MODEL-BASED TESTING DEMYSTIFIED

**Presented by Stephan Schulz (Tester & CTO of Conformiq)**

Introduction

- Model-Based Testing (MBT) has been around for *many* years
  - Benefits are well known
- Three selected myths that persist in industry about MBT:
  - "MBT is about generating tests"
  - "Testers cannot do modeling"
  - "MBT is just about adding another testing tool"

User Conference on Advanced Automated Testing
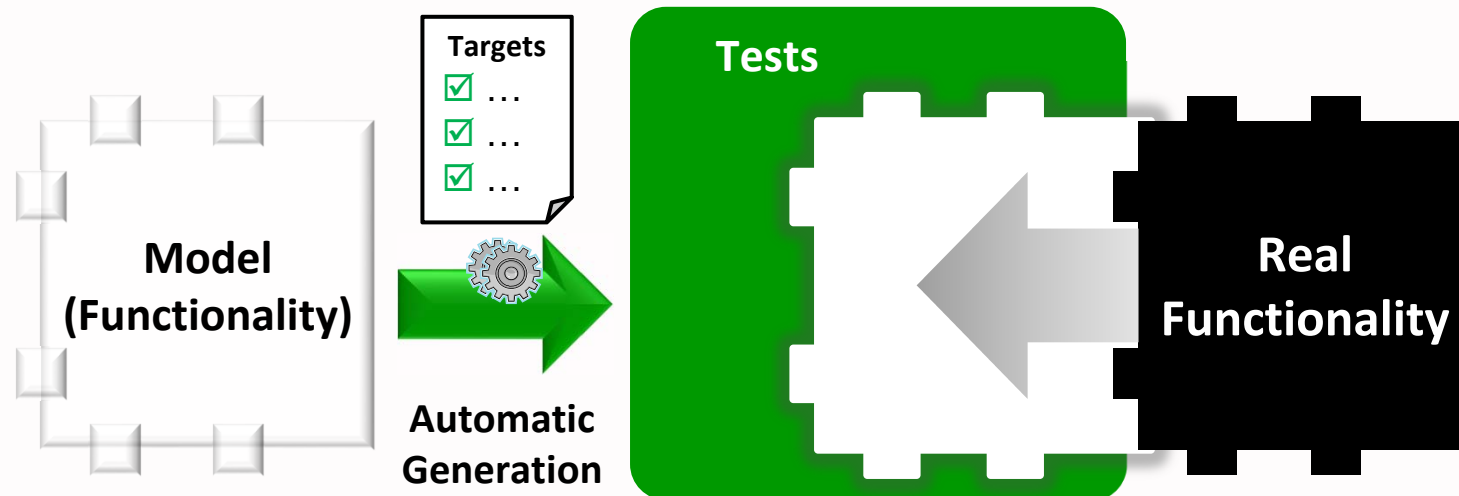
CONFORMIQ

