



**12th International Conference on
RELIABLE SOFTWARE TECHNOLOGIES**

ADA-EUROPE 2007



Geneva, Switzerland, June 25–29, 2007



ADVANCE PROGRAM

<http://www.ada-europe.org/conference2007.html>

Hes·SO
Haute Ecole Spécialisée
de Suisse occidentale
Fachhochschule Westschweiz
University of Applied Sciences
Western Switzerland



PRESENTATION

In 2007, the 12th International Conference on Reliable Software Technologies takes place in Geneva, Switzerland, from 25 to 29 of June. The conference has a number of highlights including four invited talks, a full three days technical program of referred papers, two sessions on industrial presentations, an industrial exhibition and two days of tutorials. The conference offers an international forum for researchers, developers and users of reliable software technologies. Presentation and discussions cover applied and theoretical work currently conducted to support the development and maintenance of software systems.

At the crossroads of important communication roads linking the Mediterranean Sea to the North of Europe, Geneva is a town of exchanges, ideas and trade.

In 1387, the Bishop of Geneva Adhémar Fabri granted his fellow-citizens some liberty within the commune. He gave them the right to govern their city and encouraged the trading business by authorizing the practice of obtaining a loan, payable with an interest, which at the time, was severely condemned by the Church.

In the 16th century, came the Reformation: Jean Calvin was called to Geneva. He had the genius of elevating Geneva to the rank of a “Protestant Rome”.

Rousseau and Voltaire, two of the most important philosophers of the “Siècle des Lumières” (18th century) were living in Geneva. The writings of the first, “Citizen of Geneva”, inspired the French Revolution.

The international vocation of Geneva prospered again to excel during the 18th century due to important Protestant bankers. The 18th century also witnessed the expansion of the watch making and gold industry. Today, Geneva is considered as one of the most important trading places in the world.

From the science point of view, Geneva has two Universities: University of Geneva and University of Applied Sciences (Geneva Site). Geneva hosts the European Organization for Nuclear Research (CERN), where the Web was born. The International Telecommunication Union (ITU) and the International Organization for Standardization (ISO) are also headquartered in Geneva.

OVERVIEW OF THE WEEK

	Morning	Late Morning	After Lunch	Afternoon
Monday June 25th Tutorials	Rod Chapman <i>Security by Construction</i>			
	William Bail <i>An Overview of Model Driven Engineering</i>		William Bail <i>Verification and Validation for Reliable Software Systems</i>	
	Tullio Vardanega <i>CbyC: A UML2 profile enforcing the Ravenscar Computational Model</i>		Matthew Heaney <i>Object-Oriented Programming in Ada 2005</i>	
Tuesday June 26th Sessions & Exhibition	Keynote Talk: Klauss D. Mueller-Glaser <i>Challenges for reliable software design in automotive electronic control units</i>	Ada 2005 & Real-Time Systems	Verification & Validation	Testing
			Vendor Session I	Vendor Session II
Wednesday June 27th Sessions & Exhibition	Keynote Talk: Gerard Berry <i>Synchronous techniques for embedded systems</i>	MDA & Real Time	Industrial Presentations	Industrial Presentations
Thursday June 28th Sessions & Exhibition	Keynote Talk: Ali Mili <i>Perspectives on Next Generation Software Engineering</i>	MDA & Applications	Keynote Talk: Liviu Iftode <i>Observation Rooms for Program Execution Monitoring</i>	Distributed Systems
				Ada 2005 General Purpose Programming
Friday June 29th Tutorials	Gerard Berry <i>Synchronous Design of Embedded Systems: the Esterel/Scade Approach</i>		Thomas Quinot and Jérôme Hugues <i>Building interoperable applications with PolyORB</i>	
	Jolita Ralyté <i>Situational Method Engineering: Towards a Specific Method for Each System Development Project</i>			

INVITED SPEAKERS

One of the conference's highlights is the invited talks from leading experts in the fields covered by the conference:

- “Challenges for reliable software design in automotive electronic control units”, Klaus D. Mueller-Glaser (University of Karlsruhe, Germany)
- “Synchronous techniques for embedded systems”, Gerard Berry (Esterel Technologies, France)
- “Perspectives on Next Generation Software Engineering”, Ali Mili (New Jersey Institute of Technology, USA)
- “Observation Rooms for Program Execution Monitoring”, Liviu Iftod (Rutgers University, USA)

Challenges for reliable software design in automotive electronic control units



Klaus D. Mueller-Glaser,
University of Karlsruhe,
Germany
(Tuesday 26th, 9:00 - 10:00)

Up to 70 electronic control units (ECU's) serve for safety and comfort functions in a passenger car. Communicating over different bus systems most ECU's perform close loop control functions and event based reactive functions. Some ECU's controlling on board entertainment/office systems are software intensive, incorporating millions of lines of code. The design of these distributed and networked control units is a difficult and demanding task, the development process is a concurrent engineering process distributed between automotive manufacturer and several suppliers. The design of reliable ECU software with safety critical and hard real time constraints requires a strictly controlled design methodology and the intensive use of software engineering tools. Challenges are in model based design integrating heterogeneous models to allow for early system level simulation, in new domain specific tools for model driven design space exploration of distributed ECU architectures, in safety-function-co-design, in automatic code generation for rapid prototyping, verification, debugging and test of heterogeneous HW/SW modules. To support these challenging design tasks a domain specific modelling and design space exploration tool “PREEvision” has been developed which includes as a core technology an efficient rule based model-to-model transformation for migration of model data, CASE tool integration and coupling, consistency checking, model import and export as well as model re-factoring.

