

---

# OPEN SOURCE DEVELOPMENT, ADOPTION AND INNOVATION

## **IFIP – The International Federation for Information Processing**

IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

*IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.*

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is less rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is in information may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly, National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.

# OPEN SOURCE DEVELOPMENT, ADOPTION AND INNOVATION

IFIP Working Group 2.13 on Open Source  
Software, June 11-14, 2007, Limerick, Ireland.

*Edited by*

Joseph Feller

*Business Information Systems, University College Cork, Ireland*

Brian Fitzgerald

*Lero - the Irish Software Engineering Research Centre, University of Limerick, Ireland*

Walt Scacchi

*Institute for Software Research, Donald Bren School of Information and Computer Sciences,  
University of California, Irvine, USA.*

Alberto Sillitti

*Free University of Bolzano-Bozen, Italy*



Springer

Library of Congress Control Number: 2007927182

***Open Source Development, Adoption and Innovation***

Edited by J. Feller, B. Fitzgerald, W. Scacchi, and A. Sillitti

p. cm. (IFIP International Federation for Information Processing, a Springer Series in Computer Science)

ISSN: 1571-5736 / 1861-2288 (Internet)

ISBN: 13: 978-0-387-72485-0

eISBN: 13: 978-0-387-72486-7

Printed on acid-free paper

Copyright © 2007 by International Federation for Information Processing.

All rights reserved. This work may not be translated or copied in whole or in part without the written permission of the publisher (Springer Science+Business Media, LLC, 233 Spring Street, New York, NY 10013, USA), except for brief excerpts in connection with reviews or scholarly analysis. Use in connection with any form of information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed is forbidden.

The use in this publication of trade names, trademarks, service marks and similar terms, even if they are not identified as such, is not to be taken as an expression of opinion as to whether or not they are subject to proprietary rights.

9 8 7 6 5 4 3 2 1

springer.com

# Preface

We are very pleased to introduce *Open Source Development, Adoption and Innovation*, the proceedings of the *Third International Conference on Open Source Systems* (OSS 2007). Open source software (free software, libre software) has emerged as a major field of scientific inquiry across a number of disciplines (software engineering, information systems, business, economics, law, sociology, just to name a few). In addition to this highly successful conference series, open source has been the focus of dozens of conference program tracks, workshops, tutorials and panels, as well as the theme for numerous special issues published by many of the top journals in the disciplines listed above. A substantial library of books has been published, targeted at both researchers and practitioners, and the web is awash with the experiences and perspectives of a large community of open source developers, observers, advocates (and detractors).

When the concept of open source began to gain mindshare in the global business community, decision makers faced a challenge: to convert hype and potential into sustainable profit and viable business models. As a community of researchers, we face a similar challenge: to convert anecdote and speculation into empirical description and predictive theory. Over the past several years, a substantial body of multi-disciplinary (and in some cases truly inter-disciplinary) literature has emerged. This literature provides us with rich descriptions of the various aspects of open source, many based on empirical data rigorously gathered and analyzed using both qualitative and quantitative methods. Our challenge is to continue this work, setting aside anecdote and insisting on rigor, depth and completeness in our research. We must also extend the work, so that open source research can move beyond description to understanding and prediction. Our rhetoric is filled with claims that open source is a different way to build software, acquire software, use software; that it challenges development processes, software business models, and intellectual property frameworks. Such rhetoric calls out for theory, both the careful testing of existing theory in new (open source) contexts and also the building of new theory emerging from the phenomenon itself.

We believe that this conference series, and the IFIP working group it represents, can play an important role in meeting these challenges, and hope that this book will become a valuable contribution to the open source body of research. Nearly 100 submissions from authors in 23 countries were carefully peer-reviewed; in the end, 15 papers are published here as full papers (Part I) and 25 published in a condensed form as short papers (Part II). Additionally, 12 paper authors presented their work in poster form for discussion at the conference (Part VI). Complementing the paper program, we are pleased to include descriptions of the two panels (Part III), three tutorials (Part IV) and five workshops (Part V) which were all an important part of the conference event.

