BENEFITS OF ASAM SOVD

ASAM SOVD offers diagnostic functions that go beyond classic diagnostic applications:

- **ASAM SOVD** enables the use of HPCs as diagnostic controllers. This is particularly advantageous as they support multicore, multithreaded computing capabilities.

- **ASAM SOVD** allows monitoring and logging of software processes that are running in parallel. Its functions and capabilities go beyond I/O diagnostics as it is currently being done with traditional diagnostic protocols.

- **ASAM SOVD**'s remote access allows the automotive industry to update / upgrade vehicles with new functions.

- **ASAM SOVD** allows full vehicle assessment from one single point (centralized diagnostic access points to access the vehicle).

- **ASAM SOVD** allows for all use cases, proximity diagnostics, remote diagnostics, and in-vehicle diagnostics.

- **ASAM SOVD** supports a symmetric access to diagnostic content from both HPCs, their applications and UDS based entities.

- **ASAM SOVD** supports the handling of bulk data (upload and download).

- **ASAM SOVD** enables access to different E/E architectures (e.g. domain-based or zone-based).

- **ASAM SOVD** is not limited to data-specific use cases but also considers process-related and vehicle-related use cases.

- **ASAM SOVD** supports interactive generic diagnostics.

ASAM SOVD is developed in close cooperation with AUTOSAR Adaptive Platform

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ASAM SOVD –

THE FUTURE OF
VEHICLE DIAGNOSTICS

ASAM

Association for Standardization of
Automation and Measuring Systems

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Automation and Measuring Systems

A NEW STANDARD FOR DIAGNOSTICS

As we move towards autonomous driving, the vehicle becomes increasingly complex and more software-driven. New techno-logies are finding their way into the car creating new use cases for vehicle communication that go beyond today's diagnostic capabilities:

• High-performance computers (HPC) with their own operating systems and multicore, multithreaded capabilities, are used as controllers in the vehicle.

• As a consequence, there will be different software architectures in the future which diagnostics must be able to support.

• Features and functions will be distributed across multiple virtual applications (system within a system) instead of a single ECU.

• Software in the vehicle will need to be continuously updated and new features added.

• Vehicles are more and more becoming IoT devices. Therefore, the analysis of running software programs (beyond reading error codes) will become even more relevant.

• In-vehicle use cases need to be supported, e.g. to conduct predictive maintenance or for fleet monitoring scenarios.

Today's diagnostics is ECU-centered and heavily relies on the unified diagnostic services (UDS) protocol. Extending the UDS protocol for HPC diagnostic requirements would not be flexible enough to meet the necessary software analytics requirements.
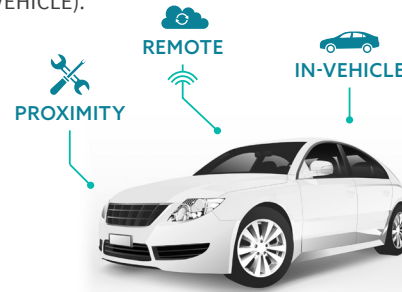
ASAM SOVD

ASAM SOVD (Service-Oriented Vehicle Diagnostics) defines an API for diagnosing and communicating with software-based vehicles. It is a flexible standard that provides a uniform access to the diagnostic content of HPCs and their related applications, as well as classical ECUs.

ASAM SOVD was developed by an internationally staffed project group of experts from leading OEMs, tool vendors and Tier-1s.

BASIC PRINCIPLES OF ASAM SOVD

ASAM SOVD allows diagnostics on a vehicle in a workshop (PROXIMITY), via remote access (REMOTE) or directly in the vehicle (IN-VEHICLE).

ASAM SOVD works on a service-oriented basis. A service-oriented query enables the determination of precisely the information needed. This means that the preprocessing is already taken care of by the SOVD server.

The SOVD services are defined as templates. This generic approach allows manufacturers to define which information they want to disclose or, more precisely, which queries ("entities") can be done and which data ("resources") should be accessible.
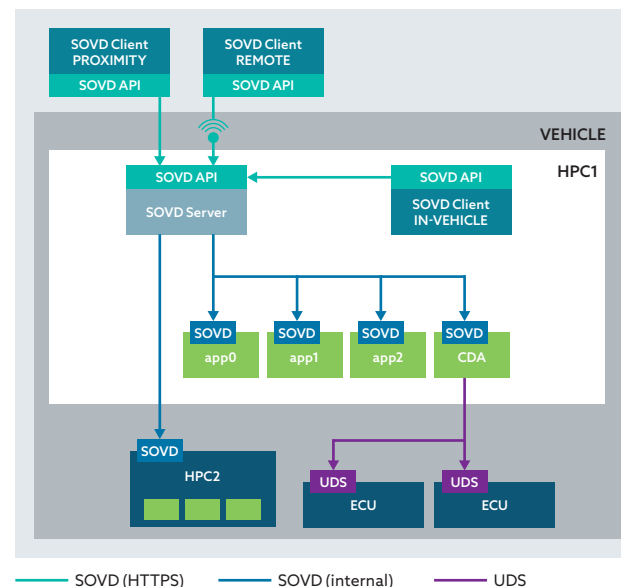
NEXT GENERATION OF VEHICLE DIAGNOSTICS

> *" ASAM SOVD is the answer to the growing demand on diagnostics for tomorrow's vehicles. "*
>
> **Tobias Weidmann,**
> Project Leader ASAM SOVD,
> Vector Informatik GmbH

Concept of REST based on HTTP

ASAM SOVD defines a REST API which is based on HTTP to facilitate the development and use of new diagnostic applications. REST is stateless. Due to REST, no automotive-specific stack is needed on client side.

Concept of entities

ASAM SOVD introduces the concept of "entities" that allow context-based diagnostic access. An entity can be an app, a function, an area or a component (ECU, HPC, software). The entities provide different resources for the data access on a physical level. The data structure is described in JSON.

OpenAPI format

The OpenAPI specification defines a single format for both offline and online capability descriptions. SOVD clients can process both online and offline capability descriptions in the same way and with the same tools and mechanisms. This allows to develop both generic testers and testers for a specific series covering all possible variants using identical tools.

Data protection

ASAM has ensured that common technologies for authentication and authorization of clients are used with OpenID Connect and OAuth 2.0.

Change in culture

The concept of ASAM SOVD is not only a technological change. The introduction of ASAM SOVD also requires a significant update in the tool chain to support these additional functions.