

# Raffaella Mirandola: CV Summary

*Name* Raffaella Mirandola  
*Institution* Politecnico di Milano, Dipartimento di Elettronica, Informazione e Bioingegneria  
*E-mail* raffaella.mirandola@polimi.it  
*Web page* <https://mirandola.faculty.polimi.it>

---

## GENERAL INFORMATION

### Education

1994 - Ph.D. in Computer Science, University of Roma Tor Vergata, Italy.

1989 - M.Sc. in Computer Science University of Pisa, Italy.

### Career

2011 – present **Associate Professor** at Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano

2005 – 2011 **Assistant Professor** at Dipartimento di Elettronica e Informazione, Politecnico di Milano

1997 – 2005 **Assistant Professor** at the Computer Science Department, University of Rome Tor Vergata

2018 – 2019 **International Visiting Full Professor**, *Linneus University, Sweden*, Swedish KK-Stiftelsens grant 20170232

1995 – 1997 **Post-Doc Fellow** at the Computer Science Department, University of Rome Tor Vergata

1990 – 1994 **PhD Student**, University of Roma Tor Vergata, Italy

### Parental leave

September 1999 – February 2000

### National Habilitation

Italian national scientific qualification in the following scientific sectors:

Full Professor 09/H1 ING-INF/05 (from 16/01/2020 to 16/01/2029)

Full Professor 09/H1 ING-INF/05 (from 03/12/2013 to 03/12/2022)

Full Professor 01/B1, INF/01 (from 29/01/2014 to 29/01/2023)

### Research Interests

- Software quality requirements modeling, analysis and verification
- Formal methods for (self-)adaptive dependable IT systems
- Model-driven software engineering
- Computing education research

and the application of the theories, approaches and techniques specific to the above research areas to *service-oriented* and *component-based* systems, *adaptive systems*, *mobile systems*, and *cloud computing*.

## QUALITY OF SCIENTIFIC AND/OR PROJECT PRODUCTION

### Productivity and Impact Metrics

- **Scientific Productivity:** According to Scopus: 191 Publications, 226 Co-authors
  - 22 Q1 ranked journal papers - including 3 IEEE Transactions on Software Engineering, 1 IEEE Transaction on Reliability, 1 IEEE Transaction on Mobile Computing, 2 Future Generation Computer Systems, 1 Communications of ACM, 1 ACM Transaction on Computing Education;

- 131 scientific publications on peer reviewed conferences - including 2 ICSE papers (A++), 1 ESEC/FSE paper(A+) and 10+ ECSA-QoSA papers (A conference)

- **Publication impact:**

- Based on Google Scholar    h-index 39    citations 8530
- Based on Scopus                h-index 27    citations 4481

## Awards and Recognitions

- *Best paper* M. Caporuscio, M. D'Angelo, V. Grassi and R. Mirandola "Decentralized Architecture for Energy-aware Service Assembly", Proceedings of the 14th European Conference on Software Architecture (ECSA 2020), LNCS 12292, 57-72, Springer 2020
- *Best Paper Candidate* R. Calinescu, R. Mirandola, D. Perez-Palacin and D. Weyns "Understanding Uncertainty in Self-adaptive Systems", 1st IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS 2020): 242-251
- *Hall of Fame winner* for the Distributed Software Development course, at the IEEE Conference on Software Engineering Education and Training November 2017
- *Best Paper Candidate* D.Perez-Palacin, R. Mirandola "Uncertainties in the modeling of self-adaptive systems: a taxonomy and an example of availability evaluation", Proc. ACM Int. Conf. on Performance Engineering (ICPE 2014), pp. 3-14 March 2014
- *Best paper* A. Filieri, C. Ghezzi, V. Grassi, R. Mirandola "Reliability Analysis of Component-Based Systems with Multiple Failure Modes" Proceedings of the 13th International ACM Sigsoft Symposium on Component Based Software Engineering (CBSE) 2010, LNCS 6092, pp 1-20 October 2010

## Invited Talks and Seminars

- "Architecting self-adaptive systems under uncertainty" invited seminar, KIT University, Germany, July 2022
- "Software Performance Engineering in Complex Systems: Achievements and Challenges", invited seminar, Linnaeus University, Sweden, September 2018
- "Software QoS enhancement through self-adaptation and formal models" invited lectures at GSSI, L'Aquila, Italia, April 2015
- "Software QoS enhancement through self-adaptation and formal models" invited tutorial at QoSA'14, the 10th International ACM SIGSOFT Conference on Quality of Software Architectures (part of CompArch 2014), June 30 - July 04, 2014, Lille, France
- "Software Performance Engineering In and For Dynamic Environments", Keynote at ECSA 2011, European Conference on Software Architecture, Essen Germany, September 2011
- "A journey across three decades of software performance engineering approaches" Keynote at Palladio-Days 2011, Karlsruhe, Germany November 2011

## Istitutional responsibilities

- 2013-present    President of the commission for the Evaluation Committee of the Bachelor and Master degree programs in Computer Engineering (Segretario di Laurea)
- 2017-present    Member of the PhD Advisory Board in Computer Engineering at Politecnico di Milano
- 2013-present    Delegate member of the Computer Engineering degrees at the Faculty Evaluation Committee
- 2014-present    Member of several evaluation committees (in Italy and in Europe) for the appointment of junior and senior researchers

- 2012 Member of the PhD Admission Committee

## Organization of Scientific Meetings

- 2011-present **Program (Co-) Chair**
  - ACM/IEEE International Symposium on Software Engineering for Adaptive and Self-Managing Systems- SEAMS 2021, co-located with ICSE 2021, Madrid
  - European Software Architecture Conference - ECSA, Dubrovnik/Cavtat, Croatia, September 2015
  - ACM ICPE International Conference on Performance Engineering, Karlsruhe, Germany March 2011
- 2011-present **General (Co-) Chair**
  - ACM/IEEE International Symposium on Software Engineering for Adaptive and Self-Managing Systems- SEAMS 2023, co-located with ICSE 2023, Melbourne
  - European Conference on Software Architecture- ECSA 2021, Vaxjo, Sweden September 2021
  - Comparch 2012, federated conference including CBSE (International ACM Sigsoft Symposium on Component Based Software Engineering), QoSA (International ACM Sigsoft Conference on the Quality of Software Architectures) and ISARCS (International ACM Sigsoft Symposium on Architecting Critical systems), Bertinoro, Italy, June 2012
- 2011-present **Steering Committee member**
  - SEAMS: ACM/IEEE International Symposium on Software Engineering for Adaptive and Self-Managing Systems
  - ICPE: ACM International Conference on Performance Engineering
  - ICSA: IEEE International Conference on Software Architecture
  - ECSA: The European Conference on Software Architecture
- 2011-present **Track (Co-) Chair**
  - ACM SAC Software Architecture: Theory, Technology, and Applications (SA-TTA) track (2013-2015)
  - MOCS Model-based development, Components and Services Track at Euromicro SEAA Conference (2011-2012)
- 2011-present **Other events organization**
  - Workshop co-chair at The 20th International Conference on Service-Oriented Computing- ICSOC 2022
  - Poster co-chair at IEEE International conference on Software Architecture- ICSA 2022
  - Doctoral Symposium chair at European Conference on Software Architecture- ECSA 2019
  - Poster co-chair at IEEE/ACM International Conference on Software Engineering, ICSE 2018
  - Doctoral Project track chair at the International Symposium on Software Engineering for Adaptive and Self-Managing Systems- SEAMS 2018:
  - Co-organizer of the first workshop on Gender Equality in Software Engineering, ICSE 2018
  - Workshop co-chair at the European Conference on Software Engineering - European Conference on Software Architecture- ECSA 2018
  - Co-organizer of the Woman in Software Architecture Track at the European Conference on Software Architecture-ECSA 2017

- Workshop co-chair at the IEEE/ACM International Conference on Software Engineering - ICSE 2015
- 2011-present **Program Committee member**. In the last ten years, I have been serving in the program committee of several conferences, among which:
  - ICSE: the IEEE/ACM International Conference on Software Engineering
  - ICPE: the ACM International Conference on Performance Engineering
  - ICSA: the IEEE International Conference on Software Architecture
  - ECSA: the European Conference on Software Architectures
  - SEAMS: the International Symposium on Software Engineering for Adaptive and Self-Managing Systems
  - MODELS: the ACM/IEEE International Conference on Model-Driven Engineering Language and Systems
  - SEAA: the Euromicro Conference on Software Engineering and Advanced Applications

### Participation to Editorial Boards

- 2019-present **Special Issue co-Editor** Journal of System and Software, Elsevier
- 2014- 2018 **Associate editor** IEEE Transaction on Software Engineering,
- 2008- 2019 **Editorial Board** Journal of System and Software, Elsevier
- 2013 **Guest Editor** 'Theme issue on performance modeling', Journal of Software and Systems Modeling, Springer, Volume 2013, 12, no. 4
- 2017 **Guest Editor** New Frontiers in Software Architecture", Journal of Systems and Software, Elsevier, 2017; Vol. 130

### Commission of Trust

- 2011-present **Expert Reviewer**
  - 2012 Research projects for the "Netherlands Organisation for Scientific Research", The Netherlands
  - 2012 Research projects for the "Fundacao para a Ciencia e a Tecnologia", Portugal
  - 2012 Research projects for the DFG priority program SPP 1593/1, Germany
  - 2015 Research projects for the DFG priority program SPP 1593/1, Germany
  - 2017, 2018 CLUSTER of EXCELLENCE projects, DFG, Germany
- 2011-present **Participation in the selection committee**
  - 2017 Committee for the selection of the *Editor in Chief* for the IEEE Transaction on Software Engineering
  - 2020 Committee for the selection of the *Editor in Chief* for the ACM Transaction on Adaptive and Autonomous Systems
- 2011-present **Participation in the recruitment committee**
  - 2015 Chalmers University, Sweden, Committee for the recruitment of Lecturers and Senior Lecturers
  - 2016 Malardalen University, Sweden, Committee for the recruitment of Senior Lecturers
  - 2018 Chalmers University, Sweden, Committee for the recruitment of Senior lecturers
  - 2020 LNU University, Sweden, Committee for the recruitment of Senior Lecturers

- 2022 KIT University, Germany, Committee for the recruitment of Junior Professor
- 2011-present Several Italian Researcher, RTD-A, RTDB recruitment committee including: University of L'Aquila, GSS L'Aquila, University of Napoli, University of Verona and University of Padova

## TEACHING ACTIVITIES

Starting from 1997, 2+ courses taught per academic year. For all the courses presented in the list, I have been both Lecturer and Examiner. I have also indicated the courses that are my institutional assignment (IA).

Since 2013, I have been involved in an *innovative teaching methods* project: the Distributed Software Development (DSD) course. DSD is a project course held together with the University of Zagreb and Malarladden University, Vasteras, Sweden. The students learn how complex is to work in distributed and geographically dispersed teams, using tools and technologies for distributed development environments, and discover how to cooperate with people of different cultures and how to manage in a predictable way the software development process. DSD teams participated and won various editions at the international project competitions in the International Conference on Software Engineering (2020/2021: teams in the finals, 2017/2018: winners, 2015/2017: team in semi-finals, 2012/2013: winners).

Institution	Course name	Credits	IA	No. of Students	Reference Study Course	Time Period	Student Evaluation
POLIMI	Computer Science Fundamentals (undergraduate course)	10	IA	300	CSE	2017-2022	High
POLIMI	Distributed Software Development (graduate course)	5	-	20	CSE	2013-2022	High
POLIMI	Software Engineering II (graduate course)	5	IA	150	CSE	2010-2016	Medium
POLIMI	Computing Infrastructure (graduate course)	5	IA	150	CSE	2015-2017	Medium
POLIMI	Impianti e Servizi Informatici (undergraduate course)	10	-	20	CSE-IOL	2016-2020	High

## Supervision of Master, Doctoral Students and Postdoctoral Researchers

- 2005- present Co-advisor of 2 PhD students at Politecnico di Milano, Co-advisor of 1 PhD student at University of Roma Tor Vergata, Advisor of 1 PhD student at Gran Sasso Science Institute, L'Aquila. Advisor of 2 Post-Doc Researchers at Politecnico di Milano.
- 2010-present PhD Committee member at Malardalen University, Sweden, Malmo University, Sweden, University San Paolo, Brasil, University of Zaragoza, Spain, University of Calgary, Canada, University of Lisbona, Portugal.
- 2006- present Advisor of 40+ Master students in Computer Engineering at Politecnico di Milano

## SCIENTIFIC RESPONSIBILITY FOR FUNDED PROJECTS

### Leadership in Competitive Research Projects

#### Principal Investigator for Politecnico di Milano

- FP7 European project Q-ImPRESS: "Quality Impact Prediction for Evolving Service-Oriented Software", Budget 500K

#### Task leader

- National project PRIN 1999 SALADIN: Software Architectures and Languages to Coordinate Mobile Distributed Components from 01-01-1999 to 31-12-2000, University of Roma tor Vergata
- National project PRIN 2001 SAHARA Software Architectures for Heterogeneous Access Infrastructures, from 01-01-2001 to 01-01-2003, University of Roma tor Vergata
- EU FP6-ICT CASCADAS: "Component-ware for Autonomic Situation-aware Communications, and Dynamically Adaptable Services", from 01-01-2006 to 31-12-2008, Politecnico di Milano
- EU FP7 SeaClouds: "Seamless adaptive multi-cloud management of service-based applications" from 01-10-2013 to 31-03-2016, Politecnico di Milano

### Leadership in Industrial-funded Research Projects

- Three years PhD Scholarship funded by Softeco Italy: 2009-2011
- Two Stages of six months funded by HP Italia, 2015

## TECHNOLOGY TRANSFER

### Development of Products

The research conducted during these years has been supported by the development of proof-of-concept tools that have been made available at the community. For example, we have developed *-PRIMA-UML*, *-KLAPERSuite*, *-MOSES*, *-MANTRA*, *-SOLAR*, *-SCOAP*, *-GoPrime*, and more recently *-The MSL language and framework*.

Some of them at present are not maintained but are still available on request (for example, PRIMA-UML, KLAPERSuite, SCOAP and MANTRA), while other framework are still in use for research purposes. For example,

*SOLAR* can be found at <http://webdiis.unizar.es/GISED/?q=tool/solar>

*MOSES* at <https://sourceforge.net/projects/uniroma2-moses/>

*MSL framework* at <https://github.com/fmselab/msl>

### Leadership or participation in industry-relevant exploitation

- *Member of the Advisory Board* of the project AIDOaRT - AI-augmented automation for efficient DevOps, a model-based framework for continuous development At RunTime in cyber-physical systems, project n. 101007350-2, under the call H2020-ECSEL-2020-2-RIA
- *Member of the DIA: The industry graduate school Data Intensive Applications*, Linnaeus University, Sweden

## TWELVE MOST RELEVANT PUBLICATIONS

The paper selection reflects the results obtained in the different research lines in the last 10 years. The contributions below are listed starting from the most recent ones. The authors are almost always listed in alphabetical order and they equally contributed to the development of the research and papers.

