



Annual Report to Shareholders

Operative year #3

April 1st, 2008 - March 31st, 2009

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Formal issues

The SAFER agreement is running from 060401 which is the formal signing date. The first Stage covered three years and ended 090331. SAFER was inaugurated on June 7 2006 by the Minister of Industry and Trade and was internationally evaluated in December 2008.

The vision of SAFER is:

To enable Sweden to reach world leading competitiveness, by:

- Providing countermeasures to considerably reduce both the number of traffic accidents and the number of fatalities and serious injuries
- Using the multi-disciplinary scientific competence available within SAFER
- Making SAFER a hub for excellence within the international field of vehicle safety

Strategy

The board has formed a strategy to reach the vision of “enabling Sweden to reach world leading competitiveness”. The plan is to build long-term competence in defined Competence Areas necessary to achieve outstanding research project results in chosen Focus Areas. The Focus Areas together form a framework for the projects to be formulated and shaped in the four reference groups.

Presently the six Focus Areas are:

- Incidents and accidents – priorities and effect analysis
- Driver state/action/reaction
- Prediction for accident prevention
- Methods for evaluation of safety systems
- (Safety for) Novel Electric Vehicles and Vehicle Combinations
- Human Models and Biomechanics for all people

Values

SAFER is guided by its vision and its values. The essence of SAFER is that “World class expertise in traffic safety collaborate to save lives”. The values supporting this are shown in the following picture:

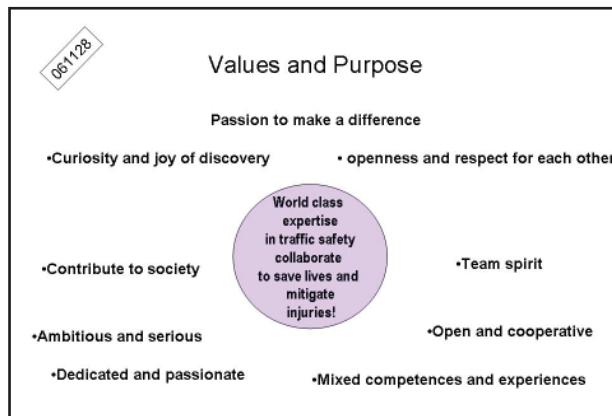


Fig 1. SAFER values

Partners

During year 3 the partners have been: AB Volvo, Autoliv, Chalmers, Epsilon, Folksam, Imego, Lindholmen Science Park, Region Västra Götaland, Saab Automobile, Saab Microwave Systems, Scandinavian Automotive Suppliers, Scania, Swerea/Sicomp, SP Technical Research Institute of Sweden, Swedish Road Administration, Telia Sonera, University of Gothenburg, VINNOVA, Volvo Car Corporation, VTI Swedish National Road and Transport Research Institute, Viktoria Institute and TÖI – the Norwegian Institute of Transport Economics.

Board

The board of SAFER consists of seven members: Jan-Eric Sundgren (Chairman), AB Volvo, Hans Nyth, Volvo Cars, Per Lenhoff, Saab Automobile, Jan Olsson, Autoliv, Pontus Matstoms,

VTI Swedish National Road and Transport Research Institute, Ove Pettersson and Anna Dubois, Chalmers.

There have been 9 board meetings during the third year.

Management

SAFER has two management groups. The operative which consists of the director Anna Nilsson-Ehle, the coordinators Hans Norin, Yngve Håland, Lotta Jakobsson and Prof Per Lövsund (during 2008). The extended management group also includes the Competence Area Leaders Trent Victor (Volvo/Chalmers), Erik Ström (Chalmers), Jan Jacobsson (SP), Mathias Lidberg (Chalmers), Mats Svensson (Chalmers) and from VTI Hans-Erik Pettersson during 2008 replaced by Lena Nilsson in 2009. Meetings for the operative group are held every other week and once a month for the extended.

