



# **22<sup>nd</sup> International Conference on RELIABLE SOFTWARE TECHNOLOGIES**

## **ADA-EUROPE 2017**



12-16 June 2017, Vienna, Austria

# **FINAL PROGRAM**

<http://www.ada-europe.org/conference2017>

In cooperation with



Ada Resource Association



## PRESENTATION

In 2017 the 22<sup>nd</sup> International Conference on Reliable Software Technologies - Ada-Europe 2017 - takes place in Vienna, Austria, from 12 to 16 of June. The conference is the latest in a series of annual international conferences started in the early 80's, under the auspices of Ada-Europe, the international organization that promotes knowledge and use of Ada and Reliable Software in general.

The conference offers an international forum for researchers, developers and users of reliable software technologies. Presentations cover applied and theoretical work conducted to support the development and maintenance of reliable software systems.

The conference program includes three keynote talks, a three-day technical program of refereed

papers, industrial and vendor presentations, an industrial exhibition and two days of tutorials. The program of the conference is complemented with posters and presentations from several robotics and autonomous vehicle projects. Co-located with the conference, the program includes on Friday the 4<sup>th</sup> workshop on "Dependable and Cyber-Physical Systems", this year focusing on "Transportation of the Future". Vienna, a city with about 2 million inhabitants is situated in the heart of Europe. It is a city on which its ever-changing history has left an indelible mark, manifested also in the rich cultural heritage. The city's ultimate fascination stems from combining imperial grandeur with the explosive modernity that emerged from the break-up of the Austro-Hungarian Empire.

*Ada-Europe 2017 provides a unique opportunity for dialogue and collaboration between academics and industrial practitioners interested in reliable software.*

## OVERVIEW OF THE WEEK

	Morning	Late Morning	After Lunch	Afternoon
<b>Monday June 12</b> Tutorials	Peter Chapin <i>Indroduction to SPARK 2014</i>			
	Maciej Sobczak <i>Ada on ARM Cortex-M, A Zero-Run-Time Approach</i>		William Bail <i>Software Measurement for Dependable Software Systems</i>	
			Luis Miguel Pinho, Eduardo Quinones <i>Real-Time Parallel Programming with the UpScale SDK</i>	
<b>Tuesday June 13</b> Sessions & Exhibition	Keynote Talk: G. B. Gallus (Array, Italy)	Regular Session <i>Runtimes &amp; Vendors</i>	Industrial Presentations <i>Exploratory Uses of Ada</i>	Regular Session <i>Programming Models</i>
<b>Wednesday June 14</b> Sessions & Exhibition	Keynote Talk: Thomas Henzinger (IST, Austria)	Regular Session <i>Safety &amp; Security</i>	Industrial Presentations <i>Verification</i>	Panel <i>The Future of Safety-Minded Languages</i>
<b>Thursday June 15</b> Sessions & Exhibition	Keynote Talk: Kay Römer (TU Graz, Austria)	Regular Session <i>Timing Verification</i>	Regular Session <i>Mixed Criticality</i>	Industrial Presentations <i>Large Industrial Applications</i>
<b>Friday June 16</b> Tutorials & Workshop	J.P. Rosen <i>Using Gnoga for Desktop/Mobile GUI and Web development in Ada</i>		J.P. Rosen <i>On beyond ASCII: Characters, Strings, and Ada 2012</i>	
	Julien Signoles <i>Frama-C, a Collaborative Framework for C Code Verification</i>		William Bail <i>Modular Open System Architecture for Critical Systems</i>	
	<i>Workshop Dependable and Cyber-Physical Systems (DeCPS): Transportation of the Future</i>			

Please refer to the conference website for the latest details.



## KEYNOTE SPEAKERS

**Giovanni Battista Gallus**  
**Array Italy**

**The laws of robotics and autonomous vehicles may be much more than three, but don't panic... yet.**

**Tuesday June 13, 9:00**

The future European legal framework, which is relevant for the development of autonomous vehicles, and especially programming issues.



**Bio-Sketch** Lawyer, ISO27001 Lead Auditor, freeware advocate, Former President of @CircoloGT, Nexa Fellow. ITLaw, privacy, security & drones.

Copyright, Criminal, Data Protection/Privacy and IT and

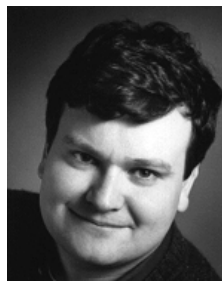
New Technologies law are his main areas of expertise. In the last two years, he is devoting a significant part of his practice to the legal aspects of UAVs (drones) After a cum laude degree in Law in Italy, he moves to Great Britain for the Master of Laws in Maritime Law e Information Technology Law at the University College London - UCL. Afterwhile, he earns a PhD. In 2009 he obtains the European Certificate on Cybercrime and Electronic Evidence (ECCE). He is ISO 27001:2005 Certified Lead Auditor (Information Security Management System). Member of the Bar of Cagliari since 1996, admitted to the Supreme Court since 2009, he is a member of the Department "Informatica Giuridica" at the Università Statale of Milan and he is a teacher at the "Corso di Perfezionamento in Digital Forensics, Privacy, Cloud e Cyber Warfare" - Post-Graduate Course in Digital Forensics, Privacy, Cloud e Cyber Warfare. Fellow of Nexa Center on Internet e Society and of the Hermes Center for Transparency and Digital Human Rights. Author of several publications on the above mentioned areas and speaker at the main national and international congresses, he sides his legal profession an intense teaching activity, mainly in the field of copyright, Free/Open Source Software, data protection, IT security and digital forensics. Former President of Circolo dei Giuristi Telematici, founded in 1998, first initiative to gather IT law experts in Italy.