Presenter

Klaus D. Mueller-Glaser received Dr.-Ing. degree in 1977 from the University of Karlsruhe, Germany. From 1977 to 1986 he worked for Siemens, Synertek, Honeywell and Bell Labs, before he became responsible for setting up the first commercial U.S. AT&T ASIC Design Centre in Sunnyvale, CA. In 1986 he was appointed Full Professor at the University of Erlangen-Nürnberg, Germany. In 1993 he became Director of the Institute for Information Processing Technologies (ITIV), University of Karlsruhe. He is a Director of the Computer Science Research Centre (FZI) in Karlsruhe.

Synchronous techniques for embedded system



Gerard Berry,
Esterel Technologies, France
(Wednesday 27th, 9:00 - 10:00)

We discuss synchronous languages and methods for embedded systems, and in particular SCADE for certified embedded software design and Esterel Studio for circuit design. Both are based on the zero-delay computation mathematical model, which abstracts classical cycle-based reactive implementations. This model is very different from usual rendez-vous models, and often much simpler. It makes it possible to support sequencing and concurrency while preserving the fundamental determinism of most continuous or discrete control systems and circuits. We present the SCADE synchronous design flow in details: specification, simulation, embedded code generation, model coverage, formal verification. We discuss the current large-scale applications in avionics, railway and automotive.

Presenter

Gerard Berry received his PhD in Mathematics in 1977. He is the father of the Esterel language. Before joining Esterel Technologies in January 2001, Mr. Berry was the Director of Research at Ecole des Mines de Paris (EMP), Director of the Applied Mathematics Center (CMA) of EMP, and co-head of the joint EMP/INRIA Meije project. His research activities include programming language designs, semantics and implementation, hardware synthesis and formal verification. Gerard Berry is a member of Académie des Sciences and Academia Europaea.

Perspectives on Next Generation Software Engineering



Ali Mili,
**New Jersey Institute of
Technology, USA**
(Thursday 28th, 9:00 - 10:00)

The Software Engineering Institute has convened a panel in 2005 made up of SEI experts and outside experts to explore research issues in the next generation of software systems, referred to as Ultra Large Scale Systems (whose size is anticipated to be in the billion LOC range). This scale has many implications that make the study of ULS systems a totally new discipline, rather than a variation on existing research. In this talk, we present general characteristics of the ULS initiative, then discuss specific aspects pertaining to ULS Qualities and computational aspects of ULS engineering.

Presenter

Ali Mili holds a PhD from the University of Illinois, Urbana (1981) and a Doctorat es Sciences d'Etat from the Université Joseph Fourier de Grenoble, France (1985).

He is currently a Professor at the New Jersey Institute of Technology and is a faculty member in the graduate school of Rutgers University, Newark. In 2005 and 2006, he served as a visiting researcher for Oak Ridge National Lab (Oak Ridge, TN) and the Software Engineering Institute (Pittsburgh, PA). His research interests are in Software Engineering, ranging from technical to organizational aspects.

Observation Rooms for Program Execution Monitoring



Liviu Iftode,
Rutgers University, USA
(Thursday 28th, 14:00 - 15:00)

In this talk, I argue that program execution can and should be continuously monitored in order to detect anomalous behaviour. Our approach is to provide robust "observation rooms" from where specially-designed monitoring threads can observe execution. In my talk, I will describe several implementations and utilizations of these observation rooms, both for the operating system and application program monitoring.

Presenter

Liviu Iftode is an Associate Professor in the Department of Computer Science at Rutgers University, New Jersey. He received his Ph.D. and M.A. degrees in Computer Science from Princeton University in 1998 and 1993, respectively. His research interests include distributed systems, operating systems, mobile networking and pervasive computing. Most of his work has been conducted with his students in the Distributed Computing (DISCO) Laboratory at Rutgers (<http://discolab.rutgers.edu>).



TUTORIALS

An Overview of Model Driven Engineering



William Bail,
The MITRE Corporation
(Monday June 25th, morning)

Abstract

Model Driven Engineering (MDE) in its various names, such as Model Driven Architecture®, has matured significantly over the past few years, and as a consequence has become much more widely used throughout industry. Some practitioners are claiming significant gains in productivity and product quality, while others cite more modest benefits. This tutorial examines MDE, looking at the mechanics of its process, revealing its constituent elements, and describing how it automates portions of the development process. It analyzes the parts of the process where the productivity and quality gains are realized, and also takes a critical look at the various claims that are being made about its benefits. The tutorial provides an objective assessment of the maturity of MDE, and objectively assesses the potential benefits of using this technology. The tutorial does describe any specific tool but rather describes the underlying technical basis.

