



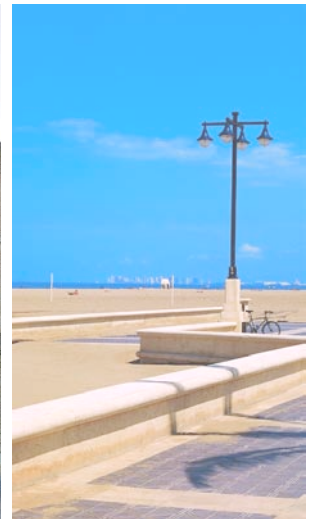
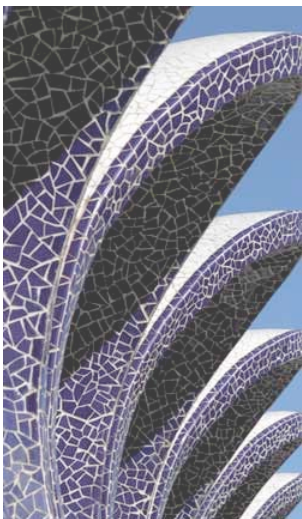
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UNIVERSIDAD
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15th International Conference on
RELIABLE SOFTWARE TECHNOLOGIES
ADA-EUROPE 2010

FINAL PROGRAM



VALENCIA, SPAIN, 14-18 JUNE 2010

<http://www.ada-europe.org/conference2010>

PRESENTATION

The 15th International Conference on Reliable Software Technologies – Ada-Europe 2010 will take place in Valencia, Spain, on 14-18 June 2010. The conference has established itself as an international forum for providers, practitioners and researchers into reliable software technologies. Following tradition, the conference will span a full week, with a three-day technical program at its centre from Tuesday to Thursday accompanied by vendor exhibitions, and a string of parallel tutorials on Monday and Friday.

Valencia, situated on the Mediterranean coast of eastern Spain and with a population of around 800,000 inhabitants, is the capital city of the autonomous region Comunidad Valenciana. Not many cities are capable of so harmoniously

combining a fine array of sights from the distant past with innovative constructions now being erected. Valencia, founded in 138 BC, is one of these fortunate few. From the remains of the Roman forum located in today's *Plaza de la Virgen* to the emblematic City of the Arts and Sciences, this town has transformed its physiognomy over the years while preserving its monuments from the past.

Sightseeing around the city begins in the old quarter, where the conference venue is located. On the old riverbed of the Turia River lie the nursery gardens, along with the Fine Arts Museum and the modern part of the city. Life in the city spreads down to the seafront with the harbor and the beaches of Las Arenas and La Malvarrosa.

OVERVIEW OF THE WEEK

	Morning	Late Morning	Early Afternoon	Afternoon
Monday 14 June Tutorials	Developing High-Integrity Systems with GNATforLEON/ORK+ <i>J. A. de la Puente, J. Zamorano</i>		Hypervisor Technology for Building Safety-Critical Systems: XtratuM <i>I. Ripoll, A. Crespo</i>	
	Software Design Concepts and Pitfalls <i>W. Bail</i>		How to Optimize Reliable Software <i>I. Broster</i>	
	Using Object-Oriented Technologies in Secure Systems <i>J. P. Rosen</i>		Developing Web-aware Applications in Ada with AWS <i>J. P. Rosen</i>	
Tuesday 15 June Sessions & Exhibition	Keynote Talk What to Make of Multicore Processors for Reliable Real-Time Systems? <i>Theodore Baker</i>	Multicores and Ada	Software Dependability	Critical Systems
			Vendor Session	Vendor Session
Wednesday 16 June Sessions & Exhibition	Keynote Talk Control Co-design: Algorithms and their Implementation <i>Pedro Albertos</i>	Real-Time Systems	Industrial Presentations	Industrial Presentations
			Invited Session Software Vulnerabilities in Programming Languages and Applications <i>Stephen Michell</i>	
Thursday 17 June Sessions & Exhibition	Keynote Talk Ada: Made for the 3.0 World <i>James Sutton</i>	Language Technology	Industrial Presentations	Distribution and Persistency
Friday 18 June Tutorials	SPARK: The Libre Language and Toolset for High-Assurance Software <i>R. Chapman</i>			
	C#, .NET and Ada: Keeping the Faith in a Language-Agnostic Environment <i>B. Brosgol, J. Lambourg</i>			

INVITED SPEAKERS

Three eminent keynote speakers will open each day of the core conference program:



Theodore Baker (Florida State University, USA), a leading researcher in Ada and Real-Time systems, will examine the state of the art in multiprocessor real-time scheduling in his talk *What to Make of Multicore Processors for Reliable Real-Time Systems?*



Pedro Albertos (Universidad Politécnica de Valencia, Spain), a most authoritative member of the Automatic Control community, will explore the relationship between implementation and performance of control algorithms in a talk entitled *Control Co-design: Algorithms and their Implementation*.



