ascens

ASCENS

Autonomic Service-Component Ensembles

D9.4a: Progress Report on Dissemination and Collaboration

SEVENTH FRAMEWORK
PROGRAMME

Executive Summary

This report describes the efforts performed in the ASCENS project to achieve the dissemination, collaboration and exploitation objectives, which are defined in the Annex I "Description of Work" of the project contract while the dissemination and exploitation strategy is described in deliverable D9.1.a.

The report includes a section describing the project identity and sections dedicated to dissemination and collaboration activities. Finally, a table of measurable results is presented as summary. Demonstrations and exploitation issues are included in deliverable D94b.

The dissemination activities performed during the first two periods of the project (October 2010 to September 2012) include publication of project results on the ASCENS web site and the ASCENS blog, publications and presentations at conferences and workshops, organizations of events, teaching courses and tutorials, distribution of software products, and the preparation of dissemination material for a wide audience, such as a poster and a magazine overview article.

During the project ASCENS members produced 325 publications. The list of accepted and submitted publications includes 52 articles for journals, 217 conference and workshop papers, 31 book contributions, and 19 technical reports. The number of joint publications in which two or more partners or an associated researcher and a partner were involved adds up to 119 (36,6%). In addition, 156 presentations were held during these reporting periods. Project members organized 100 conferences and workshops, participated in the organization of 8 summer schools, and taught ASCENS related topics in 59 courses. The collaboration activities with other projects comprise the participation in the AWARENESS and FOCAS coordination action (CA) meetings, the contact to and joint work with associated researchers, bilateral meetings with other projects and teaching at the AWARENESS Virtual Lecture Series (AVLS), at the AWASS Summer Schools 2012 and 2013. The final project results were presented at the ECAS Spring School 2015 in Lucca, were more than 30 PhD students had the opportunity to apply the theoretical outcomes to pragmatic scenarios of the ASCENS case studies and using the methods, techniques and tools developed in the ASCENS project.

Contents

1   Project Identity

ASCENS presented its project identity (PI) at the kick-off meeting in Munich, Germany, on October 10-11, 2010. Since then it is used in the website, presentations and reports, i.e. whenever projects results are presented. We believe that a strong PI helps to reinforce the image of the project and supports the dissemination activities. The PI is implemented by

- a set of colors,

- a logo (see Figure 1),

- templates for presentations (LaTeX beamer and PowerPoint format), and

- templates for deliverables, progress reports and technical reports (LaTeX and Word format).

Figure 1: ASCENS logo

In particular, the templates for deliverables and reports were made more general during the second year of the project. In the third year, quality of logos were improved, mainly for their use in the flyer and posters designed for the exhibition ICT 2013 in Vilnius. In the last reporting period (month 37 to month 54) we used the ASCENS colors and logos for the brochure on ASCENS results (34 pages) and the printing material we prepared for our stand at the CeBIT 2015 exhibition.

2   Dissemination of Project Results

To attain the goal to promote and publish the results of the ASCENS project to a wide scientific and industrial audience, the research results were disseminated through scientific publications, invited speakers' presentations, tutorials and lectures. Another dissemination activity consisted in the organization of events such as conferences, workshops and symposia on topics related to the ASCENS research area. The general public is informed about the project through the website and a blog. In addition, different scenarios of the case studies were presented at two important exhibitions. A real life demo of robots competing in an arena and simulations were shown at the ICT 2013 in Vilnius. At the CeBIT 2015 in Hanover the focus was on the cloud science and e-mobility simulations. In the following sections the different dissemination activities and results are presented in detail.

2.1   ASCENS Website

The ASCENS website (`http://www.ascens-ist.eu`) was set-up by LMU before the start of the project by October 1st, 2010 and was continuously updated since then. The website contains general information as well as all non-confidential results, i.e. papers, presentations, course material, exhibitions, tools, etc. It allows easy access to this information for researchers, interested companies, and institutions. It includes objectives of and the results achieved by the project, among others the list of publications and deliverables. The ASCENS website includes also a page for each partner of the project describing the role of the partner and the researchers involved in the project and a list of associated researchers.

The ASCENS website (shown in Figure 2) is built using a content management application (open source Joomla of Apache) and imports the publications from the Publication Management Interface application (PMI) developed by LMU. For more details on the PMI see Section 2.3.

Figure 2: ASCENS website

We use an ASCENS blog (`http://blog.ascens-ist.eu/`) to communicate the goals and the progress of the ASCENS project to the public in a way that can be understood by people who are interested in engineering ensembles, but not experts in this field (see Figure 3). Therefore, we address the non-technical public describing easy understandable scenarios to illustrate how methods, techniques and languages developed within the scope of ASCENS will be applied in the development of autonomic service-component ensembles. Over the course of the four and half project years we have published 30 blog articles covering not only questions related to the main topics of our project, but also project results.

Figure 3: ASCENS blog

Regarding cross references, on the one hand the ASCENS website provides links to many related projects grouped in categories, such as self-awareness, global computing, and swarm robotics. On the other hand, several websites of organizations, universities, institutes and other projects as well as the homepages of many partner members include links to the ASCENS website, for example:

- Homepages of universities, organisations and companies
    - European Commision, ICT Research in FP7, FET Proactive
      `http://cordis.europa.eu/fp7/ict/fet-proactive/aware_en.html`
    - Ludwig-Maximilians-Universität München (LMU), Institute for Informatics, Programming and Software Engineering Unit
      `http://www.pst.ifi.lmu.de/Research/current-projects`
    - Ludwig-Maximilians-Universität München (LMU), Institute for Informatics, Communication Systems and System Programming Unit
      `http://www.nm.ifi.lmu.de/projects/ASCENS/`
    - Ludwig-Maximilians-Universität München (LMU), European Projects
      `http://www.uni-muenchen.de/forschung/service/`
      `forschungsfoerderung/eu_programme/7frp/koord_7frp/index.`
      `html`
    - Consiglio Nazionale delle Ricerche, Istituto di Scienza e Tecnologie dell'Informazione "A. Faedo (ISTI), Formal Methods and Tools Laboratory
      `http://www.isti.cnr.it/research/unit.php?unit=FMT&section=`
      `projects`
    - IMT Institute for advanced studies Lucca, System Modelling and Analysis research unit
      `https://sysma.lab.imtlucca.it/`
    - IRIDIA-CoDE laboratory, Université Libre de Bruxelles
      `http://code.ulb.ac.be/iridia.home.php`
    - Lero – the Irish Software Engineering Research Centre, University of Limerick, ASCENS Project Web Page
      `http://www.lero.ie/project/ascens`
    - Università di Firenze, Dipartimento di Sistemi e Informatica, Concurrency and Mobility Group
      `http://gdn.dsi.unifi.it/cmg/index.php/projects/`
    - Fraunhofer FOKUS
      `http://www.fokus.fraunhofer.de/en/quest/projekte/laufende_`
      `projekte/ascens`
    - Mobysa Association
      `https://sites.google.com/site/mobsya/activites?pli=1`
    - Verimag website
      `http://www-verimag.imag.fr/ASCENS.html`
    - EPFL MOBOTS, self-assembling robots page
      `http://mobots.epfl.ch/self-assembling-robots.html`
    - Department of Distributed and Dependable Systems, Charles University in Prague, project page
      `http://d3s.mff.cuni.cz/projects/`

- – Zimory
  `http://www.zimory.com/partners/ascens-european-commission/`
- – Universitá di Modena e Reggio Emilia, Agents and Pervasive Computing Group
  `http://www.agentlab.unimore.it/projects.html`

- Homepages of other projects

  - – FOCAS Coordination Action
    `http://focas.eu/community/`
  - – AWARENESS Coordination Action
    `http://www.aware-project.eu/`
  - – SAPERE project
    `http://www.sapere-project.eu`
  - – CoCoRo Collective Cognitive Robots Project
    `http://cocoro.uni-graz.at/`
  - – ARGoS robot simulator website
    `http://iridia.ulb.ac.be/argos/argos_in_use.php`
  - – QUANTICOL project
    `http://blog.inf.ed.ac.uk/quanticol/`

- Homepages of ASCENS members

  - – Homepages of Martin Wirsing, Mirco Tribastone, Nora Koch, Annabelle Klarl, Philip Mayer, Lenz Belzner (LMU)
    `http://www.pst.ifi.lmu.de/people/staff/`
  - – Homepages of Diego Latella and Mieke Massink (ISTI)
    `http://www.isti.cnr.it/about/people.php`
  - – Homepages of IMT members
    `https://sysma.lab.imtlucca.it/?page_id=4`
  - – Homepages of Roberto Bruni, Andrea Corradini, Gianluigi Ferrari, Fabio Gadducci, Ugo Montanari, Matteo Sammartino (UNIPI)
    `http://compass2.di.unipi.it/amministrazione/persone/index.asp`
  - – Homepages of Marco Dorigo, Mauro Birattari, Carlo Pinciroli (ULB)
    `http://iridia.ulb.ac.be/~mdorigo/HomePageDorigo/projects.php`
    `http://iridia.ulb.ac.be/~mbiro/projects.html`
    `http://iridia.ulb.ac.be/~cpinciroli/projects.php`
  - – Homepage of Franco Zambonelli (UNIMORE)
    `http://www.agentgroup.unimo.it/Zambonelli`
  - – Homepage of Emil Vassev (Lero at UL)
    `http://www.vassev.com/`
  - – Homepages of Michele Boreale, Michele Loreti, Rosario Pugliese (UDF)
    `http://www.dsi.unifi.it/~boreale/`
    `http://www.dsi.unifi.it/~loreti/`
    `http://www.dsi.unifi.it/~pugliese/,`

- Homepage of Jacques Combaz (Verimag)
  `http://www-verimag.imag.fr/~jcombaz/`

- Homepages of Jan Kofron, Petr Hnetynka (CUNI)
  `http://d3s.mff.cuni.cz/~kofron/`
  `http://d3s.mff.cuni.cz/~hnetynka/index.cgi/index/research`

- Homepages of ASCENS results

  - ARE
    `http://www.ascens-ist.eu/are`
    (redirect to `http://www.engineeringautonomy.com/`)

  - SOTA
    `http://www.ascens-ist.eu/sota`
    (redirect to `http://www.agentgroup.unimore.it/SOTA/`)

  - GEM
    `http://www.ascens-ist.eu/gem`
    (redirect to `http://world-of-programming.de/gem/`)

  - IRM
    `http://www.ascens-ist.eu/irm`
    (redirect to `http://d3s.mff.cuni.cz/projects/components_and_services/irm-sa/`)

  - SCEL
    `http://www.ascens-ist.eu/scel`
    (redirect to `http://rap.dsi.unifi.it/scel/wp/`)

  - jRESP
    `http://www.ascens-ist.eu/jresp`
    (redirect to `http://jresp.sourceforge.net/`)

  - FACPL
    `http://www.ascens-ist.eu/facpl`
    (redirect to `http://rap.dsi.unifi.it/facpl/wp/`)

  - RDC
    `http://www.ascens-ist.eu/rdc`
    (redirect to `http://www.di.unipi.it/~bruni/ASCENS/RDC/`)

  - MAIA
    `http://www.ascens-ist.eu/maia`
    (redirect to `http://sysma.imtlucca.it/tools/maia/`)

  - MESSI
    `http://www.ascens-ist.eu/messi`
    (redirect to `http://sysma.imtlucca.it/tools/ensembles/`)

  - NCPi
    `http://www.ascens-ist.eu/ncpi`
    (redirect to `http://www.di.unipi.it/~bruni/ASCENS/NCPI/`)

  - Energy-Aware Ensembles
    `http://www.ascens-ist.eu/eae`
    (redirect to `http://www.di.unipi.it/~bruni/ASCENS/Planning/`)

- – SMC-BIP
  `http://www.ascens-ist.eu/smcbip`
  (redirect to `http://www-verimag.imag.fr/Statistical-Model-Checking.html`)

- – Compositional Verification
  `http://www.ascens-ist.eu/compver`
  (redirect to `http://www-verimag.imag.fr/~lastefan/tas/index.html`)

- – GMC
  `http://www.ascens-ist.eu/gmc`
  (redirect to `http://d3s.mff.cuni.cz/projects/formal_methods/gmc/`)

- – MultiVeStA
  `http://www.ascens-ist.eu/multivesta`
  (redirect to `https://code.google.com/p/multivesta/`)

- – KnowLang
  `http://www.ascens-ist.eu/knowlang`
  (redirect to `http://knowlang.lero.ie/`)

- – Iliad & Poem
  `http://www.ascens-ist.eu/iliad`
  (redirect to `https://github.com/hoelzl/Iliad`)

- – SPL
  `http://www.ascens-ist.eu/spl`
  (redirect to `http://d3s.mff.cuni.cz/projects/performance_evaluation/spl-java/`)

- – Self-Awareness Platform
  `http://www.ascens-ist.eu/sap`
  (redirect to `https://bitbucket.org/damiano_fontana/awareness`)

- – AVIS
  `http://www.ascens-ist.eu/avis`
  (redirect to `http://avisplugin.sourceforge.net/`)

- – EDLC
  `http://www.ascens-ist.eu/edlc`

- – DEECo
  `http://www.ascens-ist.eu/deeco`
  (redirect to `http://d3s.mff.cuni.cz/projects/components_and_services/deeco/`)

- – Helena
  `http://www.ascens-ist.eu/helena`
  (redirect to `http://www.pst.ifi.lmu.de/Personen/team/klarl/helena`)

- – Adaptation Patterns
  `http://www.ascens-ist.eu/adapatt`
  (redirect to `http://www.agentgroup.unimore.it/ADAPATT/`)

- – Science Cloud Platform
  `http://www.ascens-ist.eu/cloud`

  - Robotics
    `http://www.ascens-ist.eu/cloud`
  - E-Mobility
    `http://www.ascens-ist.eu/evehicles`
  - SASOE
    `http://www.ascens-ist.eu/sasoe`
    (redirect to `http://www.irit.fr/~Victor.Noel/Projects/ASCENS`)
  - ARGoS
    `http://www.ascens-ist.eu/argos`
    (redirect to `http://www.argos-sim.info`)
  - Marxbot
    `http://www.ascens-ist.eu/marxbot`
    (redirect to `http://www.mobsya.org/en/robots`)

2.2 Press Releases

Different press release were posted in order to provide general information on the start of the project to a wide audience, e.g. at the homepage of the LMU and announcements by two Italian local newspapers and the Università di Modena e Reggio Emilia. Exhibitions like CeBIT 2015 were also announced by corresponding press releases.

- LMU site (October 11,2010)
  `http://www.en.uni-muenchen.de/news/newsarchiv/2010/`
  `2010-ascens-wirsing.html`

- UNIMORE site (November 15, 2010)
  http://www.magazine.unimore.it/index.php?option=com_content&view=article&id=526 finanziamenti-europei-per-la-ricerca-unimore&catid=91:ricerca&Itemid=346

- Modena 2000 newspaper (November 21, 2010)
  `http://www.ascens-ist.eu/images/ascens/modena2000.pdf`

- Giornale di Reggio Emilia newspaper (November 22, 2010)
  `http://www.ascens-ist.eu/images/ascens/modena2000.pdf`

- ZDNet - Cebit Special - EU-Projekt ASCENS presents research results on autonomic systems (February 27, 2015)

An overview article on the ASCENS project was written during the first reporting year and published by the AWARENESS magazine in 2012 (see list of publications in Sec. 2.3).

2.3 ASCENS Publications

During the four project reporting periods of the ASCENS project 325 publications were produced, of which 50 were published in the first reporting period, 80 in the second, 62 in the third period and 133 in the last period that comprised 18 month. The list of publications includes articles for journals (52), conference and workshop papers (217), book contributions (31) and technical reports (19). All publications with exception of the two last categories were peer reviewed and were submitted to the best scientific journals like *Theoretical Computer Science*, *Journal of Grid Computing*, and

ACM Transactions on Autonomous and Adaptive Systems, major international conferences, ranging from the more foundation-oriented like FACS, FASE, FORTE and NASA Formal Methods, to those that address more methodological and application-oriented aspects of software engineering, such as DEXA and IROS. All of the publications listed below have been already published or accepted for publication.

In the four reporting periods 119 joint publications were published, i.e. a 36,6% of the total. Joint publications are those in which at least two partners (94) or at least a partner and an associated researcher (25) were involved.

We would like to point to the ASCENS Book published by Springer Verlag in the series Lecture Notes of Computer Science (LNCS 8998). The book is divided into four parts corresponding to the research areas of the project and their concrete applications: (I) language and veri

cation for self-awareness and self-expression, (II) modeling and theory of self-aware and adaptive systems, (III) engineering techniques for collective autonomic systems, and last but not least, (IV) challenges and feedback provided by the case studies of the project in the areas of swarm robotics, cloud computing and e-mobility. Figure 4 shows the cover of the book.
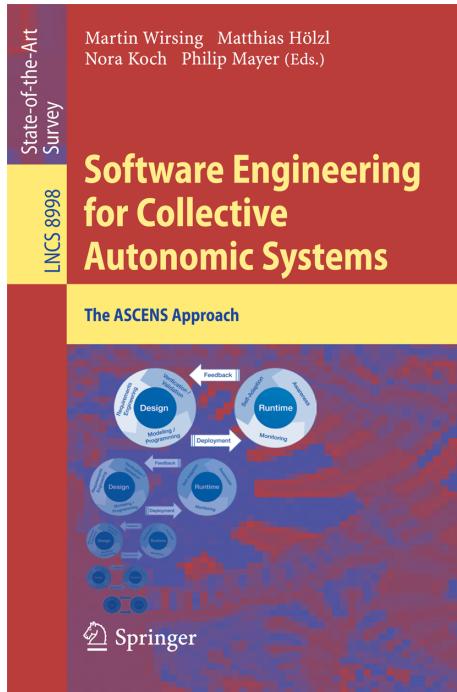
Figure 4: LNCS 8998 Book Cover

Another special publication is the User Guide (JD5.1), which provides information on each tool that was developed within the scope of the project or is an improved version of an already existing tool. The User Guide includes a description of the tool, download facilities, installation guidelines, how to use the tool, example(s) and access to the sources in the case of open source tools. The user guide is available online; the access is provided through the tool pages of the ASCENS website.

In the last part of the section we give some details on the Publication Management System used in the ASCENS project.

