Car-to-X Communication
Future of Motor Insurance

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Car-to-X Communication: Promising Applications Existing

- Car-to-Car (C2C) and Car-to-Infrastructure (C2I): Growing field of research
- Promising use cases aiming at increased safety, comfort, and traffic efficiency
- There are still technical and economic hurdles to take

Convergence through “Field Operational Tests”

- Numerous research projects ongoing in Europe and worldwide
- Standardization initiatives have been initiated
- Now: Convergence of the so far heterogeneous research landscape and start of “Field Operational Tests” (FOTs) on a European scale

Significant Strategic Implications for Different Industries

- What are the most promising business cases?
- What are chances for software firms such as SAP?
- What are potential implications for insurance companies?
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Car-to-X Communication to Improve Traffic Safety and Efficiency

Source: BMW Forschung und Technik GmbH
Prototyping at BMW Forschung und Technik (Dr. Kosch): C2X Intersection Assistance on Real Road (2/3)

Source: BMW Forschung und Technik GmbH
Prototyping at BMW Forschung und Technik (Dr. Kosch): C2X Intersection Assistance on Real Road (3/3)

Car-to-X Communication

FAHRZEUG VON RECHTS!
Prototyping at BMW: Intersection Assistance, Communication with Traffic Infrastructure

Source: BMW Forschung und Technik GmbH
Car-to-Car Communication to Increase Traffic Efficiency

Source: BMW Forschung und Technik GmbH
## Technical and Economic Challenges Still Ahead

### Technical
- Frequency band regulation
- Transmission protocol specification (across different OEMs)
- Information diffusion strategies
- Security
- Connectivity to backend services
- etc…

### Economic
- In case of some applications: “Who is the customer”
- Can government support market introduction through regulative order?
- Success of C2C applications depends on market penetration
- Who will do the initial investment into C2I infrastructure?
- Wo can be an independent entity for governance purposes?
- etc…”
Agenda

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Numerous Research Projects Being Conducted Worldwide

USA
- VII
- CICAS

Japan
- AHSRA
- VICS
- UTMS

Standardization
- ISO
- IEEE
- ETSI

National
- Invent
- NOW
- INFONEBBIA

Europe
- CVIS
- GST
- Prevent

Legislation
- Member States

C2C-CC

Frequ. Regulation
- CEPT
- ITU

Stakeholders
- Suppliers
- OEMs
- Insurance
- TelCos

COMeSafety
**COMeSafety, C2C-CC, and the eSafety Forum as Most Relevant Institutions**

- **EU Specific Support Action**
  - **Members:** Audi, BMW, Fiat, Daimler, GZVB (Traffic Transport Telematics, Renault, and Volkswagen)
  - **Goals:** Coordination and consolidation of research results, eSafety Forum support, worldwide harmonization, frequency allocation, dissemination

- **Industry Consortium**
  - **Members:** OEMs, Techn. Prov. (Deplphi, Hitachi, NEC. etc.), and Academia (TUM, DLR, Fraunhofer FOKUS, INRIA, HTW, etc.)
  - **Goals:** Create a European industry standard for C2C communication, and to enable the development of active safety applications

- **Joint Platform (EU Commission)**
  - **Members:** Open to all road safety stakeholders
  - **Goals:** promote and monitor the implementation of the recommendations identified by the eSafety Working Groups, and to support the development, deployment and use of intelligent integrated road safety systems
Field Operational Tests (FOTs) Being Launched World-Wide

FOT efforts worldwide:

- USA: VII, CICAS
- Japan: Smartway & more FOT activities

Field operational tests (FOTs) in Europe

In the past some larger scale trials have already been performed, e.g.

- Netherlands: ADAS-Systems like ACC, LDW,…
- Sweden: Intelligent Speed Adaptation (ISA, 10000 vehicles)
- Germany: Fleetnet

In many European countries FOTs are planned like in

- Germany: SIM-TD for cooperative systems and field trails for RTTI
- France: test site VOLTAIRE
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Car-to-X Communication Use Cases

**Car-to-Infrastructure**
- Data exchange with roadside beacons and traffic signs
- Access to backend services
- Forwarding of data between vehicles

**Car-to-Car**
- Collision warning
- Crossing assistance
- Local danger warning (road conditions, approaching emergency vehicle, etc.)
- Real-time traffic jam warning

**Back-end Services**
- **OEM**: Remote Diagnosis, Vehicle Relationship Management, and more
- **Insurance**: Intelligent pricing (Pay-as-you-Drive) and more
- **Fleetmgmt.**: Intelligent coordination of logistics/car rental
- **Traffic Management**: Safety, efficiency, and electronic toll payment
- **Business Applications**

Picture from [http://www.cvisproject.org](http://www.cvisproject.org)
SAP as First Business Software Provider in the Emerging Telematics Ecosystem: The Pre-Drive C2X Project

### Consortium

- Most relevant European OEMs
- Technology Providers
- For the first time, a business application provider: SAP

### Project Goals

- Specification of common European Car-to-X architecture
- Simulation, Development and Testing of prototype
- Preparation for large-scale European cooperative system

### SAP Involvement

Focus on Infrastructure-related Part of the Architecture
- Vehicle Relationship Management
- Management of Embedded Software
# Project Consortium

## Automotive OEMs
- BMW
- DAIMLER
- OPEL
- Audi
- CENTRO RICERCHE FIAT
- VOLVO
- VW

## Technology- and Software Providers/ Academia
- SAP
- Siemens
- DLR
- imec
- NEC
- Hitachi
- eict
- UNIVERSITY OF SURREY
- DELPHI
- RENESAS
- Pivi
- INRETS
- Fraunhofer
- Universität Karlsruhe (TH)

## Management & Market Research
- Pbs
- Institut für Offene Kommunikationssysteme
- Kennis voor zaken
- Universität Karlsruhe (TH)

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**SAP**

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Vision: A common architecture for Car-to-Car and Car-to-Infrastructure

Picture from http://www.car-to-car.org/
SAP Focus in the Pre-Drive C2X Project: Identification and Evaluation of C2I-Based Application Scenarios

**Vehicle Relationship Management**

1. Provide information about vehicle (e.g., expendable items, tire pressure, temperature) available in car/sensoric systems (CAN Bus)
2. Transfer data to central data center / VOW
3. Route data to the corresponding system/application (“SaaS”)
4. Conduct preventive maintenance (e.g., optimize wheel pressure for truck fleet, schedule service order), roadside assistance or improve long-term product design

**Benefits**

- **Car Drivers**
  - Higher availability of assets for car drivers
  - Immediate error recovery

- **OEMs**
  - Access to invaluable data over the whole product lifecycles
  - Increased customer satisfaction
  - Opportunity to sell value-added services
C2X Communication may have implications on the insurance industry

- Will car insurance be one of the services offered electronically via the C2X communication infrastructure?
- Will the customer require tailor-made pricing?
- Aren’t switching costs significantly lowered through high transparency and direct comparability in an electronic market?
- The C2X communication infrastructure may become a new major sales channel which implies operating costs (whoever will be the operator)
- Potential shift away from sales premises and their organization towards increased organizational effort for pricing strategies, orchestration of internal as well as potential external services as reaction on an insured event
- With an access to the C2X infrastructure, the provision of additional services is facilitated
- Diverse insurances will discover the new market
- Will OEMs become additional competitors? With their exclusive access right to their products’ interfaces, the economic potential in this after sales market may be attractive
- ...
Thanks for your attention