

Frédéric LOIRET - Researcher

Curriculum Vitae

KTH (ROYAL INSTITUTE OF TECHNOLOGY)
Embedded Control Systems research group
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Personal Information

Born 1979, Jakarta, Indonesia. French citizen,
Languages: French (mother tongue), English.

Education

- 2008** **PhD.** CEA/LIST, University of Lille 1/LIFL, INRIA. France.
Title: *Tinap: A Component-Based Model and Execution Infrastructure for Multi-Task, Soft Real-Time, and Embedded Applications.*
Jury: Yvon Trinquet (Univ. Nantes), Jean-Bernard Stefani (INRIA).
Supervisors: David Servat (CEA), Laurence Duchien (Univ. Lille 1), Lionel Seinturier (Univ. Lille 1).
- 2003** **M.Sc.** University Pierre & Marie Curie. Paris, France.
Thesis: *Software Components and Aspect-Oriented Programming for Distributed Applications.*
- 2001** **Maîtrise (French B.A.)** University of Versailles. France.

Employment

- 2013-Present** **Researcher**, OFFIS (Institute für Informatik)), R&D Transportation Division. Oldenburg, Germany.
- 2011-Present** **Researcher**, KTH (Royal Institute of Technology), Embedded Control Systems research group. Stockholm, Sweden.
- 2008-2011** **Postdoctoral Researcher**, INRIA, ADAM Project Team. Lille, France.
- 2004-2007** **Teaching Assistant**, University Pierre & Marie Curie. Paris, France.
- 2004-2008** **Research Assistant & PhD student**, CEA/LIST, INRIA. Paris, France.
- Apr-Sept**
2003 **Research Internship**, LIP6, Research Laboratory in Computer Science of the University Pierre & Marie Curie. Paris, France.
- Apr-Sept**
2002 **Internship**, PRiSM, Research Laboratory of the University of Versailles. France.
- 2000-2004** **System Administrator**, part-time in a socio-cultural center, Saint-Germain. France.

Research Interests

Tailored Development Environments
Embedded Systems Engineering
Component-Based Software Engineering
Real-Time Operating System
Real-Time Java
Wireless Sensor Networks

Engineering/Lifecycle Tool & Data Interoperability
Service Oriented Architectures
Middleware for Embedded Systems Runtime Platforms
Generative & Aspect-Oriented Programming
Model-Driven Software Engineering
Tool-Based Analysis & Verification

Refereed Articles in International Journals

- Matthias Biehl, Jad El-Khoury, **Frédéric Loiret** and Martin Tornngren. On the Modeling and Generation of Service-Oriented Tool Chains. In *Journal of Software and Systems Modeling (SoSyM)*. 2012.
- Amirhosein Taherkordi, **Frédéric Loiret**, Romain Rouvoy and Frank Eliassen. Optimizing Sensor Network Reprogramming via In-situ Reconfigurable Components. In *ACM Transaction On Sensor Networks (TOSN)*. 2012.
- * M. Jan, C. Jouvray, F. Kordon, A. Kung, J. Lalande, **F. Loiret**, J. Navas, L. Pautet, J. Pulou, A. Radermacher and L. Seinturier. Flex-eWare: a Flexible MDE-based Solution for Designing and Implementing Embedded Distributed Systems. In *Software Practice and Experience (SPE)*. Wiley. 2012.
- ** Amirhosein Taherkordi, **Frédéric Loiret**, Romain Rouvoy and Frank Eliassen. A Generic Component-based Approach for Programming and Tuning Sensor Software. In *The Computer Journal, Special Issue on Embedded Computing Systems: Techniques and Trends*. Oxford Journals. 2011.
- **Frédéric Loiret**, Romain Rouvoy, Lionel Seinturier, Daniel Romero, Kévin Sénéchal, Aleš Plšek. An Aspect-Oriented Framework for Weaving Domain-Specific Concerns into Component-Based Systems. In *Journal of Universal Computer Science (J.UCS). Special Issue: Software Components, Architectures and Reuse*. 2010.

