect but primary liability of a public body and a restriction of the statutory means of limiting the public bodies' exposure in § 839 BGB. It can even be said that the state and its public bodies are regarded as less deserving of protection than the individual citizen or official.

The Position under the Law of France (from an essay by Mads Andenas and Duncan Fairgrieve; the former is Director, British Institute of International and Comparative Law in London, where the latter is a Fellow).

In **France**, this area of the law was, until fairly recently, dominated by the requirement that, for there to be a successful claim against a public authority, there must be *faute lourde*.

An early case which established scope for state liability occurred in 1870 when Agnes Blanco was run over by a vehicle owned by the local tobacco-making plant, whilst she was playing in a street. It was held that as the tobacco was manufactured by a State subsidiary, the action had to be adjudicated by rules different from those laid down as to the relationships between individuals. Nonetheless, the State was held responsible and ordered to pay the little girl a life-time annuity for her disabilities.

Three of the most important French cases in recent years in this field concerned the contamination of blood and blood products by HIV because the Health Ministry had failed to withdraw batches which had not been submitted to the most up-to-date processing techniques. A government commissioner was appointed and concluded that the adoption of the relevant statute in 1991, designed to give assistance to individuals affected, did not intend to exclude any concurrent remedy in tort. Indeed, although he treated the cases as concerning supervision, he went so far as to drop the requirement of *faute lourde*. He found that the State had failed to amend the processes, even after it knew there were serious risks of contamination and he held the State liable on the ground of simple fault.

In a recent decision, the Administrative Appeal Court in Lyon found both the State and a local authority liable for damages on the ground of *faute simple* because they had authorised the re-opening of a camping site prematurely, close to a river that once again flooded.

The State controls the way in which departments and communes exercise their administrative powers, which are collectively referred to as *tutelle*. It can, through its delegate the *prefet*, stay, annul or substitute administrative decisions.

The Position under the Law of the UK (from commentaries by Mads Andenas and Duncan Fairgrieve)

Several important cases in the **UK** have come from the alleged misfeasance of the Bank of England in failing to supervise BCCI properly. In *Three Rivers District Council v Bank of England* the House of Lords examined in detail the UK system of banking supervision and the protection of depositors. This had moved, but with an underlying tension, from a principle that supervision should prevent contagion and systemic risk that could threaten the stability of the banking system to a new perspective under which individual bank insolvency could be acceptable and in certain circumstances might even be reckoned to promote the soundness of the financial system. The Bank had still continued to rely on informal supervision after the establishment of a formal framework with legal duties and sanctions for breach of those duties. In 1998 the banking supervision role was transferred from the Bank of England to the FSA and the Bank was given statutory immunity unless the impugned act or omission was in bad faith.

In English law it has become clear that the essence of misfeasance is the exercise of power by a public officer in bad faith which causes loss to the claimant. Either the official must have acted with targeted malice or, in untargeted malice, (which was the issue in *Three Rivers*), he

must have knowingly exceeded his powers and recognised (viewed subjectively, not merely by an objective test) that this act would probably injure the claimant.

The claimant must show that the public officer had actual knowledge that the impugned act was unlawful or that he acted with reckless indifference to the illegality. The “couldn’t care less” test for recklessness as to consequences is elastic. It stretches from being aware of the likely consequences but being indifferent to them, to not even bothering to become aware of the likely consequences. Bad faith is demonstrated recklessness on the part of the administrator in disregarding the risk. No additional element of dishonesty or bad faith is required. This broad interpretation will make the tort of misfeasance more broadly applicable for compensating administrative wrongs. Reckless administrators are more common than outright dishonest ones.

In *Three Rivers* the House of Lords did not reckon that the First Banking Directive would found a cause of action to individual claimants itself; its purpose was to secure non-discriminatory treatment of banks from other Member States.

As the tort of misfeasance has required proof of egregious intentional wrongdoing, claimants have tended to rely instead on the tort of negligence. But negligence requires a proximate relationship between claimant and defendant. So, once again misfeasance in public office, for which proximity is not required, may come into more frequent focus to provide a remedy. It is no coincidence that many of the leading misfeasance cases (including *Three Rivers*) have been for purely economic loss.

