SUMMER SCHOOL PROGRAM

The program of the 2nd IAOA Interdisciplinary Summer School on Ontological Analysis is structured into courses offered by renowned experts in the fields of Philosophy, Knowledge Representation, Logics, Conceptual Modeling and Ontology Engineering. In addition to the courses, a number of shorter invited talks will also be presented.

A summary of the program is shown here. The following pages show more details about each course, invited talk and social event.

Program at a glance

	Monday 15	Tuesday 16	Wed. 17	Thursday 18	Friday 19
09:00–10:30	Guizzardi	Guarino	Guarino	Guarino	Asher
10:30–11:00	*Coffee Break*				
11:00–12:30	Wassermann	Wassermann	Wassermann	Asher	Fine
12:30–14:00	*Lunch Break*				
14:00–15:30	Fine	Fine	Fine	Uschold	Grüninger
15:30–16:00	*Coffee Break*				
16:00–17:30	Guarino	Uschold	Uschold	Uschold	Grüninger
17:30–18:30	Panel	Panel	Panel	Panel	Closing
19:00			Social Event		

Courses

Invited Talks

MESSAGE FROM THE CO-CHAIRS

It is our great pleasure to welcome you to the 2nd IAOA Interdisciplinary Summer School on Ontological Analysis!

This second edition of the IAOA summer school comprises four courses and three invited talks offered by world-class scientists and philosophers. The four courses offered throughout the week are: *Formal Ontology* by Kit Fine (New York University, USA), *Ontological Analysis and Conceptual Modeling* by Nicola Guarino (CNR - Italian National Research Council, Italy), *Designing and Building Enterprise Ontologies* by Michael Uschold (Semantic Arts, Inc., USA) and *Knowledge Representation in Description Logics* by Renata Wassermann (University of São Paulo, Brazil). In addition to this exciting courses, the summer school will count with the following invited talks: *Types, Semantics and Ontology* by Nicholas Asher (CNRS, Laboratoire IRIT, France), *Process Ontologies in Action: From Applications to Foundations* by Michael Grüninger (University of Toronto, Canada) and *An Introduction to Applied Ontology* by Giancarlo Guizzardi (NEMO – Ontology and Conceptual Modeling Research Group, UFES, Brazil). We are deeply grateful to these internationally renowned speakers who were able to come to Vitória to share their knowledge with students, researchers and practitioners of the international ontology community. We look forward to their courses and talks!

In this edition of the IAOA summer school, we have around 90 participants coming from countries such as Argentina, Belgium, Brazil, Canada, China (Hong Kong), France, Germany, India, Italy, Japan, The Netherlands, New Zealand, Spain, United Kingdom and the United States of America. Ten of these participants were beneficiary of student grants offered by the IAOA. Moreover, circa ten members of the NEMO Research Group voluntarily offered their homes to host attendees of the International School. We would like to express our gratitude to the IAOA for the student grants as well as to the NEMO members for their kind community-supporting act without which the participation of many students would not be possible.

We would also like to express our immense gratitude to our excellent local organization committee composed of Maria das Graças da Silva Teixeira, Monalessa Perini Barcellos, Patrícia Dockhorn Costa, Renata Silva-Souza Guizzardi, Ricardo de Almeida Falbo and Vítor Estêvão Silva Souza. Without the hard work of these individuals, this event would be impossible to materialize. We would also like to thank Alessandra Leitão (creEAct.eve) for the organizational support, Bernardo Ferrreira Bastos Braga for setting up the website and Cristine Griffo for some legal advice. Furthermore, we would like to thank the support of our sponsors NIC.br, CGI.br, FAPES (Fundação de Amparo à Pesquisa do Espírito Santo) and CAPES/MEC

Finally, we thank all the participants, who sometimes travelled long distances to join us here. You are the heart and soul of this event! We hope you have a pleasant and productive week and a great stay in this beautiful island. We sincerely hope that you leave this event with great prospects for new collaborations and interesting ideas for future work.

