Martin Quinson — Associate Professor, Université de Lorraine

Expert in **Experimentation Methodologies for Distributed Computing**

http://www.loria.fr/~quinson/ 38 years old, French citizenship.
Martin.Quinson@loria.fr Married, 3 children.
French: mother tongue; English: fluent; German: spoken

PROFESSIONAL EXPERIENCE

02/05 – present: Tenured Associate Professor at Université de Lorraine, LORIA laboratory.
09/04 – 01/05: Temporary Assistant Professor at University Joseph Fourier of Grenoble, ID-IMAG lab.
01/04 – 09/04: Postdoctoral Research Associate at University of California at Santa Barbara (UCSB).

EDUCATION

Habilitation: Université de Lorraine, France, 2013. *Computational Science of Computer Systems.*
Ph.D.: École Normale Supérieure de Lyon (ÉNS-Lyon), France, 2003.
Dissertation: *Automatic discovery of characteristics and capacity of distributed computing platforms.*
Advisors: Frédéric Desprez and Eddy Caron.
M.S.: *Models of heterogeneous clusters of parallel machines for numerical algorithms*, ÉNS-Lyon, 2000.

RESEARCH INTERESTS

My research is on experimentation methodologies for large-scale distributed systems such as grids, P2P, clouds or High Performance Computing. My work aim at **turning computer science into a computational science**. My goal is to use computers to understand and improve very large scale computer systems, that became in some sense as complex as natural systems. I try to build methods and tools for the evaluation of the performance and correctness of these computer systems. I am a specialist of the simulation of distributed applications and of their formal verification. I contributed several ready to use scientific instruments with solid foundations both on the theoretical and technical sides.

PROFESSIONAL ACTIVITIES

Leadership

- **Team leader** of Algorille (joint team Université de Lorraine – Inria – CNRS), 20 members.
- **Scientific leader** on several projects around the SimGrid project (total funding over 3.6M€).
- Elected member of an academic council representing 6 laboratories and 450 faculty members.
- Advisor of 2 Post-Doc students, 2 PhD students, 14 Graduate students, and 6 Research Engineers.

Scientific Expertise

- Member of several **steering committees on Research Grids** at regional and national scope.
- Regular member of conferences and workshops Program Committees and PhD defense juries.
- Author of 1 book chapter, 4 journal articles, 4 highly selective conferences, 12 refereed conferences, 8 refereed workshops and 10 presentations and tutorials.

Teaching Expertise

- *Domains:* Programming and algorithms, Operating systems, Distributed algorithms and systems.
- Author of scientific outcome activities; leader of a working group on computer science education.

Technical Expertise

- **Software architect** of 7 projects, from a research tool enjoying hundreds of users (*SimGrid*) to a complete pedagogical platform, alongside to an infrastructure element for Linux distributions.
- Official Debian Developer since 2005.

REFERENCES

Prof. Franck Cappello: Co-director of the INRIA-Illinois joint lab on PetaScale Computing.
Prof. Henri Casanova: University of Hawaii at Manoa, USA.

DETAILED CURRICULUM VITÆ

AUTHORED PUBLICATIONS

My publication strategy is more oriented toward quality than quantity. I aim at only writing papers that may interest the readers. This results in a list that is not larger than the average, but with some articles that are highly cited. According to Google Scholar, my **h-index is of 13, with over 700 citations**.

Book Chapters

1. Eddy Caron, Frédéric Desprez, Eric Fleury, Frédéric Lombard, Jean-Marc Nicod, Martin Quinson and Frédéric Suter. *Calcul réparti à grande échelle*, chapter *une approche hiérarchique des serveurs de calculs*. Hermès Science Paris, 2002. ISBN 2-7462-0472-X. **Cited 18 times.**

