



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!

MIDAS

testing on cloud

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
SOA/API testing infrastructure as a service
SOA/API testing infrastructure as an API
SOA/API testing infrastructure as an open marketplace of testing methods



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

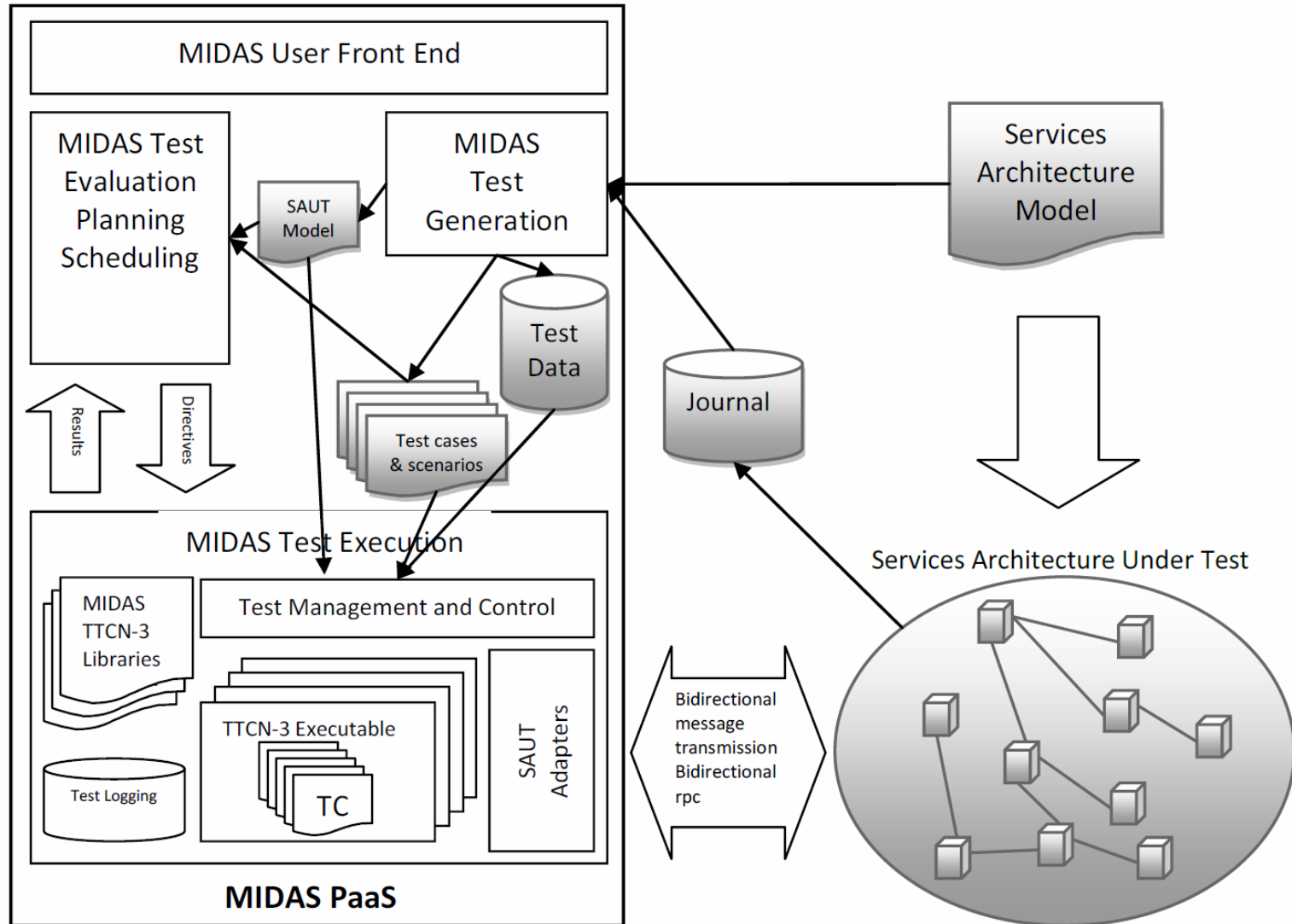
SOA/API monitoring &
usage-based testing