João Paulo A. Almeida
Giancarlo Guizzardi
Co-Chairs

An Introduction to Applied Ontology

Giancarlo Guizzardi
Federal University of Espírito Santo, Brazil

Abstract: Information is the foundation of all governance. Without the proper information, individuals, organizations, communities and governments can neither systematically take optimal decisions nor understand the full effect of their actions. In the past decades, there has been a substantial improvement in information access. This was caused not only by the advances in communication technology but also, more recently, by the demands on transparency and public access to information. Despite these advances, most of these information spaces remained as independent components in large and increasingly complex silo-based architectures. The problem with this is that several of the critical questions we have nowadays in large corporations, government and even professional communities (e.g., scientific communities) can only be answered by precisely connecting pieces of information distributed over these silos. As consequence, despite the increasing amount of information produced, answering these critical questions is still extremely hard. In this scenario, rational governance cannot succeed without the support of a particular type of discipline. A discipline devoted to establish well-founded theories, principles, as well as methodological and computational tools for supporting us in the tasks of understanding, elaborating and precisely representing the nature of conceptualizations of reality, as well as in tasks of negotiating and safely establishing the correct relations between different conceptualizations of reality. This discipline is Applied Ontology. In this talk, I will give a general overview of this emerging discipline, with a particular focus on its interdisciplinary nature. In particular, I intend to briefly elaborate on how the other areas represented in this summer school (i.e., formal ontology, conceptual modeling, ontology engineering, linguistics, knowledge representation and logics) contribute to the body of knowledge comprising this discipline.

Short Bio: Giancarlo Guizzardi obtained a PhD (with the highest distinction) from the University of Twente, in The Netherlands. He is currently a visiting professor at the University of Trento (Italy) and an associate researcher at the Laboratory of Applied Ontology (LOA), Institute of Cognitive Sciences and Technology (ISTC), also located in Trento. He is on an extended sabbatical leave from the Computer Science Department of the Federal University of Espírito Santo (UFES), where he is an associate professor and a research lead at the Ontology and Conceptual Modeling Research Group (NEMO). He has been working for the past 18 years in the areas of Ontology and Conceptual Modeling. He is the author of nearly 160 publications in

these areas, including recipients of best paper awards at conferences such as CAISE and EDOC. He is a former member of the Executive Council and currently a member of the Advisory Board of the International Association for Ontologies and its Applications (IAOA). Over the years, he has been involved in the editorial board of several journals (including Applied Ontology, Semantic Web, Requirements Engineering) and played active roles (PC Chair, General Organizational Chair, Program Board Member, Keynote Speaker, Tutorialist) in several international conferences (CAISE, ER, FOIS, EDOC). Finally, his experience in ontology-driven conceptual modeling has also been acquired in a number of industrial projects in domains such as offshore software development, petroleum and gas, digital journalism, government, telecommunications, product recommendation, and complex media management.

Recommended Reading:
1. Guarino, N., Musen, M., Applied Ontology: Focusing on Content, Applied Ontology, Vol. 1, pp. 1-5, IOS Press, 2005.
2. Guarino, N.; Guizzardi, G., In the Defense of Ontological Foundations for Conceptual Modeling, Scandinavian Journal of Information Systems, Vol.18, No. 1, ISSN 0905-0167, 2006.
3. Guizzardi, G., On Ontology, ontologies, Conceptualizations, Modeling Languages, and (Meta)Models, Frontiers in Artificial Intelligence and Applications, Databases and Information Systems IV, Olegas Vasilecas, Johan Edler, Albertas Caplinskas (Editors), ISBN 978-1-58603-640-8, IOS Press, Amsterdam, 2007.
4. Guizzardi, G., Halpin, T. Ontological Foundations for Conceptual Modeling. Applied Ontology., v.3, p.91 - 110, 2008.
5. Munn, K., What is Ontology for?, In Munn, K., Smith, B. (Eds.), Applied Ontology, Ontos Verlag, Lancaster, 2008.
6. Guizzardi, G., Theoretical Foundations and Engineering Tools for Building Ontologies as Reference Conceptual Models, Semantic Web Journal, Editors-in-Chief: Pascal Hitzler and Krzysztof Janowicz, IOS Press, Amsterdam, 2010.

