Liability of ITS services for connected cars from the perspective of a service provider

Dr. Johannes Springer, Head of Technology and Business Development Strategic Business Area Connected Car, Deutsche Telekom/T-Systems

Brussels, June 13th, 2012
Agenda.

1. Connected Car –
   - Market Overview & Positioning of Deutsche Telekom.
   - Profile Strategic Area Connected Car.

2. Technology and Services –
   - Building blocks and architecture of telematics platforms.
   - Connected Car Services

3. Liability –
   - How to ensure service quality.
   - Design principles: „State of the Art“.
   - Process Guidelines
Connected car – what’s happening in the market?

We connect the vehicle with its environment and the driver with his private and professional contacts, emails and data.

- Market penetration of mobile Internet > 25% in 2012
- Vehicle is the last “white spot“
- Need for driver-specific service and operating concept

- Smartphones threaten highly profitable navigation business
- Differentiation via brand-specific online services
- Customer retention and loyalty

- E-Call 2015: Embedded SIM compulsory in every car
- 1 Mio E-Vehicles in 2020
- CO2 fleets targets per OEM*

- Need to optimize utilization
- Reduction of warehousing
- Increase in production downtime due to more traffic jams

* Original equipment manufacturer

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T-Systems
Deutsche Telekom’s Strategic Area Connected Car addresses the automotive industries’ challenges for online services.

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Automotive Industry</th>
<th>Business Customers</th>
<th>Consumers</th>
<th>Government / Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need to manage customers and online services</td>
<td>Need to integrate backend services into cars &amp; trucks</td>
<td>Utilize enabling services at fleets and logistics with cloud based telematic solutions</td>
<td>Need to integrate smartphone into car</td>
<td>Need to optimize mobility</td>
</tr>
<tr>
<td>Verticalize project services with car enabling and service provisioning</td>
<td></td>
<td>Generate best synchronisation services consisting of docking, driver interface &amp; car services</td>
<td></td>
<td>Provide vehicles with easy, cost-effective and secure infrastructures based upon licenses</td>
</tr>
</tbody>
</table>

Long-term strategic investment of Deutsche Telekom

**DTAG approach**

- public-

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2012-06-13
References Deutsche Telekom / T-Systems.

- Telematics Service Provider
  - Toll Collect
  - Vlotte
  - MAN
  - Schmitz Cargobull

- Projects
  - BMW
  - Continental
  - Germany
  - China

- M2M & Connectivity
  - Daimler Universal Telematic Plattform
  - BMW
  - FleetBoard
  - Mercedes-Benz
    - Customer Assistance Center Maastricht

- Operation
  - DHL
  - Germany
  - Daimler
  - Shell

- BD & Partnerships
  - Nationale Plattform Elektromobilität
  - Quicar
    - Wir leben Zukunft.
  - T-City Friedrichshafen

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Major building blocks needed for a telematics platform
Operating a platform using existing standards and technologies.

Client

- Operating Standards
- Security Standards
- Application/Service Standards

Embedded

- Standard Architectures, e.g. GENiVi, OSGi, ...

Smartphone

- Existing Platforms, e.g. iOS, Android, Windows, ...

Backend Infrastructure

- Operating Standards
- Security Standards
- Application/Service Standards

Protocol Standards

- http/https
- POP3
- SMTP
- SMS

- Interface Standards

- Standard Architecture
  - OSS/BSS

- Connected External Services

- SOAP
- REST

OMA-DM = Open Mobile Alliance - Device Management, OSS/BSS = Operational Support Services / Business Support Services
OSGi = Open Services Gateway initiative, SOAP = Simple Object Access Protocol, REST = Representational State Transfer
Examples for Connected Car Services. Liability Relevance and business impact.

<table>
<thead>
<tr>
<th>Services</th>
<th>Customers</th>
<th>Liability relevance</th>
<th>Payment and Business Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infotainment</td>
<td>Pol, weather</td>
<td>Driver</td>
<td>for free</td>
</tr>
<tr>
<td>Safety</td>
<td>eCall, SVT</td>
<td>Driver, insurance</td>
<td>Lifetime fee and guarantee safety malfunction</td>
</tr>
<tr>
<td>Comfort</td>
<td>Remote control</td>
<td>Driver</td>
<td>per use /lifetime fee dissatisfaction</td>
</tr>
<tr>
<td>Dealers/Workshop</td>
<td>Diagnosis</td>
<td>Dealer</td>
<td>per vehicle vehicle break down</td>
</tr>
<tr>
<td>Fleet Operators</td>
<td>Track&amp;trace, ecoDrive, logbook</td>
<td>Fleet operator</td>
<td>per vehicle legal Risks</td>
</tr>
<tr>
<td>Mobility</td>
<td>Track&amp;trace, Remote door unlock</td>
<td>Carsharing fleet</td>
<td>per vehicle vehicle lost</td>
</tr>
<tr>
<td>3rd Party</td>
<td>Data tariffs</td>
<td>Driver &amp; telco</td>
<td>Provision minor commercial risks</td>
</tr>
</tbody>
</table>

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Tactics to deal with liability issues

Contractual “Design”

Technical / Procedural Design
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Major Liability problems

- **Functional / Quality**
  - Functional malfunctions
  - Quality problems: values, ranges, thresholds, heart-beats, on/off-distinction, etc.

- **Availability**
  - Service availability by Time (7/24)
  - Service availability by Location

- **Performance**
  - Performance problems: Time lags / process speed, overload, etc.

local / client

central / cloud

Middleware (Platform)  Middleware (Platform)

API  API

Device  Device

Sensor

physical logging

Bus

Services

network

IT-/TC-
Operation

functional logging

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Reference Model for Connected Car.
Design principle „monitoring/reporting“ to handle liability issues.

local / client

monitoring / reporting

Sensor
Device
Middleware (Platform)
API

central / cloud

monitoring / reporting

Services

Management (Platform)
IT-/TC-Operation

network

monitoring / reporting

Bus
Reference Model for Connected Car.
Design principles „sender/receiver receipt“ to handle liability issues.
Example: Remote Door Lock/Unlock.
Testing and Operational Infrastructures
Staging Concept as a Process Framework

1. Step
- Integration
  - Client Services
  - Central Services

2. Step
- Tests
  - Functional
  - Operational (Load/B'Up/Recovery)

3. Step
- Deployment into Production

Integration Platform
Testing Platform
Productive Platform
Summary: Enabling service providers to drive innovation and to accomplish with liability requirements with a portfolio of:

- Flexible and secure hosting environment
- Fast and reliable operation processes based on standards
- IaaS, SaaS or PaaS housing models
- Monitoring and Reporting Processes
- Deployment and Review processes: Staging
- Modular and service-oriented
- Horizontal scalability
- Security & Data privacy
- Transparency and Traceability between Service processes
- Use of COTS and Open Source Software
- Cutting-Edge technologies, e.g. NoSQL
- Future proven

Platform Services
- Device Gateway
- Service Integration
- Portal Framework
- OSS and BSS
- Trust Center (PKI)
- Identity Management
- B2B Interface Integration
- Networking Services
- Monitoring and Reporting Services
Thank you for your attention!