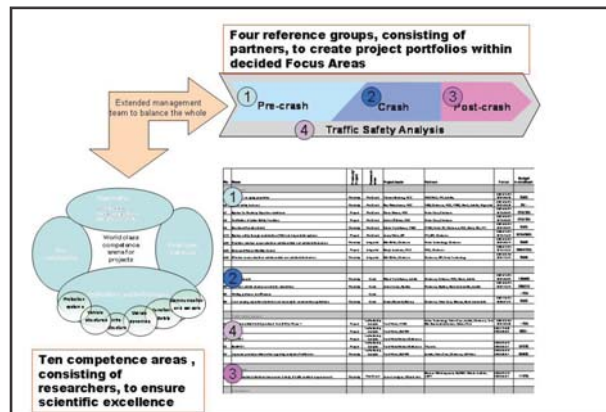


Fig 2. Organisation and management

The implementation of the project management model has progressed. Each project manager is now delivering a status report, including economy, content, major events and risks, every quarter. This is reported per research portfolio and presented at each board meeting.

SAFER research environment

SAFER is renting an office in floor five, Lindholmen Science Park, Lindholmsspiren 5, to be in an area equally open to all of the partners. The office has this year been expanded with a new small landscape for the accident investigation team. Rearrangement has been made to better mirror the competence areas and to improve the working environment. Some 160 people are working in the area part or full time, 45 have this as their only work place.

The definition of “belonging to SAFER” is to have your own key and your portrait in the hallway. The board requested a follow up of everyday presence. A simple count once a day during 2 weeks showed an average of 34 persons, varying from 24 – 46.

SAFER is participating in the planning of next step of the facilities at Campus Lindholmen and Lindholmen Science Park. The assumption is that SAFER will grow according to the statement in the agreement and eventually need around twice the space of today.

A research project “Management on Open Innovation” has started during 2008. The four-year project is funded by Vinnova and aims at researching SAFER as an arena for collaborative innovation. The research is already starting to give input to improvements and to the planning of the new facilities.

SAFER people

Each person belonging to SAFER is employed by a partner. 82 of the 160 “key-holders” are employed at Chalmers, the rest are from the other partners. 27 percent are women.

Of the “key-holders” 25 are academic PhD students and 17 are industrial PhD students thus making the PhD students close to 27 percent of the total staff.

Research programmes - Reference groups

SAFER has four reference groups, one for each research programme and its project portfolio. Members of the reference groups are knowledgeable persons representing each partner (that wishes to participate).

Traffic Safety Analysis with coordinator Dr Hans Norin, Chalmers, has met 5 times during the year.

Main issues has been dialogues in the reference group about the focus areas, and the relationship between the reference group "Traffic Safety Analysis" and the competence area "Real Traffic". Area of Field Operational Tests (FOT) has developed intensively during the year. Some major projects started during the year, SeMiFOT, EuroFOT, and FOT-Net. Three senior researchers, and a number of project workers have been employed, and three more are in the near plan.

In the area of Accidentology a new EU project, DaCoTa started. This project will be a beginning of creation of a common European in depth study database. In this field, two new accident investigators have been recruited.

Activities to build up cooperations within the areas of FOT and Accidentology together with universities, institutes and companies in Japan have been going on, including a trip to Japan for project discussions and a workshop with invited experts from Japan will be held in Gothenburg in September 2009.

Pre-Crash with coordinator Dr Yngve Håland, Autoliv, has met 6 times during the year. Focus areas for the future research has been agreed upon. These are now Driver State/ Action/Reaction, Methods for Evaluation of Active/Integrated Safety Systems, and Vehicle Dynamics of Novel Electric Vehicles. Moreover, external seminars about two types of sensor technologies (far-IR (Night Vision), and automotive radar) have been organized as well as a seminar about wireless real-time communication. Two pre-studies about vehicle-to-vehicle (V2V) and infra-structure to vehicle (I2V) wireless communication were finished. Project proposals in this area are now being prepared.