Knowledge Representation in Description Logics

Renata Wassermann
University of São Paulo, Brazil

Abstract: in this course, I plan to give a quick introduction to Classical Logics and Knowledge Representation in AI, followed by a more extensive presentation of some families of Description Logics. I will go through their syntax, semantics and reasoning methods. Then we will see the applicability of these different logics for representing ontological knowledge and examples of their use in the "real world".

Outline:
- Introduction to Knowledge Representation in AI: Classical Logic, knowledge engineering;
- Description Logics: The basic logic ALC, logics up and down the family hierarchy;
- OWL, reasoners and applications.

Short Bio: Renata Wassermann is Associate Professor at the Computer Science Department of the University of São Paulo, (PhD, Institute of Logic, Language and Computation of the University of Amsterdam, 2000). Working on Knowledge Representation and Belief Revision, especially on non-classical logics, she got involved with ontologies from the description logics side. Current interests include merging of ontologies and ontology evolution.

Recommended Reading:
1. Ron Brachman, Hector Levesque. Knowledge Representation and Reasoning Morgan Kaufman, 2004 (Chapters 1, 2, 3).
2. Vladimir Lifschitz, Leora Morgenstern, and David Plaisted, Knowledge Representation and Classical Logic, in Handbook of Knowledge Representation, F. van Harmelen, V. Lifschitz, and B. Porter, eds., 2008, Elsevier, pp. 3-88.
3. Franz Baader, Ian Horrocks, and Ulrike Sattler. Description Logics. In Frank van Harmelen, Vladimir Lifschitz, and Bruce Porter, editors, Handbook of Knowledge Representation, chapter 3, pages 135-180. Elsevier, 2008.
4. A Description Logic Primer - Markus Krötzsch, František Simančík and Ian Horrocks. arXiv.org, 2012 [http://arxiv.org/abs/1201.4089]
5. OWL 2 Web Ontology Language Primer (Second Edition) - W3C Recommendation 11 December 2012 [http://www.w3.org/TR/owl-primer/]

Formal Ontology

Kit Fine
New York University, USA / University of Birmingham, UK

Abstract: I shall briefly survey some introductory material and some of my own work on the following topics: The Project of Metaphysics (Fine, 1994; 2012); Mereology (Simons, 2010; Fine 1999; 2010); Relations (Fine, 2000); and Truthmaker Semantics (Lewis, 2001; Fine 2012; 2014).

Short Bio: Kit Fine (B.A., Balliol College Oxford, 1967; Ph.D., Warwick, 1969) is University Professor and Silver Professor of Philosophy and Mathematics at New York University and Distinguished Research Professor at the University of Birmingham. He specializes in metaphysics, logic, and philosophy of language. He is a fellow of the American Academy of Arts and Sciences, a corresponding fellow of the British Academy, and recently received an Anneliese Maier Award from the Humboldt Foundation. Professor Finehas served as an editor or as a member of the editorial board for Journal of Symbolic Logic, Synthese, Notre Dame Journal of Formal Logic, Journal of Applied Non-Classical Logics, Reports on Logic, and Philosophers' Imprint. He is an author of numerous publications, including: Worlds, Times and Selves (Duckworth, 1977), with A. N. Prior; Reasoning with Arbitrary Objects (Blackwell, 1985); The Limits of Abstraction (OUP, 2002); and Semantic Relationism (Blackwell, 2007).

Recommended Reading:
1. Kit Fine [2012] 'What is Metaphysics' in 'Contemporary Aristotelian Metaphysics' (ed. T. E. Tahko), Cambridge: Cambridge University Press, 8-25 (2012).
2. Kit Fine [1994] 'Essence and Modality', in Philosophical Perspectives 8 (ed. J. Tomberlin) as the Nous Casteneda Memorial Lecture, pp. 1-16, (1994); reprinted in 'The Philosopher's Annual for 1994', volume 16, (ed. P. Grim), Stanford: CSLI.
3. Peter Simons [2010] 'Parts: A Study in Mereology' Oxford: Oxford University Press
4. Kit Fine [1999] 'Things and Their Parts', Mid-west Studies XXIII (ed. French & Wettstein), pp. 61-74
5. Kit Fine [2010] 'Towards a Theory of Part', Journal of Philosophy CV11, no. 11, November (2010).

