

# Request for an Ada Developer Room

at

Free and Open-Source Software Developers' European Meeting  
FOSDEM 2010

6-7 February 2010



## Executive Summary

- Project Name: Ada Developer Room
- URL of the website of the project:  
<http://www.cs.kuleuven.be/~dirk/ada-belgium/events/10/100206-fosdem.html>
- Description of the project(s) : Ada for Free and Open Source Software
- Name of **Ada at FOSDEM2010** Coordinator: Valentine Reboul  
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# Introduction

Ada-Belgium requests a Developer Room to hold presentations on related projects and tools.

We really enjoyed the opportunity you gave us with the 2-full-day Ada DevRoom at FOSDEM 2009 and as it received a true warm welcome (several talks given in front of a full room), the European Ada community has once again a real motivation to attend FOSDEM 2010.

At the time of writing speakers from various countries (Denmark, France, Spain) have already proposed six interesting hour-long presentations on Ada connections to the Free Software world. The addressed topics are as various as coverage analysis (Couverture), real-time (MAST), and "back to childhood project" (with LEGO(c) MINDSTORMS).

We also plan to organize a one-hour "open forum" on each day, for informal discussions and short presentations by participants, as we learned last year it would be nice to offer more time for interactions with the audience. And finally, a few more presentations may be confirmed in the coming weeks or months.

We apply on the same basis as last year, as we completely follow the collaborative model you gave this year to the FOSDEM Devrooms Project: The 6 talks we are presenting below, together with the two open forums would be enough to fill a DevRoom for the entire duration of the FOSDEM event (i.e. Saturday 7th from 12:00 to 18:00 and Sunday 8th from 10:00 to 17:00). However, if necessary, we could try to make our program fit in a single day by reducing the number of talks or the time allocated to each of them.

- ▷ <http://www.cs.kuleuven.be/~dirk/ada-belgium>
- ▷ [http://en.wikipedia.org/wiki/Ada\\_\(programming\\_language\)](http://en.wikipedia.org/wiki/Ada_(programming_language))
- ▷ [http://en.wikibooks.org/wiki/Ada\\_Programming](http://en.wikibooks.org/wiki/Ada_Programming)
- ▷ <http://www.adaic.com>
- ▷ <http://www.cs.kuleuven.be/~dirk/ada-belgium/events/09/090207-fosdem.html>

# Presentations

## An Introduction to Ada 2005 for Beginning or Experienced Programmers

by [Jean-Pierre Rosen - Adalog](#)

This presentation exposes the main features of the Ada language, with special emphasis on the features that make it especially attractive for free software development. It addresses also how Ada handles the object oriented paradigm, and especially how its model is different from what is commonly found in other languages, as well as the benefits and drawbacks of this original approach.

- ▷ <http://www.adalog.fr/compo2.htm> (free Software from Adalog)
- ▷ <http://adaic.org/standards/95rat/RAThtml/rat95-p2-4.html>
- ▷ <http://adaic.org/standards/05rat/html/Rat-2.html>
- ▷ <http://adaic.org/standards/05rat/html/Rat-TOC.html>

## 30 Years of Multicore Programming with Ada

by TBD from [Adalog](#) and/or [AdaCore](#)

A simple presentation of Ada's features in this parallel/multicore area, given in such a way that it offers enough for people to start experimenting and doing "interesting stuff".

## Web-enabling Ada Applications with AWS

by [Jean-Pierre Rosen - Adalog](#)

AWS is the Ada Web Server, a software component that allows applications to embed an http server. It allows stand-alone Ada applications to offer a web interface, or use HTML for the GUI, without resorting to an external server.

This presentation describes this alternative approach to web development, and the many features provided by AWS (including SOAP, LDAP, Jabber, SMTP...)

- ▷ <http://libre.adacore.com/libre/tools/aws/>

## **Couverture:**

### **Next Generation Coverage Analysis for Safety Critical Applications**

by [Thomas Quinot](#) - [AdaCore](#)

Project Couverture aims at producing a free software coverage analysis tool suite, together with the ability to generate artifacts that allow the tools to be used for safety critical software projects undergoing DO-178B software audit process. The tools will also be usable in a more general context for non-safety-critical projects, thus benefitting the open source community at large.

Unlike traditional coverage analysis tools requiring source code instrumentation, the key contribution of Couverture consists in providing unobtrusive coverage assessment by leveraging recent advances in hardware virtualization. Native target code is executed in an instrumented simulation environment where traces are collected. These traces are then analyzed off-line to determine whether a given coverage objective is achieved by the executed tests.

This presentation introduces the context of Couverture. We describe the various open source technologies used in the project, as well as the new tools specifically developed in the context of the project. We show how these tools can be applied to both safety-critical software in DO-178B context and non-safety-critical open source applications.