Outline

- Overview of software development
- To provide a context for the rest of the briefing
- To show where modeling techniques can provide benefits
- Models and software engineering
- Model Driven Engineering
- Model Driven Architecture®

Why you should participate in this tutorial?

This tutorial will provide the attendee with the basic understanding of the technical underpinnings of Model Driven Engineering, and thereby provide a basis for selection of this technique for candidate software development projects. The tutorial will also provide an assessment of the level of maturity of the technology, and provide a perspective regarding where additional research is needed. Understanding the underlying principles, and the relative strengths and weaknesses of MDE, is essential to making informed decisions and selecting (or not selecting) MDE as a development strategy.

Presenter

Dr. Bail received a BS in Mathematics from Carnegie Institute of Technology, and an MS and Ph.D. in Computer Science from the University of Maryland. Since 1990, Dr. Bail has worked for The MITRE Corporation in

McLean VA as a Computer Scientist in the Software Engineering Center (SWEC). MITRE is a not-for profit corporation chartered to provide systems engineering services to the U.S. Government agencies, primarily the DoD, the FAA, and the IRS. Within MITRE, the SWEC focuses on supporting various programs with consultation, particularly transitioning emerging technologies into practice. Dr. Bail's technical areas of focus include dependable software design and assessment, error handling policies, techniques for software specification development, design methodologies, metric definition and application, and verification and validation. At MITRE, Dr. Bail is currently supporting the U.S. Navy, focusing on the practice of software engineering as applied to large real-time systems. Prior to 1990, Dr. Bail worked at Intermetrics Inc. in Bethesda MD.

Since 1989 he has served as an Adjunct Professor at the University of Maryland University College where he develops instructional materials and teaches courses in software engineering, in topics such as Software Requirements, Verification and Validation, Software Design, Software Engineering, Fault Tolerant Software, and others. Previously, Dr. Bail taught part-time at The University of Maryland from 1983-1986 in the Computer Science Department for undergraduate courses in discrete mathematics, computer architecture, and programming language theory.

Dr. Bail has presented tutorials on Cleanroom Software Engineering, Semi-Formal Development Techniques, Statistical Testing, and Requirements Engineering for Dependable Systems at SIGAda, Ada-Europe, and other conferences.

Correctness by construction: A UML2 profile enforcing the Ravenscar Computational Model



Tullio Vardanega,
University of Padua, Italy
(Monday June 25th, morning)

Abstract

This tutorial illustrates some results from a core track of the EC FP6 ASSERT project, which aims to unite three distinct wavefronts in the engineering of high-integrity software systems:

1. the pursuit of a “correctness by construction” development paradigm;
2. the reliance on the UML2 notions of profile supported by meta-model ontologies;
3. the adoption of an educated approach to the use of concurrency centred around guaranteed compliance



with the computational model defined the *Ravenscar Profile*.

The tutorial proceeds in three successive steps:

- first we discuss how a UML2 profile can be constructed by mapping the basic ontologies of HRT-HOOD onto the UML2 metamodel;
- subsequently we address and overcome some frustrating limitations inflicted by the HOOD heritage on the expressive power at model level and make an important step toward better integration of the HRT and OO dimensions of modern systems;
- finally we show how Ada 2005 permits to amplify the benefits of correct-by-construction model-based code generation via factorization and instantiation.

Level

The tutorial is intended for an audience with some prior experience with the development of high-integrity real-time systems. It is possible that the tutorial will include the practical demonstration of some utilities in support of the subject development method.

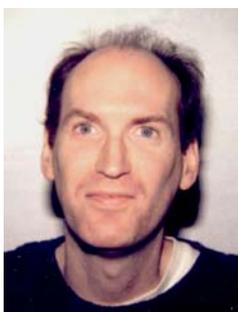
Why you should participate in this tutorial?

There is growing awareness that the development of high-integrity real-time systems demands better methods that unite solid theoretical foundations with sufficient flexibility to leverage on some controlled form of Model-Driven Engineering. The tutorial illustrates the principles that inspire a novel development method as it stems from the ASSERT project partially funded by the European Commission as part of the IST objective of VI Framework Programme (FP6-IST-004033).

Presenter

Tullio Vardanega, from the Department of Pure and Applied Mathematics of the University of Padua, is an expert in the development of real-time embedded systems, and processes and methodologies for the engineering of software-intensive high-integrity systems. Before joining the University of Padua, he worked for a long time at ESA, the European Space Agency. He is Ada-Europe Board member and Editor of the Ada User Journal. He is active in ISO's Ada standardization working group (WG9), more specifically in the Ada Rapporteur Group (ARG, language maintenance) and the Annex H Rapporteur Group (HRG, guidance for high integrity applications in Ada).