## About IFIP WG 2.13

This is the first conference since the formal acceptance of this new Working Group 2.13 on Open Source Software by IFIP. Since the formal founding meeting on 10 June 2006 in Como, Italy, we have sought to consolidate the working group. The Working Group has 27 founding members from Europe, North America, Middle East, Asia /Pacific and Africa. The main objective of the Working Group is to enable the diverse community of free, libre and open source software (OSS) researchers and practitioners to rigorously investigate the technology, work practices, development processes, community dynamics within OSS systems, complementing appropriately other IFIP Working Groups where OSS is increasingly relevant. The scope of the Working Group is detailed on the website which is being maintained by Kevin Crowston at <http://www.ifipwg213.org>.

Since the group has been founded, there have been several exciting developments in which group members have been centrally involved. Firstly, the results of several EU-funded initiatives are emerging, such as *CALIBRE* ([www.calibre.ie](http://www.calibre.ie)), which studied the impact of open source software on the European secondary software sector, *COSPA* ([www.cospa-project.org](http://www.cospa-project.org)), which studied the adoption of open source by public administrations across Europe, and *FLOSSIMPACT* ([www.flossimpact.eu](http://www.flossimpact.eu)) which studied the impact of free/libre/open source software on innovation and competitiveness of the European Union.

Ongoing projects in which the Working Group's members are central include *COSI* ([www.itea-cosi.org](http://www.itea-cosi.org)), which is focusing on transferring the lessons of open source and agile methods to traditional in-house development (the so-called inner source phenomenon); *OPAALS* ([www.opaals.org](http://www.opaals.org)), which is seeking to build a sustainable interdisciplinary research community in the emerging area of digital ecosystems; *QualiPSO* ([www.qualipso.org](http://www.qualipso.org)), which studies the quality and trust aspects of Open Source Software and its adoption in the main stream industrial process; and *Open Code, Content and Commerce (O3C) Business models*, a three-year investigation of open innovation and value-creation strategies.

## IFIP WG 2.13 OFFICERS

General Chair:	Brian Fitzgerald, Lero, University of Limerick, Ireland
Vice-Chair:	Walt Scacchi, University of California - Irvine, US
Vice-Chair:	Giancarlo Succi, Free University of Bolzano-Bozen, Italy
Secretary:	Ernesto Damiani, Free University of Bolzano-Bozen, Italy

## Acknowledgements

We gratefully acknowledge the contributions made by the other OSS 2007 Conference officials: Ernesto Damiani (Tutorial Chair), Scott A. Hissam (Workshop Chair), Sandra Slaughter (Panel Chair), Barbara Russo (Publicity Chair), and Alberto Colombo and Fulvio Frati (Webmasters). Special thanks go to Lorraine Morgan for her instrumental role in preparing this volume. We would like to thank the OSS 2007 sponsors, our international program committee, our board of reviewers and all the local volunteer organizers and supporters, without whom this conference could not take place. Finally, we thank all the authors, panelists, tutorial and workshop organizers who provided this years conference with such an excellent program.

Joseph Feller (Program Co-Chair)<sup>1</sup>  
Brian Fitzgerald (Organizing Chair)<sup>2</sup>  
Walt Scacchi (General Chair)<sup>3</sup>  
Alberto Sillitti (Program Co-Chair)<sup>4</sup>

Limerick, Ireland  
June 2007

<sup>1</sup> Business Information Systems, University College Cork, Ireland

<sup>2</sup> Lero - the Irish Software Engineering Research Centre University of Limerick, Ireland

<sup>3</sup> Institute for Software Research, Donald Bren School of Information and Computer Sciences, University of California, Irvine, USA.

<sup>4</sup> Free University of Bolzano-Bozen, Italy

# Organization

## Conference Officials

General Chair:	Walt Scacchi	University of California, Irvine, US
Program Chair:	Joseph Feller	University College Cork, Ireland
	Alberto Sillitti	Libera Università di Bolzano, Italy
Organising Chair:	Brian Fitzgerald	University of Limerick, Ireland
Tutorial Chair:	Ernesto Damiani	University of Milan, Italy
Workshop Chair:	Scott Hissam	Carnegie Mellon University, US
Panel Chair:	Sandra Slaughter	Carnegie Mellon University, US
Publicity Chair:	Barbara Russo	Free University of Bolzano-Bozen, Italy
Web Master:	Alberto Colombo	University of Milan, Italy
	Fulvio Frati	University of Milan, Italy



