

SYNECT, the new dSPACE data management solution with a focus on model-based development, has been on the market since October 2012. It started with one module for test management and one for integrated variant management. Now modules for managing signals, parameters and models are also available.

A photograph of a surfer riding a wave, viewed from a low angle. The water is a vibrant blue-green. Overlaid on the water are various technical terms and values in a light green font, such as 'SignalOffset', 'F_Kd_2', '00:27:21', 'Fac_U32_gain', 'F_Kp_1', 'Float32', 'AirMass', 'Failed', 'Select_param_set', 'Lambda2', '0.004192', 'Undefined', '0.00034325', 'TC_V8_ExtendedFunction2', '0.12', '0.3277', 'Float64', 'SmallSize', 'Engine', 'TC_V12_Temperature3', 'BigSize', 'MidSize', 'Chassis', '0.0524', '0.11735', '0.796392', 'NorthAmerica', 'Euro', '15.0.2017', 'Country', 'Van', 'F_Kp_2', 'SmallSize_Bas', 'FrequencyPrescaler', 'Fac_18_gain', 'TC_V8_BaseFunctions1'.

Mastering the Data Wave

The interest in SYNECT is enormous. This is because model-based development is being used everywhere, every day to develop new functions. Networked functions that need to be adapted to fit hundreds of vehicle variants, with thousands of parameters and signals and very many software modules. All of this happens in development processes where there are multiple stages and many developers and testers participating. Only clean processes and clean data management can guarantee that work is done systematically and reliably. This is where SYNECT comes in. SYNECT speaks the language of the user. Its modules for test management, signal and parameter management, and model management provide direct support for everyday development tasks. For example, engineering tools can be connected directly to SYNECT, and data exchange via key standards and common file formats is supported.

Modular and Scalable

SYNECT is modular in design and you can add extensions one after the other to build up a comprehensive central data management system. To handle the many variants that accumulate during development, SYNECT provides systematic support. For example, you can explicitly specify variant dependencies

according to a configurable model variant and then evaluate and consider these dependencies when the data is used later. SYNECT acts as the data management center and provides fine-grained versioning as well as comprehensive user and rights management so that teams can reuse data and work together.

Cross-Phase Test Management

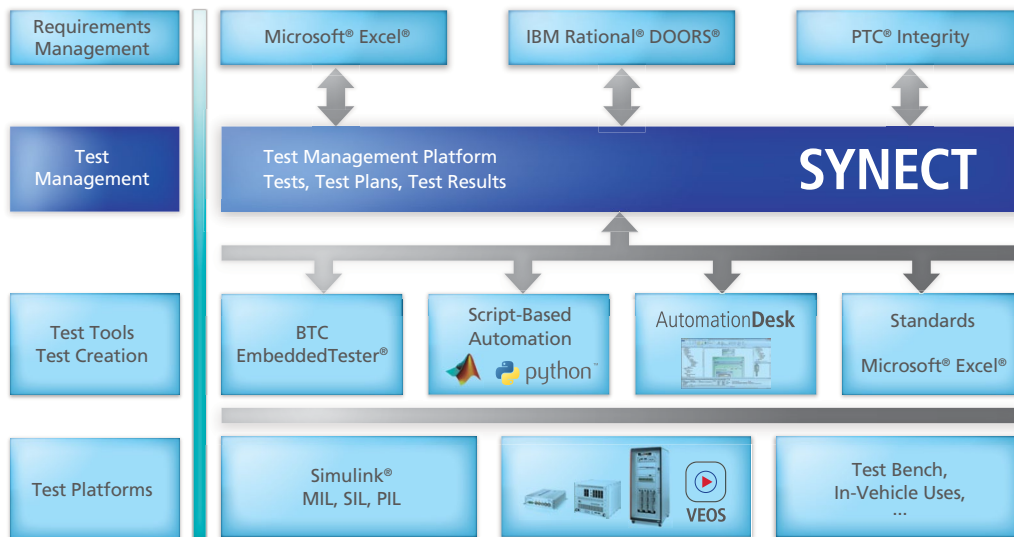
SYNECT Test Management provides comprehensive support for testing functions, software, and electronic control devices throughout the various phases of the development process. It focuses on supporting MIL, SIL, PIL and HIL tests, and also manual tests. One important aspect is that SYNECT can be integrated seamlessly into existing processes and tool environments. It not only supports test automation tools such as dSPACE AutomationDesk, but also standard exchange formats such as Microsoft® Excel® and XML. Customer-specific test tools, test formats and script-based solutions can be connected via a generic interface. Test cases can be specified directly in SYNECT or imported from existing test specifications and test implementations. This means that the start-up phase for learning how to work with SYNECT Test Management is quick and fuss-free. SYNECT not only lets you manage test cases

Impressions from SYNECT users:

“The seamless integration of SYNECT and AutomationDesk was a decisive advantage when we were extending our test automation environment. The process for compiling test execution plans and evaluating test results runs efficiently and intuitively.”