2.3.1 Joint Publications

[ABN11]   Lucia Acciai, Michele Boreale, and Rocco De Nicola. Linear-time and may-testing in a probabilistic reactive setting. In Roberto Bruni and Juergen Dingel, editors, *Formal Techniques for Distributed Systems*, volume 6722 of *LNCS*, pages 29–43. Springer Berlin / Heidelberg, June 2011.

[AHZ13]   Dhaminda Abeywickrama, Nicklas Hoch, and Franco Zambonelli. Simsota: Engineering and simulating feedback loops for self-adaptivesystems. In *Sixth International C* Conference on Computer Science & SoftwareEngineering*, pages 67–76, Porto (P), July 2013. ACM, ACM.

[ASL15]   Dhaminda Abeywickrama, Nikola Serbedzija, and Michele Loreti. Monitoring and visualizing adaptation of autonomic systems at runtime. SAC'15, Salamanca, April 2015, April 2015.

[AZH12]   Dhaminda Abeywickrama, Franco Zambonelli, and Nicklas Hoch. Towards simulating architectural patterns for self-aware and self-adaptive systems. In *2nd SASO Workshop on Awareness in Autonomic Systems*, Lyon (F), September 2012. IEEE CS Press.

[BBC$^+$14]   Saddek Bensalem, Tomáš Bureš, Jacques Combaz, Rocco De Nicola, Matthias Hölzl, Nora Koch, Michele Loreti, Petr Tůma, Martin Wirsing, and Franco Zambonelli. A life cycle for the development of autonomic systems, March 2014. ASCENS Technical Report 12.

[BBG$^+$15]   Lubomír Bulej, Tomáš Bureš, Ilias Gerostathopoulos1, Vojtěch Horký, Jaroslav Keznikl, Lukas Marek, Max Tschaikowski, Mirco Tribastone, and Petr Tůma. *Supporting Performance Awareness in Autonomous Ensembles*, volume 8998 of *LNCS*, chapter 1.3.5. Springer, 2015. (Book title: Software Engineering for Collective Autonomic Systems: Results of the ASCENS Project).

[BBGM10]   Paolo Baldan, Filippo Bonchi, Fabio Gadducci, and Giacoma Valentina Monreale. Concurrency can't be observed, asynchronously. In Kazunori Ueda, editor, *Programming Languages and Systems - 8th Asian Symposium, APLAS 2010, Shanghai, China, November 28 - December 1, 2010. Proceedings*, volume 6461 of *Lecture Notes in Computer Science*, pages 424–438. Springer, 2010.

[BBGM14]   Paolo Baldan, Filippo Bonchi, Fabio Gadducci, and Giacoma Valentina Monreale. Encoding synchronous interactions using labelled petri nets. In Eva Kuehn and Rosario Pugliese, editors, *Proceedings of the 16th IFIP WG 6.1 International Conference on Coordination Models and Languages, (COORDINATION) 2014*, volume 8459 of *Lecture Notes in Computer Science*, pages 1–16. Springer, 2014.

[BBGM15a]   Paolo Baldan, Filippo Bonchi, Fabio Gadducci, and Giacoma Valentina Monreale. Concurrency cannot be observed, asynchronously. *Mathematical Structures in Computer Science*, 29(5), 2015.

[BBGM15b]   Paolo Baldan, Filippo Bonchi, Fabio Gadducci, and Giacoma Valentina Monreale. Modular encoding of synchronous and asynchronous interactions using open petri nets. *Science of Computer Programming*, 2015.

[BC13]   Michele Boreale and Alessandro Celestini. Asymptotic risk analysis for trust and rep-
             utation systems. In Peter van Emde Boas et al., editor, *SOFSEM 2013, Theory and
             Practice of Computer Science*, volume 7741 of *LNCS*, pages 169–181. Springer Berlin
             Heidelberg, 2013.

[BCDCM11]   Maria Grazia Buscemi, Mario Coppo, Mariangiola Dezani-Ciancaglini, and Ugo Mon-
             tanari. Constraints for service contracts. In Roberto Bruni and Vladimiro Sassone,
             editors, *TGC 2011*, volume 7173 of *Lecture Notes in Computer Science*, pages 104–
             120. Springer, 2011.

[BCG⁺12a]   Roberto Bruni, Andrea Corradini, Fabio Gadducci, Alberto Lluch Lafuente, and Andrea
             Vandin. Modelling and analyzing adaptive self-assembly strategies with maude. In
             *Proceedings of the 9th International Workshop on Rewriting Logicand its Applications
             (WRLA 2012)*, volume 7571 of *LNCS*, pages 18–138. Springer, 2012.

[BCG⁺12b]   Roberto Bruni, Andrea Corradini, Fabio Gadducci, Alberto Lluch-Lafuente, and An-
             drea Vandin. A conceptual framework for adaptation. In Juan de Lara and Andrea
             Zisman, editors, *Proceedings of the 15th International Conference on Fundamental Ap-
             proachesto Software Engineering, FASE 2012*, volume 7212 of *Lecture Notes in Com-
             puter Science*, pages 240–254. Springer, 2012.

[BCG⁺13]   Roberto Bruni, Andrea Corradini, Fabio Gadducci, Alberto Lluch-Lafuente, and An-
             drea Vandin. Adaptable transition systems. In Narciso Martí-Oliet and Miguel
             Palomino, editors, *Recent Trends in Algebraic Development Techniques, 21st Interna-
             tional Workshop, WADT 2012*, volume 7841 of *Lecture Notes in Computer Science*,
             pages 95–110. Springer, 2013.

[BCG⁺15a]   Roberto Bruni, Andrea Corradini, Fabio Gadducci, Matthias Hölzl, Alberto Lluch La-
             fuente, Andrea Vandin, and Martin Wirsing. *Reconciling White-Box and Black-Box
             Perspectives on Behavioral Self-Adaptation*, volume 8998 of *LNCS*, chapter 1.3.1.
             Springer, 2015. (Book title: Software Engineering for Collective Autonomic Systems:
             Results of the ASCENS Project).

[BCG⁺15b]   Roberto Bruni, Andrea Corradini, Fabio Gadducci, Alberto Lluch Lafuente, and Andrea
             Vandin. Modelling and analyzing adaptive self-assembly strategies with maude. *Science
             of Computer Programming*, 99:75–94, 2015.

[BDFZ09]   Massimo Bartoletti, Pierpaolo Degano, Gian Luigi Ferrari, and Roberto Zunino. Model
             checking usage policies. *Mathematical Structures in Computer Science*, To appear,
             2009.

[BDL14]   Marco Bernardo, Rocco De Nicola, and Michele Loreti. Relating strong behavioral
             equivalences for processes with nondeterminism and probabilities. *Theor. Comput. Sci.*,
             546:63–92, 2014.

[BFK12]   Roberto Bruni, Carla Ferreira, and Anne Kersten Kauer. First-order dynamic logic
             for compensable processes. In *COORDINATION 2012*, volume 7274 of *LNCS*, pages
             104–121. Springer, 2012.

[BGL⁺11]   Saddek Bensalem, Andreas Griesmayer, Axel Legay, Thanh-Hung Nguyen, Joseph
             Sifakis, and Rongjie Yan. D-finder 2: Towards efficient correctness of incremental

design. In Mihaela Gheorghiu Bobaru, Klaus Havelund, Gerard J. Holzmann, and Rajeev Joshi, editors, *NASA Formal Methods - Third International Symposium, NFM 2011, Pasadena, CA, USA, April 18-20, 2011. Proceedings*, volume 6617 of *Lecture Notes in Computer Science*, pages 453–458. Springer, 2011.

[BGM11]   Filippo Bonchi, Fabio Gadducci, and Giacoma Valentina Monreale. Towards a general theory of barbs, contexts and labels. In Hongseok Yang, editor, *Proceedings of the 9th Asian Symposium on Programming Languages and Systems (APLAS 2011)*, volume 7078 of *Lecture Notes in Computer Science*, pages 289–304. Springer, 2011.

[BGM14a]   Filippo Bonchi, Fabio Gadducci, and Giacoma Valentina Monreale. A general theory of barbs, contexts, and labels. *ACM Transactions in Computational Logic*, 15(4):35, 2014.

[BGM14b]   Filippo Bonchi, Fabio Gadducci, and Giacoma Valentina Monreale. RPO semantics for mobile ambients. *Mathematical Structures in Computer Science*, 24(4), 2014.

[BK12]   Roberto Bruni and Anne Kersten Kauer. Lts semantics for compensation-based processes. In *TGC 2012*, volume 8191 of *LNCS*, pages 112–128. Springer, 2012.

[BKK11]   Marianne Busch, Alexander Knapp, and Nora Koch. Modeling secure navigation in web information systems. In Janis Grabis and Marite Kirikova, editors, *10th International Conference on Business Perspectives in Informatics Research*, LNBIP, pages 239–253. Springer Verlag, 2011.

[BKM⁺12]   Marianne Busch, Nora Koch, Massimiliano Masi, Rosario Pugliese, and Francesco Tiezzi. Towards model-driven development of access control policies forweb applications. In *Workshops MoDELS 2012*, page Article No. 4. ACM, September 2012.

[BL11]   Roberto Bruni and Alberto Lluch-Lafuente. Evaluating the performance of model transformation styles in maude. In *Proceedings of FACS 2011, 8th International Workshop on Formal Aspectsof Component Software*, volume 7253 of *LNCS*, pages 79–96. Springer, 2011.

[BLLM15]   Roberto Bruni, Alberto Lluch-Lafuente, and Ugo Montanari. Constraint design rewriting. *Science of Computer Programming*, 97(1):23–30, January 2015. Available on-line, in press.

[BLM11]   Roberto Bruni, Alberto Lluch Lafuente, and Ugo Montanari. On structured model-driven transformations. *International Journal of Software and Informatics*, 5(1-2):185–206, 2011.

[BM11]   Filippo Bonchi and Ugo Montanari. Symbolic and asynchronous semantics via normalized coalgebras. *Logical Methods in Computer Science*, 7(2), 2011.

[BM12]   Maria Grazia Buscemi and Ugo Montanari. A game-theoretic analysis of grid job scheduling. *Journal of Grid Computing*, 10(3):501–519, 2012.

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[VH14c]   Emil Vassev and Mike Hinchey. Modeling swarm robotics with knowlang. In *Nature of Computation and Communication*, volume 144 of *Lecture Notes of the Institute for Computer Sciences*. Springer, 2014.

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2.3.3 Publications Management System

Publications are managed in ASCENS by a password protected web application called PMI (Publications Management Interface), which is available under `http://pmi.ascens-ist.eu/`. The PMI has been developed by the LMU for a user friendly management of publications providing a user interface for input and search of publications as shown in Figure 5. It supports CRUD operations, simple and advanced search facilities, provides a set of Rich Internet Application (RIA) features, such as validation on the fly, and the generation of publication lists ordered by year, by author, and by type. The PMI is implemented in Ruby on Rails.

2.4 Best Paper Awards

Eight publications originating from ASCENS research were honored with a best paper award.

- Marius Bozga, Mohamad Jaber, Nikolaos Maris and Joseph Sifakis. Modeling Dynamic Architectures Using Dy-BIP∗. In Software Composition SC 2012

- Jaroslav Keznikl, Tomas Bureš, Frantisek Plášil, Ilias Gerostathopoulos, Petr Hnětynka and Nicklas Hoch. Design of Ensemble-Based Component Systems by Invariant Refinement. In International ACM SIGSOFT Symposium on Component-Based Software Engineering CBSE 2013.

- Dhaminda Abeywickrama, Franco Zambonelli and Nicklas Hoch, An Integrated Eclipse Plug-in for Engineering and Implementing Self-Adaptive System, ACEC track at WETICE 2014.

- Christian Kroiß. Simulation and Statistical Model Checking of Logic-Based Multi-Agent System Models. In 8th International Conference on Agent and Multi-Agent Systems: Technologies and Applications (KES-AMSTA 2014), pages 151–160, 2014. (doi:10.1007/978-3-319-07650-8_16).

- Peter Libič, Lubomír Bulej, Vojtěch Horký and Petr Tůma. On the Limits of Modeling Generational Garbage Collector Performance. In ACM/SPEC International Conference on Software Performance Engineering ICPE 2014.

Figure 5: Publication Management Interface

- Touraj Soleymani, Vito Trianni, Michael Bonani, Francesco Mondada and Marco Dorigo. Autonomous Construction with Compliant Building Material. In Proceedings of the 13th International Conference on Intelligent Autonomous Systems – IAS-13, Advances in Intelligent Systems and Computing, Vol. 301, Springer, 2014.

- Emil Vassev and Mike Hinchey. Modeling Swarm Robotics with KnowLang. In: Nature of Computation and Communication – Proceedings of the 2014 International Conference on Nature of Computation and Communication (ICTCC 2014). Lecture Notes of the Institute for Computer Sciences, Volume 144, Springer, 2014. ISBN 978-3-319-15391-9.

- Nicola Capodieci, Emma Hart, Giacomo Cabri. Artificial Immune System driven evolution in Swarm Chemistry. In proceedings of the Eighth IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 14), London, UK, 8-12 September 2014, IEEE Press

2.5 Presentations

The project members have presented ASCENS results at many events held in the period from 01.10.2010 to 31.3.2015. The following list includes 156 presentations that comprise tutorials, invited and keynote talks held during months 1 – 54 of the project. The table does not include – in order to avoid repetitions – presentations performed at conferences and workshops directly related to accepted papers listed in the previous section.

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
1	Invited Talk	Joseph Sifakis (Verimag)	Component-based Construction of Heterogeneous Real-time Systems in BIP	22.11.2010	ETH, Zurich, Switzerland	University	–	Italy
2	Seminar	Franco Zambonelli (UNIMORE)	Research Trends in Autonomic Computing and Communication	16.12.2010	Faculty of Engineering Enzo Ferrari, Modena, Italy	Master and PhD. students, Faculty	30	Italy
3	Invited Talk	Rocco De Nicola (IMT)	A Uniform Framework for Modeling Processes Behaviors and their Performances	04.02.2011	ICE'11 & PACO'11 at Reykjavik, Iceland	Workshop	40	all
4	Tutorial	Diego Latella (CNR-ISTI)	A Uniform Framework for the Definition of (Stochastic) Process Languages (Part I).	04.02.2011	MT-Lab Seminars, Lyngby, Copenhagen, Denmark	Faculty and PhD. students	20	all
5	Talk	Nora Koch (LMU)	Integration of Methodologies and Tools	09.02.2011	NESSoS Plenary Meeting, Madrid, Spain	NESSoS partners	40	all
6	Tutorial	Diego Latella (CNR-ISTI)	A Uniform Framework for the Definition of (Stochastic) Process Languages (Part II).	11.02.2011	MT-Lab Seminars, Lyngby, Copenhagen, Denmark	Faculty and PhD. students	20	all
7	Invited Talk	Ugo Montanari (UNIPI)	Logica e Modelli di Calcolo: Due Facce della Stessa Medaglia (in Italian)	17.02.2011	Info-Incontri Informatica, Dalla Logica Computazionale all' Intelligenza Artificiale, Fano, Italy	Series of Seminars	80	all
8	Invited Talk	Mieke Massink (CNR-ISTI)	A Process Algebraic Fluid Flow Model of Emergency Egress.	18.02.2011	MT-Lab Seminars, Lyngby, Copenhagen, Denmark	Faculty and PhD. students	20	all
9	Tutorial	Rolf Hennicker (LMU)	Large Simulations: The GLOWA-Danube Approach to Integrative Environmental Simulations	22.02.2011	Utrecht, the Netherlands	Master Students	35	Netherlands

