SAFESPOT INTEGRATED PROJECT - IST-4-026963-IP

DELIVERABLE

SP8 – HOLA – Horizontal Activities

Report on results of User Forum Workshop

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Abbreviation List

API	Application Programming Interface
C2C	Car to Car
CBA	Cost Benefit Analysis
ETSI	European Telecommunications Standards Institute
HW or H/W	Hardware
IP	Integrated Project
ITS	Intelligent Transportation Systems
LDM	Local Dynamic Map
P2P	Peer to Peer
R&D	Research and Development
SW or S/W	Software
TC	Technical Committee
TS	Test Site
V2I	Vehicle to Infrastructure
V2V	Vehicle to Vehicle
VANET	Vehicle Ad Hoc Network
VRU	Vulnerable Road Users

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EXECUTIVE SUMMARY

This document presents the minutes of the SAFESPOT and WATCH-OVER Common Workshop that was realized in Stuttgart, Germany, the 21st and 22nd of January 2008. The workshop's title was: "Future perspectives of cooperative systems for road safety" aiming to bring together all stakeholders in the area of the cooperative safety (V2V and V2I) including the special role of vulnerable road users (VRU).

The workshop was attended by 118 participants from all over Europe, coming from different key-stakeholder's companies of the ITS sector. The 2-days program included different presentations for both projects focusing on informing the participants on the projects' concept and achievements. The workshop contributed to the dissemination goal of reaching and informing the scientific and expert's community on the projects' expected results and their respective market potential. Also, the workshop provided the ideal opportunity of receiving feedback on the current activities and results that will eventually influence the project's future course of activities.

Consequently, the workshop not only succeeded in reaching a variety of selected experts from Europe and in disseminating the projects' achievements so far and expected results, but also contributed to receiving valuable experts' opinions on the open issues revolving their future work.

1. Introduction

The SAFESPOT and WATCH-OVER projects Common workshop took place in Stuttgart, Germany, hosted by the University of Stuttgart, at 21-22 January 2008.

The joint SAFESPOT and WATCH-OVER workshop aimed to bring together all stakeholders in the area of the cooperative safety (V2V and V2I) including the special role of vulnerable road users (VRU).

The workshop's program included presentations by key experts both of the projects' consortia and of external attendees, such as the European Commission and EUCAR as well as interactive working groups involving all interested participants. In order to give both projects enough room and to emphasise and cover all subjects in detail the dimension of the SAFESPOT and WATCH-OVER projects a two-day workshop was planned.

The two days program is summarised in the following tables.

Table 1 Workshop's program 21 January 2008

Monday 21 January 2008	
Time	**Topic**
9:00	Registration Open
9:45 – 10:00	**Welcome session:** Welcome from Project Coordinators, Roberto Brignolo (CRF), Luisa Andreone (CRF)
10:00 – 10:15	Introduction to the Workshop, Angelos Amditis (ICCS)
10:15 - 10:45	**Coffee Break**
10:45 – 12:45	**Plenary Session** **PART A - Projects Overview** **Moderator: Angelos Amditis (ICCS)** Future scenarios of vehicle to vehicle, vehicle to vulnerable users, vehicle to infrastructure, infrastructure to vehicles applications for road safety • SAFESPOT project overview, Roberto Brignolo (CRF) • SAFESPOT vehicle based applications, Giulio Vivo (CRF) • SAFESPOT infrastructure based applications, Fabien Bonnefoi (COFIROUTE) • WATCH-OVER overview and applications, Luisa Andreone (CRF) • SAFESPOT vulnerable users applications, Laurent Jacques , (VOLVO)
12:45 – 13:45	Lunch Break
13:45 – 14:25	**PART B** **Moderator: Achim Brakemeier (DAIMLER)** Related projects on cooperative systems in the European Research Area will be presented • Cooperative Systems - an overview of WILLWARN and German national projects, Gerhard Noecker (DAIMLER) • Cooperative systems and safety aspects : the CVIS IP approach, Paul Mathias (SIEMENS)

Monday 21 January 2008			
Time	**Topic**		
14:25 - 15:40	**PART C** **Moderator: Han Zwijnenberg (TNO)** Interactive sessions on the deployment of cooperatives.		
	Introduction to SAFESPOT Sub - Project BLADE Realising the SAFESPOT potential: • A non technical view on the SAFESPOT system (Arjan van Leijsen, TNO) • Facing the challenge of reduction and allocation of deployment risks (Han Zwijnenberg, TNO) • Facing the challenge of sharing responsibilities and allocating risks (Kiliaan van Wees, Free University of Amsterdam)		
15:40 - 15:55	Coffee Break		
15:55 - 17:10	**PART C (continue)**		
	Session 1: Technical and user issues for SAFESPOT deployment **Moderator:** Phillippus Feenstra (TNO)	**Session 2:** Full scale deployment of SAFESPOT **Moderator:** Tom Alkim (Rijkswaterstaat)	**Session 3:** Responsibilities of actors in the chain **Moderator:** Marion Robery (Tomas Miller)
	Feedback and conclusions		
17:10 - 17:30	**Keynote:** EUCAR perspective on cooperative systems, Alessandro Coda (EUCAR)		
17:30 – 17:40	Conclusion of the first day, introduction of the 2nd day, Angelos Amditis (ICCS)		
20:00	Gala Dinner		

Table 2 Workshop's program 22 January 2008

Tuesday 22 January 2008				
Time	**Topic**			
9:00 – 9:30	**Keynote:** The European Union approach towards cooperative systems for safer and more efficient transportation environment, Elina Holmberg (European Commission)			
9:30 – 9:45	Introduction to interactive working groups, Roberto Brignolo (CRF)			
9:45 - 10:15	Coffee Break			
10:15 – 12:15	***Interactive Parallel Sessions*** Discussion on enabling and disabling factors for the deployment of cooperative systems Identification of future needs for R&D			
	Session 1. Ad hoc dynamic networks: towards a common architecture **Moderator:** Achim Brakemeier (DAIMLER)	**Session 2.** Technical platforms and local dynamic maps **Moderator:** Christian Zott (BOSCH)	**Session 3.** Applications of cooperative systems **Moderator:** Fabien Bonnefoi (COFIROUTE)	**Session 4.** Communication technologies for vulnerable road user detection **Moderator:** Luisa Andreone (CRF)
	Participation by road operators, suppliers, drivers (FIA), OEMs, project			

Tuesday 22 January 2008	
Time	**Topic**
	representatives
12:15 - 12:45	Plenary Session: Conclusions and Closing, Roberto Brignolo (CRF) and Luisa Andreone (CRF) • Session conclusions • Workshop conclusions
12:45 – 13:45	Lunch

A change of a few speakers during the workshop was necessary due to an unexpected airplane delay involving the 1st session speakers.