Myth 1: MBT is just about generating tests

"Just push a button and you have your tests!"
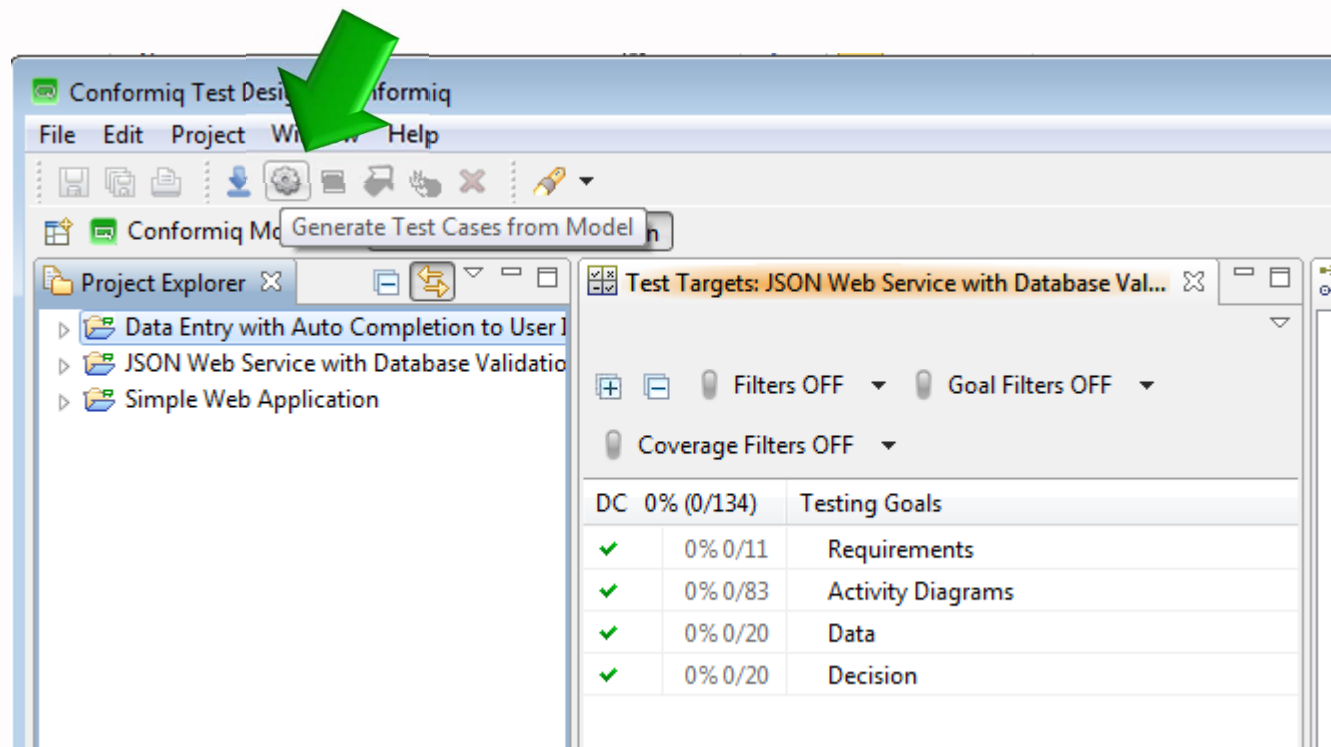
Fact 1: MBT Inputs and Outputs

- IN: A model, e.g., the desired system operation

- IN: Test targets that control test generation
  - In theory usually infinitely many tests are possible

- OUT: Test logic including test data and timing based on model
  - Information that is not modeled is not in the tests!

Targets
☑ …
☑ …
☑ …

Tests

Model (Functionality)

Automatic Generation

Real Functionality

CONFORMIQ

Fact 2: Test Validation Remains Important

- Tests are as good as their model and selected test targets
- Tests are not correct just because they are generated
  - Every generated test is (still) requires validation
  - Good tooling support for review of generated tests is critical!
  - Model & test review with all stakeholders is important

Model Functionality   Direct & Review Test Design   Export Tests
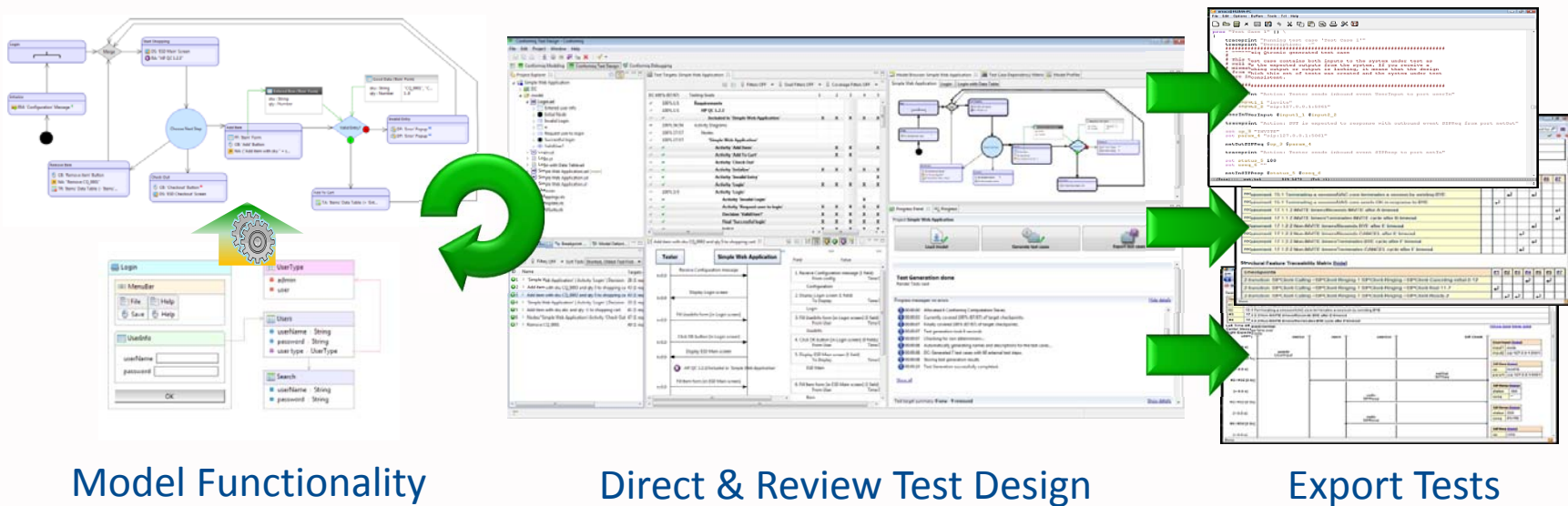
Fact 3: MBT is only <u>one</u> part of testing process

