

SYSTEMATIC THOUGHT LEADERSHIP FOR INNOVATIVE BUSINESS

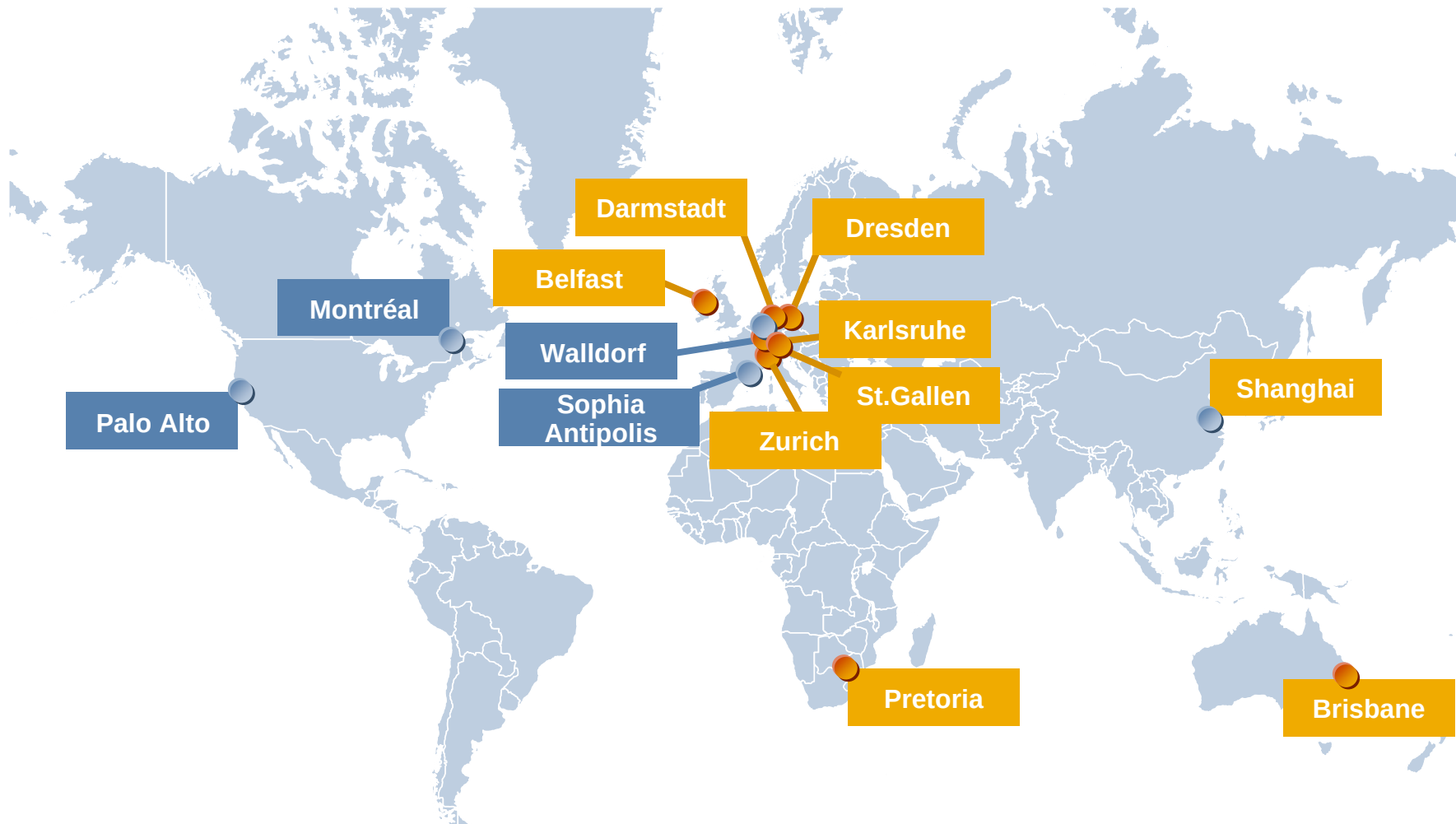


Car-to-X Communication

Future of Motor Insurance

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SAP Research Global Network



- SAP Labs-based Research Centers
- Campus-based Engineering Centers



