

GENIVI Cloud & Connected Services Project

GENIVI is actively investigating essential standards and solutions needed to enable a data-oriented, connected vehicle architecture. In just a few years, connected cars will become the predominant form of automotive transportation. A number of actors are now working at breaking down the barriers to adoption for mobility services based on automotive data and at helping drivers, communities, mobility services, aftermarket and repair services and automotive manufacturers extract the most value from that data. But this has already resulted in a somewhat fragmented ecosystem where different actors are using different solutions to access the data of connected cars.

As an example of the fragmentation, we have identified competing commercial initiatives that are developing mostly proprietary solutions, and more than one partly overlapping collaborative efforts. Several start-ups are already active for delivering data of production vehicles to the market place in the short term. We also have a list of collaborative projects that look at various facets of the same topic on a mid to long term. The list includes the ISO Extended Vehicle, the AutoMat project, the Sensoris project, W3C automotive business group, and Android™ Automotive.

In addition to the above usage, more and more automotive functions exchange data with the cloud-based back-end or execute partly using cloud computing. This back-end provides the basis for various innovative applications and functions that can execute with support of the cloud. These functions include for example for autonomous driving or multimedia, and security-related system behavior analysis.

In GENIVI we believe there is a need to join forces and harmonize activities when designing and implementing the full data-oriented connected vehicle architecture in order to

- Enable easy interoperability of building blocks, flexibility and choice
- Develop common solutions and software
- Enable access to all data we want to exchange
- Control access to data
- Enable user privacy and data security
- Clarify responsibilities
- Agree on names, roles, responsibilities
- Facilitate business opportunities and contractual agreements

The work on data-driven connected vehicle software architecture GENIVI is undertaking is an important step towards achieving the seamless coupling of the in-vehicle and back-end architectures, and delivering an end-to-end vehicle computing platform. This end-to-end platform leverages existing standards and solutions but some gaps exist and an overall interoperability is still far from achieved. We are convinced the GENIVI work will help the automotive industry take a big step toward the future when the in-vehicle software, E/E architecture and the back-end architecture will be moving closer together.

In order to achieve this, GENIVI may investigate several areas:

- Reference software and system architectures for data exchange

- Data Model / representation
- Data protocols for requesting data (low to medium speeds)
- Data protocols and software architecture for Big Data (high-bandwidth data streams, high-volume processing)
- Nomenclature, terms, names, definitions and contracts so that we understand each other in Technology and Business conversations
- Use Cases & Requirements to drive the other work areas in the right direction.

GENIVI will produce the following list of deliverables

- a vehicle data model overview and gap analysis
- a list of use cases and requirements supported
- a reference architecture for the on-board vehicle data capturing and the end-to-end vehicle-to-cloud communication
- a proof-of-concept demonstrator implementing the reference architecture

GENIVI has launched a Cloud & Connected Services project team and it welcomes your knowledge of the vehicle data market place either from a technical standpoint, a business standpoint or from a geographical standpoint.