The Position under the Law of Italy from commentaries by Mads Andenas and Duncan Fairgrieve)

Under the old rules, it was difficult in **Italy** to gain compensation from the State but it is now much easier. Civil Courts and Administrative Courts can both entertain actions against public bodies. It has been clearly stated by the Court of Cassation in the *Vitali* Case (1999) that damages can be awarded for infringements of *interessi legittimi* and the courts have proceeded through a number of cases where licences or bids in public procurement were illegally excluded, to offer a number of pointers towards damages for economic loss, etc..

Fault is usually attributed to the administrative organisation rather than to any named individual public servant.

In September 1959 a residential building collapsed in Baletta, Apulia. Fifty-eight people died and many more were injured. The technical building commission of the local authority had vetted and approved the addition of three floors onto the original single row of ground-level garages which had constituted the building. In doing so, the commission had made many mistakes. The Court of Cassation, which did not produce its decision until 1978, held that the powers of the local authorities were directed towards harmonious development in towns and villages and did not confer any rights to specific individuals. The law has changed substantially from this surprising result. In a significant case in 1992, the courts wrestled with claims of investors after a tourist development company failed and angry depositors turned against CONSOB, the Italian financial market watchdog. It was alleged that that body had failed to notice many false statements in the prospectus and brochure and had also failed to take any action even after the falsehoods were denounced in the national press. At present,

the case has been sent back to the trial judge but it certainly points towards exposure of a supervisory authority to liability for negligence.

The Position under the Law of Greece

In **Greece**, a public body is only liable for actions or omissions that can be attributed to at least one of its officials, but can be liable even when the official acted against the directions given to him by his superiors. The manner in which the responsibility is addressed is not merely objective, but is subjective; i.e. the Court will examine the actual behaviour and state of mind of the official whose breach of duty is alleged; it is on that basis that the claimant must prove the official was negligent.

APPENDIX 8: Claims Against Public Authorities under English Law

In English law, claims against public authorities responsible for the maintenance of highways are very common, perhaps because of the number of accidents that occur on the roads. Whilst most accidents are caused by the fault of individual drivers or other road users, some could have been avoided had the authority responsible for the highway acted more carefully in its maintenance of roads, the provision of signs, the removal of ice or other obstructions and so on. Claims brought against highway authorities are predominantly framed as breaches of the statutory duty imposed on such authorities under the Highways Act 1980. Where the provisions of the Act are not available to a claimant, he must bring his claim in negligence under the common law. As we shall see, there are limitations both to claims under the Act and to claims at common law.⁸⁷

Claims under the Highways Act 1980

S.36 of the Act lists the various authorities responsible for maintenance of designated sections of the UK road network. Thus, the Secretary of State for Transport is responsible for the maintenance of ‘trunk roads’ and other designated highways; for other roads outside Greater London, the county council or the metropolitan district is responsible; within London, the responsibility for major roads lies with Transport for London (the Transport for London Road Network) and for other roads with the local authority concerned.

S.41 of the Highways Act 1980 (the “Act”) provides that:

“the authority who are for the time being the Highway Authority for a highway maintainable at the public expense are under a duty... to maintain the highway.”

This means that a road user who sustains a physical injury as a consequence of the highway authority’s failure to maintain the highway can claim damages for breach of s.41. For claims to succeed, the claimant must establish that:

1. there was a failure to ‘maintain’ the highway so that it is free of danger;
2. the failure caused the claimant to suffer a physical injury; and
3. the highway authority is unable to show that it took reasonable care to ensure the highway was safe.⁸⁸

What does ‘failure to maintain the highway’ mean? The Act provides⁸⁹ that failure to maintain the highway includes a failure to repair it. Thus, a pedestrian who trips on faulty paving can bring a claim; so can a motorist involved in an accident caused, in whole or part, by the damaged or uneven surface of the road.⁹⁰ But the courts have held that an authority’s failure to use its statutory powers to provide adequate road signs is not a failure to maintain the highway.⁹¹ As regards a temporary hazard such as ice and snow, the Railways and

⁸⁷ The Negligence Liability of Public Authorities, Edited by Cherie Booth QC and Don Squires, Oxford University Press, 2006

⁸⁸ Booth & Squires, Op.Cit. 15.06

⁸⁹ S.329(1)

⁹⁰ Booth & Squires, Op.Cit 15.08

⁹¹ Lavis v. Kent County Council (1992) 90 LGR 416, quoted by Booth & Squires, Op.Cit. 15.1

Transport Safety Act 2003⁹² imposes on the highway authority a duty ‘to ensure, so far as is reasonably practicable, that safe passage along the highway is not endangered by snow or ice’.

