INTERMEDIATE RESULTS OF ASSUME DEVELOPMENT PROJECT ANNOUNCED: INTEGRATED MQC QUALITY DASHBOARD STANDS THE TEST

Integrated quality monitoring with MES Quality Commander® (MQC) convinced reviewers of the Affordable Safe & Secure Mobility Evolution (ASSUME) development project. Important quality metrics were obtained during the process using formalized requirements from BTC EmbeddedSpecifier.

November 28, 2016, Berlin (Germany): During the presentation of the first intermediate stage of the European development project ASSUME, project partners announced results of requirement formalization with BTC EmbeddedSpecifier and product quality monitoring with MQC. The project team has formalized requirements for a demo component and subsequently integrated data from various software tools for testing, consistency checks, as well as guideline and complexity testing in MQC. Evaluation in the MQC quality dashboard showed the changes in product quality over time. The feedback of reviewers and participants of the review meeting in Paris on October 12 was clear: working with MQC was a complete success.

Testing an OEM model
As part of the ASSUME project, Daimler AG provided a model on which they carried out product quality tests. In collaboration with BTC Embedded Systems AG (BTC), the project team formalized requirements for the model in BTC EmbeddedSpecifier. These were then applied for automated test case generation and requirement consistency analysis in collaboration with OFFIS-Institute for Information Technology (OFFIS). Further quality data could be collected automatically with the software tools of Model Engineering Solutions GmbH (MES): MES Model Examiner® (MXAM) for guideline compliance and MES M-XRAY® for complexity analysis. For the data from the quality assurance tools of OFFIS, BTC, and MES, MES set up a quality model for Daimler and integrated it in the quality dashboard of MQC.

Results of the first ASSUME review meeting
Innovative elements were implemented in cooperation with technology partners BTC and OFFIS, such as the formalization of requirements with simplified universal patterns in BTC EmbeddedSpecifier, which increases the quality and clarity of requirements compared to informal requirements. Furthermore, formalized requirements enable a lot of use cases within the field of verification, such as consistency checks, automatic test case generation, formal testing, or formal verification. Another innovative element is the integrated quality dashboard with iterative data collection and trend analysis of requirements, coverage, guideline compliance, and complexity metrics, implemented by MES in MQC. This enables the definition, application, and consistent visualization of the quality assessment.
The tasks of MES and BTC in the ASSUME development project

The goal of ASSUME, a European development project, is to establish a new development methodology and quality assurance process for software running on multi-core processors. These are particularly important in the case of networked cars, since a wide range of data from the environment is gathered and processed to enable the vehicle to be controlled independently of the driver. The application of software on several control units with drastically increased complexity, as well as the use of multi-core processors must be safeguarded. Within the project, the task of MES is to develop an integrated framework for measuring and tracking product quality, while BTC focuses on using formalized requirements efficiently for coverage analyses and test case generation.

**About MES: Software Quality. Made in Germany.**

Model Engineering Solutions GmbH (MES) is the competence center for model-based software in the car. Structured along three main areas, (1) MES Quality Tools, (2) MES Test Center, and (3) MES Academy, MES offers ideal support for integrated quality assurance. The MES Quality Tools are software tools to achieve highest quality. MES Model Examiner® (MXAM) is the first-choice solution for checking modeling guidelines. MES Test Manager® perfectly implements requirements-based unit testing in model-based development. MES Quality Commander® (MQC) evaluates the quality and product-readiness of your software and delivers key decision-making data throughout the product development lifecycle. The MES Test Center includes testing services from requirements management, through setting up test specifications, and automated test evaluation, to quality monitoring. The MES Academy provides training workshops and seminars and supports customers seeking to introduce or enhance their model-based development processes, new technologies such as AUTOSAR, or to fulfill standards such as ISO 26262 with individual consulting and services. MES clients include major OEMs and suppliers to the automotive industry worldwide. MES is a TargetLink® Strategic Partner of dSPACE GmbH and a MathWorks and ETAS Product Partner.

**About BTC Embedded Systems: Intelligent and automated test solutions**

BTC Embedded Systems is a tool provider for intelligent and automated test solutions with a focus on the verification of Simulink/TargetLink® models and production code. BTC EmbeddedTester provides a highly integrated and ISO 26262-certified test environment for requirements-based testing and automated back-to-back testing. Highlights include automatic test case generation for full code coverage and direct connection to requirements management tools such as DOORS or PTC Integrity. For safety-critical applications, EmbeddedSpecifier and BTC EmbeddedValidator provide an efficient and intuitive way for formal specification and formal verification of safety-critical requirements.

BTC Embedded Systems was founded in 1999 and is now represented by approx. 100 employees worldwide at locations in Oldenburg, Berlin, Paris, Timisoara, and Tokyo. BTC Embedded Systems is a TargetLink® Strategic Partner of dSPACE GmbH.

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