- Automated test design generally *complements* test execution
  - MBT *must* integrate with existing tools!
- The higher the degree of automation the more the value
  - Requirement & test management
  - Version management
  - Test execution automation
  - Model construction

**User Conference
on Advanced Automated Testing**

CONFORMIQ
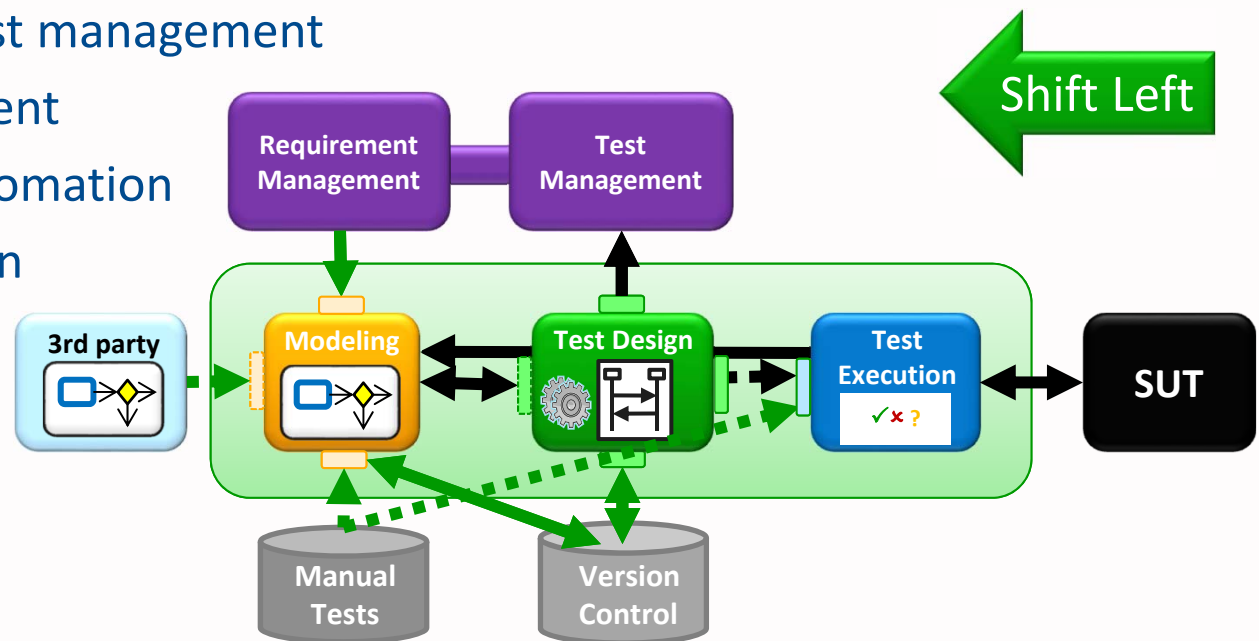
Myth 2: "Testers Cannot Model"

"MBT is the future but **where do we get models from since testers cannot model**?" (telecom vendor in 2005)

"**Many have tried** [to teach testers how to model] **but no one has succeeded**" (expert at German testing event 2011)