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
10	Invited Talk	Mieke Massink (CNR-ISTI)	Modelling Crowd Dynamics in Bio-PEPA.	25.02.2011	MT-Lab Seminars, Lyngby, Copenhagen, Denmark	Faculty and PhD. students	20	all
11	Invited Talk	Mieke Massink (CNR-ISTI)	A formal fluid-flow approach to agent based models	11.03.2011	Model Based & Formal Verification Techniques, Pisa, Italy	Faculty and PhD. students	40	Italy
12	Keynote Talk	Rolf Hennicker (LMU)	Interface Coherence of Reactive Software Components: Solutions and Challenges	02.04.2011	FESCA'11, Saarbruecken, Germany	Workshop	30	all
13	Invited Talk	Nikola Serbedzija (Fraunhofer)	This Pervasive Day Exhibition	19.04.2011	Science Festival, Edinburgh	Exhibition	40	Edingburgh, UK
14	Invited Talk	Lucia Acciai (UDF)	Spatial and Behavioural types: safety, liveness and decidability	20.04.2011	Faculdade de Ciencias e Tecnologia, Universidade Nova de Lisboa, Portugal	Workshop	40	all
15	Seminar	Emil Vassev (UL)	Knowledge Representation for Autonomous Systems – The ASCENS Case Study.	02.05.2011	Organic Computing – Design of Self-Organizing Systems (Dagstuhl Seminar 11181), Schloss Dagstuhl, Wadern, Germany	Workshop	40	all
16	Invited Talk	Ugo Montanari (UNIPI)	Ensambles Autonomici	05.05.2011	Aula Magna Facoltà di Scienze, Pisa, Italy	Internet Festival	40	all
17	Invited Talk	Nikola Serbedzija (Fraunhofer)	Heaven and Hell: Visions for Pervasive Adaptation	05.05.2011	FET'11, Budapest, Hungary	Special session	30	Hungary
18	Talk	Michele Boreale (DSIUF)	Quantitative Information Leakage, With a View	24.05.2011	Quantitative Modelling and Formal Analysis, Lucca, Italy	Workshop	20	all
19	Invited Talk	Michele Loreti (DSIUF)	A Uniform Framework for Process Models and Behavioral Equivalences of Nondeterministic, Probabilistic, or Stochastic Nature	24.05.2011	Quantitative Modelling and Formal Analysis, Lucca, Italy	Workshop	20	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
20	Invited Talk	Mieke Massink (CNR-ISTI)	Modelling Non-linear Crowd Dynamics in Bio-PEPA	24.05.2011	Quantitative Modelling and Formal Analysis, Lucca, Italy	Faculty and PhD. students	20	all
21	Invited Talk	Michele Boreale (UDF)	A survey on Quantitative Information Flow.	24.05.2011	Quantitative Modelling and Formal Analysis, Lucca, Italy	Faculty and PhD. students	20	all
22	Invited Talk	Stephan Reiter (LMU)	The ASCENS Science Cloud	25.05.2011	Working Group: Grid, Leibniz Supercomputing Centre, Munich, Germany	Staff and PhD. students	10	all
23	Invited Talk	Nikola Serbedzija (Fraunhofer)	Reflective Computing	30.05.2011	Véhicules et transports intelligents et communicants, Telecom ParisTech, Paris, France	Workshop	80	France
24	Seminar	Franco Zambonelli (UNIMORE)	The SAPERE and the ASCENS Projects	31.05.2011	Faculty of Engineering Reggio Emilia, Reggio Emilia, Italy	Master and PhD. students	20	Italy
25	Invited Talk	Joseph Sifakis (Verimag)	Embedded Systems Design – Challenges and Work Directions	13.5.2011	IMT Institute for Advanced Studies, Lucca, Italy	University	–	Italy
26	Invited Talk	Ugo Montanari (UNIPI)	Un'Algebra di Connettori Per le Reti di Petri (in Italian)	22.06.2011	Università di Milano, Milano, Italy	Giornata in Onore di Gianni Degli Antoni	100	all
27	Invited Talk	Ugo Montanari (UNIPI)	Connector Algebras And Petri Nets	30.06.2011	Siberian Academy of Sciences, Akademgorodok, Novosibirsk, Russia	PSI'11, Ershov Informatics Conference	80	all
28	Workshop	Annabelle Klarl (LMU)	Hands-on Robots: Simulation with ARGoS	10.07.2011	PST Hut Seminar, Bayrischzell, Germany	Faculty and PhD. students	15	Germany
29	Workshop	Martin Wirsing (LMU)	Towards a System Model for Ensembles	12.07.2011	PST Hut Seminar, Bayrischzell, Germany	Faculty and PhD. students	15	Germany
30	Invited talk	Michele Boreale (UDF)	Quantitative Information Flow, with a View	20.07.2011	Trinity College, Dublin, Ireland	Faculty and PhD. students	15	Europe
31	Invited Talk	Bernd Werther (VW)	E-Mobility as a Challenge for New ICT Solutions in the Car Industry	09.09.2011	Trustworthy Global Computing, Aachen, Germany	Symposium	50	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
32	Invited Talk	Henry Bensler (VW)	Volkswagen und Elektromobilität	09.09.2011	Elektromobilität von morgen, Aachen, Germany	Symposium	60	Germany
33	Invited Talk	Matthias Hölzl (LMU)	Adaptation and Awareness in Ensembles	09.09.2011	Trustworthy Global Computing, Aachen, Germany	Symposium	50	all
34	Colloquium	Martin Wirsing (LMU)	Adaptation and Awareness in Ensembles	12.09.2011	IMDEA Software, Madrid, Spain	Faculty and PhD. students	20	Spain
35	Invited Talk	Michele Loreti (DSIUF)	Uniform Labeled Transition Systems for Nondeterministic, Probabilistic, and Stochastic Process Calculi	19.09.2011	PASTA'11, Ragusa, Italy	Workshop	20	all
36	Invited Talk	Mieke Massink (CNR-ISTI)	Fluid Analysis of Foraging Ants	19.09.2011	PASTA'11, Ragusa, Italy	Faculty and PhD. students	20	all
37	Invited Talk	Matthias Hölzl (LMU)	Research Challenges for Ensembles	21.09.2011	AWARENESS Steering Committee, Amsterdam, the Netherlands	Symposium	20	all
38	Invited Talk	Roberto Bruni (UNIPI)	Distributed Compensations with Interruptions in Long-Running Transactions	21.09.2011	Department of Computer Science, University of Leicester, Leicester, UK	Faculty and PhD. students	20	all
39	Invited Talk	Alberto Lluch Lafuente (IMT)	A Conceptual Framework for Behavioural Adaptation	22.09.2011	Department of Computer Science, University of Leicester, Leicester, UK	Faculty and PhD. students	20	all
40	Invited Talk	Ugo Montanari (UNIPI)	Component-Based Network Models	23.09.2011	IFIP WG 2.2, LIAFA, Université Paris Diderot, Pars, France	Seminar	20	all
41	Talk	Carlo Pinciroli (ULB)	The ARGoS simulator	30.09.2011	IROS2011, San Francisco, USA	IROS2011	–	USA
42	Keynote talk	Joseph Sifakis (Verimag)	Rigorous System Design	03.10.2011	VLSI-SoC Conference, Hong Kong, China	Conference	–	all
43	Invited Talk	Matthias Hölzl (LMU)	Adaptation and Awareness in Ensembles	04.10.2011	Formal Methods for Components and Objects, Turin, Italy	Conference	30	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
44	Invited Talk	Rosario Pugliese (UDF)	SCEL: Service Component Ensemble Language	04.10.2011	Formal Methods for Components and Objects, Turin, Italy	Conference	30	all
45	Tutorial	Joseph Sifakis (Verimag)	Rigorous System Design in BIP	09.10.2011	Tutorial on Time-Predictable and Composable Architectures for Dependable Embedded Systems in Esweek, Taipeih, Taiwan	Conference	–	all
46	Tutorial	Rosario Pugliese (UDF)	SCEL: Service Component Ensemble Language	28.10.2011	Awareness Lecture Series	Awareness Virtual Lecture	–	all
47	Invited Talk	Stephan Reiter (LMU)	The ASCENS Science Cloud	02.11.2011	D3S Seminar, Charles University, Prague, Czech Republic	Faculty and PhD. students	20	all
48	Invited Talk	Ugo Montanari (UNIPI)	La Ricerca al Dipartimento di Informatica	11.11.2011	La CEP prima della CEP: storia dell'Informatica, La Limonaia, Pisa, Italy	Seminar	40	all
49	Invited Talk	Ugo Montanari (UNIPI)	Models and Languages for Service Component Ensembles	18.11.2011	Departamento de Computación, Buenos Aires, Argentina	Seminar	40	all
50	Invited Talk	Rolf Hennicker (LMU)	Modal Interface Theories	15.12.2011	Charles University, Prague, Czech Republic	University	20	Czech Republic
51	Invited Talk	Emil Vassev (UL)	Engineering Self-adaptive Systems – Challenges and Approaches	17.01.2012	Seminar at Concordia University , Montreal, Canada	100	–	Canada
52	Workshop Presentation	Gianluca Mezzetti (UNIPI)	Checking Security of Behavioural Variations	03.02.2012	COTICO Workshop, Lucca, Italy	Workshop	40	all
53	Workshop Presentation	Roberto Bruni (UNIPI)	Transactions Being Arranged	03.02.2012	COTICO Workshop, Lucca, Italy	Workshop	40	all
54	Invited Talk	Ugo Montanari (UNIPI)	Network Conscious pi-calculus	09.02.2012	Workshop on Nominal Sets meet Automata Theory, Warsaw, Poland	Seminar	20	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
55	Invited Talk	Rolf Hennicker (LMU)	Challenges and Solutions in Interface-Based Design of Component Systems	25.03.2012	FIT'12, Tallinn, Estonia	Workshop	25	all
56	Invited Talk	Martin Wirsing (LMU)	Algebraic Specifications: From Concurrent Systems to Clouds	01.04.2012	Symposium in honour of Egidio Astesiano, Genova, Italy	Symposium	60	all
57	Invited Talk	Franco Zambonelli and Marco Mamei (UNIMORE)	Toward Sociotechnical Urban Superorganisms	15.05.2012	IBM Smart Cities Center, Dublin, Ireland	Seminar	40	all
58	Invited Talk	Mirco Tribastone (LMU)	Performance Modelling of Large-Scale Hierarchical Systems	22.05.2012	GI-Dagstuhl Seminar, Schloss Dagstuhl, Wadern, Germany	Seminar	30	all
59	Seminar	Nikola Serbedzija (Fraunhofer)	Engineering Awareness	22.05.2012	52. IFIP 2.4 Working Group Meeting, Vadstena, Sweden	Annual meeting	30	all
60	Invited Talk	Mirco Tribastone (LMU)	Performance Modeling of Design Patterns for Distributed Computation	30.05.2012	GI-Dagstuhl Seminar, Schloss Dagstuhl, Wadern, Germany	Seminar	30	all
61	Invited Talk	Alberto Lluch Lafuente (IMT)	A white-box perspective on Adaptation	04.06.2012	International Summer School on Self-Awareness in Autonomic Computing Systems (AWASS 2012)	Summer School	40	all
62	Invited Talk	Franco Zambonelli (UNIMORE)	Reconciling Self-adaptation and Self-organization	05.06.2012	7th International Symposium on Software Engineering for Self-Managing and Adaptive Systems, Zurich Switzerland	Symposium	100	all
63	Invited Talk	Roberto Bruni (UNIPI)	Open Multiparty Interaction	07.06.2012	21st International Workshop on Algebraic Development Techniques, Salamanca, Spain	Workshop	50	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
64	Seminar	Rolf Hennicker (LMU)	View-based development of a simulation framework for multi-disciplinary environmental modelling	14.06.2012	Salamanca, Spain	IFIP Working Group	30	all
65	Invited Talk	Rocco de Nicola (IMT)	A Language-based Approach to Autonomic Computing	16.06.2012	8th International Workshop on Automated Specification and Verification of Web Systems, Stockholm, Sweden	Workshop	20	all
66	Talk	Matthias Hölzl and Annabelle Klarl (LMU)	The POEM Language	18.06.2012	PST Hut Seminar, Bayrischzell, Germany	Faculty and PhD. students	20	Germany
67	Talk	Christian Kroiß (LMU)	Adaptive Runtime-Verification In Multi Agent Systems	18.06.2012	PST Hut Seminar, Bayrischzell, Germany	Faculty and PhD. students	20	Germany
68	Talk	Martin Wirsing (LMU)	The ASCENS Approach	19.06.2012	PST Hut Seminar, Bayrischzell, Germany	Faculty and PhD. students	20	Germany
69	Seminar	Diego Latella (ISTI)	Bisimulation of State-to-Function Labeled Transition Systems of Stochastic Process Languages	07.09.2012	PEPA Club Talks, LFCS – University of Edinburgh, Edinburgh, UK	Faculty and Ph.D. students	15	all
70	Seminar	Roberto Bruni (UNIPI)	Open Multiparty Interactions in the link-calculus	12.09.2012	IMT Seminar series, Lucca, Italy	Faculty and PhD. students	10	all
71	Talk	Nora Koch (LMU)	Model-Driven Development of Access Control Policies	12.09.2012	NESSoS NoE Meeting, Pisa, Italy	NESSoS partners	15	all
72	Invited Talk	Ugo Montanari (UNIPI)	On hierarchical graphs: reconciling bigraphs, gs-monoidal theories and gs-graphs	20.09.2012	ICTCS 2012, 13th Italian Conference on Theoretical Computer Science, Varese, Italy	Conference	50	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
73	Invited Talk	Ugo Montanari (UNIPI)	Il Consorzio Interuniversitario Nazionale per l'Informatica: Presente e Futuro	21.09.2012	Colloquium Ticinense in Honor of Ivo De Lotto, Pavia, Italy	Colloquium	–	Italy
74	Invited Talk	Gian Luigi Ferrari (UNIPI)	Surveillance: data secrecy and Privacy.	25.09.2012	International Workshop on SURVEILLING and SURVEILLANCE, Florence, Italy	Workshop	–	all
75	Invited Talk	Martin Wirsing (LMU)	Softwaretechnik First	29.09.2012	Symposium in honour of Stefan Jähnichen, Berlin, Germany	Symposium	120	all
76	Invited Talk	Martin Wirsing (LMU)	Observations and Specifications	09.11.2012	Symposium in honour of Rolf Hennicker, München, Germany	Symposium	70	all
77	Invited Talk	Michele Boreale (DSIUF)	Worst- and average-case privacy breaches in randomization mechanisms	28.11.2012	Dagstuhl Seminar Series, Germany	Seminar	40	all
78	Invited Talk	Franco Zambonelli (UNIMORE)	Bio-inspired Solutions for Engineering Large-scale Urban Systems	10.12.2012	BIONETICS Conference, Lugano, CH	Conference	60	all
79	Invited Talk	Giacomo Cabri (UNIMORE)	Approaches to Engineer Interactions between Distributed Components	10.01.2013	7th International Conference on Computer Engineering And Applications, Milano, I	Conference	50	all
80	Seminar	Rolf Hennicker (LMU)	Component-Interfaces with Contracts on Ports	22.01.2013	Erlangen, Germany	University	20	all
81	Seminar	Michele Boreale (DSIUF)	Quantitative Models of Confidentiality and Privacy	22.01.2013	DiSIA seminar, University of Firenze	Seminar	50	Italy
82	Workshop	Roberto Bruni, Fabio Gadducci (UNIPI)	Kick-off meeting of Italian MIUR Project CINA	04.02.2013	Pisa, Italy	University	60	Italy

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
83	Presentation	Ugo Montanari (UNIPI)	Constraints for service contracts	04.02.2013	Kick-off meeting of Italian MIUR Project CINA, Pisa, Italy	University	60	Italy
84	Presentation	Andrea Corradini (UNIPI)	Applying Process Analysis to the Italian eGovernment Enterprise Architecture	05.02.2013	Kick-off meeting of Italian MIUR Project CINA, Pisa, Italy	University	60	Italy
85	Talk	Michele Boreale (DSIUF)	Introduction to Quantitative Information Flow (QIF)	05.02.2013	CINA Kickoff Meeting, University of Pisa, Italy	Project meeting	40	Italy
86	Presentation	Roberto Bruni (UNIPI)	From static to dynamic connectors	06.02.2013	Kick-off meeting of Italian MIUR Project CINA, Pisa, Italy	University	60	Italy
87	Seminar	Rolf Hennicker (LMU)	Component-Interfaces with Contracts on Ports: Meta-Theory and Instantiation	16.03.2013	Rome, Italy	IFIP Working Group	30	all
88	Invited Talk	Ugo Montanari (UNIPI)	Indexing processes with computational resources	17.03.2013	ACCAT'13 Workshop, Rome, Italy	Researchers	–	all
89	Tutorial	Nikola Serbedzija (Fraunhofer)	Service Components and Ensembles: Building Blocks for Autonomous Systems	24.03.2013	Lisboa, Portugal	ICAS 2013	20	all
90	Panel	Nikola Serbedzija (Fraunhofer)	How Much Autonomous can be the Autonomous Systems? From Dreams to Facts	24.03.2013	Lisboa, Portugal	ICAS 2013	40	all
91	Invited Talk	Ugo Montanari (UNIPI)	A network-conscious pi-calculus and its coalgebraic semantics	01.06.2013	Glynn Fest Workshop, Cambridge, UK	Researchers	–	all
92	Talk	Fabio Gadducci (UNIPI)	Enriching the flexibility of soft constraints formalisms	10.06.2013	Lix, École Polytechnique	Faculty and PhD. students	25	all
93	Workshop	Martin Wirsing (LMU)	Introduction to the Formal Engineering of Autonomic Systems	18.06.2013	PST Hut Seminar, Bayrischzell, Germany	Faculty and PhD. students	20	Germany, Italy

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94	Workshop	Annabelle Klarl (LMU)	Towards Task-Driven Ensemble Modeling	18.06.2013	PST Hut Seminar, Bayrischzell, Germany	Faculty and PhD. students	20	Germany, Italy
95	Workshop	Lenz Belzner (LMU)	Action Programming in Rewriting Logic	18.06.2013	PST Hut Seminar, Bayrischzell, Germany	Faculty and PhD. students	20	Germany, Italy
96	Summer School	Martin Wirsing (LMU)	ASCENS: Towards Systematically Engineering Ensembles	24.06.2013	Awareness Summer School, Lucca, Italy	PhD. students	40	all
97	Invited Talk	Franco Zambonelli (UNIMORE)	Collective Awareness and Action in Urban Superorganisms	03.07.2013	Platforme Francofone d'Intelligence Artificielle, Lille, F	Conference	160	France
98	Invited Talk	Rolf Hennicker (LMU)	Component-Interfaces with Contracts on Ports: Meta-Theory and Instantiation	09.07.2013	Aveiro, Portugal	Mondrian Workshop	30	Portugal
99	Talk	Fabio Gadducci (UNIPI)	Bisimulations from graphical encodings	12.07.2013	Institut Galilée, Université Paris 13	Faculty and PhD. students	10	all
100	Seminar	Carlo Pinciroli (ULB)	ARGoS: Large-Scale Physics-Based Simulation of Swarm Robotics Systems	19.08.2013	Argonne National Laboratory, IL, USA	Researchers	40	all
101	Invited Talk	Franco Zambonelli (UNIMORE)	Engineering Urban Superorganisms	17.09.2013	Conference of the Academia Europaea, Worclaw, Polans	Conference	80	all
102	Invited Talk	Ugo Montanari (UNIPI)	Software Engineering: new challenges, some solutions	20.09.2013	Knowledge Acceleration and ICT, Pisa, Italy	Computer Science Dept., Informatics Eng. Dept and local companies	100	Italy
103	Invited Talk	Michele Boreale (DSIUF)	An introduction to Quantitative Information Flow (QIF)	24.09.2013	IFIP WG 2.2	IFIP meeting	30	all
104	Invited Talk	Marius Bozga (UJF-Verimag)	Modeling Heterogeneous Real-Time Components in BIP (revisited)	25.09.2013	SEFM 2013, Madrid, Spain	Conference	30	all