- M. D'Angelo, M. Caporuscio, V. Grassi, R. Mirandola "Decentralized Learning for Self-Adaptive QoS-Aware Service Assembly" *Future Generation Computer Systems, Elsevier*, 108: 210-227 (2020), Scimago ranking: Q1 [doi: <https://doi.org/10.1016/j.future.2020.02.027>]
- P. Arcaini, R. Mirandola, E. Riccobene, P. Scandurra "MSL: a pattern language for engineering self-adaptive systems" *Journal of Systems and Software, Elsevier*, 164: 110558 (2020), Scimago ranking: Q1 [doi: <https://doi.org/10.1016/j.jss.2020.110558>]
- I. Bosnic and F. Ciccozzi and I. Crnkovic and I. Cavrak and E. Di Nitto and R. Mirandola and M. Zagar "Managing Diversity in Distributed Software Development Education - A Longitudinal Case Study" *ACM Transactions on Computing Education*, Volume 19 (2), 10:1-10:23, (2019), Scimago ranking: Q1 [doi: <https://doi.org/10.1145/3218310>]
- M. García-Valls and D. Perez-Palacin and R. Mirandola "Pragmatic cyber physical systems design based on parametric models" *Journal of Systems and Software, Elsevier* Volume 144, pp. 559-572, (2018), Scimago ranking: Q1 [doi: <https://doi.org/10.1016/j.jss.2018.06.044>]
- M. Amiri, L. Mohammad-Khanlia, R. Mirandola "An online learning model based on episode mining for workload prediction in cloud" *Future Generation Computer Systems, Elsevier*, Volume 87: 83-101 (2018), Scimago ranking: Q1 [doi: <https://doi.org/10.1016/j.future.2018.04.044>]
- M. Amiri, L. Mohammad-Khanlia, R. Mirandola "A sequential pattern mining model for application workload prediction in cloud environment" *Journal of Network and Computer Applications, Elsevier*, Volume 105: 21-62 (2018), Scimago ranking: Q1 [doi: <https://doi.org/10.1016/j.jnca.2017.12.015>]
- M. Caporuscio, V. Grassi, M. Marzolla, R. Mirandola "GoPrime: a Fully Decentralized Middleware for Utility-Aware Service Assembly" *IEEE Transactions on Software Engineering* vol. 42, n.2, pp136-152, 2016, Scimago ranking: Q1 [doi: <http://dx.doi.org/10.1109/TSE.2015.2476797>]
- D. Perez Palacin, R. Mirandola, J. Meseguer "On the Relationships between QoS and Software Adaptability at the Architectural Level" *Journal of Systems and Software, Elsevier* Volume 87, no. 1 (2014), pp.1-17, Scimago ranking: Q1 [doi: <http://dx.doi.org/10.1016/j.jss.2013.07.053>]
- S. Distefano, C. Ghezzi, S. Guinea, R. Mirandola "Dependability Assessment of Web Service Orchestrations" *IEEE Transactions on Reliability* Volume 63,n.3, pp 689-705, 2014, Scimago ranking: Q1 [doi: <http://dx.doi.org/10.1109/TR.2014.2315939>]
- V. Cardellini, E. Casalicchio, V. Grassi, S. Iannucci, F. Lo Presti, R. Mirandola "MOSES: a Framework for QoS Driven Runtime Adaptation of Service-oriented Systems" *IEEE Transactions on Software Engineering* Volume 38, no.5 (2012) pp. 1138-1159, Scimago ranking: Q1 [doi: <http://dx.doi.org/10.1109/TSE.2011.68>]
- R. Calinescu, L. Grunske, M. Kwiatkowska, R. Mirandola, and G. Tamburrelli "Dynamic QoS Management and Optimisation in Service-Based Systems" *IEEE Transactions on Software Engineering* Volume 37, no.3 (2011) pp. 377-409, Scimago ranking: Q1 [doi: <http://dx.doi.org/10.1109/TSE.2010.92>]
- R. Calinescu, C. Ghezzi, M. Kwiatkowska, R. Mirandola "Self-adaptive software needs quantitative verification at runtime" *Communications of ACM* Volume 55, no. 9 (2012), pp. 69-77 , Scimago ranking: Q1 [doi: <http://dx.doi.org/10.1145/2330667.2330686>]

# Raffaella Mirandola: curriculum vitæ et studiorum

*Name* Raffaella Mirandola  
*Institution* Politecnico di Milano, Dipartimento di Elettronica, Informazione e Bioingegneria  
*E-mail* raffaella.mirandola@polimi.it  
*Web page* <https://mirandola.faculty.polimi.it>

---

## Degrees

- Ph.D. in Computer Science, University of Roma Tor Vergata, Italy, 1994.  
Title: *Hierarchical models for performance evaluation of computer and communication systems*
- M.Sc. in Computer Science University of Pisa, Italy, 1989.  
(Thesis title: *Hybrid simulation and variance reduction methods for performance evaluation of queueing network models*)

## Employment History

- Associate Professor at Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano (August 2011 – present)
- Assistant Professor at Dipartimento di Elettronica e Informazione, Politecnico di Milano (November 2005 – July 2011)
- Assistant Professor at the Computer Science Department, University of Rome Tor Vergata (November 1997 – October 2005)
- Post-Doc Fellow at the Computer Science Department, University of Rome Tor Vergata (November 1995 – October 1997)

### PARENTAL LEAVE

September 1999 – February 2000

### VISITING EXPERIENCE

International Visiting Full Professor, *Linneus University, Sweden*, (September 2018-August 2019), Swedish KK-Stiftelsens grant 20170232

### NATIONAL HABILITATION

Italian national scientific qualification in the following scientific sectors:

Full Professor 09/H1 ING-INF/05

Full Professor 01/B1, INF/01

## Collaborations

The following are the most active scientific collaborations:

- *Linneus University, Sweden*, collaboration with Prof. Jesper Andersson and Prof. Marco Caporuscio
- *York University, UK*, collaboration with Prof. Radu Calinescu
- *Katholieke Universiteit Leuven, Belgium* collaboration with Prof. Danny Weyns



- *KIT University, Germany* collaboration with Prof. Ralf Reussner
- *INRIA, France* collaboration with Prof. Jean-Marc Jezequel
- *Zagreb University, Croatia* collaboration with Prof. Igor Cavrak and Dott. Ivana Bosnic
- *CMU University, USA* collaboration with Prof. David Garlan
- *SEI, USA* collaboration with Dr. Grace Lewis
- *UCIrvine, USA* collaboration with Prof. Sam Malek
- *University of Milano, Italy* collaboration with Prof. Elvinia Riccobene
- *University of Bergamo, Italy* collaboration with Prof. Patrizia Scandurra
- *ISTI-CNR, Italy* collaboration with Prof. Antonia Bertolino
- *University of Roma Tor Vergata, Italy* collaboration with Prof. Vincenzo Grassi
- *Gran Sasso Science Institute, L'Aquila Italy* collaboration with Dott. Catia Trubiani

## Academic Services

### POLITECNICO DI MILANO

- President of the commission for the Evaluation Committee of the Bachelor and Master degree programs in Computer Engineering (Segretario di Laurea) (2013-present)
- Member of the PhD Advisory Board in Computer Engineering at Politecnico di Milano (2017-present)
- Delegate member of the Computer Engineering degrees at the Faculty Evaluation Committee (2013-present)
- Member of the PhD Admission Committee (2012)
- Member for the Evaluation Committee of State Exams for the Qualification to the Engineering Profession (2009)

### INTERNATIONAL COMMUNITY

#### Participation in the selection committee

- Committee for the selection of the *Editor in Chief* for the IEEE Transaction on Software Engineering (2017)
- Committee for the selection of the *Editor in Chief* for the ACM Transaction on Adaptive and Autonomous Systems (2020)

#### Participation in the recruitment committee

- Chalmers University, Sweden, Committee for the recruitment of Lecturers and Senior Lecturers (2015)
- Malardalen University, Sweden, Committee for the recruitment of Senior Lecturers (2016)
- Chalmers University, Sweden, Committee for the recruitment of Senior lecturers (2018)
- LNU University, Sweden, Committee for the recruitment of Senior Lecturers (2020)
- KIT University, Germany, Committee for the recruitment of Junior Professor (2022)
- Several Italian Researcher, RTD-A, RTDB recruitment committee including: University of L'Aquila, GSS L'Aquila, University of Napoli, University of Verona and University of Padova (2005-present)

#### Participation in industry-relevant exploitation

- *Member of the Advisory Board* of the project AIDOaRT - AI-augmented automation for efficient DevOps, a model-based framework for continuous development At RunTime in cyber-physical systems, project n. 101007350-2 , under the call H2020-ECSEL-2020-2-RIA

- *Member of the DIA: The industry graduate school Data Intensive Applications, Linnaeus University, Sweden*

## Description of Scientific Results

The main research interests are in:

- Software quality requirements modeling, analysis and verification
- Formal methods for (self-)adaptive dependable IT systems
- Model- driven software engineering

and the application of the theories, approaches and techniques specific to the above research areas to *service-oriented* and *component-based* systems, *adaptive systems*, *mobile systems*, and *cloud computing*. Her research has been funded by several national and international projects, among which the FP7 European project Q-ImPrESS: Quality Impact Prediction for Evolving Service-Oriented Software, for which she was Scientific Responsible and also local responsible for Politecnico.

An orthogonal research line concerns teaching and **computing education research** mainly focusing on observations and data analysis for the innovative Distributed Software Development (DSD) course. The results have been published in the **Information and Software Technology** journal [JR.9], the **ACM Transactions on Computing Education** [JR.10], and at the conferences [IC.17],[WS.11]. DSD is a project course held together with the University of Zagreb and Malarladen University, Vasteras, Sweden. DSD teams participated and won various editions at the international project competitions in the **International Conference on Software Engineering** (2020/2021: teams in the finals, 2017/2018: winners, 2015/2017: team in semi-finals, 2012/2013: winners).

### SOFTWARE QUALITY REQUIREMENTS MODELING, ANALYSIS AND VERIFICATION

A key requirement for software is becoming the capability to keep providing the required quality of service (QoS), in terms of performance, dependability and operating cost (e.g., energy consumption). To this end, quality goals must be carefully and continuously pursued throughout the lifecycle, and especially from its very beginning. Indeed, if unacceptable qualities are discovered late in the project, it is necessary to either abandon the system entirely or go back through redefinition, redesign and redevelopment phases until the system becomes acceptable. Both options are clearly much more expensive than meeting the quality goals since the initial stages. For these reasons the research has been directed to the (automatic) generation and use of software quality models in a continuous way starting from design time until runtime.

**Scientific contributions** A first research area has been the definition and generation of quality models at design time, with the definition of PRIMA-UML [IC.85], [IC.84], [JR.36] for example, which represents a seminal work in this area widely cited in the reading list of academic courses and in the literature, see for example the citations of Google Scholar for the **WOSP paper** [IC.85], and the **Science of Computer Programming** journal [JR.36]). These methods have been applied to the domain of mobile software architectures and the results presented in [IC.81] and in the **IEEE Transaction on Mobile Computing** [JR.34].

For component-based systems we have been working at a general framework for enabling the early validation of component-based systems on the basis of the architectural specification. We started with a survey on existing methods for the quality analysis of component-based systems presented in [IB.15]. Then, the definition of the Component-Based Software Performance Engineering (CB-SPE) [IC.75], [IC.77], [IC.76], [IC.66]

[WS.23], [OJ.4] has been one of the result of this work, which is widely cited in the literature (see for example the citations of Google Scholar for the CBSE [IC.75]). In this context, a common component modeling example has been produced and presented in the widely cited **Springer Book** [BK.1], to provide a common case study to be used as a basis for comparisons of different approaches. Different techniques based on optimization methods have been investigated and presented in [IC.51] and in two journal papers [JR.31], [JR.25] published on **Journal of Systems and Software**.

Another result concerns the definition and analysis of different kind of failures that can affect the overall system behavior [IC.48], [IC.45], [IC.30], in the **Transactions on Reliability** journal [JR.18] and in the **Software: Practice and Experience** journal [JR.14]. The paper [IC.48] received the **best paper award** at the CBSE conference. The paper [JR.3] presents a framework to better understand the resilience concept in software-intensive systems.

Different research contributions consist in the definition of models at runtime (presented at **ICSE Conference** [IC.55]) and their usage in the area of self-adaptive systems and service-oriented application, presented in [IC.63], [IC.54], [IC.53], [IC.57], [IB.8], [IC.33], [IC.32], [IC.22], [IC.19], [IB.4] and in the **IEEE Transactions on Software Engineering** journals [JR.30], [JR.29], [JR.16]. The obtained results are widely cited in the literature, see for for example the citations of Google Scholar for the **ICSE paper** [IC.55], the **ESEC/FSE** paper [IC.53], and the **IEEE Transactions on Software Engineering** [JR.30] and [JR.29].

The adaptive composition of services based on reinforcement learning techniques has been the topic of research published in [IC.19] and **Future Generation Computer Systems, Elsevier** [JR.5]. In this context, a contribution with a special focus on energy has been presented in [IC.6] (Best paper award).

## FORMAL METHODS FOR (SELF-)ADAPTIVE DEPENDABLE IT SYSTEMS

In modern software applications, two requirements are becoming common: software must adapt continuously to respond to changes in application objectives and in the environment in which it is embedded, and it is expected to fulfil its dependability. To this end the seamless use of *formal verification techniques* preventing errors from reaching the final implementation (or at least removing them when a new version of the software is deployed) has been proved to be a feasible way to reach these goals.

**Scientific contributions** In this area, the main contributions concern the definition of an overall framework promoting the use of quantitative formal techniques at runtime presented in [IB.8] and in the **Communication of ACM** [JR.26], as well as a set of specific techniques proposing the use of formal methods to deal with adaptable dependable systems. Specifically, Petri Nets and Queueing Networks have been applied to plan system adaptation while minimizing the energy consumption, in **Journal of Systems and Software** [JR.27], in **Sustainable Computing, Informatics and Systems** [JR.24] and in **International Journal of Performability Engineering** [OJ.1] respectively. Petri Nets have also been applied to devise the most suitable number of resources to be used when the workload of the application presents some burstiness [IC.36] and in the **Journal of Systems and Software** paper [JR.15]. More recently, formal models have also been applied for time-sensitive adaptation in Cyber Physical Systems through run-time configuration generation and verification and the results presented in the conference papers in the conference papers [IC.27] and [IC.25], [IC.20], [IC.15], [IC.14], [IC.13], and in the **Journal of Systems and Software** [JR.13] and in the **Journal of Software: Evolution and Process, Wiley**[JR.8].

The use of formal models for the definition of adaptation plans in cloud infrastructure has been discussed in [IC.26], [IC.21]. Based on that, we have also explored their combination with machine learning techniques in the **Journal of Network and Computer Applications** [JR.12], in **Future Generation Computer Systems, Elsevier** [JR.11], and in the **Computing Journal, Springer** [JR.7].

Another formalism, called Abstract State Machine (ASM), has been extended to deal with reliability analysis in [IC.34], [IB.5] and in the **Journal of System and Software** paper [JR.19] providing a unique component model, which is both the design oriented model of the component assembly and the formal analysis-oriented

model and that leads the reliability analysis. The combined use of optimization techniques and design patterns and tactics have been exploited to explore the state space adaptation of service oriented applications in [IC.42] and in the **Science of Computer Programming** journal [JR.22].