Test execution automation
with TTCN-3

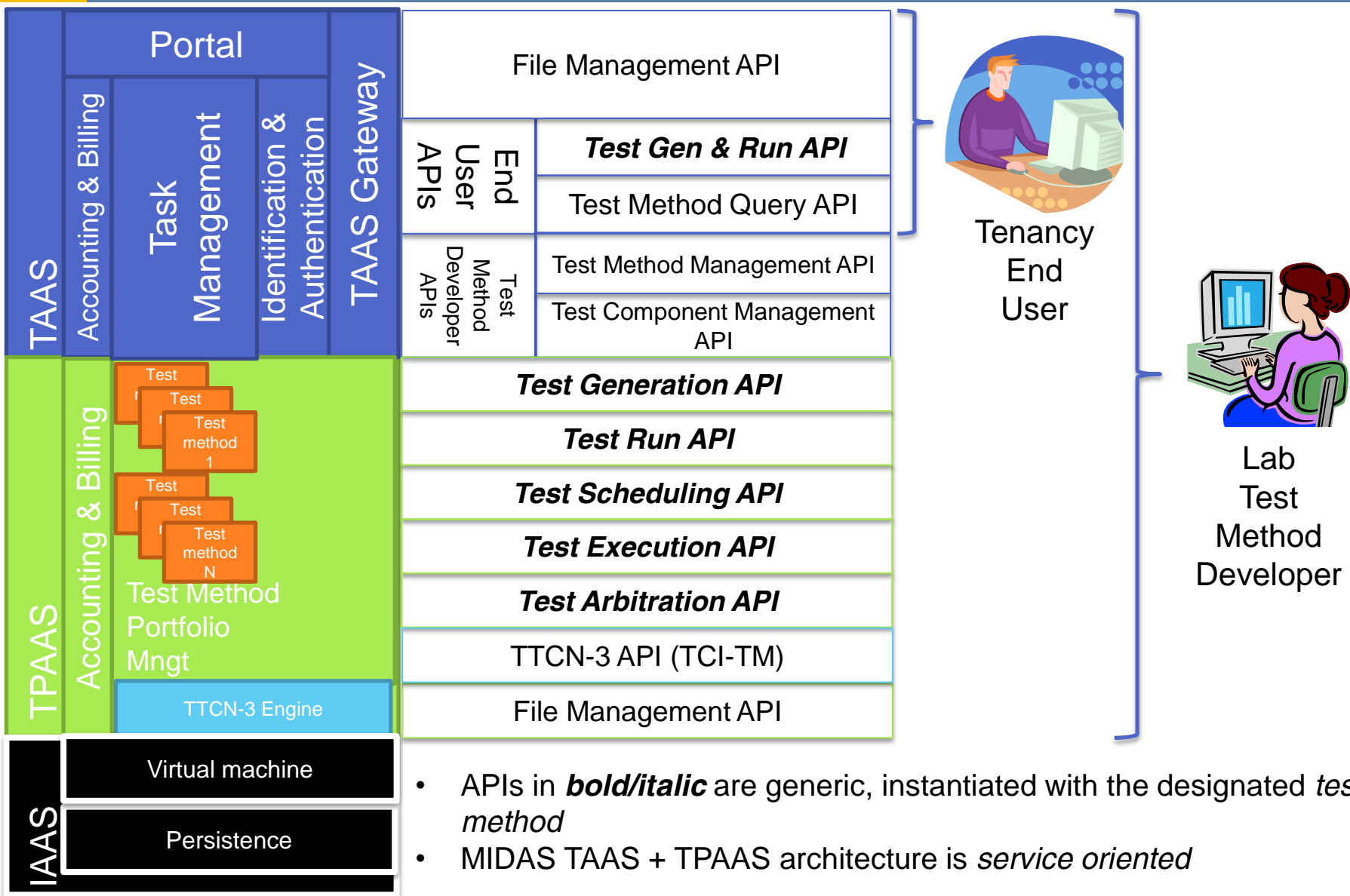
A test method is a software component that automates one or more test tasks



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

Anti model-based testing
Model-based testing
Acceptance testing
Property-based testing
Regression testing
Compliance testing
Protocol fuzzing
Pairwise testing
Load testing
Random testing
Requirement-based testing
Conformance testing
Assertion-based testing
Boundary value analysis
Contract-based testing
Mutation testing
Protocol testing
Risk-based testing
Combinatorial testing
Data flow testing
Choreography testing
Orchestration testing
Interoperability testing
Random testing
Policy-based testing
Service composition testing
Integration testing
Penetration testing
Usage-based testing
Partition testing
Data fuzzing

