

Project DEPLOY
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*“Industrial deployment of advanced system engineering methods for high
productivity and dependability”*



DEPLOY Deliverable D13

D14.10 Collaboration Report

Thierry Lecomte (ClearSy)

Alexander Romanovsky (University of Newcastle)

Jon Warwick (University of Newcastle)

Christophe Ponsard (CETIC)

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Contents

1 INTRODUCTION.....

2 ACHIEVEMENTS

2.1 FORMAL METHODS FOR SERVICE ORIENTED ARCHITECTURE

2.2 OTHER COLLABORATIONS

1 Introduction

This document presents achievements obtained during the first year of the project, for establishing links and organizing co-operation activities with other ICT projects under the WP2007/2008 Objective Service and Software Architectures, Infrastructure and Engineering.

The co-operation aims at exploiting synergies between the projects and increasing the impact of the ICT initiative. The consortium members commit to provide contributions to the following activities, if applicable:

[A1] Exploitation of synergies / technical concertation: participation to workshops, contribution to some of the working groups.

[A2] Joint activities for exchange, dissemination and training

[A3] Production of dissemination material that can be used for communication towards the general public

[A4] Co-ordination of standardisation efforts

[A5] Contribution to repositories of reference implementations

This only covers the specific activities for collaboration with other projects. The other project WPs cover the individual project activities in some of these areas (e.g., dissemination, standardisation).

The specific plan for collaboration, including the specific working group this project was detailed in [*D3 Collaboration Plan*], released at month 6 . The present document reports on the activities done during the first year.

2 Achievements

2.1 Formal Methods for Service Oriented Architecture

FOUNDATION. Following the SSAI FP7 Call1 projects meeting that took place in March 2008 in Brussels, we have identified a common thematic, namely “Formal methods for Service Oriented Architecture”, bridging over DEPLOY main focus (formal methods) and “Internet Technology” mainstream that most FP7 Call1 projects adhere to.

A Discussion Group was created, with the objective of determining how formal methods would contribute to the specification, design, development and deployment of service oriented architectures, based on potential or real error risks analysis. This analysis would rely on experience gained through non-formal developments, as well as the reasons why some SSAI FP7 Call1 projects are making explicit use of formal methods or plan to develop a formal framework (project ALIVE for example).

“Negative” testimony or feelings (justified or not) explaining why formalities are not welcome in SOA are also expected to contribute to the analysis.

In a second phase, it would be interesting to expose the results of this analysis (that we hope to be positive), to present case-studies including formalities and to explain what is the added-value of this approach. These case-studies, stored on the DEPLOY repository¹, could be issued from ongoing DEPLOY case-studies/pilots, or could be proposed by external stakeholders. These results could be disseminated through collective workshops and “white papers”.

This Working Group has been initially planned to be a subgroup of the Service Engineering Collaboration Working Group. The purpose was that it contributes to larger, service engineering oriented objectives. Now it is a separate Working Group as it addresses specific thematic.

A wiki² has been set up. It presents the Discussion Group objectives, lists the projects potentially interested in participating to the exchanges. It hosts all contributions from the Working Group members that could be discussions, statements, case-studies, etc. Everyone is invited to register and to contribute to this wiki.



The screenshot shows a web page for the 'Formal Methods for SOA and Internet of the Future' wiki. At the top left is the 'deploy' logo. To the right is a search bar with 'Go' and 'Search' buttons. Below the search bar is a navigation menu with links for 'Main Page', 'Current events', 'Category', 'Recent changes', and 'Help'. The main heading is 'Formal Methods for SOA and Internet of the Future'. Below this is a sub-menu with 'Article', 'Discussion', 'View source', and 'History'. A 'Contents' box on the left lists sections: 1 Introduction, 2 Objectives, 3 Discussions, 4 Participants and contributors, 5 Events, 6 Links and resources, and 6.1 Interesting Papers. The 'Introduction' section is expanded, showing text about the site's dedication to a Group Discussion on Formal Methods for Service Oriented Architecture and Internet of the Future, mentioning FP7 Call1 projects and the goal of increasing ICT initiative impact.

Figure 1: FM4SOA Working Group wiki

¹ <http://deploy-eprints.ecs.soton.ac.uk/>

² reachable at

[http://www.deploy-project.eu/mediawiki/index.php5?title=Formal Methods for SOA and Internet of the Future](http://www.deploy-project.eu/mediawiki/index.php5?title=Formal_Methods_for_SOA_and_Internet_of_the_Future)

First meeting. The Working Group was presented at the occasion of the concertation meeting organized in September 22-23 2008, Brussels. About 50 persons, coming from various FP6 and FP7 projects attended the session. Michael Leuschel gave a quick overview of the history of formal methods and of recent projects like the NATS (air-traffic UK) and the on-going DEPLOY project and Michael Butler described the [proposal for the WG](#). Then a discussion took place to better identify the interested projects and area of contributions. Formal methods are used by many SOA/Grid projects in specific tasks (critical design parts, methodology, policies...). The Working Group is interesting to share common problems and solutions based on Formal Methods. Link with SOA has also not to be direct, as FM can bring support in a larger perspective.

