

## Anthony SIMONET

Born February 15th, 1987 in France (30 years old)

16 rue de la Bléterie

44000 Nantes

FRANCE

Cell. +33 (0) 6 85 42 56 17

Office +33 (0) 2 51 85 82 38

[anthony.simonet@inria.fr](mailto:anthony.simonet@inria.fr)

<https://www.anthony-simonet.fr>



## POSTDOCTORAL RESEARCHER AT INRIA RENNES AND INSTITUT MINES-TÉLÉCOM

ASCOLA Research Group, since October 2015

### PERSONAL PROFILE

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I am a Postdoctoral Researcher involved in the Discovery Initiative, a French project that aims at implementing a fully Distributed IaaS infrastructure on top of nano-data centers, deployed in Points of Presence of the Internet. My current research focuses on the energy model of this new kind of infrastructure and on data management (virtual appliances and user data) in a context where the infrastructure is dynamic (data centers may appear and disappear at any time) and where users are mobile.

My Ph.D. work regarded distributed data management on heterogeneous distributed infrastructures. I developed Active Data, a meta-model for representing the end-to-end life cycle of data distributed across multiple systems and infrastructures. Active Data is also a programming model and an implementation that helps developing managing the life cycle of distributed data. The idea borrows from event programming while relying on data transition events. The resulting programming model is data-centric and implicitly parallel. It is designed to help researchers manage and share large volumes of data in a formal and intuitive way.

### EDUCATION AND DEGREES

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- **2011–2015** Ph.D. in Computer Science at École Normale Supérieure de Lyon under the guidance of Gilles Fedak, defended on July 8th, 2015 (mention "Très Honorable").
  - Subject: "Active Data: Enabling Smart Data Life Cycle Management for Large Distributed Scientific Data Sets"
- **2009–2011** Master's Degree in Computer Science, specialty in Software Engineering and Distributed Software Architecture at the University Bordeaux I (mention "Bien").
  - Master's thesis: "A Programming Model for Active Data in Hybrid DCIs" supervised by Gilles Fedak.
- **2009** Laureate of the Isabelle Attali Prize of the University Bordeaux I (<http://prix-isabelle-attali.u-bordeaux1.fr/>)
- **2007–2009** Licence of Computer Science at University Bordeaux I (mention "Assez Bien")
- **2005–2007** Technical University Degree (DUT) in Statistics and Data Processing (STID) at the University of Pau, France.

## MOBILITY

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- I studied for one quarter at the *University of California, San Diego* in 2010. There, I pursued an Independent Study under the supervision of Tajana Simunic Rosing, head of the *System Energy Efficiency Lab*.
- During my Ph.D. I visited Ian Foster at the *Computation Institute* of the *University of Chicago* during 1 month. The work I made there has led to the publication of a short paper in *PDP 2015* and to an article submitted to the *IEEE Transactions on Big Data* journal.

## TEACHING

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I have been teaching approximately 64 hours a year at the University Lyon 1 during my Ph.D. in 2012 and 2013:

- TP Algorithms/Functional Programming, 1st year students: 28 hours
- TP Parallelism, 4th year students: 12,5 hours
- TD & TP Operating Systems, 3rd year students: 44 hours
- TP Parallelism, 4th year students : 12,5 hours

Since fall 2015, I occasionally teach at the Institut Mines-Télécom Atlantique (engineering program):

- CM & TP Cloud Computing (AWS), 4th year engineering students: 18 hours (2015 & 2016)
- TP MapReduce (Hadoop), 4th year engineering students: 9 hours (2016 & 2017)

## PUBLICATIONS

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### ➔ *International journals*

