

## **ABSTRACT**

### **a. Guido Boella's research topics, his position at the international level and technological transfer**

**Guido Boella** is one of the **founders and leaders of the new area** of Normative Multi-agent Systems (**NorMAS**). The **NorMAS** approach to coordinating open multi agent systems was combines normative systems with multi-agent systems methodologies to regulate the emergent behaviour of open systems.

The idea was foreseen in his PhD thesis with an innovative game-theoretic approach to cooperation among agents based on decision theoretic planning in 2000. **Guido Boella** then decided to apply his new methodology to the problem of regulating multi-agent systems with norms, leading to a game theoretic approach to norms that went beyond the state of the art, focusing not only on logical reasoning on norms, but also on the decision process of agents, thus innovating the traditional approach to legal reasoning based on deontic logic. The methodology was originally based on planning and then adapted to logical techniques.

Since 2005, he has organized the two series of workshops of this area, NorMAS and COIN, associated with major conferences (AAAI, IJCAI, AAMAS, ECAI) or held as **Dagstuhl seminars**, which were attended by all the major researchers in the field. The proceedings appeared as **special issues** of major ISI indexed journals such as JAAMAS, JLC, and JIGPL. They include **manifestos** of the field co-authored by **Guido Boella** which define NorMAS and the **research challenges** involved, manifestos which are widely cited.

**Guido Boella** is the **most cited author** in recent surveys on AI-Communications Magazine and JASSS on Normative Multi-agent Systems. There are now hundreds of researchers working on normative multi agent systems and it is a typical topic in major conferences such as AAMAS.

**Guido Boella** has showed his creativity and intellectual capacity also in related fields, with a **multidisciplinary** scholarly activity publishing not only in different areas of computer science but also in the legal field. In computer science **his interests** include multi-agent systems, the analysis of the concepts of organizations and roles agent and object oriented programming languages, AI&Law and ontologies.

He founded has organized since 2005 the workshop series Roles at AAAI symposium, ECOOP and Dagstuhl in cooperation with major scholars in the field such as Friedrich Steimann and Erik Meijer. Another related field covered by the author is argumentation, for which he developed innovative methodologies such as meta-argumentation, patterns and semantics and presented at major conferences such as IJCAI and COMMA. Finally, in cooperation with Steve Barker, Dov Gabbay and Guillaume Aucher, he recently worked in the field of logics for security and privacy.

Since 2000, **Guido Boella** has also collaborated **with legal scholars** in the interdisciplinary field of legal ontologies, bringing new requirements from the **EU legal system** to this field. In recent years, he has brought frontier research results on legal ontologies to the applicative field via the ICT4Law project he co-ordinates and his spinoff company, Nomotika srl, he co-founded in 2009. He developed the software Eunomos and Syllabus.

### **b. Research group, international collaborations and supervision of PhD students**

His research is carried out in cooperation with several renowned international scholars. He **has collaborated in a stable way** since 2003 with Leon van der Torre of University of Luxembourg, a leader in Deontic logic, whose expertise in logic complemented **Guido Boella's** background in Multi-

agent Systems. Given the wide scope of his research, he has worked with researchers from different disciplines (other logics, argumentation, programming languages, law) installing a **network of cooperation**. He has made several research visits abroad, among which as visiting professor at the interdisciplinary excellence center for Security and Trust (SnT) at University of Luxembourg and **collaborates regularly** with at least **25 international researchers** who are interested in developing his ideas and visit him in Torino or Luxembourg. The joint international research has been conducted without the umbrella of projects and specific funding, and **Guido Boella** has undertaken a role of **group leader and playmaker**. Given the wide scope of his research, he relishes opportunities to work with researchers who have different but complementary skills to his own. **Guido Boella's** network of collaborators includes the well-known logician Dov Gabbay of King's College in London, Guido Governatori of NICTA (National ICT Australia Ltd), Australia's Information and Communications Technology Research Centre of Excellence, Monica Palmirani and Antonino Rotolo of CIRSIFID Università di Bologna, a **leading interdisciplinary center** on legal informatics, Nicola Guarino of LOA ISTC-CNR, a **leader institute** in the ontology sector.

Besides the international collaborations, Guido Boella's research group in his department is composed by 2 postdocs, 7 PhD students and one programmer, almost all paid on his project funds.

**Guido Boella** has trained several young researchers at different stages. He has supervised several bachelor and master theses, he has been the **supervisor** of two **Phd** students at the Università di Torino, now employed as researcher in University of Napoli and INRIA, and he is supervising seven others, most in **cotutele with the University of Luxembourg**. In the past he has directed the work of three post-docs for whom he obtained grants.

#### c. Institutional roles and teaching

Guido Boella is Associate Professor since 2006 at Dipartimento di Informatica of University of Torino, where he has been permanent researcher since 1999.

He is currently the "Minister of Research" on the **Board** of his department in the last 2 terms, delegated to promoting writing of project proposals on competitive calls like FP7, and the contact point for the Common strategic task force for competitive projects of his university.

**Guido Boella is also a vice-director, and thus member of the board and teaching committee, of the Erasmus Mundus Joint Doctorate (2011) LAST-JD in Law, Science and Technology**. He was a member of the **PhD committee in Computer Science** of his department and of the Phd committee in Neurosciences (for the topic Cognitive Science) and he is in the board of the **Doctoral School of Sciences and Innovative Technologies** at his university.

He was elected for the Governing board of Associazione Italiana per l'Intelligenza Artificiale (AI\*IA) from 2007 to 2009.

Concerning the teaching activities at Corso di Studi in Informatica della Facoltà di Scienze MM.FF.NN. dell'Università di Torino, Guido Boella since 1999 is teaching courses both at the bachelor and master level, for 120 hours each year. He also taught courses in doctorate schools.

**d. Publications, and recognition and diffusion that his contributions have received from others at the international level**

**Guido Boella** published more than 200 papers. He publishes since his master thesis in 1995, extensively, continuously and with an increasing rate, on a wide range of topics notwithstanding the absence of a specific journal on such his main research topic. **Guido Boella** has been senior author (albeit alphabetic order is followed) of over 35 papers published in **leading international ISI indexed peer-reviewed journals** in the field (such as JAAMAS, JLC, JIGPL, JSMC, KAIS, IJCIS, IJAR), **major international peer-reviewed multidisciplinary scientific journals** (such as AI&LAW) as well as over 30 in highly **competitive** peer-reviewed **conferences** proceedings (such as KR, IJCAI, AAMAS, ECAI) , over 160 papers listed on DBLP.

**Guido Boella** has a total impact factor of over 16, **H-Index** of 16 (manually computed excluding self citations) and a **G-Index** of 23 to which must be added that **Guido Boella** is publishing on a wide range of topics and despite having teaching commitments of between 90 and 120 hours since 2000. His papers have **2913 citations** (on Google scholar, 1488 on Academic Search Microsoft). *Over 100 citations of the most cited paper.*

On Scopus he has 126 papers, 422 citations (of which 196 in the last three years), h-index 11.

On ISI WOK, he has 82 papers, 159 citations, h-index 6

On ISI WOS, he has 67 papers, 121 citations, h-index 5

**Guido Boella** received the **best paper award** at KES-AMSTA 2007 Conference and MIWAI 2010 workshop and, was finalist for best paper at AAMAS2009, the most important conference in his field.

Due to **Guido Boella's** consolidated international reputation, international visibility and community leadership, he was invited to the **editorial board of two ISI indexed international journals (AO and JIGPL)** and to the **Scientific Advisory Board** of a Springer book Series. He is in the programme committee of the most important conferences in his field (IJCAI, AAMAS, ECAI). He has been guest editor of several special issues and is regularly asked to review articles, PhD theses and projects (such as NWO, ETH Zurich).

He is involved in **the organization and in the steering committee** of the relevant workshop series of his area (COIN, NorMAS) and he was the **organizer of EASSS'09 summer school**, the MALLOW'09 conferences, of 3 **Dagstuhl** seminars, and he will be the co-organizer of the XIII AI\*IA conference in 2013.