"Looking at the continued focus on test automation, ATDD, TDD and test pyramid, it is becoming **obvious that testers must have programming** as essential **skills** ..." ([linked-in]() post 2015)
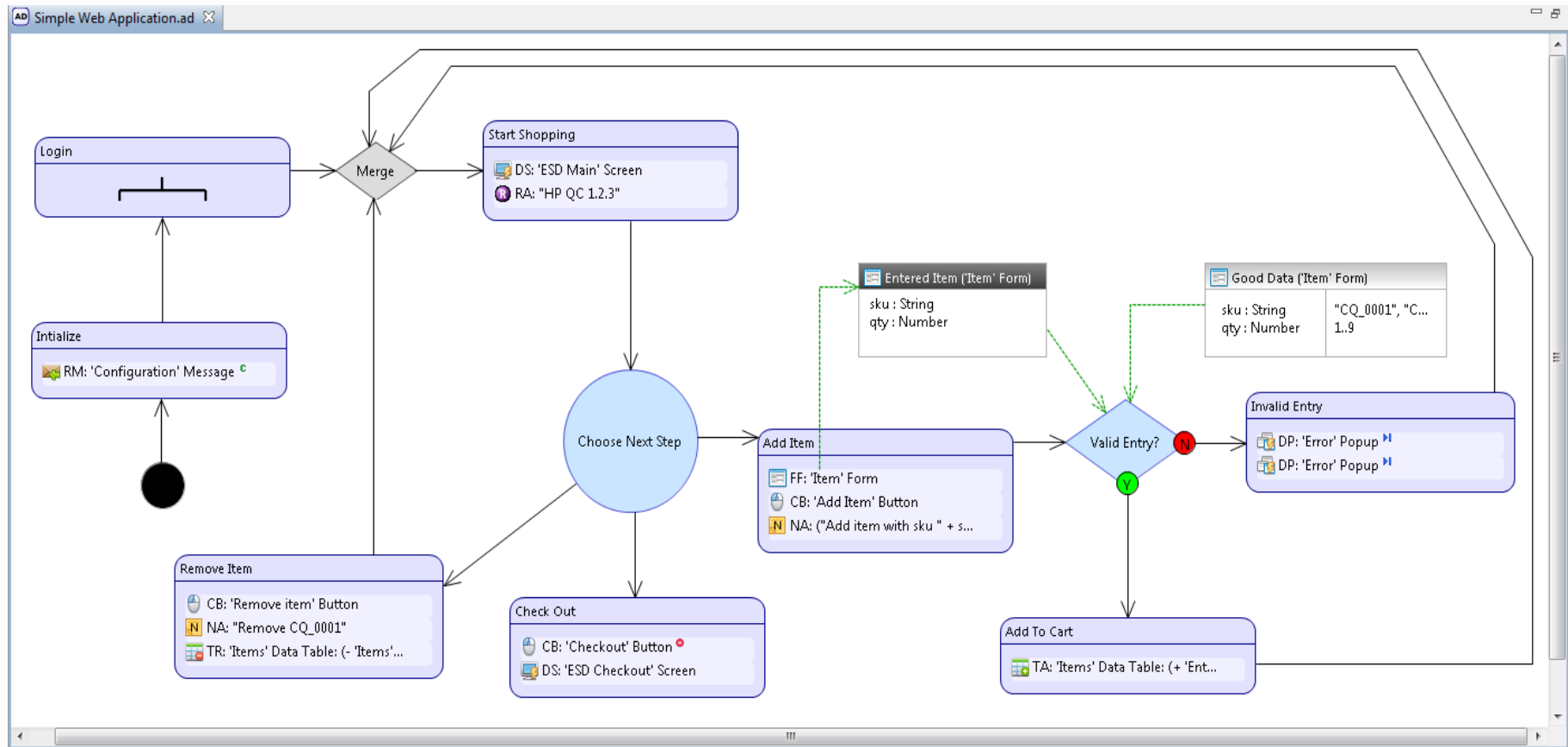
User Conference on Advanced Automated Testing

CONFORMIQ

Fact: Sorry - the "T" in MBT is for "Testing"