James Sutton (Lockheed Martin, USA), a renowned expert software architect, will analyze the fitness of Ada for the so-called 3.0 World, where complexity and chaos are appeased, and both can be used to the user's advantage. That will be in his talk entitled *Ada: Made for the 3.0 World*.

TUTORIAL SCHEDULE

Date	#	Session	Speaker(s) and Title	Room*
Monday 14 June	T1	Morning	Juan Antonio de la Puente, Juan Zamorano <i>Developing High-Integrity Systems with GNATforLEON/ORK+</i>	1.5
	T2	Morning	William Bail <i>Software Design Concepts and Pitfalls</i>	1.3
	T3	Morning	Jean-Pierre Rosen <i>Using Object-Oriented Technologies in Secure Systems</i>	1.4
	T4	Afternoon	Ismael Ripoll, Alfons Crespo <i>Hypervisor Technology for Building Safety-Critical Systems: XtratuM</i>	1.3
	T5	Afternoon	Ian Broster <i>How to Optimize Reliable Software</i>	1.4
	T6	Afternoon	Jean-Pierre Rosen <i>Developing Web-Aware Applications in Ada with AWS</i>	1.5
Friday 18 June	T8	Full day	Roderick Chapman <i>SPARK: The Libre Language and Toolset for High-Assurance Software</i>	1.3
	T9	Full day	Benjamin Brosgol, Jérôme Lambourg <i>C#, .NET and Ada: Keeping the Faith in a Language-Agnostic Environment</i>	1.4

(*) Please use the map on the next page to locate the tutorial rooms on the first floor.

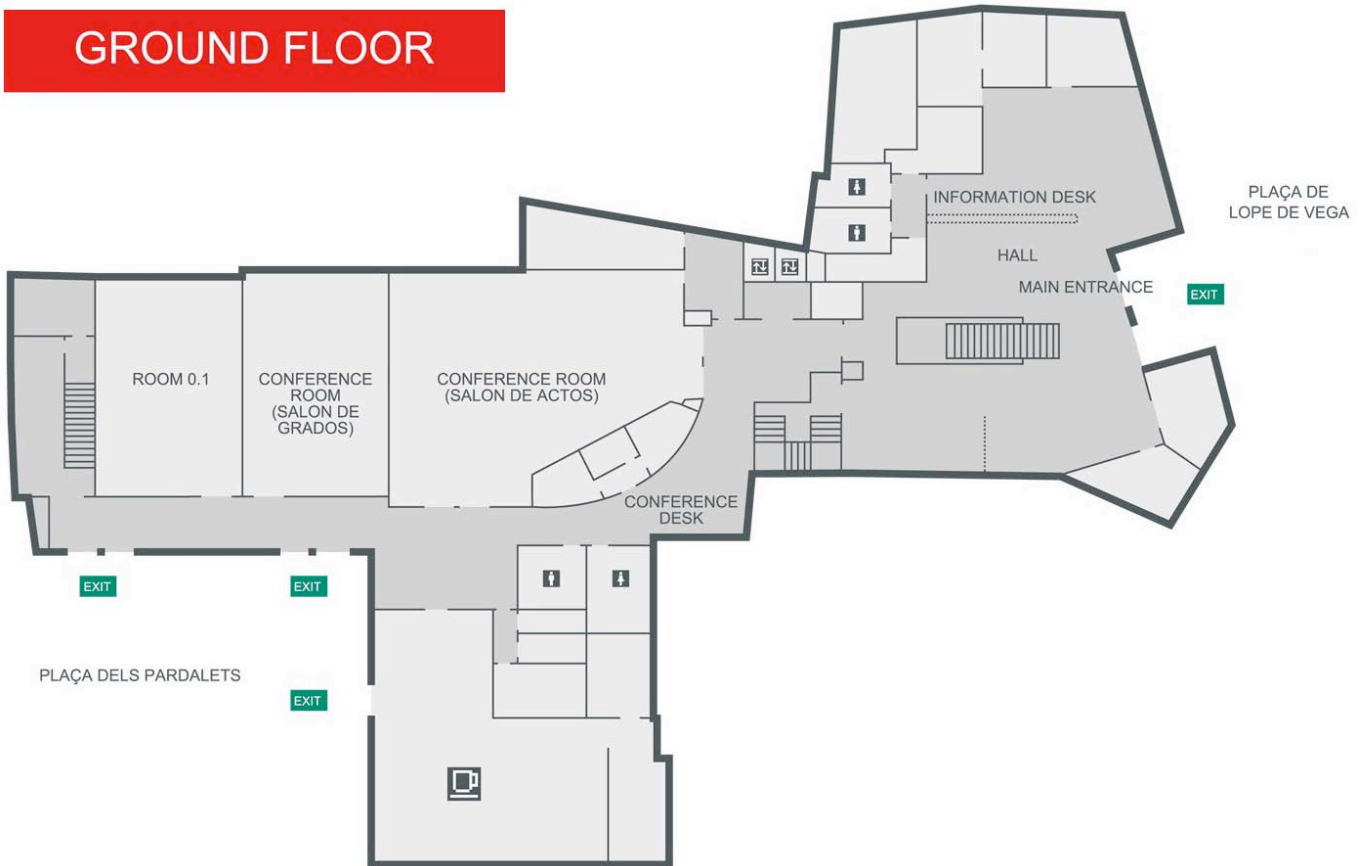
Morning tutorial sessions will start at 9:30 and end at 13:00. Afternoon sessions will start at 14:30 and end at 18:00. Coffee breaks will be at 11:00 - 11:30 and at 16:00 - 16:30.