**e. Projects**

**Guido Boella** has a proven record of project conception and leadership, with an independent portfolio of research grants for approximately 4m€. **Guido Boella** is the **author and scientific coordinator of "ICT4Law: ICT Converging on Law"**, a 3-year **interdisciplinary project** with a **3.5m€ budget** involving 15 partners from **academy** and **industry** and he is member of the **COST Action Agreement technologies**.

**Guido Boella is also a vice-director and coauthor of the interdisciplinary Erasmus Mundus Joint Doctorate (2011) LAST-JD in Law, Science and Technology** coordinated by Università di Bologna, which will be funded for 5 years, with a budget of **4m €**

He is author of a project proposal in evaluation “Law costs and process driven effective services” on call Smart cities and communities and social innovation (Avviso MIUR prot. 391/ric), 15m€ with Università di Milano Bicocca, Università di Bologna, Università del Piemonte Orientale, Infocert, Sirfin, Net Service Finmeccanica and others. He participates as local coordinator to the proposal in evaluation J-Cloud: “Justice on the Cloud”, call Smart cities and communities and social innovation (Avviso MIUR prot. 391/ric), 18m€ with Università Federico II di Napoli, LUISS, Università del Salento, HP, PosteCOM, Net Service Finmeccanica, Links MT.

He proposed an ERC starting grant twice and he is now submitting EU project proposals on the Call 10 of FP7.

## **CURRICULUM VITAE**

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**Appendix:** Detailed list of membership to program committees, organization of events, tutorials and reviews by Guido Boella.

### **a. Education:**

- February 2000: **PhD in Computer Science** at Università di Torino, Dept. of Computer Science. Thesis title: “Cooperation among economically rational agents”.
- February 1995: **Master of Science in Philosophy** (with curriculum in Computer Science) at Università di Torino with 110/110 cum summa Laude. Thesis title: “Pianificazione ed atti linguistici”. Advisor: Prof. Leonardo Lesmo (Dept. of Computer Science, Università di Torino).

### ***b. Academic positions:***

- January 2009 – March 2009: **Visiting professor** at Individual and Collective Reasoning Group of Security and Trust (SnT) of University of Luxembourg, an **interdisciplinary excellence** center.
- October 2009: Associate Professor (confirmed) at Dept. of Computer Science, Università di Torino.
- October 2006: Associate Professor at Dept. of Computer Science, Università di Torino.
- October 2005: Abilitation (“idoneità”) **for Associate Professor** in Computer Science.
- November 1999: **Researcher in Computer Science** at Università di Torino.
- November 1995-1999: Phd Student in Computer Science under a four-year grant of Università di Torino.

### ***c. Institutional roles***

Guido Boella is the “Minister of Research” in the **Board** of his department in the last 2 terms, delegated to promoting writing of project proposals on competitive calls like FP7, and the contact point for the Common strategic task force for competitive projects (CSTF) at his university, headed by Bruno Quarta.

He was secretary of the Consiglio di Corsi di Studi in Informatica from 2004 to 2008 and member of the Job Placement committee of Facoltà di Scienze MM.FF.NN.

**Guido Boella is a vice-director and thus member of the board and teaching committee of the Erasmus Mundus Joint Doctorate (2011) LAST-JD in Law, Science and Technology.**

He was a member of the **PhD committee in Computer Science** of his department (2010-2012) and from 2004 to 2010 of the Phd committee in Neurosciences (for the topic Cognitive Science) and since 2010 he is in the board of the **Doctoral School of Sciences and Innovative Technologies** at his university.

He was elected for the Governing board of Associazione Italiana per l’Intelligenza Artificiale (AI\*IA) from 2007 to 2009.

He has been member of selection committees (“procedura comparativa”) for position of researchers at Universities of Bari (2004) and Milano (2005), member of selection committees for PhD in Cognitive science (2004) and in Computer Science in Torino (2011), in Informatica giuridica e diritto dell’informatica at Università di Bologna, member of final exam committees of the PhD in Informatica giuridica e diritto dell’informatica at Università di Bologna (2009 and 2012). He is in the selection committee of LAST-JD in 2012 and 2013.



#### **d. Publications**

**Guido Boella** published more than 200 papers. He publishes since his master thesis on 1995, extensively, continuously and with an increasing rate, on a wide range of topics notwithstanding the absence of a specific journal on such his main research topic. **Guido Boella** has been senior author (alphabetic order is followed and the contribution is to be considered paritary) of over 35 papers published in **leading international ISI indexed peer-reviewed journals** in the field (such as JAAMAS, JLC, JIGPL, JSMC, KAIS, IJCIS, IJAR), **major international peer-reviewed multidisciplinary scientific journals** (such as AI&LAW) as well as 30 in highly **competitive** peer-reviewed **conferences** proceedings (such as KR, IJCAI, AAMAS, ECAI) , over 160 papers listed on DBLP.

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Guido Boella's publishes in:

- **International journals ranked on ISI, GRIN e ERA (Australian research council):**
  - International Journal of Approximate Reasoning Uncertainty in Intelligent Systems (Elsevier),
  - *Journal of Applied Ontology* (IOS) Impact factor of 1.105 for 2011
  - *International Journal of Human-Computer Studies*, impact factor 0.918 and A in the ranking of GRIN.
  - *IEEE Transactions on Systems, Man and Cybernetics*, impact factor 2.123 (Part A 2011) and 2.009 (Part C 2011) and B in the ranking of GRIN.
  - *Applied Artificial Intelligence* (Taylor & Francis) impact factor 0.753 and B in the ranking of GRIN and ERA.



- *International Journal of Cooperative Information Systems* impact factor 1.433 and C in the ranking of GRIN.
- *Knowledge and Information Systems* (Springer) impact factor 2.225 and B on the ERA ranking.
- *Logic Journal of the IGPL* (Oxford University) Impact Factor 0.913, B on ERA and C in the ranking of GRIN.
- *Synthese* (Springer), An International Journal for Epistemology, Methodology and Philosophy of Science, Impact Factor 0,649
- *Annals of Mathematics and Artificial Intelligence* (Springer) Impact Factor 0,358
- *Simulation Modelling Practice and Theory* (Elsevier), Impact Factor: 0.969
- *Studia Logica* (Springer), A in ERA and C in the ranking of GRIN.
- *Artificial Intelligence and Law* (Springer), C in the ranking of GRIN.
- *Journal of Applied Logic* (Elsevier), Impact Factor: 0.574, A on ERA.
- *Web Intelligence and Agent Systems: an international journal* (IOS) C on ERA.
- *Journal of Object Technology* classificata (GRIN D)
- *Autonomus Agents and Multiagent Systems* (Springer) impact factor 1.213 (GRIN A).

□ **Electronic Notes in Theoretical Computer Science** (Elsevier) (GRIN C).

□ **Lecture Notes Springer LNCS series** - impact factor 0.515 till 2007.

□ Proceedings of main international conferences, with peer review:

- ACM proceedings:

- AAMAS - International Joint Conference on Agents and Multiagents Systems, acceptance rate 2004, 2005: 24.6%, 2006: 23.1%, 2008: 22%.
- ICAIL - International Conference on AI and Law, (GRIN C).
- TARK - Conference on Theoretical aspects of rationality and knowledge

- PPPJ - International Symposium on Principles and Practice of Programming in Java
- **IEEE** proceedings
  - IAT - Intelligent Agent Technology, acceptance rate 2003 24%, 2004 17% regular papers, 2005 18%, 26% short papers.
  - WI - Web Intelligence, acceptance rate 2003 16%, 2004 16% regular papers, 23% short papers.
  - HICSS - Hawaii International Conference on System Sciences.
- **AAAI proceedings:** KR - International Conference on the Principles of Knowledge Representation and Reasoning, acceptance rate 30%,
- **GRIN A** conferences
  - ECAI - European Conference on AI, acceptance rate 2004 27%
  - IJCAI - International Joint Conference on AI acceptance rate 20%
  - ATAL (Agent Technologies, Architectures and Languages
  - KR, AAMAS, AAAI Fall Symposium, CogSci - Cognitive Science, ACL - Meeting of the Association for Computational Linguistics.
- **GRIN B:** ISMIS - International Symposium on Methodology of Intelligent Systems, LREC - International Conference on Language Resources and Evaluation, TARK - Conference on Theoretical aspects of rationality and knowledge, COMMONSENSE - International Symposium on Logical Formalizations of Commonsense Reasoning, HICSS - IEEE Hawaii Conf. On System Sciences, AI\*IA - Congress of the Italian Association for Artificial Intelligence, ECCS - European Conference on Cognitive Science, ICCM - International Colloquium on Cognitive Modelling.
- **GRIN C:** ICAIL - International Conference on Artificial Intelligence and Law, ECSQARU.
- **ERA C:** KES-AMSTA, JURIX