1.1. Innovation and Contribution to the SAFESPOT Objectives

The key objective of the workshop was to bring together stakeholders in the area of cooperative systems for road safety to discuss the new trends and to debate on the project's recent results. Highlights for future development and large scale testing of cooperative systems were the major outcomes of this workshop.

The workshop was organised by the University of Stuttgart (DE) in cooperation with ICCS (EL) with the support of the dissemination managers and co-ordinators of the two projects.

To the workshop 118 experts from around Europe, working in different areas such as OEMs, universities, industries, authorities etc. participated. The list of participants can be found in Annex II.

Figure 1: Photo of workshop's participants

Figure 2: Photo of workshop's participants

1.2. Deliverable structure

This document presents the minutes of the workshop. The speeches are ordered by the time they were held. In the Annex I the reader can also find the respective presentations.

2. Minutes

2.1. Day 1

2.1.1. Welcome Session

The workshop's opening speech was held by Angelos Amditis by ICCS, the Dissemination Manager of SAFESPOT. After welcoming all participants Mr. Amditis invited to the stand Professor Dr. Kern. Prof Dr. Kern is a member of the board of directors of the Fraunhofer Institute for Industrial Engineering (IAO) and represented the host which was the University of Stuttgart.
Prof. Dr. Kern also welcomed all participants, expressed his interest to the important work of both SAFESPOT and WATCH-OVER projects and highlighted the social aspect of research within the European Commission framework. Workshops, such as this, allow researchers from around the world to meet, interact and collaborate, thus enhancing their work.
Mr. Amditis then continued with the introduction to the workshop. The workshop's objectives and program were briefly presented and logistics details were provided to the participants.
At the end a tribute for the recently deceased Berthold Ulmer from Daimler, one of the SAFESPOT's Godfathers, was paid by observing one minute of silence.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Welcome.pdf)

2.1.2. Part A - Projects Overview

Moderator: Angelos Amditis (ICCS)

In this session, moderated by Angelos Amditis, the future scenarios of vehicle to vehicle, vehicle to vulnerable road users, vehicle to infrastructure and infrastructure to vehicles applications for road safety were presented.

- **SAFESPOT project overview**

Speaker: Achim Brakemeier (DAIMLER)

Achim Brakemeier provided a short overview of the SAFESPOT integrated project emphasizing its main objective which is the road safety. SAFESPOT is implementing the V2V and V2I communication and the idea of the safety margin assistant, while the main innovation that the project brings is the cooperative support.
A few indicative applications were also described whith special reference to the cooperation with CVIS, COOPERS and WATCHOVER projects.
The SAFESPOT enabling technologies were highlighted: fast, secure, reliable and low cost V2V and V2I communication, a real time relative positioning and finally a real time updateable LDM.

The SAFESPOT architecture was also presented which includes two parts for each application; the HMI and driver notification; and the cooperative application.
Finally, the SAFESPOT consortium was listed.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_A _Overview.pdf)

- **SAFESPOT infrastructure based applications**
  Speaker : Fabien Bonnefoi (COFIROUTE)

The Infrastructure based applications were then presented by Fabien Bonnefoi. The Infrastructure based applications are developed within the Sub-project 5 of SAFESPOT, entitled COSSIB. The definition of the SP5 applications was based on accident analysis. Here below, a list of the applications is reported, along with their main aspects highlighted in the presentation:

-Speed Alert: it indicates the appropriate speed to the driver.
-Road Departure prevention: it detects dangerous trajectories on identified black spots (also exploiting the trajectories coming from the vehicle side).
- Hazard and Incident Warning
-Intelligent Cooperative Intersection Safety System: Urban intersections are considered very dangerous especially for VRU (pedestrians, cyclists).
-Safety Marging for Assistance and Emergency Vehicles: (2 aspects): priority to emergency vehicles, emergency vehicles used as mobile road side units.

Finally, the presentation of the Speed Alert and Hazard and Incident Warning applications corresponding to a probable real-life scenario was realised.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_A_IBA.pdf)

- **SAFESPOT vulnerable users applications**
  Speaker: Laurent Jacques , (VOLVO)

Jacques Laurent introduced SAFESPOT Vulnerable Road Users (VRU) applications. The facts concerning accidents involving Vulnerable Road Users (VRU) such as cyclists, motorcyclists and pedestrians were briefly discussed. The SAFESPOT project aims to understand how intelligent vehicles and intelligent roads can cooperate to produce a breakthrough for road safety. Therefore, there is consideration for applications for trucks including forward collision warning, road conditions status and VRU. The active safety systems that can protect vulnerable road users within SAFESPOT were also presented.
In the final stage of SAFESPOT there will be two truck demonstrators equipped with a VRU detection system and the SAFESPOT applications using different HMI for the drivers to be warned about the VRUs

The relevant presentation is found at Annex I

(SF_WO_Workshop_Annex_I_Day_1_Part_A _VUA.pdf)

- **WATCH-OVER overview and applications**

Speaker: Professor Wanielik (TUC)

Professor Wanielik presented the European co-funded project WATCH-OVER which aims to develop a Vulnerable Road User detection system based on a new generation of CMOS cameras and on communication technology. As Vulnerable Road Users, the pedestrians, the cyclists and the powered two wheelers are considered. The innovative concept is represented by an on board platform and by a vulnerable user module. The system is based on short range communication and vision sensors.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_A WO.pdf)

- **SAFESPOT vehicle based applications**

Speaker: Giulio Vivo (CRF)

The part A concluded with the presentation of the vehicle based applications within SAFESPOT, by Giulio Vivo. The vehicle based applications are developed within the Sub-Project 4 of SAFESPOT entitled SCOVA. The SAFESPOT concept is to move from autonomous intelligent systems to intelligent cooperative systems. The key enabling factors to support the SAFESPOT vehicular applications is the Vehicle Ad Hoc Network VANET (a dynamic local communication network), a real time reliable and precise positioning, and a solid real time and dynamic database. Also the most relevant vehicle based applications were described.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_A _VBA.pdf)

In the discussion after these presentations, clarifications on the VRUs detection by WATCH-OVER system for each scenario were provided. The sensors will be able to detect multiple VRUs.
Also the technology used for VRU detection via short range radio-frequency communication (802.15.4a – Chirm Spread Spectrum Technology), currently has a range of the order of 100m, but with a trade-off between range and accuracy.
A discussion took place also on the market perspectives of the presented technologies, with different opinions ranging to about 3 to 5 years for the deployment of the final prototype and its entry to the market.

