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Presentation Title:	End-to-End Testing Automation in TTCN-3 environment using Conformiq Qtronic™ and Elvior MessageMagic™
Intended Audience:	Software test engineers, testing managers.

Summary of Presentation

The presentation presents the case study of an end-to-end testing automation in TTCN-3 environment using Conformiq Qtronic for automated test design and Elvior MessageMagic for automatic execution of these test cases.

This case study explains **end-to-end test automation** in a TTCN-3 environment that is applied to test a system, a publicly available SIP softphone, X-Lite from CounterPath. The case study also explains the overall test automation flow for automatically generating TTCN-3 test cases using Conformiq Qtronic and executing those test cases using MessageMagic against the SUT (system-under-test).

Conformiq Qtronic is an automated test design tool which requires system models to generate test cases automatically. Thus, we started by creating a system model for SIP softphone, based on specifications, using UML- and Java-compatible notation action language as the modeling language. Subsequently, we implemented a system adapter which is needed to connect MessageMagic TTCN-3 execution environment to X-Lite softphone, and finally executed the generated TTCN-3 test suite against the X-Lite softphone using MessageMagic.

The model-based, end-to-end test automation creates a direct link between system requirements and quality assurance, an invariably missing link. System models thus created become test assets for review and maintenance of test suites. These models are easier to review compared to reviewing test cases and test plans. The reduced test maintenance costs are achieved as models are easier and faster to change than the actual test scripts.

The process-level integration of an automated test design tool, **Conformiq Qtronic**, and TTCN-3 test execution environment **MessageMagic** brings benefits where TTCN-3 forms an integral part of the quality assurance process. Automatically generated test scripts can be stored in configuration management / version control systems, and they can be executed independent of the test generation system.

Evaluation Criteria

1. Which categories of your presentation are covered according to the Call for Papers? (practical experiences, design/test process, training/education, future of TTCN-3, etc.)

Practical experiences
Design/test process

2. What is the novelty in your presentation?

The end-to-end test automation in TTCN-3 environment of its own kind.

3. What are the benefits of your chosen approach or method over existing ones?

In the existing approach, the TTCN-3 test design is done either manually or by using tools which allow test designers to model the test cases. This is higher level approach, where the test designers focus on system behaviour modelling rather than how to test the system, a paradigm shift. The results in increased communication among test and system engineers, resulting in improvement system requirements and eventually better products and systems delivered.

Automated test execution using TTCN-3 and this process-level integration brings opportunities to integrate the tools where test execution results can be fed back to test design tools and defects can be tracked back to models or system requirements. This end-to-end approach is generally considered valuable, but hard to achieve and implement. Here we lay the foundation for achieving it.

4. How can the approach or method be re-used by other organizations?

1. The presentation demonstrates to the TTCN-3 community how it is possible to use model-based technology seamlessly in TTCN-3 testing processes.
2. The presentation demonstrates to the adopters of the model-based technology, who didn't know TTCN-3 before, that the TTCN-3 is an industry standard option for executing the generated test cases.

Further Details (optional)