Deploying MBT-based Test Automation in an Agile Development Project for Financial Industry
UCAAT 2014

Munich

17th September

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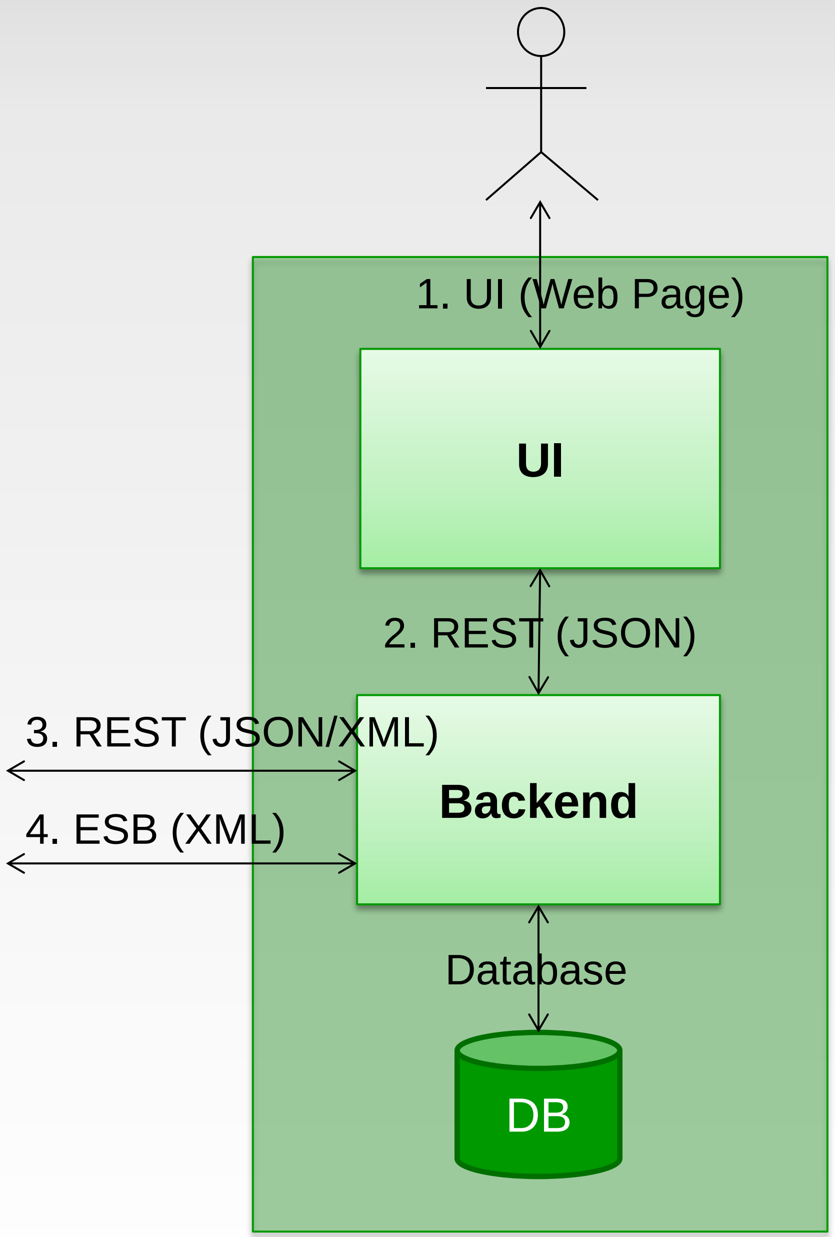
Project Context

- 18-month development project for a major financial institute in the US
- Team of 50: business/developers/testers
- Developed an ecosystem of backend and UI components
  - Java (Spring Framework)
  - RESTful web services between components
- MBT-activities focused on the ”core node”
  - UI
  - Backend serving UI but also other components in the UI
- Agile
  - 2-week sprints
  - 4-week ”development drops” with 2 sprints each
  - 15 development drops followed by final System Integration + Acceptance Test phases
- Test execution
  - QTP for UI
  - JUnit for backend