- ***Active Data: A Programming Model to Manage Data Life Cycle Across Heterogeneous Systems and Infrastructures*** – Anthony Simonet, Gilles Fedak, Matei Ripeanu, *Future Generation Computer Systems* journal, p. 25-42 – 2015.
- ***Scalable Data Management for Map-Reduce-Based Data-Intensive Applications: a View for Cloud and Hybrid Infrastructures*** – Gabriel Antoniu, Alexandru Costan, Julien Bigot, Frédéric Desprez, Gilles Fedak, Sylvain Gault, Christian Pérez, Anthony Simonet, Bing Tang, Christophe Blanchet, Raphael Terreux, Luc Bougé, François Briant, Franck Cappello, Kate Keahey, Bogdan Nicolae, Frédéric Suter, *International Journal of Cloud Computing*, Volume 2, Number 2, p. 150-170 – 2013

### ➔ *Internationales conferences*

- ***ENOS: a Holistic Framework for Conducting Scientific Evaluations of OpenStack*** – Roman-Alexandre Cherrueau, Adrien Lebre, Dimitri Pertin, Anthony Simonet, Matthieu Simonin, Short paper in *Proceeding of the IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing*, CCGrid 2017 – IEEE, 2017
- ***Revising OpenStack to Operate Fog/Edge Computing Infrastructures*** – Adrien Lebre, Jonathan Pastor, Anthony Simonet, Frédéric Desprez, *Proceedings of the IEEE International Conference on Cloud Engineering*, IC2E 2017 – IEEE, 2017
- ***Deploying Distributed Cloud Infrastructures: Who and at What Cost?*** – Anthony Simonet, Adrien Lebre, Anne-Cécile Orgerie, *Proceedings of the 5th IEEE International Workshop on Cloud Computing Interclouds, Multiclouds, Federations and Interoperability*, Intercloud 2016 – IEEE, 2016
- ***D<sup>3</sup> MapReduce: Towards MapReduce for Distributed and Dynamic Data Sets*** – Heithem Abbes, Julio Anjos, Asma Ben Cheikh, Gheorghe Cosmin Silaghi, Gilles Fedak, Haiwe He, Hai Jin, Lu Lu, Mircea Moca, José-Francisco Saray, Xuanhua Shi, Anthony Simonet, Bing Tang, *Proceedings of the 2015 International Conference on Big Data Intelligence*, DataCom 2015 – IEEE, 2015
- ***Using Active Data to Provide Smart Data Surveillance to E-Science Users*** – Anthony Simonet, Gilles Fedak, Kyle Chard, Ian Foster, *Proceedings of the 23rd Euromicro International Conference*

on Parallel, Distributed and Network-based Processing conference, PDP 2015 (Short paper) – IEEE, 2015

- **Active Data: a Data-Centric Approach to Data Life-Cycle Management** – Anthony Simonet, Gilles Fedak, Matei Ripeanu, Samer Al-Kiswany, Proceedings of the 8th Parallel Data Storage Workshop – ACM, 2013
- **Towards Scalable Data Management for Map-Reduce-based Data-Intensive Applications on Cloud and Hybrid Infrastructures** – Gabriel Antoniu, Julien Bigot, Christophe Blanchet, Luc Bougé, François Briant, Franck Cappello, Alexandru Costan, Frédéric Desprez, Gilles Fedak, Sylvain Gault, Kate Keahey, Bogdan Nicolae, Christian Pérez, Anthony Simonet, Frédéric Suter, Bing Tang, Raphael Terreux, 1st International IBM Cloud Academy Conference, ICA CON 2012