As regards other transient dangers, such as flooding, the decision of the House of Lords in the case of *Goodes v. East Sussex County Council*⁹³ - to the effect that a highway authority was under no obligation to remove a transient danger, such as ice⁹⁴ – probably means that the authority is under no obligation to remove them. Flood water cannot be regarded in law as part of the ‘fabric’ of the road within the meaning of s.41 of the Act. Where, on the other hand, the flooding has been caused by some defect in the drainage system of the road, the courts have held that the system formed part of the ‘fabric’ of the road, which the authority was then under an obligation to maintain.⁹⁵

Of course, in order to recover from the authority, the claimant must then show that the defect in the highway was the dominant cause of his injury. Note that the injury must be physical (or, presumably, psychological); pure economic loss is not recoverable for breach of s.41.⁹⁶ What is the standard of care that the highway authority must attain so satisfy its statutory duty to ‘maintain’ the highway? In *Rider v. Rider*⁹⁷, the Court of Appeal held that the highway authority is required under s.41 of the Act, to maintain and repair the highway ‘so that it is free of danger to all users who use that highway in the normal way to be expected of them’. This means that the law recognises that the ‘normal’ driver may not necessarily be a perfect one; the authority must therefore take into account that drivers may be, on occasion, negligent or careless. It does not, however, have to anticipate that drivers might be drunk or reckless.

An element of common sense must be applied in determining whether or not a defect in the road or footway constitutes a ‘danger’; the normal road user is to be credited with some capacity to look out for himself and to avoid or navigate around minor defects.

Defences under the Highways Act 1980

The obligation to maintain the highway under s.41 of the Act is an absolute one, in the sense that it is not necessary for the claimant to prove that the authority has been at fault in failing to maintain the highway. The authority does have, however, a defence to such claims under the statute. S.80 provides that an authority shall not be liable for a failure to maintain if it can show that it took ‘such care as in all the circumstances was reasonably required to secure that the part of the highway to which the action relates was not dangerous for traffic’.

S.58(2) of the Act sets out the factors that the court is invited in particular to take into account when considering whether, in the given case, the statutory defence has been made out. The factors are:

92 S.111

93 [2001] 1 WLR 1356, House of Lords

94 The effect of this decision was reversed by s.111 of the Railways and Transport Safety Act 2003

95 *Burnside v. Emerson* [1968] 1 WLR 1490, Court of Appeal

96 *Wentworth v. Wiltshire County Council* [1993] QB 654, Court of Appeal

97 [1973] QB 505, Court of Appeal, quoted by Booth & Squires, *Op.Cit.* 15.19

- (a) the character of the highway, and the traffic which was reasonably expected to use it;
- (b) the standard of maintenance appropriate for a highway of that character and used by such traffic;
- (c) the state of repair in which a reasonable person would expect to find the highway;
- (d) whether the highway authority knew, or could reasonably have been expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway;
- (e) where the highway authority could not reasonably have been expected to repair that part of the highway before the cause of action arose, what warning notices of its condition had been displayed.

In applying these guidelines, the courts will consider:

- the classification of the road;
- the frequency of inspections by the highway authority;
- the criteria used to determine whether repair is required; and
- how the authority prioritised repairs.⁹⁸

Booth & Squires consider that the courts should also take into account “that the authority operates under resource constraints”.⁹⁹ In determining the issues under s.58(2), the court will take into account good practice guides prepared by the Department for Transport and the Local Authority Associations. The highway authority cannot evade its responsibility by delegating its duty to maintain the highway to a responsible sub-contractor, unless it can also establish that it gave that contractor proper instructions, which it then carried out.¹⁰⁰

