

# Alan Schmitt

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## CV

Birth: 02 April 1974 (Nancy, France)

Citizenship: French

Married, two children

### Work coordinates in France

Address: INRIA Rhône-Alpes, Projet SARDES  
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### Work coordinates in Italy

Address: Università di Bologna  
Mura Anteo Zamboni, 7  
40126 Bologna, Italy.

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### Home coordinates

Address: Via Vespucci, 1  
40033 Casalecchio di Reno (BO), Italy.

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### Diplomas

2002 Ph.D. in computer science, Ecole Polytechnique.  
1999 DEA in semantics, proofs and programming. "Mention très bien".  
1998 Engineer diploma of Ecole Polytechnique (Internship Award in Applied Mathematics).  
1993 Baccalauréat série E. "Mention Très bien".  
1992 American Highschool Graduation, Lincoln High School, Nebraska.

### Education

Oct 1999 – Sep 2002: Ph.D., Moscova Project, INRIA Rocquencourt. "Conception et Implémentation de Calculs d'Agents Mobiles". Supervisor: Jean-Jacques Lévy.  
Oct 1998 – Oct 1999: DEA in semantics, proofs and programming, Univeristy of Paris VII.  
Sep 1996 – Apr 1998: Ecole Polytechnique, major in computer science.  
Aug 1991 – May 1992: Senior highschool year, Lincoln High School, Nebraska.

### Employment

- Jan 2004 – present: Researcher at INRIA Rhône-Alpes, Sardes Project. Experienced researcher (CR1) since January 2005. In sabbatical at University of Bologna, Italy, since September 2007.
- Sep 2002 – Jan 2004: Postdoc researcher at University of Pennsylvania, Philadelphia, with Benjamin Pierce, in Xtatic and Harmony projects.
- Oct 1999 – Sep 2002: Teaching assistant at Ecole Polytechnique: courses on Objective Caml, programming languages and modularity, type systems, and compilation.

## Research interests

Programming language support for component-based distributed systems, including type systems for process calculi and behavioral theory of distributed systems.

Rich type systems for safe XML processing, such as regular types for XML pattern matching and logics to model XPath queries.

Bi-directional languages and their application to data synchronization.

## Refereed journal papers

“Combinators for Bi-Directional Tree Transformations: A Linguistic Approach to the View Update Problem”, with J. Nathan Foster, Michael B. Greenwald, Jonathan T. Moore, and Benjamin C. Pierce. *ACM Transactions on Programming Languages and Systems (TOPLAS)*, 29(3):17.

“Exploiting Schemas in Data Synchronization”, with J. Nathan Foster, Michael B. Greenwald, Christian Kirkegaard, and Benjamin C. Pierce. *Journal of Computer and System Sciences*, 73(4), June 2007.

“The Kell Calculus: A Family of Higher-Order Distributed Process Calculi”, with Jean-Bernard Stefani. LNCS volume of the post-proceedings of the Global Computing 2004 workshop.

## Lecture Notes

“JoCaml: a Language for Concurrent Distributed and Mobile Programming”, with Fabrice Le Fessant, Cédric Fournet, and Luc Maranget. *Proceedings of the 4th Summer School on Advanced Functional Programming, Oxford, 19-24 August 2002*. LNCS. Springer Verlag, November 2002.

## Major refereed conference papers

“On the Expressiveness and Decidability of Higher-Order Process Calculi”, with Ivan Lanese, Jorge A. Pérez, and Davide Sangiorgi. *Proceedings of the 23rd Annual IEEE Symposium on Logic in Computer Science (LICS 2008)*. To appear.

“Boomerang: Resourceful Lenses for String Data”, with Aaron Bohannon, J. Nathan Foster, Benjamin C. Pierce, and Alexandre Pilkiewicz. *ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL'08)* (San Francisco, California, January 2008). Pages 407–419.

“Efficient Static Analysis of XML Paths and Types”, with Pierre Genevès and Nabil Layaïda. *Proceedings of PLDI 2007* (San Diego, USA). Pages 342-351.

“Agreeing to Agree: Conflict Resolution for Optimistically Replicated Data”, with Michael B. Greenwald, Sanjeev Khanna, Keshav Kunal, and Benjamin C. Pierce. *Proceedings of 20th International Symposium on Distributed Computing (DISC)*, Stockholm, Sweden, September 2006. LNCS 4167, pages 269-283.

“Combinators for Bi-Directional Tree Transformations: A Linguistic Approach to the View Update Problem”, with J. Nathan Foster, Michael B. Greenwald, Jonathan T. Moore, et Benjamin C. Pierce. *Proceedings of POPL 2005* (Los Angeles, USA). Pages 233-246.

“The M-calculus: a higher-order distributed process calculus”, with Jean-Bernard Stefani. *Proceedings of POPL 2003* (New Orleans, USA). Pages 50–61.

### Refereed conference papers

“Oz/K: A Kernel Language for Component-Based Open Programming”, with Michaël Lienhardt and Jean-Bernard Stefani. *ACM, editor, 6th International Conference on Generative Programming and Component Engineering (GPCE'07)* (October 2007). Pages 43–52.