Object-Oriented Programming in Ada 2005



Matthew Heaney,
On2 Technologies, USA
(Monday June 25th, afternoon)

Abstract

This tutorial discusses object-oriented programming in Ada05. In addition to discussing classic

features such as tagged types, class-wide programming, and access discriminants, the tutorial will include information about new procedure-call syntax, interface types, anonymous access types and anonymous subprogram parameters, extended return statements, limited-with and private-with package dependencies, and limited aggregates and box defaults. The tutorial will also present idioms for implementing a type, constructing and destroying instances, designing subsystems, and for storage management and concurrency.

Why you should participate in this tutorial?

Attendees will gain a thorough understanding of how to use the myriad language features available for crafting abstractions in Ada, learning useful rules-of-thumb for their proper use.

Presenter

Matthew Heaney is the author of Charles, a container library for Ada which was the basis of the proposal selected by the ARG for the Ada 2005 standard container library. He has given many Ada tutorials on topics that include object-oriented programming, design patterns, and software systems and library design. Matt was recently awarded an Outstanding Ada Community Contribution Award by SIGAda, for his work in the development of container libraries for Ada.

Verification and Validation for Reliable Software Systems



William Bail,
The MITRE Corporation, USA
(Monday June 25th, afternoon)

Abstract

The practice of verification and validation (V&V) is a key aspect of any software development effort, and is tightly intertwined with the construction of the software. In this tutorial we examine the nature of V&V as applied to software systems with high expectations of dependability, and present techniques that have been shown to increase quality and dependability. We emphasize that V&V is more than just a "testing" activity, and includes practices that include testing as well as other valuable techniques, such as reviews, inspections and audits. We describe these practices, point out their individual strengths and weaknesses, and provide advice on how to select the appropriate practices based on the nature of the system under development. A key aspect of this selection process is correlating the techniques to the different types of requirements, recognizing that the requirements define the desired attributes of the system. We describe some challenges in applying V&V, and describe how to approach these challenges to improve the results. We also contrast "normal" V&V with "Independent V&V" (IV&V), an



approach often used for large software development efforts.

Outline

- Introduction to tutorial content
- Overview of verification and validation
- Practices: reviews, audits, and inspections
- Practices: test
- Special challenges
- Planning for V&V

Why you should participate in this tutorial?

This tutorial will provide the attendee with the basic understanding of different verification and validation techniques, and advice on how to select and apply them based on the system to be developed. This information will assist in planning for complex systems development by providing a framework of verification steps that will balance cost efficiency with the need to demonstrate that systems are able to deliver their required high levels of dependability.

Presenter

See first Tutorial

Security by Construction



Rod Chapman,
Praxis HIS, UK
(Monday June 25th, full day)

Abstract

This tutorial will cover the use of "Correctness by Construction" (CbyC) techniques in the development of highly secure software systems. While the use of CbyC is well-known in the

development of safety-related systems, it has also been deployed in the domain of highly secure systems. The software world seems plagued by security problems caused by basic mistakes in software design and construction, but this tutorial will show how practices from the safety-critical domain can be used to tackle these problems. In particular, the role of formal methods, programming language design, and strong static verification will be covered. The tutorial will be illustrated with reference to CbyC security projects such as the MULTOS CA and the NSA Tokeneer system.

Description of Topic: Software security is one of the highest-profile and most important topics facing researchers today. The plague of "buffer overflow" and similar attacks that we read about every day seem almost endemic, yet these are problems that have been faced (and solved) by the safety-critical community for many years.

This tutorial will recount our experience in building high-grade secure systems using the CbyC approach developed by Praxis over the last 15 years.

Outline

Part I - Basics

Security basics - assumptions, threats, attacks, satan's computer Software correctness vs security

Part II - Correctness by Construction

- CbyC principles and techniques
- The role of formal languages and methods

Part III - Programming Languages and Static Analysis Language issues

- Ada's position in all this
- The SPARK approach to verification of security properties
 - o Basic protection from stupid mistakes
 - o Flow analysis and theorem proving
 - o Input data validation and injection attacks
 - o Domain and application-specific security properties

Part IV - Project examples

- MULTOS CA
- NSA Tokeneer

Why you should participate in this tutorial?

In recent years, software security has become a major issue. This tutorial will focus on how practices from the safety-critical industry can be used to address the engineering of secure systems. In particular, the tutorial will cover how Ada, SPARK, and static verification techniques can address the needs of secure systems development.

Presenter

The principal presenter will be Dr Roderick Chapman of Praxis High Integrity Systems.

Rodderick Chapman is a well-known conference speaker. He has presented papers, tutorials and workshops at many international events including STC, NSA HCSS, and ACM SIGAda. He was the opening key-note speaker at Ada Europe 2006.

Rod Chapman has been involved with the design of both safety- and security-critical software with Praxis for many years, including significant contributions to many of Praxis' key-note projects such as SHOLIS, MULTOS CA, Tokeneer, and the development of the SPARK language and verification tools. Rod is a chartered engineer and a Fellow of the BCS.