## Program Committee

Gunter Boeckle	Siemens, Germany
Gerry Coleman	Dundalk Institute of Technology, Ireland
Kieran Conboy	NUI Galway, Ireland
Kevin Crowston	Syracuse University, USA
Jean-Michel Dalle	Universite Pierre et Marie Curie, France
Stefano De Panfilis	Engineering Ingegneria Informatica, Italy
Francesco Di Cerbo	University of Genoa, Italy
Gabriella Dodero	University of Bolzano-Bozen, Italy
Mahmoud Elish	King Fahd University, Saudi Arabia
Pat Finnegan	University College Cork, Ireland
Rishab Aiyer Ghosh	University of Maastricht, The Netherlands
Jesus M. Gonzalez-Barahona	University Rey Juan Carlos, Spain
Jean-Luc Hardy	Eurocontrol, France
Jeremy Hayes	University College Cork, Ireland
Joseph Kiniry	University College Dublin, Ireland
Stefan Koch	University of Economics and BA, Austria
Derrick Kourie	University of Pretoria, South Africa
Jean Pierre Laisne	ObjectWeb, France
Karim Lakhani	Harvard, USA
Gregory Lopez	Thales, France
Bjorn Lundell	University of Skovde, Sweden
Paul Malone	Waterford Institute of Technology, Ireland
Martin Miclmayr	University of Cambridge, UK
Sandro Morasca	Universita degli Studi dell'Insubria, Italy
Bulent Ozel	Carnegie Mellon University, USA
Witold Pedrycz	University of Alberta, Canada
Paolo Pumilia	EST, Italy
Barbara Russo	University of Bolzano-Bozen, Italy
Gregory Simmons	University of Ballarat, Australia
Marco Scotto	University of Bolzano-Bozen, Italy
Barbara Scozi	Politecnico di Bari, Italy
Katherine Steward	University of Maryland, USA
Malcom Tyrell	Dublin City University, Ireland
Tony Wasserman	Carnegie Mellon University, USA
Hongbo Xu	South China University of Technology, China

**Board of Reviewers**

Dave Kelly  
Neil Kiely  
Niamh O'Riordan  
Zhengnan Liang  
Patrick Wall  
Peter Wittek

University College Cork, Ireland  
University College Cork, Ireland  
University College Cork, Ireland  
University College Cork, Ireland  
University College Cork, Ireland  
University College Cork, Ireland