**Tom Henzinger**  
**IST, Austria**

**Behavioral Software Metrics**

**Wednesday June 14, 9:00**

We show how the classical satisfaction relation between programs and requirements can be replaced by quantitative preference metrics that measure the "fit" between programs and requirements. Depending on the application, such fitness measures can include aspects of function, performance, resource consumption, and robustness.



**Bio-Sketch** Thomas A. Henzinger is president of IST Austria (Institute of Science and Technology Austria). He holds a Dipl.-Ing. degree in Computer Science from Kepler University in Linz, Austria, an M.S. degree in Computer and Information Sciences from the University of Delaware, a

Ph.D. degree in Computer Science from Stanford University (1991), and a Dr.h.c. from Fourier University in Grenoble, France (2012) and from Masaryk University in Brno, Czech Republic (2015). He was Assistant Professor of Computer Science at Cornell University (1992-95), Assistant Professor (1996-97), Associate Professor (1997-98), and Professor (1998-2004) of Electrical Engineering and Computer Sciences at the University of California, Berkeley. He was also Director at the Max-Planck Institute for Computer Science in Saarbruecken, Germany (1999) and Professor of Computer and Communication Sciences at EPFL in Lausanne, Switzerland (2004-09). His research focuses on modern systems theory, especially models, algorithms, and tools for the design and verification of reliable software, hardware, and embedded systems. His HyTech tool was the first model checker for mixed discrete-continuous systems. He is an ISI highly cited researcher, a member of Academia Europaea, a member of the German Academy of Sciences (Leopoldina), a member of the Austrian Academy of Sciences, a Fellow of the AAAS, a Fellow of the ACM, and a Fellow of the IEEE. He has received the Milner Award of the Royal Society, the Wittgenstein Award of the Austrian Science Fund, and an ERC Advanced Investigator Grant.





**Kay Römer**  
**TU Graz, Austria**  
**Dependable Internet of Things**

**Thursday June 15, 9:00**



Wireless networked embedded systems are increasingly used for safety-critical applications, where even under harsh environmental conditions dependability requirements must be met. In this talk we introduce the Dependable Things research center at TU Graz and present recent results on improving the dependability of wireless communication and

localization, embedded computing, and networked control for the Internet of Things.

**Bio-Sketch** Kay Römer is professor at and director of the Institute for Technical Informatics, head of the Field of Expertise "Information, Communication & Computing", and vice dean of the Faculty of Electrical and Information Engineering at TU Graz. He obtained his doctorate in computer science from ETH Zurich in 2005 with a thesis on wireless sensor networks. As a senior researcher, he led the sensor network-related research activities of the Distributed Systems Group at ETH Zurich between 2005 and 2009. From 2009 to 2013 he held a professorship at University of Lübeck in Germany. Kay Römer is an internationally recognized expert on networked embedded systems, with research focus on wireless networking, fundamental services, operating systems, programming models, dependability, testbeds, and deployment methodology. He was the scientific coordinator of the EU FP7 FIRE project RELYonIT on dependable networking in the Internet of Things. He is currently the coordinator of the TU Graz Research Center "Dependable Internet of Things".



**Join**  
**Ada-Europe!**

Become a member of Ada-Europe and **support Ada-related activities** and the future **development of the Ada programming language**.

Membership benefits include **receiving the quarterly Ada User Journal** and a substantial **discount when registering for the annual Ada-Europe conference**.



To apply for membership visit our web page at

**<http://www.ada-europe.org/join>**





## TUTORIALS

### T1 Introduction to SPARK 2014



**Peter Chapin**  
**Vermont Technical College**

**Monday full day, June 12**

This tutorial will provide an introduction to the SPARK 2014 language and tools, covering all the major features of SPARK to date. New features, such as support for concurrency and Liskov Substitution Principle (LSP) verification, will be presented. The goal of the tutorial is to give attendees enough background so that they can explore using SPARK in real projects. The focus will be on the practical application of SPARK rather than on the theory. Topics such as mixed language programming, the interaction between proof and testing, and approaches for debugging proofs will also be included. Hands-on exercises will be provided.

Attendees should bring a computer with the GNAT GPL and SPARK GPL editions installed. These are available for download from [libre.adacore.com/download/](http://libre.adacore.com/download/).