- 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



MIDAS

testing on cloud

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](https://twitter.com/EUMIDASProject)



Reminder for the
presenter
4 Slides/3 Minutes =
1.33 slides per minute



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

www.modaclouds.eu

MODAClouds focus area

Multi-Cloud Dev&Ops Management



Deployment speed

Flexibility

Elasticity/Adaptability

Set of services

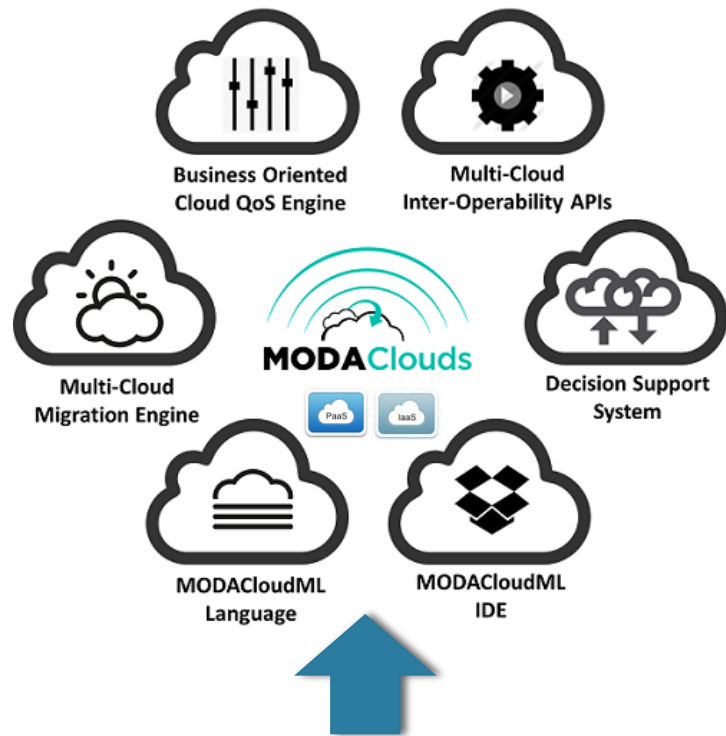
Lock-in

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



Adapters & Abstraction Library



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
Two iterations of experiments
through case studies and
extension of the platform

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

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

open source projects
europe 



Alfredo Matos - Project Coordinator
Caixa Mágica Software
alfredo.matos@caixamagica.pt



Promoting Open Source in European Projects

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 & Workflows

- Eliminate Setup Time
- Evaluate results
- Create dialog with EC

Development Support

- GT & SVN
- Wiki, Forums
- Issue Tracker

<http://opensourceprojects.eu>

open source projects europe



Manage

Create, customise and
monitor projects:
Admin tools

Wiki	>
Tickets	>
Discussion	>
Git	3 >
Admin	>
Documentation	>
Metadata	
Screenshots	
Categorization	
Tools	
User Permissions	
Audit Trail	

Develop

Support multiple tools for the
same project:
Git and SVN

Wiki	>
Tickets	>
Discussion	>
Git	3 >
Admin	>
Documentation	>
Browse Commits	
Fork	
Branches	
master	2

Communicate

Engagement between users
and projects:
Wiki, Forum and Blog

Wiki	>
Tickets	>
Discussion	>
Git	3 >
Admin	>
Documentation	>
Create Topic	
Add Forum	
Forums	
General Discussion	2
OSP Development	1
Help	
Formatting Help	

Track

What needs to be
completed, bugs, requests or
tasks:
Tickets

Wiki	>
Tickets	>
Discussion	>
Git	3 >
Admin	>
Documentation	>
Create Ticket	
Edit Milestones	
View Statistics	
Milestone	
1.0	75
Searches	
Changes	39
Closed Tickets	37

open source projects europe



15+ EU Projects (Public and Private)
280+ Registered Users (150 active daily)

<http://opensourceprojects.eu>



Promoting Open Source in European Projects

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>



Caixa Mágica
software



TSSG



MFG

**Innovation Agency
for ICT and Media**

origin

origin.co.uk



open source projects
europe

open source projects
europe

<http://opensourceprojects.eu>



Follow the QR Code to register!