Alessandro Recca, ABB Switzerland





Because it supports different test tools and platforms, SYNECT Test Management can be used flexibly in all phases of the development process.

clearly, but also gives you the ability to plan test case executions from a central location and initiate them directly. After the tests are executed successfully, the test results are fed back into SYNECT and stored for traceability throughout all project phases. The interface to requirements management is especially important. Requirements can be linked to the test cases to support requirements-based test workflows and to ensure traceability from the requirements to the test cases and

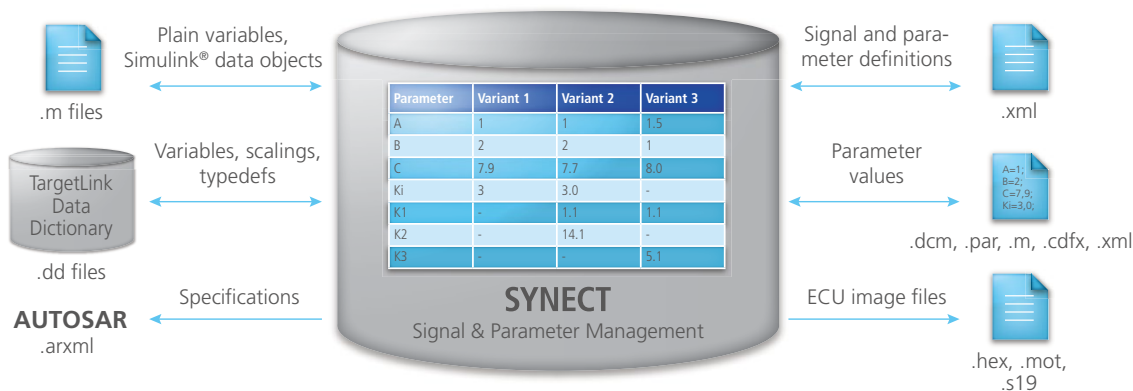
test results. The direct overview in SYNECT shows what test coverage level of the requirements was achieved.

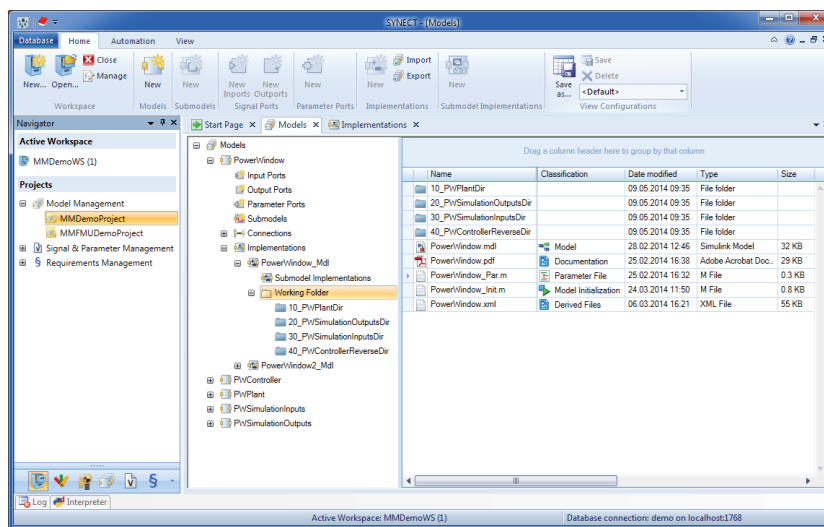
Managing Model Variety Efficiently

The many function models and simulation models that are created in embedded electronics development can be managed centrally and reused easily by different teams and in different projects. SYNECT handles models not just as black boxes

by using files, but uses metadata and a fine-grained level of detail that includes interface signals, parameters and submodels. This model structure information is generated automatically via model analysis when the new model is imported into SYNECT. As a result, the information is more transparent because the model management functionality already shows you the model's interfaces and parameters. You do not have to switch to the modeling environment. Integrating models

Numerous import and export interfaces support integrated signal and parameter management and use throughout the entire development process.





SYNECT manages models centrally and traceably with metadata, interface signals, parameters and associated files.

later on can be simplified because the interfaces can be defined at a central location, independently of the actual implementation. There is also a separate module for seamless signal and parameter management throughout the entire development process, independent of model management. Of course, SYNECT also manages the actual model files and all related files such as initialization scripts and model documentation. The hierarchical representation of the models not only makes it possible to organize submodel reuse but is also the basis for creating configurable integration models in SYNECT. The interface information is helpful for checking

whether models can be used with each other. This check often relies not just on interface information but also on additional context- and scenario-specific information – such as which variants or scenarios a particular model is suitable for.

Adding Metadata

The flexible metadata management provided by SYNECT lets you expand the information that is stored in the individual models. This metadata not only makes it easier to search for specific models, but can also be evaluated in integration scenarios afterwards. SYNECT's model management functionality currently particularly supports MATLAB®/Simu-

link® models and functional mock-up units (FMUs) in accordance with the Functional Mock-up Interface (FMI) standard. dSPACE will continue to expand its range of supported model formats. ■



Video:
dSPACE SYNECT
<http://www.youtube.com/watch?v=ZebVW9kwjOI>

Impressions from SYNECT users:

“SYNECT is user-friendly and meets the special requirements that test managers have. Because of its interfaces to DOORS® and AutomationDesk, SYNECT is the only central tool we need to plan, manage, and control all the test activities, and the automated tests in particular. Using the SYNECT Test Management module helps us track the test activities throughout all the various test levels and test benches.”

*Christian Trösch and Alexander Wiener,
Division Powertrain, Continental Corporation*