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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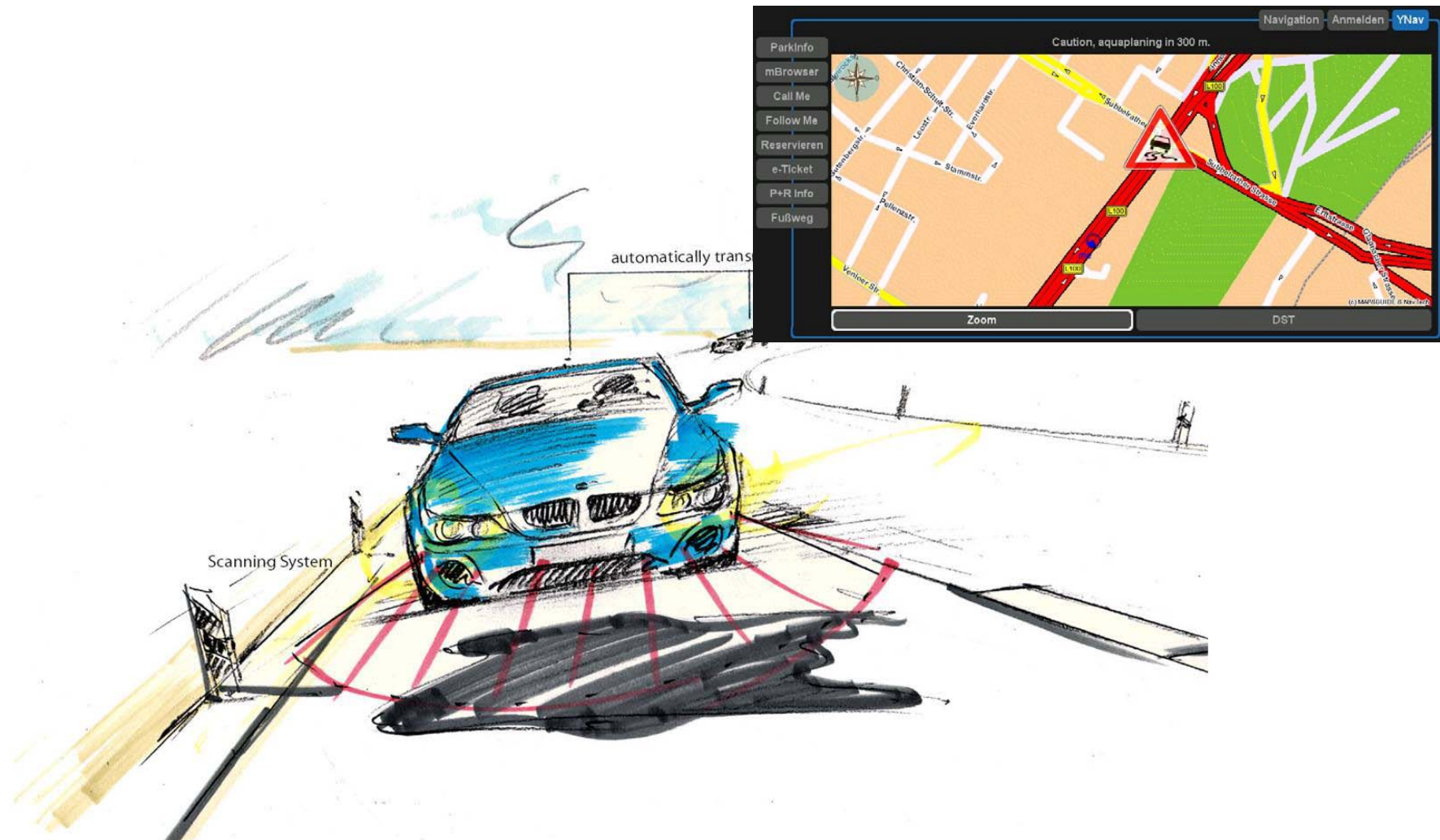
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Car-to-X Communication to Improve Traffic Safety and Efficiency



Prototyping at BMW Forschung und Technik (Dr. Kosch): C2X Intersection Assistance on Real Road (1/3)