Synchronous design of embedded systems: the Esterel / Scade approach



Gerard Berry,
Esterel Technologies, France
(Friday June 29th, morning)

Abstract

This tutorial presents the synchronous design of embedded systems using the SCADE and Esterel

Studio tools. The synchronous approach relies on a rigorous mathematical model of synchronous concurrent computation, which serves as a basis for the formal semantics of the languages. The tutorial mostly focuses on Scade, which is a graphical language. Scade models are defined by hierarchical block diagrams for continuous control and hierarchical state machines for discrete control, with unlimited nesting of both formalisms. The SCADE Suite tool provides model capture and sanity checking, visual simulation, model coverage analysis, C code generation, and formal verification. The tutorial will also briefly present Esterel Studio, a similar integrated development environment for the design, synthesis, and verification of hardware circuits and their software models.

Level: advanced

Heritage

the synchronous methodology and the associated tools are based on 25 years of research and more than 15 years of industrial applications.

Why you should participate in this tutorial?

SCADE is used by a large number of major companies to develop embedded safety-critical software for avionics, railway, automotive, and industry applications. Its C code generator is certified at highest level A of the DO-178B avionics norm, which makes it perfectly suited to certified software development. Esterel Studio is used by major hardware companies for the specification, synthesis, and verification of embedded hardware circuits together with their software models.

Presenter

Gerard Berry received his PhD in Mathematics in 1977. He is the father of the Esterel language. Before joining Esterel Technologies in January 2001, Mr. Berry was the Director of Research at Ecole des Mines de Paris (EMP), Director of the Applied Mathematics Center (CMA) of EMP, and co-head of the joint EMP/INRIA Meije project. His research activities include programming language designs, semantics and implementation, hardware synthesis and formal verification. Gerard Berry is a member of Académie des Sciences and Academia Europaea.

Building interoperable distributed applications with PolyORB



**Thomas Quinot
and Jérôme
Hugues**
AdaCore-ENST,
France
(Friday June 29th,
afternoon)

Abstract

PolyORB is the reference implementation of the "schizophrenic" middleware architecture. This innovative architecture resolves middleware to middleware interoperability issues: it allows seamless integration of partitions in heterogeneous distribution environments (CORBA, DSA, web services) through the collaboration of multiple collocated personalities.

After presenting key concepts of distributed applications, we present two application fields of PolyORB:

- as a CORBA implementation, using the iac IDL-to-Ada compiler, allowing integration in multi-language distributed applications;
- as a supporting partition communication subsystem for the Ada Distributed Systems Annex (annex E), using the gnatdist partitioning tool.

We then present how to leverage the schizophrenic to take advantage of both the CORBA and Ada DSA distribution models. Specifically, we show how Ada components can interact seamlessly with components written in other languages through GIOP using the PolyORB-based DSA implementation and third-party CORBA implementations. We then conclude by presenting other innovative aspects of PolyORB: integration of web services, security services, real-time.

PolyORB is developed as a joint effort by ENST, LIP6 and AdaCore, and supported by AdaCore. The PolyORB project is a member of the ObjectWeb consortium.

Why you should participate in this tutorial?

The intended audience for this tutorial is Ada application developers seeking to develop distributed applications. We specifically focus on distributed features of the Ada language, allowing seamless integration of distribution in the language itself, and on integration with industry standard CORBA components.

Presenters

Thomas Quinot has been involved with Ada and distributed systems since 1997. As part of his PhD research at Télécom Paris, he carried research on interoperability of heterogeneous distributed systems, and developed the Schizophrenic Middleware Architecture and its first implementation, PolyORB.

He contributed a reimplementation of the Ada 95 distributed systems annex for the GNAT compiler on top of the PolyORB components. He is now a senior engineer at AdaCore, where he is involved in the maintenance of GNAT and the industrial development of the PolyORB project.

Jérôme Hugues graduated from ENST in 2002, and got his PhD in 2005. He is now associate professor at the C/S department of the ENST. His research domain covers distributed systems, real-time systems and the use of modelling and formal methods applied to the engineering of complex systems. As part of his research activities, he was involved in the PolyORB project since its early stage in 2002, and since he became one of its lead architects. He uses PolyORB as a proof of concept of emerging techniques in distributed systems, and contributed many enhancements to its architecture and its internals: better performance, determinism and compliance to standards, including CORBA and RT-CORBA. He also contributed to the formal verification of the inner core of PolyORB using Petri Nets. He also participates in the support and development of PolyORB in the context of an industrial partnership between AdaCore and the ENST.

Situational Method Engineering: Towards a Specific Method for Each System Development Project



Jolita Ralyté
University of Geneva,
Switzerland
(Friday June 29th, full day)

Abstract

Over the last decade *Method Engineering*, defined as the engineering discipline to design, construct and adapt methods and

supportive tools, has emerged as the research and application area for using methods for software and information systems development. Because the engineering situation vary considerable from one system development project to another (different application domain, product features, licence form, stakeholders involved, team structure and various technological conditions), methods need to be adapted, configured or even designed from scratch to satisfy the specific situation of each project. Contributions in the field of *Situational Method Engineering* aim at providing techniques and tools allowing to construct project-specific methods instead of looking for universally applicable ones.