***Selection of publications as senior author with IF and citations without self citation***

***i. Best paper prizes:***

G. Boella and L. van der Torre. Power in Norm Negotiation. In Agent and Multi-Agent Systems: Technologies and Applications, First KES International Symposium, KES-AMSTA 2007. pp. 436-446. Volume 4496 of LNCS Springer 2007. Acceptance rate 23.7%

G. Boella, S. Villata, L. van der Torre. Trust in Abstract Argumentation. The 4th Mahasarakham International Workshop on Artificial Intelligence MIWAI'10. 2010

G. Boella, G. Pigozzi and L. van der Torre. Normative Framework for Normative System Change. The Eighth International Conference on Autonomous Agents and Multiagent Systems. pp. 169-176. 2009 (Finalist paper) Acceptance rate 22%

G. Boella and con R. Damiano. An architecture for normative reactive agents. Lecture Notes in Artificial Intelligence n. 2413: Intelligent Agents and Multi-Agent Systems, 1-17. Springer 2002. "Runner-up Price" of 5th Pacific Rim International Workshop on Multi Agents.

**ii. Most cited papers:**

G. Boella and L. van der Torre. Regulative and constitutive norms in normative multiagent systems. Procs. of the 9th International Conference on the Principles of Knowledge Representation and Reasoning (KR'04), pp.255-266. AAAI, 2004. Acceptance rate 30% Cited by 102 (manually counted)

G. Boella and L. van der Torre and H. Verhagen, Introduction to normative multiagent systems. Computational & Mathematical Organization Theory, 12(2-3):71-79, Springer 2006. Cited by 100 (manually counted), 43 on Scopus (over 80th perc.),

G. Boella and L. van der Torre. Permissions and obligations in hierarchical normative systems. In Proceedings of the Eighth International Conference on Artificial Intelligence and Law (ICAIL'03), pages 109-118, 2003. Cited by 60 (manually counted). 19 on Scopus (over 80th perc.)

G. Boella and L. van der Torre. A game theoretic approach to contracts in multiagent systems IEEE Transactions on Systems, Man and Cybernetics Part C: Applications and Reviews 36 (1), pp. 68-79, 2006. Cited by 62 on Google scholar, 19 on Scopus (over 80th perc.), 11 on WoS (over 80th perc.).

G. Boella and L. van der Torre. Security policies for sharing knowledge in virtual communities IEEE Transactions on Systems, Man, and Cybernetics Part A:Systems and Humans 36 (3), pp. 439-450, 2006. Cited by 43 on Google scholar, 18 on Scopus (over 80th perc.), 16 on WoS (over 80th perc.).

G. Boella, H. Verhagen, and L. van der Torre. Introduction to the special issue on normative multiagent systems. Journal of Autonomous Agents and Multi Agent Systems JAAMAS, 17(1):1-10, 2008. Cited by 74 on Google scholar, 34 on Scopus (over 80th perc.), 22 on WoS (over 80th perc.).

G. Boella and L. van der Torre. Attributing mental attitudes to normative systems. Procs. of the 2nd International Joint Conference On Autonomous Agents and Multi Agent Systems (AAMAS'03), pp.942-943, ACM 2003. Acceptance rate 24.7%. Cited by 40 (manually counted)

### **iii. Multidisciplinary journals:**

M. Slavkovik, G. Boella. Recognition-primed group decisions via judgement aggregation. *Synthese*. In press. Impact Factor 0,649

G. Aucher, G. Boella, L. Van Der Torre. A dynamic logic for privacy compliance. *Artificial Intelligence and Law (AI&Law)*, 19 (2-3): 187-231. 2011

G. Boella and L. van der Torre. Institutions with a hierarchy of authorities in distributed dynamic environments. *Artificial Intelligence and Law Journal (AI&Law)*, 16(1):53-71, 2008.

G. Boella, L. van der Torre, and H. Verhagen. Roles, an interdisciplinary perspective. *Journal of Applied Ontology*, 2(2):81-88, 2007. Impact factor of 1.105

G. Boella and L. van der Torre. The ontological properties of social roles in multi-agent systems: Definitional dependence, powers and roles playing roles. *Artificial Intelligence and Law Journal (AI&Law)*, 15(3):201-221,2007.

G. Boella, R. Damiano, J. Hulstijn, and L. van der Torre. A common ontology of agent communication languages: Modelling mental attitudes and social commitments using roles. *Applied Ontology*, 2(3-4):217-265, 2007. Impact factor of 1.105 for 2011

G. Boella, L. Lesmo, and R. Damiano. On the ontological status of plans and norms. *Artificial Intelligence and Law Journal (AI&Law)*, 12(4):317-357, 2005.

### **iv. Main journals (selection from 35 articles):**

S. Villata, G. Boella, D. Gabbay, L. van der Torre. **A Socio-Cognitive Model of Trust using Argumentation Theory**. *International Journal of Approximate Reasoning*. Elsevier. In press. Impact factor 1.948

S. Villata, G. Boella, D. Gabbay, J. Hulstijn, L. van der Torre. **A Logic of Argumentation for Specification and Verification of Abstract Argumentation Frameworks**. *Annals of Mathematics and Artificial Intelligence*. Springer. 2012. Impact Factor 0.358

S. Villata, G. Boella, D. Gabbay, L. van der Torre. **Modelling Defeasible and Prioritized Support in Bipolar Argumentation**. *Annals of Mathematics and Artificial Intelligence*. Springer. 2012. Impact Factor 0.358

G. Boella, J. Hulstijn, G. Governatori, R. Riveret, N. Rotolo, and L. van der Torre. Time and defeasibility in fipa acl semantics. *Journal of Applied Logic*, vol. 9, p. 274-288, 2011. Impact Factor: 0.574

M. Remondino and G. Boella: How users' participation affects reputation management systems: The

case of P2P networks. *Simulation Modelling Practice and Theory* 18(10): 1493-1505, 2010. Impact Factor: 0.969

G. Boella, C. da Costa Pereira, G. Pigozzi, A. Tettamanzi, and L. van der Torre. The role of goals in belief selection. *Logic Journal of IGPL*, pages 215-224, 2010b. IF 0.913

G. Boella, D. Gabbay, L. van der Torre, e S. Villata. Meta-Argumentation Modelling I: Methodology and Techniques. *Studia Logica*, 93, pp. 297-355, 2009. IF 0.728

S. Barker, G. Boella, D.M. Gabbay, and V. Genovese. A meta-model of access control in a fibred security language. *Studia Logica*, 92(3) 437-477, 2009. IF 0.728

G. Boella, L. van der Torre, and S. Villata. Analyzing cooperation in iterative social network design. *Journal of Universal Computer Science*, 15(13):2676-2700, 2009. IF 0.669

G. Boella, D. M. Gabbay, V. Genovese, and L. W. N. van der Torre. Fibred security language. *Studia Logica*, 92(3):395-436, 2009. IF 0.728

G. Boella, L. Sauro, and L. van der Torre. Algorithms for finding coalitions exploiting a new reciprocity condition. *Logic Journal of the IGPL*, 17(3):273-297, 2009. IF 0.913

G. Boella, H. Verhagen, and L. van der Torre. Introduction to the special issue on normative multiagent systems. *Journal of Autonomous Agents and Multi Agent Systems JAAMAS*, 17(1):1-10, 2008. Cited by 74 on Google scholar, 34 on Scopus (over 80th perc.), IF 1.213

G. Boella and R. Damiano. A Replanning Algorithm for Decision Theoretic Hierarchical Planning: Principles and Empirical Evaluation. *Applied Artificial Intelligence*. 22 (10): 937-963. 2008. IF 0.563

G. Boella and L. van der Torre. Substantive and procedural norms in normative multiagent systems. *Journal of Applied Logic*, 6(2):152-171, 2008. Impact Factor: 0.574

G. Boella, P. Caire, and L. van der Torre. Norm negotiation in online multi-player games. *Knowledge and Information Systems*, 18(2): 137-156. 2008d. IF 2.225

G. Boella and L. van der Torre. Norm negotiation in multiagent systems. *International Journal of Cooperative Information Systems (IJCIS)*, 16(2):97-122, 2007. IF 1.433

G. Boella, L. Sauro, and L. van der Torre. From social power to social importance. *Web Intelligence and Agent Systems Journal (WIAS)*, 5(4):393-404, 2007.