During the year two new projects have been proposed, one about "Scenario- based testing" and the other about "Safety for elderly drivers". A demonstration of one of the typical dangerous accident/test scenarios will be done at a high level EU-meeting about "Safe and Clean Road Transports" in Gothenburg on October 26-27 2009. Pre-Crash has also been deeply involved in the preparation of the project proposal "Safety for novel Electric and hybrid VehicleS" (SEVS) together with SHC (Swedish Hybrid Vehicle Centre at Chalmers).

Crash with coordinator Dr Lotta Jakobsson, Volvo Cars, has met 7 times during the year. Main issues has been establishing and discussing the new projects and supporting the creation of a human modelling cluster at Chalmers. A large project of safety in the rear seat was started, involving two industrial PhD students, three industrial partners, Chalmers and

collaboration with Children's hospital of Philadelphia. Recently, additional funding from FFI enables an expansion for an additional PhD student within the area.

Three projects in the area of human modelling were started during the year, enabling recruitment of senior and PhD student researchers in the area. A pre-study within the area of whiplash injuries involving nine partners was performed, resulting in preparation of a project proposal for FFI funding. Also, intense activities have been ongoing in preparation of projects within Novel Electric Vehicles.

Post-Crash with acting coordinator Dr. Anna Nilsson-Ehle, has met 4 times during the year. Main issue has been the project "Sensor assisted situational awareness" which is a pilot study on how mobile live video capabilities could improve information sharing and situation awareness in emergency response work. This project is co financed by SAFER and Security Arena (LSP) and partners have been Viktoria institute, Swedish Road Administration, Fire and Rescue Service (FRS), the Emergency Paramedics Service (EPS) and the Traffic and Road Authorities (TRA).

The project renamed itself LiveResponse after the successful completion of the pilot and is now continuing in a phase 2 aim at large scale validation. The Post crash reference group will in Stage 2 focus on projects that use new communication technologies to enhance the possibility to mitigate consequences of accidents. Other post crash issues related to vehicle structures, fire risks and extrication of occupants is transferred to the reference group Crash.

Competence Areas

The current Competence Areas are: Real Traffic, Biomechanics, Road User Behaviour and within the common scope "safety system applications and technologies" Communication & Sensors, Functional Safety, Vehicle Dynamics, Vehicle Structures, Infrastructure and Protective Systems. The competence areas should develop through strong projects, international collaboration, visiting professors and researchers and the participation from all partners.

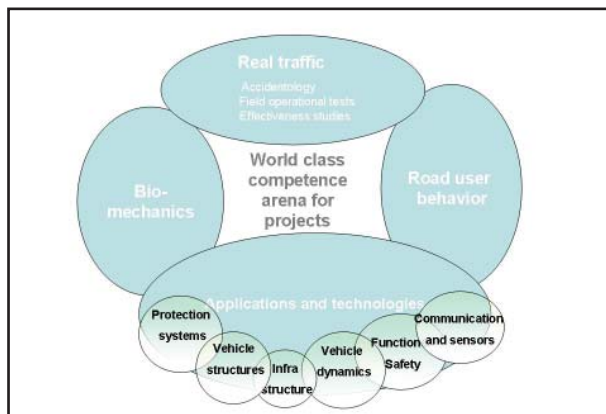


Fig 3. SAFER Competence Areas

SAFER is mainly focusing on pre competitive research such as understanding injury and accident/incident mechanisms, designing models, principals and concepts for counter-measures. When projects move into the competitive phases of system solutions and products SAFER is not involved in projects but supplies good researchers to the industry.

SAFER projects also address evaluation of systems in real traffic and SAFER should develop high competence in the area of traffic systems and prediction of impact from different counter-measures.