Some of these topics, concerning the definition of metrics for system adaptability are presented in the journal paper [JR.23] (**Journal of Systems and Software**) and in the conference paper [IC.23].

The research challenges and possible research directions in the field of self-adaptive have been explored in [IB.11] and [IB.6] [IB.7], [IB.3].

The results of a new research line considering the identification and management of uncertainties in software-intensive adaptive systems have been presented in [IC.16], [IC.28], [IC.29] (Best paper candidate), in the book chapter [IC.3], in the conference papers [IC.5] (Best paper candidate), [IC.3], [IC.2] in the book chapter [IB.1] and in the **ACM Transactions on Adaptive and Autonomous Systems** [JR.4] and in the **Journal of Systems and Software** [JR.2] papers.

## MODEL- DRIVEN SOFTWARE ENGINEERING

*Model-driven development* (MDD) is a discipline that tries to systematize model-based software development. The goal of MDD is twofold. On the one side, it aims at deriving (automatically or semi-automatically) a software implementation, starting from high-level models of the system and applying model transformation rules which refine high-level descriptions into more concrete and specific models. On the other, it aims at supporting reasoning activities on the high-level models. Through an early analysis of quality properties, such as performance and reliability, the software engineer can evaluate the impact of the different design choices or candidate system architectures, before they are reified into runnable code.

**Scientific contributions** A first research contribution in this area is the definition of an UML profile for mobile software architectures and its usage for the analysis of quality requirements: [IC.83], [IC.74] and [IC.73]. Another result concerns the definition of a pivot language called KLAPER facilitating the definition and generation of analysis- oriented models (such as reliability models or performance models) starting from design-oriented models expressed in different formalisms, such as UML or BPMN, [IC.69],[IC.65],[JR.33],[IB.13], together with the possibility to deal with dynamic system environments [IC.64] and [IB.12]. A tool-suite has been built around this language and used in a set of academic and industrial case studies presented at the conferences [IC.44] (**TOOLS2011**, [IC.43] (**ICSE2011**)) and in the **Software and System Modeling** journal [JR.21]. The obtained results are widely cited in the literature, see for example the citations of Google Scholar for the WOSP paper [IC.69] and the **Journal of Systems and Software** paper [JR.33].

A different challenging problem we have considered in the MDE area is called "feedback provisioning": how to propose solutions to non-experienced engineers and guide them in the selection of an appropriate one when issues concerning quality attributes are detected. In this context we have presented a general discussion of challenges and open issues [IC.35] and their application to a specific domain [IC.24], we have proposed a multi-modeling solution that leverages and extends existing model transformation techniques with constructs to elicit the space of the alternative solutions and to bind quality properties to them, presented at **MODELS2011** conference [IC.41] and in the **Computer Science - Research and Development** journal [JR.28]. The model transformations themselves need to be verified and a testing technique has been proposed to this end in the **QUATIC2010** conference paper [IC.50] and in the **Innovations in Systems and Software Engineering** journal paper [JR.20].

Recently, we have started a research line exploring the definition of a DSL language for the specification of the managing part in self-adapting systems [IC.11]. Based on this language we are now defining a framework helping the development and verification of self-adapting systems, published in the conferences [IC.10], [IC.8], [IC.7], and in the **Journal of Systems and Software** [JR.6] .

## DEVELOPMENT OF PRODUCTS

The research conducted during these years has been supported by the development of proof-of-concept tools that have been made available at the community. For example, we have developed *-PRIMA-UML-* for [JR.36], *-KLAPERSuite-* for [JR.33] and [JR.21], *-MOSES-* for [JR.29], *-MANTRA-* for [JR.20], *-SOLAR-* for [JR.23], *-SCOAP-* [IC.26], *-GoPrime-* for [JR.16] - and more recently *-The MSL language and framework-* for [JR.6].

Some of them at present are not maintained but are still available on request (for example, PRIMA-UML, KLAPERSuite, SCOAP and MANTRA), while other framework are still in use for research purposes. For example,

*SOLAR* can be found at <http://webdiis.unizar.es/GISED/?q=tool/solar>

*MOSES* at <https://sourceforge.net/projects/uniroma2-moses/>

*MSL framework* at <https://github.com/fmselab/msl>

## External research funding

### EUROPEAN RESEARCH PROJECTS

Principal Investigator for Politecnico

- FP7 European project Q-ImPRESS: "Quality Impact Prediction for Evolving Service-Oriented Software"

I contributed actively in the following research projects:

- H2020 CSA Dossier Cloud: Devops-based Software engineering for the cloud (Coordinator Cyprus University of Technology, Local PI Luciano Baresi)
- FP7 ICT SeaClouds: Seamless adaptive multi-cloud management of service-based applications (Coordinator: ATOS, Spain, Local PI Elisabetta Di Nitto)
- FP7 ERC-SMSCom: Self-Managing Situated Computing (ERC grantee Carlo Ghezzi, Politecnico di Milano)
- FP7 NOE S-Cube: Software Services and Systems Network (Coordinator University of Duisburg-Essen, Local PI Carlo Ghezzi)
- FP6-ICT CASCADAS: Component-ware for Autonomic Situation-aware Communications, and Dynamically Adaptable Services (Coordinator Telecom Italia, Local PI Elisabetta Di Nitto)
- FP6 ICT PLASTIC: Providing Lightweight and Adaptable Service Technology for pervasive Information and Communication (Coordinator Inria, France, Local CNR PI Antonia Bertolino)
- European Project "GAAS": Design and development of distributed Client/server Architectures for air traffic control systems (local Rome PI, Giuseppe Iazeolla)
- EUROCONTROL Project "PAMPAS": A preliminary approach to performance modelling and analysis of air traffic control systems (local Rome PI, Giuseppe Iazeolla)
- EUROCONTROL Project "EVAS: EATMS VALIDation Strategy" (local Rome PI Giuseppe Iazeolla)

### INDUSTRIAL-FUNDED RESEARCH PROJECTS

- Three years PhD Scholarship funded by Softeco Italy: 2009-2011
- Two stages, each of six months duration funded by HP Italia, 2015

### NATIONAL RESEARCH PROJECTS

I contributed actively in the following Italian research projects:

- PRIN 2017 SISMA- Solutions for Engineering Microservice Architectures (Local PI Luciano Baresi)
- PRIN 2012 IDEAS - Integrated Design and Evolution of Adaptive Systems, (Local PI Carlo Ghezzi)
- PRIN 2008 DASAP: Architetture Software Adattabili e Affidabili per Sistemi Pervasivi, (Local PI Carlo Ghezzi)
- FIRB Programmi Strategici 2005: ART DECO (Adaptive InfRasTructures for DECentralized Organizations), (Local PI Carlo Ghezzi)
- FIRB - PERF (2002 - 2006) Performance Evaluation of Complex Systems: Techniques, Methodologies and Tools,(Local Rome PI Vincenzo Grassi)
- PRIN 2001 SAHARA Software Architectures for Heterogeneous Access Infrastructures, (Local Rome PI Vincenzo Grassi)
- PRIN 1999 SALADIN: Software Architectures and Languages to Coordinate Mobile Distributed Components, (Local Rome PI Vincenzo Grassi)
- Certia-CERC Project "Software Process Optimization and Collaborative Environments for Software V&V" (Rome PI, Giuseppe Iazeolla)
- CNR Project "Performance and Reliability Engineering of Distributed Databases"
- ITALIAN MURST Project "Performability V&V of Product and Processes in Software Engineering"

## Other academic qualification

### EDITORIAL BOARDS

- Special Issue co-Editor Journal of System and Software, Elsevier (2019-present)
- Past Editorial Board:
  - IEEE Transaction on Software Engineering (2014-2018),
  - Journal of System and Software, Elsevier (2008-2019).

### JOURNAL SPECIAL ISSUE EDITOR

- "Theme issue on performance modeling" *Journal of Software and Systems Modeling, Springer* Volume 12, no. 4, (2013)
- "New Frontiers in Software Architecture" *Journal of Systems and Software, Elsevier*, 2017; Vol. 130

### PROJECT REVIEWER

- Research projects for the "Netherlands Organisation for Scientific Research" in 2009 and 2012
- Research projects for the "Fundacao para a Ciencia e a Tecnologia", Portugal in 2012
- Research projects for the DFG priority program SPP 1593/1, Germany, in 2012
- Research projects for the DFG priority program SPP 1593/1, Germany, in 2015
- CLUSTER of EXCELLENCE projects, DFG, Germany, 2017, 2018

## Conference Organization

### Conference General (Co-)Chair

- ACM/IEEE International Symposium on Software Engineering for Adaptive and Self-Managing Systems- SEAMS 2023, co-located with ICSE 2023, Melbourne
- European Conference on Software Architecture- ECSA 2021,
- Comparch 2012, federated conference including CBSE (International ACM Sigsoft Symposium on Component Based Software Engineering), QoSA (International ACM Sigsoft Conference on the Quality of Software Architectures) and ISARCS (International ACM Sigsoft Symposium on Architecting Critical systems).

### **Conference Program (Co-)chair**

- International Symposium on Software Engineering for Adaptive and Self-Managing Systems- SEAMS 2021
- European Software Architecture Conference - ECSA 2015
- ACM SAC Software Architecture: Theory, Technology, and Applications (SA-TTA) track (2013-2015)
- MOCS Model-based development, Components and Services Track at Euromicro SEAA Conference (2010-2012)
- ACM WOSP/SIPEW ICPE International Conference on Performance Engineering (2011)
- QoSA 2009: Fifth International Conference on the Quality of Software Architectures (2009)
- EUROMICRO Conference on Software Engineering and Advanced Applications (SEAA), 2008

### **Dagstuhl Seminars Co-organization**

- GI-Dagstuhl-Seminar: "Model-Driven Quality Prediction", November 2009
- GI-Dagstuhl-Seminar: "Modelling Contest: Common Component Modelling Example", August 2007

### **Other events organization**

- Workshop co-chair at The 20th International Conference on Service-Oriented Computing- ICSOC 2022
- Poster co-chair at IEEE International conference on Software Architecture- ICISA 2022
- Doctoral Symposium chair at European Conference on Software Architecture- ECSA 2019
- Poster co-chair at IEEE/ACM International Conference on Software Engineering, ICSE 2018
- Doctoral Project track chair at the International Symposium on Software Engineering for Adaptive and Self-Managing Systems- SEAMS 2018:
- Co-organizer of the first workshop on Gender Equality in Software Engineering, ICSE 2018
- Workshop co-chair at the European Conference on Software Engineering - European Conference on Software Architecture- ECSA 2018
- Co-organizer of the Woman in Software Architecture Track at the European Conference on Software Architecture-ECSA 2017
- Workshop co-chair at the IEEE/ACM International Conference on Software Engineering - ICSE 2015
- Co-organizer of QUOVADIS: First International workshop on Quantitative Stochastic Models in the Verification and Design of Software Systems, Workshop at ICSE 2010
- Workshop chair of IEEE ASE 2008: International Conference on Automated Software Engineering, 2008
- Panel organizer: "SOA and Quality Assurance" at SEAA 2008
- Workshop organizer NfC – Models for Non-functional Aspects of Component-Based Software, Models 2005

### **Steering Committees**

I serve on the Steering Committee of the following conferences:

- ICPE: ACM International Conference on Performance Engineering
- ICISA: IEEE International Conference on Software Architecture
- ECSA, The European Conference on Software Architecture
- SEAMS: The International Symposium on Software Engineering for Adaptive and Self-Managing Systems (IEEE/ACM)

## **Program Committee Membership**

Starting from 2002 until now I have been serving in the program committee of several conferences, among which:

- ICSE: the IEEE/ACM International Conference on Software Engineering
- ICPE: the ACM International Conference on Performance Engineering
- ICSA: the IEEE International Conference on Software Architecture
- ECSA: the European Conference on Software Architectures
- SEAMS: the International Symposium on Software Engineering for Adaptive and Self-Managing Systems
- MODELS: the ACM/IEEE International Conference on Model-Driven Engineering Language and Systems
- SEAA: the Euromicro Conference on Software Engineering and Advanced Applications

## **REFeree SERVICES**

I regularly serve as a reviewer for several journals, among which: Performance Evaluation, Elsevier, Journal of System and Software, Elsevier, IEEE Transaction on Software Engineering, Software and System Modeling-Springer, ACM transactions on software engineering and methodology, IEEE Transactions on Dependable and Secure Systems, IEEE Transactions on Service Computing, Future Generation of Computer Systems, Elsevier, Journal of Software: Evolution and Process, Wiley, Computing Springer, Science of Computer Programming, Elsevier, Information and Software Technology, Elsevier

## **INVITED TALKS**

- "Architecting self-adaptive systems under uncertainty" invited seminar, KIT University, Germany, July 2022
- "Software Performance Engineering in Complex Systems: Achievements and Challenges", invited seminar, Linnaeus University, Sweden, September 2018
- "Software QoS enhancement through self-adaptation and formal models" invited lectures at GSSI, L'Aquila, Italia, April 2015
- "Software Performance Engineering In and For Dynamic Environments", Keynote at ECSA 2011, Essen Germany, September 2011 (<http://www.ecsa2011.org/>)
- "A journey across three decades of software performance engineering approaches" Keynote at Palladio-Days 2011, Karlsruhe, Germany November 2011 (<http://www.palladio-days.org/2011/programme/>)
- "Software Performance Engineering In and For Dynamic Environments" Seminar at Milano Bicocca, PhD Course, 2 December 2011
- "Tecniche di valutazione di requisiti di performance e reliability per il software", Invited talk, Workshop CDE V&V Intecs, 25 November 2011
- "Some issues about modeling of mobile software architecture", Invited presentation at UML 2004 Workshop on "Software Architecture Description and UML", 12 October 2004

## **TUTORIALS**

- "Software QoS enhancement through self-adaptation and formal models" at QoSA'14, the 10th International ACM SIGSOFT Conference on Quality of Software Architectures (part of CompArch 2014), June 30 - July 04, 2014, Lille, France (with Diego Perez-Palacin)
- "Performance Validation of mobile software architecture" at PERFORMANCE 2002 IFIP WG 7.3 International Symposium on Computer Performance Modeling, Measurement and Evaluation, Roma, Italy, September 2002 (with V. Cortellessa and V. Grassi)



- “Performance Validation of mobile software architecture” at the Fourth International Workshop on Software and Performance, WOSP 2004, ACM, January 14-16 2004, Redwood Shores, CA, USA (with V. Cortellessa and V. Grassi)

## Teaching experience

For all the courses presented in the list, whenever not differently indicated, I have been both Lecturer and Examiner. I have also indicated the courses that are my institutional assignment (IA).

Since 2013, I have been involved in an *innovative teaching methods* project: the Distributed Software Development (DSD) course. DSD is a project course held together with the University of Zagreb and Malarladen University, Vasteras, Sweden. The students learn how complex is to work in distributed and geographically dispersed teams, using tools and technologies for distributed development environments, and discover how to cooperate with people of different cultures and how to manage in a predictable way the software development process. DSD teams participated and won various editions at the international project competitions in the International Conference on Software Engineering (2020/2021: teams in the finals, 2017/2018: winners, 2015/2017: team in semi-finals, 2012/2013: winners).