2.1.3. Part B – Related Projects

Moderator: Achim Brakemeier (DAIMLER)
In Part B, moderated by Achim Brakemeier (DAIMLER), a few projects related to cooperative systems in the European Research Area were presented.

- **Cooperative Systems - an overview of WILLWARN and German national projects**

Speaker: Gerhard Noecker (DAIMLER)

Gerhard Noecker presented the EC co-funded subproject of PReVENT Integrated Project, entitled WILLWARN. WILLWARN (Wireless Local Danger Warning) is developing a communication-based system that extends the driver's horizon and intelligently warns the driver of dangerous situations ahead. WILLWARN provides drivers the opportunity to adapt the vehicle speed and inter-vehicle distance early-on, leading to a higher situational awareness of potential unforeseen danger. Also a few national German projects on cooperative systems such as INVENT, activ and NOW were presented.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_B _WILLWARN.pdf)

- **Cooperative systems and safety aspects : the CVIS IP approach,**

Spealer: Paul Mathias (SIEMENS)
The European Commission co-funded project CVIS (Cooperative Vehicle-Infrastructure Systems) was presented by Paul Mathias from SIEMENS. The CVIS vision, in parallel to the SAFESPOT project, is more focused to vehicle-infrastructure communication and it is more oriented to traffic efficiency applications. The concept is to enhance the information exchanged between cars and infrastructure.
The CVIS architecture was briefly described.
An important aspect of CVIS is the communication subsystem. It is highly connected to CALM, a technology that enables different communication media transparent to the user (across various interfaces and media).
The applications are divided in three different sectors (URBAN, INTERURBAN, FREIGHT & FLEET).

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_B _CVIS.pdf)

- **The TRACKSS Project presentation**

Speaker: Roberto Brignolo (CRF)

A presentation of the project TRACKSS was also done by Roberto Brignolo. The common elements of SAFESPOT and TRACSS project include:

- *Compatible on-board architecture;* It should be physically and functionally possible to have TRACKSS on-board KSM and SAFESPOT dynamic digital map running on the same in-vehicle computer.

- *Vehicle and infrastructure sensors;* Possibility of using TRACKSS sensors as components of the SAFESPOT Cooperative Systems and hence additional input to the SAFESPOT data fusion process.
- *Business Model;* It would be possible to create a business model with common elements since both projects are interrelated and share most of their stakeholders.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_B _TRACKSS.pdf)

2.1.4. Part C Interactive sessions on the deployment of cooperatives.

Moderator: Han Zwijnenberg (TNO)

Part C of the 1st day was moderated by Han Zwijnenberg from TNO. This part served as a "consultation workshop" for recommendations following the risk identification analysis. Its results are reported in detail in the deliverable D6.4.4 of SAFESPOT and are taken into account in the formulation of the recommendations in D6.4.5. In this report only short descriptions of the speeches are included.

- **Introduction to SAFESPOT Sub - Project BLADE**

Speaker: Han Zwijnenberg (TNO)

The sub-project of SAFESPOT, BLADE was introduced by Han Zwijnenberg (TNO). The main objective of BLADE is to "pave the road" from the experiments and tests done within the SAFESPOT IP to the real life. The cooperative approach is very complex in terms of number of actors involved and factors to be considered. The main objective can be formulated to be the development of a deployment programme for SAFESPOT to reach the overall goal of the IP.

To reach this objective, this SP deals with the following areas of activity:

- defining an organisational architecture, including roles, responsibilities and interrelationships;
- analysis of potential barriers, with special attentions to the analysis of legal aspects, which have to be considered for an efficient deployment programme;
- assessment of the IP applications/systems/services in terms of identification of impact, market assessment and financial assessment;
- identification of a business models suitable for system, applications and services addressed by the IP;
- identification of suitable steps to reach the goal of the IP.

The relevant presentation is found at Annex I

(SF_WO_Workshop_Annex_I_Day_1_Part_C _BLADE.pdf)

- **A non technical view on the SAFESPOT system (Arjan van Leijsen, TNO)**

The benefits of the SAFESPOT system, from both the private and the public point of view, were examined within this speech, while the potential deployment scenarios of SAFESPOT were proposed.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_C _Non-Technical_view.pdf)

- **Facing the challenge of reduction and allocation of deployment risks (Han Zwijnenberg, TNO)**

The process of risk identification and the process to formulate mitigation strategies were presented here. Besides pure technology driven issues, like the accuracy and timing of warnings, the acceptance of the SAFESPOT system by the end user and the associated impact on the safety of the end user is a key element in deployment. The early identification of the risks and measures to reduce or prevent the risks influencing the take up of the system and preserving the ultimate success of SAFESPOT deployment is the important objective of this workpackage. Moreover, a marketable system is innovative, clear and profitable for the user.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_C _ RisK_TNO.pdf)

- **Facing the challenge of sharing responsibilities and allocating risks (Kiliaan van Wees, Free University of Amsterdam)**

The need to explore roles and responsibilities of the public and private actors involved in 'delivering' the SAFESPOT system was highlighted by Kiliaan van Wees. The questions about the demarcation of responsibilities and the allocation of risks were discussed as an introduction to the parallel sessions that followed the presentation.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Part_C _Risk_FUA.pdf)

After the introductory sessions, Part C continued with three parallel sessions on the deployment issues of SAFESPOT. These sessions are described below in brief, including the conclusions as formulated in D6.4.4.

- **Session 1: Technical and user issues for SAFESPOT deployment**

Moderator: Phillippus Feenstra (TNO)

In order to find the different views for the existing uncertainties and gain advice for recommendations on how to minimize the user and technology related risks, a session on user and technical issues was organized. The main objectives of this session were:

- get a discussion on what kind of SAFESPOT system needs to be deployed;
- find different views for the existing uncertainties;
- gain advice for recommendations how to minimize the user and technology related risks.

In conclusion one should make use of feedback from users during the initial deployment phase where feedback could be collected actively and passively. Inhere a consortium (and not only a single industrial or non industrial partner) that should have the ownership for feedback collection. Furthermore, it is recommended to anticipate at an early stage on feedback mechanisms for improvement and how to update (and do maintenance of) the SAFESPOT System.