Please note that the speaker of tutorial T7 has fallen ill and his medical recovery prevents him from attending the conference. Regretfully therefore the previously announced tutorial has been cancelled.

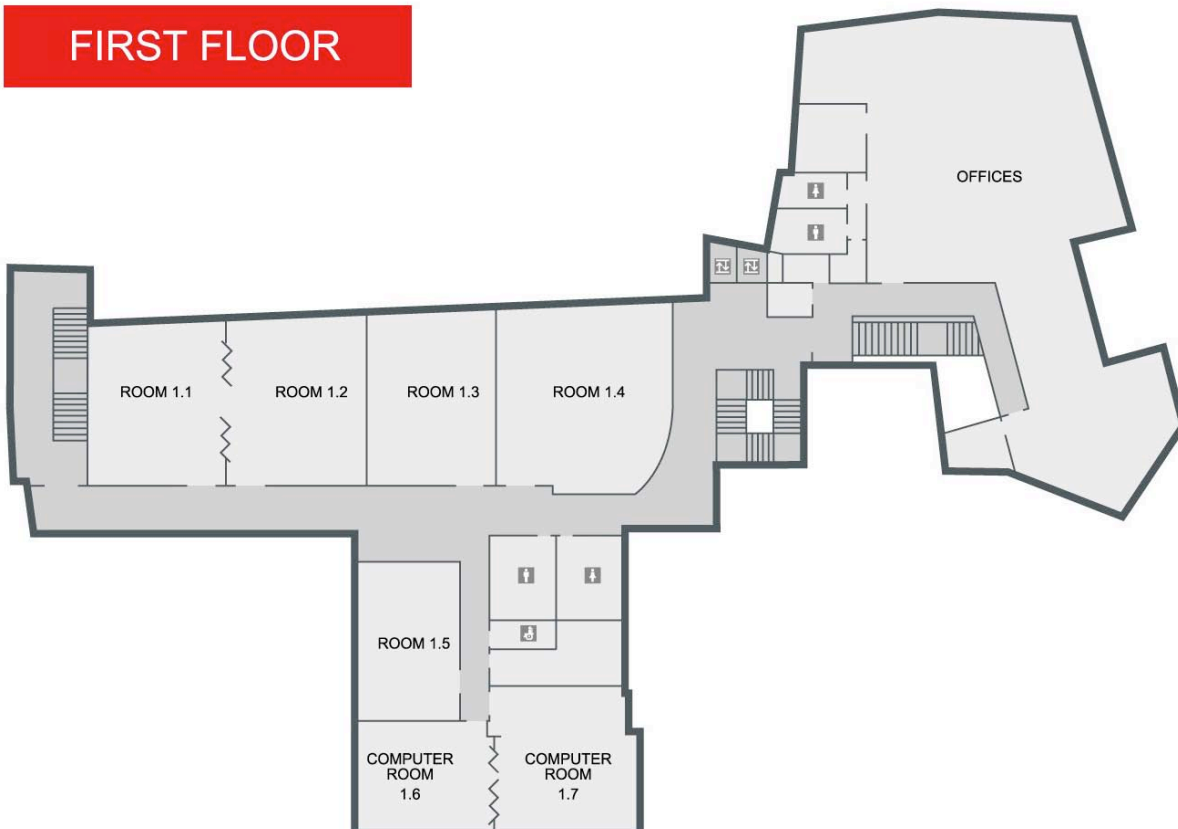


MAP OF THE CONFERENCE CENTER

GROUND FLOOR



FIRST FLOOR







EXHIBITION

The exhibition will take place in Room 0.1, on the ground floor. It will open at the morning break on Tuesday and run continuously until the end of the afternoon break on Thursday. The coffee breaks will be served in the exhibition area. The breaks from Tuesday to Thursday span one hour so as to allow the attendees comfortable time to visit the exhibition.

The companies that will be present at the exhibition include, in alphabetical order: AdaCore, Altran Praxis, Atego, and Ellidiss Software. Exhibitors will also deliver a presentation at a vendor session.

VENDOR SESSIONS

Vendor sessions are scheduled on Tuesday afternoon, in parallel with the Software Dependability session and partially overlapping the Critical Systems session. Vendor sessions will be held in the conference room *Salón de Grados*, on the ground floor, next to the main conference room (named *Salón de Actos*). The schedule is:

Time	Title and Speaker	Company
14:30 – 15:00	GNAT Pro Innovations for High-Integrity Development <i>José Ruiz</i>	
15:00 – 15:30	HOOD, STOOD and AADL <i>Tony Elliston</i>	
15:30 – 16:00	Atego Introduction – The <i>Work as One</i> Concept <i>Tom Grosman</i>	
16:00 – 17:00	Coffee & Exhibition	
17:00 – 17:30	SPARK Pro 9 and Beyond – an Update from SPARK Team <i>Rod Chapman</i>	

MEETINGS

The conference will host the following meetings:

Ada-Europe General Assembly (open)

Tuesday 15th, 18:30 – 19:30

Conference Room (*Salón de Actos*)

GNAT Academic Program Update (open)

Wednesday 18:00 – 18:30

Conference Room (*Salón de Actos*)

Ada-Europe Board meetings (closed)

Monday 14th, 17:00

Thursday 17th, 18:30

Room 4.3, fourth floor

ISO/IEC JTC1/SC22/WG9 HRG (closed)

Wednesday 16th, 16:00 – 17:30

Room 2.5, second floor.

ISO/IEC JTC1/SC22/WG9 (closed)

Friday 18th, 9:30 – 13:00

Room Hemicycle, fourth floor

ISO/IEC JTC1/SC22/WG9 ARG (closed)