- **Distributed Software Development, 2013-2022** (5 credits) - Master of Science, Computer Engineering, Politecnico di Milano, Course offered together with the University of Zagreb and Malarladen University, Vasteras, Sweden.
- **Fundamental of Computer Science, (2017-2022)** (10 credits)- IA - Undergraduate Programme, ICT Engineering, Politecnico di Milano
- **Impianti e Servizi Informatici (2016-2020)** (10 credits)- Undergraduate Programme, Computer Engineering, Laurea On Line, Politecnico di Milano.
- **Computer Infrastructures, 2015-2017** (5 credits) - IA - Master of Science, Computer Engineering, Politecnico di Milano
- **Software Engineering II (2010-2016)** (5 credits)- IA - Master of Science, Computer Engineering, Politecnico di Milano
- **Impianti Informatici (2008-2015)** (5 credits)- Undergraduate Programme, Computer Engineering, Politecnico di Milano, Cremona Campus.
- **Fundamental of Computer Science, (2005-2010)** (10 credits)- IA - Undergraduate Programme, Management and Production Engineering, Politecnico di Milano
- **Fondamenti di Informatica II (2003-2005)**, (10 credits)- IA - Undergraduate Programme, Computer Engineering, University of Roma Tor Vergata
- **Early validation of non-functional requirements in software systems (2003-2004)**, - PhD Course at University of Roma Tor Vergata
- **Fondamenti di Informatica I, (1997-2004)**, (teaching assistant) (10 credits)- Undergraduate Programme, Computer Engineering, University of Roma Tor Vergata
- **Impianti Informatici (1997-2003)**, (5 credits) - IA - Undergraduate Programme, Computer Engineering, University of Roma Tor Vergata
- **Simulazione (1990-1996)**, (teaching assistant) (10 credits)- Undergraduate Programme, Computer Engineering, University of Pisa

## Supervisor experience

- Advisors of several PhD and post-doc students in Computer Science and Engineering at Politecnico di Milano, 2007-Present

- Advisor of several undergraduate and Master students in Computer Engineering at Politecnico di Milano, 2006-Present
- Advisor of several Undergraduate and Master students in Computer Science at University of Roma Tor Vergata, 1997-2005

#### PHD EXTERNAL EXAMINER

- PhD Committee member in 2022 at KIT University, Germany, for the PhD defense of the candidate Stephan Seifermann discussing a thesis titled "Architectural Data Flow Analysis for Detecting Violations of Confidentiality Requirements", Advisor Prof. Ralf Reussner
- PhD Committee member in 2021 at Linneaus University, Sweden, for the PhD defense of the candidate Tobias Ohlsson discussing a thesis titled "Incremental Clustering of Source Code-a Machine Learning Approach", Advisor Prof. Morgan Ericsson and Prof. Anna Wingkvist
- PhD Committee member in 2020 at Malmo University, Sweden, for the PhD defense of the candidate Fahed Alkhabbas discussing a thesis titled "Realizing Emergent Configurations in the Internet of Things", Advisor Prof. Romina Spalazzese and Prof Paul Davidsson
- PhD Committee member in 2019 at Malardalen University, Sweden, for the PhD defense of the candidate Nesredin Mahmud discussing a thesis titled "Design of Assured and Efficient Safety-Critical Systems", Advisor Prof. Cristina Secoleanu, Sr. Lect. Guillermo Rodriguez-Navas
- PhD Committee member in 2018 at Malardalen University, Sweden, for the PhD defense of the candidate Gabriel Campeanu discussing a thesis titled "GPU Support for Component-based Development of Embedded Systems", Advisor Prof. Jan Carlson
- PhD Committee member in 2018 at University San Paolo, Brasil, for the PhD defense of the candidate Lina Mara Garces Rodriguez discussing a thesis titled "A reference architecture for healthcare supportive home systems from a systems-of-systems perspective", Advisors Elisa Yumi Nakagawa (ICMC-USP) and Professor Flavio Oquendo (UBS).
- PhD Committee member in 2016 at Malardalen University, Sweden, for the PhD defense of the candidate Gaetana Sapienza discussing a thesis titled "Multiple Criteria Decision Analysis-based HW/SW partitioning methodology for embedded applications", Advisor Prof. Ivica Crnkovic, co-advisors: Prof. Tiberiu Secoleanu, Dr. Antonio Cicchetti.
- PhD Committee member in 2013 at University of Zaragoza, Spain, for the PhD defense of the candidate Diego Perez-Palacin discussing a thesis titled "Extra Functional Properties Evaluation of Self-managed Software Systems with Formal Methods", Advisor Prof. Jose' Merseguer
- PhD Committee member in 2013 at University of Calgary, Canada, for the PhD defense of the candidate Anas Youssef discussing a thesis titled "Burstiness and Uncertainty Aware Service Level Planning for Enterprise Clouds", Advisor Dr Diwakar Krishnamurthy
- External reviewer in 2013 for the habilitation as Associate Professor of Tomas Bures, Charles University, Prague, Czeck Republic
- External reviewer 2012 for the PhD thesis of the candidate Indika Meedeniya titled "Architecture Optimisation of Embedded Systems under Uncertainty in Probabilistic Reliability Evaluation Model Parameters", Advisor Prof. Lars Grunske, Swiburne University, Australia
- PhD Committee member in 2012 at University of Lisbona, Portugal, for the PhD defense of the candidate Liliana Rosa discussing a thesis titled "Self-management of Systems Built from Adaptable Components", Advisor Prof. Luis Rodrigues, co-advisors: Prof. Antonia Lopes
- PhD Committee member in 2012 at Malardalen University, Sweden, for the PhD defense of the candidate Severine Santilles discussing a thesis titled "Managing Extra-Functional Properties in Component-Based Development of Embedded Systems", Advisor Prof. Ivica Crnkovic, co-advisors: Dr. Jan Carlsson, Prof. Hans Hansson
- PhD Committee member in 2010 at Malardalen University, Sweden, for the PhD defense of the can-

didate Kurt Wallnau discussing a thesis titled "Predictability By Construction: Working the Architecture/Program Seam", Advisor Prof. Ivica Crnkovic, co-advisors: Magnus Larsson, Hans Hansson

# Complete publication list

## PUBLICATION LIST

Refereed international journals	39
Refereed online international journals	4
Refereed international magazines	2
Editorial contributions	12
Refereed chapters in international books	17
Refereed international conferences	92
Refereed international workshops	24
Academic books	2

---

## REFEREED INTERNATIONAL JOURNALS

- JR.1. F. Alongi, M. M. Bersani, N. Ghielmetti, R. Mirandola, D. A. Tamburri: "Event-sourced, observable software architectures: An experience report". *Software: Practice and Experience*, Wiley online first (2022)  
[doi: <https://doi.org/10.1002/spe.3116>]
- JR.2. N. Alasmari, R. Calinescu, C. Paterson, R. Mirandola: "Quantitative verification with adaptive uncertainty reduction". *Journal of Systems and Software, Elsevier* 188: 111275 (2022)  
[doi: <https://doi.org/10.1016/j.jss.2022.111275>]
- JR.3. Andersson, J., Grassi, V., Mirandola, R., Perez-Palacin D. "A conceptual framework for resilience: fundamental definitions, strategies and metrics." *Computing* 103(4): 559-588 (2021)  
[doi: <https://doi.org/10.1007/s00607-020-00874-x>]
- JR.4. S. Mahdavi-Hezavehi, D. Weyns, P. Avgeriou, R. Calinescu, R. Mirandola, D. Perez-Palacin "Uncertainty in Self-Adaptive Systems: A Research Community Perspective." *ACM Transactions on Adaptive and Autonomous Systems*, 15(4): 10:1-10:36 (2020)  
[doi: <https://dl.acm.org/doi/10.1145/3487921>]
- JR.5. M. D'Angelo, M. Caporuscio, V. Grassi, R. Mirandola "Decentralized Learning for Self-Adaptive QoS-Aware Service Assembly" *Future Generation Computer Systems, Elsevier*, 108: 210-227 (2020)  
[doi: <https://doi.org/10.1016/j.future.2020.02.027>]
- JR.6. P. Arcaini, R. Mirandola, E. Riccobene, P. Scandurra "MSL: a pattern language for engineering self-adaptive systems" *Journal of Systems and Software, Elsevier*, 164: 110558 (2020)  
[doi: <https://doi.org/10.1016/j.jss.2020.110558>]
- JR.7. M. Amiri, L. Mohammad-Khanlia, R. Mirandola "A new efficient approach for extracting the closed episodes for workload prediction in cloud" *Computing Journal, Springer*, 102(1): 141-200 (2020)  
[doi: <https://doi.org/10.1007/s00607-019-00734-3>]
- JR.8. L. Pagliari, R. Mirandola, C. Trubiani "Engineering Cyber-Physical Systems through Performance-based Modelling and Analysis: A Case Study Experience Report" *Journal of Software: Evolution and Process, Wiley*, 32(1) (2020)  
[doi: <https://doi.org/10.1002/smr.2179>]
- JR.9. I. Cavrak and I. Bosnic and F. Ciccozzi and R. Mirandola "Resilience of distributed student teams to stress factors: A longitudinal case-study" *Information and Software Technology*, Available on line (May 2019)  
[doi: <https://doi.org/10.1016/j.infsof.2019.05.011>]
- JR.10. I. Bosnic and F. Ciccozzi and I. Crnkovic and I. Cavrak and E. Di Nitto and R. Mirandola and M. Zagar "Managing Diversity in Distributed Software Development Education - A Longitudinal Case Study" *ACM Transactions on Computing Education*, Volume 19 (2), 10:1-10:23, (2019)  
[doi: <https://doi.org/10.1145/3218310>]
- JR.11. M. Amiri, L. Mohammad-Khanlia, R. Mirandola "An online learning model based on episode mining for workload prediction in cloud" *Future Generation Computer Systems, Elsevier*, Volume 87: 83-101 (2018)  
[doi: <https://doi.org/10.1016/j.future.2018.04.044>]
- JR.12. M. Amiri, L. Mohammad-Khanlia, R. Mirandola "A sequential pattern mining model for application workload prediction in cloud environment" *Journal of Network and Computer Applications, Elsevier*, Volume 105: 21-62 (2018)  
[doi: <https://doi.org/10.1016/j.jnca.2017.12.015>]

- JR.13. M. García-Valls and D. Perez-Palacin and R. Mirandola "Pragmatic cyber physical systems design based on parametric models" *Journal of Systems and Software, Elsevier* Volume 144, pp. 559-572, (2018)  
[doi: <https://doi.org/10.1016/j.jss.2018.06.044>]
- JR.14. M.Caporuscio, C. Trubiani R. Mirandola "Building design-time and run-time knowledge for QoS-based component assembly" *Software: Practice and Experience, Wiley* Volume 47(12): 1905-1922 (2017)  
[doi: <https://doi.org/10.1002/spe.2502>]
- JR.15. D. Perez Palacin, R. Mirandola, J. Meseguer "Accurate modeling and efficient QoS analysis of scalable adaptive systems under bursty workload" *Journal of Systems and Software, Elsevier* Volume 130, (August 2017), pp. 24-41  
[doi: <https://doi.org/10.1016/j.jss.2017.05.022>]
- JR.16. M.Caporuscio, V. Grassi, M. Marzolla, R. Mirandola "GoPrime: a Fully Decentralized Middleware for Utility-Aware Service Assembly" *IEEE Transactions on Software Engineering* vol. 42, n.2, pp136–152, 2016  
[doi: <http://dx.doi.org/10.1109/TSE.2015.2476797>]
- JR.17. V. Cortellessa, R. Mirandola, P. Potena "Managing the evolution of a software architecture at minimal cost under performance and reliability constraints" *Science of Computer Programming, Elsevier* Volume 98, pp 439-463, 2015  
[doi: <http://dx.doi.org/10.1016/j.scico.2014.06.001>]
- JR.18. S. Distefano, C. Ghezzi, S. Guinea, R. Mirandola "Dependability Assessment of Web Service Orchestrations" *IEEE Transactions on Reliability* Volume 63,n.3, pp 689-705, 2014  
[doi: <http://dx.doi.org/10.1109/TR.2014.2315939>]
- JR.19. R. Mirandola, P. Potena, E. Riccobene, P. Scandurra "A reliability model for Service Component Architectures" *Journal of Systems and Software, Elsevier* Volume 89, 2014, pp. 109-127  
[doi: <http://dx.doi.org/10.1016/j.jss.2013.11.002>]
- JR.20. A. Ciancone, A. Filieri, R. Mirandola "Testing operational transformations in model-driven engineering" *Innovations in Systems and Software Engineering, Springer* Volume 10, n.1, pp. 19-32, 2014  
[doi: <http://dx.doi.org/10.1007/s11334-013-0208-9>]
- JR.21. A. Ciancone, A. Filieri, M. L. Drago, V. Grassi, H. Koziolk, R, Mirandola "The KlaperSuite Framework for Model-Driven Reliability Analysis of Component-Based Systems" *Software and System Modeling, Springer* Volume 13, n.4, pp. 1269-1290, 2014  
[doi: <http://dx.doi.org/10.1007/s10270-013-0334-8>]
- JR.22. R. Mirandola, P. Potena, P. Scandurra "Adaptation Space Exploration for Service-oriented Applications" *Science of Computer Programming, Elsevier* Volume 80, Part B ( 2014) pp. 356-384  
[doi: <http://dx.doi.org/10.1016/j.scico.2013.09.017>]
- JR.23. D. Perez Palacin, R. Mirandola, J. Meseguer "On the Relationships between QoS and Software Adaptability at the Architectural Level" *Journal of Systems and Software, Elsevier* Volume 87, no. 1 (2014), pp.1-17  
[doi: <http://dx.doi.org/10.1016/j.jss.2013.07.053>]
- JR.24. M. Marzolla, R. Mirandola "Dynamic Power Management for QoS-Aware Applications" *Sustainable Computing, Informatics and Systems, Elsevier* Volume 3, no. 4, (December 2013) pp. 231-248  
[doi: <http://dx.doi.org/10.1016/j.suscom.2013.02.001>]
- JR.25. A. Koziolk, D. Ardagna, R. Mirandola "Hybrid Multi-Attribute QoS Optimization in Component Based Software Systems" *Journal of Systems and Software, Elsevier* Volume 86, no. 10 (2013), pp.2542-2558  
[doi: <http://dx.doi.org/10.1016/j.jss.2013.03.081>]
- JR.26. R. Calinescu, C. Ghezzi, M. Kwiatkowska, R. Mirandola "Self-adaptive software needs quantitative verification at runtime" *Communications of ACM* Volume 55, no. 9 (2012), pp. 69-77  
[doi: <http://dx.doi.org/10.1145/2330667.2330686>]
- JR.27. D. Perez Palacin, R. Mirandola, J. Meseguer "QoS and energy management with Petri nets: a self-adaptive framework" *Journal of Systems and Software, Elsevier* Volume 85, no. 12 (2012), pp.2796-2811  
[doi: <http://dx.doi.org/10.1016/j.jss.2012.04.077>]
- JR.28. M. L. Drago, C. Ghezzi, R, Mirandola "A Quality Driven Extension to the QVT-Relations Transformation Language" *Computer Science - Research and Development, Springer* Volume 27, no. 2, (2012)  
[doi: <http://dx.doi.org/10.1007/s00450-011-0202-0>]
- JR.29. V. Cardellini, E. Casalicchio, V. Grassi, S. Iannucci, F. Lo Presti, R. Mirandola "MOSES: a Framework for QoS Driven Runtime Adaptation of Service-oriented Systems" *IEEE Transactions on Software Engineering* Volume 38, no.5 (2012) pp. 1138-1159  
[doi: <http://dx.doi.org/10.1109/TSE.2011.68>]