Journal Articles

5. Stephan Merz, Martin Quinson, Cristian Rosa. *SimGrid MC: Verification Support for a Multi-API Simulation Platform.* Electronic Communication of the European Association of Software Science and Technology (ECEASST), 35(1), 2010. **Cited 3 times.**
4. Jens Gustedt, Emmanuel Jeannot and Martin Quinson. *Experimental Validation in Large-Scale Systems: a Survey of Methodologies.* Parallel Processing Letters, 19(3):399–418, 2009. **Cited 38 times.**
3. Eddy Caron, Frédéric Desprez, Martin Quinson and Frédéric Suter. *Performance Evaluation of Linear Algebra Routines.* International Journal of High Performance Computing Applications, 18(3):373-390, 2004. Special issue on Clusters and Computational Grids for Scientific Computing (CCGSC'02). **Cited 5 times.**
2. Martin Quinson. *Un outil de prédiction dynamique de performances dans un environnement de metacomputing.* Technique et Science Informatique, 21(5):685–710, 2002. Special issue on RenPar'01.
1. Eddy Caron, Serge Chaumette, Sylvain Contassot-Vivier, Frédéric Desprez, Eric Fleury, Claude Gomez, Maurice Goursat, Emanuel Jeannot, Dominique Lazure, Frédéric Lombard, Jean-Marc Nicod, Laurent Philippe, Martin Quinson, Pierre Ramet, Jean Roman, Franck Rubi, Serge Steer, Frédéric Suter, Gil Utard. *Scilab to Scilab//, the OURAGAN Project*. Parallel Computing, 11(27):1497–1519, 2001. **Cited 27 times.**

Highly Selective Conferences. In my community, some conferences are as prestigious as journals[1].

4. Martin Quinson, Cristian Rosa, Christophe Thiéry. *Parallel Simulation of Peer-to-Peer Systems.* 12th ACM/IEEE Intl Symposium on Cluster Computing and the Grid (CCGrid'12 – rate 83/302=27.5%), Canada, May 2012. **Cited 8 times.**
3. Laurent Bobelin, Arnaud Legrand, David Marquez, Pierre Navarro, Martin Quinson, Frédéric Suter, Christophe Thiéry. *Scalable Multi-Purpose Network Representation for Large Scale Distributed System Simulation.* 12th ACM/IEEE Intl Symposium on Cluster Computing and the Grid (CCGrid'12 – rate 83/302=27.5%), Canada, May 2012. **Cited 6 times.**

[1] Cf. B. Meyer, C. Choppy J. Staunstrup and J. van Leeuwen. *Research Evaluation in Computer Science*. CACM, April 2009.

2. ⋆ Pierre-Nicolas Clauss, Mark Stillwell, Stéphane Genaud, Frédéric Suter, Henri Casanova, Martin Quinson. *Single Node On-Line Simulation of MPI Applications with SMPI.* 25th IEEE International Parallel & Distributed Processing Symposium (IPDPS'11 – rate 112/571=19.6%), May 16-20, 2011, Anchorage (Alaska) USA. **Cited 21 times.**
1. Lionel Eyraud Dubois, Arnaud Legrand, Martin Quinson and Frédéric Vivien. *A First Step Towards Automatically Building Network Representations.* 13th International EuroPar Conference (rate 89/333=26.7%), France, August 2007, LNCS 4641:160–169. **Cited 17 times.**