Friday 18th, 14:30 – Sunday 20th, 18:00

Room Hemicycle, fourth floor

FOURTH FLOOR



CONFERENCE SCHEDULE

	Tuesday 15 June	Wednesday 16 June	Thursday 17 June
9:00 – 9:30	Welcome and Opening Address		
9:30 – 10:30	Chair: Tullio Vardanega Keynote Talk What to Make of Multicore Processors for Reliable Real-Time Systems? <i>Theodore Baker</i> Florida State University, USA	Chair: Albert Llemosí Keynote Talk Control Co-Design: Algorithms and their Implementation <i>Pedro Albertos</i> Universidad Politécnica de Valencia, Spain	Chair: Rod White Keynote Talk Ada: Made for the 3.0 World <i>James Sutton</i> Lockheed Martin, USA
10:30 – 11:30	Coffee & Exhibition	Coffee & Exhibition	Coffee & Exhibition
11:30 – 13:00	Multicores and Ada Chair: José Ruiz Dispatching Domains for Multiprocessor Platforms and their Representation in Ada <i>A. Burns, A. Wellings</i> Implementing Multicore Real-Time Scheduling Algorithms Based on Task Splitting Using Ada 2012 <i>B. Andersson, L. M. Pinho</i> Preliminary Support of Ada 2012 in GNU/Linux Systems <i>S. Sáez, A. Crespo</i>	Real-Time Systems Chair: Juan Antonio de la Puente Towards the Definition of a Pattern Sequence for Real-Time Applications using a Model-Driven Engineering Approach <i>J. Pastor, P. Sánchez, D. Alonso, B. Álvarez</i> Scheduling Configuration of Real-Time Component-Based Applications <i>P. López, L. Barros, J. M. Drake</i> The Evolution of Real-Time Programming Revisited: Programming the Giotto Model in Ada 2005 <i>A. Wellings, A. Burns</i>	Language Technology Chair: Jean-Pierre Rosen AdaStreams: A Type-Based Programming Extension for Stream-Parallelism with Ada 2005 <i>G. Hong, B. Burgstaller, J. Blieberger</i> A Comparison of Generic Template Support: Ada, C++, C#, and Java <i>B. Brosgol</i> Towards Ada 2012: An Interim Report <i>E. Schonberg</i>
13:00 – 14:30	Lunch & Exhibition	Lunch & Exhibition	Lunch & Exhibition

	Tuesday 15 June		Wednesday 16 June		Thursday 17 June
14:30 – 16:00	<p>Software Dependability</p> <p>Chair: Rod Chapman</p> <p>Practical Limits on Software Dependability: A Case Study <i>P. Graydon, J. Knight, X. Yin</i></p> <p>Program Verification in SPARK and ACSL: A Comparative Case Study <i>E. Brito, J. Sousa Pinto</i></p> <p>Static Versioning of Global State for Race Condition Detection <i>S. Keul</i></p>	<p>Vendor Session</p> <p>Chair: Ahlan Marriott</p> <p>Details on page 5</p>	<p>Industrial Presentations</p> <p>Chair: Alok Srivastava</p> <p>HRT-UML and Ada Ravenscar Profile: A Methodological Approach to the Design of Level-B Spacecraft Software <i>R. López, A. I. Rodríguez</i></p> <p>Applying Model-Driven Architecture and SPARK Ada - a SPARK Ada Model Compiler for xtUML <i>E. Wedin</i></p> <p>Ada 95 Usage within the Airbus Military Advanced Refuelling Boom System <i>I. Lafoz</i></p> <p>Ada 95 Usage within the Airbus Military Generic Test Environment System <i>B. Lozano</i></p>	<p>Invited Session</p> <p>Chair: Joyce Tokar</p> <p>Software Vulnerabilities and Security <i>Stephen Michell</i></p> <p>Details on page 8</p>	<p>Industrial Presentations</p> <p>Chair: Dirk Craeynest</p> <p>Future Enhancements to the U.S. FAA's En-Route Automation Modernization (ERAM) Program and the Next Generation Air Transportation (NextGen) System <i>J. O'Leary, A. Srivastava</i></p> <p>System Architecture Virtual Integration Case Study <i>B. Lewis</i></p> <p>Lessons Learned from the First High Assurance (EAL 6+) Common Criteria Software Certification <i>D. Kleidermacher</i></p> <p>An Introduction to ParaSail: Parallel Specification and Implementation Language <i>S. T. Taft</i></p>
16:00 – 17:00	Coffee & Exhibition		Coffee & Exhibition		Coffee & Exhibition
17:00 – 18:00	<p>Critical Systems</p> <p>Chair: Alan Burns</p> <p>Using Hardware Support for Scheduling with Ada <i>R. White</i></p> <p>Cache-aware Development of High-Integrity Systems <i>E. Mezzetti, A. Betts, J. Ruiz, T. Vardanega</i></p> <p>Preservation of Timing Properties with the Ada Ravenscar Profile <i>E. Mezzetti, M. Panunzio, T. Vardanega</i></p>	<p>Vendor Session</p> <p>Details on page 5</p>	<p>Industrial Presentations</p> <p>Chair: David Mirfin</p> <p>Implementing Polymorphic Callbacks for Ada/C++ Bindings <i>M. Sobczak</i></p> <p>A Reusable Work Seeking Parallel Framework for Ada 2005 <i>B. Moore</i></p> <p>Database Programming with Ada <i>F. Piron</i></p>		<p>Distribution and Persistency</p> <p>Chair: Erhard Plödereder</p> <p>Managing Transactions in Flexible Distributed Real-Time Systems <i>D. Sangorrín, M. González-Harbour, H. Pérez, J. J. Gutiérrez</i></p> <p>An Efficient Implementation of Persistent Objects <i>J. S. Andersen</i></p>
18:00 – 18:30			GNAT Academic Program Update		Closing Address and Best-Presentation Award
From 18:30	Ada-Europe General Assembly		Banquet and Best-Paper Award (Departure 19:15)		
From 19:30	Welcome Reception (Departure 19:45)				