- JR.30. R. Calinescu, L. Grunske, M. Kwiatkowska, R. Mirandola, and G. Tamburrelli "Dynamic QoS Management and Optimisation in Service-Based Systems" *IEEE Transactions on Software Engineering* Volume 37, no.3 (2011) pp. 377-409 [doi: <http://dx.doi.org/10.1109/TSE.2010.92>]
- JR.31. D. Ardagna, R. Mirandola "Per-flow optimal service selection for Web services based processes" *Journal of Systems and Software, Elsevier* Volume 83, no. 8 (2010), pp. 1512-1523 [doi: <http://dx.doi.org/10.1016/j.jss.2010.03.045>]
- JR.32. A. Bertolino, E. Marchetti, R. Mirandola "Performance Measures for Supporting Project Manager Decision" *Software Process Improvement and Practice Journal, Wiley* Volume 12, no. 2 (2007), pp. 528-558 [doi: <http://dx.doi.org/10.1002/spip.312>]
- JR.33. V. Grassi, R. Mirandola, A. Sabetta "Filling the Gap Between Design and Performance/Reliability Models of Component-Based Systems: A Model-Driven Approach" *Journal of Systems and Software, Elsevier* Volume 80, no. 4 (2007), pp. 1512-1523 [doi: <http://dx.doi.org/10.1016/j.jss.2006.07.023>]
- JR.34. V. Grassi, R. Mirandola "Derivation of Markov Models for Effectiveness Analysis of Adaptable Software Architectures for Mobile Computing" *IEEE Transaction on Mobile Computing* Volume 2, no. 2 (2003), pp. 114-131 [doi: <http://dx.doi.org/10.1109/TMC.2003.1217232>]
- JR.35. Bertolino A., G.Lombardi, E.Marchetti, R. Mirandola, E. Peciola "A Reported Experience: Statistical Control of an Industrial Test Process" *IEE-Proceedings on Software* Volume 149, no. 4 (2002), pp. 98-101
- JR.36. Cortellessa V., Mirandola R. "PRIMA-UML: a Performance Validation Incremental Methodology on Early UML Diagrams" *Science of Computer Programming, Elsevier* Volume 44, no. 1 (2002), pp. 101-129 [doi: [http://dx.doi.org/10.1016/S0167-6423\(02\)00033-3](http://dx.doi.org/10.1016/S0167-6423(02)00033-3)]
- JR.37. Cortellessa V., Iazeolla G., Mirandola R. "Early Generation of Performance Models for Object-Oriented Systems" *IEE-Proceedings on Software* Volume 147, no. 3 (2000), pp. 61-72
- JR.38. A. Bertolino, R. Mirandola, E. Peciola "A Case Study in Branch Testing Automation" *Journal of Systems and Software, Elsevier* Volume 38, no. 1 (1997), pp.47-59 [doi: [http://dx.doi.org/10.1016/S0164-1212\(97\)00061-7](http://dx.doi.org/10.1016/S0164-1212(97)00061-7)]
- JR.39. R. Mirandola, D. Hollinger "A New Approach to Performance Modelling of Client/Server Distributed Data Base Architectures" *Performance Evaluation, Elsevier* Volume 29, no. 4 (1997), pp.255-272 [doi: [http://dx.doi.org/10.1016/S0166-5316\(96\)00047-8](http://dx.doi.org/10.1016/S0166-5316(96)00047-8)]

#### REFEREED ONLINE INTERNATIONAL JOURNALS

- OJ.1. M. Marzolla, R. Mirandola "PARSY: Performance-Aware Reconfiguration of Software Systems" *International Journal of Performability Engineering, RAMS Consultants* Volume 7, no. 5 (2011) pp. 479-492, ISSN 0973-1318
- OJ.2. R. Mirandola, P. Potena, "A QoS-based framework for the adaptation of service-based systems," *Scalable Computing: Practice and Experience* Volume 12, no. 1, (2011), ISSN 1895-1767
- OJ.3. Basanieri, F. Bertolino A., Marchetti E., Mirandola R. "UML-based Performance Analysis Techniques Applied to Software Multiprojects Management" *International Journal of Computer and Information Science (IJCIS)* Volume 4, no. 1 (2003), pp. 1-13
- OJ.4. A. Bertolino, R. Mirandola, "Modeling and Analysis of Non-functional Properties in Component-based Systems," *Electronic Notes in Theoretical Computer Science, Elsevier* Volume 82, no. 6, (2003), pp. 158-168, [doi: [http://dx.doi.org/10.1016/S1571-0661\(04\)81034-X](http://dx.doi.org/10.1016/S1571-0661(04)81034-X)]

#### REFEREED INTERNATIONAL MAGAZINES

- MAG.1. A. Bertolino A., E.Marchetti, R. Mirandola "Decision support for Personnel and Resources Management in Multi-project environments" *ERCIM news* Volume 56, no. 1 (2004)
- MAG.2. A. Bertolino, M. Marré, R. Mirandola "The number of tests required for branch coverage" *Cross Talk* Volume 9, no. 9, (1996)

#### EDITORIAL CONTRIBUTIONS

- ED.1. S. Biffi and E. Navarro and W. Löwe and M. Sirjani and R. Mirandola and D. Weyns *ECSCA 2021 15th European Conference on Software Architecture*, Springer, LNCS 12857, 2021, ISBN 978-3-030-86043-1 [doi: <https://doi.org/10.1007/978-3-030-86044-8>]

- ED.2. R. Heinrich and R. Mirandola and D. Weyns *ECSA 2021 15th European Conference on Software Architecture: Companion Volume*, CEUR Proceedings, volume 2978,  
[<http://ceur-ws.org/Vol-2978>]
- ED.3. R. de Lemos and I. Nunes and R. Mirandola *SEAMS 2021: Proceedings of International Symposium on Software Engineering for Adaptive and Self-Managing Systems*, IEEE 2021  
[doi: [10.1109/SEAMS51251.2021.00005](https://doi.org/10.1109/SEAMS51251.2021.00005)]
- ED.4. J. Pérez, R. Mirandola, H. Chen: *Proceedings of the 12th European Conference on Software Architecture: Companion Proceedings, ECSA 2018*, ACM, isbn 978-1-4503-6483-6
- ED.5. D. Weyns, R. Mirandola, I. Crnkovic "Introduction to the special issue on New frontiers in software architecture" *Journal of System and Software, Elsevier* Volume 130: 57-58 (2017)  
[doi: <http://dx.doi.org/10.1007/978-3-319-23727-5>]
- ED.6. D. Weyns, R. Mirandola, I. Crnkovic "Proceedings of 9th European Software Architecture Conference - ECSA 2015" *Lecture Notes on Computer Science, Springer LNCS 9278*, Springer 2015, ISBN 978-3-319-23726-8  
[doi: <http://dx.doi.org/10.1007/978-3-319-23727-5>]
- ED.7. D. J. Lilja, R. Mirandola, "Introduction to the theme issue on performance modeling," *Journal of Software and Systems Modeling, Springer* Volume 12, no. 4, (2013), pp. 679-680  
[doi: <http://dx.doi.org/10.1007/s10270-012-0269-5>]
- ED.8. V. Grassi, R. Mirandola, N. Medvidovic, M. Larsson "Proceedings of the 15th ACM SIGSOFT Symposium on Component Based Software Engineering, CBSE 2012" *Comparch '12 Federated Events on Component-Based Software Engineering and Software Architecture* ACM 2012, ISBN 978-1-4503-1345-2
- ED.9. V. Grassi, R. Mirandola, J. Cuellar, J. Lopez "Proceedings of the 3rd international ACM SIGSOFT symposium on Architecting Critical Systems, ISARCS 2012" *Comparch '12 Federated Events on Component-Based Software Engineering and Software Architecture* ACM 2012, ISBN 978-1-4503-1347-6
- ED.10. V. Grassi, R. Mirandola, B. Buhnova, A. Vallecillo "Proceedings of the 8th international ACM SIGSOFT conference on Quality of Software Architectures, QoSA 2012" *Comparch '12 Federated Events on Component-Based Software Engineering and Software Architecture* ACM 2012, ISBN 978-1-4503-1346-9
- ED.11. S. Kounev, V. Cortellessa, R. Mirandola, D. J. Lilja " ICPE'11 - Second Joint WOSP/SIPEW International Conference on Performance Engineering" ACM 2011, ISBN 978-1-4503-0519-8
- ED.12. Geri Georg, Janyvind Agedal, Raffaella Mirandola, Ileana Ober, Dorina C. Petriu, Wolfgang Theilmann, Jon Whittle, Steffen Zschaler " Workshop on Models for Non-functional Properties of Component-Based Software - NfC, MoDELS Satellite Events 2005" LNCS 3844 Springer: 210-216  
[doi: [http://dx.doi.org/10.1007/11663430\\_22](http://dx.doi.org/10.1007/11663430_22)]

## REFEREED CHAPTERS IN INTERNATIONAL BOOKS

- IB.1. S. Bernardi and M. Famelis and J.-M. Jézéquel, and R. Mirandola and D. Perez Palacin and F. A. C. Polack and C. Trubiani *Living with Uncertainty in Model-Based Development* in *Composing Model-Based Analysis Tools*, Springer 2021, ISBN: 978-3-030-81915-6  
[doi: [https://doi.org/10.1007/978-3-030-81915-6\\_8](https://doi.org/10.1007/978-3-030-81915-6_8)]
- IB.2. R. de Lemos and D. Garlan and C. Ghezzi and H. Giese and J. Andersson and M. Litoiu and B. R. Schmerl and D. Weyns and L. Baresi and N. Bencomo and Y. Brun and J. Cámara and R. Calinescu and M. B. Cohen and A. Gorla and V. Grassi and L. Grunske and P. Inverardi and J. Jézéquel and S. Malek and R. Mirandola and M. Mori and H. A. Müller and R. Rouvoy and C. M. F. Rubira and É. Rutten and M. Shaw and G. Tamburrelli and G. Tamura and N. M. Villegas and T. Vogel and F. Zambonelli *Software Engineering for Self-Adaptive Systems: Research Challenges in the Provision of Assurances*, SefSAS III, LNCS 9640, pp 0-30, Springer 2017, ISBN 978-3-319-74182-6  
[doi: [https://doi.org/10.1007/978-3-319-74183-3\\_1](https://doi.org/10.1007/978-3-319-74183-3_1)]
- IB.3. D. Weyns, N. Bencomo, R. Calinescu, J. Cámara, C. Ghezzi, V. Grassi, L. Grunske, P. Inverardi, J. Jézéquel, S. Malek, R. Mirandola, M. Mori, G. Tamburrelli *Perpetual Assurances for Self-Adaptive Systems*, SefSAS III, LNCS 9640, pp 31-63, Springer 2017, ISBN 978-3-319-74182-6  
[doi: [https://doi.org/10.1007/978-3-319-74183-3\\_2](https://doi.org/10.1007/978-3-319-74183-3_2)]
- IB.4. V. Cardellini, E. Casalicchio, V. Grassi, S. Iannucci, F. Lo Presti and R. Mirandola *MOSES: a platform for experimenting QoS-driven self-adaptation policies for service oriented systems*, SefSAS III, LNCS 9640, pp 409-433, Springer 2017, ISBN 978-3-319-74182-6  
[doi: [https://doi.org/10.1007/978-3-319-74183-3\\_14](https://doi.org/10.1007/978-3-319-74183-3_14)]