Other Refereed Conferences

11. Marion Guthmuller, Lucas Nussbaum, Martin Quinson. *Émulation d'applications distribuées sur des plates-formes virtuelles simulées.* Rencontres francophones du Parallélisme (RenPar'20), May 10-13, 2011, Saint Malo, France. Cited 1 time.
10. Sabina Akhtar, Stephan Merz and Martin Quinson. *A High-Level Language for Modeling Algorithms and their Properties.* 13th Brazilian Symposium on Formal Methods, Natal, Rio Grande do Norte, Brazil, Nov 8-12, 2010. Cited 1 time.
9. Laurent Bobelin, Martin Quinson and Frédéric Suter. *Synthesizing Generic Experimental Environments for Simulation.* 5th International Conference on P2P, Parallel, Grid, Cloud and Internet Computing (3PGCIC'10), Fukuoka, Japan, Nov 4-6 2010. Cited 2 times.
8. Martin Quinson and Flavien Vernier. *Byte-Range Asynchronous Locking in Distributed Settings.* 17th Euromicro Intl Conf. on Parallel, Distributed and network-based Processing (PDP'09), Weimar, Germany, Feb 18-20 2009. Cited 3 times.
7. Henri Casanova, Arnaud Legrand and Martin Quinson. *SimGrid: a Generic Framework for Large-Scale Distributed Experiments.* 10th IEEE International Conference on Computer Modeling and Simulation, Cambrige, UK, 2008. **Cited 283 times.**
6. Martin Quinson. *GRAS: a Research and Development framework for Grid services.* 18th IASTED Intl Conf. on Parallel and Distributed Computing and Systems (PDCS06). **Best paper award, Cited 23 times**.
5. Philippe Combes, Frédéric Lombard, Martin Quinson and Frédéric Suter. *A Scalable Approach to Network-Enabled Servers*. 7th Asian Computing Science Conference, Dec. 2002. **Cited 18 times.**
4. Eddy Caron, Frédéric Desprez, Frédéric Lombard, Jean-Marc Nicod, Martin Quinson and Frédéric Suter. *A Scalable Approach to Network-Enabled Servers*. 8th International EuroPar Conference, Paderborn, Germany, August 2002, LNCS 2400:907–910 (Springer-Verlag). **Cited 106 times.**
3. Frédéric Desprez, Martin Quinson and Frédéric Suter. *Dynamic Performance Forecasting for Network Enabled Servers in a Metacomputing Environment*. Intl Conf. on Parallel and Distributed Processing Techniques and Applications (PDPTA'01), June 25-28 2001. CSREA Press 3:1421–1427. **Cited 36 times.**
2. Frédéric Lombard, Martin Quinson and Frédéric Suter. *Une approche extensible des serveurs de calcul*. 13th Rencontres du parallélisme des architectures et des systèmes (RenPar'01), France, 2001.
1. Martin Quinson. *Un outil de modélisation de performances dans un environnement de metacomputing.* 13th Rencontres du parallélisme des architectures et des systèmes (RenPar'01), France, 2001.

Refereed Workshops

8. Paul Bedaride, Augustin Degomme, Stéphane Genaud, Arnaud Legrand, George Markomanolis, Martin Quinson, Mark L. Stillwell, Frédéric Suter, Brice Videau. *Toward Better Simulation of MPI Applications on Ethernet/TCP Networks.* Fourth International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS 2013). Held as part of SuperComputing'13, Denver, Colorado, USA, November 2013. Cited 1 time.
7. Maximiliano Geier, Lucas Nussbaum, Martin Quinson. *On the Convergence of Experimental Methodologies for Distributed Systems: Where do we stand?* Fourth International Workshop on Analysis Tools and Methodologies for Embedded and Real-time Systems (Waters 2013).

6. Frédéric Desprez, George S. Markomanolis, Martin Quinson, Frédéric Suter. *Assessing the Performance of MPI Applications Through Time-Independent Trace Replay.* Second International Workshop on Parallel Software Tools and Tool Infrastructures (PSTI 2011). Held in conjunction with ICPP 2011, the 40th International Conference on Parallel Processing, Taipei, Taiwan, September 13-16, 2011. **Cited 9 times.**
5. Cristian Rosa, Stephan Merz and Martin Quinson. *A Simple Model of Communication APIs – Application to Dynamic Partial-order Reduction.* 10th International Workshop on Automated Verification of Critical Systems (AVOCS'10), Düsseldorf, Germany, 2010.Cited 3 times.
4. Sabina Akhtar, Stephan Merz, Martin Quinson. *Extending PlusCal: A Language for Describing Concurrent and Distributed Algorithms.* Actes des deuxièmes journées nationales du Groupement De Recherche CNRS du Génie de la Programmation et du Logiciel, March 2010, Pau, France.
3. Lionel Eyraud-Dubois and Martin Quinson. *Assessing the Quality of Automatically Built Network Representations.* Workshop on Programming Models for Grid Computing, associated to CCGrid'07. Cited 3 times.
2. Arnaud Legrand and Martin Quinson. *Automatic deployment of the Network Weather Service using the Effective Network View.* High-Performance Grid Computing Workshop, associated to IPDPS'04. **Cited 16 times.**
1. Martin Quinson. *Dynamic Performance Forecasting for Network-Enabled Servers in a Metacomputing Environment.* International Workshop on Performance Modeling, Evaluation, and Optimization of Parallel and Distributed Systems (PMEO-IPDS'02), associated to IPDPS'02, April 15-19 2002. **Cited 49 times.**