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105	Talk	Ugo Montanari (UNIPI)	Named Graphs and HD Automata for Network-Conscious pi-Calculus	13.10.2013	Dagstuhl Seminar 13422, Germany	Workshop		all
106	Seminar	Ugo Montanari (UNIPI)	History Dependent Automata: From Location Bisimulation to Network Conscious pi-Calculus	06.11.2013	IMT Institute for Advanced Studies, Lucca, SysMA – System Modelling and Analysis, Italy	Faculty and Ph.D. students		Italy
107	Seminar	Ugo Montanari (UNIPI)	Static and Dynamic Connectors	15.11.2013	Dipartimento di Scienze Ambientali, Informatica e Statistica, Università Ca' Foscari – Venezia, Italy	Faculty and students		Italy
108	Invited Talk	Roberto Bruni (UNIPI)	Early validation and analysis of adaptive systems using Maude	21.11.2013	VECOS 2013, Florence, Italy	Workshop	30	all
109	Seminar	Ugo Montanari (UNIPI)	Static and Dynamic Connectors	16.12.2013	Radboud University Nijmegen, The Netherlands	Faculty and students		The Netherlands
110	Invited Talk	Martin Wirsing (LMU)	Semantics and Analysis of KLAIM Models in Maude	09.01.2014	IFIP WG 1.3, Hothorpe Hall	Researchers	30	all
111	Keynote talk	Saddek Bensalem (UJF-Verimag)	Rigorous System Design: The BIP Approach	09.01.2014	Winter School on Design Technologies for Heterogeneous Embedded Systems (FETCH'14), Ottawa, Canada	Winter School	60	all
112	Invited Talk	Matteo Sammartino (UNIPI)	An introduction to presheaf models for nominal calculi	27.01.2014	ENS Lyon, France	Researchers	30	all
113	Invited Talk	Rolf Hennicker (LMU)	Specification of Asynchronous Component Systems with Modal I/O-Petri Nets	28.02.2014	Workshop, University of Augsburg	Researchers	10	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
114	Keynote Talk	Rolf Hennicker (LMU)	Dynamically Evolving Ensembles: Modeling and Implementation with the Helena Approach	10.03.2014	International Conference on Artificial Intelligence and Software Technology, ICA2IT'14, Ouargla, Algeria	Conference	200	all
115	Keynote	Petr Tuma (CUNI)	Performance Awareness	25.03.2014	ICPE'14, Dublin, Ireland	Conference	~100	all
116	Seminar	Ugo Montanari (UNIPI)	Why Sometimes Abstract Models Are Better in Practice	26.03.2014	IMT Graduation And Honorary Doctorate Award Ceremony for Ugo Montanari, Lucca, Italy	Seminar		Italy
117	Invited Talk	Martin Wirsing (LMU)	Assembly Theories for Communication-Safe Components	06.04.2014	Festschrift Symposium in Honor of Joseph Sifakis, FPS 2014, Grenoble,	Researchers	50	all
118	Invited Talk	Martin Wirsing (LMU)	Reasoning on Reasoning Robots	15.04.2014	Specification, Algebra, and Software, A Festschrift Symposium in Honor of Kokichi Futatsugi (SAS 2014), Kanazawa, Japan	Researchers	50	all
119	Talk	Rolf Hennicker (LMU)	Foundations for Ensemble Modeling: The HELENA Approach	15.04.2014	Specification, Algebra, and Software, A Festschrift Symposium in Honor of Kokichi Futatsugi (SAS 2014), Kanazawa, Japan	Researchers	50	all
120	Invited Talk	Matteo Sammartino (UNIPI)	Coalgebras and automata for nominal calculi	25.04.2014	Radboud University, Nijmegen, The Netherlands	Researchers	10	all
121	Invited Talk	Franco Zambonelli (UNIMORE)	Self-organization vs self-adaptation approaches to engineering autonomic systems	12.05.2014	SORULES Workshop. London (UK), 2014	Workshop	20	all

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122	Invited Talk	Martin Wirsing (LMU)	Trends der Angewandten Informatik: Vom Personal Computer zum Personalized Computing und Autonomen Systemen	20.05.2014	Festvortrag *10 Jahre Fakultät für Informatik*, Universität Augsburg	Faculty and general public	150	Germany
123	Seminar	Rolf Hennicker (LMU)	Dynamically Evolving Ensembles: Modeling and Implementation with the Helena Approach	28.05.2014	IMT Lucca	Faculty and Ph.D. students	20	Italy
124	Talk	Ugo Montanari (UNIPI)	Causality, Revisited	21.06.2014	Open Problems in Concurrency Theory, Bertinoro, Italy	Workshop		all
125	Invited Talk	Rolf Hennicker (LMU)	Foundations for Ensemble Modeling: The HELENA Approach	26.06.2014	Workshop RoSI (Role-based Software Infrastructures for Continuous-Context-Sensitive Systems), Dresden	Faculty and Ph.D. students	30	Germany
126	Workshop	Annabelle Klarl (LMU)	Helena – Handling massively distributed systems with ELaborate ENsemble Architectures	30.06.2014	PST Hut Seminar, Bayrischzell, Germany	Faculty and PhD. students	20	Germany, Australia
127	Workshop	Martin Wirsing (LMU)	Semantics and Analysis of KLAIM Models in Maude	01.07.2014	Hut Seminar, Sudelfeld	Faculty and PhD. students	20	Germany, Italy
128	Invited Talk	Rolf Hennicker (LMU)	Modeling and Implementation of Ensemble-based Sasystems with HELENA	22.07.2014	German Chapter of the ACM, Regional Group Munich	Industry	30	Germany

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129	Talk	Ugo Montanari (UNIPI)	Declarative vs Procedural Approach for SCSP with an Application to an E-mobility Optimization Problem	23.07.2014	CINA: Compositionality, Interaction, Negotiation, Autonomicity, Italian MIUR PRIN project, WP1 Meeting, Dipartimento di Informatica, Bioingegneria, Robotica e Ingegneria dei Sistemi, Università di Genova, Italy	Workshop	25	all
130	Invited Talk	Martin Wirsing (LMU)	Towards Engineering Personalized and Autonomic Systems	30.08.2014	Seminar, University of Oslo, Oslo	Faculty and PhD. students	25	Norway, Germany
131	Invited Talk	Martin Wirsing (LMU)	Towards Engineering Personalized and Autonomic Systems	02.09.2014	Seminar, Technical University of Denmark, Lyngby	Faculty and PhD. students	20	Denmark
132	Talk	Rolf Hennicker (LMU)	Specification of Asynchronous Component Systems with Modal I/O-Petri Nets	03.09.2014	IFIP WG 1.3 Meeting, Sinaia, Romenia	Researchers	20	all
133	Talk	Rolf Hennicker (LMU)	On the Semantics of HELENA Ensemble Specifications	06.09.2014	Workshop on Algebraic Development Techniques, WADT'14, Sinaia, Romenia	Workshop	50	all
134	Invited Talk	Franco Zambonelli (UNIMORE)	Engineering self-organizing urban superorganisms	08.09.2014	FOCAS Workshop @ SASO. London (UK), 2014	Workshop	50	all
135	Invited Talk	Ugo Montanari (UNIPI)	A Network Conscious pi-calculus model of Pastry	08.09.2014	LSFA 2014 – 9th Logical and Semantic Frameworks, with Applications, Brasília D.F., Brazil	Workshop		all
136	Invited Talk	Rocco De Nicola(IMT)	A formal approach to autonomic systems programming: The SCEL Language	09-11.09.2014	International Conference on Integrated Formal Methods	Conference	40	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
137	Seminar	Rocco De Nicola(IMT)	A formal approach to autonomic systems programming: The SCEL Language	09.09.2014	IKTH Royal Institute of Technology. Stockholm October 24, 2014	Seminar	20	all
138	Invited Talk	Martin Wirsing (LMU)	Semantics and Analysis of KLAIM Models in Maude	15.09.2014	IFIP WG 2.2, München, Germany	Researchers	40	all
139	Invited Talk	Ugo Montanari (UNIPI)	Static and Dynamic Connectors	16.09.2014	Division of Computer Science, School of Electrical and Computer Engineering, National Technical University of Athens	Researchers	–	all
140	Invited Talk	Rocco De Nicola(IMT)	A formal approach to autonomic systems programming: The SCEL Language	17.09.2014	The 15th Italian Conference on Theoretical Computer Science	Conference	40	all
141	Invited Talk	Martin Wirsing (LMU)	Engineering Autonomous Ensembles.	17.09.2014	FET Seminar, European Commission, Brussels	Project Officers	20	all
142	Invited Talk	Martin Wirsing (LMU)	Engineering Autonomous Ensembles	18.09.2014	RE.WORK Workshop, London	Industry	70	all
143	Invited Talk	Saddek Bensalem (UJF-Verimag)	Compositional Verification of Timed Systems	29.09.2014	8th International Workshop on Verification and Evaluation of Computer and Communication Systems, Bejaïa, Algeria, 29-30.09.2014	Workshop	70	all
144	Invited Talk	Nikola Serbedzija	Complexity of Autonomous Behaviors	September 2014	SAI 2014 – Science and Informacion Conference, London	Conference	100	all
145	Invited Talk	Michele Boreale (DSIUF)	Formally bounding Information Flow by Statistical Estimation	September 2014	IFIP WG 2.2	IFIP meeting	30	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
146	Workshop	Martin Wirsing (LMU)	Introduction to Rigorous Engineering of Autonomic Ensembles	09.10.2014	ISOLA 2014, Corfu, Greece	Researchers	40	all
147	Invited Talk	Martin Wirsing (LMU)	Formal Methods for Collective Adaptive Ensembles	11.10.2014	Workshop on Formal Aspects of Mastering Change, Corfu, Greece	Researchers	15	all
148	Invited Talk	Ugo Montanari (UNIPI)	Coordinating Mobile Processes with Committed JOIN	15.10.2014	MatthewFest – In Honor of Matthew Hennessy, IMT Institute for Advanced Studies	Researchers	–	all
149	Keynote Talk	Rolf Hennicker (LMU)	Role-based Adaptation of Ensembles	04.11.2014	International Conference on Advanced Concepts of Software Engineering, ICAASE'14, Constantine, Algeria	Conference	100	all
150	Seminar	Michele Loreti (UDF)	Model checking 3D	21.11.2014	PEPA Club, Laboratory for Foundations of Computer Science , University of Edinburgh	Researchers	–	all
151	Talk	Nikola Serbedzija	Anatomy of Autonomous Systems	5.11.2014	IFIP WG 2.4	IFIP 2.4 WG, Stellenbosch, South Africa	30	all
152	Invited Talk	Martin Wirsing (LMU)	Toward Systematically Engineering Ensembles	15.12.2014	Dagstuhl Seminar 14512 on Collective Adaptive Systems: Qualitative and Quantitative Modelling and Analysis, Dagstuhl	Researchers	30	all
153	Invited Talk	Ugo Montanari (UNIPI)	Declarative vs Procedural Approach for SCSP with an Application to an E-mobility Optimization Problem	14.12.2014	Dagstuhl Seminar 14512	Researchers	–	all

No.	Type of activities	Presenter	Title	Date	Place	Type of audience	Size	Countries
154	Invited Talk	Annabelle Klarl (LMU)	Role-based Adaptation	16.12.2014	Dagstuhl Seminar 14512 on Collective Adaptive Systems: Qualitative and Quantitative Modelling and Analysis, Dagstuhl	Researchers	30	all
155	Invited Talk	Ugo Montanari (UNIPI)	Declarative vs Procedural Knowledge: the Case of Soft Constraint Satisfaction Problems, with an Application to an E-mobility Optimization Problem	09.01.2015	Symposium on Coordination Models and Languages in Honor of Farhad Arbab, CWI	Researchers	–	all
156	Invited Talk	Josef Glöckl-Frohnholzer (Zimory AG)	Community Cloud – The Community Cloud as Base Technology for the Industry 4.0	17.03.2015	Future Talks at CeBIT 2015, 16-20.03.2015	Exhibition		all

2.6   Organization of Events

ASCENS members participated in the organization of 45] conferences and 55 workshops in different roles, such as chairs of the event, Program Committee (PC) or Steering Committee (SC) members. In addition to the event name, the type and size of the audience is provided as additional information. All the events addressed participants of all countries.

An increasing number of international conferences welcome the organization of satellite events that focus on aspects that are more specific than the topics of the conference, as a means to maximize interaction between participants and to give visibility to emerging areas with clear impact on science and technology. ASCENS members seized this opportunity by collocating some of the organized workshops with major conferences, such as GT-VMT at ETAPS 2011, ICE at DisCoTec'11, as well as FIT, QAPL and GRAPHITE at ETAPS 2012 and 2014, and MDsec at MoDELS 2012.

We would like to point to the Collective Adaptive Systems Seminar at Dagstuhl organized by the ASCENS coordinator Martin Wirsing and ASCENS members Matthias H⸲olzl and Franco Zambonelli.

2.6.1   Conferences

- Joint 13th IFIP International Conference on Formal Methods for Open Object-based Distributed Systems and 31th IFIP International Conference on FORmal TEchniques for Networked and Distributed Systems (FMOODS-FORTE 2011), 6 – 9 June 2011, Reykjavik (Iceland), Faculty and Ph.D. Students, 40, all countries, UNIPI, Roberto Bruni

- 20th European Conference on Artificial Life (ECAL), 8 – 12 August 2011, Paris (France), Faculty and Ph.D. Students, 500, all countries, ULB, Marco Dorigo

- 4th Conference on Algebra and Coalgebra in Computer Science (CALCO 2011), 30 August – 02 September 2011, Winchester (UK), Faculty and Ph.D. Students, 70, all countries, UNIPI, Andrea Corradini & Ugo Montanari.

- International Colloquium on Theoretical Aspects of Computing 2011 (ICTAC 2011), 31 August 31 – 02 September 2011, Johannesburg (South Africa), Faculty and Ph.D. Students, 100, all countries, ISTI, Mieke Massink (PC member)

- 6th International Symposium on Trustworthy Global Computing (TGC 2011), 9 – 10 September 2011, Aachen (Germany), Faculty and Ph.D. Students, 30, all countries, UNIPI, Roberto Bruni

- 14th International Conference on Coordination Models and Languages (Coordination 2012), June 2012, Stockholm, Sweden, Faculty and Ph.D. Students, 60, all countries, UNIPI, Roberto Bruni (PC member)

- IFIP Joint International Conference on Formal Techniques for Distributed Systems (FMOODS-FORTE 2012), June 2012, Stockholm, Sweden, Faculty and Ph.D. Students, 60, all countries, UNIPI, Roberto Bruni (PC member)

- 9th International Conference on Integrated Formal Methods, 18 – 22 June 2012, Pisa (Italy), Faculty and Ph.D. Students, 100, all countries, ISTI, Diego Latella (PC co-hhair)

- 4th ACM SIGCHI Symposium on Engineering Interactive Computing Systems (EICS 2012), Copenhagen (Denmark), 25 – 28 June 2012, Faculty and Ph.D. Students, 200, all countries, ISTI, Mieke Massink (PC member)

- 23rd International Conference on Concurrency Theory (CONCUR 2012), September 2012, Newcastle upon Tyne, UK, Faculty and Ph.D. Students, 100, all countries, UNIPI, Roberto Bruni (PC member).

- ANTS 2012: Eight International Conference on Swarm Intelligence, 12 – 14 September 2012, Brussels (Belgium), Faculty and Ph.D. Students, 100, all countries, ULB, Marco Dorigo (general chair).

- 9th International Symposium on Formal Aspects of Component Software (FACS 2012) – September 2012, Mountain View, CA, USA, Faculty and Ph.D. Students, 40, all countries, UNIPI, Roberto Bruni (PC member)

- 1st International Conference on Context-Aware Systems and Applications (ICCASA 2012), 26 – 27 November 2012, Ho Chi Minh City (Vietnam), 200, all countries, UL, Emil Vassev (steering).

- 6h International Conference on Health Informatics (HEALTHINF 2013), Barcelona (Spain), 11 – 14 February 2013, Faculty and Ph.D. Students, 200, all countries, UDF and IMT, Rosario Pugliese (PC member), Francesco Tiezzi (PC member)

- 4th ACM/SPEC International Conference on Performance Engineering, 21 – 24 April 2013, Prague, (Czech Republic), Faculty and Ph.D. students, 160, all countries, CUNI, Petr Tuma (General co-chair)

- 15th International Conference on Coordination Models ad Languages (COORDINATION 2013), Firenze (IT), 3 – 5 June 2013, Faculty and Ph.D. Students, 30, all countries, ISTI/UDF, Mieke Massink and Rosario Pugliese (PC members)

- Joint 15th IFIP International Conference on Formal Methods for Open Object-based Distributed Systems and 33rd IFIP International Conference on FORmal TEchniques for Networked and Distributed Systems (FMOODS-FORTE 2013), 3 – 5 June 2013, Florence (Italy), Faculty and Ph.D. Students, 40, all countries, Michele Boreale, DSIUF (PC co-chair)

- 8th International Federeted Conference on Distributed Computing Techniques (DisCoTec2013), Firenze (IT), 3 – 6 June 2013, Faculty and Ph.D. Students, 120, all countries, UDF, Michele Loreti (General Chair), Rosario Pugliese (publicity chair)

- 10th International Conference on Integrated Formal Methods, 10 – 14 June 2013, Turku (Finland), Faculty and Ph.D. Students, 100, all countries, ISTI/UDF, Diego Latella (and Michele Loreti (PC members)

- 5th ACM SIGCHI Symposium on Engineering Interactive Computing Systems (EICS 2013), London (UK), 24 – 27 June 2013, Faculty and Ph.D. Students, 200, all countries, ISTI, Mieke Massink (PC member)

- 8th Symposium on Trustworthy Global Computing (TGC 2013) – August 2013, Argentina, Faculty and Ph.D. Students, 40, all countries, IMT, Alberto Lluch Lafuente (co-chair)

- 7th International Conference on Self-adaptive and Self-organizing Systems (SASO 2013), Philadelphia (USA), 9-13 September 2013, Faculty and Ph.D. Students, 120, all countries, UNIMORE, Franco Zambonelli (Steering committee member)

- 28-esimo Convegno Italiano di Logica Computazionale (CILC 2013), Catania, 25 – 27 September 2013, Faculty and Ph.D. Students, 40, all countries, IMT, Valerio Senni (PC member)

- 10th International Symposium on Formal Aspects of Component Software (FACS 2013) – October 2013, Nanchang, China, Faculty and Ph.D. Students, 40, all countries, UNIPI, Roberto Bruni (PC member)

- Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2013) – December 2013, IIT Guwahati, India, Faculty and Ph.D. Students, 60, all countries, UNIPI, Roberto Bruni (PC member)

- 7th International Conference on Performance Evaluation Methodologies and Tools (ValueTools 2013) – December 2013, Torino, Italy, Faculty and Ph.D. Students, 60, all countries, UDF, Michele Loreti (PC member)

- 7th International Conference on Health Informatics (HEALTHINF 2014), Angers (France), 3 – 6 March 2014, Faculty and Ph.D. Students, 200, all countries, UDF and IMT, Rosario Pugliese and Francesco Tiezzi (PC members)

