11<sup>th</sup> International Conference on

# RELIABLE SOFTWARE TECHNOLOGIES

## ADA-EUROPE 2006

# Final Program

Porto, Portugal, June 5–9, 2006

http://www.ada-europe.org/conference2006.html

# PRESENTATION

In 2006, the 11th International Conference on Reliable Software Technologies takes place in Porto, Portugal, from 5 to 9 of June. The conference has a number of highlights including four invited talks, a full three day technical program of referred papers, two session 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.

Porto (a.k.a. Oporto) is Portugal's second-largest city, in the heart of an area of great vitality, ideal gateway to the undiscovered North of Portugal. The city presents a rich Cultural Heritage. From the remains of Visigotic and Celtic villages, Roman roads, bridges and Castros to Romanesque and Gothic churches and Cathedrals built during the Medieval Age, centuries of mankind-built heritage are to be discovered in and around Porto. The recognition of Porto by UNESCO (in 1996) as a World Heritage City is undoubtedly a tribute to its wealth of over two thousand years of history.

The city of Porto and its river, Douro, cannot be dissociated. The Douro valley, with its lovely terraces of vineyards clinging to the hillsides, is the kingdom of the famous Port Wine and offers visitors spectacular views.

The friendly welcoming nature of the Portuguese people, highly professional and cost-effective services are a guarantee of a successful event and will give you something to remember in the future.

# OVERVIEW OF THE WEEK

| | Morning | Late Morning | After Lunch | Afternoon |
|---|---|---|---|---|
| **Monday June 5th** Tutorials | William Bail *Verification and validation for reliable software systems* | | Matthew Heaney *The Ada 2005 Standard Container Library* | |
| | Jean-Pierre Rosen *Developing Web-aware Applications in Ada with AWS* | | | |
| | Joyce L Tokar *SAE Architecture Analysis and Design Language* | | | |
| **Tuesday June 6th** Sessions & Exhibition | Keynote Talk: Rod Chapman *Correctness by Construction: Putting Engineering into Software* | Real-Time Systems | Static Analysis | Verification / Invited Presentation: John L. Hill *I Have a Dream: ICT Problems We All Face* |
| **Wednesday June 7th** Sessions & Exhibition | Keynote Talk: Henrique Madeira *Empirical Software Risk Assessment Using Fault Injection* | Applications / Reliability | Industrial Presentations | Compilers |
| **Tuesday June 8th** Sessions & Exhibition | Keynote Talk: Miguel Angel de Miguel *Model Driven Technologies in Safe-aware Software Applications* | Industrial Presentations | Distributed Systems | Closing Session and Awards |
| **Friday June 9th** Tutorials | Colin Coates *Model Driven Development with the Unified Modeling Language (UML) 2.0™ and Ada* | | Jérôme Hugues *Distribution in Ada 95 with PolyORB, A Schizophrenic Middleware* | |
| | William Bail *Requirements management for dependable systems* | | | |
| | Benjamin M. Brosgol *Real-Time Java for Ada Programmers* | | | |

# TUTORIAL SCHEDULE

| | | | | |
|---|---|---|---|---|
| **Monday June 5th** | T1 | Morning | **William Bail**<br>*Verification and validation for reliable software systems* | Room:<br>Sagres |
| | T2 | Afternoon | **Matthew Heaney**<br>*The Ada 2005 Standard Container Library* | Room:<br>Sagres |
| | T3 | Full day | **Jean-Pierre Rosen**<br>*Developing Web-aware Applications in Ada with AWS* | Room:<br>Sintra |
| | T4 | Full day | **Joyce L Tokar**<br>*SAE Architecture Analysis and Design Language* | Room:<br>Aveiro |
| **Friday June 9th** | T5 | Morning | **Colin Coates**<br>*Model Driven Development with the Unified Modeling Language (UML) 2.0™ and Ada* | Room:<br>Bragança |
| | T6 | Afternoon | **Jérôme Hugues**<br>*Distribution in Ada 95 with PolyORB, A Schizophrenic Middleware* | Room:<br>Bragança |
| | T7 | Full day | **William Bail**<br>*Requirements management for dependable systems* | Room:<br>Aveiro |
| | T8 | Full day | **Benjamin M. Brosgol**<br>*Real-Time Java for Ada Programmers* | Room:<br>Viana do Castelo |

Morning tutorial sessions will start at 9:30 and end at 13:00. Afternoon sessions will start at 14:00 and end at 17:30. There will be coffee breaks at 11:00 - 11:30 and at 15:30 - 16:00.  Lunch is included for those following all-day programs or two half day tutorials on the same day. The layout of the conference floor is presented in page 6.

