Breakout 3: Advanced Software Engineering, Open Source of Software Prototyping

Andreas Menychtas, National Technical University of Athens & ORBIT
Stefan Wesner, University Ulm & Coordinator, CACTOS
Projects & presenters

Call 8 Lightning Talks

- MIDAS - Libero Maesano, Simple Engineering France
- MODAClouds - Elisabetta Di Nitto, Politecnico di Milano
- OSSMETER - Nicholas Matragkas, University of York
- PROSE - Alfredo Matos, Caixa Mágica Software
- RISCOSS - Angelo Susi, FBK
- U-QASAR - Aitor Elorriaga, Innopole

Call 10 Lightning Talks

- CACTOS - Stefan Wesner, University Ulm
- Mondo - Nicholas Matragkas, University of York
- S-Case - Isabel Matranga, Engineering
- ORBIT - Andreas Menychtas, National Technical University of Athens
Our plan for today

- The full session is 1 hour 35 minutes with approx 45/50 mins of lightning talks, and 45 mins of discussion.
- Call 8 projects give their presentation
- 15 minute roundtable identifying the top 5 cross-cutting themes.
- Call 10 projects will then give their presentations followed by roundtable.

Questions to be answered:
- Top 5 Cross cutting themes
- Top 5 R&D Challenges not yet addressed
- Top 5 New collaboration opportunities and new ideas
- A view to the future: A vision of what the interoperable cloud ecosystem will look like in 2016

Stay in time as discussion is key not presenting!
Automated SOA/API testing as a service on cloud

Reminder for the presenter
8 Slides/3 Minutes = 2.67 slides per minute

Introducing the MIDAS project

Libero MAESANO
libero.maesano@simple-eng.com

SimpleEngineering
Service Oriented Architects
The MIDAS Project

- Model and Inference Driven Automated testing of Services architectures
- EC FP7 Project n° 318786
- Started on September 2012
- Three years STREP project
SOA/API testing automation

Tasks

- test case generation
- test oracle generation
- test execution
- test arbitration
- test scheduling
- test reporting
- test planning

Model-based testing

- Black-box / grey-box

  | SOA/API functional testing |
  | SOA/API security testing |
  | SOA/API monitoring & usage-based testing |
  | Test execution automation with TTCN-3 |

A test method is a software component that automates one or more test tasks
SOA/API testing infrastructure as a service
MIDAS TAAS / TPAAS architecture

- APIs in **bold/italic** are generic, instantiated with the designated *test method*
- MIDAS TAAS + TPAAS architecture is *service oriented*
Test method marketplace

- (SOA/API) testing research and practice are characterized by high heterogeneity of approaches, modalities, strategies, terminology

MIDAS develops test methods
MIDAS delivers a SOA/API testing infrastructure where test method developers are able to upload, register and deploy (after certification !) new enhanced test methods
Thank you for your attention
- Service providers, service users, independent testers
- Test method developers
if you are interested in the MIDAS approach, join us as early adopters!

www.midas-project.eu
info@midas-project.eu
@EUMIDASProject
M0del-Driven Approach for design and execution of applications on multiple Clouds

Coordinator: Elisabetta Di Nitto
Politecnico di Milano
elisabetta.dinitto@polimi.it
Starting date: October 2012
Ending date: September 2015
MODAClouds focus area

Multi-Cloud Dev&Ops Management

Build & Run
solutions for Multi-Clouds

Deployment speed
Flexibility
Elasticity/Adaptability
Set of services

Lock-in
Unpredictability of performance
Relevant Standards for Interoperability and Portability

• Initiatives we contribute to
  • OASIS TOSCA 2.0
    • Contribution with our experience on MODACloudsML
    • Introduction of non-functional aspects
  • ETSI "Cloud Standards Coordination report" (SLA)

• Other relevant initiatives
  • OASIS CAMP
  • Service Measurement Index (SMI)
Achievements to date and future plan