- For many years the automated test design tools have been missing modeling notations actually designed for use by testers
- Testing is about achieving a common understanding
  - Testers viewpoint is critical to do proper modeling for test generation!
- Modeling for test generation requires domain knowledge and ability to abstract to the essentials
  - Testers are used to operate and prioritize facing infinite possibilities
  - Classic testing skills are needed to analyze generated tests
- **MBT** does not remove the need for testers, it **enables** them **to work more effectively**
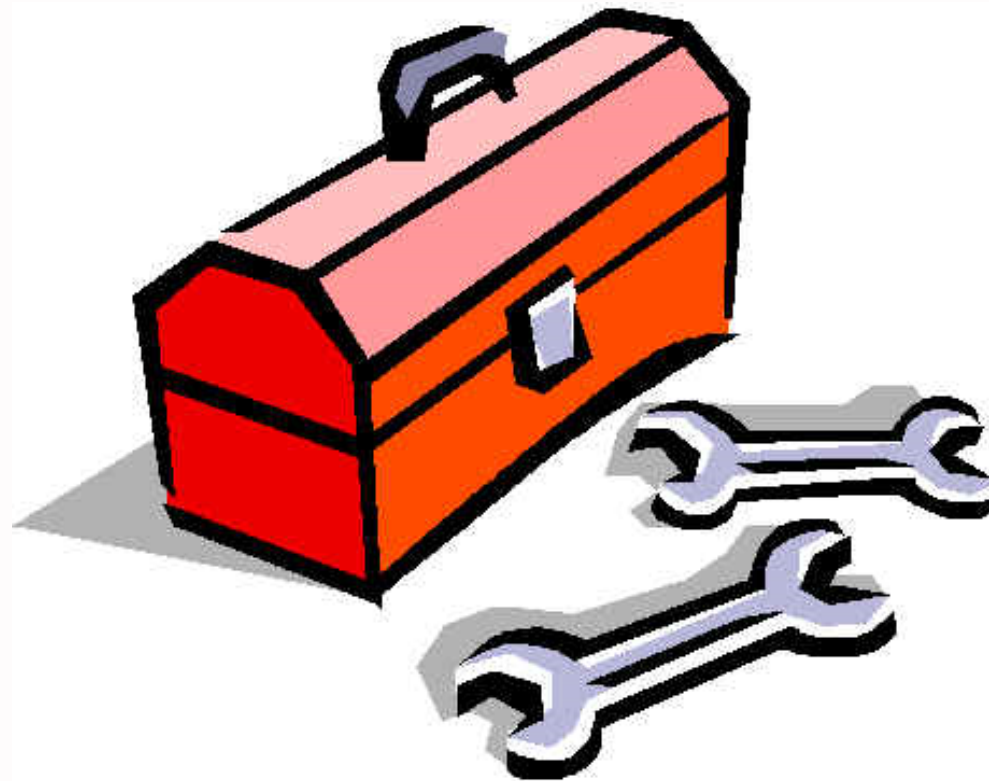
An Example of Modeling for Testers Today


Activity diagrams with action keywords & data flows – no programming!

User Conference
on Advanced Automated Testing

CONFORMIQ

Myth 3: MBT - Just Another Testing Tool

User Conference on Advanced Automated Testing

CONFORMIQ

Fact: MBT is a Disruptive Change

- It is not just "a cool new technology"
  - Gains in productivity come from a different way of working!
- Work changes for testers but also for test managers!
  - Modeling instead of test specification
  - Coverage instead of no of tests (acceptable %?)
  - Resourcing of projects
  - Approval of deliverables
  - Generation for progression vs regression testing
  - Integration into existing testing processes

- MBT deployments work best when there is a good reason for change already in place

User Conference on Advanced Automated Testing

CONFORMIQ
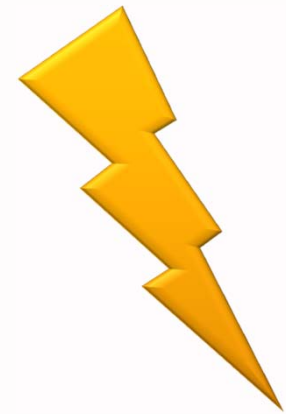
Fact: Good Planning is Required to Succeed

- Introduction of MBT requires minimizing the impact on existing testing process and practices

- All stakeholders must be convinced and share a common goal
  - Management as well as delivery
  - Value proposition is different for different stakeholders

- Identify testing phase with biggest need for improvement

- Pick applications or features that are expected to be extended or changed in next releases

- Establish MBT competence in your company
  - Certify your staff and yourself as "Model Based Tester"
  - Create a competence center for 1st level support
  - Establish blue prints for workflow (scoping of models)

ISTQB®
Certified Tester
Foundation Level

CONFORMIQ

Is it Worth it? An Example from BFSI

- Test service provider in Enterprise IT sector doing functional testing for a major bank using Conformiq Creator

- Automated test design resulted in testing efficiency gains from 21% to 72% (avg. 50%) across 8 different applications
  - Efficiency gains depend on application complexity
  - Data is from <u>first</u> iteration
  - <u>Testers</u> are modeling and generating tests

Productivity

- Above efficiency gains based on use of manual test execution!
  - Effort for automating test execution dropped to 30% of estimated effort for automating manually specified tests

- Real value is even higher since models are upfront IPR investment that can be adopted for other bank

User Conference on Advanced Automated Testing

CONFORMIQ

Summary

- Model-based testing is more than just pressing a button
    - Test review and tool integrations
- Model-based testing can and should be done by testers
    - MBT is about making work in testing more effective
    - Use of MBT elevates testers to the center of development
- Model-based testing is a disruptive process change and needs to be managed as such
    - It is not just about "start using a cool tool"
    - Get certified!

**User Conference
on Advanced Automated Testing**

CONFORMIQ