

ASAM – ODS

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Today measuring and test systems are computer based. In general such systems are highly specialized for the environment they are used in. Components like data acquisition and visualisation are from the same vendor and mixing products of different vendors is either expensive, because special data interfaces must be developed for each such combination, or existing standard data exchange formats must be used. The latter case does not lead to a clean integration, for in general special modules (Import/Export) have to be activated to get data from one application to the other, which means, compared to access of application proprietary files, time consuming extra work for the user. Since data exchange formats usually are developed for a very limited range of applications, this process is also often combined with a loss in information.

The idea behind ASAM (activity group for standardisation of automation and measuring systems) is to offer an infrastructure, which allows vendors to develop software components in the area of computer aided test and measuring systems. The notion "component" implies, that this software can be easily integrated into heterogenous test stand environments.

ASAM - ODS (Offline Data Service)

The aim of ASAM - ODS workgroup is to define interfaces for data storage and exchange. This includes

1. definition of a data model, which describes in which way the data is to be organized.
2. definition of a set of access functions (API), which allows access to the data without actually knowing how it has been stored (storage independent).
3. definition of a physical storage format.
4. definition of a flat file format, which is specially designed for transferring data between different test environments (ASAM Transport Format ATF).

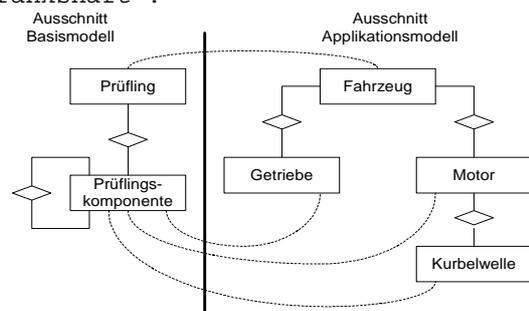
Data, which is handled by ASAM - ODS includes:

- Measurement data
- Reduced data
- Unit Under Test
- Test Sequence
- Test Instrumentation
- Project data

Data Model

Identifying concepts, which are common to all applications in the domain of test automation and measurement, it turned out that such concepts (like Unit, Quantity, Test unit and Test) do exist, but that for some concepts only very general assumptions can be made without losing application independence.

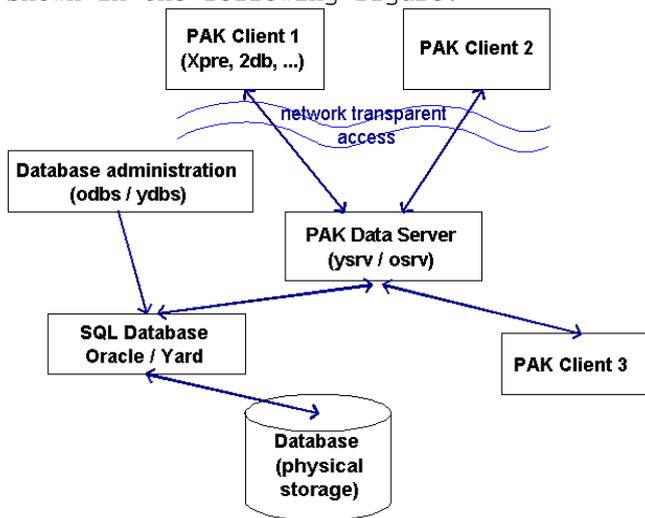
E.g. a measurement quantity always has an assigned unit and measurement values are generally associated with some quantity. Of course measurement values also always belong to some measurement, which has been carried out on a certain day at a certain place. In contrast to this very little general can be told about the test unit. Taking this into account, ASAM - ODS has defined a data model, which is highly adaptable to specific application needs. In other words an application takes the generalized data model (the so called base model), which is defined by ASAM - ODS and put it into concrete form (the so called application model). The figure below shows as an example how a concrete test unit is derived from the general structures defined in ASAM ODS base model. The map of base model to application model can be read by general ASAM ODS clients, so a general application knows, without knowing the application that creates the application model, that 'Car' is the unit under test, which consists of a 'Gear' and an 'Engine', which itself consists of a 'Crankshaft'.



Using ASAM - ODS within vibro - acoustic test stand environments

Acoustic measurements introduce the complexity of handling mass data. It is generally not possible to store measurement data into a database, although the option for doing so can be reasonable for highly reduced data. Instead of this, measurement values are stored in flat files on optical or hard disk, while the measurement descriptive data combined with a reference to the file system, which allows to find again the measurement values, is stored into the database.

The main components of the system are shown in the following figure:



A standard relational SQL database is used to hold the measurement descriptive data. Measurement data is stored in normal flat files. A proprietary file format is used for the flat files (not shown). A data server provides a network transparent and ASAM ODS conformant access to both measurement descriptive and measurement data. The splitting of physical data storage into a ODS conformant database and a proprietary file format for mass data is invisible to the general ODS client, because it is hidden by the ASAM ODS API. Several clients communicate with the data server using ASAM ODS API. These clients, we may call them ASAM ODS components, include programs for data visualisation and query.