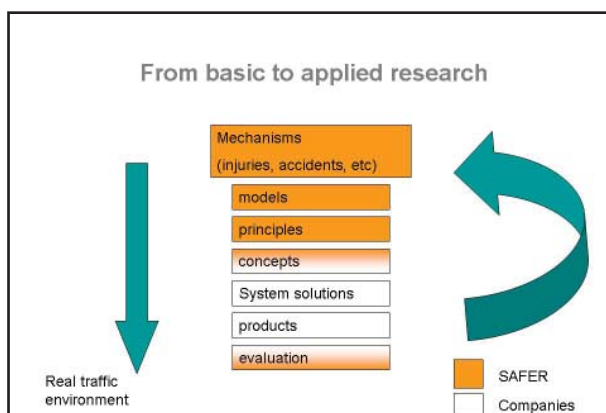


Fig 4. SAFER involvement in R&D process

Projects

The SAFER research environment contains both projects that have no SAFER funding, most of them started before 060401, which are called “associated” and projects that are initiated (and to some degree financed) by SAFER. In total, more than 60 research projects are, or have been, connected to SAFER, 20 associated and 41 SAFER. During SAFERs third year the board of SAFER has decided to approve 15 pre-studies and projects. SAFER-researchers are engaged in several applications for projects within EU 7th frame programme and have during the year been granted six projects.

To develop the competence areas in SAFER three projects have been started. These are named K# and their purposes are to support activities enhancing the forming of competence or collaboration. This in turn can be used to prepare for coming project calls.

Pre-Crash

A11 Assess FP7 (EU Project)

A12 SAFER Electric Vehicles (Pre-study)

A13 Scenario-based testing of Pre-Crash Systems (Project)

Crash

B5 Rear Seat Safety for Short Occupants in Side Impact (4 yrs to 5th percentile female) (Project)

B6 Understanding factors influencing WAD outcome (Pre-study)

B7 Improved injury prediction using HBM (Project)

B8 Development of active HBM in frontal impact situations step 1 (Project)

B9 Scalable and Tuneable Human Body Model (THUMS) (Project)

B10 FimCar FP7 (EU Pre-Study)

Post-Crash

E2 Sensor assisted situational awareness (Project)

Traffic Safety Analysis

C5 DaCoTa FP7 (EU project)

C6 FOT-Net (EU project)

C7 Accident in-depth studies using DREAM-methodology (Project)

C8 Field data acquisition and analysis methods for car safety development (Project)

Competence Area Projects

K4 Safety for novel electric vehicles

Other:

Adjunct professor Mike Regan in the area of human behaviour, 3 years part time

Pre-studies and projects decided during year #1-2:

(Finished projects in italics)

AD1 Enhanced/Robust electronic stability control (Pre-study)

AD2 Real-time wireless communications vehicle-vehicle and vehicle-infrastructure (Pre-study)

AD3 Enhanced/Robust stability control (Project)

AD4 Wireless communication vehicle-vehicle and vehicle-infrastructure (Pre-study)

A2 System safety through combination of HMI and dependable systems (Pre-study)

A4 Safety for an ageing population (Pre-Study)

A5 Active safety test area (Project)

A6 Positioning system for outdoor safety testing (Pre-study)

A7 Systems for roadway departure avoidance (Project)

A8 Verification of active safety functions (Project)

A9 Emotional Reaction Model (Pre-study)

A10 System safety through combination of HMI and dependable systems (Project)

B1 Multiple events (Pre-study)

B2 Common vehicle structure models for simulations (Project)

B4 Load carrying capacitors for crash-worthy applications (Pre-study)

CA1 Establishment of Field Operational Test (FOT) Activities at Safer (Pre-study)

CA3 TSS Naturalistic Field Operational Test (FOT) (Project)

C1 FESTA (EU project)

C2 EuroFOT (EU project)

C3 SemiFOT

C4 Japanese pre-study collaboration regarding analysis of traffic data (Pre-Study)

C5 DaCoTa (Pre-Study)

E1 Sensor assisted situational awareness (Pre-Study)

Other:

IVSS-financed project INTACT

Visiting professor in the area of human modelling, 3 years part time

Competence areas, year #1-2:

K1 BasFOT

K2 Establishment of Road User Behaviour activities at SAFER

K3 Vehicle Dynamics

International cooperation

SAFER is to find and encourage different ways of cooperation. One obvious is within the research projects which, according to guidelines from the SAFER board, always should involve at least one academic and one industrial part.