Thank You!

Alfredo Matos

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Caixa Mágica
software



Innovation Agency
for ICT and Media

origin
origin.co.uk

 Bitergia



PROSE

Promoting Open Source in European Projects

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1.33 slides per minute

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 1st, 2012; ends on October 31st, 2015
- <http://www.ricoss.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

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

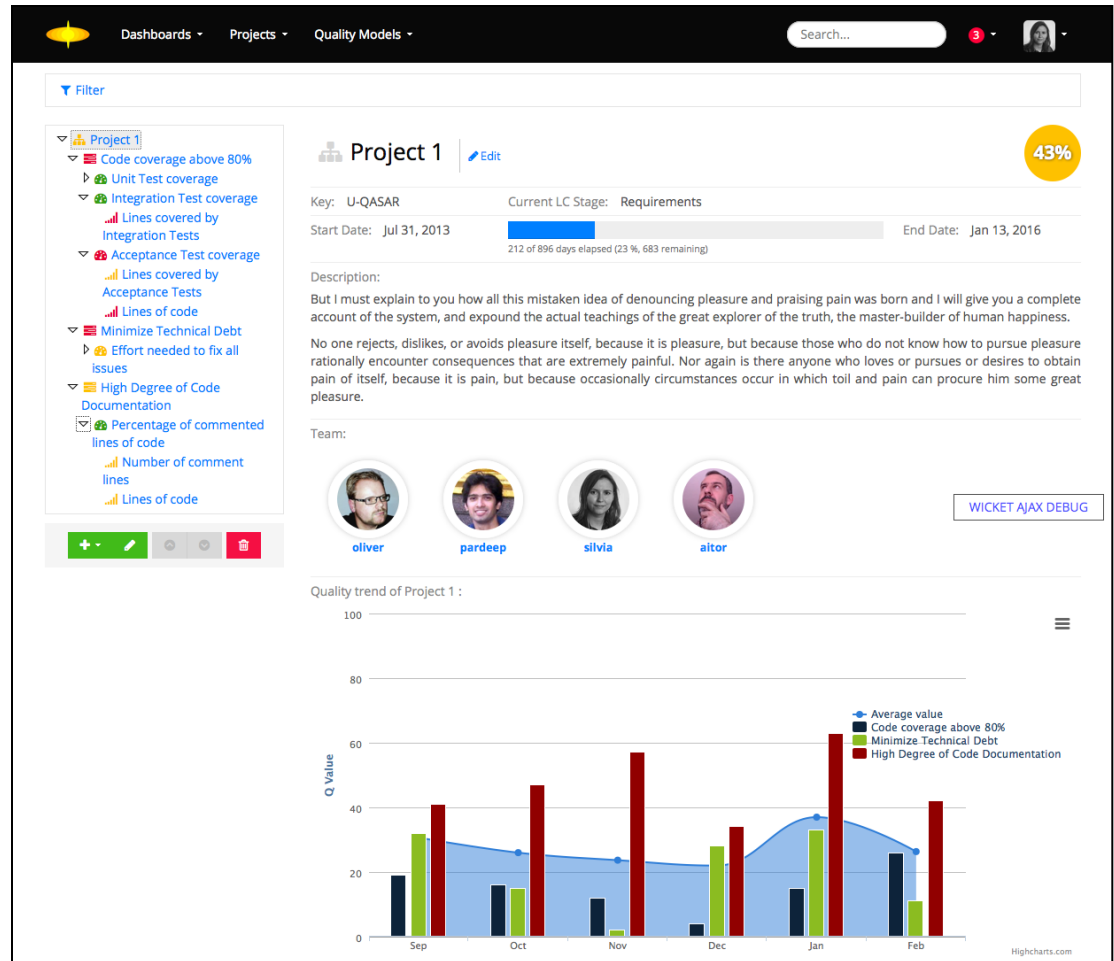
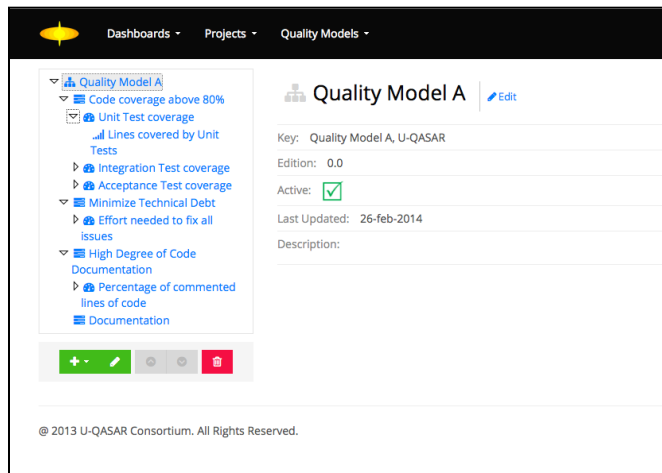
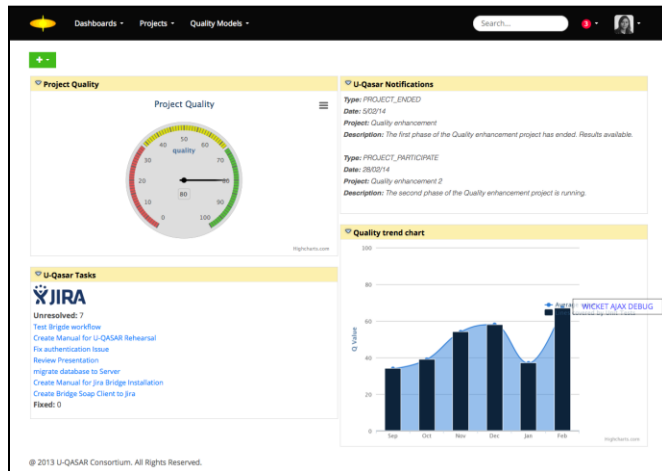
Concertation Meeting - Connect.E2
12-13 March 2014. Brussels.