INVITED SESSION:

SOFTWARE VULNERABILITIES AND SECURITY

In addition to the regular, industrial and vendor sessions, the conference will include an invited session on the hot topic of software vulnerabilities. The session will take place on Wednesday 16th, from 14:30 to 15:30, at the conference room *Salón de Grados*, on the ground floor (see map on page 4).

Presenter: Stephen Michell
Maurya Software Inc.
Ottawa, Ontario, Canada

Abstract

There has been a lot of discussion in the past decade about security vulnerabilities in software. Before the late 1990's, most of the effort was on traditional security regimes such as developing operating systems that would provide separation, privacy and protection for multiple compartments of security. In the intervening years, the rise of the internet and the dramatic increase of malicious attacks has changed the focus to design mistakes, programming mistakes and programming language weaknesses that permit theft of resources, theft of identity, loss of confidence or even destruction of property from attacks launched over networks between computers.

Even this does not tell the complete story as attackers find ways to use flaws in hardware, protocols and interfaces (as well) and threaten to disrupt our very institutes of democracy and civilization. This session will discuss many of the issues around software application security vulnerabilities, how they can occur, typical and possible attacks, and how we can avoid them.

About the author

Stephen Michell has been working in the High Integrity Software field for two decades. He was one of the two principle authors on the "Guidance on the use of Ada 95 in high integrity systems", which led ISO/IEC TR 15952. He is a contributing member to ISO/IEC TR 24772 "Avoiding software vulnerabilities through language selection and use". He is presently leading a software security initiative for the Canadian army.

SOCIAL PROGRAM

Welcome Reception

The social program will open with a welcome reception on Tuesday at the *Jardí Botànic*. The University of Valencia founded this botanical garden in 1567. In 1802 it was installed in its current location.

Today, the botanical garden has nearly four thousand trees and plant species from all five continents, with an impressive collection of palm and tropical trees.

A 1 Km walk to the botanical garden will give us the opportunity to pass below the XV Century Quart towers, remains of the old medieval city walls.

Departure to *Jardí Botànic* will be at 19:45 from the main entrance of the conference center, in Plaza Lope de Vega, next to the pretty and singular Plaza Redonda.