During this third year several EU projects have started with SAFER as one of the partners. Due to this SAFER has developed knowledge about and routines for handling such responsibility. The international collaboration within the research area "Field operational tests/ Naturalistic driving studies" includes two European and one US project and has led to a MoU with the US programmes SHRP 2.

SAFER is increasing the active on the European scene through the membership in EARP and ISN and the director has been active in ERTRACs scenario work on Road Transport Safety for 2030.

SAFER is now involved in the Vinnova project Global Links. The outcome of the project will be a strategy for creating global links for SAFER, including an action plan for the first phase of the execution of the strategy.

The aim of the strategy is to

- To create strong links to world class research environments, an inflow of international researchers and a high rate of exchange of young researchers in order to strengthen Swedish safety research, innovation ability and global competitiveness
- To achieve a reputation as a highly innovative melting pot where collaboration between industry and academy is outstanding
- To be able to manage and contribute to international networks
- To be highly credible thus influencing the international research agenda

In parallel with interviews and workshops performed to develop the strategy, contacts are established with partners in Japan and France. A delegation from SAFER will visit Japan in May and in September representatives from e.g. JARI, ITARDA and several universities will visit SAFER in order to further strengthen the collaboration initiatives. The automotive cluster Mov'eo in France would like to collaborate with SAFER in a project on Elderly drivers. These two groups have previously been favorably considered by SAFER and will constitute the first pilot cases of the Global link project.

SAFER as JRU (Joint Research Unit)

An important pre-requisite for collaboration is that SAFER, in spite of its character as competence centre with no legal status of its own, can be a partner in projects. This was solved during 2007 and SAFER is in EU 7FP accepted as a JRU – a Joint Research Unit.

This means that SAFER has the possibility to draw on the competence from its 22 partners and that in a given EU-project partners that so wish can act together as SAFER with Chalmers as the legal host. EU project partners within the JRU SAFER have to be explicitly

identified. In some EU projects SAFER partners are independent partners (e.g. Volvo Cars, Chalmers and VTI can enter into EU projects as separate partners), and yet in other EU projects specifically identified SAFER partners as part of the JRU SAFER (e.g. SP and VTI as 3rd party partners to Chalmers).

JRU SAFER is presently partner in 4 EU-projects.

Economy

The agreement clearly states each partners undertaking. The project model established for SAFER monitors the resources used, both cash and in-kind. Each partner has to sign-off resources used. A procedure has been established and implemented. The last sign-off for Stage 1 will be completed during May 2009. Estimated result for the operational cost is msek 4,5 for year 3 which is within approved budget.

Seminars and conferences

SAFER has established weekly lunch seminars for internal cross-fertilization of knowledge and ideas. 63 seminars with more than 105 speakers have been conducted. Half-day workshops with all staff are held 3-4 times a year.

Another SAFER ambition is to hold external seminars on related topics with interesting researchers. Initiatives often come from the reference groups. During SAFER year #3 eight external seminars have been conducted on topics such as child safety, wireless communications in traffic safety, night vision, automotive radar technology and the role of hybrid electric vehicles in achieving stringent CO2 targets.

Amongst others, Dave LeBlanc, Jim Sayer and Scott Bogard from UMTRI University of Michigan Transportation Research Institute, USA, Dr Geetam Tiwari, Chair Associate Professor Transportation Research and Injury Prevention Programme (TRIPP), India, Professor Kazuya Takeda, Nagoya University Japan and Richard R. Kent, Associate Professor at University of Virginia (UVA) - Center for Applied Biomechanics, have been invited to speak. The seminars have been highly appreciated.

SAFER will participate in the international ITS 2009 conference in Stockholm.

SAFER had a seminar session at the yearly Tylösand Conference in September. In January 2009, SAFER had a session at Transportforum in Linköping, with researchers connected to SAFER attending.

