Model and Inference Driven Automated testing of Services architectures

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Motivation

- Software and software architectures evolved
- More and more industrial software is based on SOA
- Often available on the cloud
  - Software as a Service (SaaS)
- Testing did not evolve!
Objectives

- SOA Testing
- Routinize testing
- SMEs
- Affordable accessible disruptive innovation
- Public administrations

In practice automated effective Model Driven Tools Developers
MIDAS Testing as a Service

- Move the testing of SOAs to the cloud
  - Testing as a Service (TaaS)

- Benefit from the scalability of the cloud

- Facilitates testing of cloud applications from the cloud

- Removes the need for local test driving facilities
MIDAS is Model-based

- Model-based approach
  - Everything is based on models
    - Common feature that unites the different testing approaches

- UML for modeling the SUT
  - State machine diagrams
  - Class diagrams
  - Sequence diagrams
  - OCL for further restrictions on the diagrams
  - Augmented with SoaML to account for SOA specific aspects

- UML Testing Profile (UTP) for modeling test specific aspects
MIDAS spans all testing activities

- Test generation
- Test execution
- Test scheduling
- Test arbitration
Testing Features

- Offers testing the system from different perspectives
  - Functional and interaction testing
    - Mixture of techniques from boundary value analysis to model checking
  - Security testing
    - Based on data fuzzing and behavioral fuzzing
  - Usage-based testing
    - Based on usage data
Intelligent test scheduling

- **Intelligent scheduling of test suites to improve efficiency**
  - Reduces costs
  - Reduces execution time

- **Static scheduling**
  - Based on security properties and priorities
  - Based on usage scores for each test case

- **Dynamic scheduling**
  - Based on analysis of test runs and bayesian networks
Overview of MIDAS
Supply Chain Management Pilot

Testing of a GS1 LIM compliant framework
Testing of a X1.V1 compliant framework

Healthsoaf Pilot or other scenarios
Web Interfaces

SERVER

http:sendrequest(XML)

Consumer adapter

RLUS

WSDL Management (WSSAK)

Standalone implementation

X1.V1 (XDS)

IXS

WSDL Management (WSSAK)

Standalone implementation

X1.V1 (PIX/PDQ)

CTS2

REST Skeleton (BaseX)

Standalone implementation

Provider adapter

System provider
Conclusion

- **MIDAS will move testing to the cloud**
  - Testing as a Service

- Uses a model-based approach

- Test execution based on TTCN-3

- Pilots will evaluate the feasibility of MIDAS
  - Test of two SOA applications implementing industrial standards
Thank you for your attention!

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