

## Patrick Thomas Eugster

COORDINATES	Kunklerstrasse 6 8600 Dübendorf Switzerland <a href="http://se.inf.ethz.ch/people/eugster">http://se.inf.ethz.ch/people/eugster</a>
CONTACT	+41 43 355 92 51 (home / fax) +41 79 274 18 24 (mobile) <a href="mailto:patrick.eugster@gmail.com">patrick.eugster@gmail.com</a>
DATE OF BIRTH	07-OCT-1973
PLACE OF BIRTH	Mineola (New York), U.S.A.
NATIONALITY	American and Swiss

### PROFESSIONAL ACTIVITY

2006-	Purdue University, West Lafayette, Indiana Assistant Professor.
2005	Swiss Federal Institute of Technology in Zürich, Switzerland (ETHZ) Research associate and lecturer.
2004	Sun Microsystems, Switzerland Senior software architect and "Java consultant".
2003-2005	Swiss Federal Institute of Technology in Lausanne, Switzerland (EPFL) Research associate and lecturer ("first assistant"). Part-time employed 2004-2005.
2002	Chalmers University of Technology, Göteborg, Sweden Postdoctoral researcher.
1998-2001	Swiss Federal Institute of Technology in Lausanne, Switzerland (EPFL) Research and teaching assistant , PhD student in Computer & Communication Sciences.
1996	Sulzer Hydro AG, Zürich, Switzerland Internship as system administrator and system developer.

### LANGUAGES

GERMAN	Mother tongue (swiss german).	(swiss german father)
FRENCH	Bilingual.	(swiss french mother)
ENGLISH	Bilingual.	(lived seven years in U.S.A.)
SWEDISH	Good.	
ITALIAN	Basics.	

## AWARDS AND SCHOLARSHIPS

- 2002 **Advanced researcher** scholarship (Swiss National Science Foundation).  
**Postdoctoral researcher** scholarship (Swedish Research Council).
- 2001 Prize of excellence for an **exceptional research contribution** (EPFL).  
**Best student paper** award (USENIX).
- 1998 Prize of excellence for an **exceptional teaching contribution** (EPFL).

## DEGREES

- 2001 **PhD** in Computer Science from the Swiss Federal Institute of Technology in Lausanne, Switzerland. Thesis subject: *Type-Based Publish/Subscribe*.
- 1998 **MS** in Computer Science from the Swiss Federal Institute of Technology in Lausanne, Switzerland. Specialization: *Hardware-Oriented Computer Science*.
- 1993 **Highschool degree** in Natural Sciences from Kantonsschule Zofingen.

## MAJOR RESEACH PROJECTS

- 2005-2006 **SCOOP (ETHZ)**  
**Hasler Foundation / Swiss National Science Foudation project** (budget: ~1.5 Mio\$) on SCOOP (Simple Concurrent Object-Oriented Programming), a simple yet very powerful mechanism for concurrent computation. Personal role: technical manager, researcher. Focus: programming language abstractions and algorithms for distributed programming.
- 2004-2005 **PALCOM (EPFL)**  
**European IST FET project** (budget: ~2 Mio \$) on research and development of a new perspective on ambient computing named palpable computing. Palpable denotes that systems are capable of being noticed and mentally. Personal role: technical manager. Focus: programming abstractions and algorithms for pervasive programming.
- 2002-2004 **PEPITO (EPFL)**  
**European IST FET project** (budget: ~2 Mio \$) on theory and practice of peer-to-peer computing. Personal role: technical manager, researcher. Focus: programming abstractions and algorithms for peer-to-peer programming.
- 2001- **Terminodes (EPFL)**  
**Swiss National Science Foundation project** (budget: ~10 Mio \$) on ad-hoc communication and computing. Personal role: researcher. Focus: fault-tolerant algorithms for ad-hoc communication.
- 2000- **DACE (EPFL)**  
**Umbrella project** (budget: ~1.4 Mio \$) targeting the development of a middleware platform for large-scale distributed computing. Personal role: co-initiator, researcher, architect, developer.
- 1998-2000 **OpenDREAMS (EPFL)**  
**European ESPRIT project** (budget: ~2 Mio \$). Development of an industrial CORBA platform for reliable distributed applications, integrating transactions, replication, persistence and real-time aspects. Personal role: technical manager for EPFL, researcher, architect, and developer of a Java prototype developed in the context of this project, which was subsequently licenced by **Oracle Co**.