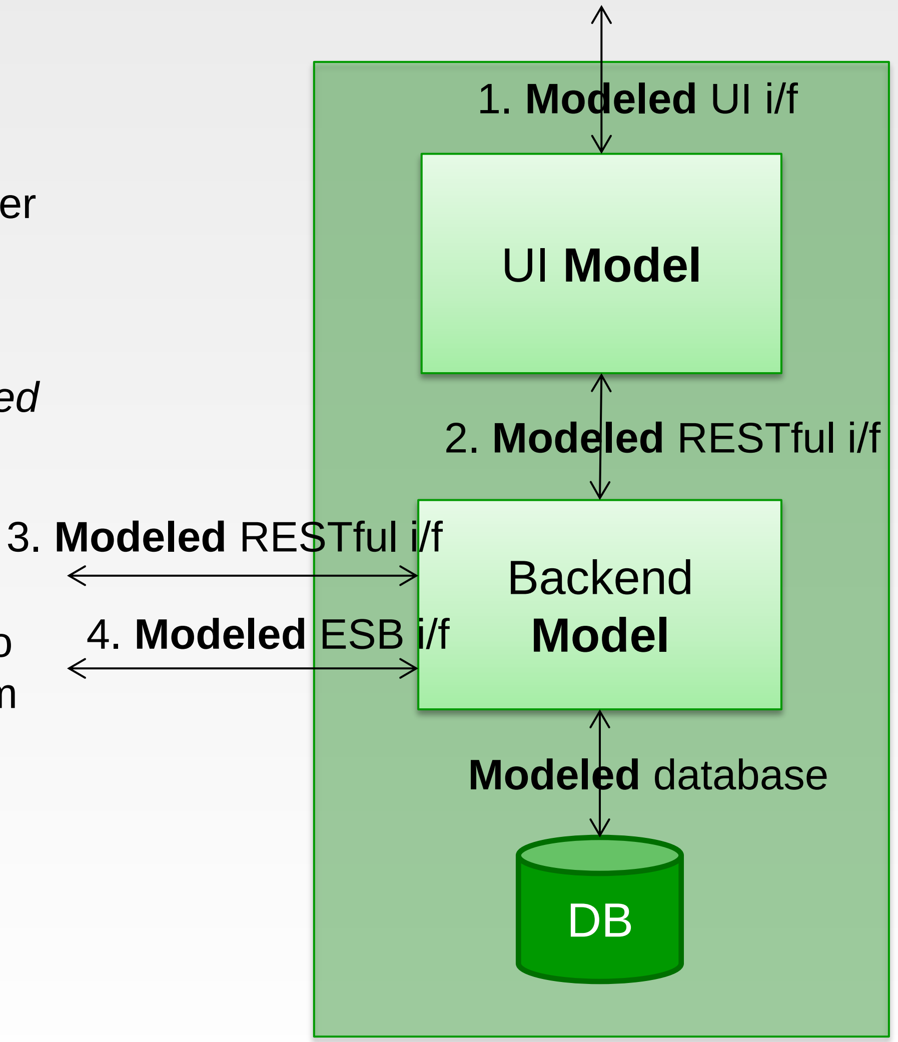
System Description

- The system consists of
  - UI
  - Backend
- UI runs on a web browser
- UI and Backend are connected over a RESTful interface (JSON payload)
- Backend serves not only its own UI but also other components (MBSC for example) over
  - REST (JSON/XML)
  - ESB (XML)
- The system persists its own data in an internal database



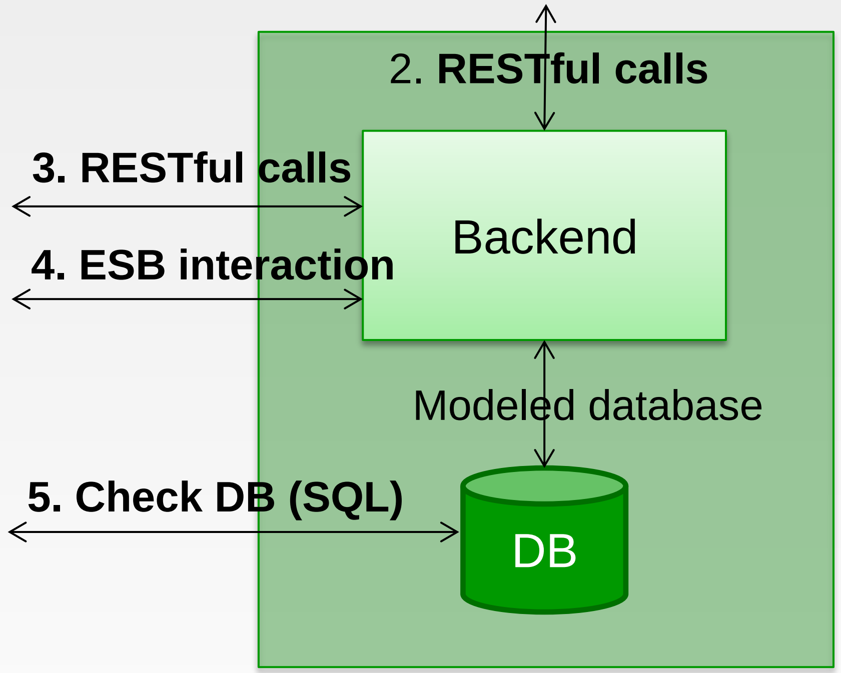
System Model

- Two *model components* for
  - UI
  - Backend
- Model components are connected over an interface just like the real components
- Just like the real backend, the *modeled* backend exposes external interfaces for communcation towards other components
- There is also an *in-model database* to mirror the database of the real system
- Reusable components at the model level