6. Kit Fine [2000] 'Neutral Relations', Philosophical Review, vol. 109, no. 1, pp. 1-33.
7. David Lewis [2001] 'Counterfactuals', Oxford: Blackwell
8. Kit Fine [2014] 'Truthmaking', Dialectica Lecture (podcast available from the Dialectica website).
9. Kit Fine [2012] 'Counterfactuals without Possible Worlds', Journal of Philosophy, 109(3), pp. 221-46.

Ontological Analysis and Conceptual Modeling

Nicola Guarino
Italian National Research Council (CNR) - Italy

Abstract: One of the key tenets of Applied Ontology is that conceptual modeling – making explicit people's assumptions about a domain structure for purposes of understanding and communication– can greatly benefit from the rigorous tools of formal ontological analysis. In this course I will review the main achievements of what is now called "Ontology-Driven Conceptual Modeling", from the first intuitions that originated the OntoClean methodology, to the more recent contributions such as the DOLCE ontology and the OntoUML framework. I will focus then on some recent ideas I have been working on, emerging from practical experiences with public services and organizations, centered on the observation that current practice of conceptual modeling tends to mainly focus on endurants (a.k.a. objects) and their relationships, with less attention given to perdurants (a.k.a. events and states). I will present a methodological approach called "Episode-centric Conceptual Modeling" that shifts the focus of attention from relationships to their truth-makers, considered indeed –in most cases– as maximal perdurants (i.e., episodes), and suggest some ways to account for the internal structure of such truth-makers, analyzing the different ways objects and their individual qualities are more or less directly involved in an episode. Finally, I will discuss the practical relevance of episode-centric conceptual modeling in the current practice of ontology development based on competency questions, and introduce the vision of a new generation of conceptual modeling tools, able to perform an interactive critique of modeling choices on the basis of logical, ontological and linguistic criteria.

Outline:
- The basic tools of formal ontological analysis: essence, parthood, unity, identity;
- OntoClean;
- The DOLCE ontology;
- Ontology-Driven Conceptual Modeling: OntoUML;
- Episode-centric conceptual modeling.

Short Bio: Nicola Guarino is research director at the Institute for Cognitive Sciences and Technologies of the Italian National Research Council (ISTC-CNR), where he leads the Laboratory for Applied Ontology (LOA), a section of the Institute located in Trento. A graduate in Electronic Engineering at Padua University in 1978, he was first

in charge of the data acquisition and monitoring system of a large nuclear fusion experiment in Padua. He then moved to the area of knowledge representation, joining the CNR Institute of Systems Theory and Biomedical Engineering (LADSEB-CNR) to work initially on medical expert systems. He joined ISTC-CNR in 2003, moving to Trento to found the new lab. Since 1991 he has been playing a leading role in the ontology field, developing a strongly interdisciplinary approach that combines together Computer Science, Philosophy, and Linguistics, and relies on logic as a unifying paradigm. In 1993, he organized in Padua the first International Workshop on Formal Ontology in Conceptual Analysis and Knowledge Representation, and since then has gained an international leadership in areas such as conceptual modeling, knowledge engineering, and more in general semantic technologies, multi-agent systems, and natural language processing. His impact is testified by a long list of widely cited research papers, and many keynote talks and invited tutorials in major conferences involving different communities. Among the best known results of his lab, the OntoClean methodology and the DOLCE foundational ontology. Current research interests include ontology-driven conceptual modeling, socio-technical systems, and service science. He is founder and editor-in-chief (with Mark Musen from Stanford University) of the international journal Applied Ontology, and is the founder and was first president of the International Association for Ontology and its Applications, IAOA. He is editorial board member of the International Journal of Semantic Web and Information Systems, the Journal of Data Semantics, and editor of the IOS Press book series Frontiers in AI and Applications. He has been recently nominated ECCAI fellow.