- IB.5. R. Mirandola, P. Potena, E. Riccobene, P. Scandurra "Formal Reliability Models for Web Services" in *Correct Software in Web Applications and Web Services*, pp. 229-256 Springer 2015, ISBN 978-3-319-17111-1  
[doi: [http://dx.doi.org/10.1007/978-3-319-17112-8\\_7](http://dx.doi.org/10.1007/978-3-319-17112-8_7)]
- IB.6. R. de Lemos and H. Giese and H. A. Müller and M. Shaw and J. Andersson and M. Litoiu and B. R. Schmerl and G. Tamura and N. M. Villegas and T. Vogel and D. Weyns and L. Baresi and B. Becker and Y. Brun and B. Cukic and R. J. Desmarais and S. Dustdar and G. Engels and K. Geihs and K. M. Göschka and A. Gorla and V. Grassi and P. Inverardi and G. Karsai and J. Kramer and A. Lopes and J. Magee and S. Malek and S. Mankovski and R. Mirandola and J. Mylopoulos and O. Nierstrasz and M. Pezzè and C. Prehofer and W. Schäfer and R. D. Schlichting and D. B. Smith and J. P. Sousa and L. Tahvildari and K. Wong and J. Wuttke "Software engineering for self-adaptive systems: A second research roadmap," in *Self-Adaptive Systems, Software Engineering for Self-Adaptive Systems, SefSAS II*, LNCS 7475, Springer 2012 pp. 1-32  
[doi: [http://dx.doi.org/10.1007/978-3-642-35813-5\\_1](http://dx.doi.org/10.1007/978-3-642-35813-5_1)]
- IB.7. D. Weyns, B. Schmerl, V. Grassi, S. Malek, R. Mirandola, C. Prehofer, J. Wuttke, J. Andersson, H. Giese, and K. Goschka "On Patterns for Decentralized Control in Self-Adaptive Systems" in *Self-Adaptive Systems, Software Engineering for Self-Adaptive Systems, SefSAS II*, LNCS 7475, Springer 2012 pp. 76-107  
[doi: [http://dx.doi.org/10.1007/978-3-642-35813-5\\_4](http://dx.doi.org/10.1007/978-3-642-35813-5_4)]
- IB.8. A. Filieri, C. Ghezzi, R. Mirandola, and G. Tamburrelli "Conquering Complexity via Seamless Integration of Design-Time and Run-Time Verification" in *Conquering complexity*, Springer 2012 pp. 253-275  
[doi: [http://dx.doi.org/10.1007/978-1-4471-2297-5\\_12](http://dx.doi.org/10.1007/978-1-4471-2297-5_12)]
- IB.9. D. Barbagallo, E. Di Nitto, D. J. Dubois, R. Mirandola "A bio-inspired algorithm for energy optimization in a self-organizing data center" in *Self-Organizing Architectures*, Springer 2010, LNCS 6090, pp. 101-126  
[doi: [http://dx.doi.org/10.1007/978-3-642-14412-7\\_7](http://dx.doi.org/10.1007/978-3-642-14412-7_7)]
- IB.10. V. Cardellini, E. Casalicchio, V. Grassi, F. Lo Presti, R. Mirandola "Towards Self-adaptation for Dependable Service-Oriented Systems" in *Architecting Dependable Systems VI*, LNCS 5835, Springer 2009, pp 24-48  
[doi: [http://dx.doi.org/10.1007/978-3-642-10248-6\\_2](http://dx.doi.org/10.1007/978-3-642-10248-6_2)]
- IB.11. B.H. C. Cheng and R. de Lemos and H. Giese and P. Inverardi and J. Magee and J. Andersson and B. Becker and N. Bencomo and Y. Brun and B. Cukic and G. Di Marzo Serugendo and S. Dustdar and A. Finkelstein and C. Gacek and K. Geihs and V. Grassi and G. Karsai and H. M. Kienle and J. Kramer and M. Litoiu and S. Malek and R. Mirandola and H. A. Müller and S. Park and M. Shaw and M. Tichy and M. Tivoli and D. Weyns and J. Whittle "Software Engineering for Self-Adaptive Systems: A Research Roadmap" in *Software Engineering for Self-Adaptive Systems*, LNCS 5525, Springer 2009 pp. 1-26  
[doi: [http://dx.doi.org/10.1007/978-3-642-02161-9\\_1](http://dx.doi.org/10.1007/978-3-642-02161-9_1)]
- IB.12. V. Grassi, R. Mirandola, E. Randazzo "Model-Driven Assessment of QoS-Aware Self-Adaptation" in *Software Engineering for Self-Adaptive Systems*, LNCS 5525, Springer 2009 pp. 201-222  
[doi: [http://dx.doi.org/10.1007/978-3-642-02161-9\\_11](http://dx.doi.org/10.1007/978-3-642-02161-9_11)]
- IB.13. V. Grassi, R. Mirandola, E. Randazzo, A. Sabetta "KLAPER: an Intermediate Language for Model-Driven Predictive Analysis of Performance and Reliability" in *The Common Component Modeling Example: Comparing Software Component Models*, LNCS 5153, Springer 2008 pp. 327-356  
[doi: [http://dx.doi.org/10.1007/978-3-540-85289-6\\_13](http://dx.doi.org/10.1007/978-3-540-85289-6_13)]
- IB.14. R. Mirandola, F. Plasil "CoCoTA: Common Component Task" in *The Common Component Modeling Example: Comparing Software Component Models*, LNCS 5153, Springer 2008 pp. 4-15  
[doi: [http://dx.doi.org/10.1007/978-3-540-85289-6\\_2](http://dx.doi.org/10.1007/978-3-540-85289-6_2)]
- IB.15. S. Becker, L. Grunske, R. Mirandola and S. Overhage "Performance Prediction of Component-Based Systems: A Survey from an Engineering Perspective" in *Architecting Systems with Trustworthy Components*, LNCS 3938, Springer 2006 pp. 169-192  
[doi: [http://dx.doi.org/10.1007/11786160\\_10](http://dx.doi.org/10.1007/11786160_10)]
- IB.16. G. Iazeolla A. D' Ambrogio, R. Mirandola "Software Performance Validation Strategies" in *System Performance Evaluation, Methodologies and Applications*, CRC Press, 2000
- IB.17. M. Conti, Mirandola R. "Hierarchical Performance Modelling of Computer Communication Systems" in *State of the art in Performance modelling and simulation - Modeling and simulation of computer and communication networks: techniques, tools and tutorials*, Gordon and Breach Publisher inc, Amst, New Jersey, USA 1997

## REFEREED INTERNATIONAL CONFERENCES

- IC.1. M. Camilli, R. Mirandola, P. Scandurra XSA: eXplainable Self-Adaptation *Proceedings of the The 37th IEEE/ACM International Conference on Automated Software Engineering.*, ASE 2022- to appear



- IC.2. M. Camilli, R. Mirandola, P. Scandurra Taming Model Uncertainty in Self-adaptive Systems Using Bayesian Model Averaging. *Proceedings of the International Symposium on Software Engineering for Adaptive and Self-Managing Systems*, SEAMS 2022: 25-35  
[online:<https://ieeexplore.ieee.org/document/9800082>]
- IC.3. M. Camilli, R. Mirandola, P. Scandurra Runtime Equilibrium Verification for Resilient Cyber-Physical Systems *Proceedings of the 2nd IEEE International Conference on Autonomic Computing and Self-Organizing Systems*, ACSOS: 71-80  
[doi: <https://doi.org/10.1109/ACSOS52086.2021.00025>]
- IC.4. V. Grassi, R. Mirandola The Tao way to anti-fragile software architectures: the case of mobile applications. *Proceedings of the 18th International Conference on Software Architecture*, ICSA Companion 2021: 86-89  
[doi: <https://doi.org/10.1109/ICSA-C52384.2021.00021>]
- IC.5. R. Calinescu, R. Mirandola, D. Perez-Palacin and D. Weyns "Understanding Uncertainty in Self-adaptive Systems" *1st IEEE International Conference on Autonomic Computing and Self-Organizing Systems* (ACSOS 2020): 242-251 (Best paper candidate)  
[doi: <https://doi.org/10.1109/ACSOS49614.2020.00047>]
- IC.6. M. Caporuscio, M. D'Angelo, V. Grassi and R. Mirandola "Decentralized Architecture for Energy-aware Service Assembly" *Proceedings of the 14th European Conference on Software Architecture*(ECSA 2020),LNCS 12292, 57-72, Springer 2020 (Best paper)  
[doi: [https://doi.org/10.1007/978-3-030-58923-3\\_4](https://doi.org/10.1007/978-3-030-58923-3_4)]
- IC.7. P. Arcaini, R. Mirandola, E. Riccobene, P. Scandurra, A. Arrigoni, D. Bosc, F. Modica, R. Pedercini: "Smart home platform supporting decentralized adaptive automation control." *Proceedings of the 35th ACM/SIGAPP Symposium on Applied Computing* 1893-1900  
[doi: <https://doi.org/10.1145/3341105.3373925>]
- IC.8. R. Mirandola, E. Riccobene, P. Scandurra "Self-accounting in architecture-based self-adaptation" *ACM Proceedings of ECSA Companion 2019*, 14-17.  
[doi: <https://doi.org/10.1145/3344948.3344957>]
- IC.9. M. Marzolla, R. Mirandola "Gender Balance in Computer Science and Engineering in Italian Universities" *ACM Proceedings of ECSA Women on Software Engineering Track, 2019*, 82-87  
[doi: <https://doi.org/10.1145/3344948.3344966>]
- IC.10. P. Arcaini, R. Mirandola, E. Riccobene, P. Scandurra "A Pattern-Oriented Design Framework for Self-Adaptive Software Systems." *IEEE Proceedings of ICSA Companion 2019*, IEEE, 166-169.  
[doi: <https://doi.org/10.1109/ICSA-C.2019.00037>]
- IC.11. P. Arcaini, R. Mirandola, E. Riccobene, P. Scandurra "A DSL for MAPE Patterns Representation in Self-adapting Systems." *Proceedings of the 12th European Conference on Software Architecture*(ECSA 2018), LNCS 11048, Springer, 2018: 3-19  
[doi: [https://doi.org/10.1007/978-3-030-00761-4\\_1](https://doi.org/10.1007/978-3-030-00761-4_1)]
- IC.12. D. A. Tamburri, M. M. Bersani, R. Mirandola, G. Pea "DevOps Service Observability By-Design: Experimenting with Model-View-Controller." *ESOCC 2018*, LNCS 11116, 49-64 (Springer 2018)  
[doi: [https://doi.org/10.1007/978-3-319-99819-0\\_4](https://doi.org/10.1007/978-3-319-99819-0_4)]
- IC.13. T. Bures, V. Matena, R. Mirandola, L. Pagliari and C. Trubiani "Performance Modelling of Smart Cyber-Physical Systems", *WIP, ACM ICPE 2018*, April, Berlin.  
[doi: <https://doi.org/10.1145/3185768.3186306>]
- IC.14. D. Brugali, R. Capilla, R. Mirandola, C. Trubiani "Model-based development of QoS-aware Reconfigurable Autonomous Robotic Systems" *Proceedings of the Second IEEE International Conference on Robotic Computing, 2018*, (IRC2018), 129-136  
[doi: <https://doi.org/10.1109/IRC.2018.00027>]
- IC.15. L. Pagliari, R. Mirandola, C. Trubiani: "Multi-modeling approach to performance engineering of Cyber-Physical Systems design" *22nd International Conference on Engineering of Complex Computer Systems*(ICECCS 2017)  
[doi: <https://doi.org/10.1109/ICECCS.2017.22>]
- IC.16. C. Trubiani, R. Mirandola "Continuous Rearchitecting of QoS Models: Collaborative Analysis for Uncertainty Reduction" *Proceedings of the 11th European Conference on Software Architecture*(ECSA 2017), LNCS 10475, Springer, 2017: 40-48  
[doi: [https://doi.org/10.1007/978-3-319-65831-5\\_3](https://doi.org/10.1007/978-3-319-65831-5_3)]

- IC.17. I. Cavrak, I. Bosnic, M. Zagar, F. Ciccozzi, E. Di Nitto, R. Mirandola, I. Crnkovic: "Hall of Fame Nomination Paper: Distributed Software Development Course." *Proceedings of 30th IEEE Conference on Software Engineering Education and Training ( CSEE&T )* 2017: 7-8  
[doi: <https://doi.org/10.1109/CSEET.2017.13>]
- IC.18. Z. Alexeeva, D.Perez-Palacin, R. Mirandola "A literature overview on the adoption of techniques for design decision documentation" *Proceedings of the 10th European Conference on Software Architecture(ESCA 2016)*, LNCS 9839, Springer, 2016, 84-101  
[doi: [https://doi.org/10.1007/978-3-319-48992-6\\_6](https://doi.org/10.1007/978-3-319-48992-6_6)]
- IC.19. M. Caporuscio, M. D'Angelo, V. Grassi, R. Mirandola "Reinforcement Learning Techniques for Decentralized Self-adaptive Service Assembly" *Proceedings of ES OCC 2016* , LNCS 9846, Springer, 2016, 53-68  
[doi: [https://doi.org/10.1007/978-3-319-44482-6\\_4](https://doi.org/10.1007/978-3-319-44482-6_4)]
- IC.20. L. Pagliari, R. Mirandola, D. Perez-Palacin and C. Trubiani "Energy-aware adaptive techniques for information diffusion in ungoverned peer-to peer networks" *12th International ACM SIGSOFT Conference on Quality of Software Architectures(QoSA 2016)*, IEEE, QoSA 2017: 96-105  
[doi: <http://dx.doi.org/10.1109/QoSA.2016.19>]
- IC.21. D. Perez-Palacin, R. Mirandola, F. Monterisi and A. Montoli, "QoS-driven Probabilistic Runtime Evaluations of Virtual Machine Placement on Hosts" *2015 IEEE/ACM 8th International Conference on Utility and Cloud Computing(UCC 2015)*, pp. 90-94 LNCS 9306, Springer, 2015  
[doi: <http://dx.doi.org/10.1109/UCC.2015.24>]
- IC.22. V. Cardellini, M. D'Angelo, V. Grassi, M. Marzolla R. Mirandola "A Decentralized Approach to Network-Aware Service Composition" *Proceedings of the 4th European Conference on Service Oriented and Cloud Computing(ES OCC 2015)*, pp. 34-48 LNCS 9306, Springer, 2015  
[doi: [http://dx.doi.org/10.1007/978-3-319-24072-5\\_3](http://dx.doi.org/10.1007/978-3-319-24072-5_3)]
- IC.23. R. Mirandola, D.Perez-Palacin, P. Scandurra, M. Brignoli, A. Zonca "Business Process Adaptability Metrics for QoS-Based Service Compositions" *Proceedings of the 4th European Conference on Service Oriented and Cloud Computing(ES OCC 2015)*, pp. 110-124 LNCS 9306, Springer, 2015  
[doi: [http://dx.doi.org/10.1007/978-3-319-24072-5\\_8](http://dx.doi.org/10.1007/978-3-319-24072-5_8)]
- IC.24. M. Caporuscio, R. Mirandola, C. Trubiani "QoS-based Feedback for Service Compositions" *Proceedings of the 11th International ACM SIGSOFT Conference on Quality of Software Architectures(QoSA 2015)*, pp. 37-42  
[doi: <http://dx.doi.org/10.1145/2737182.2737192>]
- IC.25. M. Garcia-Valls, D. Perez-Palacin, R. Mirandola. "Extending the verification capabilities of middleware for reliable distributed self-adaptive systems." *Proceedings of the 12th IEEE International Conference on Industrial Informatics (INDIN 2014)*, pp. 164-169  
[doi: <http://dx.doi.org/10.1109/INDIN.2014.6945502>]
- IC.26. D.Perez-Palacin, R. Mirandola, R. Calinescu "Synthesis of Adaptation Plans for Cloud Infrastructure with Hybrid Cost Models" *Proceedings of the 40th Euromicro Conference on Software Engineering and Advanced Applications(SEAA 2014)*, pp. 443-450  
[doi: <http://dx.doi.org/10.1109/SEAA.2014.57>]
- IC.27. M. Garcia-Valls, D.Perez-Palacin, R. Mirandola "Time-sensitive adaptation in CPS through run-time configuration generation and verification" *Proceedings of the 38th Annual International Computers, Software & Applications Conference (COMPSAC)*, 2014, pp. 332-337  
[doi: <http://dx.doi.org/10.1109/COMPSAC.2014.55>]
- IC.28. D.Perez-Palacin, R. Mirandola "Dealing with uncertainties in the performance modelling of software systems" *Proceedings of the 10th International ACM SIGSOFT Conference on the Quality of Software Architectures (QoSA)*, 2014, pp. 33-42  
[doi: <http://dx.doi.org/10.1145/2602576.2602582>]
- IC.29. D.Perez-Palacin, R. Mirandola "Uncertainties in the modeling of self-adaptive systems: a taxonomy and an example of availability evaluation", *Proc. ACM Int. Conf. on Performance Engineering (ICPE 2014)*, pp. 3-14  
[doi: <http://dx.doi.org/10.1145/2568088.2568095>]
- IC.30. V. Cortellessa, F. Marinelli, R. Mirandola. P. Potena "Quantifying the influence of failure repair/mitigation costs on Service-Based Systems" *Proc. IEEE Int. Symposium. on Reliability Engineering (ISSRE)*, 2013  
[doi: <http://dx.doi.org/10.1109/ISSRE.2013.6698908>]
- IC.31. S. Becker, L. Happe, R. Mirandola and C. Trubiani "Towards a Methodology Driven by Dependencies of Quality Attributes for QoS-based Analysis" *Proc. ACM Int. Conf. on Performance Engineering (ICPE) 2013*, pp 311-341  
[doi: <http://dx.doi.org/10.1145/2479871.2479914>]

