MBT compared to LST

Meetup Model Based Performance Testing

19 January 2017

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Trends in the IT industry

- . . .
- Feature velocity
  - Agile software development / Scrum
  - CI / CD
- . . .

Performance Testing

- Agile demands high speed performance testing
- There is
  - Mainstream Load & Stress testing (LST)
  - Model Based Performance Testing (MBT)

Load & stress testing

- Is not fast enough for Agile
- Has become a bottleneck in the sw development process
- Shift left performance testing is not an adequate solution

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Wouldn't it be nice . . .

- If developers can assess the performance potential of their code within a couple of minutes
- And if OK, release
- But if not OK, get applic. intelligence and optimize
- Until OK

- Then developers deliver code with
  ## guaranteed performance

Vision: 3 risk areas

(Why performance testing? – Risk mitigation)

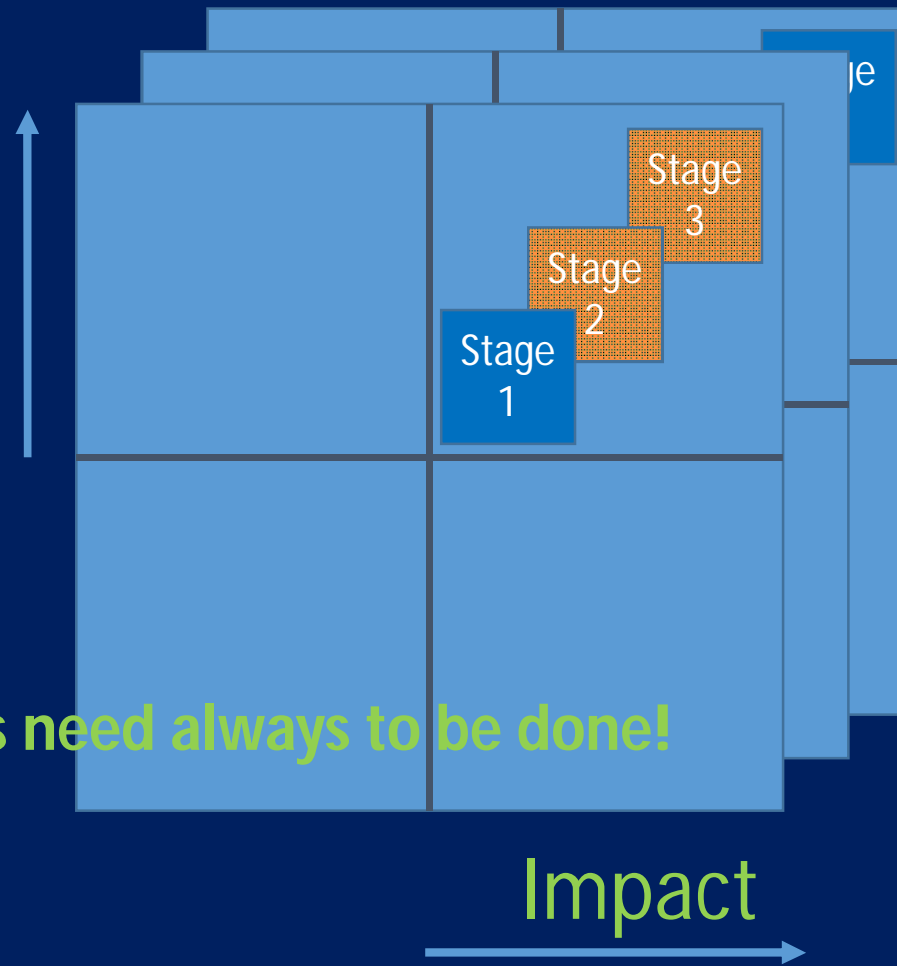| 1	2	3
Application software code	Capacities	Implementation
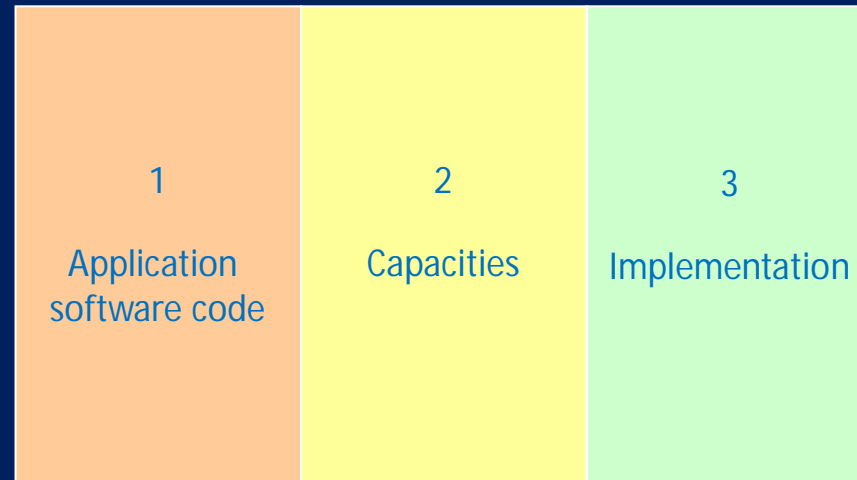
3 risk areas == > 3 stages

Stage 1: Performance potential of the code

Stage 2: Capacities

Stage 3: Implementation

Not all stages need always to be done!