- Reasons for Attending Learn about SPARK 2014 and what it can (and cannot) do.
- Know how to use SPARK in an upcoming or existing project.
- Understand how SPARK works in the “real world”.

#### Level

*Intermediate.* No prior experience with SPARK is expected, but attendees should be familiar with Ada 95. Ada 2012 features that are relevant to SPARK, such as contracts, will be introduced.

#### Bio Sketch

Peter Chapin is a professor of software engineering at Vermont Technical College (VTC) in the US, where he has taught Ada and SPARK to undergraduate and graduate students. He is a co-author, with John McCormick, of *Building High Integrity Applications with SPARK*. Dr. Chapin has been the software director at VTC's CubeSat Laboratory since 2009 where he has overseen the development of CubeSat flight software in SPARK written by students.

# The one stop Ada shop.

AdaCore has the most comprehensive and up to date Ada toolset available for all versions of Ada and across the entire development cycle.

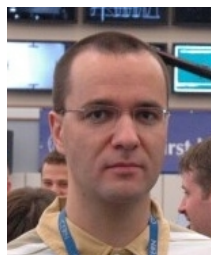
## AdaCore

[www.adacore.com](http://www.adacore.com)

[info@adacore.com](mailto:info@adacore.com)



## T2 Ada on ARM Cortex-M, A Zero-Run-Time Approach



**Maciej Sobczak**  
**GE aviation and Inspirel**

**Monday morning, June 12**

ARM Cortex-M is a core design used by multiple families of microcontrollers available from various vendors. Due to their performance vs. price ratio and a relatively elegant architecture, Cortex-M has become a *de-facto* standard among designers of final embedded devices. Ada programmers can target this family and benefit from available tool chains, relying on several run-time bases. This tutorial presents the zero-run-time approach, in which the programmer supplies the entire software part and benefits from minimal image size as well as seamless integration with software modules written in C. Topics to be covered include why Ada on ARM Cortex-M, the current landscape and available solutions, memory layout, linking and loading, Ada constructs for managing registers, interrupts, and interfacing with C

### Reasons for Attending

- Learn the basic concepts of applying Ada on ARM Cortex-M microcontrollers.
- See how common integration deployment problems can be solved or circumvented.
- Understand the pros and cons of a zero run-time approach.

### Level

*Introductory.* The tutorial is intended for programmers at any level of Ada proficiency (including beginners) who are interested in embedded systems, and "makers" in particular.

### Bio Sketch

Maciej Sobczak works for GE Aviation and is also a founder of Inspirel in Poland, a company focused on reliable software methods. He has consulted in the area of distributed systems, performance-oriented C++ programming and mixed-language techniques. Mr. Sobczak has conducted training on Ada, and his book "Ada and SPARK on ARM Cortex-M" is available online.

## T3 Software Measurement for Dependable Software Systems



**William Bail**  
**The MITRE Corporation**

**Monday afternoon,  
June 12**

Software measurement allows developers to monitor key attributes of their software products and their applied processes. Such monitoring is crucial to successful implementation and to avoiding surprises late in the system development. Applying and interpreting measures is key. Poor choices can result in wasted effort and misleading indicators.

This tutorial surveys the range of popular and effective measures, and provides guidelines for their selection, application, and interpretation.

### Reasons for Attending

- Understand the role of software measures and their role in supporting management of software development projects.
- Learn the different categories of measures and how to select specific measures.
- Know how to establish and conduct an effective metrics program.

### Level

*Intermediate.* Attendees should be familiar with software and code development and have some experience in software measurement.

### Bio sketch

Dr. Bail is a Computer Scientist in the Software Engineering Center at The MITRE Corporation in the US. His technical areas of focus include dependable software design and assessment, metric definition and application, error handling policies, design methodologies, and verification and validation. Dr. Bail has taught computer science courses at the University of Maryland and has presented tutorials on software engineering at international conferences.





## T4 Real-Time Parallel Programming with the UpScale SDK

**Luis Miguel Pinho, ISEP and  
Eduardo Quinones, BSC**

**Monday afternoon, June 12**

Nowadays, the prevalence of computing systems in our lives is so ubiquitous that it would not be far-fetched to state that we live in a cyber-physical world dominated by computer systems. These systems demand for more and more computational performance to process large amounts of data from multiple data sources, some of them with guaranteed processing response times. In other words, systems are required to deliver their results within pre-defined (and sometimes extremely short) time bounds. Examples can be found for instance in intelligent transportation systems for fuel consumption reduction in cities or railway, or autonomous driving of vehicles

To cope with such performance requirements, chip designers produced chips with dozens or hundreds of cores, interconnected with complex

networks on chip. Unfortunately, the parallelization of the computing activities brings many challenges, among which how to provide timing guarantees, as the timing behaviour of the system running within a many-core processor depends on interactions on shared resources that are most of the time not known by the system designer.