Invited Presentations and Tutorials

10. *Modéliser les systèmes à large échelle. Pourquoi? Comment?* **Invited talk** at Journées Scientifiques Inria et Journée des Responsables d'équipes, June 24th, 2013.
9. *Introduction à SimGrid.* **Half-day Tutorial** at Conférence d'informatique en Parallélisme, Architecture et Système (Compas'13), January 15th, 2013.
8. *Simulation of Next Generation Systems.* **Invited talk** at the INGI Fall 2012 Doctoral School Day in Cloud Computing. Université Catholique de Louvain, November 2012.
7. *H*C: Performance Everywhere (or, computing getting high)*, **Invited talk** to the workshop "Challenges & Pitfalls of Performance Assurance", associated to CECMG'11, Munchen, Germany, March 2011.
6. *Experimenting HPC Systems with Simulation.* **Tutorial** at the 8th ACM/IEEE International Conference on High Performance Computing & Simulation (HPCS'10), Caen, France, June 28 2010.
5. *Performance Assesment of Distributed Scientific Applications*, **Invited talk** to workshop "Challenges & Pitfalls of Performance Assurance", associated to CECMG'10, Darmstadt, Germany, March 2010.
4. *SimGrid: a Generic Framework for Large-Scale Distributed Experiments.* **Invited talk** to the 9th ACM/IEEE International conference on Peer-to-peer computing (P2P'09), Seattle, USA, Sept 2009.
3. *The SimGrid Framework for Research on Large-Scale Distributed Systems.* **Tutorial** at the 9th Intl Conf. on Parallel and Distributed Computing, Applications and Technologies (PDCAT'08), Dunedin, New-Zeeland, Dec 2008.
2. *Simulation for Large-Scale Distributed Computing Research*. **Tutorial** at the 8th ACM/IEEE Intl Symposium on Cluster Computing and the Grid (CCGrid'08), Lyon, France, May 2008.
1. *Simulation for Large-Scale Distributed Computing Research.* **Tutorial** at the 19th IASTED Intl Conf. on Parallel and Distributed Computing and Systems (PDCS'07), Boston, MA, USA, Oct 2007.

MAJOR RESEARCH WORKS

My research is on design and performance evaluation of distributed algorithms and applications in the contexts of High Performance Computing and Grid Computing. To this end, I use several approaches: direct execution on experimental grids (such as **Grid'5000**), emulation, simulation (through the **SimGrid** project), and **formal methods**.

Grid'5000. This project aims at establishing a scientific instrument for the experimentation of distributed applications. Currently composed of about 2000 computational nodes encompassing more than 5000 cores in 9 sites in France interconnected with a dedicated high speed network. Specifically designed to ease the experimentation, it gives a strong control over the experimental settings and allows to test every layer of the system, from the application down to the operating system. User of the instrument since its beginning in 2002, I am now in charge of the Grid'5000 site for the east of France (located in Nancy). This strong role in scientific animation induces a pedagogical effort targeting the scientists who could potentially use the instrument. Methodological issues are too often neglected in computer science, and the first step is often about convincing of the actual need of such an instrument to conduct reproducible science. Then, using such an instrument induces a large body of technical know-how that I have to give to users, in collaboration with the technical staff of the instrument. As a member of the advisory board since 2005, I also participate to the scientific development of the instrument. I am for example leader of a research theme in the Hemera project, leading the scientific efforts alongside to the instrument.

SimGrid. This project aims at constituting a simulation framework allowing the researcher on distributed application to test their algorithm in a scientific way. This main goal encompasses several objectives. First, we strive at solving methodological issues raised by simulation, so that the users can rely on the tool and focus on their algorithmic difficulties without even thinking about the methodology. For that, an intense effort were put into *validating* the results of the simulation kernel against what happens in the reality. It is still an active research topic in the USS-SimGrid project (that I lead), funded by the ANR french agency. Newer research included in this project is about addressing methodological issues around the simulation through campaign management to decide what is the right amount of experiments, and which they are, to answer a given question, or about the result analysis and visualization to help users avoiding visualizations artifacts. Another crucial aspect to ensure that this tool helps the scientists in their day-to-day work is its intrinsic usability. That is why the simulation kernel is highly optimized both for speed and memory. Also, we never change the interface of a published function so that code written earlier remains runnable, thus easing the comparison with existing work. These work and results explain why SimGrid is one of the most used simulation kernel in the grid algorithm community.