## MAJOR INDUSTRIAL PROJECTS

- 2004      **Web-Service Tracking (SUN)**  
Project conducted for the **Swiss Government** (budget: ~1 Mio \$). Implementation of a platform for secure and legally binding electronic exchange of documents, and tracking of procedures involving different such exchanges. Personal role: architect, developer.

## PUBLICATIONS

### BOOK CHAPTERS

- 2005      P.Th. Eugster: *Probabilistic Guarantees and Algorithms for Ad-hoc Networks*. To appear in **Theoretical and Algorithmic Aspects of Sensor, Ad-hoc Wireless and Peer-to-Peer Networks**, CRC Press.
- 2001      P.Th. Eugster, R. Guerraoui, and J. Sventek: *Loosely Coupled Components*. **Software Architectures and Component Technology: The State of the Art in Research and Practice**, Kluwer, Chapter 8, October 2001.

### JOURNAL PAPERS

- 2005      J. Luo, J.-P. Hubaux, and P. Th. Eugster: *DICTATE: Distributed Certification Authority with Probabilistic Freshness for Ad-hoc Networks*. To appear in **IEEE Transactions on Dependable and Secure Computing**.
- P.Th. Eugster and S. Baehni: *Object-Oriented Programming in Peer-to-Peer Systems*. **Concurrency and Computation: Practice and Experience**, 17(7-8), June 2005.
- 2004      J. Luo, P.Th. Eugster, and J.-P. Hubaux: *Probabilistic Reliable Multicast in Ad-hoc Networks*. **Journal of Wireless Communication and Mobile Computing**, Wiley & Sons, 2(4), pages 369-386, October 2004.
- P.Th. Eugster, R. Guerraoui, L. Massoulié, and A.-M. Kermarrec: *Epidemic Information Dissemination in Distributed Systems*. **IEEE Computer**, 37(5), pages 60-67, May 2004.
- J. Luo, P.Th. Eugster, and J.-P. Hubaux: *Pilot: A Probabilistic Group Communication System for Ad-hoc Networks*. **IEEE Transactions on Mobile Computing**, 3(2), pages 164-179, April-June 2004.
- P.Th. Eugster and R. Guerraoui: *Distributed Programming with Typed Events*. **IEEE Software**, 21(2), pages 56-64, March/April 2004.
- 2003      P.Th. Eugster, R. Guerraoui, S.B. Handurukande, A.-M. Kermarrec, and P. Kouznetsov: *Lightweight Probabilistic Broadcast*. **ACM Transactions on Computer Systems**, 21(4), pages 341-374, November 2003.
- P.Th. Eugster, P. Felber, R. Guerraoui, and A.-M. Kermarrec: *The Many Faces of Publish/Subscribe*. **ACM Computing Surveys**, 35(2), pages 114-131, June 2003.

2001 P.Th. Eugster, R. Boichat, and R. Guerraoui: *Effective Multicast in Large-Scale Distributed Systems*. **Concurrency and Computation: Practice and Experience**, Wiley & Sons, 13(6), pages 421-447, May 2001.

2000 R. Guerraoui, P. Th. Eugster, P. Felber, B. Garbinato, and K. Mazouni: *Experiences with Object Group Systems*. **Software: Practice & Experience**, Wiley & Sons, 30(12), pages 1375-1404, October 2000.

CONFERENCE PAPERS

(PRESENTED PAPERS MARKED WITH \*)

2005 P.Th. Eugster, B. Garbinato, and A. Holzer: *Location-Based Publish/Subscribe*. To appear in **4th IEEE International Symposium on Network Computing and Applications (NCA '05)**, Cambridge, Massachusetts, July 2005.

2004 S. Baehni, P.Th. Eugster and R. Guerraoui: *Data-Aware Multicast*. **5th IEEE International Conference on Dependable Systems and Networks (DSN 2004)**, pages 233-242, Florence, Italy, June 2004.