P-SOCRATES (Parallel Software Framework for Time-Critical Many-core Systems) was a FP7 European project, which developed a novel methodology to facilitate the deployment of standardized parallel architectures for real-time applications. This methodology was implemented (based on existent models and) components to provide an integrated software development kit (the UpScale SDK) to fully exploit the huge performance opportunities brought by the most advanced many-core processors, whilst ensuring a predictable performance and maintaining (or even reducing) development costs of applications. The tutorial will provide an overview of the project methodology and SDK, and will include a final open discussion to the floor on its applicability to Ada.

ptc apexada | ptc objectada\*

## Complete Ada Solutions for Complex Mission-Critical Systems

- Fast, efficient code generation
- Native or embedded systems deployment
- Support for leading real-time operating systems or bare systems
- Full Ada tasking or deterministic real-time execution

Learn more by visiting: [ptc.com/developer-tools](http://ptc.com/developer-tools)







### Reasons for attending

- Learn how to achieve time-predictability in parallel computation.
- Learn the basics of the UpScale SDK tools for the development of real-time parallel applications.
- Participate in the process of analyzing the use of OpenMP with Ada

### Level

*Intermediate.* Attendees should have knowledge of software development for embedded systems.

## T5 Using Gnoga for Desktop/Mobile GUI and Web development in Ada



**Jean-Pierre Rosen**  
**Adalog**

**Friday morning, June 16**

Gnoga is a framework / toolset for developing GUI and Web applications using Ada. Not to be confused with web development frameworks compensating for stateless client/server connections to attempt to create usable UIs, Gnoga uses a bidirectional websocket connection allowing the browser to function as a live rendering engine with instant real-time response both locally for desktop GUI applications and remotely over the web. Gnoga's framework allows rapid development of client server desktop, mobile and cloud applications and is far more capable for web application development than any existing framework regardless of language. Gnoga is open source under the "non-viral" GPLv3 with runtime exceptions and may be used for proprietary as well as free applications.

This tutorial provides a detailed overview of Gnoga, its structure, its principles, and how to use it for Web, mobile and local (desktop and embedded) applications.

### Reasons for attending

- Understand how to make GUI applications in Ada independently of the host system (Windows, Mac, Linux).
- Learn how to use the same tools and framework for desktop, mobile and web applications.

### Level

*Intermediate.* Attendees should have a casual knowledge of Ada.

### Bio sketch

JP Rosen is a professional teacher, offering training in Ada since 1979 (when it was preliminary Ada!), methods, and software engineering. He runs Adalog, a French company that provides training, consulting, and services in all areas connected to the Ada language and software engineering. He is chairman of AFNOR's (French standardization body) Ada group, AFNOR's spokesperson at WG9, a member of the Vulnerabilities group of WG9, and chairman of Ada-France.

## T6 Frama-C, a Collaborative Framework for C Code Verification



**Julien Signoles**  
**CEA LIST**

**Friday morning, June 16**

Frama-C is an extensible source code analysis platform that aims at conducting verification of industrial-size C programs. It provides its users with a collection of plug-ins that perform static and dynamic analysis for safety- and security-critical software. Collaborative verification across cooperating plug-ins is enabled by their integration on top of a shared kernel, and their compliance with a common formal specification language named ACSL.

This tutorial on Frama-C takes participants on a journey into the Frama-C world along its main plug-ins: the deductive verification tool WP, the abstract-interpretation based plug-in Eva, and the run-time verification tool E-ACSL. It also includes a presentation of the formal specification language ACSL and emphasizes possible collaborations between these plug-ins and a few others. The presentation is illustrated with concrete examples of C programs.

### Reasons for Attending

- If you don't know formal methods: learn how to use them in practice without doing any math.
- If you already know formal methods and a verification tool for another programming language (e.g. SPARK 2014): learn a state-of-the-art tool currently used in practice for verifying critical C software.



### Level

*Introductory to intermediate.* Attendees should know the C programming language but need not have any experience with formal methods.

### Bio sketch

Julien Signoles is a research engineer at CEA LIST's Software Security and Reliability Lab in France and one of the main developers of Frama-C. His research focuses on run-time assertion checking, software security, and applications of program analysis techniques. Dr. Signoles has delivered tutorials and provides professional training on Frama-C and its plug-ins2.

## T7 On beyond ASCII: Characters, Strings, and Ada 2012



**Jean-Pierre Rosen**  
**Adalog**

**Friday afternoon, June 16**

Characters represent an incredibly difficult issue, in general and in programming languages. The extent of the problems is hard to appreciate, as