# INVITED SPEAKERS

- **"Correctness by Construction: Putting Engineering into Software"**, Rod Chapman (Praxis HIS, UK), Tuesday 6th, 9:00

- **"Empirical Software Risk Assessment Using Fault Injection"**, Henrique Madeira (University of Coimbra, Portugal), Wednesday 7th, 9:00

- **"Model Driven Technologies in Safe-aware Software Applications"**, Miguel Angel de Miguel (Technical University of Madrid, Spain) , Thursday 8th, 9:00

- **"I Have a Dream: ICT Problems We All Face "**, **John L. Hill (Sun Microsystems, USA)**, Tuesday 6th, 17:30

# 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 takes place in the *Guimarães I* room next to the conference rooms. The coffee breaks are held in the same exhibition area. The exhibitors are: AdaCore, Green Hills, I-Logix, Ellidiss Software, PrismTech and Aonix. Each exhibitor has a 20 minutes presentation slot during the vendor sessions (Tuesday afternoon). Breaks are one hour to allow the attendees a comfortable visit to the exhibition.

# MEETINGS

- **Ada-Europe General Assembly (open)**
  Tuesday 6th, 18:00-18:30
  Room: Guimarães II

- **GNAT Academic Program (GAP) birds of a feather meeting (open)**
  Wednesday, 7th, 18:00-18:30
  Room: Guimarães II

- **Annex H Rapporteur Group (closed)**
  Thursday 8th, after end of conference
  Room: Sagres

- **ISO/IEC JTC1/SC22/WG9 (closed)**
  Friday 9th, Morning
  Room: Sintra

- **Ada Rapporteur Group (closed)**
  Friday 9th, Afternoon to Sunday 11th, Morning
  Room: Sintra

- **Ada-Europe Board (closed)**
  Monday 5th, Afternoon
  Thursday 8th, after end of conference
  Room: Viana do Castelo

# Conference Schedule

| | Tuesday 6th | Wednesday 7th | | Thursday 8th |
|---|---|---|---|---|
| **9:00 - 10:00** | Keynote Talk: **Correctness by Construction: Putting Engineering into Software** *Rod Chapman, Praxis HIS, UK* Session Chair: Michael González Harbour Room: Guimarães II | Keynote Talk: **Empirical Software Risk Assessment Using Fault Injection** *Henrique Madeira, University of Coimbra, Portugal* Session Chair: Tullio Vardanega Room: Guimarães II | | Keynote Talk: **Model Driven Technologies in Safe-aware Software Applications** *Miguel Angel de Miguel, Technical University of Madrid, Spain* Session Chair: Luís Miguel Pinho Room: Guimarães II |
| **10:00 - 11:00** | **Coffee & Exhibition** | **Coffee & Exhibition** | | **Coffee & Exhibition** |
| | **Real-Time Systems** Chair: Joyce Tokar Room: Guimarães II | **Applications** Chair: Jorge Real Room: Guimarães II | **Reliability** Chair: Juan A. de la Puente Room: Sagres | **Industrial Presentations #2** Chair: Ben Brosgol Room: Guimarães II |
| **11:00 - 11:30** | Hierarchical Scheduling with Ada 2005 *J. Pulido, S. Urueña, J. Zamorano, T. Vardanega, J. A. de la Puente* | Secure Execution of Computations in Untrusted Hosts *S. Narayanan, M. Kandemir, R. Brooks, I. Kolcu* | A Software Reliability Model Based on a Geometric Sequence of Failure Rates *S. Wagner, H. Fischer* | A Metamodel-based Approach to Reverse Engineer Ada Source Code into UML *T. Capelle, X. Sautejeau* |
| **11:30 - 12:00** | A Comparison of Ada and Real-Time Java for Safety-Critical Applications *B. M. Brosgol, A. Wellings* | A Systematic Approach to Developing Safe Tele-operated Robots *D. Alonso, P. Sanchez, B. Alvarez, J. A. Pastor* | Adaptive Random Testing Through Iterative Partitioning *T. Y. Chen, D. H. Huang, Z. Q. Zhou* | The Development and Deployment of a Workflow System partially written in Ada95 *F. Piron* |
| **12:00 - 12:30** | POSIX Trace Based Behavioural Reflection *F. Valpereiro, L. Pinho* | Towards developing multi-agent systems in Ada *G. Aranda, J. Palanca, A. Espinosa, A. Terrasa, A. García-Fornes* | Run-Time Detection of Tasking Deadlocks in Real-Time Systems with the Ada 95 Annex of Real-Time Systems *J. Cheng* | Parallel Graphical Processing in Ada *M. Ward, S. Palin, N. Audsley* |
| **12:30 - 14:00** | **Lunch & Exhibition** | **Lunch & Exhibition** | | **Lunch & Exhibition** |