Cloud Development Tools
Modelio IDE + MODACloudML (agnostic and QoS ready)
Language + analysis and optimization tool

Flexible Multi-Cloud Apps
Management, Monitoring & Operation Environment
maximizes automation with Quality of Service Engine, Monitoring, Inter-Operability and Portability of underlying infrastructure providers (IaaS and PaaS)

DSS Multi-Cloud Advisor
Is a system on its own enables selection of BEV provider at development & testing phase; and adds automation of runtime adaptation

Future plan
Two iterations of experiments through case studies and extension of the platform
OSSMETER
Automated Measurement and Analysis of Open Source Software

Nicholas Matragkas
Brussels March 12-13, 2014
OSSMETER is a platform that supports decision makers in the process of discovering, comparing, assessing and monitoring the health, impact and activity of Open Source Software.
Focus

- Aim: analyse and monitor key health aspects of open source projects:
  - Forges metadata
  - Source Code Repositories
  - Bug tracking systems
  - Communication channels
- Starting date: 1 November 2012
- Ending date: 31 March 2015
Interoperability & Portability

- Platform built atop open source tools.
  - Eclipse, MongoDB, Rascal
  - Extensive use of OSGi Services
- Dedicated API to extend platform.
- Dedicated REST API to build tools atop OSSMETER.
- Platform available under EPL.
- Project utilises open standards:
  - NNTP, HTTP, OSGi, WebDAV
Achievements to date

- First integrated version of the platform.
- Testbed cluster with 7 machines.
- Initial set of metrics.
  - Forges (Sourceforge, Github, Eclipse)
  - Source code (Git, SVN)
  - Bug tracking (Bugzilla)
  - Communication channels (NNTP Newsgroups)
- Initial version of the REST API.
Future Plans

- Finalise the implementation of the platform.
- Build OSSMETER web application.
- Provide support for Pareto Analysis to support decision making.
- Deploy on bigger cluster.
- Go public.
http://www.ossmeter.org/

@ossmeter
PROSE: Promoting Open Source in European Projects
An Open Software Forge For European Projects

Reminder for the presenter
8 Slides/3 Minutes = 2.67 slides per minute

Alfredo Matos - Project Coordinator
Caixa Mágica Software
alfredo.matos@caixamagica.pt
PROSE aims to Promote Open Source in European Projects, and provides an open source coordination platform for hosting software projects, supported by information and training contents on legal and business aspects of FLOSS.

**Platform**
Aggregating platform for managing Open Source Project

**Training**
Business and legal training material and support information targeting EU-funded projects

**Promotion**
Open source and platform promoting promotion events coordinated with the EC to reach EU-funded Projects.
open source projects
europe

Software Forge for
European Projects

http://opensourceprojects.eu
open source projects europe

Collaboration
- Find and re-use software
- Provide Metrics
- Platform Integration

Utility & Work; ow
- Eliminate Setup Time
- Evaluate results
- Create dialog with EC

Development Support
- GIT & SVN
- Wiki, Forums
- Issue Tracker

http://opensourceprojects.eu
open source projects europe

Manage
Create, customise and monitor projects:
Admin tools

Develop
Support multiple tools for the same project:
Git and SVN

Communicate
Engagement between users and projects:
Wiki, Forum and Blog

Track
What needs to be completed, bugs, requests or tasks:
Tickets
15+ EU Projects (Public and Private)
280+ Registered Users (150 active daily)

http://opensourceprojects.eu
Project Overview

PROSE - Coordination Action
6 Partners from 4 Countries
Effort: 48 Person-Months

Partners
Caixa Mágica Software (Project Coordinator, Portugal)
Instituto de Telecomunicações, Aveiro (Portugal)
TSSG- Waterford Institute of Technology (Ireland)
MFG Innovation Agency for ICT and Media (Germany)
Origin (UK)
Bitergia (ES)

http://www.ict-prose.eu
http://www.OpenSourceProjects.eu
Follow the QR Code to register!