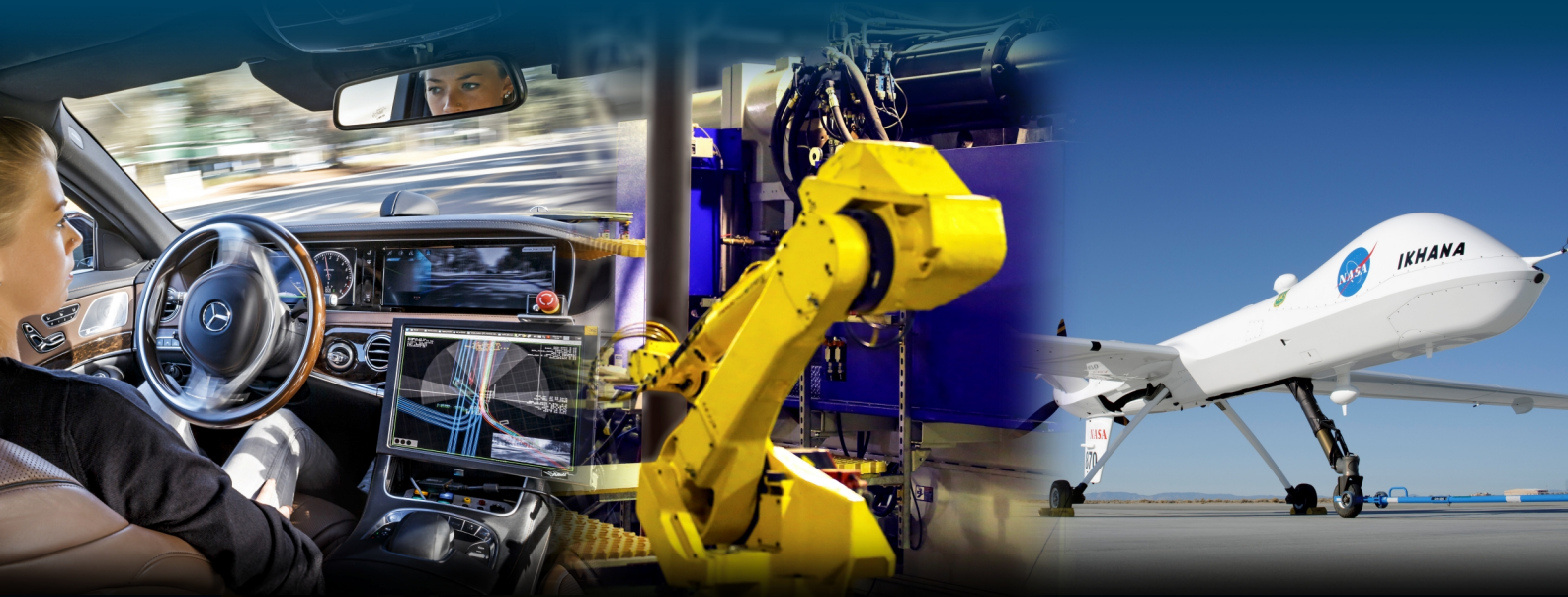
seen from the English language which needs only simple characters, but becomes apparent when you consider accented letters, ideograms, and even music notes or Klingon...

This tutorial explains all the issues with characters: their encoding and representation (both internally and externally), the various standards (ISO 10646, Unicode, UTF, ...) collating sequences, etc. In addition, it addresses character strings in programming languages in general, and in Ada 2012 in particular, showing why various forms of strings are provided and how to use them.

### Reasons for attending

- Understand (at last!) the issues with characters and the precise meaning of confusing notions like code-points, encoding, character sets, etc.
- Learn how to account for character issues in your Ada programs.
- Understand the differences between the various kinds of strings provided by Ada, and be able to choose the most appropriate one according to your needs.

# When Reliable and Safe Autonomous Platforms are Critical



**Level**

*Intermediate.* Attendees should have a casual knowledge of Ada.

**Bio sketch**

(see T5)

**T8 Modular Open System Architecture for Critical Systems**

**William Bail**

**The MITRE Corporation**



**Friday afternoon, June 16**

A recent key design strategy is the use of open modular systems. Understanding the underpinnings of open systems, its benefits, and its implementation is essential to being able to dependably develop such software systems. This tutorial examines the concepts of modular open software design and architecture, and the

motivation for following this approach. The tutorial also correlates the benefits achievable with such approaches to the attributes of such designs. It describes examples of good and faulty design, and present a variety of design challenges that are commonly encountered in realizing a modular open design.

**Reasons for attending**

- Understand the concepts of open modular design.
- Learn its benefits and drawbacks, and practical guidance on how to achieve, including trade-offs and challenges.

**Level**

*Intermediate/Advanced.* Attendees should have knowledge of software system design.

**Bio sketch**

(see T3)



# Ada User Journal

## Call for Contributions

Topics: **Ada Programming Language**, **Software Engineering Issues** and **Reliable Software Technologies** in general.

Contributions: **Refereed Original Articles**, **Invited Papers**, **Proceedings** of workshops and panels and **News and Information** on Ada and reliable software technologies.

Submission guidelines available on the Journal web page.