- The European Joint Conferences on Theory and Practice of Software (ETAPS), Grenoble (France), 5 – 13 April 2014, Faculty and Ph.D. Students, 400, all countries, UJF-Verimag, Saddek Bensalem (organizer)

- 17th International Conference on Fundamental Approaches to Software Engineering (FASE), Grenoble (F), 5 – 14 April 2014, Faculty and Ph.D. Students, 50, all countries, ISTI and UDF and LMU, Mieke Massink and Rosario Pugliese and Martin Wirsing (PC members)

- 20th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), Grenoble (F), 5 – 14 April 2014, Faculty and Ph.D. Students, 50, all countries, UJF-Verimag, Saddek Bensalem (PC member)

- 34th IFIP International Conference on Formal Techniques for Distributed Objects, Components and Systems (FORTE 2014) – June 3-6, 2014, Berlin, Germany, Faculty and Ph.D. Students, 50, all countries, UNIPI/IMT, Alberto Lluch Lafuente and Roberto Bruni (PC member)

- 16th International Conference on Coordination Models and Languages (COORDINATION 2014) – June 3-6, 2014, Berlin, Germany, Faculty and Ph.D. Students, 50, all countries, UDF and LMU, Rosario Pugliese (Program Co-Chair), Michele Loreti and Martin Wirsing (PC members)

- 30th Conference on Mathematical Foundations of Programming Semantics (MFPS XXX) June 2014, Ithaca, New York, USA, Faculty and Ph.D. Students, 40, all countries, UNIPI, Fabio Gadducci (PC member)

- 39th International Symposium on Mathematical Foundations of Computer Science (MFCS 2014) – August 2014, Budapest, Ungheria, Faculty and Ph.D. Students, 100, all countries, UNIPI, Fabio Gadducci (PC member)

- 25th International Conference on Concurrency Theory (CONCUR 2014) – September 2014, Rome, Italy, Faculty and Ph.D. Students, 100, all countries, UNIPI, Fabio Gadducci (PC member)

- 11th International Symposium on Formal Aspects of Component Software(FACS 2014) – September 2014, Bertinoro, Italy, Faculty and Ph.D. Students, 40, all countries, UNIPI/IMT, Alberto Lluch Lafuente and Roberto Bruni (PC members)

- 15th Italian Conference on Theoretical Computer Science (ICTCS 2014) – September 2014, Perugia Italy, Faculty and Ph.D. Students, 40, Italy, UNIPI, Fabio Gadducci (PC member)

- 12th International Conference on Formal Modeling and Analysis of Timed Systems (FOR-MATS), Florence, Italy, September 8-10 2014, Marius Bozga (co-PC Chair with Axel Legay)

- 11th International Conference on Integrated Formal Methods, 9 – 11 September 2014, Bertinoro, Italy, Faculty and Ph.D. Students, 100, all countries, ISTI, Diego Latella (PC member)

- ANTS 2014: Ninth International Conference on Swarm Intelligence, 10 – 12 September 2014, Brussels (Belgium), Faculty and Ph.D. Students, 100, all countries, ULB, Marco Dorigo (general chair).

- 9th Symposium on Trustworthy Global Computing (TGC 2014) – September 2014, Italy, Faculty and Ph.D. Students, 20, all countries, IMT, UDF and UNIPI, Fabio Gadducci, Alberto Lluch Lafuente and Michele Loreti (PC members)

- 11th International Colloquium on Theoretical Aspects of Computing (ICTAC 2014) – 17-19 September 2014, Bucharest, Romania, Faculty and Ph.D. Students, 80, all countries, LMU, Martin Wirsing (PC Member)

- 8th International Conference on Performance Evaluation Methodologies and Tools (ValueTools 2014) – December 2014, Bratislava, Slovakia, Faculty and Ph.D. Students, 60, all countries, UDF, Michele Loreti (PC member)

- 8th International Conference on Health Informatics (HEALTHINF 2015), Lisbon (Portugal), 12 – 15 January 2015, Faculty and Ph.D. Students, 200, all countries, UDF and IMT, Rosario Pugliese (PC member), Francesco Tiezzi (PC member)

- 18th International Conference on Fundamental Approaches to Software Engineering (FASE), London, UK, 11 – 18 April 2015, Martin Wirsing (PC member)

- 10th International Conference on the Evaluation of Novel Approaches to Software Engineering (ENASE 2015) April 29-30, 2015, Barcelona, Spain, LMU, Martin Wirsing (PC member)

2.6.2 Workshops

- Workshop on Foundations and Applications of Component-based Design (WFCD in ESWeek), 24 October 2010, Scottsdale (Arizona, USA), University and Industry, 39, all countries, Verimag, Jacques Combaz & Joseph Sifakis

- Ninth Workshop on Quantitative Aspects of Programming Languages (QAPL 2011), 1 – 3 April 2011, Saarbrücken (Germany), International, 30, all countries, ISTI, Mieke Massink (PC co-Chair)

- 10th International Workshop on Graph Transformation and Visual Modelling Techniques (GT-VMT 2011), 2 – 3 April 2011, Saarbrücken (Germany), Faculty and Ph.D. Students, 40, all countries, UNIPI, Fabio Gadducci (PC co-chair)

- 7th International Workshop on Automated Specification and Verification of Web Systems (WWV 2011), 9 June 2011, Reykjavik (Iceland), International, 15, all countries, UDF/IMT, Rosario Pugliese (Program chair) and Francesco Tiezzi (Program chair)

- 4th Interaction and Concurrency Experience (ICE 2011), 9 June 2011, Reykjavik (Iceland), Faculty and Ph.D. Students, 25, all countries, UNIPI, Roberto Bruni

- 16th International Workshop on Formal Methods for Industrial Critical Systems (FMICS2012), 29 – 30 August 2011, Trento (IT), International, 30, all countries, ISTI, Diego Latella (PC member)

- Third Annual Meeting and Workshop of the Models and Logics for Quantitative Analysis ERCIM WG (MLQA 2011), 5 September 2011, Aachen (Germany), International, 30, all countries, ISTI, Diego Latella.

- 1st SASO Workshop on Self-awareness in Autonomic Systems (AWARE2011), 7 October 2011, Ann Arbor (Michigan, USA), International, 30, all countries, UNIMORE, Giacomo Cabri (workshop chair)

- Fourth International Workshop on Foundations of Interface Technologies (FIT 2012), 25 March 2012, Tallin (Estonia), International, 30, all countries, LMU, Sebastian Bauer

- 9th International Workshop on Rewriting Logic and its Applications (WRLA 2012), March 2012, Tallin (Estonia), International, 30, all countries, UNIPI, Roberto Bruni (PC member)

- 27th ACM SAC track on Service-Oriented Architectures and Programming (SOAP 2012), March 2012, Trento (Italy), Faculty and Ph.D. Students, 20, all countries, UNIPI, Roberto Bruni (PC member)

- Tenth Workshop on Quantitative Aspects of Programming Languages (QAPL 2012), 31 March – 1 April 2012, Tallin (Estonia), International, 30, all countries, ISTI, Mieke Massink (PC co-Chair)

- 1st Workshop on Graph Inspection and Traversal Engineering (GRAPHite 2012), 1 April 2012, Tallin (Estonia), International, 30, all countries, IMT, Alberto Lluch Lafuente (PC member)

- 5th Interaction and Concurrency Experience (ICE 2012), 16 June 2012, Stockholm (Sweden), Faculty and Ph.D. Students, 25, all countries, UNIPI/IMT, Roberto Bruni, Alberto Lluch Lafuente and Francesco Tiezzi (PC members)

- 8th International Workshop on Automated Specification and Verification of Web Systems (WWV 2012), 16 June 2012, Stockholm (Sweden), International, 20, all countries, IMT/UDF, Francesco Tiezzi (Program chair) and Rosario Pugliese (PC member)

- First International Workshop on Formal Methods for Self-Adaptive Systems (FMSAS 2012), 27 – 28 June 2012, Montreal (QC, Canada), International, 20, all countries, UL, Emil Vassev (chair), Mike Hinchey (steering)

- 8th Model-Driven and Agile Engineering for the Web (MDWE 2012), 25 July 2012, Berlin (Germany), International, 30, all countries, LMU, Nora Koch (co-organizer)

- 3rd Workshop on the Web and Requirements Engineering (WeRE 2012), 27 July 2012, Berlin (Germany), International, 20, all countries, LMU, Nora Koch (co-organize)

- 17th International Workshop on Formal Methods for Industrial Critical Systems (FMICS2012), 27 – 28 August 2012, Paris (France), International, 30, all countries, ISTI, Mieke Massink (PC member)

- 9th International Workshop on Web Services and Formal Methods (WS-FM 2012), September 2012, Tallinn, Estonia, International, 30, all countries, UNIPI, Roberto Bruni (PC member)

- 2nd SASO Workshop on Self-awareness in Autonomic Systems (AWARE2012), 10 September 2012, Lyon (France), International, 20, all countries, UNIMORE, Franco Zambonelli & Giacomo Cabri (workshop chair)

- 6th International Symposium on Trustworthy Global Computing (TGC 2012), 7 – 8 September 2012, Newcastle (UK), International, 30, all countries, IMT/UNIPI/LMU, Martin Wirsing, Ugo Montanari and Rocco De Nicola (steering committee members), Roberto Bruni and Alberto Lluch Lafuente (PC members)

- 11th International Workshop on Foundations of Coordination Languages and Self Adaptation (FOCLASA 2012), 8 September 2012, Newcastle (UK), International, 30, all countries, IMT, Francesco Tiezzi (PC member)

- First Model-Driven Security Workshop (MDsec 2012) at MoDELS 2012 conference, 1 October 2012, Innsbruck (Austria), International, 30, all countries, LMU, Nora Koch (co-organizer).

- 28th ACM SAC track on Service-Oriented Architectures and Programming (SOAP 2013), March 2013, Coimbra (Portugal), Faculty and Ph.D. Students, 20, all countries, IMT and UNIPI, Roberto Bruni, Francesco Tiezzi (PC member)

- 8th Workshop on Applied and Computational Category Theory (ACCAT 2013), March 17, 2013, Rome (IT), International, 30, all countries, UNIPI, Fabio Gadducci (PC co-chair)

- Eleventh International Workshop on Quantitative Aspects of Programming Languages (QAPL 2013), March 23-24, 2013, Rome (IT), International, 30, all countries, ISTI, Mieke Massink (PC member)

- Fondamentals of Collective Adaptive Systems Inter-project Workgroup, 4-6 June 2013, Barcelona (S), Faculty and Ph.D. Students, 25, all countries, UNIMORE, Franco Zambonelli, Giacomo Cabri (co-organizers)

- 9th International Workshop on Automated Specification and Verification of Web Systems (WWV 2013), 6 June 2013, Firenze (Italy), International, 15, all countries, IMT, Francesco Tiezzi (PC member)

- 6th Interaction and Concurrency Experience (ICE 2013) – July 2013, Italy, Faculty and Ph.D. Students, 30, all countries, IMT, ISTI and UNIPI, Alberto Lluch Lafuente (co-organizer), Roberto Bruni, Giacoma Valentina Monreale, Valerio Senni (PC member)

- 7th International HPCS Workshop on Modeling and Simulation of P2P and Autonomic Systems (MOSPAS 2013) – July 2013, Finnland, Faculty and Ph.D. Students, 20, all countries, IMT, Alberto Lluch Lafuente (co-chair) and Francesco Tiezzi (PC member)

- 10th Workshop on Web Services and Formal Methods (WS-FM 2013) – August 2013, China, Faculty and Ph.D. Students, 30, all countries, IMT, Alberto Lluch Lafuente (PC member)

- 3rd SASO Workshop on Self-awareness in Autonomic Systems (AWARE2013), 8 September 2013, Philadelphia (USA), International, 20, all countries, UNIMORE, Giacomo Cabri (workshop chair)

- 12th International Workshop on Foundations of Coordination Languages and Self Adaptation (FOCLASA 2013), 11 September 2013, Malaga (Spain), International, 30, all countries, IMT, Francesco Tiezzi (PC member)

- 18th International Workshop on Formal Methods for Industrial Critical Systems (FMICS2013), 23 – 24 September 2013, Madrid (E), International, 30, all countries, ISTI, Diego Latella (PC member)

- 1st PDP Session on Formal Approaches to Parallel and Distributed Systems (4PAD 2014), February 2014, Italy, Faculty and Ph.D. Students, 20, all countries, IMT, Alberto Lluch Lafuente (co-chair)

- 29th ACM SAC track on Service-Oriented Architectures and Programming (SOAP 2014), March 2014, Korea, Faculty and Ph.D. Students, 20, all countries, IMT and UNIPI, Alberto Lluch Lafuente (co-chair), Roberto Bruni (PC member)

- Twelvth International Workshop on Quantitative Aspects of Programming Languages (QAPL 2014), April 12-13, 2014, Grenoble (F), International, 30, all countries, ISTI, Mieke Massink (PC member)

- 3rd Workshop on Graph Inspection and Traversal Engineering (GRAPHITE 2014) – April 2014, France, Faculty and Ph.D. Students, 20, all countries, IMT and UDF, Alberto Lluch Lafuente (co-chair), Michele Loreti (PC member), Mieke Massink (PC member), Valerio Senni (PC member)

- 10th International Workshop on Rewriting Logic and its Applications (WRLA 2014)– April 2014, France, Faculty and Ph.D. Students, 30, all countries, IMT and UNIPI, Roberto Bruni, Alberto Lluch Lafuente and Ugo Montanari (PC members)

- 7th Interaction and Concurrency Experience (ICE 2014) – June 6, 2014, Berlin, Germany, Faculty and Ph.D. Students, 20, all countries, IMT and UNIPI, Alberto Lluch Lafuente (co-chair), Roberto Bruni (PC member)

- 1st ICAPS Workshop on Model Checking and Automated Planning (MOCHAP 2014) – June 2014, Portsmouth, USA, International, 20, all countries, IMT, Alberto Lluch Lafuente (PC member)

- Open Problems in Concurrency Theory (OPCT 2014) – June 2014, Bertinoro, Italy, Faculty and Ph.D. Students, 60, all countries, UDF, Michele Loreti (co-organizer)

- 8th International HPCS Workshop on Modeling and Simulation of P2P and Autonomic Systems (MOSPAS 2014) – July 2014, Bologna (Italy), Faculty and Ph.D. Students, 20, all countries, IMT/CUNI/UNIMORE, Francesco Tiezzi (co-chair), Alberto Lluch Lafuente (PC member), Petr Tuma (PC member), Giacomo Cabri (PC member)

- 10th International Workshop on Automated Specification and Verification of Web Systems (WWV 2014), 18 July 2014, Vienna (Austria), International, 15, all countries, IMT, Francesco Tiezzi (PC member)

- 2nd IEEE International Workshop on Formal Methods Integration (FMi 2014) – August 2014, San Francisco, CA, USA, Faculty and Ph.D. Students, 20, all countries, UDF, Michele Loreti (PC member)

- 13th International Workshop on Foundations of Coordination Languages and Self Adaptation (FOCLASA 2014), 6 September 2014, Rome (Italy), International, 30, all countries, IMT, Francesco Tiezzi (PC member)

- 4th International Workshop on Adaptive Services for the Future Internet (WAS4FI 2014), September 2014, Manchester (UK), International, 20, all countries, IMT, Alberto Lluch Lafuente (PC member)

- 11th International Workshop on Web Services and Formal Methods: Formal Aspects of Service-Oriented and Cloud Computing (WS-FM 2014), September 11-12, 2014, Haifa, Israel, Faculty and Ph.D. Students, 20, all countries, UNIPI, Roberto Bruni (PC member)

- Track on Rigorous Engineering of Autonomic Ensembles of ISOLA 2014, October 08-11, 2014, Corfu, Greece, Researchers and Ph.D. Students, 60, all countries, IMT and LMU, Rocco De Nicola, Matthias Hölzl, Martin Wirsing (track organizers)

- Second International Workshop on Formal Methods for Self-Adaptive Systems (FMSAS 2014), November 24–25, 2014, Ho Chi Minh City, Vietnam , International, 20, all countries, UL, Emil Vassev (chair), Mike Hinchey (steering)

- Collective Adaptive Systems: Qualitative and Quantitative Modelling and Analysis Dagstuhl Seminar 14512, December 14 – 19, 2014, Researchers and Ph.D. Sudents, 30, all countries, UNIMORE and LMU, Franco Zambonelli and Martin Wirsing (organizers), Matthias Hölzl (coordinator)

- Symposion on Software, Services and Systems in Honour of Martin Wirsing, March 5-6, 2015, Munich (DE), International, 60, all countries, LMU, Rolf Hennicker and Rocco De Nicola (organizers)

- 13th International Workshop on Quantitative Aspects of Programming Languages (QAPL 2015), April 11-12, 2015, London (UK), International, 30, all countries, ISTI, Mieke Massink (PC member)

- 30th ACM SAC track on Coordination Models, Languages and Applications (CM 2015), April 2015, Spain, Faculty and Ph.D. Students, 20, all countries, IMT and UDF, Francesco Tiezzi (co-chair), Rocco De Nicola (PC member), Rosario Pugliese (PC member)

2.7 Summer Schools

ASCENS members actively participated in the organization of the AWARENESS schools. On the one hand many lecturers of the AWARENESS Virtual Lecture Series (AVLS) were ASCENS members. On the other hand senior researchers of ASCENS organized the AWARENESS summer school held in Edinburgh, UK (AWASS 2012), and AWASS 2013, held in Lucca, Italy, which was attended among others by several ASCENS PhD students.

The ECAS Spring School organized by the ASCENS Consortium aims to give PhD students and other young researchers a comprehensive overview of theoretical, practical, and technological issues related to collective self-aware autonomic systems - so-called ensembles. The overview will be presented by keynote speakers, industrial talks, and experts in ASCENS methods, tools and best practices. Special emphasis will be on the pragmatic work to be realized by the participants applying languages, techniques and tools developed in the ASCENS project to different case studies. The Spring School will take place in the same week as the fourth review of the project (March 23-27, 2015).

