



**Model and Inference
Driven Automated testing
of Services architectures**



MIDAS Newsletter

EDITORIAL

Dear Reader,

Welcome to our eight MIDAS Newsletter!

The 2nd periodic Review was taken in Pisa on 22nd October and main results of the Project were shown as demos. The last period of the MIDAS Project has just started with a concrete definition of the evaluation strategy as well as with the Integration Strategy for the Pilot Activities. Training sessions have been developed in order to make use of the platform without a consultant.

In this eight Newsletter you will read about:

- Next Pilot Increment
- Integration Strategy for the Pilot Activities
- Next MIDAS Increment
- A related project: MODACLOUDS
- Project meetings
- 2nd Annual Review
- Training Sessions
- Participation in standardization groups
- Evaluation Strategy
- T6 Ecosystems S.r.l. Partner

Enjoy your reading!

MIDAS Consortium

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Integration Strategy for the Pilot Activities

Next Pilot Increment

Early Assessment

The first increment provides the first complete automated testing of a SAUT by the pilot partners and using the pilots' SUT systems. This increment is the foundation for all pilot demonstration scenarios, as the SUT systems are accessible, domain use cases and KPIs are specified and all components and test methods can be used with the support of technical partners.

The integration strategy for the pilots activities aims to improve the alignment of MIDAS milestones and pilots

Objectives:

- Full training sessions so that pilot partners can create MIDAS DSL compliant SAUT models with support of technical partners.
- Creation of the SUT model of each pilot, with the support of technical partners.
- Perform test of the pilots' infrastructures by manually written TTCN-3 test cases (according to V0.4 increment).
- Creation of the infrastructure for technical support from the pilots' (bug tracking systems, new features, support and assistance).
- Identification barriers and success factors in the potential adoption of MIDAS in practice by pilot

MIDAS partners have defined the integration strategy for the pilot activities.

The integration strategy for the pilot activities tries to schedule, following the same approach of the Technical Integration Plan of MIDAS, the set of tasks and increments from the pilots' point of view, in particular, provides:

1. a schedule with concrete steps for developing an increment in the context of a pilot,
2. the definition of increments that are produced during the pilots,
3. the definition of the interaction with the technical milestones included in the Technical Integration Plan,
4. the collaboration with the standardization activities and,
5. the collaboration with the bootstrapping of the MIDAS Community.
- 6.

Context of Pilots in the MIDAS Project

In the MIDAS project terminology, the term Pilot identifies a complex, service oriented software system deployed on a business infrastructure that solves a set of common use cases in typical industrial scenarios. The pilots are thought to be realistic representations of what could be a typical client for the MIDAS platform.

The pilots are the way to validate the hypothesis (Reduction of overall R&D and maintenance cost, improvement of Quality of SUT, compared to MBTA and TTA) in practice with real IT systems.

The two pilots in the Healthcare and Supply Management Chain aim at demonstrating this assumption by providing each a plausible yet simplified business scenario where complex service oriented architectures are employed. External companies, in particular SMEs, will be engaged to participate in the pilots activities to obtain a valuable feedback and evaluate the potential exploitation of MIDAS results at an early stage.

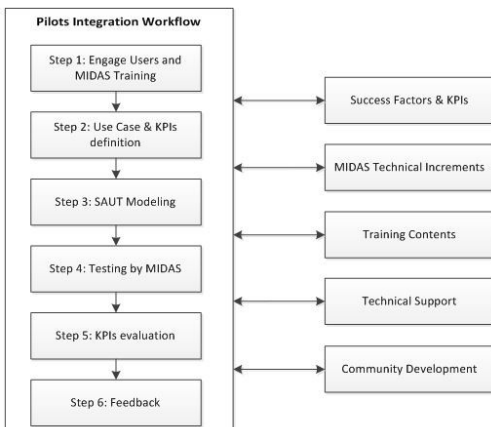
Integration Strategy

Following the same approach as the Technical Integration Plan, the pilots' activities will be performed in an incremental and step-by-step manner. With each increment, the pilots will make use of a more mature MIDAS platform, more training contents will be available and the skills and technical knowledge requirements of external stakeholders will be decreasing. This way, the hypothesis is that we should have an evolution in the cost and benefit curves, so that the latest increments will have more benefits for less costs. The integration strategy defines six steps as part of a pilot increment, and five auxiliary steps.

The main idea of the workflow suggest that an increment is a full automated testing of a SAUT concluding with the feedback from technical, socio-economic and adoption perspectives. It starts from an engagement and training sessions in order to know how-to use MIDAS, in practice, how to model the SAUT. Then, a concrete use case and particular KPIs for the increment are defined. Then, the end-users make use of the MIDAS platform, ideally without the need of any consultant, so they can create the SAUT model and perform the test. Finally an evaluation according to defined KPIs is done and feedback is given to the consortium in terms of bugs, new features, barriers, success factors and in the potential adoption of the technology in practice.