- IC.32. V. Grassi, M. Marzolla and R. Mirandola "QoS-Aware Fully Decentralized Service Assembly" *Proc. IEEE/ACM 8th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS)* 2013, pp 53-62, ISBN: 978-1-4673-4401-2
- IC.33. C. Bartolini, A. Bertolino, G. De Angelis, A. Ciancone, and R. Mirandola "Apprehensive QoS Monitoring of Service Choreographies" *Proc. of the 28th Annual ACM Symposium on Applied Computing (SAC)*, ACM 2013, pp. 1893-1899 [doi: <http://dx.doi.org/10.1145/2480362.2480713>]
- IC.34. R. Mirandola, P. Potena, P. Scandurra "A Reliability Prediction Method for Abstract State Machines" *Abstract State Machines, Alloy, B, VDM, and Z - Third International Conference (ABZ)* 2012, LNCS 7316, pp. 336-340 [doi: [http://dx.doi.org/10.1007/978-3-642-30885-7\\_26](http://dx.doi.org/10.1007/978-3-642-30885-7_26)]
- IC.35. R. Mirandola, C. Trubiani "A deep investigation for QoS-based Feedback at Design time and Runtime" *Proc. of 17th IEEE International Conference on Engineering of Complex Computer Systems (ICECCS)* 2012, pp. 147-156 [doi: <http://doi.ieeecomputersociety.org/10.1109/ICECCS.2012.3>]
- IC.36. D.Perez-Palacin, Jose<sup>o</sup> Merseguer, R. Mirandola "Analysis of Bursty Workload-aware Self-adaptive Systems", *Proc. ACM Int. Conf. on Performance Engineering (ICPE)* 2012, pp.75-84 [doi: <http://dx.doi.org/10.1145/2188286.2188300>]
- IC.37. C. Bartolini, A. Bertolino, A. Ciancone G. De Angelis, R. Mirandola "Quality requirements for service choreographies" *Proceedings of the 8th International Conference on Web Information Systems and Technologies (WEBIST)* 2012, pp.143-148, SciTePress 2012 ISBN 978-989-8565-08-2
- IC.38. P. Scandurra, C. Raibulet, P. Potena, R. Mirandola, R. Capilla "Adapting Cloud-Based Applications Trough A Coordinated And Optimized Resource Allocation Approach" *Proceedings of the 2nd International Conference on Cloud Computing and Services Science (CLOSER)* 2012, pp. 355-364, SciTePress 2012 IISBN 978-989-8565-05-1
- IC.39. M. Marzolla, R. Mirandola "A Framework For Qos-Aware Execution Of Workflows Over The Cloud" *Proceedings of the 2nd International Conference on Cloud Computing and Services Science (CLOSER)* 2012, pp. 216-221, SciTePress 2012 IISBN 978-989-8565-05-1
- IC.40. G. Lulli, R. Mirandola, P. Potena, C. Raibulet "Resource Management in the Air Traffic Domain" *5th European Conference on Software Architecture (ECSA)* 2011, LNCS 6903, pp. 97-104 [doi: [http://dx.doi.org/10.1007/978-3-642-23798-0\\_10](http://dx.doi.org/10.1007/978-3-642-23798-0_10)]
- IC.41. M. L. Drago, C. Ghezzi, R. Mirandola "Towards Quality Driven Exploration of Model Transformation Spaces" *14th International Conference on Model Driven Engineering Languages and Systems (MoDELS)* 2011, LNCS 6981, pp. 2-16 [doi: [http://dx.doi.org/10.1007/978-3-642-24485-8\\_2](http://dx.doi.org/10.1007/978-3-642-24485-8_2)]
- IC.42. R. Mirandola, P. Potena and P. Scandurra "An Optimization Process for Adaptation Space Exploration of Service-oriented Applications" *IEEE 6th International Symposium on Service Oriented System Engineering (SOSE)* 2011, pp. 146-151 [doi: <http://dx.doi.org/10.1109/SOSE.2011.6139103>]
- IC.43. H. Koziulek, B. Schlich, C. Bilich, R. Weiss, S. Becker, K. Krogmann, M. Trifu, R. Mirandola, and A. Martens "An Industrial Case Study on Quality Impact Prediction for Evolving Service-Oriented Software" *IEEE/ACM International Conference on Software Engineering (ICSE) Software Engineering in Practice Track*, 2011, pp. 776-785 [doi: <http://dx.doi.org/10.1145/1985793.1985902>]
- IC.44. A. Ciancone, M. L. Drago, A. Filieri, V. Grassi and R. Mirandola "KlaperSuite: an Integrated Model-Driven Environment for Non-Functional Requirements Analysis of Component-Based Systems" *Proc. of the 49th International Conference on Objects, Models, Components, Patterns (TOOLS)* 2011, pp. 99-114 [doi: [http://dx.doi.org/10.1007/978-3-642-21952-8\\_9](http://dx.doi.org/10.1007/978-3-642-21952-8_9)]
- IC.45. S. Distefano, A. Filieri, C. Ghezzi, R. Mirandola "A compositional method for reliability analysis of workflows affected by multiple failure modes" *Proceedings of the 14th International ACM Sigsoft Symposium on Component Based Software Engineering (CBSE)* 2011, pp. 149-158 [doi: <http://dx.doi.org/10.1145/2000229.2000251>]
- IC.46. D. Perez-Paacin, R. Mirandola, J. Merseguer "Enhancing a QoS-based Self-adaptive Framework with Energy Management Capabilities" *Proceedings of the 7th International Conference on the Quality of Software Architectures (QoSA)* 2011, pp. 165-170 [doi: <http://dx.doi.org/10.1145/2000259.2000288>]
- IC.47. D. Perez-Paacin, R. Mirandola, J. Merseguer "Software Architecture Adaptability Metrics for QoS-based self-adaptation" *Proceedings of the 7th International Conference on the Quality of Software Architectures (QoSA)* 2011, pp. 171-176 [doi: <http://dx.doi.org/10.1145/2000259.2000287>]

- IC.48. A. Filieri, C. Ghezzi, V. Grassi, R. Mirandola "Reliability Analysis of Component-Based Systems with Multiple Failure Modes" *Proceedings of the 13th International ACM Sigsoft Symposium on Component Based Software Engineering (CBSE)* 2010, LNCS 6092, pp 1-20  
[doi: [http://dx.doi.org/10.1007/978-3-642-13238-4\\_1](http://dx.doi.org/10.1007/978-3-642-13238-4_1)]
- IC.49. V. Cortellessa, R. Mirandola, P. Potena "Selecting Optimal Maintenance Plans based on Cost/Reliability Tradeoffs for Software Subject to Structural and Behavioral Changes" *Proceedings of the 14th IEEE European Conference on Software Maintenance and Reengineering (CSMR)* 2010, pp 21-30  
[doi: <http://dx.doi.org/10.1109/CSMR.2010.15>]
- IC.50. A. Ciancone, A. Filieri, R. Mirandola "MANTra: Towards Model Transformation Testing" *Proceedings of the IEEE International Conference on the Quality of Information and Communications Technology (QUATIC)* 2010, pp 97 - 105  
[doi: <http://dx.doi.org/10.1109/QUATIC.2010.15>]
- IC.51. A.Martens, D. Ardagna, H. Koziolk, R. Mirandola and R. Reussner " A Hybrid Approach for Multi-Attribute QoS Optimisation in Component-Based Software Systems" *Proceedings of the 6th International Conference on the Quality of Software Architectures (QoSA)* 2010, LNCS 6093, pp 84-101  
[doi: [http://dx.doi.org/10.1007/978-3-642-13821-8\\_8](http://dx.doi.org/10.1007/978-3-642-13821-8_8)]
- IC.52. R. Mirandola, P. Potena " Self-Adaptation of Service Based Systems Based on Cost/Quality Attributes Tradeoffs" *Proceedings of 12th IEEE International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)* 2010, pp. 493-501  
[doi: <http://dx.doi.org/10.1109/SYNASC.2010.16>]
- IC.53. V. Cardellini, E. Casalicchio, V. Grassi, F. Lo Presti, R. Mirandola " Qos-driven runtime adaptation of service oriented architectures" *Proceedings of the 7th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT International Symposium on Foundations of Software Engineering (ESEC/FSE)* 2009, pp. 131-140  
[doi: <http://dx.doi.org/10.1145/1595696.1595718>]
- IC.54. V. Cardellini, E. Casalicchio, V. Grassi, F. Lo Presti, R. Mirandola " A Scalable Approach to QoS-Aware Self-adaption in Service-Oriented Architectures" *Quality of Service in Heterogeneous Networks, 6th International ICST Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (QShine)* 2009, Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 22 Springer, pp. 431-447  
[doi: [http://dx.doi.org/10.1007/978-3-642-10625-5\\_27](http://dx.doi.org/10.1007/978-3-642-10625-5_27)]
- IC.55. I. Epifani, C. Ghezzi, R. Mirandola, G. Tamburrelli "Model evolution by run-time parameter adaptation" *31st IEEE/ACM International Conference on Software Engineering (ICSE)* 2009, pp. 111-121  
[doi: <http://dx.doi.org/10.1109/ICSE.2009.5070513>]
- IC.56. E. Di Nitto, D. J. Dubois, R. Mirandola "Overlay self-organization for traffic reduction in multi-broker publish-subscribe systems" *IEEE International Conference on Autonomic Computing (ICAC)* 2009, pp. 61-62 **Poster presentation**  
[doi: <http://dx.doi.org/10.1145/1555228.1555246>]
- IC.57. S. Gallotti, C. Ghezzi, R. Mirandola, and G. Tamburrelli " Quality Prediction of Service Compositions through Probabilistic Model Checking" *Proceedings of the 4th International Conference on the Quality of Software Architectures (QoSA)* 2008, LNCS 5281, pp 119-134  
[doi: [http://dx.doi.org/10.1007/978-3-540-87879-7\\_8](http://dx.doi.org/10.1007/978-3-540-87879-7_8)]
- IC.58. D. Ardagna, C. Ghezzi, R. Mirandola " Rethinking the use of models in software architecture" *Proceedings of the 4th International Conference on the Quality of Software Architectures (QoSA)* 2008, LNCS 5281, pp 1-27  
[doi: [http://dx.doi.org/10.1007/978-3-540-87879-7\\_1](http://dx.doi.org/10.1007/978-3-540-87879-7_1)]
- IC.59. E. Di Nitto, D. J. Dubois, R. Mirandola, F. Saffre, R. Tateson "Self-Aggregation Techniques for Load Balancing in Distributed Systems" *IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO)* 2008, pp. 489-490 **Poster presentation**  
[doi: <http://dx.doi.org/10.1109/SASO.2008.38>]
- IC.60. D. Ardagna, C. Ghezzi, R. Mirandola "Model Driven QoS Analyses of Composed Web Services" *Towards a Service-Based Internet, First European Conference (ServiceWave)* 2008, LNCS 5377, pp.299-311  
[doi: [http://dx.doi.org/10.1007/978-3-540-89897-9\\_26](http://dx.doi.org/10.1007/978-3-540-89897-9_26)]
- IC.61. E. Di Nitto, D. Dubois, R. Mirandola "Self-Aggregation Algorithms for Autonomic Systems" *Proceedings of International Conference on Bio-Inspired Models of Network, Information, and Computing Systems (BIONETICS)* 2007, pp. 114-122, ISBN: 9781424436491
- IC.62. D. Devescovi, E. Di Nitto, D. Dubois, R. Mirandola "Self Organization Algorithms for Autonomic Systems in the SelfLet Approach" *Proceedings of the 1st International Conference on Autonomic Computing and Communication Systems (Autonomics)* ACM 2007, art. 26, ISBN: 978-963-9799-09-7

- IC.63. M. Marzolla, R. Mirandola "Performance Prediction of Web Service Workflows" *Third International Conference on Quality of Software Architectures (QoSA)* 2007, LNCS 4880, pp.127-144  
[doi: [http://dx.doi.org/10.1007/978-3-540-77619-2\\_8](http://dx.doi.org/10.1007/978-3-540-77619-2_8)]
- IC.64. V. Grassi, R. Mirandola, A. Sabetta "A model-driven approach to performability analysis of dynamically reconfigurable component-based systems" *Proceedings of the 6th International Workshop on Software and Performance (WOSP)* ACM 2007, pp.103-114  
[doi: <http://dx.doi.org/10.1145/1216993.1217011>]
- IC.65. V. Grassi, R. Mirandola, A. Sabetta "A Model Transformation Approach for the Early Performance and Reliability Analysis of Component-Based Systems," *Proceedings of the 9th International Symposium on Component Based Software Engineering (CBSE)* Springer 2006, LNCS 4063, pp.270-284  
[doi: [http://dx.doi.org/10.1007/11783565\\_19](http://dx.doi.org/10.1007/11783565_19)]
- IC.66. S. Balsamo, M. Marzolla, R. Mirandola "Efficient Performance Models in Component-Based Software Engineering," *Proceedings of the IEEE Euromicro Conference on Software Engineering and Advanced Applications (EUROMICRO-SEAA)* IEEE 2006, pp.64-71  
[doi: <http://dx.doi.org/10.1109/EUROMICRO.2006.34>]
- IC.67. D. Ardagna, G. Giunta, N. Ingraffia, R. Mirandola, B. Pernici "QoS-Driven Web Services Selection in Autonomic Grid Environments" *OTM Confederated International Conferences* Springer 2006, LNCS 4276, pp.1273-1289  
[doi: [http://doi.ieeecomputersociety.org/10.1007/11914952\\_16](http://doi.ieeecomputersociety.org/10.1007/11914952_16)]
- IC.68. A. Di Marco, R. Mirandola "Model Transformation in Software Performance Engineering" *Second International Conference on Quality of Software Architectures (QoSA)* 2006, LNCS 4214, pp.95-110  
[doi: [http://dx.doi.org/10.1007/11921998\\_11](http://dx.doi.org/10.1007/11921998_11)]
- IC.69. V. Grassi, R. Mirandola, A. Sabetta "From design to analysis models: a kernel language for performance and reliability analysis of component-based systems" *Proc. of 5th ACM Workshop on Software and Performance (WOSP)* ACM 2005, pp.25-36  
[doi: <http://dx.doi.org/10.1145/1071021.1071024>]
- IC.70. A. Bertolino, G. De Angelis, R. Mirandola "UML-based design of network processor applications," *Proceedings of the IEEE Euromicro Conference on Software Engineering and Advanced Applications (EUROMICRO-SEAA)* IEEE 2006, pp.424-431  
[doi: <http://doi.ieeecomputersociety.org/10.1109/EURMIC.2005.63>]
- IC.71. V. Grassi, R. Mirandola, A. Sabetta "An XML-Based Language to Support Performance and Reliability Modeling and Analysis in Software Architectures." *First International Conference on Quality of Software Architectures (QoSA)* Springer 2005, LNCS 3712, pp.71-87  
[doi: [http://dx.doi.org/10.1007/11558569\\_7](http://dx.doi.org/10.1007/11558569_7)]
- IC.72. S. Afsharian, A. Bertolino, G. De Angelis, P. Iovanna, R. Mirandola "A Model-based approach to design applications for network processors" *Proceedings of Rapid Integration of Software Engineering Techniques, First International Workshop, RISE 2004, Luxembourg-Kirchberg, Luxembourg, November 26, 2004, Revised Selected Papers (RISE)* Springer 2004, LNCS 3475, pp. 93-101  
[doi: [http://dx.doi.org/10.1007/11423331\\_9](http://dx.doi.org/10.1007/11423331_9)]
- IC.73. V. Grassi, R. Mirandola, A. Sabetta "UML based Modeling and Performance Analysis of Mobile systems" *Proceedings of the 7th International Symposium on Modeling Analysis and Simulation of Wireless and Mobile Systems (MSWiM)* ACM 2004, pp.95-104  
[doi: <http://dx.doi.org/10.1145/1023663.1023683>]
- IC.74. V. Grassi, R. Mirandola, A. Sabetta "A UML Profile to Model Mobile systems" *"UML" 2004 - The Unified Modelling Language: Modelling Languages and Applications. 7th International Conference*, (UML) Springer 2004, LNCS 3273, pp. 128-142  
[doi: [http://dx.doi.org/10.1007/978-3-540-30187-5\\_10](http://dx.doi.org/10.1007/978-3-540-30187-5_10)]
- IC.75. Bertolino A., Mirandola R "CB-SPE tool: putting component-based Performance Engineering into practice" *Proceedings of the 7th International Symposium on Component-based Software Engineering (CBSE)* Springer 2004, LNCS 3054, pp 233-248  
[doi: [http://dx.doi.org/10.1007/978-3-540-24774-6\\_21](http://dx.doi.org/10.1007/978-3-540-24774-6_21)]
- IC.76. V. Grassi, R. Mirandola "Towards Automatic Compositional Performance Analysis of Component-based Systems" *Proc. of 4th ACM Workshop on Software and Performance (WOSP)* ACM 2004, pp.59-63  
[doi: <http://dx.doi.org/10.1145/974043.974052>]
- IC.77. Bertolino A., Mirandola R "Software Performance Engineering of Component-based systems" *Proc. of 4th ACM Workshop on Software and Performance (WOSP)* ACM 2004, pp.238-242  
[doi: <http://dx.doi.org/10.1145/974043.974081>]