Scientific Book Chapters

- Aleš Plšek, **Frédéric Loiret**, Michal Malohlava. Component-Oriented Development for Real-Time Java. To appear in *Distributed, Embedded and Real-time Java Systems* (Eds. T. Higuera-Toledano and A. Wellings). Springer. 2012.

Refereed Articles in International Conferences

- Matthias Biehl, Jiaru Hong and **Frédéric Loiret**. Automated Construction of Data Integration Solutions for Tool Chains. In *Proceedings of the Seventh International Conference on Software Engineering Advances (ICSEA2012)*. Lisbon, Portugal. Nov. 2012.
- Matthias Biehl, Wenqing Gu and **Frédéric Loiret**. Model-Based Service Discovery and Orchestration for OSLC Services in Tool Chains. In *Proceedings of the 12th international conference on Web Engineering (ICWE'12)*. Springer-Verlag. Berlin, Germany. 2012.
- * **Frédéric Loiret**, Romain Rouvoy, Lionel Seinturier and Philippe Merle. Software Engineering of Component-Based Systems-of-Systems: A Reference Framework (*short paper*). In *Proceedings of the 14th International SIGSOFT Symposium on Component-Based Software Engineering (CBSE'11)*. ACM. Boulder, Colorado, USA. June 2011.
- Daniel Romero, Romain Rouvoy, Lionel Seinturier and **Frédéric Loiret**. Integration of Heterogeneous Context Resources in Ubiquitous Environments (*short paper*). In *Proceedings of the 36th Euromicro Conference on Software Engineering and Advanced Applications (SEAA'10)*. ACM. Lille, France. September 2010.
- * **Frédéric Loiret**, Lionel Seinturier, Laurence Duchien and David Servat. A Three-Tier Approach for Composition of Real-Time Embedded Software Stacks. In *Proceedings of the 13th International SIGSOFT Symposium on Component-Based Software Engineering (CBSE'10)*, pages 37–54. Vol. 6092 of LNCS, Springer. Prague, Czech Republic. June 2010.
- Amirhosein Taherkordi, **Frédéric Loiret**, Azadeh Abdolrazaghi, Romain Rouvoy, Quan Le-Trung and Frank Eliassen. Programming Sensor Networks Using REMORA Component Model. In *Proceedings of the 6th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS'10)*, pages 45–62. LNCS, Springer. Santa Barbara, California, USA. June 2010.

¹Conferences ranked A are marked by *. Journals ranked A+ are designed by **. The lists are available on <http://www.core.edu.au>.

- Carlos Noguera and **Frédéric Loiret**. Checking Architectural and Implementation Constraints for Domain-Specific Component Frameworks using Models. In *Proceedings of the 35th Euromicro Conference on Software Engineering and Advanced Applications (SEAA'09)*, pages 125–132. IEEE Computer Society. Patras, Greece. August 2009.
- **Frédéric Loiret**, Michal Malohlava, Aleš Plšek, Philippe Merle and Lionel Seinturier. Constructing Domain-Specific Component Frameworks through Architecture Refinement. In *Proceedings of the 35th Euromicro Conference on Software Engineering and Advanced Applications (SEAA'09)*, pages 375–382. IEEE Computer Society. Patras, Greece. August 2009.
- * **Frédéric Loiret**, Juan Navas, Jean-Philippe Babau and Olivier Lobry. Component-Based Real-Time Operating System for Embedded Applications. In *Proceedings of the 12th International SIGSOFT Symposium on Component-Based Software Engineering (CBSE'09)*, pages 209–226. Vol. 5582 of LNCS, Springer. East Stroudsburg, Pennsylvania, USA. June 2009.
- * Aleš Plšek, **Frédéric Loiret**, Philippe Merle and Lionel Seinturier. A Component Framework for Java-based Real-time Embedded Systems. In *Proceedings of the 9th ACM/IFIP/USENIX International Conference on Middleware (Middleware'08)*, pages 124–143. Springer. Leuven, Belgium. December 2008.
- David Servat, **Frédéric Loiret**, Sébastien Gérard and François Terrier. Architecture Description in Related Standards. In *Proceedings of the 5th Forum on specification and Design Languages (FDL'05)*, pages 599–609. Lausanne, Switzerland. September 2005.