- 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.

- **Software Product Quality** standards:
 - ISO/IEC 9126:1991 - Software engineering - Product quality. Recently replaced by ISO/IEC 25000;
 - ISO/IEC 14598:1999 - Information technology - Software product evaluation. Also included in ISO/IEC 25000,
 - ISO/IEC 25000:2005 - Software engineering - Software product Quality Requirements and Evaluation (SQuaRE) – Guide to SQuaRE.
- **Software Development Process** standards:
 - ISO/IEC 15939:2007 - Systems and software engineering - Measurement process, or
 - ISO/IEC 15504:2004 - Information technology - Process assessment.



Achievements to Date & Future Plans



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



Concertation Meeting – Unit E2 Software & Services



ulm university universität
uulm

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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

Duration: Oct 2013 – September 2016

Total cost: 4,761,232 €



Context-Aware Cloud Topology
Optimisation and Simulation

<http://cactosfp7.eu>

Stefan Wesner
Institute for Information Resource Management

Why CACTOS?

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

Good old days

- 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

The recent past up to now

- Heterogeneous CPU/APU
- Many different flavours
- Lots of network options
- App too slow?
→ Choose the right architecture!

Near Future

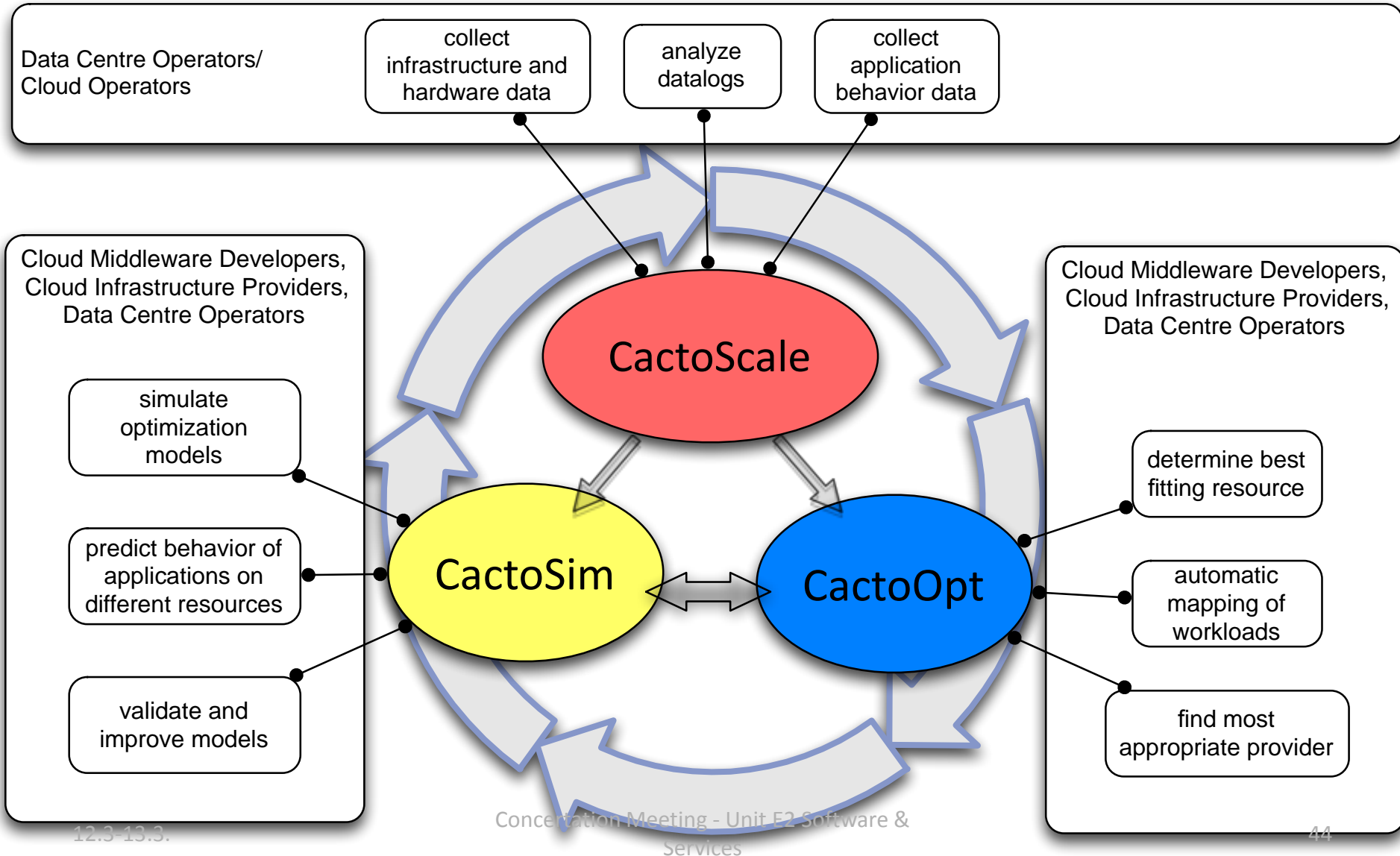
What is CACTOS not?

- 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

CACTOS Vision

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



Thanks for your attention!



<http://cactosp7.eu>

Cactos on Twitter:

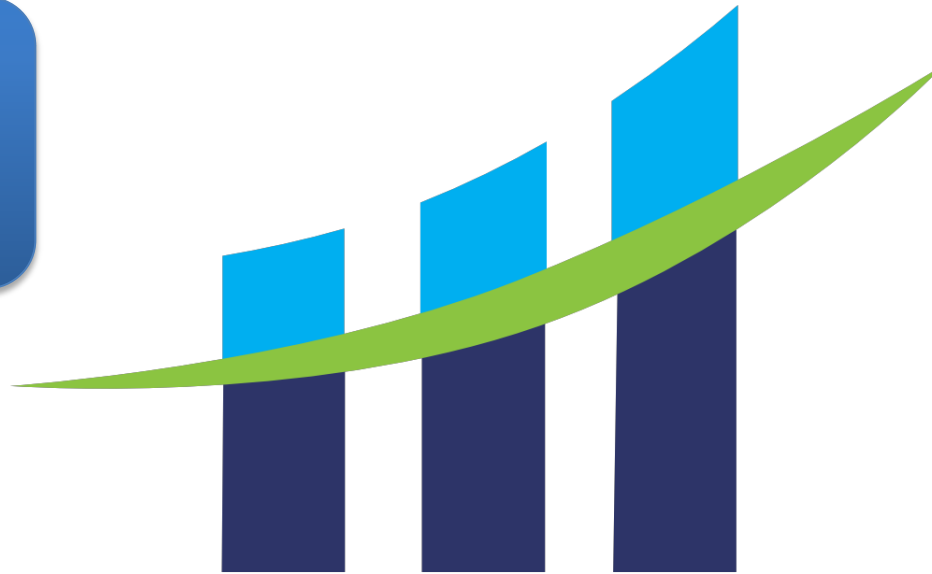
<http://twitter.com/cactosp7>

LinkedIn Group

<http://bit.ly/CACTOSgrp>

stefan.wesner@uni-ulm.de

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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