# List of Contributors

**Timo Aaltonen**

Tampere University of Technology,  
Finland  
Timo.Aaltonen@tut.fi

**Serge Abiteboul**

INRIA Futurs, France  
Serge.abiteboul@inria.fr

**Jyrki Akkanen**

Nokia Research Centre, Finland  
Jyrki.akkanen@nokia.com

**Eileen Allen**

Syracuse University, US  
eeallen@syr.edu

**L. Angelis**

Aristotle University, Greece  
lef@csd.auth.gr

**Maria Antikainen**

VTT Technical Research Centre of  
Finland, Finland  
Maria.antikainen@vtt.fi

**Claudio Agostina Ardagna**

University of Milan, Italy  
ardagna@dti.unimi.it

**Gabriela Avram**

University of Limerick, Ireland  
Gabriela.avram@ul.ie

**Claudia Ayala**

Technical University of Catalunya,  
Spain  
Cayala@lsi.upc.edu

**Christian Bac**

Groupe des Ecoles de  
Telecommunications, France  
Christianbac@int-evry.fr

**Nassim Belbaly**

GSCM, France

**Hind Benbya**

GSCM, France

**Evangelia Berdou**

London School of Economics and  
Political Science, UK

**Olivier Berger**

Groupe des Ecoles de  
Telecommunications, France  
Olivier.Berger@int.evry.fr

**Ludger Bischofs**

OFFIS, Germany  
Ludger.bischofs@offis.de

**Patrizia Boccacci**

University of Genova, Italy  
boccacci@disi.unige.it

**Jaap Boender**

Universite Paris VII , France  
boender@apps.jussieu.fr

**Luca Botturi**

University of Lugano, Switzerland  
botturil@lu.unisi.ch

**Ciaran Bryce**

University of Geneva, Switzerland  
Ciaran.bryce@unige.ch

**Michele Cabano**

Università di Bologna, Italy  
Michele.cabano@unibo.it

**Andrea Capiluppi**

University of Lincoln, UK  
acapiluppi@lincoln.ac.uk

**Fabio Caparica**

fcl@cin.ufpe.br

**Veronica Carrega**

University of Genova, Italy

Carrega@disi.unige.it

**Scott Christley**

University of Notre Dame, USA

**Megan Conklin**

Elon University, US

mconklin@elon.edu

**Reidar Conradi**

Norwegian University of Science and  
Technology, Norway

Conradi@idi.ntnu.no

**Grahame S. Cooper**

University of Salford, UK

g.s.cooper@salford.ac.uk

**Kevin Crowston**

Syracuse University, US

Crowston@syr.edu

**Jean-Michel Dalle**

Université Pierre et Marie Curie,  
France

Jean-michel.dalle@upmc.fr

**Ernesto Damiani**

University of Milan, Italy

damiani@dti.unimi.it

**Vincenzo D'Andrea**

University of Trento, Italy

dandrea@dit.unitn.it

**Itay Dar**

Tel Aviv University, Israel

daritay@post.tau.ac.il

**Francois Dechelle**

EDGE-IT, France

fdechelle@mandriva.fr

**Hunor Demeter**

Nokia Research Centre, Hungary

Hunor.Demeter@nokia.com

**Matthijs den Besten**

University of Oxford, UK

Matthijs.denbesten@oerc.ox.ac.uk

**Roberto di Cosmo**

Université Paris VII, France

dicosmo@pps.jussieu.fr

**Gabriella Doderò**

Free University of Bozen, Italy

Gabriella.doderò@unibz.it

**Santiago Duenas**

Universidad Rey Juan Carlos, Spain

sduenas@gsyc.escet.urjc.es

**Berke Durak**

INFRIA Rocquencourt, France

Berke.durak@inria.fr

**Tamás Eppel**

Budapest University of Technology  
and Economics, Hungary

peletomi@gmail.com

**U. Yeliz Eseryel**

Syracuse University, US

Uyeserye@syr.edu

**Pat Finnegan**

University College Cork, Ireland

P.Finnegan@ucc.ie

**Brian Fitzgerald**

Queensland University of  
Technology, Australia  
Bf.Fitzgerald@qut.edu.au

**Xavier Franch**

Technical University of Catalunya,  
Spain  
franch@lsi.upc.edu

**Fulvio Frati**

University of Milan  
Frati@dti.unimi.it

**G.R. Gangadharan**

University of Trento, Italy  
gr@dit.unitn.it

**Yongqin Gao**

University of Notre Dame, US  
Ygao1@nd.edu

**Mehmet Gencer**

Istanbul Bilgi University, Turkey  
Mgencer@cs.bilgi.edu.tr

**Alex Sandro Gomes**

asg@cin.ufpe.br

**Jesus M. Gonzalez-Barahona**

Universidad Rey Juan Carlos, Spain  
jgb@gsync.escet.urjc.es

**Benoît Hamet**

PhpGroupWare Project, France  
Benoit.hamet@laposte.net

**Helen Hasan**

University of Wollongong, Australia  
hasan@uow.edu.au

**Wilhelm Hasselbring**

University of Oldenburg, Germany  
hasselbring@informatik.uni-  
oldenburg.de

**Øyvind Hauge**

Norwegian University Science and  
Technology, Norway

**Hans-Ludwig Hausen**

Fraunhofer, Germany  
Hans-  
Ludwig.Hausen@fit.fraunhofer.de

**Robert Heckman**

Syracuse University, US  
rheckman@syr.edu

**Scott Hissam**

Carnegie Mellon University, US  
shissam@sei.cmu.edu

**James Howison**

Syracuse University, US  
jhowison@syracuse.edu

**Francis Hunt**

University of Cambridge, UK

**Zoltán Ivánfi**

Nokia Research Centre, Hungary  
Zoltan.ivanfi@nokia.com

**Ari Jaaksi**

Nokia, Finland  
Ari.jaaski@nokia.com

**Chris Jensen**

University of California, US  
Cjensen@ics.uci.edu

**Jyke Jokinen**

Tampere University of Technology,  
Finland

**Uros Jovanovic**

XLAB, Ljubjana, Slovenia  
Uros.jovanovic@xlab.si

**Stefan Koch**

Vienna University of Economics and  
Business Administration, Austria  
Stefan.koch@wu-wien.ac.at