G. Boella and L. van der Torre. A game theoretic approach to contracts in multiagent systems. *IEEE Transactions on Systems, Man, and Cybernetics, Part C*, 36(1):68-79, 2006b. IF 2.009

G. Boella and L. van der Torre. Security policies for sharing knowledge in virtual communities. *IEEE Transactions on Systems, Man and Cybernetics - Part A*, 36(3):439-450, 2006c. IF 2.123

***v. Highly competitive conferences (selection from more than 30 papers):***

S. Villata, G. Boella, L. van der Torre: Attack Semantics for Abstract Argumentation. Proceedings of the 22nd Int. Joint Conference on Artificial Intelligence, IJCAI 2011: 406-413 2011 Acceptance rate: 17%

G. Boella, D. M. Gabbay, V. Genovese, L. van der Torre: Higher-Order Coalition Logic. 19th European Conference on Artificial Intelligence. ECAI: 555-560 IOS. 2010c. Acceptance rate: 20%

G. Boella, G. Governatori, A. Rotolo, L. van der Torre: A Logical Understanding of Legal Interpretation. Principles of Knowledge Representation and Reasoning: Proceedings of the Twelfth International Conference, KR 2010 2010d Acceptance rate: 25.1%

G. Boella, G. Pigozzi, L. van der Torre: Normative framework for normative system change. 8th International Joint Conference on Autonomous Agents and Multiagent Systems AAMAS (1) 2009f: 169-176 Acceptance rate: 24%

P. Caire, S. Villata, G. Boella, L. van der Torre: Conviviality masks in multiagent systems. 7th International Joint Conference on Autonomous Agents and Multiagent Systems AAMAS (3) 2008f: 1265-1268 Acceptance rate: 22%

G. Boella, L. Sauro, L. van der Torre: Strengthening Admissible Coalitions. 17th European Conference on Artificial Intelligence ECAI 2006: 195-199 Acceptance rate: 26%

G. Boella, Leendert W. N. van der Torre: Negotiating the Distribution of Obligations with Sanctions among Autonomous Agents. Proceedings of the 16th European Conference on Artificial Intelligence, ECAI 2004b: 13-17 Acceptance rate: 27%

## ***e. Research group and international cooperation***

### ***i. Network of cooperations***

His research is carried out in cooperation with several renowned international scholars, **witnessed by several papers and events organized together**. He **has collaborated in a stable way** since 2003 with Leon van der Torre of University of Luxembourg, a leader in Deontic logic, whose expertise in logic complemented **Guido Boella's** background in Multi-agent Systems. Given the wide scope of his research, he has worked with researchers from different disciplines (other logics, argumentation, programming languages, law) installing a **network of cooperation**. He has made several research visits abroad, among which as visiting professor at the interdisciplinary excellence center for Security and Trust (SnT) at University of Luxembourg and **collaborates regularly** with at least **25 international researchers** who are interested in developing his ideas and visit him in Torino or Luxembourg. The joint international research has been conducted without the umbrella of projects and specific funding, and **Guido Boella** has undertaken a role of **group leader and playmaker**. Given the wide scope of his research, he relishes opportunities to work with researchers who have different but complementary skills to his own.

- 1) King's College, Londra UK (Dov Gabbay, Steve Barker), Logic and security, Argumentation
- 2) University of Luxembourg (Leon van der Torre), NorMAS, logic, judgment aggregation, argumentation
- 3) INRIA Sophia Antipolis (Serena Villata): Argumentation
- 4) CIRSIFID Università di Bologna (Nino Rotolo and Monica Palmirani). Multi-agent systems and legal informatics
- 5) NICTA, Brisbane, Australia (Guido Governatori): Compliance
- 6) Université de Rennes 1 (Guillaume Aucher): Privacy
- 7) Université Paris Dauphine (Gabriella Pigozzi): Judgement aggregation.
- 8) Dipartimento di Scienze Giuridiche, Università di Torino (Gianmaria Ajani, Elena Grasso, Ugo Pagallo): Legal ontologies for EU Law, systems to support legal translation, complex networks for law.
- 9) Università del Piemonte Orientale (Piercarlo Rossi): Legal ontologies for EU Law.
- 10) Dipartimento di Informatica, Università di Torino (Matteo Baldoni): agent programming languages
- 11) City University London (Artur d'Avila Garcez), Neural symbolic approach applied to norms

- 12) Università di Brescia (Pietro Baroni, Massimiliano Giacomin): Argumentation.
- 13) LOA ISTC-CNR Trento (Nicola Guarino): Ontologies
- 14) Utrecht Univeristeit, NL (Jan Broersen): Deontic logic
- 15) University of Liverpool (Marija Slavkovic), judgment aggregation
- 16) University of Nice Sophia Antipolis (Celia da Costa Pereira, Andrea Tettamanzi): Multi-agent systems
- 17) Delft University of Technology (Yao-Hua Tan, Joris Hulstijn, Marijn Janssen): Multi-agent systems
- 18) Università di Napoli (Luigi Sauro): Multi-agent systems
- 19) University of Bath, UK (Regis Riveret): Multi-agent systems
- 20) University of Montpellier, FR (Souhila Kachi): Argumentation
- 21) ITTIG-CNR Firenze (Daniela Tiscornia): Legal ontologies.
- 22) Stockholm University, SW (Harko Verhagen): NorMAS
- 23) Fernuniversitaet in Hagen, DE (Friedrich Steimann): Object Oriented programming

Most are young independent researchers who, despite not having their own research group, produce excellent research with peer co-operation. Gabbay, Guarino and Ajani, on the other hand, are senior and leading figures within their respective research areas of logic, ontologies and EU comparative law.

## **ii. Research group**

Guido Boella works in his department with 2 postdocs, 7 phd students and 1 programmer.

Postdocs:

- 1) Livio Robaldo (human language technologies for legal informatics), postdoc position funded by his ICT4LAW project
- 2) Luigi di Caro (statistical approaches applied to legal informatics), postdoc position funded by his department



Phd students, supervised by him:

- 1) Valerio Genovese (logics for security), phd in cotutele with University of Luxembourg (with co-supervisors Dov Gabbay and Leendert van der Torre) position funded by an AFR grant of FNR agency in Luxembourg (2010-2012)
- 2) Alan Perotti (neural symbolic methodologies for rule compliance of business process models), phd in Computer Science (with co-supervisor Artur d'Avila Garcez, City University London) position funded by MIUR (2011-2013)
- 3) Silvano Colombo Tosatto (regulatory compliance), phd in Computer Science in cotutele with University of Luxembourg (cosupervisor Leendert van der Torre) position funded by an AFR grant of FNR agency in Luxembourg (2011-2013)
- 4) Llio Humphreys (information extraction for legal informatics), phd in Computer Science in cotutele with University of Luxembourg (cosupervisor Leendert van der Torre) position funded by an AFR grant of FNR agency in Luxembourg (2012-2014)
- 5) Eniafe Festus Ayetiran (e-discovery), phd in Erasmus mundus joint doctorate in Law, Science and Technology (2012-2014)
- 6) Alice Ruggeri (as informal supervisor) (the notion of affordance in formal ontologies) phd in Cognitive Science funded by MIUR (2012-2015)
- 7) Alessio Antonini (normative multiagent systems) phd in Computer Science (with co-supervisor Leendert van der Torre, University of Luxembourg) position funded by MIUR (2013-2015)

Programmer:

- 1) Daniele Rispoli (classification), position funded by ICT4Law project.