- **Session 2: Full scale deployment of SAFESPOT**

Moderator: Tom Alkim (Rijkswaterstaat)

The objective of this session was to identify possible barriers for full scale deployment scenarios, the focus was on the costs and benefits of the system, and also on the relation between the different actors involved in full scale deployment. Part of this is the identification process, which is currently undertaken in a separate work package and the identification of the business drivers for the different actors.
The actors have already been identified in a preliminary organizational architecture of the SAFESPOT system, but this depends on the business case of SAFESPOT. The way to reach full deployment is important, especially concerning the relation between V2I and V2V scenarios and the different preconditions both scenarios have.
Furthermore, it was attempted to identify a potential scenario that sketches in which way deployments will take place, once agreement has been reached on a European standard and commitment is ensured by means of contracts.

On some issues the group as a whole could not reach consensus but this indicates that the issue is important enough to address in the near future. The following observations and recommendations were made:

1. In order to reach a critical mass of SAFESPOT systems it is not wise to rely solely on a factory fitted approach. Nomadic devices and after market systems could also play an important role.

2. For cooperative systems it seems a good approach to focus on both V2V and V2I scenario's instead of only one. Both have their specific advantages and the combination could provide synergy.
3. With this in mind it seems a good idea to start implementing the SAFESPOT system in areas that can provide quick wins instead of a nationwide roll-out. For instance at so-called black spots that pose a threat to traffic safety.
4. It is important to find a "start-up-winning application" for the SAFESPOT system in order to generate sufficient consumer demand. This "start-up winning application" does not necessarily have to be a safety related function.
5. It is not necessary to introduce the SAFESPOT system with all its intended functionalities. It's better to start with a limited set of functionalities and provide the possibility to upgrade the system gradually. Therefore a modular approach with the freedom to choose for different (sets of) applications is recommended.

- **Session 3: Responsibilities of actors in the chain**

Moderator: Marion Robery (Tomas Miller)

The session focused on liability issues and how insurance might be used to reduce liability for the Actors involved. The objectives were to:

- discuss the legal liabilities Actors would attract in delivering the SAFESPOT system to market;
- consider ways in which insurance might reduce the legal liability exposure of Actors; and
- look at how third parties eventually evoking the system to have taken a role in a damage might be compensated.

After the session the following recommendations were made:

1. It is recommended that the ADAS Code of Practice be adapted to accommodate co-operative systems.
2. It is recommended that an insurer/reinsurer be invited to become a stakeholder in the SAFESPOT project.
3. It is recommended that the project builds upon insurers' interest in telematics, as seen in the e-call system, by working with them to create a business case for their involvement in co-operative systems.
4. It is recommended that OEMs review and comment on the contractual matrix created in the SAFESPOT project to enhance its commercial relevance.
5. It is recommended that the project takes note of the transmission of "so-called" useful information given out by drivers on radio stations and is aware that, behind the scenes, to avoid liability on the part of

the radio stations, in-depth checks are made to ensure that the information can be relied upon.

- **Feedback and conclusions**

Speaker: Han Zwijnenberg (TNO)

It has been decided to formulate different scenarios to cover a range of potential deployment scenarios. The comments from the stakeholders at the workshop already indicated interesting insight with respect to these scenarios.

The level of information provided in the conference hand-out and the BLADE presentations is directed to the level of users of the SAFESPOT system represented by automobile clubs, road operators and safety organisations. It was assumed that a number of these representatives would not have extensive information of SAFESPOT. To attract the representatives of these organisations to the event, special effort has been made to include the relevant people in the email listings for the invitation to the workshop.

During the sessions participants made recommendations regarding the deployment: the need to maintain activities after the end of the first round of cooperative projects in SP6; the need for further research in areas of basic technologies (impact on safety, environment), harmonization and standardization, HMI, cooperative FOT, but also non-tech issues as a Code of Practice, a restoration fund (liability). These aspects contribute to build an updated framework for future research that is needed to complement the existing developments.

The individual conclusions of the parallel sessions were presented by the session moderators after all participants returned to the plenary hall. The overall results of the Part C are summarized in the following list and are drawn on two levels:

- beyond the SAFESPOT project level
- on the level of the SAFESPOT project

Project level:

- Stakeholder interaction leads to better insight and better advice (the report on preliminary recommendations D6.4.5 will incorporate the recommendations as formulated within the parallel sessions).
- There are still a lot of choices to be made and input is required from SP6 Work Packages (Cost Benefit Analysis (CBA) and Business Models) to create better insight.
- A question is posed whether Traffic Safety is a public issue or a private/market issue or both, this question will be partly analyzed within SP6.

Beyond SAFESPOT project:

- There is a need for a “reduction of complexity” (technical, organisational) to meet a better understanding of SAFESPOT applications and functions in order to assure SAFESPOT is

experienced the same for all involved actors. Also there is a need to explore the real cooperation between actors, especially since consensus needs to be reached on several topics

- Furthermore the SAFESPOT *community of interest*, led by a person or a board of experts could speed up (and keep running) the deployment process. The following needs for fluent deployment were also identified:
  - need to build up the momentum
  - need to explore other stakeholders for the SAFESPOT Business Case
  - need to coordinate actions between stakeholders
  - in this process all stakeholders interested in the deployment can work together.

From the first session a non technical view on the SAFESPOT system as it is envisaged now was discussed, together with a number of technical and user related issues.
One of the results of the discussion was that it has effects for business planning in terms of positioning in the market and liability because of the specific limitations of the service.
Concerning the deployment aspects some interesting scenarios were mentioned which require a good analysis of the impacts and judgment of the cost and benefits. These aspects will be investigated in the current BLADE work on assessment and evaluation and business models.
The role of insurance was also discussed and a lot of stakeholders expressed the view that insurance companies could lower their premium rates. But what they will get in return is still to be defined. Up to now there seems to be no clear role for insurers in the chain of delivery and benefits are vague.
Furthermore, in different areas a number of choices still have to be made regarding functional, organizational, and legal or contractual perspectives.
Since a number of stakeholders need to be involved in making these choices, it seems to be crucial to make a start with the organization of a community of interest, dealing with several aspects as Business planning, European roll-out, technical standardization, harmonization of laws, communication and promotion.