Evidence that the authority inspected the highway regularly and had a reasonable system in place to respond to any defects will usually satisfy the statute, provided the system was functioning adequately in the location where the accident occurred. Clearly, a location which is particularly susceptible to accidents might well require a greater intensity of attention than the standard. “The focus of the courts’ enquiry when determining whether the highway authority has a s.58 defence is not simply on the reasonableness of the highway authority’s policies in the abstract, but how they operated on the facts of a particular case.”¹⁰¹

The impact of s.58 on the highway authority’s responsibilities in the event of ice and snow seems to be that, in order to avoid liability, the authority must act with reasonable promptitude to take steps to make the road (and footpaths) reasonably safe, either by clearance or by gritting.¹⁰² A highway authority does not, it seems, have to take steps to take precautions in advance of the snow falling or the ice forming.¹⁰³

Claims at Common Law

Where the circumstances do not permit a claim under s.41 of the statute, it is open to the claimant to bring a claim against the highway authority at common law. This is often a more

⁹⁸ Booth & Squires, Op.Cit. 15.24

⁹⁹ Booth & Squires, Op.Cit. 15.24

¹⁰⁰ Booth & Squires, Op.Cit. 15.24

¹⁰¹ Booth & Squires, Op.Cit. 15.26

¹⁰² See Cross v. Kirlees Metropolitan Borough Council [1998] 1 All ER 565, Court of Appeal, referred to by Booth & Squires, Op.Cit. 15.29

¹⁰³ McKenna v. Scottish Omnibuses Limited, Court of Appeal, 28 February 1985, quoted by Booth & Squires, Op.Cit. 15.30

onerous task than a claim under the statute, since it is (a) difficult for the claimant to show that the highway authority owes a common law duty of care – for reasons which we will see later – and (b) necessary for the claimant to prove that the authority was careless.

Actions under the statute will not be available in relation to the statutory powers and duties given to highway authorities under other sections of the Highways Act 1980 and other legislation. These relate to such matters as the power to erect warning signs, to require the removal of obstructions to visibility and to provide street lighting. Under the Road Traffic Act 1988, authorities have a more general duty to prevent accidents. None of these activities is classed as maintenance of the highway within the meaning of s.41 of the Act.

The difficulty in mounting a successful claim against a highway authority in relation to duties other than maintenance of the highway is that the alleged negligence often takes the form of a pure omission, such as a failure to use its powers in relation to lighting or signage. The decision of the House of Lords in the case of *Gorringe v. Calderdale Metropolitan Borough Council*¹⁰⁴ has established the principle that a highway authority has no liability in relation to a pure omission to act, even if the failure to act could be characterised as ‘irrational’! “A duty would only be imposed at common law [upon the authority] if [it] had ‘done acts or entered into relationships or undertaken responsibilities’ which gave rise to the duty. In other words, where the authority had merely omitted to act and had no prior relationship with the claimant, a common law duty of care would not be imposed upon it.”¹⁰⁵ The net result of the case appears, then, to be that the potential to impose liability at common law arises only in cases where it can be shown that the authority has performed a positive act that created the danger.¹⁰⁶ The heavy hand of public policy can be seen at work in this approach.

Booth & Squires summarise the effect of the *Gorringe* case in relation to pure omission cases in these terms:

“This will mean that liability at common law cannot be imposed in the following situations; a failure to provide a warning sign; a failure to clear transient defects, such as ice, from the road; a failure to require a neighbouring landowner to remove an obstacle to visibility on the highway; a failure to provide street lighting and a failure to reconstruct a road that was built in a dangerous manner by some body other than the highway authority.”¹⁰⁷

If then, the highway authority will be responsible at common law only where it has performed some *positive* act that created a danger, in what circumstances could this arise?