Conference Banquet

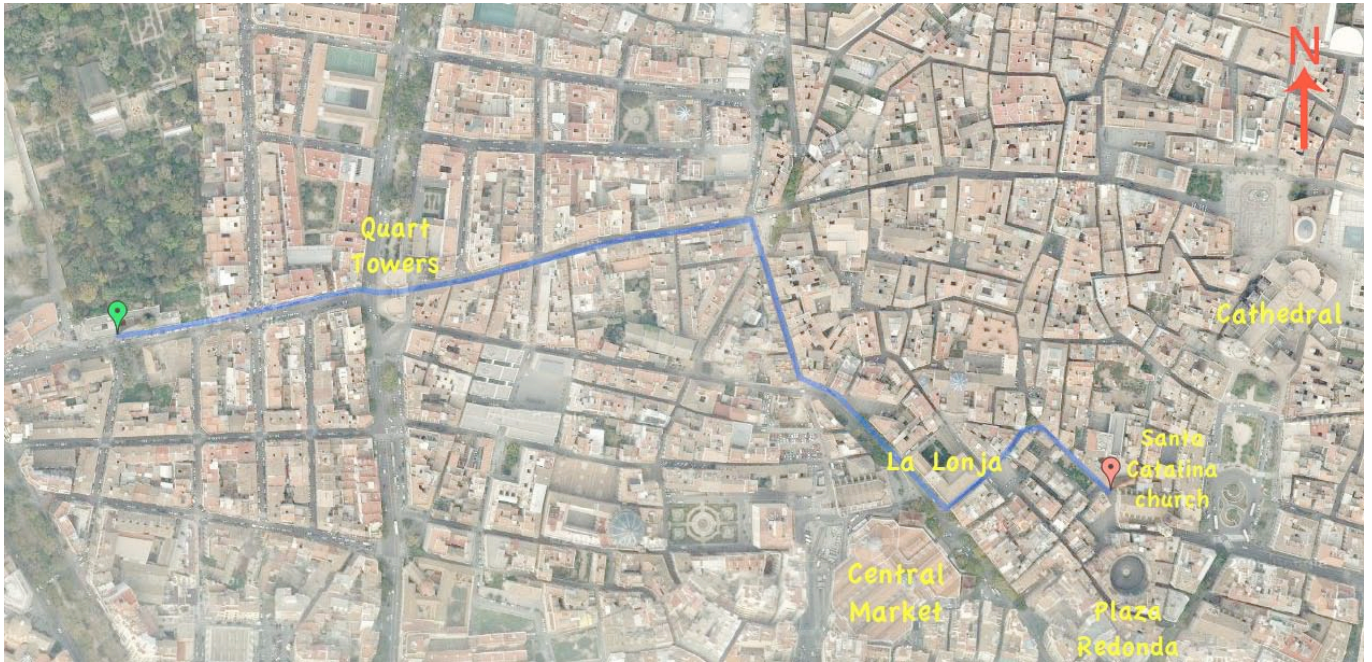
Following a well established and appreciated tradition of the conference, there will be a banquet dinner on Wednesday evening. We will be visiting a beautiful Valencian *Masía* (country house and farm) built in the 19th century and kept in perfect condition for the celebration of this kind of events.

A bus will take us to *Masía de Xamandreu* in a short trip of about 30 minutes from the conference venue. Access to the *Masía* is through a straight road flanked by palm trees, with orange trees and Mediterranean gardens surrounding the house. Altogether, the place has a marked Valencian character. In addition, *Masía de Xamandreu* has gained a reputation for its creative cuisine, close to tradition and using excellent quality ingredients, many of them grown in the property.

Departure to the *Masía* will be at 19:15 from Plaza de la Reina, next to Adeit, the conference venue.



ROUTE TO JARDÍ BOTÀNIC



📍 Adeit (conference venue)