The main result of the parallel sessions is the fact that stakeholders are interested in the deployment aspects of cooperative safety systems. Some representatives from large metropolitan areas (POLIS members, regions) see possibilities for early deployment within 5 years, especially in the field of commercial vehicles (Public Transport and Logistics).

The results of the workshop are already integrated in the recommendations report D6.4.5, which will be updated when a number of topics with respect to CBA and Business modeling have been analyzed more in depth. Furthermore the recommendation to include telecom operators and insurers in the value chain will be investigated in the Business Modelling work package. The question if safety is a public or private good will be analysed in close cooperation between the work package on assessment and evaluation and the business modeling work package.

2.1.5. Keynote Speech: EUCAR perspective on cooperative systems

Keynote speaker: Alessandro Coda (EUCAR)

Figure 3: Mr. Alessandro Coda speaking at the workshop

Mr. Alessandro Coda, Research Coordinator of EUCAR, presented the background of the “Intelligent car initiative” and highlighted the effects of such initiative to the quality of life for all European citisens.
The mission statement of EUCAR was presented which aims to ”Strengthen the Competitiveness of the European Automobile Manufacturers through Strategic Collaborative R&D”.
This is carried out by:

- Identifying, formulating and prioritizing the common R&D needs;
- Interacting with the European Commission, national bodies and other key stakeholders in order to represent, promote and communicate these common R&D needs;
- Initiating, supporting and monitoring impact studies, R&D projects and programmes.

The actual research projects on safety and mobility that are supported by EUCAR have been presented in the framework of the EUCAR Programme Board of Integrated Safety and Mobility. Mr. Coda presented also a roadmap of the research needs in the area of Integrated Safety as defined by the different EUCAR related Working Groups.
The presentation concluded with the description of the future research focus of the integrated safety area which include:

- Cooperative HMI: the cooperative concepts open new challenges to develop new HMI strategies
- Cooperative FOT: the new concepts and systems developed within this set of projects (SAFESPOT, CVIS, WATCH-OVER) need to be tested
- Cooperative systems basic technologies e.g. communication protocols, security issues, new advanced positioning systems (GALILEO), dynamic maps etc.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Keynote.pdf)

2.1.6. Closing and Conclusion of 1st day

Speaker: Angelos Amditis (ICCS)

The 1st day of the workshop was summarised by Angelos Amditis by ICCS.
In short, SAFESPOT and WATCH-OVER are two EC co funded projects:

- dealing with preventive safety;
- using cooperative means and tools;
- working with V2V, V2I communication and other key technologies;
- producing key applications both for infrastructure and vehicles but also for Vulnerable Road Users.

There is a framework of projects both EC co-funded and national which all work on the area of cooperative systems. Cooperative technologies include a wide variety of systems and quite a long list of research questions. This calls for a wide collaboration of all the related stakeholders. Moreover, there is a need to increase collaboration and integration and to reduce potential overlaps and fill in the gaps. As identified during the workshop already a good framework of cooperation has been established among the major running projects on cooperative systems.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_1_Conclusions.pdf)

2.2. Day 2

2.2.1. Keynote Speech: The European Union approach towards cooperative systems for safer and more efficient transportation environment

Keynote Speaker: Irmgard Heiber (European Commission)

Figure 4: Mrs. Irmgard Heiber addressing workshop's participants

Mrs. Irmgard Heiber, one of the three Project Officers of the SAFESPOT Integrated Project, presented the European Commission activities towards integrated safety and cooperative systems.
The benefits of the cooperative systems were presented, which include:

- increased road network capacity;
- reducing congestion and pollution;
- shorter and more predictable journey times;
- improved traffic safety for all road users;
- lower vehicle operating costs;
- more efficient logistics;
- improved management and control of the road network (both urban and inter-urban);
- increased efficiency of the public transport systems;
- better and more efficient response to hazards, incidents and accidents.

Mrs. Heiber also referred to the Intelligent Car Initiative as one of the i2010 Flagship Initiatives. The objective of the Intelligent Car Initiative is to improve the quality of the living environment by supporting ICT solutions for safer, smarter and cleaner mobility of people and goods.
The actions towards having smarter vehicles on smarter European roads were also proposed:

- Stakeholders should work towards an open, pan-European, standardised and interoperable Communications Architecture for Cooperative Systems.
- The Commission will continue to support further R&D under the ICT priority on Co-operative Systems in the time frame 2009-2010.
- The Commission will continue to work with the Radio Spectrum Committee in supporting the teams to establish a solution to the spectrum related issues.

The future research needs recognised by the European Commission include:

- Need to cover area of clean and efficient road transport
- Field operational test of cooperative systems

Concluding the presentation Mrs. Heiber highlighted the needs for realising the potential of ITS including Co-operative Systems:

- Common pan-European Architecture and Deployment Model (Architecture Task Force).
- Policy support through the Intelligent Car and the eSafety Forum and its Working Groups (with Socio-economic Impact studies) and the ITS action plan.
- Joint work on standards between ISO, IEEE, ETSI, CEN, IETF and Projects.
- International Cooperation and harmonisation.
- Spectrum Allocation at 5.9 GHz.
- Field Operational Tests.
- Continuation of RTD in Cooperative Systems.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_2_Keynote.pdf)

2.2.2. Interactive Sessions

After the keynote speech Roberto Brignolo (CRF) introduced the interactive working groups that followed. The Working groups sessions were held in parallel in different rooms. The working groups aimed to encourage the discussion on enabling and disabling factors for the deployment of cooperative systems and to facilitate the identification of future needs for R&D.

- **Session 1. Ad hoc dynamic networks: towards a common architecture**

Moderator: Achim Brakemeier (DAIMLER)

The issues discussed in this session concerned the VANET architecture and its scope, the data fusion, the scalability and the standardisation. The topics of discussion evolved around the following issues:

Scope of Architecture
In SAFESPOT numerous ITS stations (vehicles&road units) are cooperating. They establish cooperative awareness by transmitting periodic messages. The stations share common resources, i.e. the same communication channels.

The architecture should describe how these resources are used, considering:

- **Basic fairness**
  All stations have equal rights to access the channels.
- **Priority handling**
  How to deal with emergency messages.

- **Congestion control**
  General policies to ensure that the VANET (Vehicle Ad hoc NETwork) works even with many vehicles.
- **Scalability**
  How does the system behave in low and dense traffic scenarios.
- **Stability**
  Consider delays when communicating via multi hop communications.
- **Data Fusion**
  When aggregating information from different sources, the information should converge. A consistent view of the environmental conditions and the traffic scenarios is necessary (via Local Dynamic Maps).
- **Interoperability**
  The format of exchanged messages needs to be standardized, at least as basic message set (beacons and emergency messages).