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



Car-to-X Communication

1

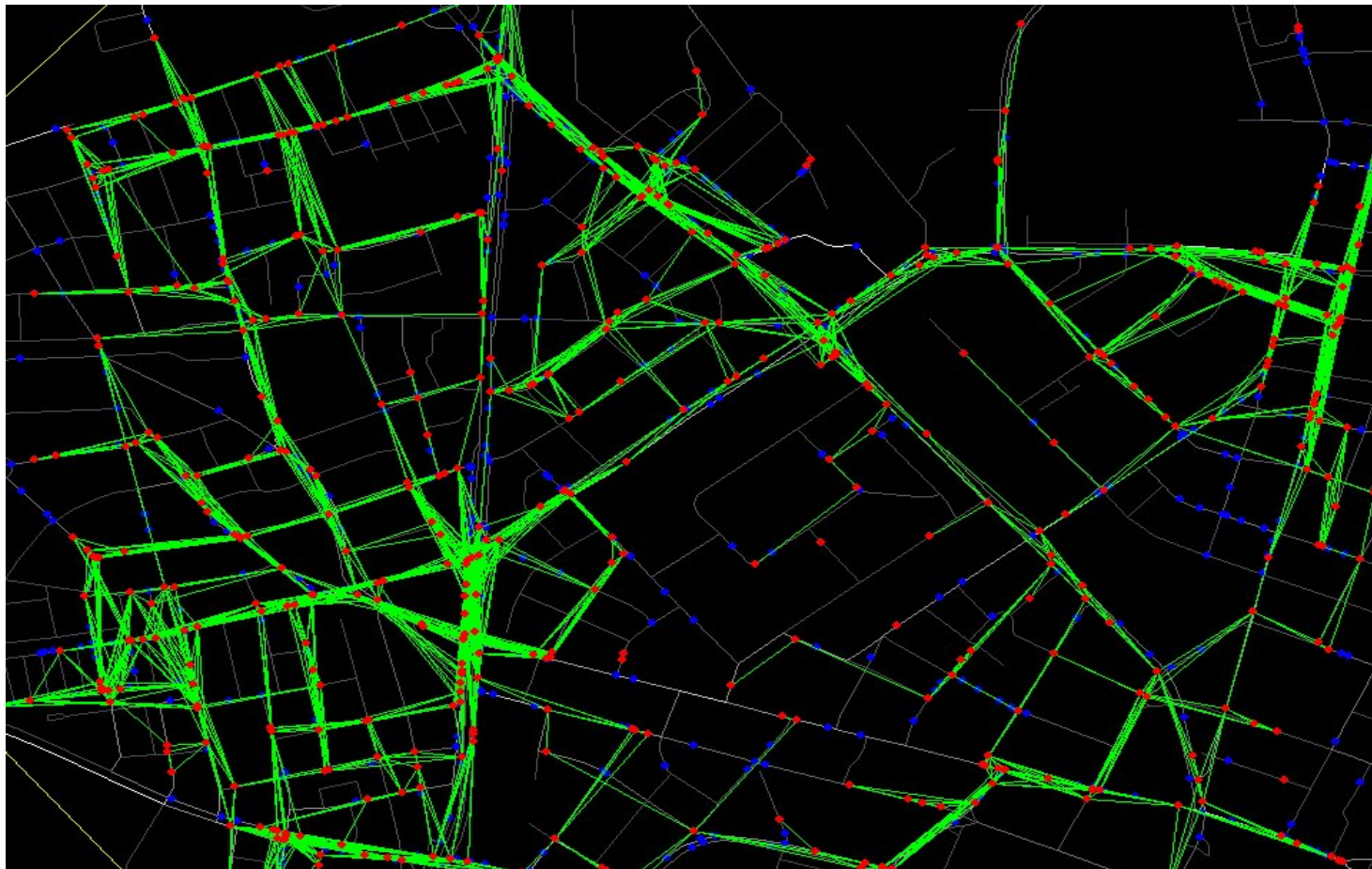
2



Prototyping at BMW: Intersection Assistance, Communication with Traffic Infrastructure



Car-to-Car Communication to Increase Traffic Efficiency



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?
- Who can be an independent entity for governance purposes?
- etc...