He previously followed the phd thesis of Luigi Sauro "*Formalizing Admissibility Criteria in Coalition Formation among Goal Directed Agents*" (2003-2005) and of Serena Villata "*Meta-Argumentation for Multiagent Systems: Coalition Formation, Merging Views, Subsumption Relation and Dependence Networks*" (2005-2008)

All **Guido Boella's** students are allowed to work independently to pursue ideas that only partially overlap his interests, such as coalitions, argumentation, security and neural symbolic paradigm.

***f. Recognised leadership in industrial innovation***

**Guido Boella** was **cofounder** in 2010 of the enterprise Nomotika srl, an high tech **spinoff of the Università di Torino** working in the field of legal informatics, using technologies such as ontologies, human language technologies, compliance verification and he remains an associate of the company.

**Guido Boella** is **co-author of the software** Eunomos and Syllabus which have been engineered and distributed by Nomotika srl in conjunction with Augeos spa and used to create the compliance service Menslegis (see publications).

He is also co-author of the programming languages powerJava and powerJade (see publications).

## **g. Funding ID**

Guido Boella participates in the following projects in the role of **coordinator**:

1. **Guido Boella** is **author and scientific coordinator** of the interdisciplinary project “ICT4Law: ICT Converging on Law: Next Generation Services for Citizens, Enterprises, Public Administration and Policymakers”, a 3 years, **3.5m** € budget, 15 partners from academy and industry. Converging Technologies Project financed by Regione Piemonte – scoring first - and ending on 30 March 2012. The project lead to dozens of **publications**, some **patents** and **commercial products** and established in Piedmont region a district of excellence in legal informatics research.
2. **Guido Boella** is vice-director **and coauthor** of the **Erasmus mundus joint doctorate** (2011) LAST-JD in Law, **Science and Technology** (5 years, about 4m €) coordinated by Università di Bologna, with University of Luxembourg, Università Autonoma di Barcelona, Università Mycolas Romeris di Vilnius, TILT University of Tilburg, NICTA Australia, Renmin University (Beijing), Pittsburg University, CELLS Hannover and several enterprises.
3. Local coordinator of “EU Legal Culture” (project funded by Bando di Ateneo of Università di Torino, funded by Compagnia di San Paolo) 2012-2014 (Coordinator at Law department, Michele Graziadei)
4. Local coordinator of Contrat de collaboration de recherche with Cour de cassation de Paris on Decision support tool for the drafting of court judgements, with University of Rennes 1 and INRIA Rennes (coordinator Guillaume Aucher).
5. **Coordinator** of the “L’outsourcing dei dati aziendali in India e Cina tra rischi e opportunità delle nuove tecnologie: il problema dell’enforcement delle norme a tutela ella sicurezza dei dati. Call Progetto Alfieri of Fondazione Cassa di Risparmio di Torino. With Università del Piemonte Orientale e con l’Università del Lussemburgo (90,000 €) 2007-2009
6. **Local coordinator** of subproject “Organization and development of legal ontologies based on an agent perspective” in “Canone Ontologico. Un approccio integrativo alla organizzazione della conoscenza” PRIN project (Ministry of University) 30,000 € from 2005 to 2006 (coordinator Maurizio Ferraris).
7. **Local coordinator** of “Ontology of social reality in multi-agent systems: organizations, roles and documents” in “Documentalità. Ontologie e tecnologie per la cittadinanza e la democrazia “ PRIN project (Ministry of University) 19,000 € from 2006 to 2007 (coordinator Maurizio Ferraris).
8. Scientific responsible of “Online financial services in the regional practice, between European regulations and technological aspects” Call Progetto Alfieri of Fondazione Cassa di Risparmio di Torino. 120,000 € from 2005 to 2007 (coordinator Gianmaria Ajani)
9. Coordinator of “Modular approaches to linguistic analysis” Local research project (Università di Torino), 8,000 € from 2005 to 2007.
10. Coordinator of “Natural language, ontologies and multi-agent systems: theory and applications to law and arts” Local research project (Università di Torino), 25,000 € from 2006 to 2008.

Project proposals under evaluation:

He is author and responsible of a project proposal in evaluation “Law costs and process driven effective services” on Bando Smart cities and communities and social innovation (Avviso MIUR prot. 391/ric). 15m€ Università di Milano Bicocca, Università di Bologna, Università del Piemonte Orientale, Infocert, Sirfin, Net Service Finmeccanica and others.

He participates as local coordinator to the proposal in evaluation J-Cloud. “Justice on the Cloud”, bando SMART Smart cities and communities and social innovation (Avviso MIUR prot. 391/ric), 18m€ with Università Federico II di Napoli, LUISS, Università del Salento, HP, PosteCOM, Net Service Finmeccanica, Links MT.

He is author and coordinator of the project “ITxLaw” on the call Bando di Ateneo of Università di Torino 2012 funded by Compagnia di San Paolo to promote the presentation of eventual ERC grants.

He is co-author of the DART: Dynamically and Autonomously Reconfigurable Types project proposal, presented as ERC Advanced grant 2012 by Mariangiola Dezani.

Non financed projects:

1. He is the **author** of the FP7 project proposal EGALITE on legal ontologies scoring second among **accepted** but not financed projects.
2. He is co-author of SALT: Self-adaptive, light types , presented as ERC Advanced grant 2011 by Mariangiola Dezani, which was admitted to the second phase of evaluation but not financed
3. He is author of “ITxLaw” presented by him as PI on the ERC Starting grant 2011, which was not admitted to the second phase of evaluation but graded B.

***Planned projects:***

**Guido Boella** is involved in the **writing** of the following project proposals:

1. CORE Project proposal “Legal knowledge management systems” coordinated by Leon van der Torre on AFR call of FNR Luxembourg.
2. “Computers and Privacy Regulations: the Logical Bridge” coordinated by Guillaume Aucher of Université de Rennes 1 on call ANR France.
3. Proposal on call 10 of FP7 SME initiative on data analytics on publishing case law in EU as linked open data with the SME Apis (BU).

4. Proposal on call 10 of FP7 on Deception detection coordinated by University of Essex.
5. Proposal on FET Open Xtrack of call 10 of FP7 on Computational law.
6. ERC synergy grant on the formalization of the notion of interpretation for information systems requiring an explicit modeling of legislation

#### ***h. Organisation of international conferences, program committees and editorial boards***

Guido Boella has been **on the program committee** of well-established and important international conferences on his field **continuously** since 2005 such as IJCAI, AAMAS, ECAI, IAT (see Appendix)

He is involved in **the organization and steering committee** of the relevant workshop series of his area (COIN, NorMAS).

He was the **Organizer of EASSS'09 summer school**, the MALLOW'09 conferences, of 3 **Dagstuhl** seminars, and he will be the co-organizer of the XIII AI\*IA conference in 2013 (see Appendix).

He was guest editor of several special issues of relevant journals like JAAMAS, JLC, JIGPL, CMOT, ENTCS (see Appendix)

For his scientific achievements, international visibility and community leadership, he has been invited in the **editorial board of two ISI indexed international journals**:

- 1) Applied ontology (IOS Press) An Interdisciplinary Journal of Ontological Analysis and Conceptual Modeling. impact factor 2011 1.105.
- 2) Journal of IGPL (Oxford Journals): *algorithms in cognition, informatics and logic*. Impact Factor of 0.913 for 2011

*He is also on the **Scientific Advisory Board** of the **Springer book series** on Law, Governance and Technology, edited by Pompeu Casanovas and Giovanni Sartor.*

***i. Early career and major contributions to launching the early careers of excellent researchers***

Guido Boella became a **permanent researcher** at Università di Torino in 1999 at 30, before concluding his PhD in 2000. He became an **Associate professor** in 2006 after winning an examination in 2005. He was a Visiting Researcher in Berkeley and **Visiting Professor** in Luxembourg.

Despite his relatively young age, he scored **first in the evaluation of research** of his department in 2007, 2008, 2011, 2012, third and second in the intervening years.

He has supervised several bachelor and master theses. Concerning the career of former PhD students, Luigi Sauro is now permanent researcher at Università di Napoli, Serena Villata is now a post-doc at INRIA Sophia Antipolis, and Valerio Genovese won a permanent position as lecturer at Royal Holloway University of London during his second year of Phd.

