

Model-Based Testing User Survey - 2014

Survey of Model-based Testing Users - Please participate

If you have evaluated, used, or are using any model-based testing approach, please take a few minutes to respond to the 2014 Model-based Testing User Survey.

This survey is a follow up to the 2012 MBT User Survey: <http://robertvbinder.com/real-users-of-model-based-testing/> and integrates questions from a survey distributed at last year's User Conference on Advanced Automated Testing (UCAAT 2013).

The purpose is to collect data and experience on the usage of Model-based Testing. We want to learn how MBT users view the efficiency and effectiveness of the approach, what works, and what does not work. Some questions are more technical and aim at validating a common MBT classification scheme.

All responses to the survey are strictly confidential. Respondents will receive an advance copy of the report which will be released at the 2014 UCCAT meeting in September <http://ucaat.etsi.org/2014/>

Thank you

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Motivation and context

1. When did you start using or evaluating Model-Based Testing?

nn years ago

2. What do you expect from a model-based approach to testing?

- Our test design shall become more efficient ("cheaper tests").
- Our tests shall become more effective ("better tests").
- Models shall help us to manage the complexity of the system with respect to testing.
- We wish to improve the communication between stakeholders.
- Models shall help us to start test design earlier.

Other expectations:

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3. From your current experience, does MBT fulfil those expectations?

	Yes	Partly	No	Don't know (yet)
Our test design is more efficient ("cheaper tests").	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our testing is more effective ("better tests").	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Models help us to manage the complexity of the system with respect to testing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication between stakeholders has improved.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Models help us to start test design earlier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If MBT does not satisfy the expectations you placed in it, please indicate the reason

4. On which test level(s) do you employ MBT?

- Component (or unit) testing System testing
 Integration testing Acceptance testing

Other (please specify)

5. On which type(s) of testing do you employ MBT?

- Functional testing Security Testing
 Performance testing Usability testing

Others

6. At what stage of MBT adoption is your organization?

- Evaluation
 Pilot
 Rollout
 Generalized use

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7. Do you use models in other development phases, for example for requirement elicitation or system design?

- Yes
- No

Reuse of models from other development phases

8. What type of models do you use in those other development phases?

- Use Case diagrams
- Activity diagrams
- State machines
- Sequence charts
- Domain Specific Language models

Others (please specify):

9. If you use models both for analysis or design and for testing activities, how different are these models?

	Completely identical	Slightly modified	Largely modified	Completely different
Degree of redundancy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Testing effort

10. Considering all testing effort on your project,

MBT is about this percentage of total effort:

Hand-coded test automation is about this percentage of total effort:

Manual test design is about this percentage of total effort:

MBT models

By definition, an "MBT model" is any model used for testing purposes. Depending on the approach, those models vary a lot regarding their subject, focus and level of abstraction. Current literature distinguishes between "system models", "test models" and sometimes "environment models".

It is our conviction that an MBT model usually combines all three of these aspects. Please tell us, how you would classify your MBT model.

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11. What is the subject of your model?

	Not at all a subject of the model	Not the major subject of the model	Important subject of the model	The one and only subject of the model
The model describes the system's environment, concentrating on interfaces and stimuli (e.g. from a user's point of view).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The model describes how the system works.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The model describes the test procedure rather than the system itself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. What aspect does your MBT model focus on?

- Structural aspect
- Behavioral aspect
- Both

13. How detailed is your MBT model?

	Very abstract	Rather abstract	Rather detailed	Very detailed
Degree of abstraction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. What notation type do you use for your MBT model?

- Graphical (may also contain text and possibly formulas, but most of the information is represented in diagrams)
- Textual / Scripting (no graphical elements)
- Symbolic (completely mathematical)

MBT Test Generation

15. What artifacts do you generate from the model?

- Test cases (for manual test execution)
- Test scripts (for automated test execution)
- Test data
- Test context (documentation, test suites,...)