**A. Günes Koru**

UMBC, US  
gkoru@umbc.edu

**Jacob Krivoruchka**

Nova Southeastern University, US  
Krivoruc@nova.edu

**Luigi Lavazza**

CEFRIEL, Italy  
Luigi.lavazza@uninsubria.it

**Xavier Leroy**

INRIA Rocquencourt, France  
Xavier.Leroy@inria.fr

**Jingyue Li**

Norwegian University of Science and  
Technology, Norway  
jingyue@idi.ntnu.no

**Qing Li**

Syracuse University, US  
Qli03@syr.edu

**Juho Lindman**

Helsinki School of Economics,  
Finland  
Juho.lindman@hse.fi

**Brian Lings**

University of Skövde, Sweden  
Brian.lings@his.se

**Hongfang Liu**

Georgetown University Medical  
Centre  
h1224@georgetown.edu

**Gregory Lopez**

Thales, France  
Gregory.lopez@thalesgroup.com

**Björn Lundell**

University of Skövde, Sweden  
Bjorn.lundell@his.se

**Greg Madey**

University of Notre Dame, US  
gmadey@nd.edu

**Fabio Mancinelli**

Universite Paris VII, France  
Fabio@pps.jussieu.fr

**Y. Manolopoulos**

Aristotle University, Greece  
manolopo@csd.auth.gr

**Pentti Marttiin**

Nokia, Finland  
Pentti.marttiin@nokia.com

**Mari Matinlassi**

VTT Technical Research Centre of  
Finland

**Riccardo Mazza**

University of Lugano, Switzerland  
mazzar@lu.unisi.ch

**Regis Meissonier**

GSCM, France

**Janne Merilinna**

VTT Technical Research Centre of  
Finland

**Martin Michlmayr**

University of Cambridge, UK  
Martin@michlmayr.org

**Cesare Monti**

Università di Bologna, Italy  
Cesare.monti@unibo.it

**Sandro Morasca**

Università dell'Insubria, Italy  
Sandro.morasca@uninsubria.it

**Thiago Moreira**

tjml@cin.ufpe.br

**Lorraine Morgan**

University of Limerick, Ireland  
Lorraine.morgan@ul.ie

**Rogério Nibon**

Rtn2@cin.ufpe.br

**John Noll**

Santa Clara University, US  
jnoll@cse.scu.edu

**Jukka K. Nurminen**

Nokia Research Centre, Finland  
Jukka.k.nurminen@nokia.com

**Beyza Oba**

Istanbul Bilgi University, Turkey  
boba@bilgi.edu.tr

**Ville Oksanen**

Helsinki University of Technology,  
Finland

**Stanislaw Osinski**

Poznan Supercomputing and  
Networking Centre, Poland  
Stanislaw.osinski@man.poznan.pl