Answer:

“(a) where the authority introduces a danger to the highway and fails to neutralise it;
(b) if the authority was responsible for constructing a highway in a dangerous manner; and
(c) if the authority misleads a motorist as to the state of the road so as to cause an accident.”¹⁰⁸

104 [2004] 1 WLR 1057, House of Lords

105 Booth & Squires, Op.Cit. 15.37

106 Booth & Squires, Op.Cit. 15.39

107 Op.Cit. 15-40

108 Booth & Squires, Op.Cit. 15-41

Examples of the first include:

- (a) “negligently placing a road sign on the highway [so] that it posed a risk to motorists;
- (b) removing bollards from a road, leaving a plinth that was hard for road-users to see;
- (c) placing a post in the highway at a dangerous location; and
- (d) putting traffic studs in the highway which subsequently came loose.”¹⁰⁹

However, a highway authority is not regarded as performing a positive act where it undertakes work to remove a hazard but fails to do so completely. The logic (?) is that the failed remedial work left the road no more hazardous than it was without the attempt! But the case of *Fisher v. Ruislip-Northwood Urban District Council*¹¹⁰ established the useful precedent that an authority can be liable for its failure to neutralize a feature of the road – in this case, an air raid shelter – which had become a hazard once street lighting was banned in England during World War II.

As for the second category, an authority will be responsible for constructing a highway – or a part of it, such as a motorway crash barrier – in a dangerous way, provided it was that authority that constructed it. If the dangerous highway was in fact constructed by a predecessor in title to the highway authority at the time of the accident (the ‘present authority’), the law imposes no liability upon the present authority to correct the defects of its predecessor. “The highway authority owed no common law duty to remove a defect it was not responsible for creating.”¹¹¹

An example of the third category is given by the case of *Bird v. Pearce*¹¹², where the claimant sued the road authority in relation to an accident that had occurred at a junction. The road markings that were usually there - to indicate that priority lay with the other road - had been removed for re-surfacing (it took the authority some four weeks to replace them). The absence of the markings, the claimant alleged, confused him into thinking that the priorities had been changed.

Once the claimant has established on the facts that the road authority owes him a duty of care, he must then prove (on the balance of probabilities) that the authority has breached that duty. The standard to be applied in the common law action is the same as that required under s.41 and s.58 of the Highways Act 1980 – see above. In ensuring that its roads are reasonably safe for road users, the highway authority must take into account that motorists do, on occasions, drive carelessly.¹¹³

Where matters of professional judgment are concerned, the courts will apply the test formulated in the case of *Bolam v. Friern Hospital Management Committee*¹¹⁴. Under that test, engineers and surveyors of the highway authority will not have breached the standard of

¹⁰⁹ Booth & Squires, Op.Cit. 15.42

¹¹⁰ [1945] KB 584, Court of Appeal

¹¹¹ Booth & Squires, Op.Cit. 15.46, quoting *Nash v. Rochford Rural District Council* [1917] 1 KB 384, Court of Appeal

¹¹² (1979) 77 LGR 753, Court of Appeal

¹¹³ Booth & Squires, Op.Cit. 15.52, quoting *Levine v. Morris* [1970] 1 WLR 71, Court of Appeal

¹¹⁴ [1957] 1 WLR 582

care required of them “if they are able to show that they have acted in accordance with a reasonable and respectable body of professional opinion.”¹¹⁵

There is now some evidence that the courts will, in determining whether a highway authority has breached its duty of care, take into account the resources available to the authority. Whilst the authority has a statutory duty to maintain the highway, the resources available to it are not unlimited. Accordingly, the authority will have to determine priorities among the potentially competing demands that the statutory duty makes upon it. If the authority can satisfy the court that it has determined its priorities in a sensible and careful way, then the court may well excuse it for leaving some minor matter undone in order that some more urgent need be dealt with. All will depend on the facts of the case!

¹¹⁵ Booth & Squires, Op.Cit 15.53

APPENDIX 9: CVIS Actor Questionnaire

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Interview/Questionnaire Document Content

1. Background to the Need for this Questionnaire

Topic 6 – Risks and Liability – of the DEPN (DEployment ENablers) sub-project of CVIS has created an inventory of potential external risks and threats for the CVIS project applications and identified mitigation strategies for each risk or threat judged to be substantial.

The next stage of the work is to analyse the liabilities and map the legal exposure of each Actor in the CVIS deployment and operational service chain through a number of use cases/scenarios. Each application sub-project has chosen one and the CF & F urban parking zones use case is attached hereto as an example (see section 3.2.1 of this report).