Standardization
SAFESPOT supports important standardization activities, in cooperation with:

- COMeSafety, CVIS, COOPERS; SEVECOM projects
- C2C-CC;
- ETSI TC ITS.

The related standardization activities in course are focused on the definition of a common European architecture for cooperative systems. Special attention is paid to the allocation of the dedicated communication frequency band and common protocols.

Test and Validation
It has been highlighted that a key point for standardization is the definition of clear and reliable certification procedures. In the time frame of the SAFESPOT project this activity will be supported by simulations.

Results
The workshop strengthens the central role of the LDM and the effort to come to a common object model and harmonized message descriptions. Furthermore the cooperation of SAFESPOT with COMeSafety, C2C-CC and ETSI TC ITS is the key factor for the Vehicle Ad hoc NETwork design and development as core enabling technology in the SAFESPOT project.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_2_Session_1.pdf)

- **Session 2. Technical platforms and local dynamic maps**

Moderator: Christian Zott (BOSCH)

Christian Zott presented the definition of the SAFESPOT 'platform'. The SAFESPOT platform will communicate with add-on components (data sources, clients,...) and shall serve as reusable modules for future ITS projects, supporting application development.

The first implementation (from Bosch and TeleAtlas called PG-LDM) is based on open PostgreSQL/PostGIS database which comes with drivers and libraries for Linux and Windows, allowing remote clients accessing the data base via LAN (TCP/IP). Therefore the API will be available for Linux and WindowsXP. SP1 data fusion framework is written in C++ using Qt library.
The Data fusion architecture is valid for all configurations (different vehicles, sensors, etc.), but the component instantiations will depend on the configuration.

The SAFESPOT infrastructure based platform basically follows the same functional architecture as SP1 but sensor availability / installation depends very much on particular spots. There are four types of sensors: Laserscanner to detect/track vehicles, camera for moving vehicles and especially VRUs, RFID to pickup moving vehicles, innovative distributed wirwless micro-sensors. The situation refinement depends very much on the applications and the sensor configuration, i.e. some components exist only for specific applications.
The objective is to integrate all fusion functions in one control unit. The inter-module communication is message-based.
The infrastructure gateways do not only acquire data but distribute also information and warnings, e.g. to variable message signs (VMS).
A discussion on modularity and open (standard) interfaces of fusion modules was triggered by G. Waniliek. At least during SAFESPOT's implementation phase the internal data fusion interfaces have to be open and published to developers, but later they may be seen / handled as proprietary by suppliers to develop specific business cases.
A discussion on error handling, traceability and responsibilities (liability) was triggered by M. Robery (Thomas Miller). It led to the agreement that this is a crucial and critical issue which needs more focus for product development. SAFESPOT 's platform architecture is expected to support fault analyses and the identification of error sources and responsibilities. Some kind of long-term logging (data storage) seems to be necessary to enable post hazard analysis. Currently, “Esposytor” is seen as the SAFESPOT device which can provide at least mid-term logging (e.g. some minutes in vehicles) at major component level, as reported by M. C. De Gennaro (Magnetti Marelli).

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_2_Session_2.pdf)

- **Session 3. Applications of cooperative systems**

Moderator: Fabien Bonnefoi (COFIROUTE)

The objective of this session was to discuss the current and future road applications made available by cooperative systems. About thirty people attended this session coming from various companies and public administrations.
The session started with a short presentation. European projects Coopers, CVIS, SAFESPOT and PReVENT were introduced together with their

applications and technological solutions. Then a more general presentation of current cooperative systems topics (enforcement, toll collection, traffic flow control and optimization, comfort, safety etc.) and communication technologies was provided. To conclude this introduction, a list of open questions was asked to the audience. Here is an overview of those questions:

- What is a cooperative application (as seen from the point of view of the final user)?
- Which are the added values for the user – the road operators – the car makers – the society (environment – traffic jams - accidents etc)?
- How to deploy cooperative systems?
  - Problem of a minimal equipment rate (the quality of service depends on equipment rate)
- How to ensure long term usage of cooperative systems?

The first part of the discussion was focused on the possible evolution of cooperative systems and their applications. Enabling technologies already exist and the expected improvements of existing systems are multiple. Furthermore, the cooperation of vehicles and infrastructures enables new safety related use cases. It was also stated by a participant: "*Evolution to cooperative systems seems natural and evident like the emergence of P2P systems on the Internet".* To conclude this first part of the discussion, possibilities in pollution reduction were evocated. Environment is seen as a big motivation for European cities and the overall society. It was said that: *"Even if cooperative systems didn't solve totally the problem, it is a very important part of the puzzle".* It enables traffic flow optimization, flexible taxes solution and so on.

The second part of the discussion was about the different entities involved in cooperative systems (public authorities, car manufacturers, road administrators, etc.) and motivation of the different possible users. Two main groups of users were identified: the drivers and the public authorities. The problem of the motivation of the user was asked: are motivations of drivers compatible with cooperation needs? How to motivate the users? It appears that a clear answer to those questions needs more in depth analysis. Local authorities (mainly cities) seem very motivated: they know what they need (traffic optimization – pollution reduction – protection of vulnerable road users etc.). But they need to have a reliable evaluation of the potential impact and tangible demonstrations of the systems before taking a decision.

To conclude, it seems that cooperative applications are very promising, but the involvement of multiple actors is needed for the deployment. Therefore, it is critical for projects like SAFESPOT and WATCH-OVER to define a common architecture with other European projects which enable a different range of cooperative applications.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_2_Session_3.pdf)

Session 4. Communication technologies for vulnerable road user detection

- **Moderator: Luisa Andreone (CRF)**

The session initiated with a definition of a picture that relates to each other the SAFESPOT and the WATCH-OVER communication technologies, their use and their complementarity. This definition is essential in light of the future exploitation of the two projects as it is a clear fact that if the communication technology cannot be the same (for incontestable reasons) then there is a clear need to understand how the impact on future vehicles will be.