P.Th. Eugster, C. H. Damm: *Towards Safe Distributed Application Development*. **26th ACM / IEEE International Conference on Software Engineering (ICSE 2004)**, pages 347-356, Edinburgh, Scotland, May 2004.\*

P.Th. Eugster, R. Guerraoui, and P. Kouznetsov: *Delta-Reliability: A Probabilistic Measure of Broadcast Reliability*. **24th IEEE International Conference on Distributed Computing Systems (ICDCS 2004)**, pages 636-643, Tokyo, Japan, March 2004.\*

C.H. Damm, P.Th. Eugster, and R. Guerraoui: *Programming Language Support for Distributed Programming Abstractions*. **24th IEEE International Conference on Distributed Computing Systems (ICDCS 2004)**, pages 244-251, Tokyo, Japan, March 2004.\*

2003 S. Baehni, P.Th. Eugster, R. Guerraoui, and P. Altherr: *Pragmatic Type Interoperability*. **23rd IEEE International Conference on Distributed Computing Systems (ICDCS 2003)**, pages 404-411, Providence, Rhode Island, July 2002.\*

J. Luo, J.-P. Hubaux, and P.Th. Eugster: *Pan: Providing Reliable Storage in Mobile Ad-hoc Networks with Probabilistic Quorum Systems*. **Fourth ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc 2003)**, Annapolis, Maryland, June 2003.

J. Luo, P.Th. Eugster, and J.-P. Hubaux: *Route Driven Gossip: Probabilistic Reliable Multicast in Ad Hoc Networks*. **IEEE Infocom 2003 Conference**, San Francisco, March 2003.\*

2002 P.Th. Eugster and S. Baehni: *Abstracting Remote Object Interaction in a Peer-to-Peer Environment*. **ACM Java Grande – ISCOPE 2002 Conference**, pages 46-55, Seattle, Washington, November, 2002.\*

S. Baehni, P.Th. Eugster, and R. Guerraoui: *OS Support for Peer-to-Peer Programming: A Case for Type-based Publish/Subscribe*. 22nd **IEEE International Conference on Distributed Computing Systems (ICDCS 2002)**, pages 355-362, Vienna, Austria, July 2002.

P.Th. Eugster and R. Guerraoui: *Probabilistic Multicast*. 3rd **IEEE International Conference on Dependable Systems and Networks (DSN 2002)**, pages 312-322, Washington DC, June 2002.\*

2001 P.Th. Eugster, R. Guerraoui, and C.H. Damm: *On Objects and Events*. 16th **ACM Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA 2001)**, pages 131-146, Tampa, Florida, October 2001.\*

P.Th. Eugster, R. Guerraoui, S. Handurukande, A.-M. Kermarrec, and P. Kouznetsov: *Lightweight Probabilistic Broadcast*. 2nd **IEEE International Conference on Dependable Systems and Networks (DSN 2001)**, pages 443-452, Göteborg, Sweden, July 2001.\*

P.Th. Eugster and R. Guerraoui: *Content-Based Publish/Subscribe with Structural Reflection*. 6th **USENIX Conference on Object-Oriented Technologies and Systems (COOTS '01)**, pages 131-146, San Antonio, Texas, January 2001.\*

2000 P.Th. Eugster, R. Guerraoui, and J. Sventek: *Distributed Asynchronous Collections: Abstractions for Publish/Subscribe Interaction*. 14th **AITO European Conference on Object-Oriented Programming (ECOOP 2000)**, pages 252-276, Cannes, France, June 2000.\*

1999 P. Felber, X. Défago, P.Th. Eugster, and A. Schiper: *Replicating CORBA Objects: A Marriage between Active and Passive Replication*. Second **IFIP WG 6.1 International Working Conference on Distributed Applications and Interoperable Systems (DAIS '99)**, pages 375-387, Helsinki, Finland, July 1999.\*

#### WORKSHOP PAPERS

2005 V.Arslan and P.Th. Eugster: *Modeling Embedded Real-time Applications with Objects and Events*. To appear in 3<sup>rd</sup> **Workshop on Object-Oriented Modeling of Embedded Real-time Systems (OMER-3)**, Paderborn, Germany, October 2005.

S. Vaucouleur and P.Th. Eugster: *Atomic Features*. To appear in **Workshop on Synchronization in Concurrent Object-Oriented Languages (SCOOL'05)** at the 20th ACM Conference on Object-Oriented Systems, Languages, and Applications (OOPSLA'05), San Diego, California, October 2005.