“Component-Oriented Programming with Sharing: Containment is not Ownership”, with Daniel Hirschhoff, Tom Hirschowitz, Damien Pous, and Jean-Bernard Stefani. *Proceedings of Generative Programming and Component Engineering (GPCE) 2005*. LNCS 3676, pages 389–404.

“Exploiting Schemas in Data Synchronization”, with J. Nathan Foster, Michael B. Greenwald, Christian Kirkegaard, and Benjamin C. Pierce. *Proceedings of Database Programming Languages (DBPL) 2005*.

“An Abstract Machine for the Kell Calculus”, with Philippe Bidinger, and Jean-Bernard Stefani. *Proceedings of Formal Methods for Object-Based Distributed Systems (FMOODS) 2005*. LNCS 3535, pages 31–46. This paper received the “Best Paper Award”.

“XML goes native: Run-time representations for Xtatic”, with Vladimir Gapeyev, Michael Y. Levin, and Benjamin C. Pierce. *Proceedings of Compiler Construction (CC) 2005*. LNCS 3443, pages 43–58.

“Safe Dynamic Binding in the Join Calculus”. *Proceedings of the International IFIP Conference TCS 2002* (Montréal, Canada). Kluwer IFIP96, pages 563–575.

“An Asynchronous, Distributed Implementation of Mobile Ambients”, with Cédric Fournet and Jean-Jacques Lévy. *Proceedings of the International IFIP Conference TCS 2000* (Sendai, Japan). LNCS 1872, pages 348–364.

### Refereed workshop papers (selected)

“A Logic Your Typechecker Can Count On: Unordered Tree Types in Practice”, with J. Nathan Foster and Benjamin C. Pierce. In *Workshop on Programming Language Technologies for XML (PLAN-X), informal proceedings*, September 2007 (Nice, France).

“Dream Types - A Domain Specific Type System for Component-Based Message-Oriented Middleware”, with Philippe Bidinger, Matthieu Leclercq, Vivien Quéma, and Jean-Bernard Stefani. *4th Workshop on Specification and Verification of Component-Based Systems (SAVCBS'05), in association with ESEC/FSE'05/* (Lisbon, Portugal).

### Technical reports (selected)

“The Xtatic experience”, with Vladimir Gapeyev, Michael Y. Levin, and Benjamin C. Pierce. Technical Report MS-CIS-04-24, University of Pennsylvania, October 2004.

“XML goes native: Run-time representations for Xtatic”, with Vladimir Gapeyev, Michael Y. Levin, and Benjamin C. Pierce. Technical Report MS-CIS-04-23, University of Pennsylvania, October 2004.

### Software

Camlgrenouille, Linux and Mac OS X client for <http://grenouille.com> (7000 users, main developer).  
<http://alan.petitepomme.net/camlgrenouille/>

Harmony, a generic synchronizer (experimental, collaborator).

<http://www.cis.upenn.edu/~bcpierce/harmony/>

Unison, a file system synchronizer (collaborator).

<http://www.cis.upenn.edu/~bcpierce/unison/>

Xtatic, an extension of C# for type safe XML manipulation (experimental, collaborator). <http://www.cis.upenn.edu/~bcpierce/xtatic/>

## Patents

“Information services provision in a telecommunications network”, with Ronnie Taib and Bernard Burg. European patent EP1069792. USA patent US6512922.

## Invited talks

- 01 Feb 2007: “DreamTypes : vers un typage avancé d’un assemblage de composants”, CPR seminar, CNAM, Paris, France.
- 01 Sep 2006: “Vers une formalisation de Dream : sémantique et système de types”, summer school ICAR 2006, Autrans, France.
- 07 Dec 2005: “Programming with Lenses”, invited talk, PSD 2005, Tokyo, Japan.
- 18 May 2005: “Fichiers à l’Unison, Données en Harmony”, Logiciels de Base course, Ecole Polytechnique, Palaiseau, France.
- 17 Jan 2004: “Native XML Processing in Object-Oriented Languages: Calling XMHell from PurgatOOry”, invited talk at FOOL ’04, Venice, Italy.

## Conference organization

Vingtièmes journées francophones des langages applicatifs (JFLA 2009).

## Program committees

Vingtièmes journées francophones des langages applicatifs (JFLA 2009).  
President.

Thirteenth ACM SIGPLAN International Conference on Functional Programming (ICFP 2008).

Dix-neuvièmes journées francophones des langages applicatifs (JFLA 2008), Jan 26-29, 2008. Etretat, France. Vice president.

Third Symposium on Trustworthy Global Computing (TGC 2007), Nov 5-6, 2007. Sophia-Antipolis, France.

Dix-huitièmes journées francophones des langages applicatifs (JFLA 2007), Jan 27-30, 2007. Aix les Bains, France.

Programming Language Techniques for XML (Plan-X 2007), Jan 20, 2007, Nice, France.

Dix-septièmes journées francophones des langages applicatifs (JFLA 2006), Jan 28-31, 2006. Pauillac, France.

Tenth International Symposium on Database Programming Languages (DBPL 2005), Aug 28-29, 2005. Trondheim, Norway.

## Other

Foreign languages: English: fluent. Italian: good notions. Spanish: notions.

Programming languages: Objective Caml, C, Java, C#.

Competition: Member of the team “Caml R’Us”, which came in first place in the ICFP Programming Contest 1999, and in second place in the ICFP Programming Contest 2000.