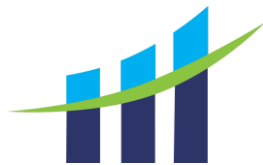
- Use of well-established standards for MDE
 - UML for modelling of applications.
 - XMI for model interchange.
- For some standards the project anticipates extending them or proposing new ones.
 - E.g. XMI

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



ORBIT

Business Continuity as a Service

Project Introduction

Concertation Meeting

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

Andreas Menychtas
National Technical University of Athens

12-13 March 2014

The inevitable outage



Credit: Federal Government of the United States



iCloud



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



redhat.



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

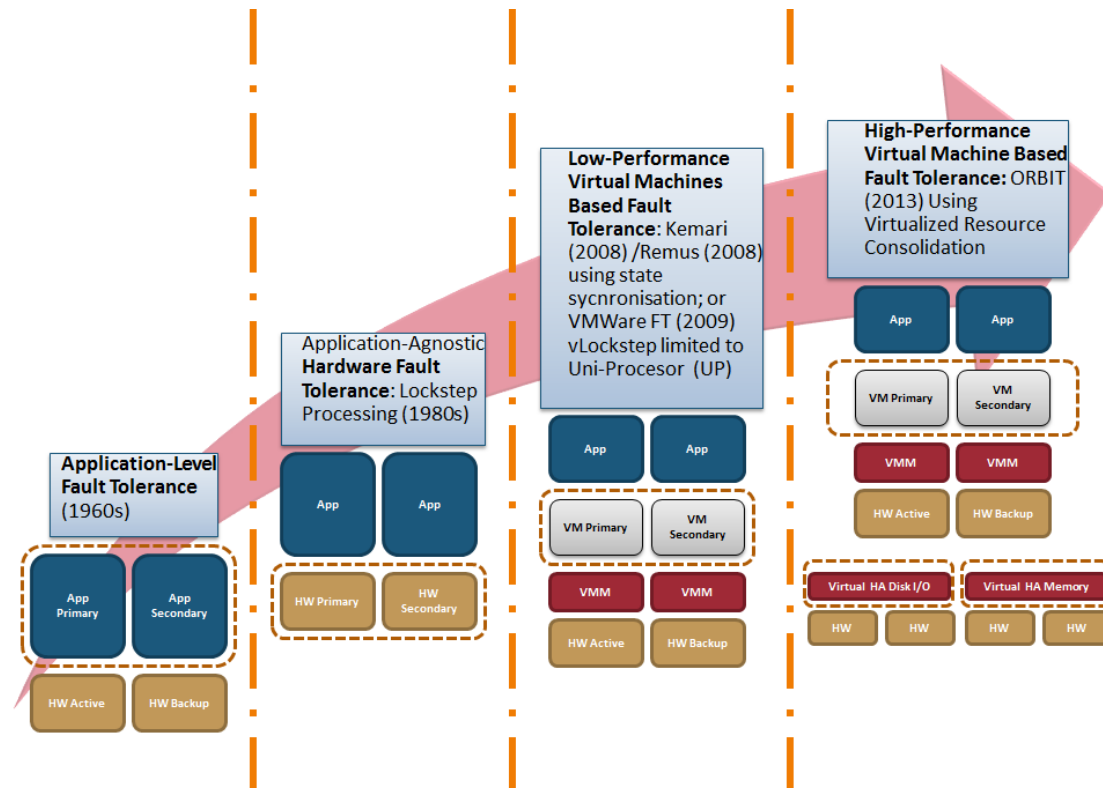


High-Performance Virtual Machine Based Fault Tolerance

- Post copy live migration available!

Initial versions to upstream community (RFC)

- OpenStack
- QEMU
- Libvirt



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