<http://www.ada-europe.org/auj>

The Journal for the international Ada Community, produced by Ada-Europe  
(online archive of past issues at <http://www.ada-europe.org/auj/archive/>)





## Co-Located Workshop

The conference week features the workshop on Dependable Cyber-Physical Systems (DeCPS) which focusses on Transportation of the Future. The workshop will gather together industrial practitioners and researchers in the topics of interest which include, but are not limited to Vehicles of the Future, Transport and Mobility, Industry 4.0 in transportation sector, Security and comfort of the end-user, and Human/Machine Interaction

**The workshop will take place Friday, June 16.**

## Vendor Presentations and Industrial Exhibition

The conference will feature an exhibition in the room where coffee will be served. Exhibitors and vendors will also deliver presentations in some of the sessions.

## Accommodation

For your stay in Vienna we list a few hotels.

**We recommend to book hotel rooms at an early stage!**

Intercontinental Vienna – special rate

Johannesgasse 28  
1030 Wien, Austria  
+43 1 711 22 62  
vienna@ihg.com  
vienna.intercontinental.com  
Keyword: "Ada-Europe"

**The special Ada-Europe rate applies for your stay during 11.6. - 17.6. 2017.**

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**Booking via the reduced and noncancelable link of Hotel Schani on their web page, you get 20% reduction on the price but your booking cannot be canceled or modified.**

## Social Program

**The conference: it's also a place to meet people, socialize and enjoy great events...**

### Welcome Reception

The conference welcome reception (featuring robotics presentations) will take place on Tuesday, after the Ada-Europe General Assembly, at TUtheSky, a room at the top of TU Vienna's buildings.

Its two terraces allow for a terrific view on the city.

Being away only a few meters from Palais Eschenbach, the conference venue, its exact address is

TUtheSky  
Getreidemarkt 9  
A-1060 Vienna

### Conference "Heuriger"

On Wednesday the conference "Heuriger" will take place.

*Heuriger* is the abbreviation of "heuriger Wein" (this year's wine) in Austrian German. It is also used for the tavern where the wine is served. Today such taverns also serve food.

For more details see  
<https://en.wikipedia.org/wiki/Heuriger>.

Attendants will be taken by bus to Mayer am Pfarrplatz (<http://www.pfarrplatz.at/en/pfarrplatz-portal-english.html>), a very famous Heuriger.

The bus will not go directly to Pfarrplatz but instead will take a tour through Vienna passing its most famous places and buildings.

The exact address of the Heurigen is

Mayer am Pfarrplatz  
Pfarrplatz 2  
A-1190 Vienna

During the "Heurigen", the Best Paper Award will also be presented.