In this tutorial we will provide an overview of the main topics in the area of situational method engineering:

- Method definition, description and meta-modelling,
- Method engineering principles, techniques and tools,

- Reusable method fragments, their selection and assembly,
- Project situation assessment,
- Selection, adaptation, configuration and construction of situation-specific methods,
- Knowledge infrastructures, meta-case, and tool support.

Beside these topics, we will also discuss more recent work in the area of methods supporting interoperable ICT products development. Interoperability of enterprise applications and platforms will be analysed as a typical problem requiring situational method engineering.

Why you should participate in this tutorial?

The tutorial is designed for researchers, students and industrial practitioners dealing with software and information systems development. We invite researchers and Master students to increase their knowledge in the area of situational method engineering and to study techniques and principals for new methods construction. The tutorial is also a suitable introduction to situational method engineering for professionals. System analysts, designers, project managers and consultants are invited to learn how to evaluate their project situation and to tailor a suitable method, how to capitalise their knowledge, experience and best practices in the form of reusable method fragments and to create method knowledge repositories.

Presenters

Jolita Ralyté is currently a senior researcher and lecturer in the Department of Information Systems at the University of Geneva. She obtained a PhD in Computer Science from the University of Paris 1 – Sorbonne in 2001. The research areas of Dr. Ralyté include situational method engineering, requirement engineering, information systems evolution and interoperability and distributed information systems development. She has participated in diverse European research projects (TOOBIS, CREWS, INTEROP) and currently she is in charge of the International Method Engineering Task Group within the IFIP WG 8.1 and the task group TG6 dealing with methods and method engineering techniques supporting various systems interoperability issues within the European NoE INTEROP. Her work has been published in various international conferences (CAISE, ER, ICSP, ISD, I-ESA, IFIP WG8.1 EISIC'02) and international journals (RE, Knowledge-Based Systems). Dr Ralyté has been involved in the organisation of a number of international conferences and workshops (OOIS'03, EMSISE'03, Interop-ESA'05, SREP'05 and Doctoral Symposium at I-ESA'06) and co-edited a special issue of SPIP with revised best papers from SREP'05. Dr. Ralyté is a program chair of the IFIP WG 8.1 Working Conference ME07 to be held in Geneva in September 2007.

CONFERENCE SCHEDULE

(Preliminary)

Please refer to the conference website for the latest details



	Tuesday 26th	Wednesday 27th	Thursday 28th
9:00 - 10:00	<p>Keynote Talk: Challenges for reliable software design in automotive electronic control units <i>Klauss D. Mueller-Glaser, University of Karlsruhe, Germany</i></p>	<p>Keynote Talk: Synchronous techniques for embedded systems <i>Gerard Berry, Esterel Technologies, France</i></p>	<p>Keynote Talk: Perspectives on Next Generation Software Engineering <i>Ali Mili, New Jersey Institute of Technology, USA</i></p>
10:00 - 11:00	Coffee & Exhibition	Coffee & Exhibition	Coffee & Exhibition
11:00 - 11:30	<p>Ada 2005 & Real-Time Systems</p> <p>Real-Time Utilities for Ada 2005 <i>A. Wellings, A. Burns</i></p>	<p>MDA & Real Time</p> <p>Correctness by Construction for High-Integrity Real-Time Systems: a Metamodel-driven Approach <i>M. Bordin, T. Vardanega</i></p>	<p>MDA & Applications</p> <p>Generating Distributed High Integrity Applications from their Architectural Description <i>B. Zalila, I. Hamid, J. Hugues, L. Pautet</i></p>
11:30 - 12:00	<p>Handling temporal faults in Ada 2005 <i>J. A. Pulido, S. Urueña, J. Zamorano, J. A. de la Puente</i></p>	<p>A Metamodel-driven Process Featuring Advanced Model-based Timing Analysis <i>M., Panunzio, T. Vardanega</i></p>	<p>Automatic Ada Code Generation Using a Model-Driven Engineering Approach <i>D. Alonso, C. Vicente-Chicote, B. Alvarez, P. Sanchez, F. Losilla</i></p>
12:00 - 12:30	<p>Implementation of new Ada 2005 real-time services in MaRTE OS and GNAT <i>M. Aldea-Rivas, J. F. Ruiz</i></p>	<p>ArchMDE approach for the development of Embedded Real Time Systems <i>N. Elleuch, A. Khalfallah, S. Ben Ahmed</i></p>	<p>Towards User-Level extensibility of an Ada library : an experiment with Cheddar <i>F. Singhoff, A. Plantec</i></p>
12:30 - 14:00	Lunch & Exhibition	Lunch & Exhibition	Lunch & Exhibition