- Artist Summer School Europe 2011, 04 – 09 Sept 2011, Aix-les-Bains (France), University and Ph.D. students, 87, all countries, Verimag, Jacques Combaz

- Awareness Virtual Lecture Series (AVLS), all countries, LMU, UDF, UNIMORE, IMT, including the following lectures of ASCENS members:

    - SCEL: Service Component Ensemble Language - Rosario Pugliese (October 28, 2011)
    - Self-aware Pervasive Service Ecosystems - Franco Zambonelli (November 11, 2011)
    - Adaptation and Awareness in Robot Ensembles - Matthias Hölzl (November 25, 2011)

- Awareness Summer School (AWASS 2012), 10 – 16 June 2012, Edinburgh (UK), PhD Students, 30, all countries, IMT, Andrea Vandin, Alberto Lluch

- Nano-Tera/Artist Summer School Europe 2012, 17 – 21 September 2012, Aix-les-Bains (France), University and Ph.D. students, 64, all countries, Verimag, Jacques Combaz

- Awareness Summer School (AWASS 2013), 24 – 28 June 2013, Lucca (Italy), PhD Students, 30, all countries, UDF, Andrea Vandin and Alberto Lluch Lafuente (organizers), LMU Martin Wirsing (invited speaker), Michele Loreti and Matthias Hölzl (teachers).

- Summer School on Cyber-Physical Systems 2013, 08 – 12 July 2013, Grenoble (France), University and Ph.D. students, 70, all countries, Verimag, Saddek Bensalem (organizer)

- Summer School on Cyber-Physical Systems 2014, 07 – 10 July 2014, Grenoble (France), University and Ph.D. students, 70, all countries, Verimag, Saddek Bensalem (organizer)

- Spring School on Engineering Collective Autonomic Systems (ECAS 2015), 23 – 27 March 2015, Lucca (Italy), Ph.D. students, 30, all countries, ASCENS Cnsortium (organizers)

2.8 Courses and PhD Students

The academia partners taught ASCENS-related topics in many courses and several PhD. Students made their degree based on ASCENS research topics and provided important results for the project. The list below shows 59 graduate and postgraduate courses and tutorials. Some of them were taught in more than one term. The list provides name of the courses, type and size of the audiences (if available), location, members that were responsible for the course and the acronym of the partner. The list of Ph.D students includes finalized and ongoing work.

2.8.1 Graduate and Postgraduate Courses and Tutorials

- Distributed systems and computer networks, Autumn 2010, University of Florence (Italy), master students, 10, UDF, Rosario Pugliese and Francesco Tiezzi.

- Modellierung dynamischer und adaptiver Systeme, Winter Term 2010/11, Ludwig-Maximilians-Universität München (Germany), master and diploma students, 10, LMU, Martin Wirsing and Wolfgang Hesse.

- Models of Computation, Spring 2011, University of Pisa (Italy), graduate students, 50, UNIPI, Ugo Montanari.

- Semantica e Teoria dei Tipi (in Italian), Spring 2011, University of Pisa and Scuola Normale (Italy), graduate and PhD students, 10, UNIPI, Ugo Montanari.

- Elements of Computability Theory, Spring 2011, IMT (Italy), PhD students, 10, UNIPI, Ugo Montanari.

- Concurrency Models, Spring 2011, IMT (Italy), PhD students, 10, UNIPI, Ugo Montanari.

- Formal Methods for Security Policies and Protocols, Spring 2011, University of Pisa (Italy), master students, 15, UNIPI, Fabio Gadducci.

- Methods for the specification and verification of business processes, Spring 2011, University of Pisa (Italy), master students, 23, UNIPI, Roberto Bruni.

- Formal Methods for Concurrent System, Spring 2011, IMT (Italy), PhD students, 7, UNIPI and IMT, Roberto Bruni and Rocco De Nicola.

- Probabilistic and Stochastic Methods in Process Algebras, Spring 2011, IMT (Italy), PhD students, IMT, Rocco De Nicola.

- Software Verification Methods, Spring 2011, University of Pisa (Italy), master students, 5, UNIPI, Andrea Corradini and Gianluigi Ferrari.

- Techniques for System Verification and Evaluation, Spring 2011, Universitá di Firenze (Italy), undergraduate students, 10, ISTI, Mieke Massink.

- Swarm Intelligence INFO-H-414, Spring 2010-2014, Université Libre de Bruxelles (Belgium), undergraduate students, 30, IRIDIA-ULB, Marco Dorigo, Mauro Birattari, Carlo Pinciroli

- Software and Service Engineering, Spring 2011, 2012, 2013, and 2014, Universita di Modena e Reggio Emilia (Italy), undergraduate students, 25, UNIMORE, Franco Zambonelli.

- Distributed Software Systems, Autumn 2011, 2012, 2013, and 2014, Universitá di Modena e Reggio Emilia (Italy), undergraduate students, 20, UNIMORE, Franco Zambonelli and Giacomo Cabri.

- Formal Methods for Specification and Validation, Autumn 2011, IMT Lucca, Phd students, UNIPI, Gianluigi Ferrari.

- Methods for the specification and verification of business processes, Autumn 2011, University of Pisa (Italy), master students, 20, UNIPI, Roberto Bruni.

- Distributed systems and computer networks, Autumn 2011, University of Florence (Italy), master students, 10, UDF, Rosario Pugliese and Francesco Tiezzi.

- Simulation with ARGoS, Spring 2011, Ludwig-Maximilians-Universität München (Germany), students and PhD students, 7, LMU, Annabelle Klarl

- Program analysis and code verification, Autumn 2011, CUNI (Czech Republic), master students, 13, CUNI, Jan Kofron.

- System behavior models and verification, Spring 2012, CUNI (Czech Republic), master students, 20, CUNI, Jan Kofron.

- Modellierung dynamischer und adaptiver Systeme, Winter Term 2011/12, Ludwig-Maximilians-Universität München (Germany), bachelor, master and diploma students, 17, LMU, Martin Wirsing and Wolfgang Hesse.

- Adaptive Agenten, Summer Term 2012, Ludwig-Maximilians-Universität München (Germany), bachelor students, 18, LMU, Martin Wirsing, Andreas Schroeder, Annabelle Klarl, Christian Kroiß, Lenz Belzner.

- Methods for the specification and verification of business processes, Autumn 2012, University of Pisa (Italy), master students, 25, UNIPI, Roberto Bruni.

- Formal Methods for System Verification, Winter term 2012/13, Universitá di Firenze (Italy), undergraduate students, 10, UDF, Michele Loreti, ISTI, Mieke Massink.

- Principles of Concurrent and Distributed Programming, Winter term 2012/23, IMT (Italy), PhD students, IMT, Rocco De Nicola

- Software Engineering and Service Oriented Systems, September/October 2012, IMT (Italy), PhD students, 6, IMT/LMU, Francesco Tiezzi, Martin Wirsing.

- Models of Sequential and Concurrent Systems, Winter term 2012/13, Universita' di Firenze(Italy), master students, 10, UDF, Rosario Pugliese.

- Modellierung dynamischer und adaptiver Systeme, Winter Term 2012/13, Ludwig-Maximilians-Universität München (Germany), bachelor, master and diploma students, 12, LMU, Martin Wirsing and Wolfgang Hesse.

- Software Verification Methods, Spring 2013, University of Pisa (Italy), master students, 5, UNIPI, Andrea Corradini.

- Formal Methods in Computer Science, April 2013, IMT (Italy), PhD students, 8, IMT, Valerio Senni, Francesco Tiezzi.

- Formale Techniken in der Software-Entwicklung, Summer Term 2013, Ludwig-Maximilians-Universität München (Germany), bachelor, master and diploma students, 6, LMU, Rocco De Nicola.

- Performance Modelling of Computer Systems, Summer Term 2013, Ludwig-Maximilians-Universität München (Germany), bachelor, master and diploma students, 12, LMU, Mirco Tribastone.

- Seminar Engineering Intelligent Distributed Systems, Summer Term 2013, Ludwig-Maximilians-Universität München (Germany), bachelor, master and diploma students, 17, LMU, Matthias Hölzl, Martin Wirsing, Lenz Belzner, Annabelle Klarl, Christian Kroiß.

- Software Engineering and Service Oriented Systems, September 2013, IMT (Italy), PhD students, 6, IMT/LMU, Francesco Tiezzi, Martin Wirsing.

- Formal Methods in Computer Science, 2013, GSSI – Gran Sasso Science Institute, PhD students, 10, IMT, Rocco de Nicola, Francesco Tiezzi, Alberto Lluch Lafuente.

- Methods for the specification and verification of business processes, Autumn 2013, University of Pisa (Italy), master students, 25, UNIPI, Roberto Bruni.

- Modellierung dynamischer und adaptiver Systeme, Winter Term 2013/14, Ludwig-Maximilians-Universität München (Germany), bachelor, master and diploma students, 14, LMU, Martin Wirsing and Wolfgang Hesse.

- Formal Methods for System Verification, Winter term 2013/14, Universita' di Firenze (Italy), undergraduate students, 10, UDF, Michele Loreti, ISTI, Mieke Massink.

- Principles of Model Checking, March 14, GSSI – Gran Sasso Science Institute, PhD students, 10, Universitá di Firenze, Michele Loreti.

- Pillar on Specification and Analysis of Concurrent Reactive Systems, March 03-07, 2014, Gran Sasso Science Institute, l'Aquila, PhD Program in Computer science, PhD Course on Constraint Programming, PhD students, UNIPI, Ugo Montanari.

- Models of Sequential and Concurrent Systems, Winter term 2013/14, Universitvá di Firenze (Italy), master students, 12, UDF, Rosario Pugliese.

- Program analysis and code verification, Autumn 2013/14, CUNI (Czech Republic), master students, 10, CUNI, Jan Kofron.

- System behavior models and verification, Spring 2013/14, CUNI (Czech Republic), master students, 15, CUNI, Jan Kofron.

- Models of Computation, Spring 2014, University of Pisa (Italy), master students, 30, UNIPI, Roberto Bruni.

- Information Technology and Society, March 2014, PUC Rio (Rio de Janeiro, Brazil), postgraduate studtents, 15, Fraunhofer, Nikola Serbedzija

- Rigorous system design, June 14, IMT (Lucca, Italy), PhD students, 10, IMT, Alberto Lluch Lafuente.

- Model Checking, 2014, IMT (Lucca, Italy), PhD students, 15, UJF-Verimag, Saddek Bensalem.

- Software Engineering and Service Oriented Systems, September – October 2014, IMT (Italy), PhD students, 6, IMT/LMU, Francesco Tiezzi, Martin Wirsing.

- Formal Methods for System Verification, Winter term 2014/15, Universitá di Firenze (Italy), undergraduate students, 10, UDF, Michele Loreti, ISTI, Mieke Massink.

- Modellierung dynamischer und adaptiver Systeme, Winter Term 2014/15, Ludwig-Maximilians-Universität München (Germany), bachelor, master and diploma students, 14, LMU, Martin Wirsing and Wolfgang Hesse.

- Models of Sequential and Concurrent Systems, Winter term 2014/15, Universitá di Firenze (Italy), master students, 12, UDF, Rosario Pugliese.

- Program analysis and code verification, Autumn 2014/15, CUNI (Czech Republic), master students, 10, CUNI, Pavel Parizek.

- System behavior models and verification, Spring 2014/15, CUNI (Czech Republic), master students, 15, CUNI, Jan Kofron.

- Methods for the specification and verification of business processes, Autumn 2014, University of Pisa (Italy), master students, 30, UNIPI, Roberto Bruni.

- Principles of Model Checking, February 14, GSSI – Gran Sasso Science Institute, PhD students, 10, UDF, Michele Loreti.

- Formal Methods in Computer Science, November 2014, IMT (Italy), PhD students, 4, Francesco Tiezzi and Hugo Torres Vieira.

- Formale Methoden des Software Engineering, Winter term 2014/2015, LMU, Master students, 12, LMU, Matthias Hölzl

- Software Engineering, Winter term 2015, German University Cairo, Undergraduates, 9, GUC Matthias Hölzl

2.8.2 PhD Students

- Stefano Sebastio, IMT, Enriching Volunteer Clouds with Self∗ Capabilities, finalized, December 2014

- David Hauzar, CUNI, Towards Static Analysis of Languages with Dynamic Features, finalized, September 2014

- Lukáš Marek, CUNI, Instrumentation and Evaluation for Dynamic Program Analysis, finalized, September 2014

- Jaroslav Keznikl, CUNI, Dynamic Software Architectures for Resilient Distributed Systems, finalized, September 2014

- Max Tschaikowski, LMU, Fluid Aggregations for Markovian Process Algebra, finalized, June 2014

- Carlo Pinciroli, ULB, On the Design and Implementation of an Accurate, Efficient, and Flexible Simulator for Heterogeneous Swarm Robotics Systems, finalized, April 2014

- Manuele Brambilla, ULB, Formal Methods for the Design and Analysis of Robot Swarms, finalized, April 2014

- Christian Von Essen, UJF-Verimag, Quantitative Verification and Synthesis, finalized, April 2014

- Alessandro Celestini, IMT, On the Analysis and Evaluation of Trust and Reputation Systems, finalized, 2013

- Andrea Vandin, IMT, Specification and Analysis of Systems with Dynamic Structure, finalized, 2013.

- Tomáš Pop, CUNI, Component and Services in Resource-Constrained Environments, finalized, September 2013

- Viliam Šimko, CUNI, From textual specification to formal verification, finalized, September 2013

- Vlastimil Babka, CUNI, Improving Accuracy of Software Performance Models on Multicore Platforms with Shared Caches, finalized, September 2012

- Michal Malohlava, CUNI, Variability of Execution Environments for Component-based Systems, finalized, September 2012

- Pavel Ježek, CUNI, Hierarchical Component Models – A True Story, finalized, September 2012

- Souha Ben Rayana, UJF-Verimag, Compositional Verification of Timed Systems, ongoing

- Ayoub Nouri, UJF-Verimag, Statistical Model Checking, ongoing

- Hadi Ardiny, EPFL, Robotic Construction for Rearch and Rescue, ongoing

- Annabelle Klarl, LMU, Helena – Handling massively distributed systems with ELaborate ENsemble Architectures, ongoing

- Lenz Belzner, LMU, Cognitive Systems in Rewriting Logic, ongoing

- Christian Kroiss, LMU, Simulation and Statistical Model-Checking of Logic-Based Multi-Agent System Models, ongoing

2.9   Distribution of Software Products

Within the scope of ASCENS, first prototypes were built or existing software tools developed in previous projects were adapted during the project. The objective was the construction of demonstrators of the technologies that have been developed by the members of the ASCENS consortium.

The following table provides an overview on the ASCENS relevant tools. It includes only a brief description of them; for further details please refer to the links provided in the last column.

Acronym	Software name	Description	License	Partner	Contact	URL
ARGoS	Autonomous Robots Go Swarming	ARGoS is a software designed to prototype robot control code for large heterogeneous swarms of robots	GPL	ULB	Carlo Pinciroli	www.ascens-ist.eu/argos
ARGoS-Lua	ARGoS-Lua	The ARGoS-Lua library allows users to program controllers for ARGoS in Lua instead of C++	MIT	ULB	Carlo Pinciroli	http://github.com/ilpincy/argos3
AVis	AVis	The Awareness Visualizer plug-in facilitates the monitoring of changes of an autonomic system executed in the jRESP runtime environment and the visualization of adaptation		ULB	Dhaminda Abey-wickrama	http://acens-ist.eu/avis
BIP D-Finder	Verification tool	The tool verifies safety properties of systems specified in BIP.	GNU	Verimag	Jacques Combaz	http://www-verimag.imag.fr/DFinder.html
FACPL	Formal Access Control Policy Language	A formal language for developing access control policies with an easily syntax and useful developing tools.	Eclipse Public License (EPL) v1.0	Verimag	Andrea Margheri	www.ascens-ist.eu/facpl
GMC	Gimple Model Checker	GMC is an explicit state model checker for C and C++ languages	LGPL	CUNI	Jan Kofroň	www.ascens-ist.eu/gmc
Helena Framework	Handling massively distributed systems with ELaborate ENsemble Architecture	Helena is a framework for running ensembles modeled around the notion of roles.		LMU	Annabelle Klarl, Rolf Hennicker	www.ascens-ist.eu/helena

Acronym	Software name	Description	License	Part-ner	Contact	URL
HL-SCEL	High Level Language for SCEL Ensembles	A compiler that starting from a HL-SCEL program generates jRESP code.	Eclipse Public License (EPL) v1.0	UDF	Michele Loreti	http://jresp. sourceforge.net/ ?page_id=16
Iliad	Implementa-tion of Logical Inference for Adaptive Devices	Iliad is an implementation of the POEM language that allows developers to analyze and execute POEM specifications	MIT	LMU	Matthias Hölzl	www.ascens-ist. eu/iliad
IRM	Invariant Refinement Method	IRM is a requirements-oriented design method that facilitates modeling of ensemble-based systems.		LMU	Tomas Bures	www.ascens-ist. eu/irm
jDEECo	Java Ensemble Component Framework	jDEECo is a Java-based implementation of the DEECo component model, which is a reification of SCEL geared towards practical development of software systems using SCEL concepts.	Apache Li-cense, Version 2.0	CUNI	Tomáš Brueš	www.ascens-ist. eu/deeco
jRESP	Java Runtime-Environment for SCEL Programs	jRESP is a runtime environment, developed in Java, that aims at providing programmers with a framework that permits developing autonomic and adaptive systems	Eclipse Public License (EPL) v1.0	UDF	Michele Loreti	www.ascens-ist. eu/jresp

Acronym	Software name	Description	License	Part-ner	Contact	URL
jSAM	Java StochAstic Model-Checker	jSAM is an eclipse plug-in integrating a set of tools that permits supporting stochastic analysis of concurrent and distributed systems specified by means of process algebras, e.g. StoKlaim	EPL	UDF	Michele Loreti	`http://rap.dsi.unifi.it/SAM/`, `https://code.google.com/p/jsam/`
KLT	KnowLang Toolset	KLT provides a development environment for Knowledge Reasoning (KR) where we can write KR specifications in the KnowLang notation by using visual modeling tools and check for the syntactical integrity and consistency of the KR models.	GPL	UL	Emil Vassev	`www.ascens-ist.eu/knowlang`
Lua-Tools	Lua-Tools	Lua is a scripting language with meta-programming features that is frequently used in embedded devices. Lua-Tools is a library that focuses on the development of adaptive, autonomous systems	MIT	LMU	Matthias Hölzl	`https://github.com/hoelzl/Lua-Tools`
MAIA	Adaptable Interface Automata in Maude	MAIA is a variant of a classical game model for open systems, Interface Automata, yielding Adaptable Interface Automata (AIA). An implementation of AIAs in Maude, called MAIA, allows one to specify AIAs, to draw them, and to perform operations such as product, composition, decomposition and control synthesis.	LGNU	IMT, UNIPI	Andrea Corradini	`http://www.ascens-ist.eu/maia`