Recommended Reading:
1. Borgo, S., & Masolo, C. (2009). Foundational choices in DOLCE. In S. Staab & R. Studer, Handbook on ontologies (pp. 361–381). Springer.
2. Guarino, N. (2009). The Ontological Level: Revisiting 30 Years of Knowledge Representation. In E. S. Yu, Conceptual Modeling: Foundations and Applications. Essays in Honor of John Mylopoulos. (pp. 52–67). Springer Verlag.
3. Guarino, N., & Welty, C. (2004). An Overview of OntoClean. In S. Staab & R. Studer, Handbook on Ontologies (pp. 151–172). Springer Verlag.
4. Guizzardi, G. (2005). Ontological foundations for structural conceptual models. University of Twente, CTIT PhD Thesis Series, no. 05-74.
5. Masolo, C., Borgo, S., Gangemi, A., Guarino, N., & Oltramari, A. (2003). The DOLCE Ontology (p. 349). WonderWeb Deliverable D18.

Designing and Building Enterprise Ontologies

Michael Uschold
Semantic Arts, USA

Abstract: We motivate the need for ontologies in the enterprise, explaining just what is meant by an "enterprise ontology". We introduce and examine a number of commonly available upper ontologies and evaluate them for suitability as a starting point for an enterprise ontology. We describe why we decided to build our own upper ontology for the enterprise; we call it 'gist'. We do a deep dive into gist, explaining the rationale behind it and the overall framework. We define the key classes and properties in gist and describe how we use it. We go through an extensive real-world example of building a portion of an Enterprise Ontology in healthcare that illustrates how we design and build enterprise ontologies for our clients. Finally we address an important and hitherto unaddressed problem of how to bridge the worlds of taxonomy and ontology in an enterprise environment. This is reporting directly from the trenches.

Outline:
- Enterprise Ontology: What and Why;
- Upper Ontologies and gist;
- Enterprise Ontology Development and Methodology;
- Ontology and Taxonomy: Together at Last.

Short Bio: Michael Uschold is an internationally recognized expert with over two decades experience in developing and transitioning semantic technology from academia to industry. He pioneered the field of ontology engineering, co-authoring the first paper and giving the first tutorial on the topic in 1995 (in London). This leveraged the work he did in creating the influential "Enterprise Ontology". From October 2010,he has been working as a senior ontology consultant at Semantic Arts, training and guiding clients to better understand and leverage semantic technology. He has built commercial enterprise ontologies in finance, healthcare, legal research, consumer products manufacturing and corporation registration for state government. More recently he has focused on how to combine less formal knowledge organization systems such as thesauri and taxonomies with formal ontology to integrate disparate corporate knowledge assets. During 2008-2009, Uschold worked at Reinvent on a team that developed a semantic advertising platform that substantially increased revenue. As a research scientist at Boeing from 1997-2008 he defined, led and participated in

numerous projects applying semantic technology to enterprise challenges. He is a frequent invited speaker and panelist at national and international events, and serves on the editorial board of the Journal for Web Semantics. He has given numerous tutorials and training classes. He received his Ph.D. in AI from Edinburgh University in 1991 and an Msc. from Rutgers University in Computer Science in 1982.

Recommended Reading:
1. Uschold, M., McComb, D., Building and Enterprise Ontology with GIST, a Minimalist Upper Ontology for Business, Semantic Arts, White Paper, 2013.
2. It helps if the student is familiar with the tool Protégé (http://protege.stanford.edu).

Types, Semantics and Ontology

Nicholas Asher
CNRS, Laboratoire IRIT, France

Abstract: In this short course, I will give an introduction to lexical semantics and its potential interactions with ontology. I will review briefly some recent history of lexical semantics and the sorts of ontological assumptions that lexical semanticists make.