International Workshops

- Jad El-khoury, Fredrik Asplund, Matthias Biehl, **Frédéric Loiret** and Martin Torngren. A Roadmap Towards Integrated CPS Development Environments In *1st Open EIT ICT Labs Workshop on Cyber-Physical Systems Engineering*. 2013.
- Fredrick Asplund, Matthias Biehl and **Frédéric Loiret**. Towards the Automated Qualification of Tool Chain Design. In *SAFECOMP 2012 Workshops*. Lecture Notes in Computer Science. 2012.
- Matthias Biehl, Jad El-Khoury, **Frédéric Loiret** and Martin Törngren. A Domain Specific Language for Generating Tool Integration Solutions. In the *4th Workshop on Model-Driven Tool & Process Integration (MDTPI2011)* at the *European Conference on Modelling Foundations and Applications (ECMFA 2011)*. Birmingham, UK. June 2011.
- Michal Malohlava, Aleš Plšek, **Frédéric Loiret**, Philippe Merle and Lionel Seinturier. Introducing Distribution into a RTSJ-based Component Framework. In *Proceedings of the 2nd Junior Researcher Workshop on Real-Time Computing (JRWRTC'08) at RTNS'08*. Rennes, France. October 2008.
- **Frédéric Loiret**, David Servat and Lionel Seinturier. A First Experimentation on High-Level Tooling Support upon Fractal. In *5th International Fractal Workshop at ECOOP'06*. Nantes, France. July 2006.
- **Frédéric Loiret** and David Servat. Insights on Real time Systems Architecture Modelling from a Software Engineering View-Point. In *Work-in-Progress Session of the 17th Euromicro Conference on Real-Time Systems (ECRTS'05)*. Palma de Mallorca, Balearic Islands, Spain. July 2005.

Refereed Articles in National Conferences

- **Frédéric Loiret**, Lionel Seinturier and Eric Gressier-Soudan. Fractal, Kilim, JAC: a Comparative Experiment. In *Journées Composants (JC'04)*. Lille, France, March 2004. (in french).

Theses

- *Tinap: A Component-Based Model and Execution Infrastructure for Multi-Task, Soft Real-Time, and Embedded Applications*. PhD thesis (in French), University of Lille I, 2008.

- *Software Components and Aspect-Oriented Programming for Distributed Applications*. Master's thesis (in French), University Pierre & Marie Curie, 2003.

Scientific Activities

Program Committee

- Journal of Systems Architecture (JSA). Special Issue on Embedded Systems Software Architecture. 2012.
- Embedded Software Engineering Track at Euromicro SEAA (Software Engineering and Advanced Applications). 2012.
- Embedded Software Engineering Track at Euromicro SEAA (Software Engineering and Advanced Applications). 2011.

Event Organizations

- Co-organizer of the conference *Towards a Vision of Interoperability Standard for Critical Embedded Systems*. Held in conjunction with the *Artemis Technology Conference 2012*. Nuremberg, Germany. February 2012.
- Co-organizer of the *1st International Workshop on Real-Time Object-Oriented Technologies (ROOTs'10)*. Held in conjunction with the *24th European Conference on Object-Oriented Programming (ECOOP'2010)*. Maribor, Slovenia. June 2010.
- Local co-organizer of the *36th Euromicro Conference on Software Engineering and Advanced Applications (SEAA)* and the *13th Euromicro conference on Digital System Design (DSD)*, Lille, France. September 2010.

Reviewing

- External Referee for the *Generative Programming and Component Engineering (GPCE)*. 2011.
- External Referee for the *European Conference on Software Architecture (ECSA)*. 2011.
- External Referee for the *International Conference on Aspect-Oriented Software Development (AOSD)*. 2010.
- External Referee for the *International Euromicro Conference on Software Engineering and Advanced Applications (SEAA)*. 2009.

Scientific Collaborations

- 2010-2013** **SeaS**: *Middleware for Sensor as a Service*, collaboration with the Network and Distributed System team of the University of Oslo, Norway. INRIA Associated Team sponsored.
- 2009-2010** **Aurora**: *Dependability and Adaptation in Systems-of-Systems*, collaboration with the Network and Distributed System team of the University of Oslo, Norway. EGIDE PHC sponsored.