The group will probably come in support for the Service Engineering Working Group and thus have interactions with it. However it will be kept separate as the focus is different. To foster exchange between the groups the same case study will be used so that Formal Methods can come into play easily where they can help. A common case study of Service Engineering Working Group (*The Telecommunication Case Study*, Philipp Leitner) would be used to exercise formal methods.

Finally, COMPASS, PROTEST, GRID4ALL, GREDIA and SmartLM projects have duly expressed their interest in participating to the Working Group.

Dedicated workshop. The working group is now organising a one-day event on February 16th in Düsseldorf at the iFM conference (<http://www.formal-methods.de/ifm09/workshops.html>) on the theme of the working group. Ten talks are planned (see below) as well as a panel on the future of SOA and funding opportunities for research in formal methods for SOA and Internet of the Future.



Figure 2: FM4SOA WG workshop announcement on iFM2009 website

The tentative list of talks and speakers is as follows:

- *From compliant business process specifications to code*, Natallia Kokash, CWI
- *Using Reo for Composition of Web Services*, Farhad Arbab, CWI
- *Formal Modeling for Service-based Process Integration*, Andreas Roth, SAP

- *Specification, Partitioning, and Composition Techniques for Web Application in the Context of Event-B*, Abdolbaghi Rezazadeh, Univ. Southampton
- *ProTest - property based testing for Erlang*, John Derrick, University of Sheffield
- *REST: SOA without Contracts?*, Stefan Tilkov, innoQ
- *Verification and Certification using rewriting logic*, Santiago Escobar, University of Valencia
- *Formal Modelling and Analysis of SOA-based Business Information Applications with Fault Tolerant Middleware*, John Fitzgerald/Jeremy Bryans, Newcastle
- *Title to be announced*, Manuel Mazzara, University of Newcastle
- *Adding domain-specific constructs to (Event) B for developing and reasoning about grid applications*, Pontus Bostrom, Abo University

2.2 Other collaborations

DEPLOY have initiated several cooperations with other FP6/FP7 projects. These cooperations are listed below:

- Collaboration with GridTrust on a WP6 thematic (requirements, KAOS-EventB mapping), with the objective of developing a Event-B based methodology for the refinement of security policies on next generation Grids.
- Initial links with Q-Empress project and possible cooperation on patterns for Fault Tolerance and their performance evaluation.
- Presentation (4 talks given) at a [concertation meeting](#) on [FMCO 2008](#) (From Components to Services to Utilities) organized in the framework of the EU GridCOMP project. (October 22nd 2008, Sophia Antipolis).
- Collaboration with XtremOS FP6 project (one of the organisers of the concertation meeting in Brussels on September 23-24, Brussels) for parallelizing model checking for Event-B.
- Collaboration with Moebius FP6 project concerning compilation of Java Bytecode

Being one of its founding members, SAP is participating in the European NESSI initiative aiming at providing a unified outlook for Services Architectures and Software Infrastructures for European research organizations. The work of NESSI is strongly influencing the projects of the European Union's Seventh Framework Program, such as MASTER, Reservoir, SLA@SOI, and SOA4All, in which SAP is involved as a partner. SAP is also collaborating with Modelplex FP6 project on model-based testing techniques involving formal models.

Newcastle University:

- presented DEPLOY at a concertation meeting From Components to Services to Utilities organized in the framework of the EU GridCOMP project. (October 22 2008, Sophia Antipolis)
- gave an invited talk at FMCO 2008, organised as an concertation event bringing together partners for a number of the ICT projects under the WP2007/2008 Objective "Service and Software Architectures, Infrastructure and Engineering" . (October 21-23, 2008, Sophia Antipolis)
- established initial links with Q-Empress project and discussed possible cooperation on patterns for Fault Tolerance under development in DEPLOY and their performance evaluation for Q-Empress (Ralf Reussner visited Newcastle in November, 2008 and gave an invited talk)
- initiated closer discussions between Lancaster University (Diva project) and Newcastle university on building formal foundations of the novel principles of exception handling for the emerging applications

Finally, Cetic is:

- interacting with the ITEA2 Spices project on Support for Predictable Integration of mission Critical Embedded Systems.
- setting up a collaboration with CE-IQS research project aiming at the quality of system engineering together with University of Louvain, Namur, Mons and a number of industries of the Walloon region