S. Balzer, P.Th. Eugster, and B. Meyer: *Can Aspects Implement Contracts?* To appear in 2nd **International Workshop on Rapid Integration of Software Engineering Techniques (RISE 2005)**, Heraklion, Greece, September 2005.

2004 M. Brahami, P.Th. Eugster, R. Guerraoui and S.B. Handurukande: *BGP-based Clustering for Scalable and Reliable Gossip Broadcast*. **IST / FET International Workshop on Global Computing 2004**, pages 273-290, Rovereto, Italy, March 2004.

- 2002 P.Th. Eugster, P. Felber, R. Guerraoui, and S.B. Handurukande: *Event Systems: How to Have One's Cake and Eat It Too*. First **International Workshop on Distributed Event-Based Systems (DEBS '02)** at the 22nd IEEE International Conference on Distributed Computing Systems (ICDCS 2002), pages 625-630, Vienna, Austria, July 2002.
- 2001 P.Th. Eugster and R. Guerraoui: *Linguistic Support for Large-Scale Distributed Programming*. **Workshop on Alternatives to RPC**, at the 6th USENIX Conference on Object-Oriented Technologies and Systems (COOTS '01), San Antonio, Texas, January 2001.\*

#### THESES

- 2001 P.Th. Eugster: *Type-based Publish/Subscribe*, Swiss Federal Institute of Technology in Lausanne (EPFL), PhD Thesis, December 2001.
- 1998 P.Th. Eugster: *Passive Object Replication in CORBA*, Swiss Federal Institute of Technology in Lausanne (EPFL), MS Thesis, March 1998.

#### WORK IN PREPARATION AND UNPUBLISHED SO FAR

- P.Th. Eugster, B. Garbinato, and R. Guerraoui: *Abstractions for Distributed Programming* (book to be published by Springer).
- P.Th. Eugster: *Lazy Parameter Passing*.
- P.Th. Eugster: *Towards Uniform Dynamic Proxies*.
- P.Th. Eugster: *Total Order Probabilistic Broadcast*.
- P.Th. Eugster: *Fault Tolerant Deterministic Merge*.
- P.Th. Eugster: *Type-based Publish/Subscribe: Concepts and Experiences*.
- P.Th. Eugster: *What Probabilistic Specifications are Good and What Good are Probabilistic Specifications?*

#### TEACHING ACTIVITIES

- 2005 Lectures in **Concurrent Object-Oriented Programming** for undergraduate and graduate (~20 participants) Computer Science students at ETHZ.  
Seminar on **Concurrent Object-Oriented Programming** for undergraduate and graduate Computer Science students at ETHZ.
- 2002-2004 Lectures in **Object-Oriented Programming** for undergraduate (2<sup>nd</sup> grade, ~100 participants) Computer Science students at EPFL.
- 2000-2001 Lectures in **Distributed Programming** for undergraduate (3<sup>rd</sup> grade, ~60 participants) and graduate (~30 participants) Communication Systems students at EPFL.
- 1998-1999 Lectures in **Distributed Programming with CORBA** for Graduates (~60 participants from industry) at EPFL.
- 1998-1999 Lectures in **Distributed Programming with CORBA** for undergraduate (3<sup>rd</sup> and 4<sup>th</sup> grade, ~70 participants) Computer Science students at EPFL.

## SUPERVISION (BEYOND UNDERGRADUATE SEMESTER PROJECTS)

- 2003 M. Bérard, P. Bizeau, D. Mayor, and S. Rastogi, *Implementing Total Order Probabilistic Multicast and Broadcast*, **semester project** pursued as internship.
- 2002- S. Baehni, *Abstractions and Algorithms for Object-Oriented Peer-to-Peer Programming*, **PhD thesis**. Co-supervision with R. Guerraoui.
- 2001- S.B. Handurukande, *Efficient Distributed Routing of Typed Events*, **PhD thesis**. Co-supervision with R. Guerraoui.
- 2001 S. Sarni, *Implementing Type-Based Publish/Subscribe with IP Multicast*, **predoctoral school project** (1 year). Now PhD student at EPFL.
- 2001 A. Petrovic, *Probabilistic Multicast*, **predoctoral school project** (1 year). Now PhD student at EPFL.
- 2001 M. Roserens, *Filtering Events in Distributed Financial Systems*, **Master thesis**. Now with McKinsey.
- 2000 P. Kouznetsov, *Probabilistic Broadcast, Algorithms and Specifications*, **predoctoral school project** (1 year). Now PhD student at EPFL.