Meanwhile, the five auxiliary steps work towards these major goals:

- Give empirical data for the success factors and KPIs defined. Potentially add more factors or KPIs.
- Compare the evolution of the MIDAS increments in practice, in particular, by finding more defects as the test methods are improved
- Improve training contents to reduce the learning curve for the MIDAS adoption.
- Request new features (i.e. reverse engineering of WSDLs and data types) and obtain support in case bugs are found.
- Add more stakeholders and promote the bootstrapping of the MIDAS community.



Overview of the major MIDAS Pilots integration Steps

Next MIDAS Increment

5th Increment

MIDAS Version 0.9

The 5th increment will be the alpha version of MIDAS, i.e., a fully functional version of MIDAS deployed on the cloud including demonstrators.

The main objective is to deploy a complete MIDAS prototype including all end-user APIs on the cloud

A related project



Project: MODACLOUDS

Title: MModel-Driven Approach for design and execution of applications on multiple Clouds

Description: The main goal of MODAClouds is to provide methods, a decision support system, an open source IDE and run-time environment for the high-level design, early prototyping, semi-automatic code generation, and automatic deployment of applications on multi-Clouds with guaranteed QoS. Model-driven development combined with novel model-driven risk analysis and quality prediction will enable developers to specify Cloud-provider independent models enriched with quality parameters, implement these, perform quality prediction, monitor applications at run-time and optimize them based on the feedback, thus filling the gap between design and run-time. Additionally, MODAClouds provides techniques for data mapping and synchronization among multiple Clouds.

Website:

www.modaclouds.eu

Coordinator:

POLITECNICO DI MILANO

Project meetings

GA Meeting , Göttingen, 7th October 2014

On October 7th 2014, General Assembly met in Göttingen at a meeting organized by Georg-August-Universität Göttingen.

Scope of the meeting was to show the latest milestone of the MIDAS platform and to face the open issues for the next annual review meeting scheduled on October 22nd, 2014.

The main conclusions were:

- Integration Plan will be updated according to a minor delay
- Training activities will be registered and aligned to the MIDAS DSL
- Accounting, billing and security aspects regarding the cloud version have been considered
- The market position of MIDAS is clear and will be taken for the Socio-Economical Impact
- The agenda for the next annual review was delivered

2nd Annual Review

On October the 22nd, the second annual review was taken in the CNR premises in Pisa.

The MIDAS Consortium showed the results achieved in the first 24 months and we have received a valuable feedback to improve the expected results for the last period of the project.

A set of demos of MIDAS release vo.4 were shown.



2nd Annual Review

Training Sessions

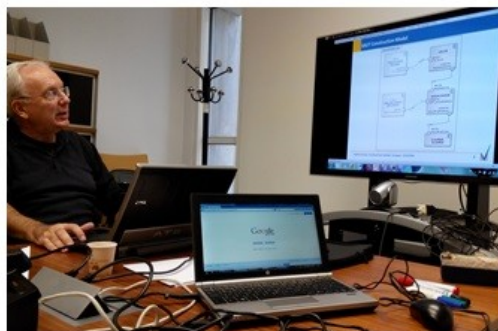
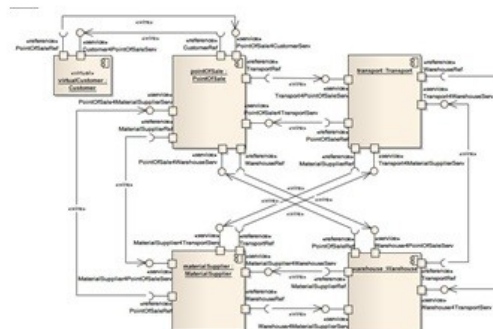
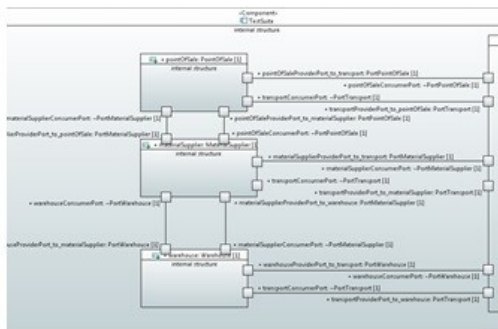
During October 2014 some training sessions have been developed between TMC and UMC members. The purpose of these sessions was to show how to model a SUT by using MIDAS DSL and what models are needed to perform a test campaign in the MIDAS platform.

On November 20th-21st 2014 a training session was organized by TMC members in Berlin.

The main objective was to train pilot members in the MIDAS DSL foundations in order to create MIDAS DSL complaint models for the pilots.

The agenda was:

- Discussion about state of the models
- Discussion about the Data type conversion to UML
- DSL Training – Foundations
 - Papyrus basics and UML profiles in papyrus
 - Creating interfaces for services
 - Creating architecture diagrams
 - Creating a test configuration
- DSL Training – Security testing
 - Creating tests as UML Sequence diagrams
 - Application of fuzzing strategies
- DSL Training – Usage-based testing
 - Creating state machine diagrams
 - Using our components on the cloud



Participation in standardization groups

OMG's PSM level specification of RLUS, hData, IXS and CTS2 services.