**Bulent Ozel**

Carnegie Mellon University, US  
bulento@cmu.edu

**Michel Pawlak**

University of Geneva, Switzerland  
pawlak@cui.unige.ch

**Mark Perry**

University of Western Ontario,  
Australia  
mperry@uwo.ca

**Anna Persson**

University of Skövde, Sweden  
anna.persson@his.se

**Clara Pezuela**

Atos Origin, Spain  
Clara-pezuela@atosorigin.com

**Charmaine C Pfaff**

University of Wollongong, Australia  
Ccp02@uow.edu.au

**Giulio Piancastelli**

Università di Bologna, Italy  
giulio.piancastelli@unibo.it

**Radu Pop**

INRIA-Mandriva, France  
Radu.pop@inria.fr

**David Probert**

University of Cambridge, UK

**Gregorio Robles**

Universidad Rey Juan Carlos, Spain  
Grex@gsysc.esctet.urjc.es

**Andreas Rosdal**

Norwegian University Science and  
Technology, Norway

**Bruno Rossi**

Free University of Bolzano-Bozen,  
Italy  
Bruno.rossi@unibz.it

**Christina Rossi**

Politecnico di Milano, Italy  
Cristina1.rossi@polimi.it

**Francesco Rullani**

Copenhagen Business School,  
Denmark  
Fr.ivs@cbs.dk

**Barbara Russo**

Free University of Bolzano-Bozen,  
Italy  
Barbara.russo@unibz.it

**Walt Scacchi**

University of California, US  
wscacchi@ics.uci.edu

**Harald Schmidbauer**

Istanbul Bilgi University, Turkey  
harald@bilgi.edu.tr

**Andrew Schofield**

University of Salford, UK  
a.j.schofield@pgt.salford.ac.uk

**Marko Seppanen**

Tampere University of Technology,  
Finland

**Anne Sheehan**

University of Limerick, Ireland  
Anne.Sheehan@ul.ie

**Anders Sigfridsson**

University of Limerick, Ireland  
Anders.sigfridsson@ul.ie

**Alberto Sillitti**

Libera Università di Bolzano, Italy  
Alberto.sillitti@unibz.it

**Darren Skidmore**

Monash University, Australia  
Darren.skidmore@infotech.monash.edu.au

**Sandra A. Slaughter**

Carnegie Mellon University, US  
Sandras@andrew.cmu.edu

**Yuping Song**

Henan University of Technology  
songyup@gmail.com

**Carl-Frederik Sorensen**

Norwegian University Science and  
Technology, Norway

**Sulayman K. Sowe**

Aristotle University, Greece  
sksowe@csd.auth.gr

**I. Stamelos**

Aristotle University, Greece  
stamelos@csd.auth.gr

**Petri Stenman**

Nokia Ventures Organization,  
Finland  
Petri.stenman@nokia.com

**Matthias Studer**

University of Geneva, Switzerland  
Matthias.studer@metri.unige.ch

**Giancarlo Succi**

Free University of Bolzano-Bozen,  
Italy  
Giancarlo.succi@unibz.it



**Daniel K. Sullivan**

University of Limerick, Ireland  
Daniel.Sullivan@ul.ie

**Nic Suzor**

Queensland University of  
Technology, Australia  
n.suzor@qut.edu.au

**Davide Taibi**

Universita dell'Insubria, Italy  
Davide.taibi@uninsubria.it

**Stefano Tardini**

University of Lugano, Switzerland  
Tardinis@lu.unisi.ch

**Ralf Treinen**

LSV, ENS de Cachan, France  
treinen@lsv.ens-cachan.fr

**Vehbi Sinan Tunaliolu**

Istanbul Bilgi University, Turkey  
Vst@cs.bilgi.edu.tr

**Tere Vaden**

University of Tampere, Finland

**Niklas Vainio**

University of Tampere, Finland

**Jaani Väisänen**

Tampere University of Technology,  
Finland  
Jaani.vaisanen@tut.fi

**Frank van der Linden**

Philips Medical Systems, The  
Netherlands  
Frank.van.der.linden@philips.com

**Manon van Leeuwen**

FUNDECYT, Spain  
manon@fundecyt.es

**Gabriel Vasile**

INRIA Futurs, France  
gabriel.vasile@inria.fr

**Dan Vodislav**

CEDRIC-CNAM, France  
vodislav@cnam.fr

**Jérôme Vouillon**

Université Paris VII, France  
vouillon@pps.jussieu.fr

**Quang Vu Dang**

Group des Ecoles de  
Telecommunications, France  
VuDang-Quang@int.evry.fr

**Dawid Weiss**

Poznan University of Technology,  
Poland  
Dawid.weiss@cs.put.poznan.pl

**Michael Weiss**

Carleton University, Canada  
Weiss@scs.carleton.ca

**Dongsong Zhang**

UMBC, US  
zhangd@umbc.edu

# Contents

---

## Part I Full Papers

---

FOCSE: An OWA-based Evaluation Framework for OS Adoption in Critical Environments.....	3
<i>Claudio Agostino Ardagna, Ernesto Damiani, Fulvio Frati</i>	
Open Source Collaboration for Fostering Off-The-Shelf Components Selection.....	17
<i>Claudia Ayala, Carl-Fredrik Sørensen, Reidar Conradi, Xavier Franch, Jingyue Li</i>	
From the Cathedral to the Bazaar: An Empirical Study of the Lifecycle of Volunteer Community Projects.....	31
<i>Andrea Capiluppi and Martin Michlmayr</i>	
Project Entity Matching across FLOSS Repositories.....	45
<i>Megan Conklin</i>	
Can Knowledge Management be Open Source?.....	59
<i>Charmaine C Pfaff and Helen Hasan</i>	
Emergent Decision-Making Practices in Free/Libre Open Source Software (FLOSS) Development Teams.....	71
<i>Robert Heckman, Kevin Crowston, U. Yeliz Eseryel, James Howison, Eileen Allen, Qing Li</i>	
Experiences on Product Development with Open Source Software.....	85
<i>Ari Jaaksi</i>	
Exploring the Effects of Coordination and Communication Tools on the Efficiency of Open Source Projects using Data Envelopment Analysis.....	97
<i>Stefan Koch</i>	
Innovation in Open Source Software Development: A Tale of Two Features...	109
<i>John Noll</i>	
Corporate Involvement of Libre Software: Study of Presence in Debian Code over Time.....	121
<i>Gregorio Robles, Santiago Dueñas, Jesus M. Gonzalez-Barahona</i>	

