ASAM

CASE STUDY

managing vehicle test data with ASAM ODS

> "Ford has been aware of the benefits of structured data management within the ASAM Environment and was specifically interested to investigate its benefits within Vehicle testing."
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i Summary

Vehicle testing is generally performed using a set of diverse data acquisition equipment from numerous suppliers. Each piece of equipment is configured differently and usually produces data sets unique to the supplier rather than the OEM.

A project was undertaken by Ford VDEC to investigate a model-based approach to vehicle test data management so that, whatever its source, it could be saved and retrieved from a single repository. A thin client solution was derived (Figure 1), that provided consistent work surfaces for both in-vehicle and in-lab tests.

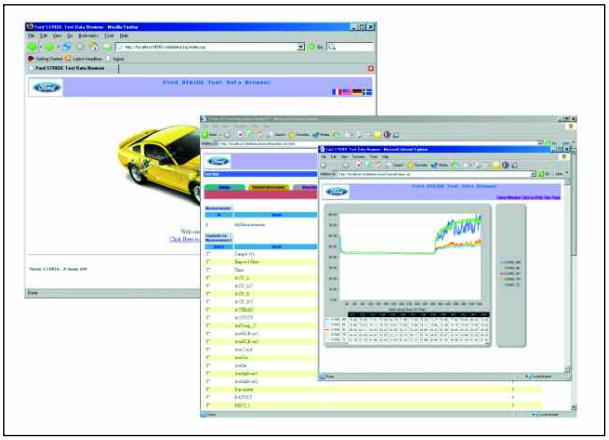

Figure 1: STRIDE Work Surface

As well as the consistent work surface, the other main benefit was a single data repository where all the engineers could access vehicle data.

The model-based test data management techniques applied within the Ford Proof of Concept project (STRIDE) have now been formalized, by rd electronic, within a new product, called Lexikon. This manages all aspects of metadata management and distribution.

ii Situation

Ford Vehicle Development and Engineering Control (VDEC) comprise 6 attribute teams responsible for various engineering disciplines within the Vehicle. rd electronic and HighQSoft were selected to implement a Proof of Concept System (STRIDE) to work with data from two of the vehicle attributes (NVH and Climatic Control) to show the feasibility of collecting and promoting vehicle data into an ASAM ODS compliant repository. When a vehicle is being tested in the field it is not connected to the corporate network and, therefore, access to the latest metadata was not possible.

iii Challenges

The first challenge was to make consistent metadata available for field test engineers. It was also a requirement that the same thin client work surface was available in the field as was used in the laboratory.

Another challenge was to use a simple Application Data Model (ADM) for all the vehicle attribute teams, so that they could all share data when appropriate. One objective was to use the same visualization tool throughout VDEC irrespective of the equipment used to collect the measured data.

iv Solution

A model-based approach to managing the test data was used so that the data set was described by the use of a model at each stage in the process of promoting the data into the ODS repository (Figure 2). This ensured data consistency and integrity was maintained during the whole process. The metadata names were managed manually during the Proof of Concept project. The manual system was based upon the specification for a new

metadata management system and the STRIDE project was used to ensure the design specification was complete for real world applications.

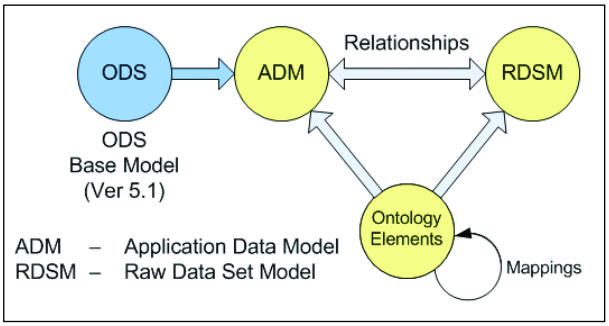

Figure 2: Data Flow Process

A new concept was introduced (Complex metadata elements) to manage optional metadata items so that the ADM was kept small enough to optimize performance. Essentially, this is the grouping together of the optional metadata items and their contents so they can be represented as a single item within the ADM. The search engines used for analysis would first locate the primary metadata items and then expand the complex elements to locate the exact data set.

v **Challenges during the project**
The final solution had to run within the Ford IT System Architecture i.e. thin clients on Engineers' desktops and Linux for the server environment. HighQSoft successfully implemented Athos on the Linux server.

vi **Business benefits**
The model-based test data management approach, designed by rd electronic, is shown in Figure 3. These concepts were deployed and proved during the STRIDE project by manually controlling the different states and their interactions. They have now been incorporated into Lexikon.

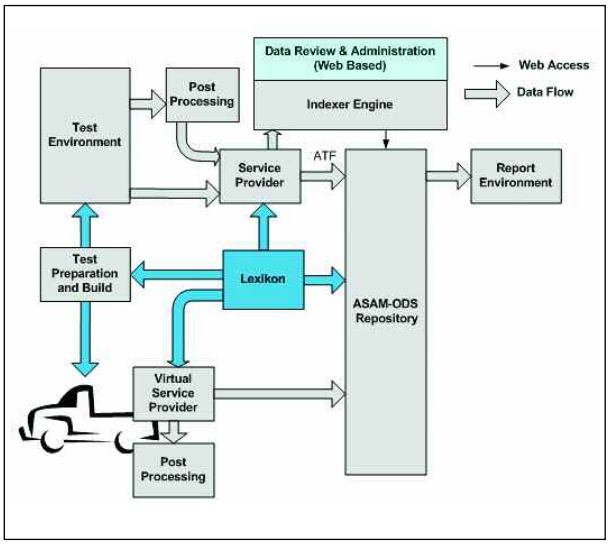

Figure 3: Lexikon States

The benefits derived by Ford from the STRIDE project are that it is now possible to merge test data, acquired from field vehicle tests, with the data collected from test laboratories. By having consistent names for both parameters and test header metadata, time was reduced to locate data. A greater level of common understanding was achieved by controlling the metadata (content and context) before saving it to the ODS repository.

It also successfully demonstrated that an ASAM ODS compliant system could be implemented and run within the Ford IT System Architecture.