Research Projects

- 2011-2014** **MBAT**: *Combined Model-Based Analysis & Testing of Embedded Systems*. European ARTEMIS JU Organisation sponsored.
- 2011-2013** **iFEST**: *industrial Framework for Embedded Systems Tools*. European ARTEMIS JU Organisation sponsored.
- 2008-2011** **MIND**: *Assembly Technology of Embedded Software Components*. French Global competitiveness cluster Minalogic sponsored.
- 2006-2010** **Flex-eWare**: *Open-Source Software Development Tools dedicated to Flexible, Reconfigurable Embedded Systems*. French National Research Agency (ANR) sponsored.

2006-2009 **REVE**: *Safe Reuse of Embedded components in heterogeneous environments*. French National Research Agency (ANR) sponsored.

Talks

- Jan. 2010** *Component-Based Real-Time Operating System for Embedded Applications*. Charles University. Prague, Czech Republic.
- Fev. 2009** *Applying CBSE From Real-Time & Embedded Systems to Arbitrary Domain-Specific Concerns*. Charles University. Prague, Czech Republic.
- Apr. 2007** *Component – Container – Connector – Middlewares for Dynamic Reconfiguration support*. Workshop on *Networks for Reconfigurable Embedded Systems (NeRES 2007)*. Aveiro, Portugal.
- Mar. 2004** *Fractal, Kilim, Jac: A Comparative Experiment*. National conference on *Software Components (JC'04)*. Lille, France.

Teaching and Supervising Activities

Lectures

- 2005-2007** **Network & Web Development**. Undergraduate teaching (15 students, 3 x 12h). University Pierre & Marie Curie, France.
- 2004-2004** **Distributed Systems**. Graduate teaching (20 students, 3 x 44h). University Pierre & Marie Curie, France.

Invited Lectures

- 2007** Masters. University Pierre & Marie Curie, France. *Adaptable Containers for Real-Time Embedded Systems*.

Internship & MSc. Thesis Supervisions

- 2011** *OSLC Tool Adaptor for MATLAB/Simulink with Configuration Management Support* (Juan Aldamiz Orcajo, KTH, Sweden, MSc. Thesis).
- 2011** *Automated Generation of Data Integration Solutions for Tool Chains* (Jiarui Hong, KTH, Sweden, MSc. Thesis).
- 2011** *Automated Generation and Orchestration of Services for Tool Adapters* (Wenqing Gu, Uppsala univ., Sweden, MSc. Thesis).
- 2011** *Component-Based Prototyping for OSLC Tool Adapters* (Baptiste Gousset, ENSTA Bretagne, Sweden, Internship).
- 2010** *Porting a Component-Based Real-Time Operating System on a Freescale i.MX27 Architecture*. (Damien Leflon, Univ. Lille 1, Internship).
- 2009** *Implementation of a Queries Language dedicated to Component-Based Model Refinements*. (Kévin Sénéchal, Univ. Lille 1, Internship).
- 2008** *Introducing Distribution into RTSJ-based Component Framework using Connectors*. (Michal Malohlava, Charles Univ., Prague, PhD Internship).
- 2007** *Graphical Editor for the Fractal Component Model based on the Eclipse Graphical Modeling Framework*. (Eric Wartelle, Univ. Lille 1, MSc. Thesis).
- 2006** *Component-based Application for Controlling Multimedia Streams in Real-Time*. (Bruno Lebon, Thomas Berthe, Univ. Lille 1, MSc. Thesis).

Thesis Co-Supervisions

- 2011-2013** Matthias Biehl. *Systematic Prototyping of Tool Integration Framework for Cyber-Physical Systems*.
- 2008-2011** Guillaume Libersat. *Development and Optimizations of Operating Systems using a Component-Based Approach*.
- 2006-2009** Aleš Plšek. *Component-Oriented Approach to Design Reflective and Highly Adaptable Middleware Architectures for Distributed, Real-Time, and Embedded Systems*.