***j. Invited presentations to international advanced schools and events***

He was a member of the **PhD mentoring program** at AAMAS'05, he has held several **tutorials** for PhD students at major conferences (AAMAS, IAT), at the EASSS agent **summer school** in 2006, 2008, and 2009, and at the **Doctoral School** "Chambery - Torino" 2004

He has been **invited speaker** at Dagstuhl seminars and at NormChange workshop several times. See Appendix for details.

## **k. Research areas**

**Guido Boella** has showed his creativity and intellectual capacity in different fields, with a **multidisciplinary** scholarly activity publishing not only in different areas of computer science but also in the legal field.

His research topics are:

- 1) Normative Multiagent Systems (NorMAS) **Guido Boella** is one of the **founders and leaders of the new area** of Normative Multi-agent Systems (**NorMAS**). The **NorMAS** approach to coordinating open multi agent systems was combines normative systems with multi-agent systems methodologies to regulate the emergent behaviour of open systems. The idea was foreseen in his PhD thesis with an innovative game-theoretic approach to cooperation among agents based on decision theoretic planning in 2000. **Guido Boella** then decided to apply his new methodology to the problem of regulating multi-agent systems with norms, leading to a game theoretic approach to norms that went beyond the state of the art, focusing not only on logical reasoning on norms, but also on the decision process of agents, thus innovating the traditional approach to legal reasoning based on deontic logic. The methodology was originally based on planning and then adapted to logical techniques. Since 2005, he has organized the two series of workshops of this area, NorMAS and COIN, associated with major conferences (AAAI, IJCAI, AAMAS, ECAI) or held as **Dagstuhl seminars**, which were attended by all the major researchers in the field. The proceedings appeared as **special issues** of major ISI indexed journals such as JAAMAS, JLC, and JIGPL. They include **manifestos** of the field co-authored by **Guido Boella** which define NorMAS and the **research challenges** involved, manifestos which are widely cited. **Guido Boella** is the **most cited author** in recent surveys on AI-Communications Magazine and JASSS on Normative Multi-agent Systems. There are now hundreds of researchers working on normative multi agent systems and it is a typical topic in major conferences such as AAMAS.
- 2) Analysis of the notion of role, across several disciplines:
  - a. Foundations of ontologies. Guido Boella studied how ontologies should be enriched with the notion of role, enlarging the set of knowledge representation primitives.
  - b. Multiagent systems. He modeled roles using the so called agent-metaphor, extending the analysis to the concept of organization in multiagent systems.
  - c. Agent oriented programming languages. The model of roles in multiagent systems has been introduced in the Jade programming languages creating powerJade.

- d. Object oriented programming languages. The conceptual model of roles developed by Guido Boella has been introduced to extend the language Java with a new primitive to model roles, creating the language powerJava.

On this topic he organized since 2005 the workshop series Roles at AAI symposium, ECOOP and Dagstuhl in cooperation with major scholars in the field such as Friedrich Steimann and Erik Meijer.

- 3) Formal argumentation. Guido Boella focused on frontier methodologies in Dung style abstract argumentation: dynamics, attack semantics, meta-argumentation, patterns. Moreover argumentation has been applied by him as a methodology to deal with other topics, like norms, coalitions, trust, etc.
- 4) Logics for security and privacy. In cooperation with Steve Barker, Dov Gabbay and Guillaume Aucher, he recently worked in the field of logics for security and privacy. In particular, he developed a logic language for the says operator indexed on formulas defining groups of principals and a privacy language where epistemic states are permitted or forbidden or made obligatory, rather than messages. He is cosupervising the phd thesis of Valerio Genovese in this field.

Since 2000, **Guido Boella** has also collaborated **with legal scholars** in the interdisciplinary field of legal ontologies, bringing new requirements from the **EU legal system** to this field **and in legal informatics, developing the legal document management systems Eunomos.**

### ***1. Visibility on newspapers and scientific divulgation***

He has interviewed by the national Italian daily newspapers "Il Sole 24 Ore Nord ovest" on his ICT4Law project (26/05/2010) and on his Nomotika spinoff (03/03/2010), by "La Stampa" on legal ontologies for the cultural page on 13/07/2004, and by wired.it on ICT4Law on 15/04/2009. He has written several entries about computer science for the prestigious encyclopedia UTET Grande Dizionario Enciclopedico on 2003.



m. Teaching activities

**Official teacher of the following courses** of Corso di Studi in Informatica of Facoltà di Scienze MM.FF.NN. of Università di Torino, for 120 hours a year since 2006:

- 2000/2001. **“Laboratorio di Informatica: Programmazione”** of first year of a 5 years degree
- 2001/2002. **“Programmazione I e Laboratorio”** of first year of bachelor
- 2002/2003. **“Programmazione I e Laboratorio”** and **“Scienze cognitive”** of master program
- 2003/2004. **“Programmazione I e Laboratorio”** and **“Scienze cognitive”**
- 2005/2006. **“Programmazione I e Laboratorio”** and **“Scienze cognitive”**
- 2006/2007. **“Architettura degli Elaboratori I”**, first year of the bachelor, **“Programmazione I e Laboratorio”**, and **“Scienze cognitive”**.
- 2007/2008. **“Architettura degli Elaboratori I”**, **“Programmazione I e Laboratorio”**, and **“Scienze cognitive”**.
- 2008/2009. **“Architettura degli Elaboratori I”**, **“Programmazione I e Laboratorio”**, and **“Scienze cognitive”**.
- 2009/2010. **“Architettura degli Elaboratori I e laboratorio”**, and **“Scienze cognitive”**
- 2009/2010. **“Architettura degli Elaboratori I e laboratorio”**, **“Sistemi cognitivi”** of the Master program
- 2009/2010. **“Architettura degli Elaboratori I e laboratorio”**, and **“Sistemi cognitivi”**

The course “**Architettura degli Elaboratori I**” of the first year of the bachelor Laurea triennale del Corso di Studi in Informatica della Facoltà di Scienze MM.FF.NN. is 6 ECTS (9 ECTS from 2009/2010) involving about 120 students.

The course “**Programmazione I e Laboratorio**” of first year of the bachelor Laurea triennale del Corso di Studi in Informatica della Facoltà di Scienze MM.FF.NN. is 6 ECTS and involves 60 students.

In the course “**Scienze cognitive**” and then “Sistemi cognitivi” he is responsible for 3 ECTS. It is a compulsory course of the master Laurea magistrale in Realtà virtuale e multimedia e opzionale per la laurea in Sistemi per il trattamento dell'informazione (20 students) and it is about the foundations of Artificial Intelligence.

APPENDIX: Detailed list of membership to program committees, organization of events, tutorials and reviews by Guido Boella.

Selection of Program Committee membership of major conferences.

- 1) **International Joint Conference on Artificial Intelligence IJCAI 2009**, Main conference in AI (GRIN A) Pasadena (CA) 2009
- 2) **International Joint Conference of Autonomous Agents and Multi Agent Systems**, main conference in his research area (GRIN A):
  - a) 4th International Joint Conference on Autonomous agents and multiagent systems (AAMAS'05), Utrecht (NL), July 2005.
  - b) 7th International Joint Conference on Autonomous agents and multiagent systems (AAMAS'08), Estoril (PT), May 2008.
  - c) 8th International Joint Conference on Autonomous agents and multiagent systems (AAMAS'09), Budapest (HU), May 2009.
  - d) 9th International Joint Conference on Autonomous agents and multiagent systems (AAMAS'10), Toronto (CA), May 2010.
- 3) **IEEE/ACM/WIC Intelligent Agent Technology Conference (IAT)** from 2005 to now, the second most important conference in his area:
  - a) IEEE/ACM/WIC International Conference on Intelligent Agent Technology and Web Intelligence (IAT/WI'05), Compiègne (FR), September 2005.
  - b) IEEE/ACM/WIC International Conference on Intelligent Agent Technology and Web Intelligence (IAT/WI'06), Hong Kong, December 2006.
  - c) IEEE/ACM/WIC International Conference on Intelligent Agent Technology and Web Intelligence (IAT/WI'07), Palo Alto (CA), December 2007.
  - d) IEEE/ACM/WIC International Conference on Intelligent Agent Technology and Web Intelligence (IAT/WI'08), Sydney (AU), December 2008.
  - e) IEEE/ACM/WIC International Conference on Intelligent Agent Technology and Web Intelligence (IAT/WI'09) Milano, September 2009.
  - f) IEEE/ACM/WIC International Conference on Intelligent Agent Technology and Web Intelligence (IAT/WI'10) Toronto, 2010.
  - g) IEEE/WIC/ACM International Conference on Intelligent Agent Technology, 22 – 27 August 2011, Campus Scientifique de la Doua, Lyon, France