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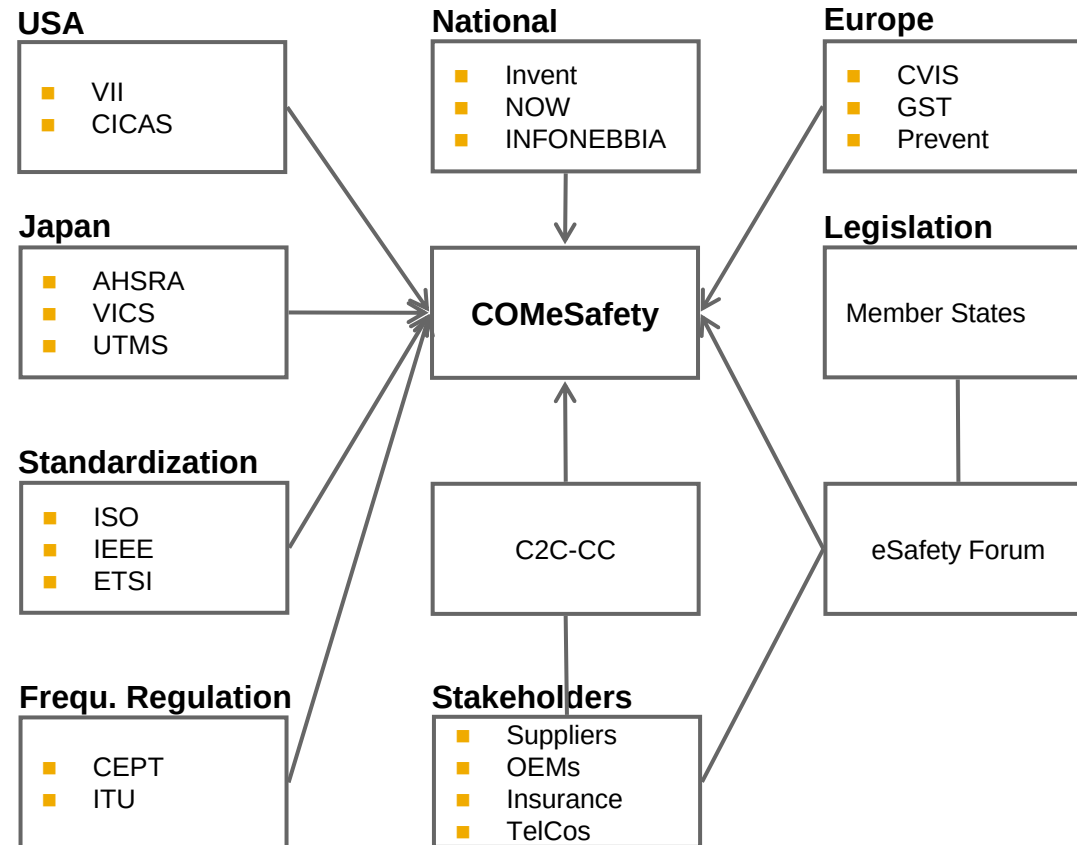
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Numerous Research Projects Being Conducted Worldwide



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 trials for RTTI
- France: test site VOLTAIRE

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Car-to-X Communication Use Cases



Car-to-Infrastructure

- Data exchange with road side 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**

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



DAIMLER



CENTRO RICERCA FIAT



Technology- and Software Providers/ Academia



NEC

HITACHI
Inspire the Next

eict



DELPHI
Driving Tomorrow's Technology

RENESAS
Everywhere you imagine.