# Conference Venue

## The conference takes place at Palais Eschenbach

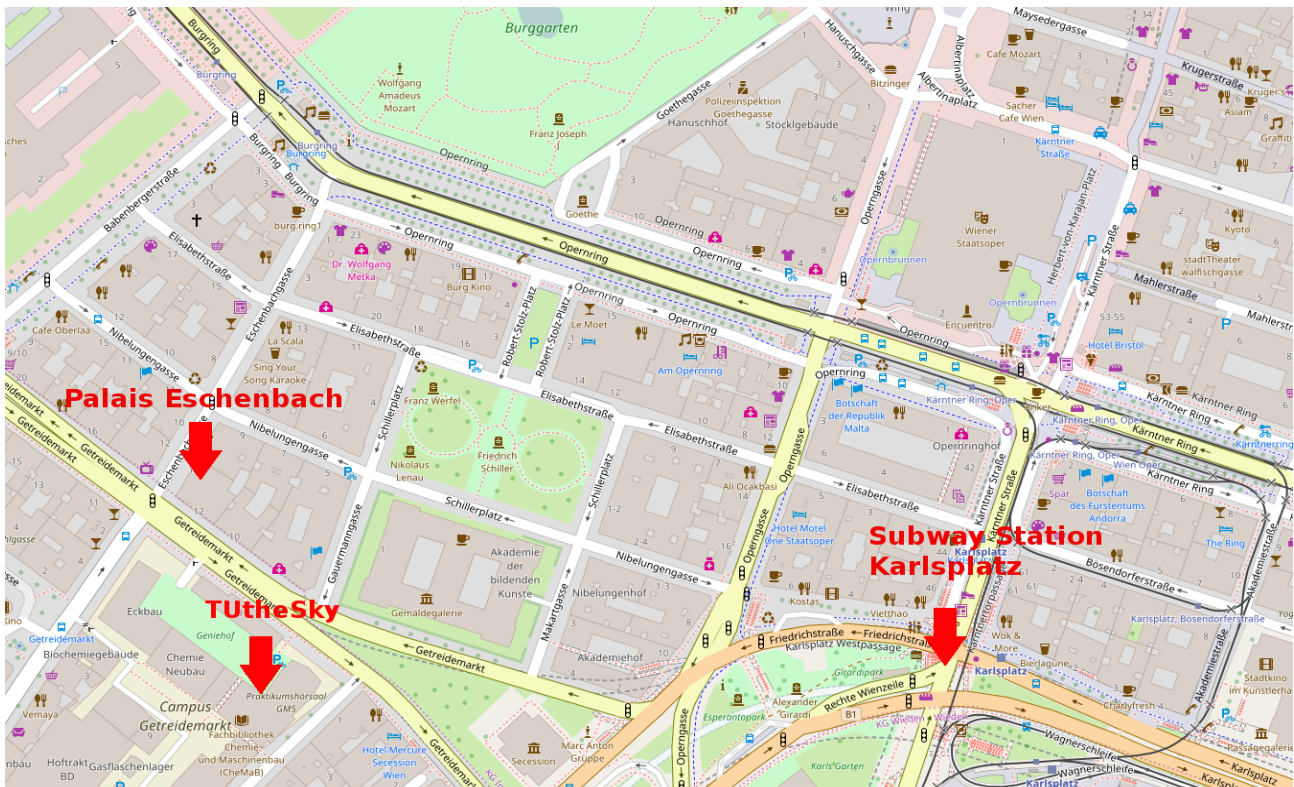


The Palais Eschenbach was built in Palladian Style. It was inaugurated in 1872 by the Austrian Emperor Franz Joseph I. The so-called "golden ballroom" with its impressive coffered ceiling, arcade arches and a number of marble pilasters mirrors the great era of Vienna. The palais is located near the center of Vienna and can easily be accessed by metro lines U1, U2, and U4.

### Address

Palais Eschenbach  
Eschenbachgasse 11  
A-1010 Vienna

From Tuesday to Thursday, lunch will be served in the neighbouring "Haus der Ingenieure".



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## REGISTRATION

Please access the registration system at the conference web page: <http://www.ada-europe.org/conference2017>.

### Conference Registration

Early registration cut-off date is May 22<sup>nd</sup>.

#### Highlights:

- Single day registration cost has been reduced
- Wednesday is Meet Ada-Europe day! Day registration is discounted
- Tutorial fees reduced when taken together with 3-day conference

### Conference

	Member of Ada-Europe or ACM SIGAda, SIGPLAN		Non-member		Student
	Non academia	Academia	Non academia	Academia	
Early registration (by May 22)	660 €	600 €	720 €	660 €	480 €
Late/on-site registration (after May 22)	720 €		780 €		520 €
Single day (Tuesday and Thursday)	300 €				
Single day (Wednesday - Meet Ada-Europe day!)	200 €				

Lunch is included for every day of the conference that you attend. Proceedings, banquet and reception is included in the 3-day conference registration. Separate tickets can be purchased.

A handling fee of 3% is added for credit card payments.

**Members discount:** Reserved to members of Ada-Europe and members of an “in cooperation with” SIG of ACM (SIGAda, SIGPLAN), and Ada-Europe sponsors.

**Academic discount:** Reserved to full-time faculty members of a university or equivalent educational institution.

**Student discount:** The conference offers a limited amount of passes under the “student discount” category. This scheme provides full access to all of the conference program, including lunches, banquet, and complimentary proceedings. Applicants for this discount should contact the conference chair by email, providing a copy of a valid student ID. Students that are co-authors of papers accepted for the conference program are eligible for this discount scheme only if at least one other co-author has registered in full.

**Student waiver program:** The conference this year also features a novel scheme that allows students to access the conference program for free, but strictly without any other benefit. Applicants for this student waiver program should contact the conference chair by email, providing a copy of a valid student ID. Contingent on logistics, students will be allowed to also apply for this discount scheme directly at the registration desk during the conference, also showing their student ID.

### Tutorials

	Full day or two half days on the same day	Half day
Early registration (with 3-day conference)	190 €	95 €
Early registration (without conference)	270 €	135 €
Late/on-site registration (after May 22nd)	300 €	150 €

Lunch is included for full day tutorials, and for two half-day tutorials on the same day.





## CONFERENCE SCHEDULE

	Tuesday 13	Wednesday 14	Thursday 15
8:30 - 9:00	<b>Welcome &amp; Opening</b>		
9:00 - 10:00	Keynote Talk: <b>The laws of robotics and autonomous vehicles may be much more than three, but don't panic... yet</b> <i>Avv. Giovanni Battista Gallus, Array, Italy</i>	Keynote Talk: <b>Behavioral Software Metrics</b> <i>Thomas Henzinger, IST Austria</i>	Keynote Talk: <b>Dependable Internet of Things</b> <i>Kay Römer, TU Graz, Austria</i>
10:00 - 10:50	<b>Coffee &amp; Exhibition</b>	<b>Coffee &amp; Exhibition</b>	<b>Coffee &amp; Exhibition</b>
10:50 - 12:30	<b>Runtimes</b>	<b>Safety &amp; Security</b>	<b>Timing Verification</b>
	Vendor Presentation <i>AdaCore</i> [10:50 - 11:10]	Vendor Presentation <i>VectorCast</i> [11:00 - 11:20]	Supporting Nested Resources in MrsP <i>Jorge Garrido, Shuai Zhao, Alan Burns, and Andy Wellings</i> [11:00 - 11:30]
	Evaluating MSRP and MrsP with the multiprocessor Ravenscar profile <i>Jorge Garrido, Juan Zamorano, Alejandro Alonso, and Juan A. de la Puente</i> [11:10 - 11:40]	Sanitizing Sensitive Data: How to get it Right (or at least Less Wrong...) <i>Roderick Chapman</i> [11:20 - 11:50]	Predicting Worst-Case Execution Time Trends in Long-Lived Real-Time Systems <i>Xiaotian Dai and Alan Burns</i> [11:30 - 12:00]
	Ravenscar-EDF: Comparative Benchmarking of an EDF Variant of a Ravenscar Runtime <i>Paolo Carletto and Tullio Vardanega</i> [11:40 - 12:10]	Enforcing Timeliness and Safety in Mission-Critical Systems <i>António Casimiro, Inês Gouveia, and José Rufino</i> [11:50 - 12:20]	MC2: Multicore and Cache Analysis via Deterministic and Probabilistic Jitter Bounding <i>Enrique Díaz, Mikel Fernández, Leonidas Kosmidis, Enrico Mezzetti, Carles Hernandez, Jaume Abella, and Francisco J. Cazorla</i> [12:00 - 12:30]
	Vendor Presentation <i>PTC</i> [12:10 - 12:30]		
12:30 - 14:00	<b>Lunch &amp; Exhibition</b>	<b>Lunch &amp; Exhibition</b>	<b>Lunch &amp; Exhibition</b>