▷ <http://www.projet-couverture.com/>

## **MINDSTORMS robots**

by engineer from [AdaCore](#) - [AdaCore](#)

GNAT for LEGO MINDSTORMS NXT is a GPL port for the GNAT compilation system to the LEGO MINDSTORMS NXT robotic platform. Originally born as an education-oriented project at MIT Media Lab, the LEGO MINDSTORMS has evolved into a successful commercial product for education in robotics in a multitude of universities and high schools across the globe. The latest revision of the platform includes a 32 bits processor and supports several different sensors able to detect distance, colors and sounds and to communicate via the Bluetooth protocol.

GNAT GPL Edition for the LEGO MINDSTORMS NXT platform brings the possibility of experimenting with embedded systems development using the Ada 2005 and SPARK languages to an education-oriented robotic platform. Entire embedded systems, including software, hardware and sensors intercefacng, and wireless communications can be developed and verified using the GPL editions of GNAT and SPARK.

▷ <http://libre.adacore.com/libre/tools/mindstorms/>

▷ <http://mindstorms.lego.com/>

## MAST - Modeling and Analysis Suite for Real-Time Applications

by [Maria Cue Sampedro](#) - [Universidad de Cantabria](#)  
and [Miguel Telleria de Esteban](#) - [Universidad de Cantabria](#)

MAST is a Free(GPL) set of real-time analysis tools developed in Ada by the Real Time Computing lab of University of Cantabria. The user submits a decomposition of his application in:

- Task, activities network messages,
- Scheduling parameters and constraints,
- Event stimulus pattern.

MAST calculates response times (worst-case and average), jitters and slacks (time percentage that the activities can be increased while still achieving schedulability).

▷ <http://mast.unican.es>

▷ <http://www.ctr.unican.es>

## POSIX in Ada

by [Jacob Sparre Andersen](#) - Tofta Teld

Florist is an open-source implementation of IEEE Standard 1003.5b-1996, the POSIX Ada binding.

A quick tour of systems programming and low-level network programming using Florist and GNAT.Sockets. Some of the topics covered are files, pipes and I/O, memory maps and shared memory, memory locking, user and group database, TCP and UDP sockets, and running external programs.

The tour will include examples, simple implementations of Unix commands, and a working HTTP server.

▷ <http://www.cs.fsu.edu/~baker/florist.html>

## Speakers

### Jean-Pierre Rosen



Jean-Pierre Rosen graduated from ENST (French engineering school) in 1975, and obtained PhD in 1986. He started as a software engineer at the computing center of ENST, then as Professor, where he was responsible for the teaching of Software Engineering and Ada. He has formed Adalog, a company specialized in high level training, consultancy, and software development in the fields of Ada and associated technologies (software engineering, object oriented methodologies).

Jean-Pierre Rosen is Chairman of the AFNOR (French standardization body) group for Ada, and a member of the ARG (Ada Rapporteur Group), the group of experts in charge of maintenance and evolution of the Ada language. He was a member of the expert team who controlled the development of the validation suite for Ada 95.

He is the author of "Méthodes de Génie Logiciel avec Ada 95" (Software Engineering Methods with Ada 95) and "HOOD: an industrial approach for software development".

### Thomas Quinot



Thomas Quinot holds an engineering degree from Telecom Paris and a PhD from Université Paris VI. The main contribution of his research work is the definition of a flexible middleware architecture aiming at interoperability across distribution models. He is now a Senior Software Engineer with AdaCore, a leading provider of tools and solutions for embedded, real-time and critical systems, where he is responsible for the distribution technologies.

## Miguel Telleria de Esteban



Miguel Telleria de Esteban is a Free Software engineer, Ph.D student and computer science researcher from Cantabria region in the north of Spain. He started using Debian GNU/Linux in 2002 and keeps collaborating ever since with [Linux User Groups](#) (Brussels) and [Linuca](#) (Cantabria region, Spain). He discovered Ada in 1998 through the lectures of Prof Michael González Harbour in Cantabria and pursued it a year later with the Software Engineering course of Prof. Alfred Strohmeier's lab at the EPFL. After a 5 year period of IT consulting work in Brussels (where he discovered Free Software), he returned to the University of Cantabria to start a research career on Real-Time systems in the same lab where he was taught Ada for the first time ([CTR](#)).

## Maria Cue Sampedro

Maria Cue Sampedro is a physicist and computer science researcher of the University of Cantabria ([CTR](#)). She has a degree in Physics since 2007 and she finished a Master in Computing Science in June 2009. She is now working at the Electronics and Real-Time Computing Lab at the Unican.

## Jacob Sparre Andersen



Jacob Sparre Andersen holds a Ph.D. in experimental physics from the Niels Bohr Institute (<http://www.nbi.ku.dk/english/>). He worked in bioinformatics, taught physics, statistics and software engineering, and since 2008 worked as an analyst in an investment bank. His current activities include teaching physics of complex systems, modelling bankruptcy avalanches, innovating for the computer gaming industry, developing an automated data mining system for travel blogs – and using Ada on Unix systems.