UML Testing Profile

UML 2.5

STF 160: 3GPP TTCN specifications for User Equipment and evolved User Equipment of different Releases (07/00 – 12/14)

STF 370: Standardization of new methodology and framework for Automated Interoperability Testing of Distributed Systems

STF 442: Standardized test development with Model-Based Testing (MBT)

STF 446: TTCN-3 evolution – continuation in 2012 (04/12 – 03/13)

STF 445: Transition of Conformance Test specification on use of Session Initiation Protocol (SIP) and Session Description Protocol (SDP) in IMS core networks to 3GPP Release 10

STF 446: TTCN-3 evolution 2012

STF 450: Validation of the Conformance Test Specifications for the Diameter Protocol over the Rx and Gx reference points

STF 453: Update of IMS NNI and IMS&EPC Test Specifications to 3GPP R10 and RCS 5.0

STF 454: Design of the Test Description Language (TDL)

STF 454: TDL Adaptation to Users (02/14 – 12/14)

STF 460: TTCN-3 Evolution 2013

STF 478: TTCN-3 Evolution 2014 (04/14 – 03/15)

Evaluation Strategy

MIDAS partners have defined the evaluation strategy as the way the results of the project will be assessed.

The evaluation strategy provides:

1. the main success factors of the project,
2. the main key performance indicators of the project,
3. a description of how the project will be evaluated as a whole, including the result of technical and pilots tasks,
4. a description of how each test method, component or approach at technical level will be evaluated at scientific level,
5. a description of how the adoption of MIDAS will be evaluated in the healthcare and logistics domains and,
6. a description of how the results will be evaluated from the standardization view.

We have identified a set of Success Factors: Quality, Cost, Effort, Risk, Usage-based testing is effective and efficient and can be applied without consulting, Functional Testing Scheduling is effective and completely automatic, Binding Functional testing Scheduling and Automated Test Case Generation improve the automation workflow, Automatic Test case generation and test execution is effective and efficient., Test methods can easily be developed without consulting and can be deployed on the MIDAS platform with minimal human intervention., The MIDAS platform usage can be transparently monitored and billed on a tenancy basis.

As well as a set of Key Performance Indicators: Number of defects found, Difficulty to learn MIDAS DSL, Effort for learning the MIDAS DSL, Difficulty to create the test architecture, Effort for creating the test architecture with the MIDAS DSL, Difficulty of usage-based testing, Effort for usage-based testing, Efficiency of usage-based testing, Difficulty of evidence-driven testing, Effort for evidence-driven testing, Efficiency of evidence-driven testing, Difficulty of security testing, Effort for security testing, Efficiency of security testing, Difficulty for integrating test methods in the MIDAS platform, Effort for deploying the MIDAS platform on the Cloud, Effectiveness of the monitoring and billing functionalities for the usage and the corresponding billing of the MIDAS services and underlying Cloud resources, Effort for the interpretation of the test results, End-user without a consultant, MBT methodology adoption in practice, Adoption by SMEs in practice

Let us introduce you...

T6 Ecosystems S.r.l.



T6ECO is a SMEs carrying out consulting and research activities with extensive experience in participating in and co-ordinating national and international research and innovation projects. The T6ECO mission is to study the development of the Information Society as well as promoting studies and innovative projects through the use of information and communication technologies for a sustainable and durable development of territories, companies, clusters and research actors.

T6ECO provides strategic consultancy to Public Administrations and private enterprises (especially SMEs) regarding innovation of process, use of ICT technologies and knowledge transfer. The socio-economic research sector plans, coordinates and deploys research activities using both qualitative (ethnography, in-depth interviews, focus groups, Delphi, etc.) and quantitative (longitudinal survey, multivariate analysis, social network analysis, etc.) techniques. In the last years analysis of social networks, online communities and research domains (within and outside the infrastructure sector) have been carried out in projects such as DBE, OPAALS, SEQUOIA, ERINA+ and ERINA4Africa.

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Our goal

To build an effective solution for SOA testing problem.

With MIDAS, we want to make it easier for companies to benefit from SOA testing.

MIDAS in a nutshell

The MIDAS project aims to design and build an integrated framework for SOA testing automation that will be available as a Software as a Service (SaaS) on a Cloud infrastructure and that spans all the testing activities: test generation, execution, evaluation and scheduling, on the functional, interaction, fault tolerance, security and usage-based testing aspects. MIDAS is focused on SOA testing, i.e. on black box testing of single services and on grey-box testing of services architectures. The testing methods and technologies that are investigated and prototyped in the project are beyond the state of the art, particularly on model-based testing, model checking of choreographies for sound interaction test scenarios, fuzzing for security testing, usage-based testing, probabilistic inference reasoning about test evaluation and scheduling. Two pilot SOA testing experiences in different business domains (healthcare and supply chain management) are carried out.

Who we are

MIDAS is led by a group of partners who have years of experience as offering research services to the industry.

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MIDAS Consortium



Consiglio Nazionale
delle Ricerche



GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN



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