Formal Assessment of Distributed Applications. I recently started working on the use of model-checking to assess the validity of distributed applications. This naturally comes in addition to my previously existing work on the topic through the methodologies of direct execution on Grid'5000 and of simulation through SimGrid. This work, although still preliminary at this point, lead me to add basic model-checking abilities to SimGrid to give to the users the power of formal approaches to assess some points of their solutions by exploring every possible execution path of the algorithms. The main difficulty of this methodology is its inherent combinatorial explosion. This was reduced in our prototype by the use of state of the art dynamic partial order reduction (DPOR). We are now at the point where this approach becomes viable in practice to SimGrid users, and these changes were recently integrated into the tool. The way is however still long on this path since model-checking is mainly destined at finding incorrect behaviors such as deadlocks or race conditions where most SimGrid users are more interested in the *performance* of their applications. Achieving this through formal methods seems really difficult at this point since the time is usually not defined or only discrete in model checking. Nevertheless, this thematic mobility is proving enriching by giving another light (through semantic considerations) on issues such as parallel simulation, collective communication primitives or the comparison of differing execution traces. This will certainly lead to original solutions to these difficult issues in the future.

MAJOR SOFTWARE PROJECTS

Maximizing the practical impact of my research is a permanent objective to me. I thus strive to produce ready to use tools for each of my research works. These programs usually benefit of strong technical and theoretical basis and several of them enjoy large user communities.

Current projects

SimGrid. This framework aims at allowing the simulation of distributed systems. It was first introduced by H. Casanova at University of California, San Diego in 1998. The scientific advantages and recent developments of this tool are highlighted in previous section and [7]. Since 2004, I am the main software architect of this project, redeveloped in collaboration with A. Legrand. It lasts 140k lines, mostly in C. This redesign, and the resulting scientific improvement, allowed to greatly increase the tool impact, from a few individuals in 2003 to a large community of hundreds of world-wide scientists.

This project constitutes the landscape of most of my current research developments. We recently added model-checking abilities to the framework, and are currently in the process of distributing and parallelizing the Discrete Event Simulator underlying SimGrid. This tool and its well controlled context allows us to easily explore some more generic issues applying to any Experimental Methodology for Large-Scale Distributed Systems, such as Open Science or Data analysis.

Simulacrum. This is a generator of synthetic but realistic experimental conditions for SimGrid. It allows to automatically generate a graph, promote nodes into computing elements, and select sub-sets verifying the wanted statistical properties. The modular design allows to add easily new generation algorithms on need. I am the unique developer of this project (5k lines of Java), described in [9].

PLM (Programmer's Learning Machine). This is a pedagogical platform for the teaching of programming through the use of interactive exercises. This graphical tool features a short feedback loop to increase the motivation of learners. Its modular design eases the creation of new kind of micro-worlds and learning situations. This is leveraged in a large but coherent body of exercises to teach differing aspects of programming, in Java, Python or Scala languages. I am the designer of this tool and main developer (20k lines of Java), I wrote most of the pedagogical content, in collaboration with G. Oster. Available in several catalogs of free pedagogical resources, this tool is heavily used in the IT engineering school where I teach.

Past projects

GRAS (Grid Reality And Simulation). This execution environment aims at easing the development and tuning of distributed applications. Its original approach consist in implementing the same communication interface twice (one for the use on top of simulator, the other for the use on real platforms). It allows the seamless exchange of any C data type using a Native Data Representation network protocol, and thus ensures performance comparable to main MPI implementations. I was the unique developer of this project (25k lines of C).

ALNeM (Application Level Network Mapper). This project aims at designing a tool able to automatically map the topology of a distributed platform. More than a mapping tool, it constitutes an environment for the study of applicative tomography algorithms, with an evaluation framework specially crafted for such algorithms. I was the software architect, and unique developer of this project (8k lines).