CONFERENCE SCHEDULE



	Tuesday 26th		Wednesday 27th	Thursday 28th	
14:00 - 14:30	Verification & Validation Enhancing Dependability of Component-based Systems <i>A. Lanoix, D. Hatebur, M. Heisel, J. Souquieres</i>	Vendor Session I	Industrial Presentations #I The NIST SAMATE Project and Reliable Software <i>P. Black</i> How Static Analysis can Increase Reliability and Readability of C, C++ and Java <i>R. Groenboom</i> Practical Application of Static Analysis for Embedded Systems <i>David N. Kleidermacher</i> Template Driven in UML Ada95 <i>W. Glaister</i>	Keynote Talk: Observation Rooms for Program Execution Monitoring <i>Liviu Iftode, Rutgers University, USA</i>	
14:30 - 15:00	Generic Discrete Event Simulations using Degas : Application to Logic Design and Digital Signal Processing <i>P. Pukite, L. Ludwig</i>				
15:00 - 15:30	On Detecting Double Literal Faults in Boolean Expressions <i>M. Lau, Y. Liu, T. Chen, Y. Yu</i>			Coffee & Exhibition Distributed Systems Ada 2005 General Purpose Programming	
15:30 - 16:00	Static Detection of Livelocks in Ada Multitasking Programs <i>J. Bliederger, B. Burgstaller, R. Mittermayr</i>				
16:00 - 16:30	Coffee & Exhibition		Coffee & Exhibition	Design and Performance of a Generic Consensus Component for Critical Distributed Applications <i>K. Barbara, J. Hugues, L. Pautet</i>	Incorporating Precise Garbage Collection in an Ada Compiler <i>F. Garcia, J. Miranda, J. Fortes Gálvez</i>
16:30 - 17:00				Closing Session & Awards	
17:00 - 17:30	Testing Towards the Testing of Power-Aware Software Applications for Wireless Sensor Networks <i>W. K. Chan, T. Y. Chen, S. C. Cheung, T. H. Tse, Z. Zhang</i>	Vendor Session II	Industrial Presentations #II Case Study: Identifying Opportunities for Worse-Case Execution Time Reduction in an Avionics System <i>G. Bernat, M. Bennett</i> Towards Certification of Object-Oriented Code with the GNAT Compiler <i>J. Miranda</i> Secure Software-Download as part of a complex business process. <i>L. Hanke, I. Furgel</i>		
17:30 - 18:00	An Intermediate Representation Approach to Reducing Test Suites for Retargeted Compilers <i>H. Seok Chae, G. Woo, H. Jang</i>				
18:00 - 18:30	Ada-Europe General Assembly				
18:30 - 19:00					
	Reception		Banquet		



TUTORIAL SCHEDULE

Monday June 25th	T1	Morning	William Bail <i>An Overview of Model Driven Engineering</i>
	T2	Morning	Tullio Vardanega <i>CbyC: A UML2 profile enforcing the Ravenscar Computational Model</i>
	T3	Afternoon	William Bail <i>Verification and Validation for Reliable Software Systems</i>
	T4	Afternoon	Matthew Heaney <i>Object Oriented Programming in Ada 2005</i>
	T5	Full day	Rod Chapman <i>Security by Construction</i>
Friday June 29th	T6	Morning	Gerard Berry <i>Synchronous Design of Embedded Systems: the Esterel/Scade Approach</i>
	T7	Afternoon	Thomas Quinot and Jérôme Hugues <i>Building interoperable applications with PolyORB</i>
	T8	Full day	Jolita Ralyté <i>Situational Method Engineering: Towards a Specific Method for Each System Development Project</i>

Morning tutorial sessions will start at 9:30 and end at 13:00. Afternoon sessions will start at 14:30 and end at 18:00. There will be coffee breaks at 11:00 - 11:30 and at 16:00 - 16:30.

EXHIBITION

The exhibition will open in the mid-morning break on Tuesday and run continuously until the end of the afternoon break on Thursday. It will take place in the area located at the mezzanine of the building, at the top of the main conference room.

The coffee breaks are held in the same exhibition area. Breaks Tuesday–Thursday are one hour to allow the attendees a comfortable visit to the exhibition

GUIDE TO THE SOCIAL PROGRAM

Reception

The welcome reception will be held on Tuesday 26th June (20:00 - 21:30) in the World Meteorological Organization (WMO) building (<http://www.wmo.ch/>). The WMO is a Specialized Agency of the United Nations. It is the UN system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources.

The reception will take place in the “Mont Blanc” area (9th floor) which offers a beautiful view point of Geneva: view of Leman Lake, old town, Mont Blanc and the Alps, Botanical garden, United Nations, etc.

You will discover one of the most famous buildings of Geneva. A guided tour will be organized.

Conference Banquet

The banquet on Wednesday will take place in one of the best known and most elegant restaurants in Geneva: *La Perle du Lac (The Pearl of the Lake)*. Located close to the lake, in the Park “*Mon Repos*”, this restaurant built in 1930, has a superb view on the city and the *Mont Blanc*. We will have dinner in the *Orangerie* room, on the ground floor.