| | Tuesday 6th | | Wednesday 7th | Thursday 8th |
|---|---|---|---|---|
| | **Static Analysis** Chair: Janet Barnes Room: Guimarães II | **Vendor Session I** Chair: Pascal Leroy Room: Sagres | **Industrial Presentations #1** Chair: Dirk Craeynest Room: Guimarães II | **Distributed Systems** Chair: Alan Burns Room: Guimarães II |
| **14:00 - 14:30** | Static Detection of Access Anomalies in Ada95 *B. Burgstaller, J. Blieberger R. Mittermayr* | AdaCore Remote Programming *M. Friess* | Developing Reliable Software Rapidly *D. N. Kleidermacher* | Replication-Aware Transactions: How to roll a transaction over failures *M. Sharifi, H. Salimi* |
| **14:30 - 15:00** | One Million (LOC) and Counting: Static Analysis for Errors and Vulnerabilities in the Linux Kernel Source Code *P. T. Breuer, S. Pickin* | Green Hills Software Partitioning Journaling File System for Embedded Systems *G. Gicca* | Publisher Framework (PFW) *J. Klein, D. Sotirovski* | The Arbitrated Real-Time Protocol (AR-TP): A Ravenscar Compliant Communication Protocol for High-Integrity Distributed Systems *S. Urueña, J. Zamorano, D. Berjón, J. Pulido, J. A. de la Puente* |
| **15:00 - 15:30** | Bauhaus - a tool suite for program analysis and reverse engineering *A. Raza, G. Vogel, E. Plödereder* | I-Logix Model-Driven Development with UML 2.0 and Rhapsody *C. Coates* Ellidiss Software STOOD, CP HOOD and HRT-UML *T. Elliston* | Assessment of Lane Recognition Systems *D. Dickmanns, H. Graef, M. Anderschitz* | Interchangeable scheduling policies in real-time middleware for distribution *J. L. Campos, J. J. Gutierrez, M. G. Harbour* |
| **15:30 - 16:00** | **Coffee & Exhibition** | | Using CORBA to Bring New Life to Legacy Ada Software *J.-C. Mahieux* | **Coffee & Exhibition** |
| **16:00 - 16:30** | | | **Coffee & Exhibition** | **Closing Session & Awards** |
| | **Verification** Chair: Johann Blieberger Room: Guimarães II | **Vendor Session II** Chair: José Ruiz Room: Sagres | | |
| **16:30 – 17:00** | SPARK Annotations within Executable UML *D. Curtis* | PrismTech Middleware for Mission Critical Systems *J.-C. Mahieux* | **Compilers** Chair: Laurent Pautet Room: Guimarães II | |
| **17:00 – 17:30** | Runtime Verification of Java Programs for Scenario-Based Specifications *L. Xuandong, W. Linzhang, Q. Xiaokang, L. Bin, Y. Jiesong, Z. Jianhua, Z. Guoliang* | Aonix ObjectAda for PikeOS: A European Solution for Secure, Certifiable Systems *R. Cholay* | Abstract Interface Types in GNAT: Conversions, Discriminants, and C++ *J. Miranda, E. Schonberg* | |
| **17:30 – 18:00** | Invited Presentation: **I Have a Dream: ICT Problems We All Face** *John L. Hill, Sun Microsystems* Chair: Erhard Plöedereder Room: Guimarães II | | Using Mathematics to Improve Ada Compiled Code *W. D. Maurer* | |
| **18:00 – 18:30** | Ada-Europe General Assembly Room: Guimarães II | | | |
| **19:00 –** | **Port Wine Cellar Visit & Reception** | | **Banquet** | |