This questionnaire has been created in an attempt to procure non-commercially-sensitive information from Actors to assist further in the assessment of existing and perceived legal responsibilities being assumed by them through their involvement in CVIS. From that assessment, the next stage will be to look at solutions and to provide recommendations as to how the effects of liability might be minimised.

Your responses to the questions contained within this questionnaire will be entirely confidential and will only be reported on an unattributable basis. Your co-operation in responding to this questionnaire is greatly appreciated.

2. General Categorisation of Interviewee

- Name and contact details of interviewee.
- Determine role, if any, within the CVIS project.

3. Contractual and Jurisdiction Characteristics

- Do you typically insist on your national jurisdiction and your national law governing your contracts?

- If you are involved in developing an application through one of the CVIS application sub-projects, how do you envisage your technical relationships with other Actors involved being formalised (for example, by contract or using standard business terms)?
- In contractual arrangements, do you generally find that you are only responsible for what you can control, as opposed to being responsible for other people's products and services?
- Do you more often settle disputes by compromise, mediation or arbitration than by going through the courts?
- Do you have experience of Alternative Dispute Resolution (ADR)¹¹⁶? If so, what were the advantages/disadvantages compared with litigation?

4. Technical Matters

- Do you have any anxieties about the robustness and resilience of the CVIS system? If so, why?
- Do you think issues of standardisation, certification and validation are being adequately dealt with in the CVIS project?
- What importance, if any, do these issues have in relation to minimising Actors' legal liability exposure in respect of the system?
- If a technical fault were to be found within the system, how best could that be put right (both in a project-based prototype, for example, and in a fully-fledged commercial product)?
- From your own company's perspective, what non-technical issues do you perceive could cause major deployment barriers to CVIS?
- Which issues cause you the most anxiety?

5. Risk Transfer, including Insurance

- Do you find that your insurers and any brokers involved really understand the risks and liabilities involved in this work?
- Are you confident that your current insurers cover you for the liabilities and economic losses which could be caused by your involvement in CVIS?
- If not, are the difficulties in this respect as to limits of cover; its duration; as to exclusions from cover; or as to the price or effectiveness of appropriate cover?
- Do you require that your affiliates or sub-contractors have and maintain fully adequate insurance cover, so that they can respond properly if you have a claim for recovery (i.e. for a monetary contribution) against them?
- Do you provide performance bonds instead of insurance or are your performance bonds covered/supported by insurance?

6. Public Authority and Community Aspects

- As a public authority, what do you see as the most important incentives for equipping the road management infrastructure in your area with sensors (or the CVIS box)?

¹¹⁶ Alternative dispute resolution, usually referred to as ADR, is the collective term for the ways that parties can settle civil disputes, with the help of an independent third party and without the need for a formal court hearing.

- As a public authority/road operator, how would you license/charge for installation of CVIS boxes in your area?
- Is there a forum where public authorities can discuss these and other issues related to CVIS deployment?
- Within the CVIS system, vehicles and infrastructure will both receive and give out information. To what legal liabilities would you believe you are exposed as a public authority if you were to install the CVIS system in your area?
- Are these potential liabilities any greater or fewer than exist currently? If yes, please give a brief explanation as to why.

7. Contributions to Further Debate

- If the CVIS system were to fail, would you be prepared to contribute to a “Without Prejudice” Restoration Fund (as there could be instances of failure where fault cannot easily be attributed to a particular Actor) to get the system up and running and to participate, also without prejudice, in the actions needed to achieve system restoration?
- How do you think claims on the CVIS system by parties who may have been damaged by it will be funded and processed?
- Do you think insurers will seek recourse against Actors in the CVIS system either individually or as a co-operative group?
- What advantages or disadvantages do you see in sharing risks with other Actors in the CVIS system?
- Are there any questions we have not asked that you believe would be relevant to our enquiries?

Thank you for your co-operation.

APPENDIX 10: Some Insurance Aspects of Codes of Practice

1. **Question: Given that in many insurance policies there are important conditions, warranties, and exclusions, is non-compliance with a Code of Practice properly to be regarded as equivalent to a breach of warranty?**

Answer: It could well be, if the policy makes that clear. In shipping, Clause 3 of the Institute Time Clauses states that the vessel would be held covered, provided notice be given to the underwriters immediately after receipt of advice of the breach, and that any amended terms of cover, and any additional premium required by the underwriters, are agreed.