Fraunhofer Institut für Offene Kommunikationssysteme



Kennis voor zaken



Universität Karlsruhe (TH)
Research University • founded 1825

Management & Market Research



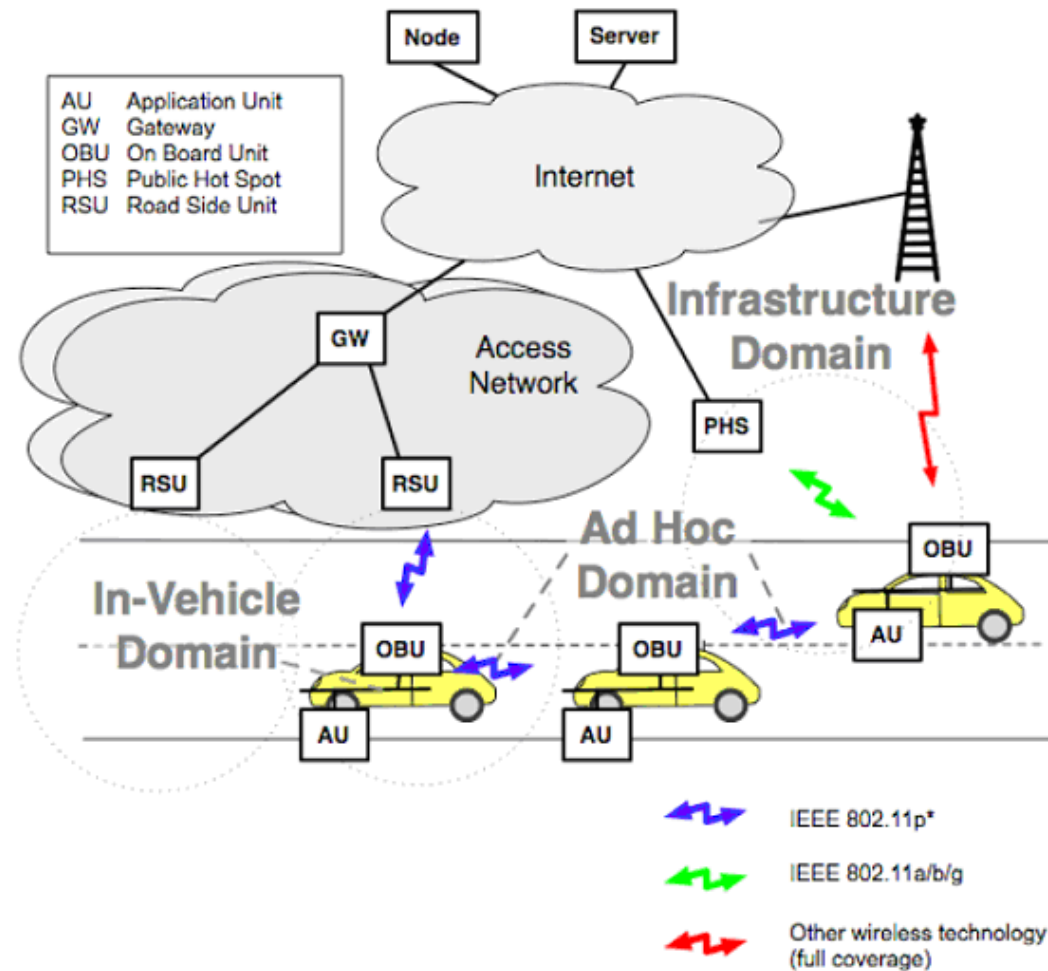
Marktforschung & Beratung



Institute of
Management
Consultancy



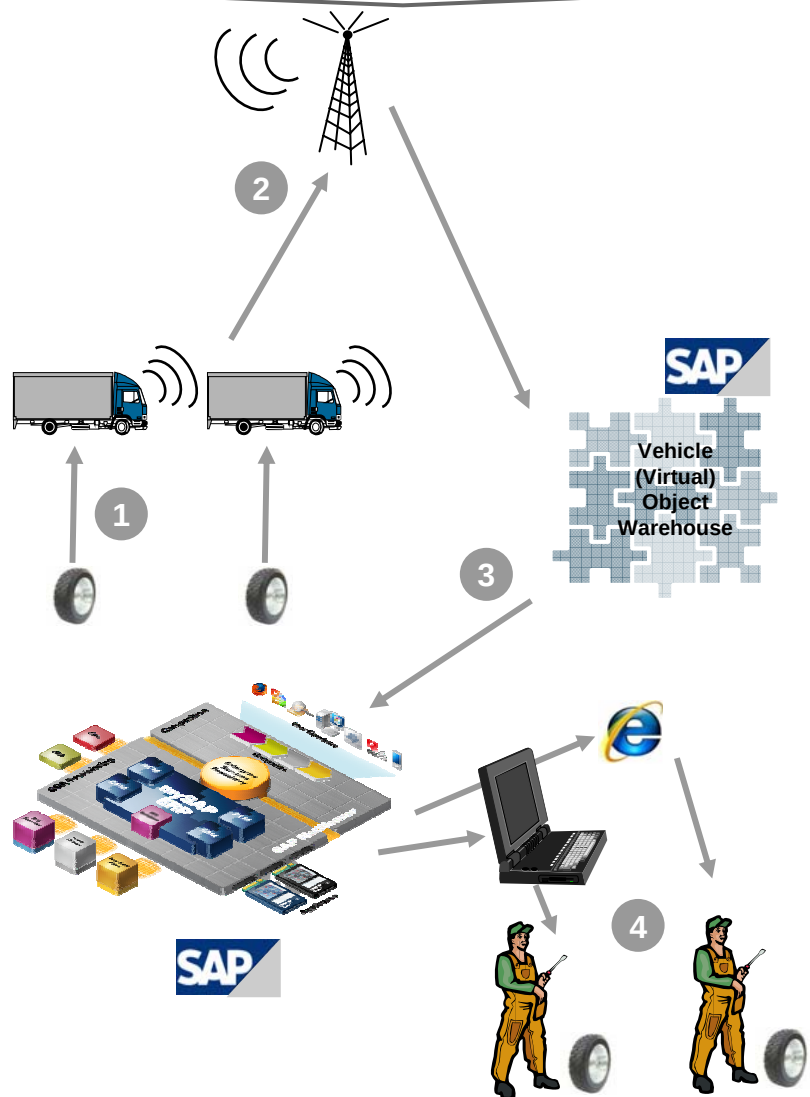
Vision: A common architecture for Car-to-Car and Car-to-Infrastructure



