

# Uniform access to ASAM ODS through model driven interfaces

“The ASAM ODS base model assigns a common view to project specific data enabling the creation of powerful general purpose software tools”

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## I Summary

**Challenge:** Storing, retrieving and exchanging data of test and measurement applications covers several aspects of data management. Possible solutions need a foundation which is stable and well understood but also adaptable and extensible for present and future requirements. Additionally, the acquired data needs to be interchangeable and interpretable by different companies and applications.

**Solution:** The ASAM ODS base model provides the needed foundation by adding semantic information to test and measurement data. Data mapped to this model can either be stored in an AOP-server allowing controlled access through well defined interfaces (Corba or RPC) or interchanged by using ATF-files. With DIAdem and LabVIEW, National Instruments offers the ability to access ASAM ODS data through a model driven interface independent of the ASAM ODS physical storage chosen.

**Key Benefits:** The model driven interfaces of LabVIEW and DIAdem allow flexible access to any kind of data inside ASAM ODS storage—from ATF-files to AOP-servers. These interfaces offer the ability to query all kinds of objects, access to property and bulk data as well as browsing over object relationships.

DIAdem additionally provides the Instance Browser, which allows the interactive navigation through ASAM ODS sources over user defined object relations, and adapts to any kind of data model.

## II Situation

In the automotive market, several companies from manufacturers (OEM) to supplier and software companies are involved in the data cycle, all with slightly different requirements. While a manufacturer is mostly interested in centralized data storage to handle the whole process, suppliers need to provide documentation of the (quality of) delivered parts, so software is needed to ensure a proper data interchange.

Additionally, the kind of data to be stored and interchanged varies from manufacturer to manufacturer, as well as for the different parts and components produced, composed and tested.

## III Challenges

ASAM ODS provides solutions for storing and interchanging different kinds of data. This aspect otherwise complicates the development of an all-embracing software product, when confronted with the different possible ASAM ODS physical storage types and interfaces.

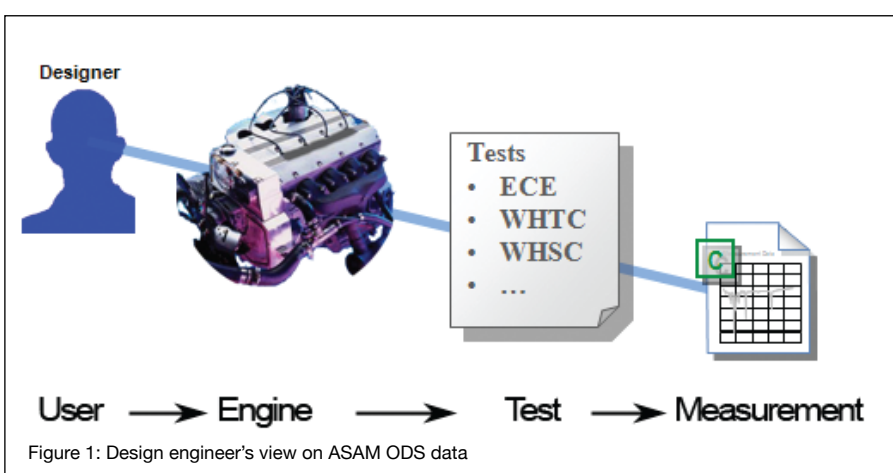


Figure 1: Design engineer's view on ASAM ODS data

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Furthermore, the perspective of data inspection varies depending on the different people and groups involved in the development cycle. While a design engineer is interested in the different setups his component is tested with, a test engineer might be interested in the tests performed by him, while a plant manager wants to gain an overview of which tests were carried out on a specific test stand in his factory.

### IV Success strategy

To address these problems, National Instruments developed a model driven interface called USI. This interface groups together input and output routines common to all data sources, and abstracts the details of the particular physical storage by using individual components for reading and writing data from/to the particular ASAM ODS storage, the so called DataPlugins. With a DataPlugin, an AOP-server (via Corba or RPC) and AFT-Files (Classic or XML) can be handled the same way. Even future extensions to ASAM ODS or other industry standards can be integrated the same way. This powerful interface is available for National Instruments LabVIEW and DIAdem.

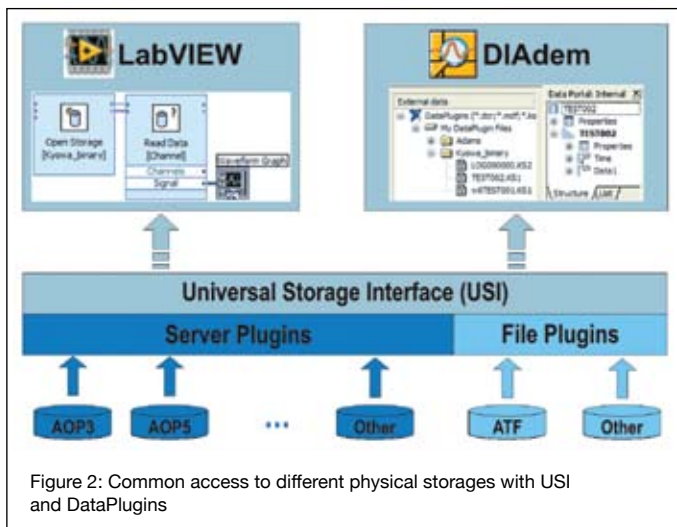


Figure 2: Common access to different physical storages with USI and DataPlugins

USI allows executing queries with conditions on multiple object levels, so a design engineer can start querying for tests made by him, or

while the plant manager can inspect the tests on a specific test stand. From those different starting points the same methodology can be used to browse up or down the object tree and “feel” the different objects by inspecting their individual properties.

Additionally, DIAdem provides the so called Instance Browser. The Instance Browser is integrated in the DIAdem NAVIGATOR and the ASAM Data service and allows the interactive navigation through ASAM ODS sources. An analogy to the programming interface is possible to specify starting points inside the data model and browse over user defined object relations. To concentrate on specific objects, filters can be applied to the tree view or objects can be searched by specifying search conditions.

### V Challenges during the project

Technically the biggest challenge was to design an extendable framework to handle all different kinds of data storages in the same manner, and address all different kinds of information described by the data model.

This hurdle could be overcome by National Instrument’s expertise in dealing with measurement data and data models back to the beginning of ASAM ODS.

### VI Business benefits

The model based ASAM ODS interface of LabVIEW and DIAdem allows the time efficient migration between and integration of different ASAM ODS physical storages, even for future industry standards, by hiding the storage details. This extends the lifetime of applications and reduces the TCO (total cost of ownership) even by changing environments.