The following picture describes the overall view of the interconnections between the SAFESPOT and the WATCH-OVER technologies:

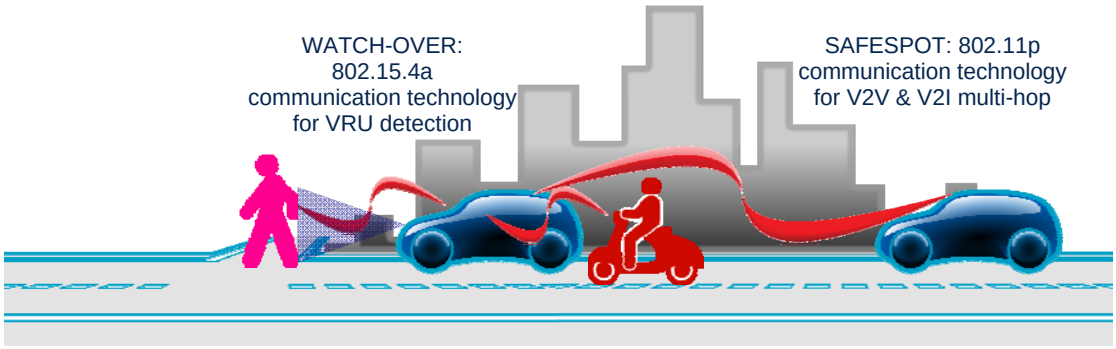

Figure 5 An overview of the interconnections between the SAFESPOT and the WATCH-OVER Communication technologies

Session members listed the requirements for the communication technology to be used for VRU (Vulnerable Road Users) detection:

- low cost: acceptable cost for a wearable device
- low power consumption
- precise relative positioning
- low complexity
  - low latency to guarantee real time
  - real time communication protocols
- high reliability of the signal recognition as objects should be unambiguously and securely identified

Session members then compared the C2C communication technology IEEE.802.11p (that is the one used in SAFESPOT) with these requirements.

The IEEE.802.11p radio technology has the following main characteristics in respect to WATCH-OVER requirements and in general in respect to VRU detection:

- no actual affordable cost for devices to be used by vulnerable users;
- high complexity of the communication protocol (this characteristic is not problematic to be used for WATCH-OVER);

- no actual affordable power consumption for devices to be used by

vulnerable users;
- no precise distance measurement (should be integrated with positioning systems);
- high reliability of the signal recognition (as for WATCH-OVER, network nodes should be unambiguously identified).

For the aforementioned motivations today the C2C technology is today not usable for the purpose of VRU detections.
Therefore the overall picture of future deployment of cooperative systems should take into account the fact that there will be one low cost communication technology for the VRU detection application and one C2C technology for the propagation of all safety critical information that can and will include also the presence of VRUs in dangerous positions when detected by the VRU detection application.

The communication technology for the VRU detection has been then main issue of discussion in the remaining part of this session. The proposed technologies include:

IEEE.802.15.4a
- Acceptable accuracy & cost;
- currently numerous VRU scans cause an overload of the receiver.

UWB Ultra Wide Band
- based on 5,8 GHz,
- low power consumption;
- range limited to less than 10 m;
- standardization still in course;
- cost still high;
- lack of availability of HW platforms that can be exploited on vehicles.

Active reflector RFID
- Acceptable distance information up to around 10 to 20 m [ref. AMULETT German funded project];
- direction should be calculated by at least 2 on vehicle sensors.

ZigBee
- Very low cost;
- it is a narrow band so accuracy below 1 m is not affordable without precise self localization.

Therefore the choice done by the WATCH-OVER project that the selected IEEE.802.15.4a communication technology sounds still valid and consistent. However further research is needed with emerging communication devices that are really low cost to meet future deployment.

In any case all potential problems of interference with other applications

should always be investigated before taking a final decision.

The relevant presentation is found at Annex I
(SF_WO_Workshop_Annex_I_Day_2_Session_4.pdf)

2.2.3. Workshop Closing and Conclusions

Speakers: Luisa Andreone and Roberto Brignolo (CRF)

At the end of the sessions, in the plenary hall each session moderator drafted the conclusion of the respective sessions. The project coordinators also closed the workshop by warmly thanking the participants for the very interesting discussions they initiated and the feedback they provided to the projects.

3. Conclusions

The innovative results of the SAFESPOT and WATCH-OVER project can only have a significant impact to the European road safety if their advantages and potential of safety improvement is widely communicated. This will be achieved through the dissemination activities that are focused both to the public and to key stakeholders of the area, such as academic organizations, OEMs, Car manufacturers, national and European authorities etc.
The SAFESPOT and WATCH-OVER workshop aimed to achieve this goal by reaching the expert's group and presenting their concept and expected results.
The two day program included a variety of presentations for all aspects of the cooperative systems development, implementation and market potential. Invited speeches for related projects also complemented the picture of the respective research within Europe. At the same time, the keynote speeches, kindly held by Mr. Alessandro Coda and Mrs. Irmgard Heiber provided an interesting perspective of the research on cooperative applications, from the EUCAR and from the European Commission point of view respectively.

On the other hand, the 118 participants that showed interest to participate, were very keen to provide feedback to the members of the consortium on different issues, according to their expertise, and to discuss all open issues for the projects' development and implementation course. This valuable inputs, originating from the key-stakeholders companies is going to be taken into account and eventually influence the projects' future activities.
Thus, it can be concluded, that the workshop not only succeeded in reaching a variety of selected experts from Europe and in disseminating the projects' achievements so far and expected results, but it also contributed to receiving valuable experts' opinions on the open issues revolving their future work.

Annex I Workshop's presentations

The workshop's presentations are available in separate PDF files. These can also be found to the on-line project's website at the URL:
http://www.safespot-eu.org/pages/page.php?mm=3&sm=7

The following table includes the presentation titles and the respective file names.