# CONFERENCE ROOMS LAYOUT

The conference will take place in the 2nd floor of Hotel Le Meridien (on the lobby of the hotel please take the stairs on your left). Sessions will be held in the *Guimarães II* and *Sagres* rooms. The exhibition and coffee breaks will be held in the *Guimarães I* room. Lunches are in the Hotel restaurant (1st floor).
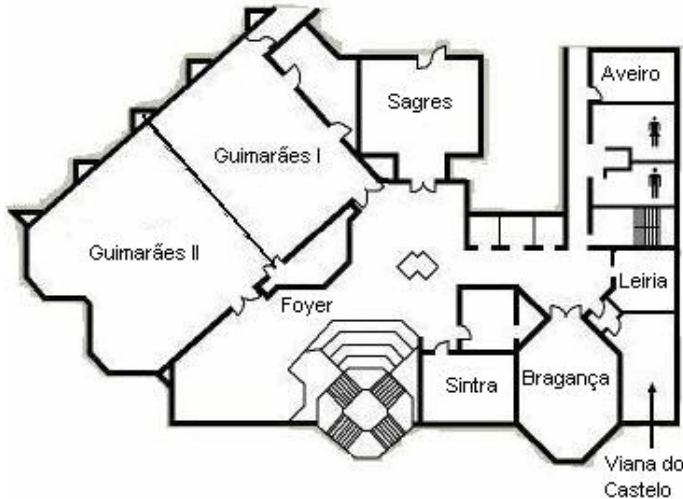


| | |
|---|---|
| *Guimarães II*: | Technical Sessions, AE General Assembly, GAP Birds of a Feather |
| *Guimarães I*: | Exhibition and coffee breaks |
| *Sagres*: | Technical Sessions, Tutorials T1 and T2, HRG meeting |
| *Sintra*: | Tutorial T3, WG9 meeting and ARG meeting |
| *Bragança*: | Tutorials T5 and T6 |
| *Viana do Castelo*: | AE Board meetings, Tutorial T8 |
| *Aveiro*: | Tutorials T4 and T7 |

# GUIDE TO THE SOCIAL PROGRAM

## Cellar Visit & Reception

Tuesday we will be happy to welcome you to one of the most historical and famous places in Porto – Caves Calém Port Wine Cellars. There you will be able to discover Port wine and all its history. You will be given the opportunity to know its evolution through out the years as well as the region where it is produced and the way it is obtained.



After the visit we will enjoy a cocktail reception in a renewed Caves Calém cellar. These cellars are located in one of the most beautiful areas of Vila Nova de Gaia, right by the Douro River side overlooking the world known Ribeira (the white building in the picture in the rigth). We hope you will enjoy your visit!

## Conference Banquet

The Wednesday banquet will take place in the "Salão Nobre" (noble room) of the "Alfândega" building, Porto's former Customs House. Beautifully located near the Douro river mouth, its construction remotes to the second half of the 19th century (1860). Its architecture includes stone arches and columns, iron columns, brick vaults and heavy wooden structures. The building was restored by a famous Portuguese architect - Souto Moura - in 1998.

Its location in the historical centre of Porto, the proximity to Douro River, its dimension and singular architecture, are some of the attributes that make this a unique place.




Buses to the Cellar Visit and to the Banquet will depart from the Conference Venue (Hotel Le Meridien) at 19:00 on Tuesday and Wednesday. Arrangements for other stops may be made during the conference; please check with the registration desk. Additional tickets for the reception and for the banquet can be purchased at registration.