2. **Question: Could non-compliance be a ground for insurers to refuse a claim?**

Answer: Yes, provided that the insurance policy makes it very clear that non-compliance triggers an exclusion of cover or amounts to a breach of warranty. This and other aspects of non-compliance were analysed in November 2003 by a leading judge of the UK Court of Appeal, Sir Andrew Longmore, in his paper “Good Faith and Breach of Warranty: Are We Moving Forwards or Backwards?” delivered for the Institute of Maritime Law of Southampton University. He referred to an important case in 1992 in which the UK House of Lords held that any breach of warranty discharges the insurers from the date of the breach because compliance with the warranty is a condition precedent to the liability of insurers. “If, however, there are two separate losses during the currency of the policy, the first of which is caused by the breach of warranty and the second of which is not, but the insurer only discovers the breach of warranty after the second loss, he is under no liability for either loss.” (Longmore)

Sir Andrew Longmore illustrated how some courts had tried to ameliorate the strictness of the doctrine of warranties. Norwegian insurance law governed where there was a warranty that a 24-hour watch be kept at a fish farm in a remote Norwegian fiord. This warranty was not complied with. The entire fish farm was destroyed at night in a winter storm. Watchmen would not have made the slightest difference. The Norwegian primary insurers paid up and the English court held that the English reinsurers had to reimburse them. If the original insurance had been governed by English law, the reinsurers would have been able to disclaim liability. However, in a Canadian case, there was supposed to be a watchman on board ship every night. The ship sunk in mid-afternoon. Even though there never was a watchman on board at night, it was held that the warranty was only applicable during the night and the insurers had to reimburse the insured. Technically, it seems that in such cases under Canadian law the insurance would be suspended when there was a breach of warranty but resumed once the breach was no longer operative. This would be contrary to the English law position. It may well have been that the Canadian judges were desperate to get round the rule that a warranty whose breach causes no loss allows the insurer, nonetheless, to escape liability.

3. Question: Could non-compliance also be a ground for insurers (a) to refuse to continue or renew an insurance; or (b) to require, as a condition of renewal, a re-application of the Code of Practice to ensure compliance thereafter?

Answer: As to (a), yes, and most insurers are not required by law to justify refusal. However, in shipping insurance there are some examples which soften this position. Thus, the International Hull Clauses (2003) – which are as yet voluntary – link liability of the insurers under the so-called Navigation Provisions in such a way that although there must be strict compliance with the ship's geographical trading limits, once a geographical breach ceases the ship or cargo comes back into cover and the insurer cannot regard the contract as discharged merely because the breach has occurred. (Longmore)

As to (b), this could well be made a condition of renewal, provided that the policy clearly so states. Marine insurers would expect the shipowner to satisfy them of compliance with requisite technical standards. If the ship's classification is suspended or its statutory (flag state) certification has been withdrawn, insurers would expect them to be reinstated before re-commencing insurance cover. If there had been serious breaches and it was felt that the shipowner was not serious about compliance, the Classification Society would decline to do further business with that fleet. A shipowner could then attempt to transfer Class but there are very strict transfer procedures in place to prevent shipowners from Class-hopping.

4. Question: Does a breach of such aspects not linked causatively to the incident leading to the claim nonetheless justify insurers in refusing to pay the claim?

Answer: Much depends on the circumstances, especially whether the breach amounts to a breach of warranty. As Professor Malcolm Clarke has written ("The Law of Insurance Contracts" LLP 2002 at page 627): "A warranty is a term of the contract of insurance. Breach of warranty automatically terminates the contract of insurance, subject, however, to the intervention of the insurer to keep it on foot of what is called, inaccurately perhaps, waiver of termination". It seems under English law to be irrelevant, not only that the breach may have been put right before the loss but also that the breach of warranty (however slight or serious) is not causative of the loss.