📍 Jardí Botànic



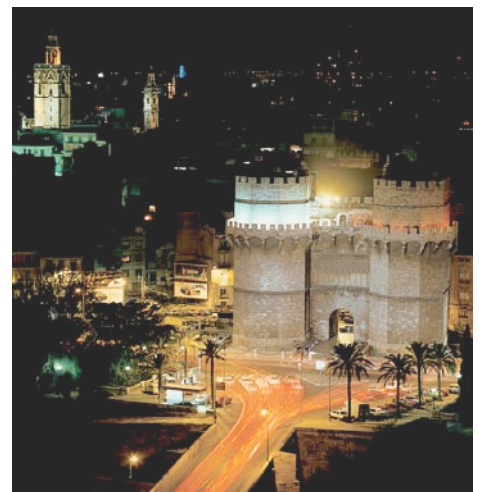
Jardí Botànic



Masia Xamandreu



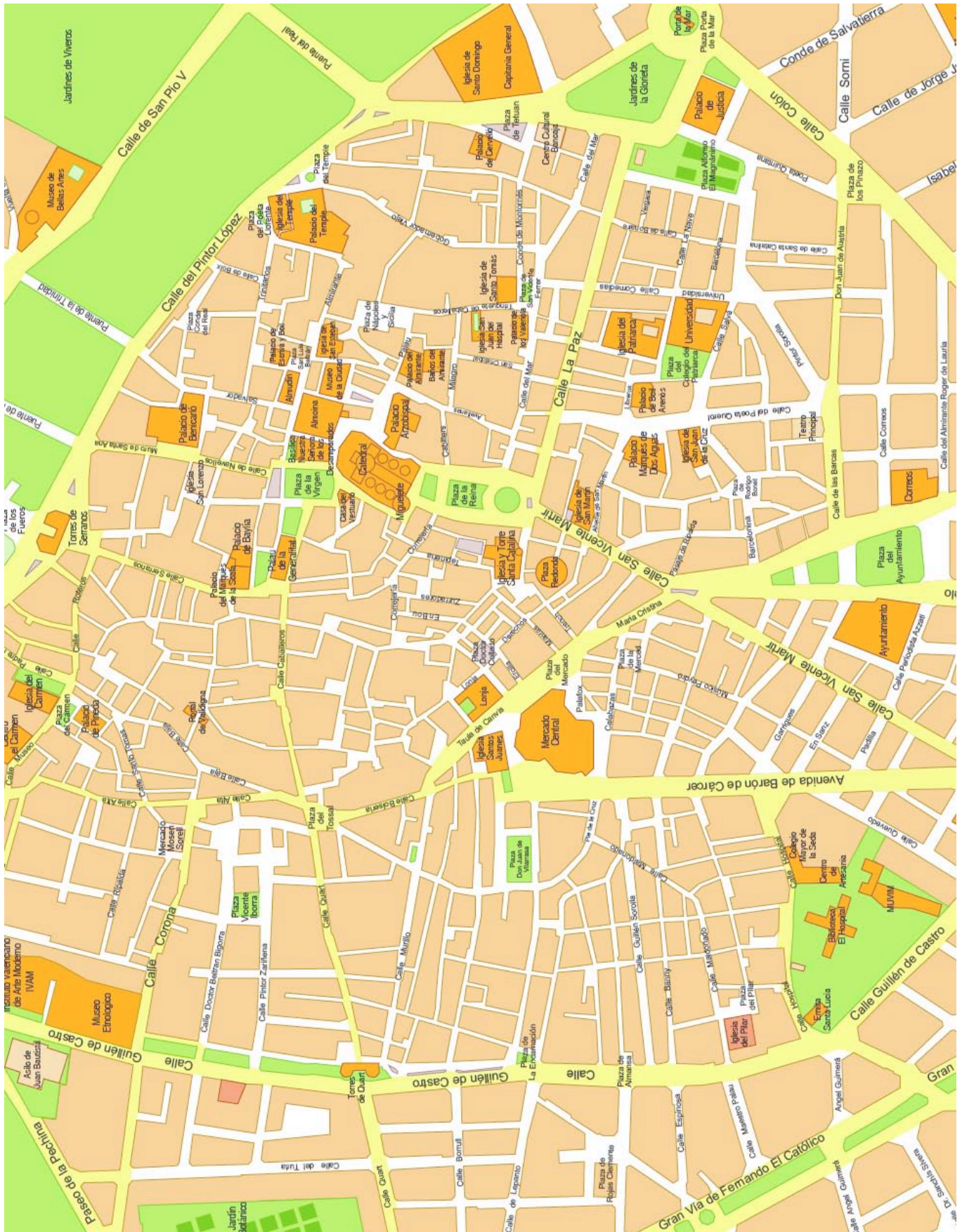
Quart towers