Sprint-driven development: working, learning and the process of enculturation in the PyPy community.....	133
<i>Anders Sigfridsson, Gabriela Avram, Anne Sheehan and Daniel K. Sullivan</i>	
Using Repository of Repositories (RoRs) to Study the Growth of F/OSS Projects: A Meta-Analysis Research Approach.....	147
<i>Sulayman K. Sowe, L. Angelis, I.Stamelos and Y. Manolopoulos</i>	
Community Structure, Individual Participation and the Social Construction of Merit.....	161
<i>Matthias Studer</i>	
OpenBQR: a framework for the assessment of OSS.....	173
<i>Davide Taibi, Luigi Lavazza and Sandro Morasca</i>	
Network Analysis of the SourceForge.net Community.....	187
<i>Yongqin Gao and Greg Madey</i>	

---

## Part II Short Papers

Influence in the Linux Kernel .....	203
<i>Timo Aaltonen and Jyke Jokinen</i>	
EDOS Distribution System: A P2P architecture for open-source content dissemination.....	209
<i>Serge Abiteboul, Itay Dar, Radu Pop, Gabriel Vasile and Dan Vodislav</i>	
Reusing an open source application – practical experiences with a mobile CRM pilot.....	217
<i>Jyrki Akkanen, Hunor Demeter, Tamás Eppel, Zoltán Ivánfi, Jukka K. Nurminen, and Petri Stenman</i>	
The role of trust in OSS communities – Case Linux Kernel community.....	223
<i>Maria Antikainen, Timo Aaltonen and Jaani Väisänen</i>	
Authenticating from multiple authentication sources in a collaborative platform.....	229
<i>Quang Vu Dang, Olivier Berger, Christian Bac, Benoît Hamet</i>	
Learning and the imperative of production in Free/Open Source development.	235
<i>Evangelia Berdou</i>	

Open source technologies for visually impaired people..... 241  
*Patrizia Boccacci, Veronica Carrega and Gabriella Doderò*

Different Bug Fixing Regimes? A Preliminary Case for Superbugs..... 247  
*Jean-Michel Dalle and Matthijs den Besten*

Free/Open Services: Conceptualization, Classification and Commercialization..... 253  
*G.R. Gangadharan, Vincenzo D’Andrea and Michael Weiss*

Surveying Industrial Roles in Open Source Software Development..... 259  
*Øyvind Hauge, Carl-Fredrik Sørensen, Andreas Røsdal*

Guiding the Discovery of Open Source Software Processes with a Reference Model..... 265  
*Chris Jensen and Walt Scacchi*

Effect of Coupling on Defect Proneness in Evolutionary Open-Source Software Development..... 271  
*A.Gunes.Koru, Dongsong Zhang, and Hongfang Liu*

The Use of Open Source Software in Enterprise Distributed Computing Environments..... 277  
*Jacob Krivoruchko*

Shared Assumption Concerning Technical Determination in Apache Web Server Developer Community..... 283  
*Juho Lindman*

Learning Through Practical Involvement in the OSS Ecosystem: Experiences from a Masters Assignment..... 289  
*Björn Lundell, Anna Persson and Brian Lings*

Release Management in Free Software Projects: Practices and Problems..... 295  
*Martin Michlmayr, Francis Hunt and David Probert*

Context-Dependent Evaluation Methodology for Open Source Software..... 301  
*Michele Cabano, Cesare Monti and Giulio Piancastelli*

Benefits and Drawbacks of Open Source Software: An Exploratory Study of Secondary Software Firms..... 307  
*Lorraine Morgan and Pat Finnegan*

Introducing Usability Practices to OSS: The Insiders' Experience.....	313
<i>Stanislaw Osinski and Dawid Weiss</i>	
Perceptions on F/OSS Adoption.....	319
<i>Bulent Ozel, Uros Jovanovic, Beyza Oba and Manon van Leeuwen</i>	
Open Source Software and Open Data Standards as a form of Technology Adoption: a Case Study.....	325
<i>Bruno Rossi, Barbara Russo and Giancarlo Succi</i>	
Free/Open Source Software Adoption, Public Policies and Development Indicators: An International Comparison.....	331
<i>Harald Schmidbauer, Mehmet Gencer and Vehbi Sinan Tunalio_Lu</i>	
Levels of Formality in FOSS Communities.....	337
<i>Andrew Schofield and Professor Grahame S. Cooper</i>	
Stakeholder value, usage, needs and obligations from different types of F/LOSS licenses.....	343
<i>Darren Skidmore</i>	

