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The Role of the automotive industry in standardization activities and the business perspective of co-operative systems

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The role of the OEMs in ITS standardization
Standardization of co-operative systems ...

... is important for OEMs because:

- It is not enough if vehicles of the same manufacturer talk to each other.
  - Vehicles of all major makes need to collaborate in order to overcome penetration problems and to ensure system benefits.
- System components must be cheap, system architecture must built on as many existing in vehicle components as possible.
  - OEMs will be faced with significant cost which can at best be partly reimbursed from customers if they equip many (if not all) vehicles produced with C2X communication.
- OEMs are liable for safety related applications but not only.
  - Communication will always be an “unreliable sensor”.
  - Standardization of a minimum functional range for safety related applications generates legal certainty for OEMs.
  - Data privacy and security need to be ensured.

OEMs contribute significantly to worldwide standardization of co-operative systems

- through participation to the standardization bodies such as ETSI TC ITS or IEEE
- through membership in C2C-CC
- through contribution to the EU/US Task Force on harmonization of ITS standards
The OEM approach towards co-operative systems

• In the past C2X used to be seen exclusively as WLAN based direct communication between vehicles and/or infrastructure.
• Recent trials have shown that for various applications between vehicles an indirect communication link based on mobile communication via an Internet server can be a complement if not a viable alternative in some cases.
• Integration of mobile communication also allows for commercial services.

• Hence from OEMs` point of view ideal co-operative systems consist of both communication modes, but mobile communication based solutions are seen as a first step in implementation.
The ITS station reference architecture
Jointly developed by OEMs and electronics industry

- Developed for safety and traffic related applications
- Enables commercial services as a basis for viable business models
- Basis for ITS standardization in ETSI TC ITS
- Harmonized between European projects
- 4 Types of ITS Stations:
  - Vehicle
  - Roadside
  - Personal
  - Central
- Includes ISO CALM approach
Sustainable, efficient and competitive mobility in Europe is a key role of innovation. Accelerate and coordinate the deployment of ITS in road transport, including interfaces with other transport modes.

**ITS Action Plan**

**EC Spectrum Decision**
5.9 GHz (2008/671/EC)

**EC Mandate 453**
Standards required for interoperability

**ITS Directive** (2010/40/EU)
Legal framework for the coordinated implementation of ITS in Europe

**C2C-CC**

**ETSI TC ITS**

**CEN TC 278 WG16**

**ISO**

**Set of commonly agreed standards for Co-operative ITS**

**System implementation**

Areas with strong OEM involvement

Areas with some OEM involvement

Outcome of standardization process
Daimler focus in ITS Standardization at ETSI

- EN 302665 Communication Architecture
- ES 202 663 European Profile for G5
- TS 102687 PHY/MAC Congestion control
- TS 102792 Mitigation DSRC 5.8/5.9 GHz
- TS 102724 ITS G5 channel configuration
- TR 102 637-2 BSA*; Definitions
- TS 102 637-2 BSA*; CAM
- TS 102 637-3 BSA*; DENM
- EN 302895 Local Dynamic Maps

Involvement of Daimler in the standard development with focus on
- G5 communication
- Messages for safety and efficiency applications

* Basic set of applications
From standards to systems and underlying business models
Business model considerations for co-operative systems

Assumptions:
- **Penetration problem** does not really lend itself to sell communication-based driver information and warning systems as optional equipment.
- Customer is (for all we know) not willing to pay (much) for communication-based safety functions.
- European OEMs may decide jointly to implement C2X technology into many if not all new vehicles at a given time.
- C2X introduction may see **benefits in safety ratings**.
- Data generated by C2X communication can be used as a basis for **attractive commercial services** if the vehicle owner agrees.

Consequences:
- C2X communication is **no unique selling proposition**, however, not having it may be a market disadvantage.
- Standards for co-operative systems must consider data sales and commercial services as a means for re-financing investments into co-operative systems.
Estimated system costs
System layout based on ITS station reference architecture

Estimated bill of material: 150€
+ overheads for development costs, reserves for contingencies, costs of marketing, ...
Estimated final price: 400€

* Consumer market prices, non-automotive grade

Please note: This is a rough estimate based on the costs of components for consumer devices!
One potential solution for cost reimbursement

Functional split of the system
• Use of safety applications and selected mobility applications based on DSRC and mobile communication free of charge
• Advanced mobility applications, commercial services, internet and telephony via mobile communication for a fee

Provision of access to C2X data for commercial service providers for a fee:
• Single payment of service provider to OEM in the start up phase
• Fee depending on amount of data provided, when system is in large scale operation

System Costs
- 400€

Reserve
- 100€

Customer
- 200€

Service Provider
- 200€

OEM
- 100€

+100€ reserve to allow for customers, who do not want to use additional applications.
Cash flow options for commercial services

Idealized representation

Backend Server

Internet

OEM

3rd party service providers (B2C)
e.g. Telco

OEM-customer access fee

Service usage fee

$ $

3rd party service providers (B2B)
e.g. SAP

OEM-customer access fee

OBU subscription fee

$ $

RSU
Road side unit

OBU
Onboard Unit

AU
Application unit

Data/info transfer

Money transfer

$ $
Improved claim management for insurance companies

An example for commercial services on the basis of data generated by C2X communication

Problem addressed:
- All German vehicle insurers lose every year up to 10 Million Euro due to delays in claim management (Source: iLab at University of St. Gallen, Schweiz)
- HDI, Zürich, Mercedes Benz Bank and GDV confirm this estimate

Solution:
- Dedicated data service for automated launch of claim management based on C2X data as soon as an accident happens.
- Insurers willing to pay 10% of the savings as service fee
- Software solutions already under preparation at various software houses
Examples for Further Commercial Applications

Financial Services
- Pay as you Drive
- New lease concepts
- Payment services
  - Parking garages
  - Fuel stations
  - ...

Fleet management

Customer Relationship Management
- Improved processes in workshops
- Better contact with customers

Media Download

Social Networks

...
Conclusions

- OEM participation to ITS standardization seems crucial because standardization is decisive for success or failure of co-operative systems.
  - ITS standardization is more than just describing technical aspects. Future business models for ITS are highly depending on what is standardized now!
  - Aspects of market introduction need to be considered right from the beginning
- Only through participation to standardization activities OEMs can ensure that their technical and economic interests are considered properly.
  - Participation to C2C-CC working groups is useful, but not enough to ensure that evolving standards reflect OEM positions.
  - Burden of standardization activities cannot be born by two or three OEMs alone.
  - More OEMs should contribute to standardization activities of ETSI TC ITS and accept leading roles in there.
- Standardization process needs to be finished soon to keep timeline for implementation.

- Daimler believes in the benefits of co-operative systems technology and its economic viability. We are driving worldwide implementation.
- Therefore we continue with our support of ETSI TC ITS and participate to the relevant standardization activities.