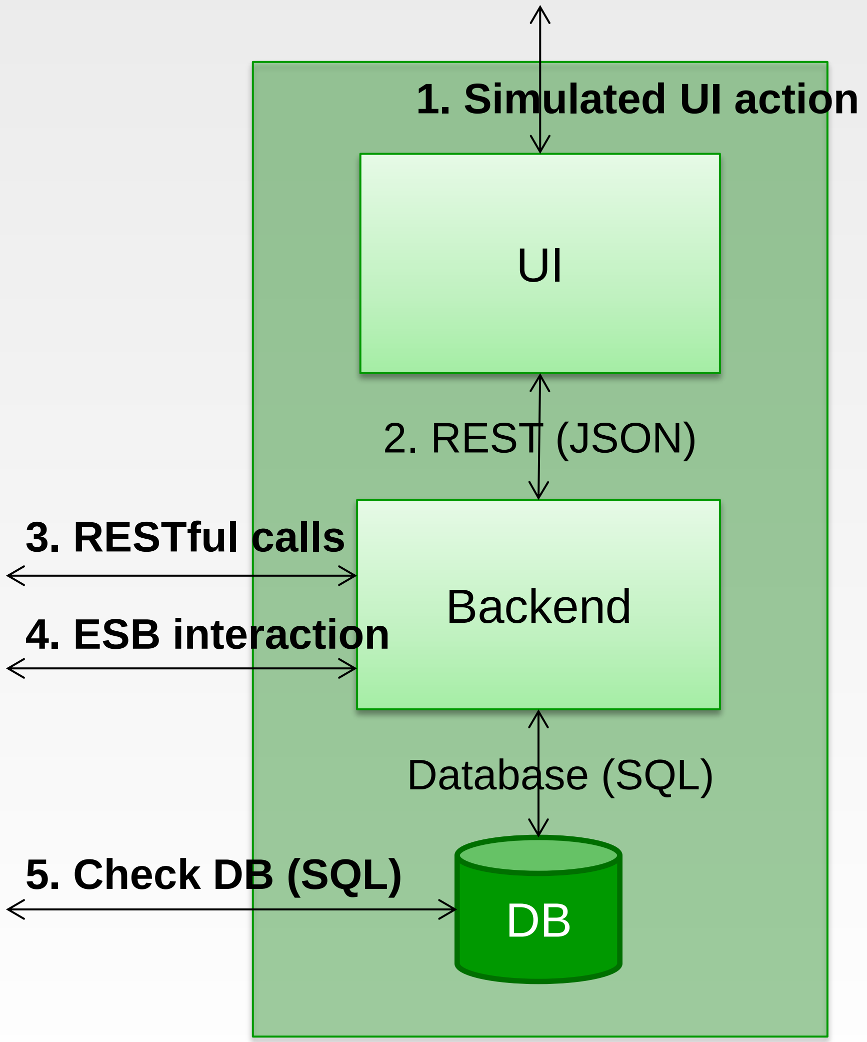
Testing the Backend

- Tests generated from the Backend Model exercise the backend by
  - RESTful calls
  - Interaction over ESB queues/topics
  - Verification of db contents
- Test are rendered in Java as JUnit tests
- Reusable components at test harness level



Testing the Full System

- Tests generated from full System Model exercise the system by
  - ”simulated” user interaction through the UI
  - RESTful calls
  - Interaction over ESB
  - Verification of db contents
- Tests are rendered in VBScript for QTP



Reusability

- The tools used in implementing the automation are readily available technologies in active development.
- Components in the test execution layer are reusable across systems using similar techniques (RESTful web services, ESB)
- Modeling is based on reusability/compositionality
  - Backend model used to generate “backend only tests”
  - The same model used as a component of the “full system model” to generate tests for the “full system”

Findings

The main benefits and takeaways:

- With MBT we were able to maintain automated in-sprint progression testing through the project. Teams *not* doing this could *not* maintain automated progression testing
- Testing coverage was better than that achieved by manual test design methods.
- We uncovered a lot of issues that would have gone completely unnoticed without the use of MBT
  - Complex scenarios related to “timing” in particular
  - Interface level issues risking the reliability of the system as a service (towards *other* components)

Q&A

For further information and discussion visit us at the booths from brightONE or Conformiq

Visit our webpages: www.conformiq.com & www.brightone.de