- 4) ICAIL 2013: XIV International Conference on Artificial Intelligence and Law, Rome.
- 5) **21st International Conference on Legal Knowledge and Information Systems Jurix 2009** 10-13 December 2008.
- 6) **ECAI'08 European Conference on Artificial Intelligence** (GRIN A).
- 7) **International Conference on Agents and Artificial Intelligence ICAART'09** 19-21 January 2009, Porto, Portugal.
- 8) **45th Annual Meeting of the Association for Computational Linguistics ACL'07** (GRIN A).
- 9) **Twentieth Australian Joint Conference on Artificial Intelligence - AI07** 2-6 December, 2007 Holiday Inn, Surfers Paradise, Gold Coast, Queensland, Australia.

Member of the program committee of the most important workshops in his research areas:

- a) LOAIT Workshop, Legal Ontologies and Artificial Intelligence Techniques, June 6, 2005, Bologna, Italy held in conjunction with ICAIL'05.
- b) International Workshop on Organizations in Multi-Agent Systems From Organizations To Organization Oriented Programming In MAS (OOOP 2005) Colocated with AAMAS 2005 May 2005, Utrecht.
- c) 3rd Workshop on Multi-Agent Systems: Theory and Applications (MASTA 2005) held at the 12th Portuguese Conference on Artificial Intelligence EPIA '05 December, 5-8, 2005, Covilha, Portugal
- d) IBERAMIA/SBIA'2006 (the Ibero-American AI Conference) at International Joint Conference IBERAMIA/SBIA/SBRN 2006 October 23-27, 2006 - Ribeirao Preto, SP, Brazil
- e) Seventh Annual International Workshop "Engineering Societies in the Agents World" (ESAW 2006) held in at University College Dublin (UCD) in Dublin, Ireland from the 6th - 8th September, 2006.
- f) The AAMAS06 Workshop on Coordination, Organization, Institutions and Norms in agent systems (COIN) Hakodate, Japan 8-12 May, 2006 AAMAS 06 An international

workshop of the COIN series.

- g) FOCA Formal Ontologies for Communicating Agents Workshop July 31 - August 4, 2006 Malaga co-located with ESSLLI.
- h) The AAMAS'07 Workshop on Coordination, Organization, Institutions and Norms in agent systems (COIN) Honolulu, Hawaii, USA May 14, 2007 An international workshop of the COIN series
- i) The MALLOW Workshop on Coordination, Organization, Institutions and Norms in agent systems (COIN) Durham, UK 3rd-4th September, 2007 MALLOW An international workshop of the COIN series
- j) Fourth International Workshop on Argumentation in Multi-Agent Systems (ArgMAS 2007) Honolulu, Hawaii, USA, May 15, 2007 In Conjunction with AAMAS 2007
- k) LOAIT Workshop Legal Ontologies and Artificial Intelligence Techniques June 4, 2007, Stanford University Palo Alto, CA USA held in conjunction with ICAIL-07
- l) Eighth Annual International Workshop "Engineering Societies in the Agents World" (ESAW 07) held at the National Centre for Scientific Research (NCSR) "Demokritos" in Athens, Greece, on the 22nd, 23rd and 24th of October, 2007.
- m) Fifth European Workshop on Multi-Agent Systems EUMAS'07. Hammamet Tunisia, December 2007
- n) The Workshop on Multimedia Ontologies and AI Techniques (MOAIL 2007) held as part of the Jurix 2007 conference in Leiden.
- o) Coordination, Organizations, Institutions and Norms (COIN) co-located with AAI in Chicago July 2008
- p) CMNA 08 8th Workshop on Computational Models of Natural Argument To be held in conjunction with ECAI 2008 Patras, Greece 21 July 2008
- q) The Fifth Workshop on Coordination, Organizations, Institutions, and Norms in Agent Systems held at AAMAS'08 Estoril, Portugal May 12-16 2008
- r) First IEEE International Workshop on Engineering Open Complex Systems: Metasynthesis of Computing Paradigms (EOCS-MCP 2008) co-located with COMPSAC 2008, 28 Jul-1 Aug 2008 Turku, Finland.
- s) Sixth European Workshop on Multi-Agent Systems EUMAS'08, Bath, UK, 18-19 December 2008

- t) Fifth International Workshop on Argumentation in Multi-Agent Systems (ArgMAS 2008) Estoril, Portugal, May 12, 2008 In Conjunction with AAMAS 2008
- u) The Sixth Workshop on Coordination, Organizations, Institutions, and Norms in Agent Systems held at AAAI'08 Chicago (USA) 13-14 Luglio 2008.
- v) International Workshop on "Organised Adaptation in Multi-Agent Systems" held with AAMAS 08 May 13 2008, Estoril, Portugal
- w) 9th Annual International Workshop "Engineering Societies in the Agents World" (ESAW 08) held at the Ecole Nationale Superieure des Mines de Saint-Etienne (ENSM-SE) in Saint-Etienne, France on the 24th, 25th and 26th of September, 2008.
- x) Formal Ontologies Meet Industry Forum: FOMI 2008. June 2008
- y) Relationships and Associations in Object-Oriented Languages (RAOOL), Workshop Co-located with The International Conference on Object Oriented Programming, Systems, Languages and Applications October OOPSLA08 in Nashville, Tennessee. October 2008
- z) Logical methods for social concepts workshop colocated with European Summer School on Logic, Language and Information 2009 20 July 2009.
- aa) International Workshop on Collective Evolutionary Systems IWCES'09 Hong Kong colocated with ICCSA'09 Luglio 2009.
- bb) Programming Multiagent Systems PROMAS 2009 workshop colocated with AAMAS'09 Maggio 2009 maggio 2009, Budapest.
- cc) 10th Annual International Workshop "Engineering Societies in the Agent World" (ESAW 2009) Utrecht University, The Netherlands 18-20 November 2009.
- dd) Sixth International Workshop on Argumentation in Multi-Agent Systems (ArgMAS 2009) colocated with AAMAS'09 Maggio 2009 Budapest.
- ee) The seventh Workshop on Coordination, Organizations, Institutions, and Norms in Agent Systems 2009 colocated with AAMAS'09 Maggio 2009 Budapest.
- ff) 9th Workshop on Computational Models of Natural Argument CMNA colocated with IJCAI'09 Pasadena 2009.
- gg) The 8th Workshop on Coordination, Organizations, Institutions, and Norms COIN in Agent Systems 2009 colocated with IJCAI'09 Pasadena 2009.
- hh) Relationships and Associations in Object-Oriented Languages (RAOOL), Workshop Co-located with 23rd European Conference on Object-Oriented Programming ECOOP'09 Genova 2009.

- ii) 7th International Workshop on Argumentation in Multi-Agent Systems (ArgMAS 2010) colocated with AAMAS'10 Maggio 2010 Toronto.
- jj) International Workshop on Programming in Multi-Agent Systems (ProMAS 2010) colocated with AAMAS'10 Maggio 2010 Toronto.
- kk) International Workshop on Agent Communication (AC 2010) colocated with AAMAS'10 Maggio 2010 Toronto.
- ll) 11th International Workshop on Computational Logic in Multi-Agent Systems CLIMA XI colocated with ECAI'10 Agosto 2010 Lisbona.