---

### **Part III Panels**

---

Introduction to Panel Discussions at the Third International Conference on Open Source Systems – OSS 2007.....	351
<i>Sandra A. Slaughter</i>	
Legal issues for free and open source software in government.....	353
<i>Nic Suzor, Brian Fitzgerald and Mark Perry</i>	
Data and analyses sharing to support research on free/libre open source software: A Debate.....	355
<i>Brian Fitzgerald, Evangelia Berdou, Kevin Crowston, Greg Madey, Megan Conklin, Stefan Koch and Walt Scacchi</i>	

---

### **Part IV Tutorials**

---

Introduction to OSS 2007 Tutorial Program .....	359
<i>Ernesto Damiani</i>	

How to Gather FLOSS Metrics.....	361
<i>Megan Conklin, Jesus M. Gonzalez-Barahona and Gregorio Robles</i>	
EDOS-Tools Tutorial: EDOS Tools for Linux Distributions Dependencies Management and Quality Assurance.....	363
<i>Francois Déchelle and Fabio Mancinelli</i>	
Quality Specification, Testing and Certification of Bespoken, Open Source and Commercial Off-The-Shelf Systems.....	365
<i>Hans-Ludwig Hausen</i>	

## Part V Workshops

Introduction to Workshops at the Third International Conference on Open Source Software – OSS 2007.....	369
<i>Scott Hissam</i>	
1 <sup>st</sup> International Workshop on Trust in Open Source Software .....	371
<i>Sandra Morasca and Alberto Sillitti</i>	
Open Source Software and Product Lines 2007.....	375
<i>Frank van der Linden and Bjorn Lundell</i>	
Towards a New Industrial Organization? OSS in Economic and Managerial Perspective.....	377
<i>Jean Michel Dalle, Christina Rossi and Francesco Rullani</i>	
2 <sup>nd</sup> International Workshop on Public Data about Software Development .....	381
<i>Jesus M. Gonzalez-Barahona, Megan Conklin and Gregorio Robles</i>	
Workshop on Free and Open Source Learning Environments and Tools.....	385
<i>Luca Botturi, Riccardo Mazza and Stefano Tardini</i>	

## Part VI Posters

Heterogeneous collaborative development involving open and inner source: Challenges for the European Software Intensive Industry.....	391
<i>Frank van der Linden, Bjorn Lundell and Pentti Marttiin</i>	

XXVIII Contents

Taking advantage of Open Source benefits for boosting growth in industry.....	391
<i>Clara Pezuela and Gregory Lopez</i>	
Sound tools for package dependency management in Free and Open Source Software distributions.....	391
<i>Fabio Mancinelli, Roberto di Cosmo, Jérôme Vouillon, Jaap Boender, Berke Durak, Xavier Leroy and Ralf Treinen</i>	
Openware Integration Technique for In-house Software and Open Source Components.....	391
<i>Janne Merilinna and Mari Matinlassi</i>	
Generating and Visualising Organisational Structures of Free/Libre and Open Source Software Projects.....	392
<i>Ludger Bischofs and Wilhelm Hasselbring</i>	
OSS design science and its influence on OSS effectiveness.....	392
<i>Nassim Belbaly, Hind Benbya and Regis Meissonier</i>	
FLOSS as Democratic Principle.....	392
<i>Mark Berry, Brian Fitzgerald and Nic Suzor</i>	
Elements of Open Source Community Sustainability.....	392
<i>Niklas Vainio, Ville Oksanen, Tere Vaden and Marko Seppänen</i>	
Global and Temporal Analysis of Social Positions at SourceForge.net.....	392
<i>Scott Christley and Greg Madey</i>	
The user involvement process on open source e-learning tools.....	392
<i>Thiago Moreira, Alex Sandro Gomes, Fabio Caparica and Rogerio Nibon</i>	
Will Open Source Software Promise China a New Future of Domestic Software Industry.....	392
<i>Yuping Song</i>	
A Reference Model for F/OSS Process Management.....	392
<i>Michel Pawlak and Ciaran Bryce</i>	