Thank You!

Alfredo Matos
alfredo.matos@caixamagica.pt
RISCOSS

Risks and Costs in Open Source Software adoption

www.riscoss.eu
@RiscossProject

Angelo Susi
Fondazione Bruno Kessler - Italy
RISCOSS: project objectives

- Risk management methodology to facilitate the adoption of open source software into mainstream products and services
  - Analysis of OSS-based technical and business ecosystems
  - Identification of OSS project and community measurements
  - Development of statistical assessment techniques
- RISCOSS Started on November 1\textsuperscript{st}, 2012; ends on October 31\textsuperscript{st}, 2015
- \textbf{http://www.riscoss.eu/}
RISCOSS and Standards

- RISCOSS aims at adopting *open standards* in risk analysis and interoperability
- For *risks* it considers the ISO 31000
- For *interoperability* standards RISCOSS aims at covering, for example
  - DMTF-CIMI for cloud infrastructure management
  - SNIA-CDMI for data management
  - Cloud-to-cloud interoperability standard (such as IEEE P2302)
- Support the use of Open Source in the cloud
Achievements & Future work

- The project developed
  - *Risk representation techniques* based on business and technical ecosystem modelling concepts
  - *Risk assessment techniques* based on formal and statistical reasoning (exploiting logic programming and Bayesian networks)
  - A *tool* supporting the risk management method

- What’s next
  - Test the platform in the use case sites spanning from OSS communities, to institutions, to large and small companies
  - Disseminate the product into some communities in order to obtain feedback and search for exploitation opportunities
  - Considering the release of RISCOSS in a cloud environment
Reminder for the presenter
4 Slides/3 Minutes =
1.33 slides per minute

FP7-ICT-2011-8. Project #: 318082

Concertation Meeting - Connect.E2
• Objectives:
  
  – Creation of the U-QASAR methodology for gathering and exploiting data about the progress and quality of software development projects and products.
  
  – Creation of an internet-based collaboration framework, with semantic capabilities, that will implement the concepts in the U-QASAR methodology as Services.
  
  – Creation of 2 business cases, establishing specific indicators for improvement.
  
  – Defining a Business Model adapted to the demands of the Future Internet.
Relevant Standards

• **Software Product Quality** standards:
  – ISO/IEC 14598:1999 - Information technology - Software product evaluation. Also included in ISO/IEC 25000,

• **Software Development Process** standards:
  – ISO/IEC 15939:2007 - Systems and software engineering - Measurement process, or
Achievements to Date & Future Plans

FP7-ICT2011-8. Project #: 318082
Session 1 Recap
Call 8 Projects

- We have now 15 minutes for finding:
  - Top 5 Cross cutting themes
  - Top 5 R&D Challenges not yet addressed
  - Top 5 New collaboration opportunities and new ideas
  - A view to the future: A vision of what the interoperable cloud ecosystem will look like in 2016
A very short view on CACTOS

Partners
REALTECH AG, DE
The Queen’s University of Belfast, UK
Flexiant Limited, UK
Umeå Universitet, SE
FZI Forschungszentrum Informatik, DE
Dublin City University, IR

Total cost: 4,761,232 €

http://cactosfp7.eu
Why CACTOS?

**Good old days**
- Data Centre are built with x86 single core CPUs
- Differences between vendors are marginal
- Application too slow? → Buy new HW

**The recent past up to now**
- Multi-Core CPUs to address energy challenge
- X86 offers begin to differ and specialised processors emerge (again) such as Manycore, GPGPUs
- Many network options
- App too slow? → Change your SW

**Near Future**
- Heterogeneous CPU/APU
- Many different flavours
- Lots of network options
- App to slow? → Choose the right architecture!
What is CACTOS not?

• CACTOS is **not** about supporting the **programmer to develop an application** that fits well on a certain architecture

• CACTOS is **not only about CPU diversity**. Diversity of IT infrastructure comes in many flavours (amount of memory, memory bandwidth, connectivity between servers and to the outside world, ...)