### ➔ *Others*

- **Energy-Aware Massively Distributed Cloud Facilities: the DISCOVERY Initiative**, Frédéric Deprez, Shadi Ibrahim, Adrien Lèbre, Anne-Cécile Orgerie, Jonathan Pastor, Anthony Simonet, Poster à 11th IEEE International Conference on Green Computing and Communications, GreenCom 2015
- **Active Data : Un modèle pour représenter et programmer le cycle de vie des données distribuées** – Anthony Simonet, CompAS'2014, conférence nationale avec comité de lecture
- **MapReduce on Desktop Grids with BitDew and Active Data** – Anthony Simonet, Lu Lu, Xuanhua Shi, Bing Tang, José-Francisco Saray, Gilles Fedak, Grid'5000 Winter School 2012
- **Active Data: A Programming Model to Manage Data Life Cycle Across Heterogeneous Systems and Infrastructures** – Anthony Simonet, Gilles Fedak, Matei Ripeanu, research report, 2013
- **FlyingGrid: from Volunteer Computing to Volunteer Cloud** – Oleg Lodygensky, Etienne Urbah, Simon Dadoun, Gilles Fedak, Simon Delamare, Derrick Kondo, Laurent Duflot, Xavier Garrido, Anthony Simonet, Peter Kacsuk, Jozsef Kovacs, Zoltan Farkas, poster in Computing in High Energy and Nuclear Physics CHEP'12, 2012, poster

### ➔ *Ongoing Work*

- **A Study of the Energy Footprint of OpenStack** – Anthony Simonet, Adrien Lebre, Anne-Cécile Orgerie
- **Putting the Next 500 VM Placement Algorithms to the Acid Test** – Adrien Lebre, Jonathan Pastor, Anthony Simonet, Mario Südholt (Submitted to IEEE Transactions on Parallel and Distributed Systems)
- **A Smart Data Surveillance Framework for E-Science Users Based on Active Data** – Anthony Simonet, Kyle Chard, Gilles Fedak, Ian Foster

## COMMUNICATIONS AND TALKS

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- Seminar at the *Department of Computer Science* of Columbia University, New York City, 2012
- Presentation at the *MapReduce ANR Meeting*, IBM France, Montpellier, France, 2012
- Seminar at the *Computation Institute* of the *University of Chicago*, 2013
- Presentation at the *Joint Lab on Petascale Computing* workshop, Inria Sophia Antipolis, France, 2014
- Seminar at the *DB* research group of the *LIRIS* at the *Université Lyon 1*, Lyon, France, 2015
- Seminar at the *Discovery* Plenary Meeting, Nantes, France, 2015
- Talk at the *Large Scale Deployment Challenge* of the Grid'5000 Winter School, Grenoble, 2016
- Talk at the *Journée OpenStack Workshop* in Lyon, France, 2016
- Talk at the *Cloud Control Workshop*, Uppsala, Sweden, 2016
- Seminar at the *Discovery* Plenary Meeting, Rennes, France, 2016
- Talk at the *Journée OpenStack Day France*, Paris, 2016

- Seminar at the *Avalon* research group of the *LIP* at the *École Normale Supérieure de Lyon*, Lyon, France, 2017

## CHAIR/PROGRAM COMMITTEE

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- PC member at the *13th International Conference on Green Computing and Communications* ([GreenCom 2017](#))
- PC member at the *14th International Symposium on Pervasive Systems, Algorithms, and Networks* ([I-SPAN 2017](#))
- PC Chair at the *1st IEEE International Conference on Fog and Edge Computing* ([ICFEC'2017](#))
- PC member of the *12th International Conference on Economics of Grids, Clouds, Systems and Services* [GECON 2015](#)

## REVIEWER

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- IEEE Cloud Computing ([IEEE Cloud Computing](#))
- IEEE Transactions on Parallel and Distributed Systems ([IEEE TPDS](#))
- IEEE Transactions on Services Computing ([IEEE TSC](#))
- International European Conference on Parallel and Distributed Computing ([Europar 2016](#))
- International Symposium on Stabilization, Safety and Security of Distributed Systems ([SSS 2016](#))
- International Workshop on Optimization of Energy Efficient HPC & Distributed Systems ([OPTIM 2016](#))
- International Workshop on High Performance Data Intensive Computing ([HPDIC 2013](#))
- IEEE International Conference on Cloud Computing Technology and Science ([CloudCom 2012](#))
- IEEE International Conference on e-Science ([e-Science 2012](#))
- International Workshop on MapReduce and its Applications ([MapReduce 2012](#))