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Model-Based Testing

Does Model-based Testing contribute to Business IT alignment?

by Colin Lek

I used model-based testing in a mixed context. But what were the contexts? After a review of literature on the Internet, I often identified a context where Model-Based Testing (MBT) appeared to be a feasible approach to control the software quality and reducing the costs related to the testing process, because test cases can be generated from the software artifacts produced throughout the software development process [1].

I found another context at a company. When I began one of my projects, I faced a problem: How can I apply a MBT approach when there is no formal model, e.g. finite state machines, UML diagrams, description of the software or system behavior?

This project, conducted at a financial company in The Netherlands a few years ago, quickly answered the question of what it takes to start MBT from scratch?

Our system analyst, a member of the requirements team, and me as the Test Analyst analyzed a mainframe system and traced its creation back to the 80's. This system had become an important source system in the chain of systems within and outside the company. The system analyst used pseudo code to document the system and the changes into a "functional design" to be used as basis for the development and test teams. Pseudo code is a compact and informal high-level description of the operating principle of a computer program.

For me it was hard to review this test base and to create test cases based on this functional design just by reading algorithms.

On the basis of the algorithms I first created a process flow model to get insight into the system under test. The modeling was done in MS Visio. The "if-then" and "if-then-else" statements from the pseudo code were transformed into a model.

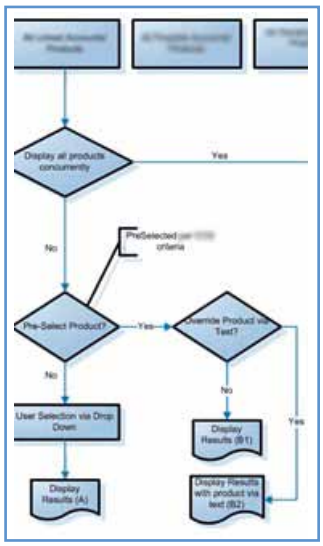

Figure 1: The modeling in MSVisio

To continue the MBT, we used the COVER test tool [2], designed by a Dutch testing company. The objective of this test tool is to make testing better, faster and cheaper.

This automation could support our test activities, such as test specification and execution. The test tool supports the test technique of Process Cycle Test (PCT), which could be perfectly used for test specification of the statements.

Secondly, derived from the process flow diagrams, the test tool automatically created test path combinations to execute the tests. It generated test cases directly from MSVisio.

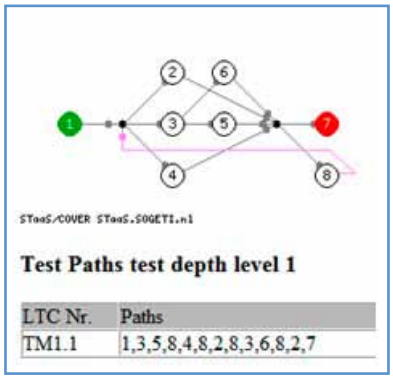

Figure 2: Test specifications generated by COVER

Getting back to other stakeholders in the project, for example business (owners) like information management and functional application management, they need the same functional design for the formal approval and acceptance of the IT project deliverable, as created by the system analyst. This project deliverable was a bridge too far, because they were unaware of this kind of system requirement. They were not able to interpret the expected functionality and discuss it with IT.

This meant that Business and IT had to communicate more effectively to achieve a true fit between the business' needs and technology's support (business-IT alignment).

In response to this, the test coordinator in a project meeting said, "The test analyst can play a role!" So I joined the project team not

just to test the system, but to also share my process flow model with the business. There was an interesting iterative process going on, which consisted of the follow activities: I designed process flows which were then reviewed by the system analyst of the system. The next step was eventually redesign the functional design. The organization and running of workshop meetings with business and IT to review and discuss our project deliverables continued for a few weeks. Business and IT people were drawing lines on the hard copy of the process flow models. These flow charts were easy-to-understand diagrams showing how steps in the system fit together. The flow diagram, originally an input for the test tool of the MBT approach, became a useful tool for communicating how the system works, and for clearly documenting information flows. It also helped to highlight where the system can be improved. It became clear that this was a good way of accepting the functional design. More important, the risk for the business in discovering what they wanted, and whether the design matched these needs or not, was reduced.

Now, years later, I can see this MBT approach, apart from reducing costs, also benefitted the (testing) process in other ways, such as reviewing the functional design and reverse engineering of a legacy system. By transforming the algorithms into a model we could trace inconsistencies and incompleteness. An unexpected discovery is that the testers can contribute to the alignment between business and IT as an ongoing process. This requires specific requirements capabilities (design of process flows) and involves holding workshops over a period of time.

Figure 3: Business IT Alignment improved?

We have added value to the project by combining the knowledge of both worlds and bringing them together.

We spend a little extra energy trying to align people; the momentum was during the test specification phase in the project where we killed two birds with one stone. We reduced the testing costs through the MBT approach, and bridged a gap between business and IT.

References

[1] A.C. Dias Neto, G.H. Travassos, R. Subramanyan, M. Vieira (2007), "Characterization of Model-based Software Testing Approaches", Technical Report ES-713/07, PESC-COPPE/UFRJ. Available at http://www.cos.ufrj.br/uploadfiles/1188491168.pdf.

[2] TSTR, (2012). 'Cover Sogeti Test Tool' http://tstr.nl/cover/index.php?language=en

> biography

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