

# Julien Delange

SOFTWARE ENGINEER · EMBEDDED, REAL-TIME SYSTEMS EXPERT

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*embedded, real-time and safety-critical software expertise with international mobility*

## Experience

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### Carnegie Mellon Software Engineering Institute

*Pittsburgh, PA - USA*

SENIOR MEMBER OF THE TECHNICAL STAFF

*Since 2012*

- Propose, conduct and execute research projects. Present research reports to SEI sponsor and technical committees. Disseminate research outcomes during conference tutorials, workshop, webinars, blog posts and podcast.
- Develop methods for improvement the design, analysis and implementation of safety-critical systems. Collaboration with critical software tool vendors (VxWorks/Windriver, DeOS/DDC-I, SCADE/ANSYS) to support our research outcomes.
- Lead developer and contributor of many modeling framework and safety-critical software: OSATE, Ocarina code generator, POK. Designer of an AADL to ARINC653 code generator that supports VxWorks and DeOS (demo video on request). Developer of the Eclipse-based EMFTA Fault-Tree Analysis tool.
- Collaboration with standardization committees and other research institutes: SAE, OMG, OpenGroup. Main contributor of the SAE AS2-C AADL standard document and lead of the v2.2 revision. Author of the ARINC653 annex for modeling avionics architectures.
- Strong experience and background with safety-critical and secure systems. Mentor and guide customers to use AADL to model & analyze avionics, automotive and aerospace systems.

### European Space Agency

*Noordwijk, The Netherlands*

SOFTWARE ENGINEER

*2010 - 2012*

- Technical lead on the ASSERT/TASTE development toolchain. Develop new capabilities and lead several collaboration with industrial and academic partners to enhance the toolchain.
- Development of software and device drivers for Aerospace hardware (LEON 3 processor using a SPARC architecture, MIL-1553 or CAN buses) for real-time embedded operating systems (RTEMS).
- Contribution to international standards, including ECSS E-40, ECSS Q-80 and SAE AS-2C AADL.
- Projects (design documents and code) reviews of critical European space projects. Experience with code analyzers and coding standards (MISRA, DO-178B, ECSS).

### EPITA (Software Engineering School)

*Paris, France*

TEACHER AND MASTER DEGREE MANAGER/SUPERVISOR

*2007 - 2010*

- Management of the embedded/real-time major. Collaboration with industrial partners and supervision of students internships. I established a strong technical program and several students in that major were hired by companies like Google, VMware or Adacore just after their internship.
- Lectures on the following topics: Ada programming, Synchronous languages, safety-critical standards (ARINC653, ISO26262, DO178B), Real-Time Operating Systems (VxWorks, RTEMS), real-time systems modeling.

### Mandriva (formerly Mandrakesoft)

*Paris, France*

SOFTWARE ENGINEER

*2005*

- Developer on *Pulse* project (automatic installation and deployment)
- Lead developer on *Aden* project (see <http://www.africaden.net>): integration with Mandriva OS, communication with customers and development.

## Education

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### TELECOM ParisTech (formerly ENST)

*Paris, France*

PHD IN COMPUTER SCIENCE, EMBEDDED SYSTEMS

*2007 - 2010*

- Topics: safety and security in distributed, real-time, embedded systems
- *Keywords*: ARINC653, MILS, AADL, DO178B, code coverage, Model-Driven Engineering, automatic code generation
- Design the first open-source ARINC653 and MILS operating-system, POK. It is currently reused in 10+ research projects internationally. <https://github.com/pok-kernel/pok>
- Publication in international conferences (SIGAda09, RTSS08, ...), participation in the AADL standardization committee that eventually leads to the creation of the ARINC653 standardized annex.
- Participation in national, european and international research projects

## Université Pierre et Marie Curie (Paris 6)

MASTER OF COMPUTER SCIENCE

- *Major*: real-time, embedded and distributed systems.
- *GPA*: 15.47/20, graduated with honors
- *Ranking*: 1st in a class of 30

Paris, France

2005 - 2007

## Université du Havre

B.S. IN SOFTWARE ENGINEERING

Le Havre, France

2001 - 2003

## Skills

<b>Programming</b>	C, Ada, ASM, Java, Perl, Ruby, shellscript, SQL, LaTeX
<b>Real-Time/Embedded Software</b>	VxWorks, RTEMS, DeOS, Ada
<b>Development standards</b>	DO-178B, ECSS, ISO26262, MISRA
<b>Formal Languages</b>	Lustre, Esterel, Petri Nets.
<b>Languages</b>	English (fluent), French (mother tongue), Spanish

## Honors & Awards

2015	<b>Andy Award - Serving the Customer</b> , Software Engineering Institute	Pittsburgh, PA
2009	<b>Best Student Paper Award</b> , SIGAda Conference	Tampa, Florida
2007	<b>Research Grant (PhD)</b> , French Ministry of Research	France

## Significant Presentations

2016	<b>AADL for Secure &amp; Safe Systems Design &amp; Analysis</b> , Embedded Systems Week	Pittsburgh, PA
2014	<b>Architecture Analysis with AADL - SEI Webinar</b> , Embedded Systems Week	Pittsburgh, PA
2010	<b>POK, an ARINC653-compliant operating system released under the BSD license</b> , 13th Real-Time Linux Workshop	Prague

## Significant Publications

### COMMERCIAL JOURNALS

Juin 2012	<b>Émulation de périphériques réseau avec QEMU ("Emulate network devices using QEMU")</b> , Linux Magazine France
May 2012	<b>Anatomie d'un OS Temps-Réel ("Inside an Real-Time Operating System")</b> , Linux Magazine France
2011	<b>Implémentation de systèmes critiques dirigée par des modèles ("Model-Driven implementation of safety-critical systems")</b> , Open Silicium

### ACADEMIC CONFERENCES OR JOURNALS

2016	<b>An Architecture-Centric Process for MILS Development</b> , 2nd MILS Workshop
2012	<b>Design, implementation and verification of MILS systems</b> , Software: Practice and Experience
2009	<b>Validate, simulate, and implement ARINC653 systems using the AAD</b> , ACM SIGAda Ada Letters

### BOOK CHAPTERS

2014	<b>J. Delange &amp; B. Lewis</b> , Digital Avionics Handbook, Third Edition, CRC Press
2011	<b>M. Perrotin, J. Delange &amp; J. Hugues</b> , Concrete aerospace systems, Wiley-ISTE