	Tuesday 13	Wednesday 14	Thursday 15
	Industrial Presentations Exploratory Uses of Ada	Industrial Presentations Verification	Mixed Criticality
14:00 - 14:30	Astronomical Ada <i>Ahlan Marriott</i>	Automated Testing of SPARK Ada Contracts: Progress & Case Study Report <i>Simon Daniel and Stuart Matthews</i>	Migrating Mixed Criticality Tasks within a Cyclic Executive Framework <i>Alan Burns and Sanjoy Baruah</i>
14:30 - 15:00	IP Network Stack in Ada 2012 and the Ravenscar profile <i>Stephane Carrez</i>	Introducing static analysis to a mature project <i>Jacob Sparre Andersen</i>	Directed Acyclic Graph Scheduling for Mixed- Criticality Systems <i>Roberto Medina, Etienne Borde, and Laurent Pautet</i>
15:00 - 15:30	Hardware-Based Data Protection/Isolation at Runtime in Ada Code for Microcontrollers <i>German Rivera</i>	Challenges and Opportunities for Improvements of the Testing Process for Ada based Safety Critical Systems <i>Guillem Bernat</i>	Software Time Reliability in the Presence of Cache Memories <i>Suzana Milutinovic, Jaume Abella, Irune Agirre, Mikel Azkarate-Askasua, Enrico Mezzetti, Tullio Vardanega, and Francisco Cazorla</i>
15:30 - 15:50	Coffee & Exhibition	Vendor Presentation <i>Rapita</i>	Coffee & Exhibition
15:50 - 16:30		Coffee & Exhibition	
	Programming Models	Panel: The Future of Safety-Minded Languages	Industrial Presentations Large Industrial Applications
16:30 - 17:00	Lock Elision for Protected Objects Using Intel Transactional Synchronization Extensions <i>Seongho Jeong, Shinhyung Yang, and Bernd Burgstaller</i>	Moderator: <i>Erhard Ploedereder</i> <ul style="list-style-type: none"> <li>A New Ravenscar-Based Profile, <i>P. Rogers, J. Ruiz, T. Gingold, and P. Bernardi</i></li> <li>OpenMP tasking model for Ada: safety and correctness <i>Sara Royuela, Xavier Martorell, Eduardo Quinones, and Luis Miguel Pinho</i></li> <li>Enhancable tooling for every day programmers <i>Oliver Schneider and Hubert B. Keller</i></li> <li>Safe, Contract-Based Parallel Programming, <i>Tucker Taft</i></li> <li>Discussion</li> </ul>	Experiences with Ada in the Safety-Critical Communication and Ground Control Systems of the nEUROn UCAV <i>Luis Pabón, Artemio Jiménez, and José M. Martínez</i>
17:00 - 17:30	An Executable Semantics for Synchronous Task Graphs: From SDRT to Ada <i>Morteza Mohaqeqi, Jakaria Abdullah, and Wang Yi</i>		Experience with Use of Model Driven Code Generation on the ASIM Project <i>Steen Palm</i>
17:30 - 18:00	RxAda: An Ada implementation of the ReactiveX API <i>Alejandro R. Mosteo</i>		A Time-Triggered Middleware for Safety-Critical Automotive Applications <i>Ayhan Mehmed, Wilfried Steiner, and Maximilian Rosenblattl</i>
18:00 - 19:00	Ada-Europe General Assembly		<b>Closing</b> Best Presentation Award Presentation of future events
19:00 - 19:15	Welcome Reception Robotics Presentations		
19:15 - 19:30			
19:30 - 20:00		Bus tour	
20:00 -		Conference “Heuriger” and Best Paper Award	



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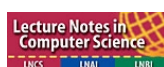
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