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<tr><td rowspan="5">Plenary Session
PART A - Projects Overview
Moderator: Angelos Amditis (ICCS)
Future scenarios of vehicle to vehicle, vehicle to vulnerable users, vehicle to infrastructure, infrastructure to vehicles applications for road safety</td><td>SAFESPOT project overview, Achim Brakemeier (DAIMLER)
SF_WO_Workshop_Annex_I_Day_1_Part_A _Overview.pdf</td></tr>
<tr><td>SAFESPOT infrastructure based applications, Fabien Bonnefoi (COFIROUTE)
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<tr><td>SAFESPOT vulnerable users applications, Laurent Jacques (VOLVO)
SF_WO_Workshop_Annex_I_Day_1_Part_A _VUA.pdf)</td></tr>
<tr><td>WATCH-OVER overview and applications, Professor Wanielik - TUC
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<tr><td>SAFESPOT vehicle based applications, Giulio Vivo (CRF)
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Moderator: Achim Brakemeier (DAIMLER)
Related projects on cooperative systems in the European Research Area will be presented</td><td>Cooperative Systems - an overview of WILLWARN and German national projects, Gerhard Noecker (DAIMLER)
SF_WO_Workshop_Annex_I_Day_1_Part_B _WILLWARN.pdf</td></tr>
<tr><td>Cooperative systems and safety aspects : the CVIS IP approach, Paul Mathias (SIEMENS)
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<tr><td>The TRACKSS project, Roberto Brignolo (CRF)
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Interactive sessions on the deployment of cooperatives. Realising the SAFESPOT potential</td><td>Introduction to SAFESPOT Sub - Project BLADE, Han Zwijnenberg (TNO)
SF_WO_Workshop_Annex_I_Day_1_Part_C _BLADE.pdf</td></tr>
<tr><td>A non technical view on the SAFESPOT system Arjan van Leijsen, (TNO)
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<tr><td>Facing the challenge of reduction and allocation of deployment risks (Han Zwijnenberg, TNO)
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<table>
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<tr><td></td><td colspan="2">Facing the challenge of sharing responsibilities and allocating risks (Kiliaan van Wees, Free University of Amsterdam)
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Moderator: Phillippus Feenstra (TNO)</td><td>Session 2: Full scale deployment of SAFESPOT
Moderator: Tom Alkim (Rijkswaterstaat)</td><td>Session 3: Responsibilities of actors in the chain
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<tr><th colspan="2">Tuesday 22 January 2008</th></tr>
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<tr><td colspan="2">Keynote: The European Union approach towards cooperative systems for safer and more efficient transportation environment, Heiber Irmgard (European Commission)
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<tr><td colspan="2">Introduction to interactive working groups, Roberto Brignolo (CRF)</td></tr>
<tr><td rowspan="4">Interactive Parallel Sessions
Discussion on enabling and disabling factors for the deployment of cooperative systems
Identification of future needs for R&D Participation by road operators, suppliers, drivers (FIA), OEMs, project representatives</td><td>Session 1. Ad hoc dynamic networks: towards a common architecture
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<tr><td colspan="2">Plenary Session: Conclusions and Closing, Roberto Brignolo (CRF) and Luisa Andreone (CRF)
• Session conclusions
• Workshop conclusions</td></tr>
</table>

Annex II Workshop's participants

SAFESPOT & WATCH Over Workshop Participants			
No	**Name**	**Family name**	**Company**
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8	Francesco	Bellotti	Univ. Genoa
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11	Achim	Böckelt	BMW
12	Miro	Bogdanovic	Daimler AG
13	Fabien	BONNEFOI	COFIROUTE
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15	Achim	Brakemeier	Daimler AG
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17	Roberto	Brignolo	CRF
18	Christopher	Brown	Robert Bosch GmbH
19	Adrien	Charpentier	Valeo Vision Systems
20	Alessandro	Coda	EUCAR
21	Carsten	Dalaff	DLR
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27	Karlheinz	Dörner	MAN Nutzfahrzeuge AG
28	Irene	Ducci	Piaggio & C. SpA
29	Tim	Edwards	MIRA Ltd
30	Basel	Fardi	TU Chemnitz
31	Philippus	Feenstra	TNO
32	Peter	Follin	Lindholmen Science Park
33	Mirko	Franceschinis	ISMB
34	Kay	Fürstenberg	IBEO Automobile Sensor
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36	Luca	Gioanola	ISMB
37	Gabriele	Giraudo	Magneti Marelli Sistemi Elettronici
38	Juan	Gomez	Development Santiago
39	Klaus	Gresser	BMW Group Forschung und Technik
40	Miguel Angel	Guijarro	AT4 wireless
41	Irmgard	Heiber	European Commission
42	Gerald	Heimann	ZENTEC GmbH
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49	Laurent	JACQUES	Volvo
50	Willi	Kiefel	Valeo Vision Systems
51	Reinhard	Kloibhofer	Austrian Research Centers GmbH - ARC
52	Winfried	König	Robert Bosch GmbH
53	Marcel	Konijn	LogicaCMG
54	M.	Koshida	Mitsui & Co. GmbH Deutschland
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57	Friedemann	Kuhn	Daimler AG
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61	Harald	Lentl	Bosch
62	Kristoffer	Lidström	Halmstad University
63	Lan	LIN	Hitachi Europe SAS
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66	Vincenzo	Maletesta	Nardò Technical Center srl
67	Simonetta	Manfredi	CSST
68	Claus	Marberger	University of Stuttgart IAT
69	Stefano	Marco	CSST
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71	Antonio	Marques	ETRA I+D
72	Norman	Mattern	Technische Universität Chemnitz
73	Marc-Michael	Meinecke	Volkswagen AG
74	Katrin	Meinken	University of Stuttgart, IAT
75	Hammou Abdallah	Mohamed	techniquecom
76	Abdel Kader	Mokaddem	Renault
77	Toine	Molenschot	City of The Hague
78	Jörg	Mönnich	Robert Bosch GmbH
79	Roberto	Montanari	Unoversity of Modena and Reggio Emilia
80	Jonathan	Moore	MIRA Ltd
81	Piero	Mortara	Magneti Marelli Sistemi Elettronici
82	Bart	Netten	TNO
83	Ulrich	Neubert	TU Chemnitz
84	Francesco	Nobile	Nardò Technical Center
85	Gerhard	Noecker	Daimler AG
86	Marian Andrezej	Obojski	Volkswagen AG
87	Michael	Ortgiese	PTV AG
88	Diego	Ortiz de Lejarazu Machín	CIDAUT
89	Christian	Paßmann	Blaupunkt GmbH
90	Mathias	Paul	SIEMENS

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95	JOEL	RECEVEUR	SODIT
96	Maria	Rimini-Doering	Robert Bosch GmbH
97	Marion	Robery	Thomas Miller & Co. LTD
98	Patricia	Rodriguez	ETRA I+D
99	Andy	Rooke	Transport for London
100	Gunther	Schaaf	
101	Roland	Schindhelm	BASt
102	Marius	Schlingelhof	German Aerospace Center DLR
103	Robin	Schubert	Technische Universität Chemnitz
104	Axel	Sikora	sfidk
105	Maurizio	Spirito	ISMB
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107	Riccardo	Tomasi	ISMB
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114	Kees	Wevers	NAVTEQ
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