FAST. This is a performance prediction and system monitoring framework. It characterizes the performance signatures on each operation to be run in the system as well as the current state of the platform before combining them into makespan prediction. I was the only developer of this tool (15k lines of C).

po4a (po for anything) is a framework to translate documentation and other materials. Its originality is to reuse the tools intended for program user interface translation in the context of documentation translation. Its design also allows to reuse the same parse for both the extraction of the strings to translate and the injection of the translations. This simplicity explains the large adoption of this tool, now grounding the translation infrastructure of the Debian Linux distribution and derived. I designed, developed and maintained alone the first versions of this project (8k lines of perl), now maintained by the community.

RESEARCH PROJECTS LEADERSHIPS

- **SONGS (Simulation Of Next Generation Systems)** (2012–2016 – 1,800,000 €)
  Description: Simulating applications in the context of Grids, P2P, Clouds and HPC.
- **Ultra Scalable Simulation with SimGrid** (2009–2011 – 840,000 €)
  Description: ANR project federating the research around the SimGrid tool
- **Experimentations and large-scale distributed computation** (2010–2013 – 500,000 €)
  Description: Federation of the regional research efforts on clusters and computational grids

- **Simulating Data-Intensive Grid Applications** (2010 – 5,000 €)
  Description: Model large data storage facilities in collaboration with a CERN team
- **Large-Scale Discrete-Event Simulation of Distributed Systems** (2010–2011 – 2,000 €)
  Description: Study the distribution of the SimGrid tool; collaboration with Antwerp U., Belgium.
- **SimGrid Usability** (2009–2011 – 80,000 €); Co-Principal Investigator with A. Legrand
  Description: ADT INRIA project providing engineering forces to the SimGrid tool
- **Model-checking distributed applications for Grids and P2P** (2009–2010 – 12,000 €)
  Description: Exploration of the abilities to add model-checking facilities to SimGrid
- **Software Development Operation on SimGrid** (2006–2008 – 80,000 €)
  Description: ODL INRIA project providing engineering forces to the SimGrid tool
- **Virtual Lab Room for Distributed Applications and Systems** (2008 – 40,000 €)
  Description: Setup and maintenance of a cluster for teaching purposes

OTHER RESEARCH RESPONSIBILITIES

- Member of the **Steering Committee** of the Grid'5000 project aiming at deploying a large experimental grid (5000 nodes over 9 sites) (2006–2012).
- Official **coordinator** of the INRIA Nancy efforts on Research Grids at regional scope (2010–2012).
- Member of the following **Conference Program Committees**: IPDPS (ACM/IEEE – 2013, 2014), SimulTech (In cooperation with ACM SIGSIM, 2014), Principles of Advanced Discrete Simulation (ACM SIGSIM PADS – 2013), CCGrid (ACM/IEEE – 2009, 2011), SIMUTools (ACM/IEEE – 2008, 2009, 2010).
- Member of the following **Workshop Program Committees**: Workshop Analysis Tools and Methodologies for Embedded and Real-time Systems (WATERS'13), associated to Euromicro ECRTS 2013. Workshop Modeling, Simulation, and Optimization of Peer-to-peer Environments (MSOP2P), associated to Euromicro PDP 2011. Workshop Experimental Grids (EXPEGRID'06), associated to HPDC 2006. Grid'5000 summer schools 2009, 2010, 2014. Simgrid User's Days 2010, 2012, 2013, 2014.
- Member of **8 PhD Defense Juries**:
  8. *A science-gateway for workflow executions: online and non-clairvoyant self-healing of workflow executions on grids*, R. Da Silva (2013). Advisors: T. Glatard, F. Desprez at INSA-Lyon, France.
  7. *Performance and Scalability of Parallel and Distributed Discrete-Event Simulations with Conservative Time Synchronization*, S. De Munck (2012). Advisors: K. Vanmechelen, J. Broeckhove. Antwerpt University, Belgium (reviewer).
  6. *Verification of Distributed Algorithms using PlusCal-2*, S. Akhtar (2012). Advisor: S. Merz, University of Lorraine, France.
  5. *Prédiction de performances d'applications de calcul distribué exécutées sur une architecture pair-à-pair*, B. Cornea (2011). Advisor: J. Bourgeois, University of Franche Comté, France.
  4. *Vers une modélisation et un dimensionnement automatique des systèmes répartis*, A. Harbaoui (2011). Advisor: Jean-Marc Vincent, Grenoble University, France.
  3. *Experimentations on new architectures: from multicore processors to computational grids*, B. Videau (2009). Advisors: J.-F. Méhaut and O. Richard, Grenoble University, France;

2. *Systematic Cooperation in P2P Grids*, C. Briquet (2008). Advisor: P. A. de Marneffe, Liege University, Belgium (reviewer);
1. *Modeling and Optimizations in P2P Grids environments*, J.-B. Ernst-Desmulier (2008). Advisors: F. Spies and J. Bourgeois at Franche-Comté University, France.