Short Bio: Nicholas Asher works in semantics and pragmatics. His books (Lexical Meaning in Context, Cambridge, 2011; Logics of Conversation, Cambridge, 2003, coauthored with Alex Lascarides; Reference to Abstract Objects in Discourse, Kluwer, 1993) deal principally with the analysis and interpretation of discourse and lexical semantics. He has published articles and journal proceedings in linguistics, philosophy, logic and computer science. Currently, he is working on lexical semantics and on game theoretic analyses of conversation. He received his Ph.D in Philosphy from Yale University in 1982 after completing a MA in Mathematics and Philosophy at Oxford (1978) and a BA in Philosophy and History, Arts and Letters at Yale University. Before becoming a director of research at the Centre National de Recherche Scientifique of France, he was professor of Philosophy and of Linguistics at the University of Texas at Austin.

Recommended Reading:
1. N. Asher, Lexical Meaning in Context, Cambridge University Press, 2011.
2. N. Asher and Z. Luo, Formalizations of Coercion in Lexical Semantics, Sinn und Bedeutung 17. Paris. 2012.
3. Zhaohui Luo, Formal semantics in modern type theories with coercive subtyping. Linguistics and Philosophy, 2012.

**Process Ontologies in Action:
From Applications to Foundations**

*Michael Grüninger
University of Toronto, Canada*

Abstract: Representing processes and the constraints on their occurrences is an integral aspect of commonsense reasoning, particularly in manufacturing, enterprise modeling, and autonomous agents or robots. In addition to the traditional concerns of knowledge representation and reasoning, the need to integrate software applications in these areas has become increasingly important. However, interoperability is hindered because the applications use different terminology and representations of the domain – what are the differences (if any) between processes, activities, events, actions, tasks? These problems arise most acutely for systems that must manage the heterogeneity inherent in various domains and integrate models of different domains into coherent frameworks. In this tutorial, we will explore process ontologies first through their applications, and then move through the philosophical and logical analysis of different process ontologies.

Outline:
1. Why do we need process ontologies?
2. Motivating scenarios
3. Philosophical approaches
4. Axiomatizing process ontologies
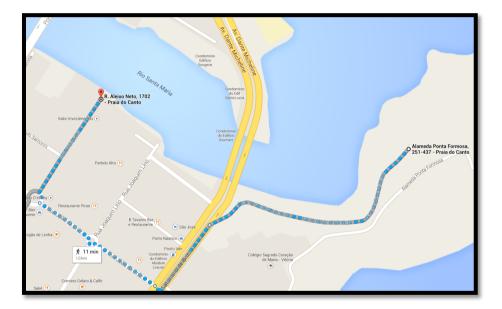5. Relationship to process modeling

Short Bio: Michael Grüninger is an Associate Professor at the University of Toronto. He returned to Canada after spending five years as an Assistant Research Scientist in the Institute for Systems Research at the University of Maryland College Park and also a Guest Researcher at the National Institute or Standards and Technology (NIST). Before that, Michael was a Senior Research Scientist in the Enterprise Integration Laboratory of the Department of Mechanical and Industrial Engineering at the University of Toronto. Michael received his Ph.D. and M.Sc. in Computer Science at the University of Toronto and his B.Sc. in Computer science at the University of Alberta. His current research focuses on the design and formal characterization of theories in mathematical logic and their application to problems in manufacturing and enterprise engineering. His most recent work on the Process Specification Language has been published as an International Standard (ISO 18629).

SOCIAL EVENT (DINNER)

Wednesday, Sept. 17, 2014, 19:00

Venue:

Pier Restaurante
R. Aleixo Neto, 1702
Praia do Canto, Vitória – ES
+55 27 3224-0880

PRACTICAL INFORMATION

Summer School Venue:

Centro de Treinamento Dom João Batista – Auditorium B5-15
Address: Alameda Irmã Nieta, Praia do Canto - Vitória, ES
Telephone: +55 27 3227-5522
Reference: next to the *Colégio Sagrado Coração de Maria (Sacre Coeur)* school

Useful telephone numbers:

Person / service	Phone numbers	
Emergency services	Emergency/Police	190
	Ambulance Service	192
	Fire Department 193	

Hotels:

Name	Address	Telephone
Sheraton Vitoria Hotel	Avenida Saturnino de Brito, 217 Praia do Canto, Vitória - ES	+55 27 2125-8000
Comfort Hotel Vitória Praia	Avenida Dante Micheline, 1057 Jardim da Penha, Vitória - ES	+55 27 3041-9500
Bristol Praia do Canto	Av. Saturnino de Brito, 1075 Praia Canto, Vitória - ES	+55 27 3334-9494
Bristol Alameda Vitória	Av. Dante Micheline, 585 Jardim da Penha, Vitória - ES	+55 27 3204-6600
Intercity Píer Vitória	Avenida Dante Micheline, 321 Jardim da Penha, Vitória - ES	+55 27 3434-0000
Ibis Budget Vitória	Av. Nossa Senhora da Penha, 1993 Santa Lúcia, Vitória - ES	+55 27 3205-6155

Transportation:

Type	Information
Airport	*Aeroporto Eurico de Aguiar Salles* Av. Fernando Ferrari, 3800 - Goiabeiras, Vitória – ES Telephone: +55 27 3235-6300 Served by city bus lines 122, 163 and 212. Taxi stop just outside the terminal.
Bus Station	*Rodoviária de Vitória* Av. Alexandre Buaiz, 350 - Ilha do Príncipe, Vitória – ES Telephone: +55 27 3203-3666 Served by city bus lines 031, 103, 121, 175, 181, 211, 213 and 370. Taxi stop just outside the station.
Taxi	Stops near the venue: • At the Bristol Camburi hotel: +55 27 3315-6573; • Camburi Beach: +55 27 3215-5585; • At the IBIS Hotel in Praia do Canto: +55 27 3317-0200; • Jardim da Penha: +55 27 3325-6106 / 3314-1372 / 3324-0758; • Praia do Canto: +55 27 3325-2541 / 3225-3667 / 3315-2009. Taxis can also be called via smartphone (iOS, Android, Samsung, Windows Phone) apps *99Taxis* (http://www.99taxis.com) and *EasyTaxi* (http://www.easytaxi.com)
City Bus (Green buses)	Stops, lines and arrival time estimates can be looked up with the *Ponto Vitória* application at http://rast.vitoria.es.gov.br/pontovitoria/, also available as an app for Android devices.

SUMMER SCHOOL ORGANIZATION

Organization Committee

- João Paulo A. Almeida (chair), Federal University of Espírito Santo, Brazil
- Giancarlo Guizzardi (chair), Federal University of Espírito Santo, Brazil
- Maria das Graças da Silva Teixeira, Federal University of Espírito Santo, Brazil
- Monalessa Perini Barcellos, Federal University of Espírito Santo, Brazil
- Patrícia Dockhorn Costa, Federal University of Espírito Santo, Brazil
- Renata Silva Souza Guizzardi, Federal University of Espírito Santo, Brazil
- Ricardo de Almeida Falbo, Federal University of Espírito Santo, Brazil
- Vítor E. Silva Souza, Federal University of Espírito Santo, Brazil

Special Thanks To

- Alessandra Leitão and the crEAct.eve crew (Registrations);
- Bernardo Ferreira Bastos Braga (Website set-up);
- Cristine Griffo (Legal advice);
- All NEMO students who volunteered to host summer school participants.

IAOA EXECUTIVE COUNCIL

- Michael Grüninger (President), University of Toronto, Canada
- John Bateman (Vice-President), University of Bremen, Germany
- Frank Loebe, University of Leipzig, Germany (Secretary)
- Stefano Borgo, ISTC-CNR, Italy
- Marion Haemmerli, University of Lausanne, Switzerland
- Janna Hastings, European Bioinformatics Institute, UK
- Oliver Kutz, University of Magdeburg, Germany
- Fabian Neuhaus, University of Magdeburg, Germany
- Leo Obrst, MITRE, USA

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