Acronym	Software name	Description	License	Partner	Contact	URL
Maude Daemon Wrapper	The Maude Daemon Wrapper is a plugin integrating the Maude framework in the SDE environment	Maude Daemon encapsulates a Maude process into a set of Java classes and provides an API to programmatically control the Maude process.	GPL	IMT, UNIPI	Alberto Lluch, Andrea Vandin, Roberto Bruni	http://www.ascens-ist.eu/maude
MESSI	Maude Ensemble Strategies Simulator and Inquirer	A framework to model, debug and analyze self-assemble scenarios.		IMT, UNIPI	Alberto Lluch, Andrea Vandin	www.ascens-ist.eu/messi
MISSCEL	Maude Interpreter and Simulator for SCEL	MISSCEL is an executable operational semantics of SCEL.	GPL	IMT	Andrea Vandin	http://sysma.lab.imtlucca.it/tools/ensembles/
MultiVeStA	ARGoS-MultiVeStA	A wrapper between ARGoS and the MultiVeStA distributed statistical analyzer.	MIT	ULB, IMT	Carlo Pinciroli, Andrea Vandin	http://ascens-ist.eu/multivesta
Pirlo	Action Programming in Rewriting Logic	Pirlo is an implementation of relational action programming in the MAUDE language that allows specification and interpretation of autonomous component behaviour via non-deterministic procedural action programs.	GPL	LMU	Lenz Belzner	http://www.pst.ifi.lmu.de/~belzner/action-programming/

Acronym	Software name	Description	License	Partner	Contact	URL
SCLP	Soft Constraint Solver	An implementation of the Soft Constraint Logic Programming framework executing over CIAO Prolog	GNU LGPL	UNIPI	Valentina Monreale, Ugo Montanari	`http://ciao-lang.org/index.html`
SCP	Science Cloud Platform	SCP is a Platform as a Service (PaaS) solution	EPL	Zimory, LMU	Philip Mayer	`http://svn.pst.ifi.lmu.de/trac/scp`
SDE	Service Development Environment	SDE provides a service-oriented platform for (development) tool integration.	CPL	CUNI	Petr Tuma	`http://svn.pst.ifi.lmu.de/trac/sde`
SMC-BIP	Statistical Model Checking	Statistical-model checking (SMC) is a "verification-inspired" approach that performs quantitative analysis of a system.	GNU	Verimag	Jacques Combaz	`http://www-verimag.imag.fr/New-BIP-tools.html`
SPL	Runtime Performance Awareness Framework	SPL provides a performance monitoring service for ensembles implemented in Java	BSD	CUNI	Petr Tuma	`www.ascens-ist.eu/spl`
ZEC	Zimory Enterprise Cloud	ZEC provides a web based front-end and a RESTful API to be used within the PaaS solution. It is Zimory's product for IaaS Clouds	Commercial	Zimory	Jose Velasco	`http://www.zimory.com`

2.10   Exhibitions

The ASCENS results were presented at two exhibitions: ICT 2013 and CeBIT 2015. The focus of the ICT 2013 was on the swarm robotics case study; conversely at the CeBIT 2015 mainly scenarios of the e-mobility and cloud computing case studies were shown.

The next section describes the printing material used for both exhibitions.

2.10.1   ICT 2013

ASCENS results were presented at the ICT 2013 - Europe's biggest event for research and innovation in information and communication technologies. TheASCENS video on the highlights of the opening of ICT 2013 includes almost 30 seconds of the ASCENS stand. More than 5000 researchers, entrepreneurs, innovators, industry representatives, young people and politicians got together from November 6-8 in Vilnius, Lithuania under the lemma Create, Connect and Grow. This conference and exhibition organized by the European Commission in partnership with the Lithuanian Presidency of the Council of the EU - provided excellent opportunities for networking.

Our robot competition demo attracted a lot of visitors, which were interested also in the general ASCENS engineering approach for autonomic ensembles. The aim of the demonstration was to show the advantages of relying on autonomic systems, operating in changing or partially unknown environments and the analysis of such autonomic systems. In the exhibit we presented modeling techniques for autonomous systems at three different abstraction levels.

1) We had two real robots one of which is programmed according to our autonomic paradigm and another was controllable via a joystick by visitors. Visitors had to compete with the autonomic robots experiencing the robots' perspective.

2) We showed a robot simulator (ARGoS) that let visitors appreciate the adaptive behavior of robot swarms.

3) We provided also experimental results about how formal methods enable a designer to predict the behavior of robots and provide measures of the quality of the proposed solutions

2.10.2   CeBIT 2015

The results of the pragmatic and mathematically founded approach to support the engineering of autonomic systems, such as applications in the cloud computing and e-mobility were shown at the CeBIT 2015. The presentations illustrate how the ASCENS tools and methods have been applied among others to construct a decentralized cloud with autonomic nodes and to develop an intelligent traffic infrastructure for coordinating e-vehicles.

2.11   Printed Material

This section presents the printed material prepared during the project. It comprised a 32 pages long brochure, a 2 pages flyer and several posters mainly designed for both exhibitions ICT 2013 and CeBIT 2015 where project results applied to the ASCENS case studies were shown.

2.11.1   Brochure

The ASCENS brochure includes contributions from 36 members of the project. The structure of the brochure follows the phases of the ensemble development life cycle (EDLC); the sections are entitled as follows: requirements engineering for self-adaptive systems, languages for autonomic systems, modeling self-awareness and adaptation, verification techniques doe self-aware systems, knowledge representation and reasoning, monitoring, awareness and self-adaptation, engineering ensembles and

case studies. Finally, the brochure contains a summary of dissemination results in the "ASCENS in numbers" section. Figure 6 shows the cover of the brochure.
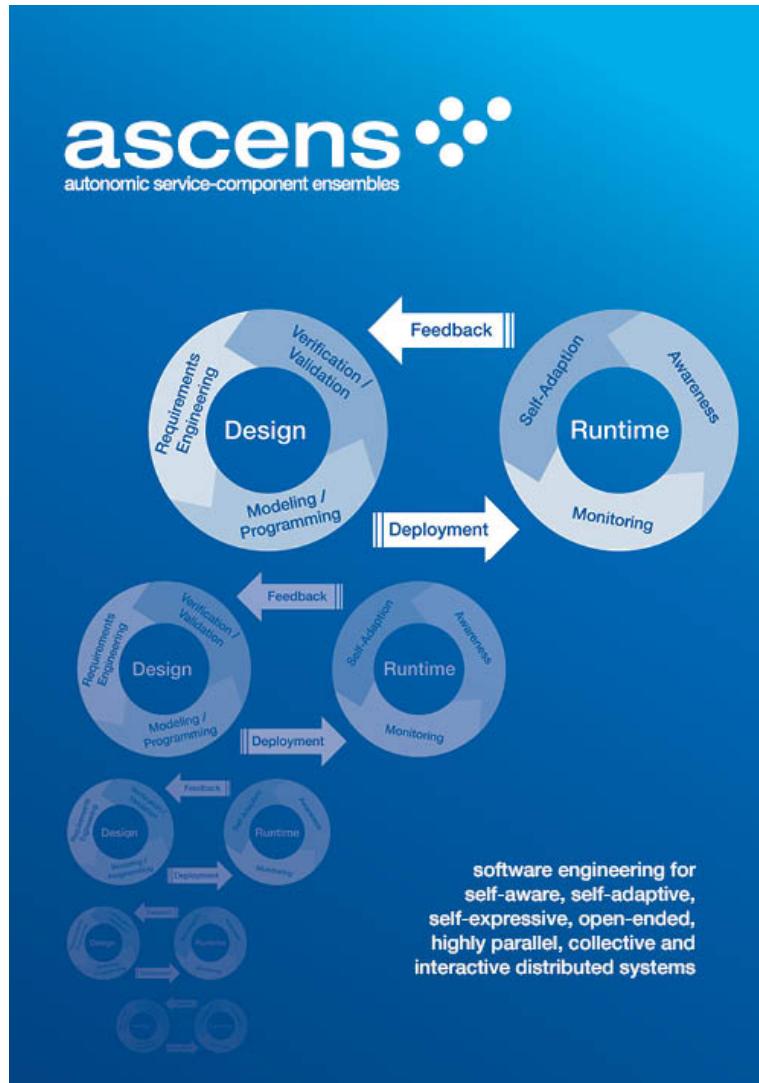
Figure 6: ASCENS Brochure: cover

2.11.2 Flyer

Figures 7 shows the flyer that was prepared for distribution at theICT 2013, that took place on November 6-8, 2013 in Vilnius. The flyer focuses on the Ensemble Development Life Cycle (EDLC) and the methods and tools developed or adapted within the scope of the project for each phase of the EDLC.

2.11.3 Posters

In addition to the ASCENS overview poster used during the first year of the project, a set of posters were designed for the ICT 2013 and the CeBIT 2015 stand. The ASCENS overview poster fulfilled the objective to present key information of the project at a glance (like the list of partners, objectives, case studies and URL of the project website in Figure 8a). The poster includes also a graphical representation of the ASCENS approach and the main research areas. The ICT posters addressed specific

Figure 7: ASCENS flyer

topics and results of the project, such as the Ensembles Development Life Cycle, SCEL modeling, formal analysis with BIP, and policy synthesis for non-deterministic domains. An additional poster presented the scenario used in the different demonstrations that was performed during the exhibition on November 6-8, 2013 in Vilnius (see Figures 8b, 8c, 8e, 8d and 8f).

For the CeBIT 2015, which took place on March 16-20 in Hanover, due to space limitations of the stand only one poster could be presented. See Figure 8). It includes general information on the project such as the list of the project partners, the graphical representation of the ensembles development life cycle (EDLC) and some graphics and keywords associated to each case study.

2.12   Use of Other Dissemination Channels

The ASCENS project uses a variety of additional and non-traditional channels for the dissemination of project key information and project results, such as presence in social networks, presentations on monitors at the university hall, internal reports at the partners' organizations or local events.

- **Social Networks**. ASCENS has created a facebook page that provides general information about the project, a discussion forum for interaction with interested facebook users, and a platform for content sharing with the public, e.g. graphics and videos illustrating and explaining the progress we make. The facebook page is also integrated with the ASCENS blog, providing users with another way of commenting on our articles and discussing them. Lastly, facebook is a means of improving cooperation and communication among project members by further connecting them.

- **Internet Festival, Pisa, May 5-8 2011.** In 2011 Italy celebrates the 150th Anniversary of Italian unification. The program of national celebrations includes a calendar of initiatives throughout the Italian territory, particularly in the cities that played a key role in the unity process, including Pisa. Pisa has been selected to represent the excellence of Italy in computer science. The Computer Science course at University of Pisa was the first one in the area to be activated in the whole Italy, during the 1960s. While information technologies are changing the changing the ways we understand and construct the world, by providing new ways of sensing, communicating and analyzing data, remains largely unknown to the general audience. Hence, on the occasion of the celebration of the 150th Anniversary of Italy Unification, the Pisa University, the Italian National Research Institute, Scuola Superiore Sant'Anna and Scuola Normale Superiore have organized a conference devoted to the dissemination of research results in computer science. Detailed description of the event is available at `http://2011.internetfestival.it/`. ASCENS contact: Gianluigi Ferrari (UNIPI), Scientific Chair of Internet Festival 2011. Ugo Montanari (UNIPI) gave a Lecture on Autonomic Ensables. Fabio Gadducci (UNIPI) presented a video on History of Computing.

- **LMU Monitors, Munich, June 2011.** ASCENS key data were published on monitors distributed through public accessible areas of the LMU building. ASCENS contact: Nora Koch (LMU). ASCENS contact: Nora Koch (LMU).

- **Fraunhofer Annual Report, September 2011.**, ASCENS project `http://www.first.fraunhofer.de/uploads/tx_wfproject/Jahresbericht_2010_Projekt_ASCENS_03.pdf` (in German, September 2011), ASCENS contact: Nikola Serbedzija (Fraunhofer).

- **Internet Festival, Pisa, October 4-7 2012.** A second edition of the Internet Festival hast taken place in Pisa in October, with a much broader and larger audience than the first edition. AS-
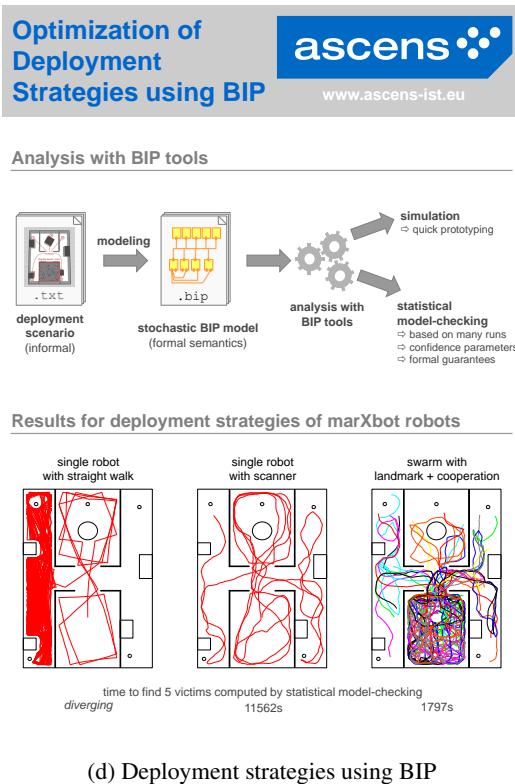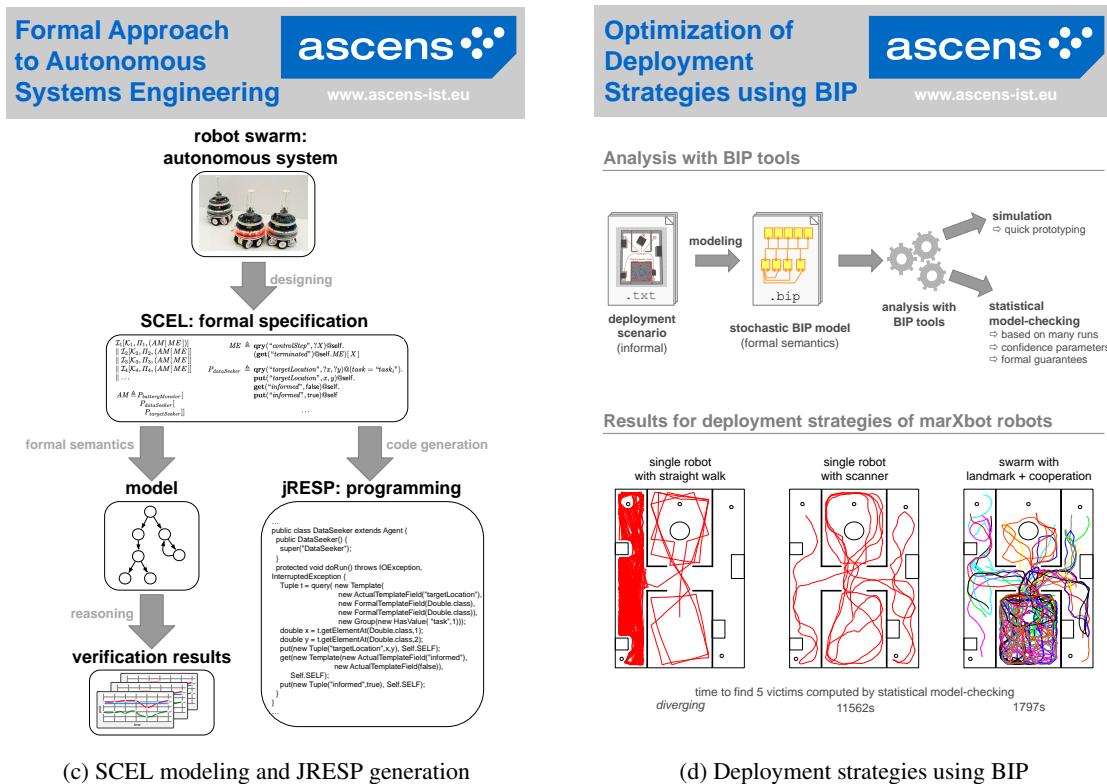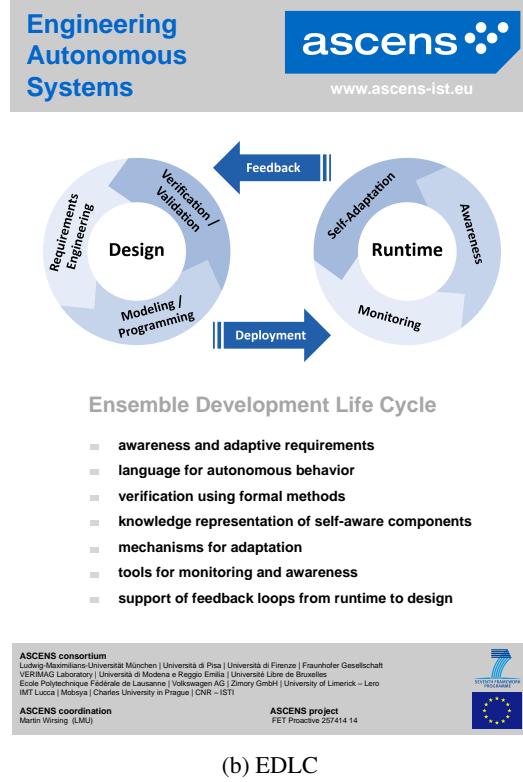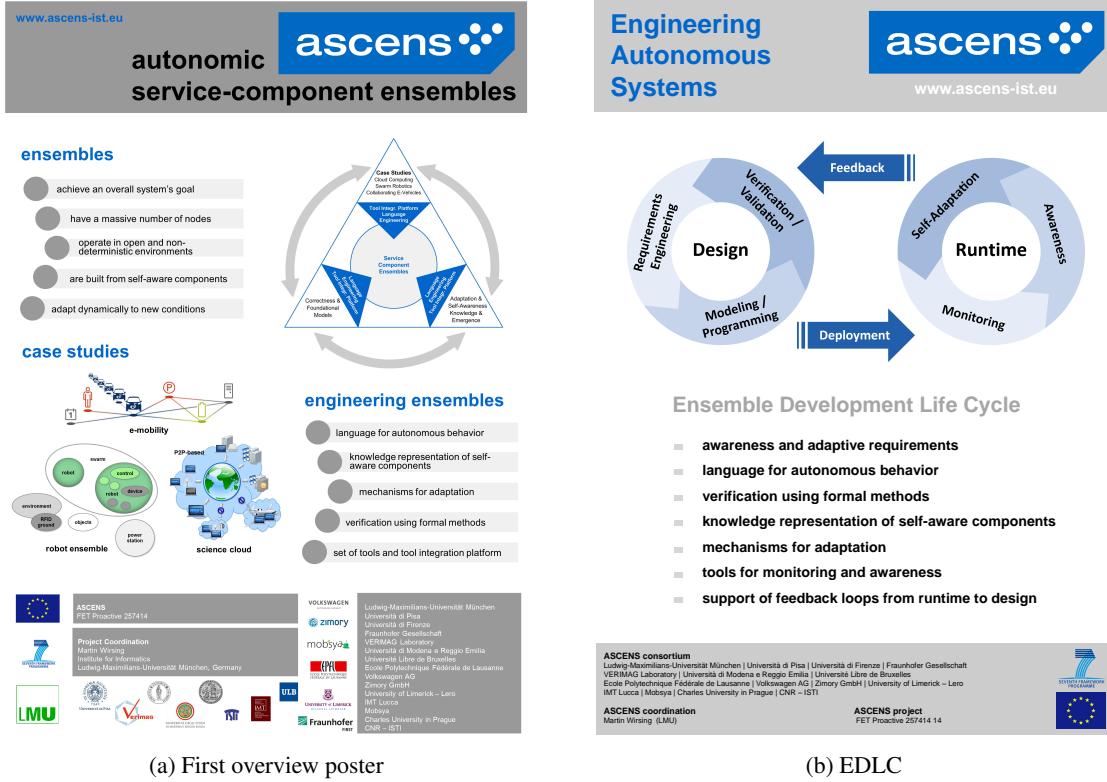
(a) First overview poster