This is a continuing dilemma in London marine insurance practice and likewise may be a problem under the Norwegian hull policies. A leading commentator (Dr Baris Soyer, author of "Warranties in Marine Insurance" 2001) – quoted by Sir Andrew Longmore – has suggested that, after providing for the insurers to be discharged from the liability as from the date of the breach of the warranty, there should be a proviso worded: "provided that, where the breach of warranty is followed by a loss, the insurer cannot rely on this sub-section if the assured proves the loss was not caused or contributed to by the breach". The Australians are moving towards a position where it will be "for the insurer to prove a breach of any term alleged to result in his release from liability" but "it should be for the assured to prove that breach of the term did not cause or contribute to the loss". If the Court decided that the insured period was the proximate cause of the loss, then the breach of warranty could not be. Even then, as Sir Andrew Longmore pointed out, "it is not theoretically impossible to have two proximate causes of loss; if one of those causes is excepted and one is covered, the

insurer is, on ordinary common law principles, entitled to succeed”; i.e. to reject the claim.

5. **Question: If there is to be compliance with a Code of Practice, would that most likely be monitored by outside agencies such as specialist engineering consultancies and verification experts or any of the international Classification Societies which may choose to diversify into this field?**

Answer: Very likely. In shipping, the vast bulk of the compliance monitoring is carried out by the Classification Societies. Flag states (‘the national administrations’) and national bodies exercising Port State control also have an increasingly important role to play, which has its own impact on the reaction of insurers to breaches of required standards. The ship’s flag state may well call on its Classification Society to check compliance with elements of SOLAS (Safety of Life at Sea Convention 1974) etc..

6. **Question: Would such an agency be acting for the insured, the insurers, the government or other national entity, or any or all of these, and would such a pattern of engagement be uniform across all insureds and all aspects of ADAS?**

Answer: In shipping, the Classification Society works on a contract between itself and the shipowner, the bareboat charterer or the technical manager (i.e. “the operating company”). The Classification Society’s central responsibility under such a contract is to ensure that the ship has been constructed and maintained in accordance with the standards set by the Classification Society. As more and more regulation that has impacted on the construction and maintenance of ships has been enacted, so the role of Classification Societies has widened and, on behalf of the owner, they can undertake these tasks. More important, Classification Societies are now employed as a watchdog service on behalf of flag states to certify compliance with ISO standards, all relevant Codes, etc.. All of this work is paid for by the owner (operating company). Such aspects were clarified for marine and non-marine contexts following significant accidents such as the failure of the ferry linkspan at Ramsgate, UK in 1994. In addition, the Classification Society, working accordingly as an independent organisation, is also able to act under delegation from the flag state; for example, to check compliance with SOLAS or MARPOL (the international marine pollution Convention). In thus taking instructions from, and giving advice in confidence to, the national administration, the Classification Society is, in principle, not authorised to share its findings directly with the insured shipowner. Classification Societies will also do the vast bulk of the work of certifying on behalf of flag states compliance by owners/operating companies and their ships with the new International Ship and Port Facility Security (ISPS) Code.

7. **Question: If there were to be self-certification by OEMs, component suppliers and other parties involved such as consultants, sub-contractors, software updating contractors, etc., would that be acceptable to insurers?**

Answer: In shipping, self-certification is allowed under procedures that set out certain authorised people or organisations as being permitted to do so survey work, usually on a regular basis, linked to other regular maintenance work. These can be either for

machinery items or the hull but are still controlled by annual audits carried out by the Classification Society, which cover every self-certified item. There are stringent limits placed on self-certification; safety-related and “critical” items are always directly seen by Classification Society surveyors.

8. Question: Should there be a duty on the insured to notify insurers if, and before, it intends to depart from a Code of Practice either in a specific instance or in general?

Answer: It is a clear rule of Classification Societies that if a shipowner wishes to depart from a Class requirement, or if he is aware of some malfunction or change in the technical performance/risk of the ship, then he is obliged to notify the Classification Society without delay. If he has to act in an emergency, he should consider himself as obliged to perform to the standard of a “prudent uninsured” and notify the Classification Society as soon as possible. It would not be sensible for a shipowner or technical operator merely because he reckons he has a better process or procedure than that covered by the relevant regulation or part of the Code of Practice, to assume that such departure would be acceptable to insurers. In principle, most insurers (whether marine or non-marine) will try to accommodate reasonable action, especially where the proposal is made to avoid an imminent danger.