Serrano towers with Miguelete and Santa Catalina bell towers behind



MAP OF THE CITY CENTER



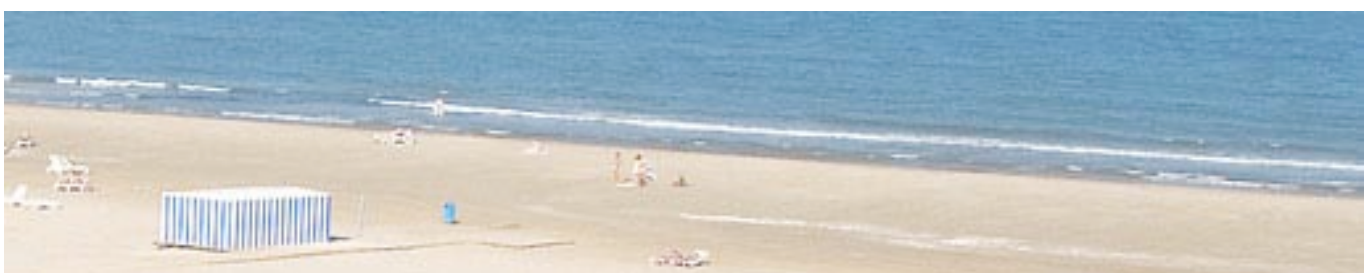


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