• **CACTOS does not start from scratch** but relies on results achieved in previous projects most notably OPTIMIS, S(o)OS, GAMES, TIMACS, SLA@SOI, Q-ImPrESS, CumuloNimbo
Realizing the CACTOS vision means that the variety of workloads supposed to be executed in a Cloud environment can be mapped automatically to the most appropriate resources in the best fitting data centre at a given time and that in case of failures or changing conditions the best matching place is automatically detected and the workload is relocated.
Cactos in a nutshell

Data Centre Operators/Cloud Operators
- collect infrastructure and hardware data
- analyze datalogs
- collect application behavior data

Cloud Middleware Developers, Cloud Infrastructure Providers, Data Centre Operators
- simulate optimization models
- predict behavior of applications on different resources
- validate and improve models

CactoScale

CactoSim

CactoOpt

Cloud Middleware Developers, Cloud Infrastructure Providers, Data Centre Operators
- determine best fitting resource
- automatic mapping of workloads
- find most appropriate provider

Concertation Meeting - Unit E2 Software & Services
Thanks for your attention!

http://cactosfp7.eu
Cactos on Twitter:
http://twitter.com/cactosfp7
LinkedIn Group

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Reminder for the presenter
7 Slides/3 Minutes = 2.33 slides per minute

MONDO

Nicholas Matragkas
Brussels March 12-13, 2014
The aim of Mondo is to tackle the increasingly important challenge of scalability in Model Driven Engineering.
Focus

- Scalability in MDE involves the following:
  - Constructing large models and domain specific languages.
  - Enabling collaborative development of large models.
  - Enabling model management tools to cope with large models.
  - Enabling storage, indexing and retrieval of large models.
- Starting date: 1 November 2013
- Ending date: 30 April 2016
Interoperability & Portability

- Use of well-established standards for MDE
  - UML for modelling of applications.
  - XMI for model interchange.
- For some standards the project anticipates extending them or proposing new ones.
  - E.g. XMI
Achievements to date

- Specifying industrial and technical requirements.
- Extensive domain analysis.
- Definition of a public set of transformation benchmarks.
Future Plans

- Methodology and technical infrastructure for constructing and visualising large DSLs and heterogeneous models.
- Theoretical background and technical infrastructure for high-performance querying and transformation of large models on the cloud.
- Primitives, patterns and tool support for scalable online and offline multi-device collaborative modelling.
- Novel facilities for efficient and secure persistence of large-scale models on the cloud.
http://www.mondo-project.org/

@mondo_project
Project Introduction

Concertation Meeting

Andreas Menychtas
National Technical University of Athens

12-13 March 2014

Reminder for the presenter
6 Slides/3 Minutes = 2 slides per minute
The inevitable outage

WORST CLOUD OUTAGES OF 2013 (SO FAR)

Credit: Federal Government of the United States
Focus Area

- Real world applications depend on the availability of Internet-based services.
- Minimizing downtime can be achieved by application-specific improvements or by expensive hardware-level approaches.
- ORBIT will provide a cost-effective approach for application-agnostic high availability.
- New paradigm for the consolidation of virtualized memory and I/O resources from multiple physical hosts.
- Enhanced with approaches for single-host fault-tolerance and entire-site MAN-based disaster recovery.
Relevant Standards

- Using and contributing to Open Source and Open Standards
  - Acceptance of Linux as a mission-critical platform
  - Open standards for virtualization software, data protection, Linux-based systems utilization and management
- Focused contributions on standardisation bodies (e.g. OVF CIM profiles, DMTF VMAN, OGF OCCI)
Achievements to Date & Future Plans

- High-Performance Virtual Machine Based Fault Tolerance
  - Post copy live migration available!
- Initial versions to upstream community (RFC)
  - OpenStack
  - QEMU
  - Libvirt
Session 1 Recap
Call 10 Projects

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