SAP Focus in the Pre-Drive C2X Project: Identification and Evaluation of C2I-Based Application Scenarios



Vehicle Relationship Management



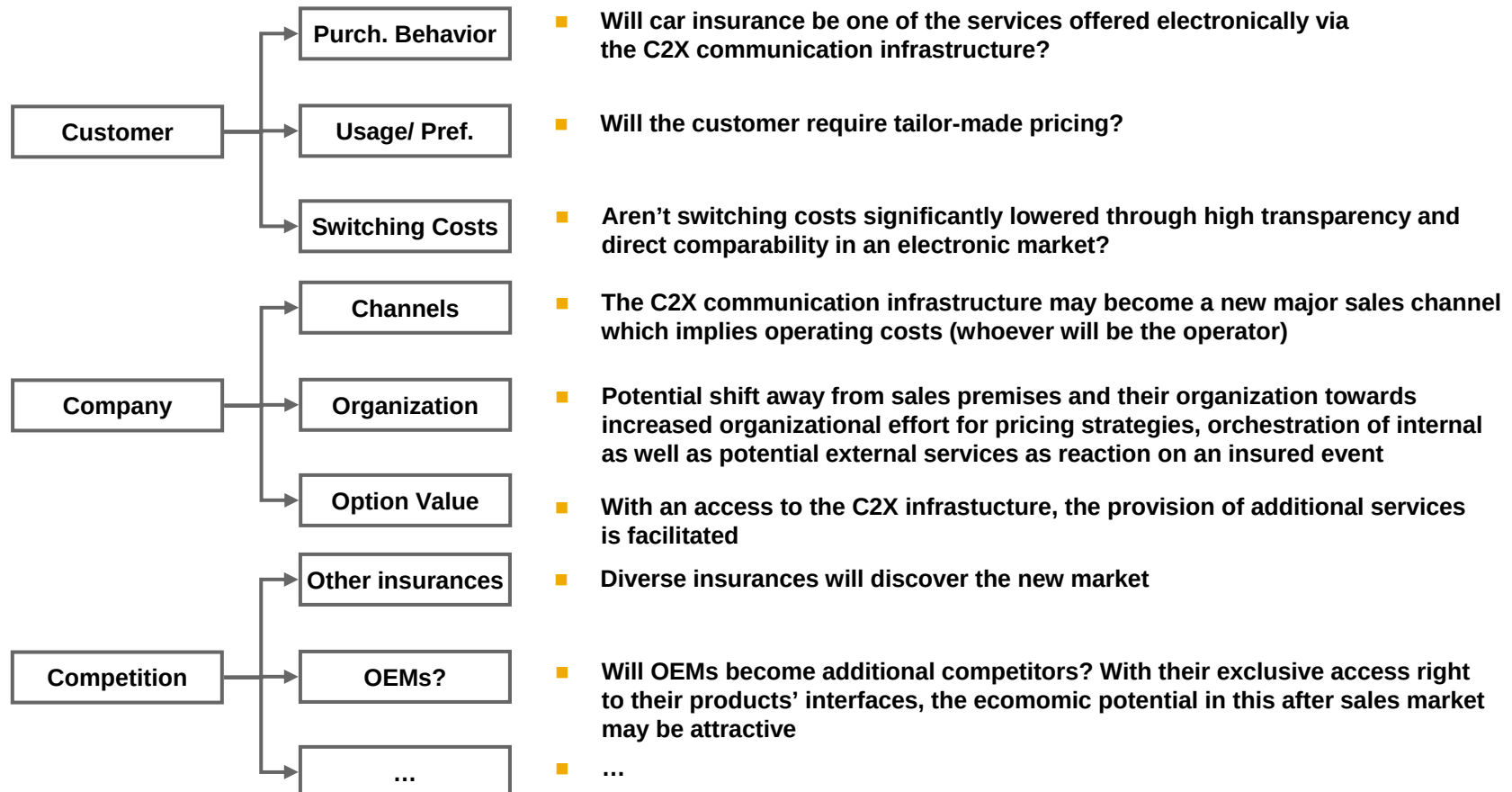
Description of services

- 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



Thanks for your attention

