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

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.

EPITA

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 mahor were hired by companies like Google, Vmware or Adacore just after their internship.
- Lectures on the following topics: Ada programming, Synchronuous 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

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) — *Paris, France*

Master of Computer Science — *2005 - 2007*

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

Universite du Havre — *Le Havre, France*

B.S. in Software Engineering — *2001 - 2003*

Skills

Programming C, Ada, ASM, Java, Perl, Ruby, shellscript, SQL, LaTeX

Real-Time/Embedded Software VxWorks, RTEMS, DeOS, Ada

Formal Languages Lustre, Esterel, Petri Nets.

Languages English (fluent), French (mother tongue), Spanish

Honors & Awards

2015 **Andy Award - Serving the Customer**, Software Engineering Institute — *Pittsburgh, PA*

2009 **Best Student Paper Award**, SIGAda Conference — *Tampa, Florida*

2007 **Research Grant (PhD)**, French Ministry of Research — *France*

Significant Presentations

2016 **AADL for Secure & Safe Systems Design & Analysis**, Embedded Systems Week — *Pittsburgh, PA*

2014 **Architecture Analysis with AADL - SEI Webinar**, Embedded Systems Week — *Pittsburgh, PA*

2010 **POK, an ARINC653-compliant operating system released under the BSD license**, 13th Real-Time Linux Workshop — *Prague*

Significant Publications

Commercial Journals

Juin 2012 **Émulation de périphériques réseau avec QEMU**, Linux Magazine France

May 2012 **Anatomie d'un OS Temps-Réel**, Linux Magazine France

2011 **Implémentation de systèmes critiques dirigée par des modèles**, Open Silicium

Academic Conferences or Journals

2016 **An Architecture-Centric Process for MILS Development**, 2nd MILS Workshop — *Prague*

2012 **Design, implementation and verification of MILS systems**, Software: Practice and Experience

2009 **Validate, simulate, and implement ARINC653 systems using the AAD**, ACM SIGAda Ada Letters

Book Chapters

2014 **J. Delange & B. Lewis**, Digital Avionics Handbook, Third Edition — *CRC Press*

2011 **M. Perrotin, J. Delange & J. Hugues**, Concrete aerospace systems — *Wiley-ISTE*