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PRA – Product Risk Assessment

Stage 3

Stage 2

Stage 1

Not all stages need always to be done!

Impact

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Stage 1 initial testing

- Agile Performance Test Tool
- Less than 5 minutes for a small use case
- Done by SW Developer
- Delivers code with guaranteed performance
- There is no use for further testing
- Until something changes
- Then regression testing

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Stage 1 Regression testing

- Agile Performance Test Tool with test automation
- Based on single user scripts
    - 5 minutes more per transaction
    - Not on critical path of software development process
    - (LST 1.5 hours per transaction)
- Can be controlled by Jenkins
- Or can be done by Developer or anyone else
- Strong anomaly detection

Stage 2

- **Experience this in upcoming workshop**
- **mBrace Model**
  - Create workload model
  - Conduct capacity optimization scenarios
  - Determine necessary changes

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Stage 3

- LST based endurance test 48 hours
- Find and eliminate defects from Implementation
- What is Implementation?
  - Production environment
    - Hardware, Software / Middleware, Parameter settings
- Expensive part! PRA: necessary?
- Sole purpose: defect finding and elimination
- Not: performance assessment (Stage 1 and 2)!!!
- Thus: smallest possible scope (example)

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Total cost and options

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Stage 1+2

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Stage 1+2
For CI/CD
(Regr testing)

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Stage 1+2+3

Pure LST

			Testing
		Testing	Scripting
		Scripting	
	Testing	Proj mgt	Proj mgt
Testing	Scripting		
Proj mgt	Proj mgt	Tooling	Tooling
Tooling	Tooling		

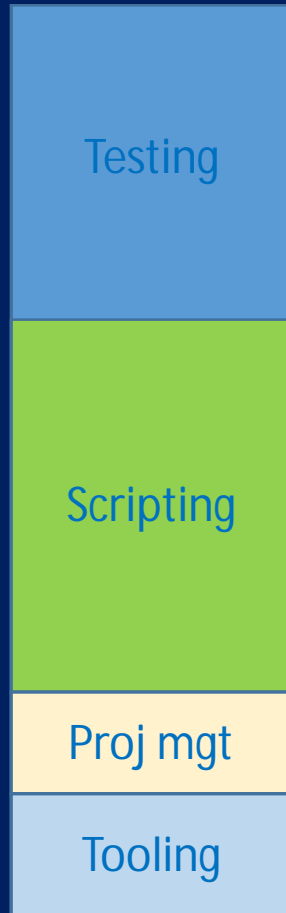**MBT**   **MBT**   **MBT / LST**   **Pure LST**

Total cost comparison

LST
Commercial
tooling

LST
Open source
tooling

MBT
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average

MBT three stage Agile Method

- Each stage
    - At proper time
    - With proper expertise
    - With the right tool
- First stage can be integrated in SW devel process
- Provides more test design options
- Significant lower cost

- Also for Waterfall performance testing

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Examples

- **Project 1**
  - **SAP HR – not mission critical: no Stage 3**
  - **6 UCs / 41 Txs / 5 hosts / grow-scenario Thuiswerken**
  - **15,000 users (load model: only 60 concurrent!)**
- **Project 2**
  - **Primary business application – mission critical: 3 stages**
  - **5 UCs / 129 Txs / 12 hosts / 20+ interfaces / 100 users**
  - **Stage 3 only 1 use case (E 4K instead of E 20K for scripting)**
  - **Architectural adaptations**
- **Project 3**
  - **With Stage 1 all software 100% passes Ops Acceptance Test**

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Compare

- **LST**
  - **Too slow for Agile**
  - **Multiuser scripting**
  - **Of all relevant transactions**
  - **For each bottleneck one test cycle**
  - **Little or no application intelligence**
  - **Test environment has production-like capacities**

- **MBT**
  - **Agile speed**
  - **Single user scripting only - for regression testing**
  - **Multiuser scripting (Stage 3) limited or skipped according to PRA**
  - **All bottlenecks dealt with in one test cycle**
  - **Complements and / or replaces LST**
  - **Stages split over organisation and time**
  - **Test environment has modest capacities**
  - **Low overall cost**

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Summary

Agile MBT Method:

- Agile speed for feature velocity
- Reliable /manageable risk reduction
- Suitable for waterfall testing too
- Low overall cost

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Questions?