# CITY CENTER MAP



········ World Heritage Classified Area
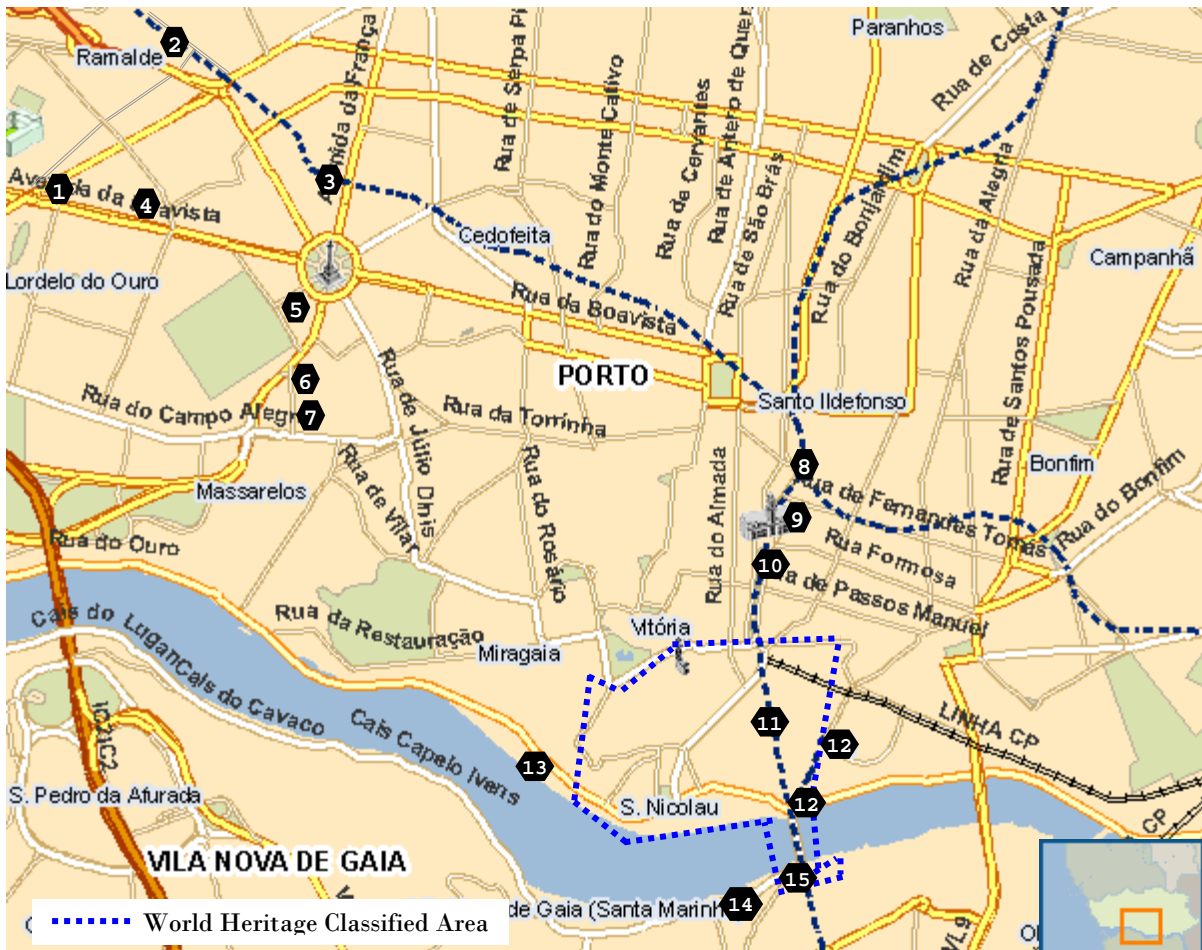
1. Conference Venue (Hotel Le Meridien Park Atlantic Porto)
2. Metro station Francos (lines A,B,C,E)
3. Metro station Casa da Música (lines A,B,C,E)
4. Quality Hotel Portus Cale
5. Hotel Douro
6. Hotel Fénix Porto and Hotel Tuela Porto
7. Hotel Ipanema Porto
8. Metro station Trindade (all lines)

9. Town Hall
10. Metro station Av. Aliados (line D)
11. Metro station São Bento (line D)
12. Guindais Funicular (connects the high and low parts of the city)
13. Alfândega (Banquet)
14. Caves Cálem – Cellar Visit
15. Caves Cálem – Reception (on the right of the bridge's lower level)

# ORGANIZATION

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**The organizers thank the exhibitors and supporters of the conference:**

Springer Verlag publishes the proceedings of the conference, as vol. 4006 of Lecture Notes in Computer Science