If applicable, please indicate the generated test context artifacts:

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16. How do you obtain the testing artifacts from the model?

- manually
- semi-automatically
- fully automatically

This question aims at the test artifact generation process. There will be a question regarding tool integration later on.

17. What selection criteria do you apply to limit the number of generated tests?

- Requirements coverage
- Structural model coverage i)
- Data coverage ii)
- Random & stochastic
- Scenario- / pattern-based iii)
- Project-driven iv)

Others:

i) Structural model coverage is a generic term for a variety of coverage criteria that are based on the internal structure of the model (e.g. transition coverage).

ii) Data coverage focuses on the equivalence partitions of input and output data, possibly combined with a boundary value analysis.

iii) Scenarios or patterns are specific paths through the model that correspond to frequently used functionality or fault-based scenarios.

iv) Project-driven test case selection criteria uses specific additional information added to the model (e.g. risk, priorities...) to drive test generation to achieve specific test objectives for the project.

18. What kind of coverage is measured for your test runs?

- Requirements
- Features/Use cases
- Module/Component
- Model
- Code
- No coverage measured

MBT Test Execution and Process Integration

19. How are the tests executed?

- manually
- automatically off-line (first generated, then executed)
- automatically on-the-fly (generated and executed in one step)

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20. How well are your MBT tools integrated into the test process?

	Manual integration	Semi-automatic integration	Fully automated integration	Not applicable (no tool support)
Requirements management tool vs. Model editor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Model editor vs. Test case generator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Test case generator vs. Test management tool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Test management tool vs. Model editor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. To summarize, how important is the role the model plays in your MBT approach?

- We use the model for analysis and documentation, but it is more a sketch to get an idea what to do. If we derive test artifacts, this is done manually.
- We (at least partly) use a tool to derive artifacts from the model. The MBT model is rather detailed, but it is not yet considered as the central part of the testing activities.
- The MBT model is the master document and must always be up-to-date. There is no manual post-processing of generated artifacts.

If you are not happy with any of the three answers, please tell us in your own words:

Experience report

22. Overall, how effective do you think MBT has been?

- extremely ineffective
- moderately ineffective
- slightly ineffective
- no effect
- slightly effective
- moderately effective
- extremely effective

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23. How likely are you to continue to use MBT?

- Extremely likely
- Very likely
- Moderately likely
- Slightly likely
- Not at all likely

24. I see the biggest limitation of MBT as:

25. I see the biggest advantage of MBT as:

26. Please provide your best estimate of the effects of MBT. If not applicable or unsure, level blank.

Bugs escaped decreased by percentage:

Bugs escaped increased by percentage:

Overall testing costs decreased by percentage:

Overall testing costs increased by percentage:

Overall testing duration decreased by percentage:

Overall testing duration increased by percentage:

27. On average, about how many hours of skill development were needed for a person to become a proficient user of the MBT tool?

Average hours needed to become proficient:

Information on your context

The questions on this page will help to correlate the previous answers with the context of your project and the nature of the system under test.

28. What is the general application domain of the system under test?

- Enterprise IT (including packaged applications)
- Embedded controller (real-time)
- Embedded software (not real-time)
- Software Infrastructure
- Web application
- Gaming
- Communications

Others:

29. What kind of organization sponsored the Model-Based Testing project?

- Business
- Educational / Research
- Non-profit
- Government

Other (please specify)

30. Approximately how many persons work in this organization, in total?

Number of persons

31. What was the overall process approach used for the MBT project?

- Agile (Scrum, XP, Kanban...)
- Phased (V-Model, Waterfall...)

Other (please comment)

32. In the project you had in mind, you were...

- an external MBT consultant
- an inhouse MBT professional
- a researcher in the MBT application area

Other (please specify)

Thank you very much for participating in this survey.

33. If you wish to receive the results via e-mail, please leave us an email address.

E-mail:

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