Standards for Vehicle Gateway

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Outline

- Vehicle Gateway for Telematics/ITS Services

- Standards for Vehicle Gateway
  - NM Gateway AUTOSAR
  - OSGi Vehicle Interface
  - Vehicle Gateway AMI-C (ISO 22902)
  - M-VCI (ISO 22900)
  - Car gateway for V2I(MYCAREVENT)

- Conclusions and outlooks
Vehicle Gateway for Telematics/ITS Services

Vehicle

Telematics terminal

Service Provider

Contents Provider

Vehicle Probe Data

Example

Vehicle Probe Data
Collection

Vehicle DB compilation &
Processing

Effective Use Case of Vehicle Probe
Data for Telematics/ITS Services

Location info.

Vehicle Safety Info.

Weather Info.

Vehicle Condition
Data

Vehicle Diagnostics

Velocity info.

Reflection Map info.

Weather Data

Traffic info.

Safety driving info.

Environment info.

Early detection of
accident

Remote
Diagnostics

Information offering to
Terminal(Navigation)

Emergency call
Caution to vehicle around(V2V)

Contact to workshop/maintenance or
nearest facilities

Vehicle Probe Data

Example

GPS

ABS

Air bag

BCM

Wiper

Door

ECM

RPM

Velocity

Brakes
Standards for Vehicle Gateway

- AUTOSAR: PDU Router/Signal Gateway for CAN, LIN, FlexRay Interfaces
- OSGi -VI: Vehicle Interface for Telematics Service Platform
- ISO 22902: Modular Vehicle Communication Interface
- ISO 22900: AMI-C VI(Vehicle Interface)
**AUTOSAR Network Management Gateway Functionality**

- Frame-based Gateway (PDU Router)
- Signal-based Gateway (COM)

**AUTOSAR Phase II (2007~2009)**

- Interface standardization on application level
- Telematics API (collecting vehicle probe data)
- Integration with ISO standards and OSGi Vehicle Interface

*Source: AUTOSAR (AUTomotive Open System ARchitecture)*

[www.autosar.org](http://www.autosar.org)
Vehicle Interface in AMI-C

- ISO 22902 AMI-C Architecture
  - Application View: how to provide the standard interface to Apps
  - Structure View: vehicle interface, network, host
  - Functional View: service discovery, system management, security, HMI

- Vehicle Interface (Gateway)
  - Translate Apps request into appropriate messages or protocols
OSGi Vehicle Interface

- OSGi Technology is Universal Middle
- OSGi Vehicle Expert Group
  - Goal:
    - Provide the technical foundation for projects like VII, GST ..
    - Create a business model for service providers, aggregators, and OEMs
  - Major Issues
    - “Off-board” Diagnostics (need vehicle bus type abstraction)
    - Vehicle Interface (VAPI: Vehicle API)
    - Navigation APIs
    - Integration with AUTOSAR defined system
    - Communication Manager for mobile session management

VAPI covers All Layers
Vehicle Sensor Gateway Platform

- **Vehicle Sensor Gateway**
  - Based on AMI-C HOST platform
  - In-vehicle CAN gateway for Interworking with AMI-C Vehicle Interface
  - Adding the Sensor Network (via CAN bus)

Source: Telematics/ITS Technology Workshop in KOREA (2007)
KATECH Sensor Gateway
Korea Automotive Technology Institute
o Modular Vehicle Communication Interface (ISO 22900)

o Motivation
  • Non standardized diagnostic connector in vehicles

o MVCI HW
  • Using by All vehicle manuf. for service outlets and aftermarket

o MVCI SW
  • Standardized APIs to support manufacturer specific service diagnostic applications

o Next Steps
  • Standardized Application APIs for Telematics, Logistics and so on.

Source: ISO 22900 Modular Vehicle Communication Interface
Car Gateway for V2I

- MYCAREVENT for optimizing the European market for automotive services and repair.
- Central Communication Device for managing in-vehicle, inter-vehicle, vehicle-to-infrastructure communication
- Integrated Car gateway with in-vehicle network for collecting and transmitting probe data

Source: MYCAREVENT Project Mobility and Collaborative work in European Vehicle Emergency Networks
Conclusion and outlook

- Telematics/ITS Services need standards framework for collecting vehicle probe data

- Standards for vehicle gateway or vehicle interface
  - NM Gateway AUTOSAR
  - OSGi Vehicle Interface
  - Vehicle Gateway AMI-C (ISO 22902)
  - M-VCI (ISO 22900)

- Challenges for Telematics based vehicle probe data
  - Will OEMs open the OBE open up to third party applications?
  - Need Integrated Standards for Vehicle Interface or Vehicle Gateway
Thank you for attention!