Functional and Security Test Automation with TestGen (TEG) Suite*

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Abstract. TestGen (TEG) suite is a testing environment for Web applications developed by Montimage. It includes: (1) an automated model driven testing tool that allows detecting functional and security misbehaviors in the Web application under test, and (2) a test management module that provides a central point to monitor the progress of the testing process in the software development lifecycle.

Keywords: Test management, model driven testing, test case generation, test automation.

1 Introduction

TEG suite [1], [3] is a testing environment designed for testing and validating the conformance of Web applications according to a set of functional and security requirements. By considering the functional description of the Web system and its security requirements expressed in TSM models (TestGen Security Models [2]), TEG suite can significantly increase the quality and coverage of the generated test cases, improving thus the quality assurance process. TEG suite automatically generates requirements driven test cases and executes them against the target of evaluation.

2 Test Management using TEG Suite

The objective of test management is to provide a central point to monitor the progress of the testing process of a software development project. TEG suite uses the functional model of the application under test and its security requirements to derive test scenarios. In addition, it provides a repository where the test engineers can manage the whole testing process. This offers a better visibility on the quality of the software development project through the following features:

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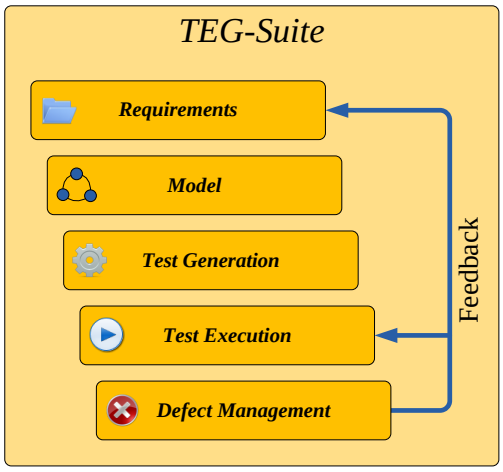
Requirements management: This feature allows defining the functional requirements of the application and associating them to a formal behavioural model to automate the test case generation. In addition, security requirements expressed in TSM can be associated to the application as a whole or to a specific functional requirement. A set of generic TSMs can be downloaded from the SVRS (SHIELDS Vulnerability Repository Service) (www.shields-project.eu). Associating TSMs to the model or requirements allows the generation of test cases targeting the security aspect of the application.



Functional model management: This feature allows associating a formal functional model to the application. We should note here that the functional model may express the complete, partial or per-requirement behaviour of the application.

Test generation: This module allows the generation of test cases to cover the functional or security aspect of the application [4].

Test execution management: This feature allows planning a testing activity. This can be done by defining test labs. A test lab includes the test cases that need to be executed. The test cases can be chosen to cover a given requirement or TSM. From a test case we can trace back the generating requirement and/or TSM.

Defect management: This feature manages the test reports generated following the execution of a test lab. The test report provides information like the number of executed test cases, the execution verdict per test case. For every failed test case, TEG creates a defect and links it to the correspondent test case, TSM(s) and requirement(s). If such information exists, the test report includes also the risk and recommendations.

TEG suite is intended to provide a better insight of the quality of the software development project and gives means to optimize the decision making process.

References

1. http://montimage.com/products.html
2. SHIELDS Project Consortium. D2.3. Final modelling methods, formalisms and prototype modelling tools. SHIELDS Project Deliverable D2.3. http://www.SHIELDS-project.eu/
3. SHIELDS Project Consortium. D4.3. Final specifications of the security methods and tools. SHIELDS Project Deliverable D4.3. http://www.SHIELDS-project.eu/
4. Wissam Mallouli, Mounir Lallali, Gerardo Morales, Ana Rosa Cavalli, Modeling and Testing Secure Web-Based Systems: Application to an Industrial Case Study, The Fourth International Conference on Signal-Image technology & Internet-Based Systems (SITIS 2008), Bali, Indonesia, November 30 - December 03, 2008.