- IC.78. D'Ambrogio A., G. Iazeolla, R. Mirandola "A Method for the prediction of software reliability" *Proceedings of the sixth IASTED International Conference Software Engineering and Applications (SEA) IASTED 2002*, pp.234-240
- IC.79. Cortellessa V, Grassi V. Mirandola R. "Performance Validation of mobile software architecture" *utorial PERFORMANCE 2002 IFIP WG 7.3 International Symposium on Computer Performance Modeling, Measurement and Evaluation (Performance)* Springer 2002, LNCS 2459, pp 346-373  
[doi: [http://dx.doi.org/10.1007/3-540-45798-4\\_15](http://dx.doi.org/10.1007/3-540-45798-4_15)]
- IC.80. Bertolino A., Marchetti E., Mirandola R. "Real-Time UML-based Performance Engineering to Aid Manager's Decisions in Multi-project Planning" *Proc. of 3rd ACM Workshop on Software and Performance (WOSP) ACM 2002*, pp.251-261  
[doi: <http://dx.doi.org/10.1145/584369.584410>]
- IC.81. Grassi V., Mirandola R. "PRIMAmob-UML: a methodology for performance analysis of mobile software architecture" *Proc. of 3rd ACM Workshop on Software and Performance (WOSP) ACM 2002*, pp.262-274  
[doi: <http://dx.doi.org/10.1145/584369.584411>]
- IC.82. Basanieri, F. Bertolino A., Marchetti E., Mirandola R. "Automating the management of Teams and Tasks in Software Multiprojects using UML and Queueing Networks" *Proceedings of 3rd ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD) ACIS 2002*, pp.162-174
- IC.83. Grassi V., Mirandola R. "UML Modelling and Performance Analysis of Mobile Software Architecture" *Proceedings UML 2001, the Unified Modelling Language: Modelling Languages and Applications (UML)* Springer 2001, LNCS 2185, pp.209-224  
[doi: [http://dx.doi.org/10.1007/3-540-45441-1\\_16](http://dx.doi.org/10.1007/3-540-45441-1_16)]
- IC.84. Mirandola R., Cortellessa V. "UML Based Performance Modelling of Distributed Systems" *Proceedings UML 2000, the Unified Modelling Language: Modelling Languages and Applications (UML)* Springer 2000, LNCS 1939, pp.178-193  
[doi: [http://dx.doi.org/10.1007/3-540-40011-7\\_13](http://dx.doi.org/10.1007/3-540-40011-7_13)]
- IC.85. Cortellessa V., Mirandola R. "A Methodology for Deriving a Queueing Network based Performance Model from ULM Diagrams" *Proceedings of Second ACM International Workshop on Software and Performance (WOSP) ACM 2000*, pp.58-70  
[doi: <http://dx.doi.org/10.1145/350391.350406>]
- IC.86. Lombardi G., Peciola, E., Mirandola R., Bertolino A., Marchetti E. "Towards Statistical Control of an Industrial Test Process" *Proceedings of SAFECOMP'99* Springer 2000, LNCS 1698, pp.260-271  
[doi: [http://dx.doi.org/10.1007/3-540-48249-0\\_23](http://dx.doi.org/10.1007/3-540-48249-0_23)]
- IC.87. Clo C., Mirandola R. "Exact Aggregation Technique for Queueing Networks with Blocking" *Proceedings of IASTED "Applied Modeling and Simulation* IASTED 1999, pp. 324-330
- IC.88. Iazeolla G., Mirandola R. "Analysis of two simulation methodologies in performance studies of distributed data bases" *Proceeding of European Simulation Symposium (ESS)* Society for Computer Simulation International 1995.
- IC.89. Bertolino A., Mirandola R., Peciola E. "A case Study in Branch Testing Automation" *Proceedings of IFIP International Conference on "Achieving Quality in Software" (AQUIS)* Springer, IFIP - The International Federation for Information Processing 1996, pp 369-380  
[doi: [http://dx.doi.org/10.1007/978-0-387-34869-8\\_30](http://dx.doi.org/10.1007/978-0-387-34869-8_30)]
- IC.90. Mirandola R., Iazeolla G., Bruti M "Performance Analysis of Client Server Data Bases by the Independent Modelling Approach" *Proceedings of EUROSIM 95, European Simulation Congress (ESS)* Elsevier 1995, ISBN 0-444-82241-0, pp. 517-522
- IC.91. Mirandola R., "Decomposition and aggregation technique for performance evaluation of parallel processing systems" *Proceedings of European Simulation Multiconference* Society for Computer Simulation International 1994.
- IC.92. Balsamo S., Cappuccio M., Donatiello L., Mirandola R. "Some Remarks on Hybrid Simulation Methodology" *Proceedings of the International Conference "Summer Computer Simulation Conference* Society for Computer Simulation International 1990, pp. 30-37.

## REFEREED INTERNATIONAL WORKSHOPS

- NC.1. L. Pagliari, M. D'Angelo, M. Caporuscio, R. Mirandola, C. Trubiani Performance Modelling of Intelligent Transportation Systems: Experience Report. *Companion Publication for ACM/SPEC on International Conference on Performance Engineering, ICPE 2021 Companion, ACM* : 155-160
- NC.2. J. Andersson, V. Grassi, R. Mirandola and D. Perez-Palacin "A distilled characterization of resilience and its embraced properties based on state-spaces" *Proceedings of the 11th International Workshop on Software Engineering for Resilient Systems*, LNCS 11732 2019, 11-25

- NC.3. A. Guerriero, R. Mirandola, R. Pietrantuono, S. Russo: "A Hybrid Framework for Web Services Reliability and Performance Assessment". *ISSRE Workshops 2019* 185-192
- NC.4. L. Pagliari, M. D'Angelo, M. Caporuscio, R. Mirandola and C. Trubiani "Towards a Continuous Model-based Engineering Process for QoS-aware Self-adaptive Systems" *Proceedings of 3rd Workshop on Formal Approaches for Advanced Computing Systems*, ACM 2019, 139-144
- NC.5. M. D'Angelo, L. Pagliari, M. Caporuscio, R. Mirandola and C. Trubiani "To What Extent Formal Methods are Applicable for Performance Analysis of Smart Cyber-Physical Systems?" *Proceedings of International Workshop on Automated and verifiable Software sYstem DEvelopment*, LNCS 2019,
- NC.6. L. Pagliari, R. Mirandola, C. Trubiani "A Case Study to Elicit Challenges for Performance Engineering of Cyber Physical Systems" *Companion Publication for ACM/SPEC on International Conference on Performance Engineering, ICPE 2017 Companion*, ACM , pp.217-222
- NC.7. G. Vergori, D. Tamburri, D. Perez-Palacin, R. Mirandola "DevOps Performance Engineering: A Quasi-Ethnographical Study" *Companion Publication for ACM/SPEC on International Conference on Performance Engineering, ICPE 2017 Companion*, ACM , pp.127-132
- NC.8. D. Perez-Palacin, R. Mirandola, M. Scopetta: "Simulation of Techniques to Improve the Utilization of Cloud Elasticity in Workload-aware Adaptive Software." *Companion Publication for ACM/SPEC on International Conference on Performance Engineering, ICPE 2016 Companion*, ACM , pp.51-56  
[doi: <http://dx.doi.org/10.1145/2859889.2859897>]
- NC.9. P. Scandurra and G. Psaila and R. Capilla, R. Mirandola "Challenges and Assessment in Migrating IT Legacy Applications to the Cloud." *IEEE proceedings of MESOCA* 2015, pp 7-14  
[doi: <http://dx.doi.org/10.1109/MESOCA.2015.7328120>]
- NC.10. D. A. Tamburri, E. Di Nitto, R. Mirandola, S. Raffa "Towards GEEZMO: hiGh-frEquency Zest and Mood-pOlling for Proactive Software Development Problem-Solving." *ESEC/FSE 7th Workshop on Social Software Engineering, ACM (SSE)* 2015, pp.9-16  
[doi: <http://dx.doi.org/10.1145/2804381.2804383>]
- NC.11. I. Bosnic, F. Ciccozzi, I. Cavrak, E. Di Nitto, J. Feljan, R. Mirandola "Introducing SCRUM into a Distributed Software Development Course." *ECISA Workshop on Enhancing Software Engineering Education, ACM (WESEE)* 2015, pp.34:1-34:8  
[doi: <http://dx.doi.org/110.1145/2797433.2797469>]
- NC.12. C. Bartolini, A. Bertolino, A. Ciancone G. De Angelis, R. Mirandola "Non-Functional Analysis of Service Choreographies" *ICSE Workshop on Principles of Engineering Service Oriented Systems (PESOS)* 2012, pp.75-84  
[doi: <http://dx.doi.org/10.1109/PESOS.2012.6225947>]
- NC.13. M. Marzolla, M., Mirandola, R. "Performance Aware Reconfiguration of Software Systems" *Proc. of the 7th European workshop on Performance Engineering (EPEW)* 2010, LNCS 6342, pp. 51-66  
[doi: [http://dx.doi.org/10.1007/978-3-642-15784-4\\_4](http://dx.doi.org/10.1007/978-3-642-15784-4_4)]
- NC.14. D. Perez-Palacin, R. Mirandola, J. Merseguer, V. Grassi "QoS-Based Model Driven Assessment of Adaptive Reactive Systems" *IEEE, Third International Conference on Software Testing, Verification, and Validation Workshops Proceedings (ICST workshop)* 2010, pp. 299 - 308  
[doi: <http://dx.doi.org/10.1109/ICSTW.2010.20>]
- NC.15. Ardagna, R. Mirandola, M. Trubian, L. Zhang "Quality at runtime: management and monitoring Run-time resource management in SOA virtualized environments" *ACM Proceedings of the 1st international workshop on Quality of service-oriented software systems* 2009, pp. 39-46  
[doi: <http://dx.doi.org/10.1145/1596473.1596484>]
- NC.16. E. Di Nitto, D. Dubois, R. Mirandola "On exploiting decentralized bio-inspired self-organization algorithms to develop real systems" *ICSE Workshop on Software Engineering for Adaptive and Self-Managing Systems (SEAMS)* 2009, pp. 68-75  
[doi: <http://doi.ieeecomputersociety.org/10.1109/SEAMS.2009.5069075>]
- NC.17. S. Bindelli, E. Di Nitto, R. Mirandola, R. Tedesco "Building autonomic components: The SelfLets approach" *23rd IEEE/ACM International Conference on Automated Software Engineering - Workshop Proceedings (ASE Workshops)* 2008, pp. 17-24  
[doi: <http://dx.doi.org/10.1109/ASEW.2008.4686289>]
- NC.18. V. Cardellini, E. Casalicchio, V. Grassi, R. Mirandola "A Framework for Optimal Service Selection in Broker-Based Architectures with Multiple QoS Classes" *Proceedings of the 2006 IEEE Services Computing Workshops (SCW Workshops)* 2006, pp. 105-112  
[doi: <http://doi.ieeecomputersociety.org/10.1109/SCW.2006.1>]

- NC.19. D. Ardagna, S. Lucchini, R. Mirandola, B. Pernici "Web Services Composition in Autonomic Grid Environments" *Business Process Management Workshops* 2006, LNCS 4103 Springer, pp. 375-386  
[doi: [http://dx.doi.org/10.1007/11914952\\_16](http://dx.doi.org/10.1007/11914952_16)]
- NC.20. A. Sabetta, D. C. Petriu, V. Grassi, R. Mirandola "Abstraction-raising Transformation for Generating Analysis Models" *Proc. of MoDELS'2005 Satellite Events* 2005, LNCS 3844 Springer, pp. 217-226  
[doi: [http://dx.doi.org/10.1007/11663430\\_23](http://dx.doi.org/10.1007/11663430_23)]
- NC.21. Iazeolla G., Mirandola R., D'ambrogio A. "Collaborative IV&V by SPEED a Tool-kit for the Performance IV&V of Critical Software" *Proceedings of IEEE International workshop on enabling technologies: infrastructure for collaborative enterprises (WET-ICE)* IEEE 1995, pp. 221-230
- NC.22. V. Grassi, R. Mirandola "A Model-driven Approach to Predictive Non Functional Analysis of Component-based Systems" *Proceedings of Workshop "Models for Non-functional Aspects of Component-Based Software" at UML 2004 conference* Technical report at TU Dresden (ISSN 1430-211X)
- NC.23. Bertolino A., Mirandola R. "Towards component-based software performance engineering" *6th ICSE Workshop on Component-Based Software Engineering* online proceedings at: <http://www.csse.monash.edu.au/~hws/cgi-bin/CBSE6/Proceedings/proceedings.cgi>
- NC.24. Bertolino A., Lombardi G., Marchetti E., Mirandola R. "Performance Analysis of the Rational Unified Process Product<sub>U<sub>i</sub></sub>" *Proceedings of 12-th International Workshop of Software Measurement (IWSM)* online proceedings at: <http://www.dasma.org/contray/media/Literatur/iwsm-inhalt.pdf>

#### ACADEMIC BOOKS

- BK.1. A. Rausch, R. Reussner, R. Mirandola, F/ Plasil (Eds.), "The Common Component Modeling Example: Comparing Software Component Models," *Lecture Notes on Computer Science, Springer*, LNCS 5153, 2008. (ISBN 978-3-540-85288-9)
- BK.2. R. Mirandola, I. Gorton, C. Hofmeister (Eds), "Architectures for Adaptive Software Systems, 5th International Conference on the Quality of Software Architectures, QoSA 2009" *Lecture Notes on Computer Science, Springer*, LNCS 5581, 2009. (ISBN: 978-3-642-02350-7)