## INVITED TALKS

- 2005 Northeastern University, Boston.  
Purdue University, West Lafayette.  
University of Texas at San Antonio, San Antonio.
- 2004 Eurecom Institute, France.
- 2003 University of Geneva, Switzerland.  
Sun Microsystems, Switzerland.  
IBM Research Rüschlikon, Switzerland.  
Swiss Federal Institute of Technology in Zürich, Switzerland.
- 2002 CHOOSE (Swiss Object-Oriented Programming Society), University of Bern, Switzerland.  
University of Lisbon, Portugal.
- 2001 IBM Research Watson, New York.  
Chalmers University of Technology, Göteborg, Sweden.
- 2000 Lombard Odier Darier Hentsch (formely Lombard Odier), Switzerland.
- 1999 Oracle Co., Portland, Oregon.

## RECENT PARTICIPATIONS

- 2005 International Conf. on Object-Oriented and Internet-based Technologies (NODE 2005).  
IEEE Dependable Systems and Networks (DSN'05).  
IEEE International Symposium on Distributed Objects and Applications (DOA'05).
- 2004 IEEE International Symposium on Distributed Objects and Applications (DOA'04).
- 2003 International Workshop on Distributed Event-Based Systems (DEBS'03).  
International Conf. on Object-Oriented and Internet-based Technologies (NODE 2003).
- 2002 International Workshop on Distributed Event-Based Systems (DEBS'02).  
IEEE International Symposium on Distributed Objects and Applications (DOA'02).

## JOURNAL REFEREE ACTIVITIES

IEEE Transactions on Data Knowledge and Engineering, IEEE Transactions on Information Systems, IEEE Transactions on Parallel and Distributed Systems, Software - Practice & Experience, Concurrency & Computation - Practice & Experience, Journal of Parallel and Distributed Computing, ...

## REFERENCES

### **Klaus R. Dittrich**

Department of Computer Science, University of Zürich, Winterthurerstrasse 190, CH-8050 Zürich, Switzerland. [dittrich@ifi.unizh.ch](mailto:dittrich@ifi.unizh.ch); +41-(0)1-635-43-11.

### **Rachid Guerraoui**

School of Computer and Communication Systems, Swiss Federal Institute of Technology in Lausanne, CH-1015 Lausanne, Switzerland. [rachid.guerraoui@epfl.ch](mailto:rachid.guerraoui@epfl.ch); +41-(0)21-693-52-72.

### **Jean-Pierre Hubaux**

School of Computer and Communication Systems, Swiss Federal Institute of Technology in Lausanne, CH-1015 Lausanne, Switzerland. [jean-pierre.hubaux@epfl.ch](mailto:jean-pierre.hubaux@epfl.ch); +41-(0)21-693-26-27.

### **Ole L. Madsen**

Department of Computer Science, University of Aarhus, Abogade 34, DK-8200 Aarhus N, Denmark. [ole.l.madsen@daimi.au.dk](mailto:ole.l.madsen@daimi.au.dk); +45-89-42-56-70.

### **Martin Odersky**

School of Computer and Communication Systems, Swiss Federal Institute of Technology in Lausanne, CH-1015 Lausanne, Switzerland. [martin.odersky@epfl.ch](mailto:martin.odersky@epfl.ch); +41-(0)21-693-68-63.

### **Robbert van Renesse**

Department of Computer Science, Cornell University, 4118 Upson Hall, Ithaca NY 14853, U.S.A. [rwr@cs.cornell.edu](mailto:rwr@cs.cornell.edu); +1-607-255-1021.

### **Joseph Sventek**

Department of Computing Science, University of Glasgow, 17 Lilybank Gardens, Glasgow G12 8RZ, Scotland. [joe@dcs.gla.ac.uk](mailto:joe@dcs.gla.ac.uk); +44-141-330-80-78.