Guido Boella is co-founder of the workshop series Normative Multiagent Systems (NorMAS), Roles, Coordination, organization, institution and norms (COIN) and Coordination and organization (CoORG), moreover he organized:

1. **Chair and organizer with** Erik Meijer (Microsoft Corp. - Redmond, US) David J. Pearce (Victoria University of Wellington, NZ), Friedrich Steimann (Fernuniversität in Hagen, DE) Frank Tip (IBM TJ Watson Research Center - Hawthorne, US) of **RORQ Dagstuhl seminar: "Relationships, Objects, Roles, and Queries in Modern Programming Languages"** April 2010.
2. **Chair and organizer with** Serena Villata and Massimiliano Giacomin ARGAIP 2010 1st Workshop on Argumentation in Artificial Intelligence and Philosophy: computational and philosophical perspectives in the context of the 11th Symposium of AI\*IA (AI\*IA 2010) 1 December 2010
3. **Chair and organizer with** COST Agreement technologies Workshop on Norm Compliance at DEON 2010 in Fiesole, 6 July 2010.
4. **Chair and organizer with** Dr. Giulia Andrighetto, Prof. Ugo Pagallo, and Dr. Serena Villata of Social Networks and Multiagent Systems Symposium SNAMAS'10 at **AISB'10 Convention Adaptive and Emergent Behaviour and Complex Systems** Leicester (UK). Followed by a **special issue del Journal Computational and Mathematical Organization Theory**.
5. Organizer with Cristina Baroglio and Matteo Baldoni of 10th European Agent Systems Summer School EASSS'09 (31 August to 4 September) 2009 (about 100 participants and 30 teachers).

6. **Organizer with** Cristina Baroglio and Matteo Baldoni the Multi-Agent Logics, Languages, and Organisations Federated Workshops MALLOW 2009 7-11 September 2009 (80 participants).
7. **Organizer and chair with** Leendert van der Torre and Harko Verhagen of Social Networks and Multiagent Systems Symposium SNAMAS'09 at **AISB'09 Convention Adaptive and Emergent Behaviour and Complex Systems** 6th-9th April 2009, Heriot-Watt University, Edinburgh.
8. **Organizer and chair with** Gabriella Pigozzi, Pablo Noriega and Harko Verhagen of **Dagstuhl seminar 07122** Normative Multiagent Systems NorMAS'09 (50 invitees). Co-editor of Special issue on Normative Multiagent Systems 2009 of *Journal of Logic and Computation*.
9. **Organizer and chair with** Gabriella Pigozzi, Munindar Singh and Harko Verhagen of the workshop NorMAS'08 colocated with DEON'08 (70 participants). Followed by the **special issue del Logic Journal of IGPL**.
10. Member of organizing committee of Formal Ontologies Meet Industry Forum: FOMI 2008. Torino, 4-5 June 2008.
11. **Organizer and chair with** Friedrich Steimann of Roles'07 Workshop colocated with ECOOP'07 (GRIN A) in Berlin. **Trygve Reenskaug was invited speaker**.
12. **Organizer and chair with** Leendert van der Torre and Harko Verhagen of **Dagstuhl seminar 09121** Normative Multiagent Systems NorMAS'07 (30 participants). **Co-editor** of proceedings and **special issue del Journal of Autonomous Agents and Multi Agent Systems** (GRIN A and ISI).
13. **Organizer and chair with** Eric Mateson and Javier Vasquez Salceda of workshop COIN'06 colocated with **ECAI'06**. Co-editor of LNCS Springer proceedings.
14. **Organizer and chair with** Mehdi Dastani, Andrea Omicini and Leendert van der Torre of **workshop Coordination and Organization CoOrg06** colocated with COORDINATION 2006 (conferenza A per il GRIN) and DISCOTEQUE 2006 in Bologna. **Co-editor** of its proceedings in a **volume ENTCS of Elsevier** (GRIN C).
15. **Organizer and chair with** James Odell, Leendert van der Torre and Harko Verhagen of **AAAI Fall Symposium 2005 Roles, under different perspectives** (GRIN A) (30 participants). **Co-editor of special issue del Journal of Applied Ontology**.
16. **Organizer and chair with** Leendert van der Torre of **workshop Coordination and Organization CoOrg05** colocated with COORDINATION 2005 (GRIN A). **Co-editor** of its proceedings in a **volume ENTCS of Elsevier** (GRIN C).
17. **Organizer and chair with** Leendert van der Torre and Harko Verhagen of **symposium Normative Multiagent Systems** (NorMAS'05), **collocated with AISB'05, founding event of the NorMAS community**. Co-editor of the following **special issue on Computational and Mathematical Organization Theory Journal**



## **CMOT of Springer.**

18. Member of the organizing committee of "**Cognition and Collective Intentionality IV**" Conference, Siena, 13-15 October 2004.
19. Member of the organization of **FOIS 2004 - International Conference on Formal Ontology in Information Systems**, 4-6 november 2004, Torino.

## **Tutorial teacher and reviewer**

- Member of the Doctoral Mentoring Program of Autonomous Agents and Multi Agent Systems **AAMAS'05**, Utrecht (NL) July 2005.
- He taught tutorials at:
  - IEEE/ACM/WIC International Conference on Intelligent agent technology and Web Intelligence **IAT/WI'04**, Beijing (CN) October 2004.
  - IEEE/ACM/WIC International Conference on Intelligent agent technology and Web Intelligence **IAT/WI'05**, Compiègne (FR) September 2004.
  - Autonomous Agents and Multi Agent Systems **AAMAS'05**, Utrecht (NL) July 2005.
- He taught courses at **summer school**:
  - European Agent Systems Summer School **EASSS 2006**, Annecy (FR) July 2006.
  - European Agent Systems Summer School **EASSS 2008**, Lisbona (PT) May 2008.
  - European Agent Systems Summer School **EASSS 2009**, Torino, September 2009.
- Reviewer for major journals: Artificial Intelligence Journal, Journal of Autonomous Agents and Multiagent Systems, Knowledge and Data Engineering, IEEE Transactions on Systems, Man and Cybernetics, Adaptive Behavior, Artificial Intelligence and Law, Cognitive Science Quarterly, User Modelling, Dialectica, etc.
- Reviewers for major conferences like IJCAI, ECAI, KR, AAMAS, ACL, COMMA *etc.*
- Project proposal reviewer for call Free competition of Netherlands Organisation for Scientific Research NWO (Olanda) (December 2009, August 2008)

- Reviewer of PhD Thesis of Alan Colman "Role Oriented Adaptive Design Alan Colman" 2006 Faculty of Information and Communication Technologies Swinburne University of Technology (Australia)
- Project proposal reviewer for Eidgenoessische Technische Hochschule ETH Zurich (Suisse).
- Project proposal reviewer for call Computer Science open competition of Netherlands Organisation for Scientific Research NWO (NL), October 2005.

Invited speaker at:

- Meeting of Centro di Scienza Cognitiva "Alle origini dell'azione": "Le intenzioni nell'azione collaborativa fra agenti", May 2001, Torino.
- **Dagstuhl seminar** on "Programming Multi Agent Systems based on Logic" October 2002, Schloss Dagstuhl (invited by Jurgen Dix).
- **Dagstuhl seminar** on "Logic Based Information agents": "The agent metaphor for organizations of information agents", April 2004, Schloss Dagstuhl (invited by Jurgen Dix).
- Invited seminar at Laboratorio di Ontologia applicata dell'ISTC-CNR di Trento (invited by Nicola Guarino).
- **Dagstuhl seminar** "Foundations and Practice of Programming Multi-Agent Systems", giugno 2006, Schloss Dagstuhl (invited by Raphael Bordini).
- "I Fondamenti cognitivi del diritto: Percezioni, Rappresentazioni e comportamenti". Archivio di Stato, Turin, 14-16 Dicembre 2006 (invited by Raffaele Caterina).
- "Norm change" Workshop, Luxembourg, december 2007
- "La dimensione tacita del diritto" Torino, la Fondazione Rosselli, 19 September 2008 (invited by Raffaele Caterina).
- **Dagstuhl seminar** "Planning in Multiagent Systems", novembre 2008, Schloss Dagstuhl (invited by Jurgen Dix).
- Security day at The Morgan Workshop. December 2009, Università del Lussemburgo
- Interdisciplinary Laboratory on Interacting Knowledge Systems (ILIKS) Annual 2009 meeting: Trento, December 17th - 18th 2009 (invited by Nicola Guarino).
- Formal Models of Norm Change 2. Gennaio 2010 University of Amsterdam.