Before dinner, we will have an aperitif in the History of Sciences Museum (musée d'histoire des sciences) which is one minute walk from the restaurant *La Perle du Lac*. This Museum shelters a collection of old scientific instruments invented by different scientists who lived in Geneva between the 17th and 19th century. A guided tour will be organized.

Additional tickets for the reception and for the banquet can be purchased at registration.



REGISTRATION AND ACCOMMODATION

Conference Registration

The registration fee for the three days of the technical program (June 26th - June 28th) includes one copy of the proceedings, coffee breaks, lunches, reception on Tuesday June 26th evening and banquet on Wednesday 27th evening. The registration fee for a single day of the technical program includes one copy of the proceedings, coffee breaks, and lunch for the day of the registration.

	Member of Ada-Europe or ACM SIGAda		Non-member	
	Non academia	Academia	Non academia	Academia
Early registration (by May 31th)	800 CHF	700 CHF	900 CHF	800 CHF
Late/on-site registration (after May 31th)	900 CHF	900 CHF	990 CHF	990 CHF
Individual registration (per day)	400 CHF	400 CHF	450 CHF	450 CHF

Tutorial Registration

The fee is per tutorial, including tutorial notes and coffee breaks. Lunches are only included when registered for a full day tutorial or two half day tutorials on the same day.

	Half day	Full day or two half days on the same day
Early registration (by May 31th)	200 CHF	360 CHF
Late/on-site registration (after May 31th)	250 CHF	450 CHF

No registration request will be confirmed until the payment has been processed. Cancellations must be given in writing. A cancellation fee of 180 CHF will be applied to all cancellations. No refunds will be given for cancellations received after the 10th of June. Substitutions will be accepted. To save on administrative costs and postage, receipts will be given out at the conference.

For latest information see the web page at <http://www.ada-europe.org/conference2007.html>. For additional information, please contact the Ada-Europe 2007 Local Chair: **Régis Boesch**, Tel: +41 22 338.05.34, Fax: +41 22 338.04.10, E-mail: regis.boesch@hesge.ch.

Accommodation

We have negotiated specially reduced rates at hotels in nearby the conference. Please consult the conference website for information. Please book accommodation as soon as possible. Geneva will be very busy in that week.



Please return this form by fax to
+41.22.338.04.10 or by mail to the
Ada-Europe 2007 Local Chair:
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Geneva School of Engineering
4 rue de la Prairie
CH-1202 Geneva, Switzerland

Participant Registration Form

12th International Conference on Reliable Software Technologies
Ada-Europe 2007

25-29 June 2007, Geneva, Switzerland

<http://www.ada-europe.org/conference2007.html>

Please use block capitals

Participant Ms Mr Title: _____

First name: _____ Last name: _____

Affiliation/Organization: _____

Address: _____

City: _____ State: _____

Country: _____ Zip/Postal code: _____

Phone: _____ Fax: _____ Email: _____

Special requirements (e.g. diet): _____

There are number of other “in cooperation” conferences in this area (such as ACM SIGAda). Indicate whether you want to receive information about other conferences: Yes No

Reduced registration fee

Member Ada-Europe; national organization _____ Academia

Member ACM; membership number _____

Additional Comments: _____

Registration time: Early registration (by May 31th) . Late registration or on site (after May 31th)

Registration Fees (see table on Ada-Europe 2007 webpage <http://www.ada-europe.org/conference2007.html>)

Conference registration fee

Three days registration: _____ CHF

Individual days (Tue Wed Thu): _____ CHF

Tutorial registration (please indicate the tutorials for which you want to register):

Monday, June 25th T1 T2 T3 T4 T5

Friday, June 29th T6 T7 T8

Tutorial registration fee: _____ CHF

Extra banquet tickets (120 CHF each): _____ CHF

Extra proceedings (60 CHF each): _____ CHF

Total Payment Due: _____ CHF

Payment method

By bank transfer ⁽¹⁾, to account number (IBAN) CH68 0900 0000 1707 5646 1 of *Geneva School of Engineering, Switzerland*. The account is from the bank *CSWISS POST-POST FINANCE*, with bank identifier (swift code) POFICHBE. Please attach a copy of the bank draft to this form.

By check ⁽¹⁾, for _____ CHF, made payable to *Geneva School of Engineering, Switzerland*.

(1) Please make checks or bank transfers in CHF. Payments in other currencies will not be accepted.



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Further Information

The conference website gives full and up to date details of the program. Also on the website are details of the venue, including travel advice, maps and list of hotels close to the conference venue.

<http://www.ada-europe.org/conference2007.html>

Exhibiting and Sponsoring details are also on the web site; a sliding scale of sponsorship provides a range of benefits. All levels include display of your logo on the conference web site and in the program. The lowest level of support is very affordable.



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The organizers thank the exhibitors and supporters of the conference (preliminary list):



Springer Verlag will publish the proceedings of the conference, as vol. 4498 of Lecture Notes in Computer Science