(b) EDLC

(c) SCEL modeling and JRESP generation

(d) Deployment strategies using BIP

Figure 8: ASCENS posters

(e) Policy synthesis for non-deterministic domains
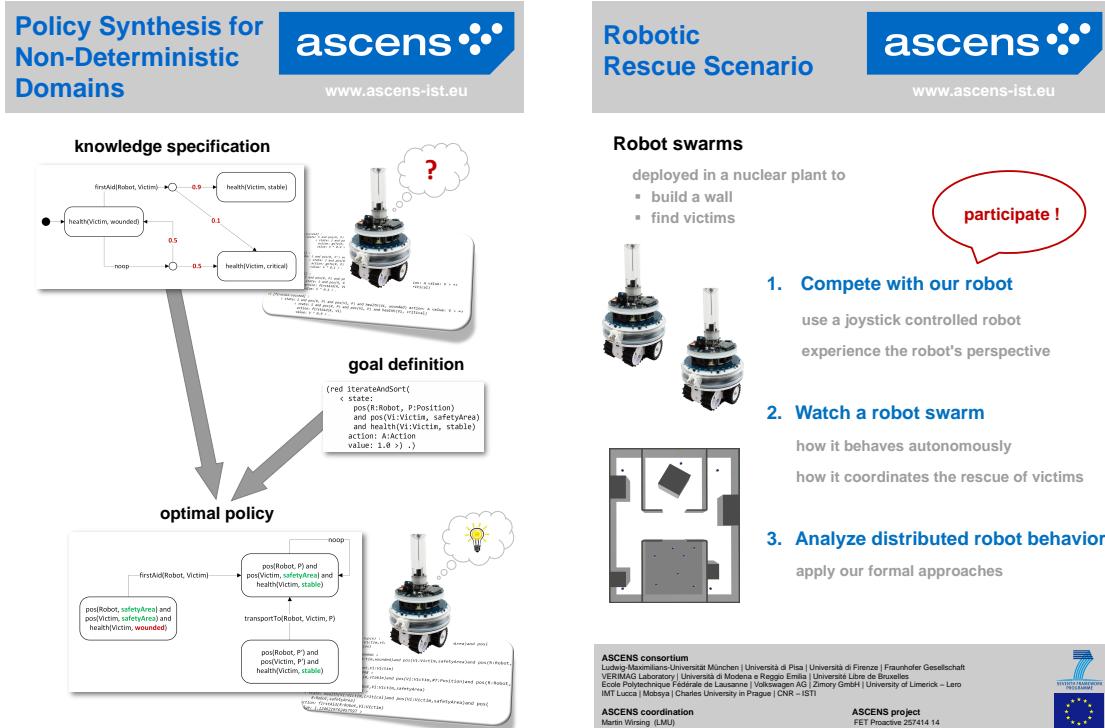
(f) ICT 2013 demonstrations

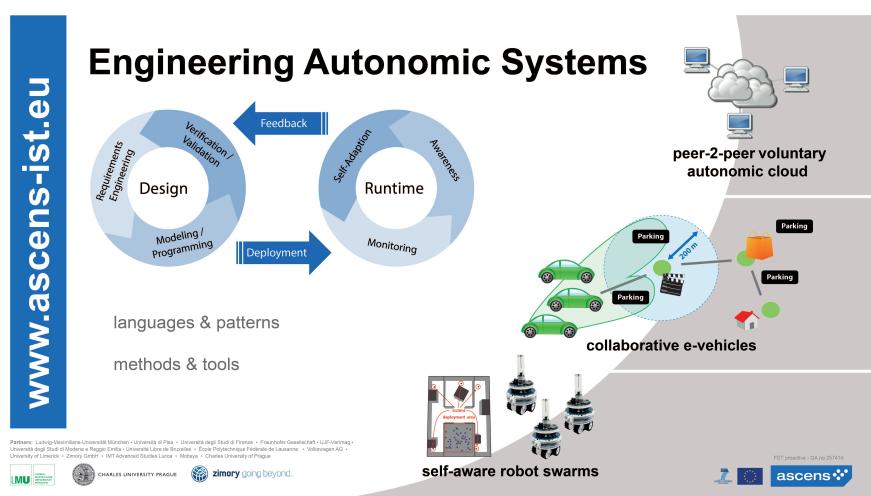Figure 7: ASCENS posters continued

Figure 8: ASCENS Poster at CeBIT 2015

CENS contact: Gianluigi Ferrari (UNIPI), chair of scientific committee, and Fabio Gadducci, member of executive commitee.

- Rocco De Nicola (IMT) visited LMU from April 10 to July 28, 2013.

- **Knowledge Acceleration and ICT, Pisa, Italy, September 20, 2013**. The workshop has been jointly organised by UNIPI and the Informatics Eng. Dept. to outline a Tuscany agenda for the European ICT research. Many local companies have participated to the event. ASCENS contact: Ugo Montanari (UNIPI).

- **Internet Festival, Pisa, October 10-13 2013.** A third edition of the Internet Festival hast taken place in Pisa in October, with the same broad scope yet a larger audience than the second edition. ASCENS contact: Gianluigi Ferrari (UNIPI), chair of scientific committee, and Fabio Gadducci, member of executive commitee.

- **ICT 2013, Vilnius, November 6-8 2013**. Exhibition and conference organised by the EC. ASCENS contact: Nora Koch (LMU), Nikola Serbedzija (Fraunhofer), ASCENS demostrations: Michael Bonani (Mobsya), Carlo Pinciroli (ULB), Francesco Tiezzi (IMT), Jacques Combaz (Verimag), Lenz Belzner (LMU).

- **Internet Festival, Pisa, October 9-12 2014.** The fourth edition of the Internet Festival has taken place in Pisa in October, with the largest audience so far and the hisgher number of events, all spread around town. ASCENS contact: Gianluigi Ferrari (UNIPI), chair of scientific committee, and Fabio Gadducci, member of executive commitee.

- **CeBIT 2015, Hanover, March 16-20 2015**. Booth at Halle 9. ASCENScontact: Nora Koch (LMU), ASCENSdemonstrations: Philip Mayer (LMU), Jose Velasco (Zimory), Tomas Bures (CUNI), presentation on "The I 4.0 COMMUNITY CLOUD" Josef Glöckl-Frohnholzer (Zimory).

3   Collaboration Platforms and Activities

The collaboration task includes the creation of communication mechanisms and infrastructure at project level and inter-project activities under the umbrella of the proactive initiative's associated Coordination Action AWARENESS. The communication mechanisms within the project are the basis for the creation of collaboration possibilities with other projects, academia and industry in general.

These communication mechanisms comprise mailing lists, an internal collaboration platform (ASCENS wiki), social networks and a set of associated researchers. In particular, the activities within the scope of the coordination action AWARENESS were very fruitful.

3.1   Coordination Actions

Members of the ASCENS project have been actively involved in the following activities organized by the coordination actions AWARENESS and FOCAS or activities in which AWARENESS and FOCAS projects were involved.

- AWARENESS Inaugural Meeting in Amsterdam, The Netherlands, December 14–15, 2010.

- Bilateral meeting of the coordinators of AWARENESS projects ASCENS and SYMBRION in Munich, Germany, February 15, 2011.

- AWARENESS Advisory Board Meeting in Amsterdam, September 22–23, 2011. Presentation on "Research Challenges for Ensembles " (see Sect. 2.5).

- Preparation of the AWARENESS Virtual Lecture Series (AVLS) (http://www.aware-project.eu/lectures/) (see Sect. 2.7).

- AWARENESS Inter-Project Workshop in Bologna, Italy, January 22–26, 2012.

- AWARENESS Summer School (AWASS 2012), in Edinburgh, UK, June 10–16, 2012.

- AWARENESS Slide Factory in Barcelona, Spain, September 24–26, 2012.

- AWARENESS Summer School (AWASS 2013), in Lucca, Italy, June 23–28, 2013.

- AWARE co-sponsored visit Prof. Endler from PUC Rio de Janeiro, Brasil to Fraunhofer FOKUS, September 20–29, 2013.

- FOCAS workshop at ICT 2013 in Vilnius, November 7, 2013.

- FOCAS newsletters 1-4, Summer 2013, Winter 2014, Spring 2014, Summer 2014.

- FOCAS workshop at SASO 2014 in London, September 8, 2014.

3.2 Associated Researchers

ASCENS invited selected researchers of the relevant communities to become an associated researcher to the project and to keep contact during the duration of the project. Associated researchers were invited to ASCENS meetings and informed by email on the project progress. In particular, Heinz Schmidt, Mario Coppo and Marianguola Dezani used these facilities to participate in the project kick-off and general meetings in Grenoble and Florence. In addition, Hernán Melgratti and Stefano Bistarelli attended the Florence meeting.

The following is the list of the current associated researchers to the ASCENS project.

- Heinz Schmidt, University of Melbourne

- Alexander Knapp, University of Augsburg

- Anders Lyhne Christensen, Inst. Telecom. of Lisbon

- Hernán Melgratti, University of Buenos Aires

- Carla Ferreira, Universidade Nova de Lisboa

- Paolo Baldan, University of Padova

- Barbara Koenig, University of Duisburg-Essen

- Gefei Zhang, Bertelsmann IT, Munich

- Tobias Heindel, University of Paris XIII

- Mariangiola Dezani, University of Torino

- Mario Coppo, University of Torino

- Stefano Bistarelli, University of Perugia

- Emilio Tuosto, University of Leicester

- Massimo Bartoletti, University of Cagliari

- Vincenzo Ciancia, ILLC Amsterdam

- Filippo Bonchi, Ecole Normale Sup Lyon

- Lorenzo Bettini, Università di Torino

- Luis Caires, Universidade Nova de Lisboa

- Marco Bernardo, Università degli Studi di Urbino

- Marco Aldinucci, Università di Torino

- Francesca Rossi, Università di Padova

3.3 Contacts to Industry and other Projects

ASCENS partners got in contact with industry, members of other national and European projects; in particular to those related to the AWARENESS and FOCAS coordination actions. The most relevant projects, which focus on topics related to the ASCENS research areas, and industrial contacts are listed below. The ASCENS members who are responsible for the contact are included in each item of the list.

- Industry, Intecs Sistemi S.p.A., ASCENS contacts: Mieke Massink, Diego Latella (ISTI)

- AWARENESS EU Coordination Action, Martin Wirsing, Matthias Hölzl (LMU)

- Symbrion EU Project, Sergej Kernbach, Universität Stuttgart, ASCENS contacts: Martin Wirsing, Matthias Hölzl, Nora Koch (LMU)

- SAPERE EU Project, Franco Zambonelli, Università di Modena e Reggio Emilia, ASCENS contacts: Franco Zambonelli (UNIMORE)

- COST EU Action Towards Autonomic Road Transport Support Systems, Lee McCluskey, University of Huddersfield, ASCENS contacts: Franco Zambonelli (UNIMORE)

- Project RUPOS (funded by Regione Toscana, Italy), Partners: Link.it and Hyperborea, ASCENS contacts: Roberto Bruni, Andrea Corradini and Gianluigi Ferrari (UNIPI)

- Project SisteR (funded by Italian Ministry for the University), Partners: University of Padua, University of Udine, ASCENS contacts: Andrea Corradini, Fabio Gadducci and Valentina Monreale (UNIPI)

- Project IPODS (funded by Italian Ministry for the University), Partners: University of Turin, University of Bologna, University Ca Foscari of Venice, ASCENS contacts: Roberto Bruni and Ugo Montanari (UNIPI)

- Project TESLA – Techniques for Enforcing Security in Languages and Applications (funded by Regione Sardegna, Italy), Partners: University of Cagliari, University Ca Foscari of Venice, ASCENS contact: Gianluigi Ferrari (UNIPI)

- Member of Scientific Advisory Board of FP7 FET Integrated Project HATS (Highly Adaptable and Trustworthy Software using Formal Methods), ASCENS contact: Ugo Montanari (UNIPI)

- Member of Scientific Advisory Board of ICT-2007.8.6, FET Proactive 6, ICT Forever Yours project CONNECT, Emergent Connectors for Eternal Software Intensive Networked Systems, ASCENS contact: Ugo Montanari (UNIPI)

- Project Pro3D of FP7 (Programming for Future 3D Architecture with Many Cores) ASCENS contact: Jacques Combaz (Verimag)

- Project NESSoS of FP7 (`http://www.nessos-project.eu/`) Fabio Martinelli, CNR, ASCENS contact: Nora Koch (LMU)

- IBM Smart Cities Center, Dublin, Ireland. ASCENScontact: Franco Zambonelli (UNIMORE)

- Azienda Ospedaliera Universitaria Pisana, Pisa Italy. ASCENS contact: Roberto Bruni, Andrea Corradini, Gian Luigi Ferrari (UNIPI)

- Project H2Swarm (funded by the European Science Foundation). ASCENS contacts: Marco Dorigo (ULB) and Francesco Mondada (EPFL)

- SRI International, Computer Science Laboratory. ASCENS contact: Matthias Hölzl (LMU)

- RMIT University, Melbourne, Australia. ASCENS contact: Martin Wirsing (LMU)

- QUANTICOL EU Project, Rocco De Nicola (IMT), Diego Latella (ISTI), Michele Loreti (UDF), Mieke Massink (ISTI), ASCENS contacts: Mieke Massink, Rocco De Nicola

- FOCAS EU Coordination Action, Franco Zambonelli (UNIMORE), Giacomo Cabri (UNI-MORE)

- MUCCA Project on Cooperative Urban Mobility, Regione Emilia-Romagna (I), Franco Zambonelli (UNIMORE)

- Methods and Tools for On-board Software Engineering, ESA/ESTEC CONTRACT No. 4000106016, Lero at UL (Ir), Emil Vassev (UL), Mike Hinchey(UL)

- Project CINA (funded by Italian Ministry for the University), Partners: University of Turin, University of Genova, University of Bologna, University of Camerino, University Ca Foscari of Venice, ASCENS contacts: Rocco De Nicola (IMT)

- DFG Priority Programme Design for Future – Managed Software Evolution. ASCENS contact: Martin Wirsing (LMU)

- Project Distributed MILS of FP7 (`http://www.d-mils.org/`), ASCENS contact: Jacques Combaz (UJF-Verimag)

- Project CERTAINTY of FP7 (`http://www.certainty-project.eu/`), ASCENS contact: Jacques Combaz (UJF-Verimag)

- Siemens AG, Munich, Germany, ASCENS contact: Martin Wirsing, Nora Koch (LMU)

- Tiani Spirit, Austria, ASCENS contact: Francesco Tiezzi (IMT), Rosario Pugliese (UNIFI)

- Project SPES 2020- Software Platform Embedded Systems 2020, ASCENS contact: Martin Wirsing (LMU)

4　Summary

The dissemination activities performed during the project (October 2010 to March 2015) include publication of project results in journal articles, on, publications and presentations at conferences and workshops, co-organization of events, teaching courses and tutorials, distribution of software products, and the preparation of dissemination material for a wide audience, such as the ASCENS website and the ASCENS blog, posters, a flyer and a brochure.

This section presents a summary "in numbers" to the composition of the consortium and the dissemination of project results and collaboration activities.

Category	Subcategory	Total
Partners	Universities	10
	Research organizations	3
	Companies	2
	Countries	7
Participants	Researchers	79
	Associated researchers	21

Table 3: ASCENS consortium and participants in numbers

Category	Subcategory	Year 1	Year 2	Year 3	Year 4	Total
Web presence	Web pages	58	8	9	13	88
	Blog entries	8	7	6	9	30
	Links to project site	41	3	2	30	76
Publications	Total	50	80	62	133	325
	Book contributions	4	1	-	26	31
	Articles in journals	7	9	16	20	52
	Papers in conf. & workshops	37	67	44	69	217
	Technical reports	1	3	2	13	19
	Joint publications (partners)	8	31	20	35	94
	Joint publications (assoc. res.)	4	6	2	13	25
Presentations		40	31	33	52	156
Schools	co-organized/organized	2	2	2	2	8
Courses		17	10	12	20	59
Conf./Workshops	co-organized	11	20	16	53	100
Contacts	Industry/other projects	12	5	8	4	29
Software		4	11	8	4	27

Table 4: ASCENS results in numbers