In September 28-29, 2009, SAFER and INRETS will host a conference in Gothenburg, called "First International Conference on Driver Distraction". The conference is the first of its kind and many internationally well-known researchers within distraction and inattention are in the scientific board. The call for abstract is out now. Conference website: <http://www.chalmers.se/safer/driverdistraction-en/>

An application is under preparation regarding the possibility to host one of the coming ESV conferences (2011/2013).

Communication

SAFER has also in year #3 been written about in news papers and partners magazines. Examples are Göteborgs-Posten, Dagens Nyheter, Ny Teknik, VINNOVA Nytt, Chalmers magasin, VTI Aktuell. Other papers in which SAFER has been mentioned include, Göteborgs-Posten Motor, Computer Sweden, Dagens Industri, GT, Expressen Motor, and Bilsport.se.

During year #3, SAFER has released two press releases, both which attracted much attention. One was released in July, and was about the EU FP7 Field Operational Tests project "euroFOT". More than 45 articles were published, and radio reported about the new research methodology F.O.T.

The second release was about the accident analysis project "INTACT". Around 20 newspapers published news articles about the project, and national TV and radio made reports.

In conjunction with the Transportforum conference in January 2009, a researcher at SAFER were interviewed on the radio about her traffic safety project.

The SAFER web site is on the Chalmers portal. The website is continuously being updated and extended. See www.chalmers.se/safer. SAFER has an internal document area on the Chalmers intranet with relevant information, minutes of meetings etc.

Research reports

Dissertation and licentiate thesis

During SAFER's operative year # 3, the following PhD Students working in the SAFER environment have written their dissertation thesis:

Fredrik Törner, Department of Computer Science and Engineering, Chalmers: "On Hazard Identification and Safety Cases In the Automotive Domain" (2008). No. 77992

Mats Landervik, Department of Applied Mechanics, Chalmers: "Multi-Scale Homogenization of Thin Foam Layers Represented by Shell Elements" (2008). No. 74604

Jesper Sandin, Department of Applied Mechanics, Chalmers: "Aggregating Case Studies of Vehicle Crashes by Means of Causation Charts: An Evaluation and Revision of the Driving Reliability and Error Analysis Method" (2008). No. 73377

Fredrik Törnvall, Department of Applied Mechanics, Chalmers: "A New Shoulder for the THOR Dummy Intended for Oblique Collisions" (2008). No. 69512

During SAFER's operative year # 3, the following PhD Students working in the SAFER environment have written their licentiate thesis:

Johan Engström, Department of Applied Mechanics, Chalmers: "A model of attention selection in driving" (2008). No. 81554

Sogol Kharrazi, Department of Applied Mechanics, Chalmers: "On Lateral Stability of Heavy Vehicle Combinations: Linking Accident Analysis and Vehicle Dynamics" (2008). No. 74380

Marianne Johansson, Department of Applied Mechanics, Chalmers: "Child Safety in Car Crashes - Three-year-olds in frontal impacts" (2008). No. 74140

David Sandberg, Department of Applied Mechanics, Chalmers: "Analysis and Optimization of Systems for Detecting Sleepiness in Drivers" (2008). No. 73403

Ana Magazinovic, Department of Computer Science and Engineering, Chalmers: "Exploring Cost Estimation Inaccuracy - Why do practitioners still fail to predict the actuals?" (2008). No. 73759

Sarbaz Othman, Department of Applied Mechanics, Chalmers: "Influence Of Road Feature Variables On Accident Rate" (2008). No. 72926

Daniel Skarin, Department of Computer Science and Engineering, Chalmers: "Techniques for Tolerating Soft Errors in Brake-by-Wire Systems" (2008). No. 70943

Anders Lindgren, Department of Computer Science and Engineering, Chalmers: "Driving safe in the future? Driver Needs and Requirements for Advanced Driver Assistance Systems" (2007). No. 65717