- Member of **recruiting boards**: tenured junior researcher (Inria Nancy – 2013), tenured associate professor (Université de Lorraine – 2013), tenured associate professor (Unversité Nancy I – 2011), tenured associate professor (Université Bordeaux – 2011).
- Member of Scientific Projects (list restricted to projects in which I had a determining impact).
  - **Simulating the production grid gLite** (2010)
    Description: Study the effect of user decision on the gLite infrastructure
    Role: Feasibility analysis about the development of the experimental tools allowing the study
  - **Algorithmic for Large-Scale Distributed Platforms** (2005–2007)
    Description: Model such platforms; Improve algorithms for scheduling and data movements
    Role: Conception of automatic topology mapping tools for large-scale distributed platforms.

Research Advising Experience

Postdoctoral advising

2. Pierre-Nicolas Clauss: *Simulation of HPC applications with SMPI*, Dec 2009 – Dec 2011.
1. Lionel Eyraud-Dubois: *Reconstruction Algorithms of the Platform Topology*, Oct 2006 – Oct 2007.
   Advising: 33%, with F. Vivien (ENS-Lyon) and A. Legrand (CNRS/LIG).

Doctoral advising

2. Marion Guthmuller: *Dynamic Verification of MPI legacy applications*, Nov 2011 – Nov 2014.
1. Cristian Rosa: *Model-checking and parallel simulation in SimGrid*, Nov 2008 – Nov 2011.
   Advising: co-advisor with Stephan Merz, INRIA Nancy.

Graduate student advising

14. C. Macur *Emulation of legacy distributed applications*, Apr – Aug 14.
13. S. Castelli *Simulation of Neighborhood Collectives over Torus Network*, Feb – Jul 14.
12. G. Serrière *Parallel Simulation of Distributed Applications,* Apr – Sept 13.
11. M. Geier: *Leveraging multiple experimentation methodologies to study P2P broadcast*, Sept 12 – March 13 (with L. Nussbaum).
10. M. Guthmuller: *Verifying Liveness Properties*, Feb–Jul 2011 (with S. Merz).
9. D. Marquez: *Scalable Network Representation in SimGrid*, Jul–Oct 2010 (with A. Legrand).
8. M. Chimento: *Model-Checking Distributed Algorithms with PlusCal*, Apr–Jul 2010 (with S. Merz).
7. C. Rosa: *Verification of Grid and P2P Algorithms*, Apr–Jul 2008 (with S. Merz).
6. S. Akhtar: *Model-checking of distributed applications*, Feb–June 2008 (with S. Merz).
5. H. Liu: Model-checking of distributed applications, Oct 2007 – Feb 2008 (with S. Merz).
4. M. Frincu: *Synthetic yet realistic platform descriptions*, Oct 2007 – Jan 2008 (with F. Suter).
3. S. Mouelhi: *Verification of distributed algorithms with TLA$^+$*, Feb–June 2007 (with S. Merz).
2. A. Harbaoui: *Reconstruction Algorithms of the Platform Topology*, Feb–June 2006.
1. B. Van Heukelom: *Development of strategies for the integration of parallel applications into DIET by example of a program for genome sequence analysis.* Sept 2002–Feb 2003. With E. Caron and F. Desprez.

Research engineer advising

- R&D on SimGrid: G. Corona (Dec 13 – Dec 15), P. Bedaride (Sept 12 – Oct 14), C. Thiéry (Oct 10 – Feb 12), M. Fekari (Oct 10 – Feb 11), M. Cherier (Oct 06 – Sept 08).
- R&D on Grid'5000: X. Delaruelle (Oct 05 – Sept 07).

I also advised numerous undergraduate students during research and development internships.