

Philosophy, Ontology, and Information Systems*

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Abstract. The workshop aimed at providing a forum to discuss the use of philosophical ontology in object-oriented information systems. Whilst ontology is now more widely used in computing circles - knowledge representation, system integration, legacy transformation, and the semantic web for example - initial attempts have been modest in their outcomes. This is because computing ontology to-date has been used primarily for (often competing) concept definitions: Pragmatically, ontologies have either been developed in an abstract sense (based on some authoritative perspective), or people have taken materials at hand (data models and the like) and tried to glue them together. A sound basis on which to properly align different views on aspects of the world in order to work towards a consistent whole is missing. With this in mind, the workshop aimed to secure a measure of agreement on:

- What philosophical ontology is,
- How ontology can assist in software development,
- Key obstacles to the deployment of ontology, and
- Possible collaborative efforts among the participants.

Selection of participants was based on short position papers and/or previously demonstrated interest in related areas of activity.

Participants

The workshop was attended by:

- Naci Akkøk, Department of Informatics, University of Oslo, `nacia@ifi.uio.no`,
- Petra Becker-Pechau, Fachbereich Informatik, Software Engineering Group, University of Hamburg, `becker@informatik.uni-hamburg.de`,

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- Dirk Siebert, Institute for Formal Ontology and Medical Information Science, University of Leipzig, Dirk.Siebert@ifomis.uni-leipzig.de,
- Mircea Trofin, School of Electronic Engineering, Dublin City University, Mircea.Trofin@eeng.dcu.ie

Summary

Chris Partridge set the scene for the workshop. A sequence of individual presentations and ensuing discussions consumed most of the workshop's time. In the wrap-up we noted:

- Agreement
 - Philosophical ontology is applicable to information systems. Therefore more than 2000 years' worth of ontological research in philosophy should actually be leveraged.
 - There are different views on philosophical ontology, though. But given the state of the art - the differences are of minor importance right now.
 - Metaphysical choices
 - * Explicitly to be made
 - * Consequenses and implications can and should be made clear.
 - What is (an) O/ontology?
 - Deployability needs to be solved.
 - Sophistication is important to manage quality and complexity.
 - Different views / concerns / aspects can in general be handled in a single ontology - there might be exceptions.
- Disagreement
 - Realism / anti-realism resp. discovery / design.

- Open issues
 - Is there only one ontology?
 - * Depends on metaphysical choices (to be) made.
 - * Design choices (short term gains)
 - How to reap the benefits?
 - People issues:
 - * How to bring people up to speed?
- Query-ability of ontologies
- What is the role of representation in the discussion of ontology? How formal does philosophical ontology need to be?

Literature

- Partridge, Chris: Introduction to the Workshop,
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/papers/Partridge.pdf
- Accepted papers:
 - Cavero, Jos Mara , Esperanza Marcos: A Schematical View of the Ontologies Concept,
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/papers/CaveroMarcos.pdf
 - Coakes, J. M., D. Rosenberg: Bringing IS Ontologies Closer to the Real World,
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/papers/CoakesRosenberg.pdf
 - Martin N. Gladwell: Position Paper on Philosophy, Ontology and Information Systems,
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/papers/Gladwell.pdf
 - Nowack, Palle: Conceptual Modeling for Ubiquitous Systems,
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/papers/Nowack.pdf
 - Nytun, Jan Pettersen, Andreas Prinz: Metalevel Representation and Philosophical Ontology,
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/papers/NytunPrinz.pdf
 - Schneider, Luc: Foundational Ontologies and the Realist Bias, http://ceur-ws.org/Vol-94/ki03rao_schneider.pdf
- Late submission:
 - Akkøk, Naci: Proliferation of Ontology in Software Engineering and its Consequences
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/papers/Akkok.pdf

– Suggested reading:

- The following papers shed light on different aspects of workshop topics:
 - * Smith, Barry, Werner Ceusters: Towards Industrial-Strength Philosophy. [Introduces ontology in philosophy and medical information science.]
<http://ontology.buffalo.edu/medo/tisp.pdf>
 - * Partridge, Chris: Note: A Couple of Meta-Ontological Choices for Ontological Architectures. Padova, The BORO Program, LADSEB CNR, Italy: 2002. LADSEB-CNR - Technical report 06/02. [Key aspects of a philosophical ontology.]
http://www.boroprogram.dsl.pipex.com/ladsebreports/ladseb_t_r_06-02.pdf
 - * Partridge, Chris: The Role of Ontology in Integrating Semantically Heterogeneous Databases. Padova, The BORO Program, LADSEB CNR, Italy: (2002). LADSEB-CNR - Technical report 05/02. [The link between inter-operability and philosophical ontology.]
<http://www.loan-cnr.it/Papers/ladseb.tr05-02.pdf>
 - * Daga, Aseem, Sergio de Cesare, Mark Lycett, and Chris Partridge: An Ontological Approach to Sophisticating Legacy Business Content. [The importance of sophistication for a philosophical ontology.]
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/sr/DagaDeCesareLycettPartridge_AnOntologicalApproachToSophisticatingLegacyBusinessContent.pdf
- These provide deeper insight/background:
 - * Mealy, G. H.: Another Look at Data. Proceeding of AFIPS 1967 Fall Joint Computer Conference Vol. 31: 1967. [Showing that an interest in ontology manifested itself at a very early stage.]
 - * Kent, W.: Data and Reality: Basic Assumptions in Data Processing Reconsidered. North-Holland, Amsterdam, New York: 1978. [Showing that an interest in philosophical questions was also present at an early stage.]
 - * Grenon, Pierre: Knowledge Management From the Ontological Standpoint.
<http://www.uni-leipzig.de/pgrenon/Downloads/grenon-wm2003.pdf>
 - * Daga, Aseem, Sergio de Cesare, Mark Lycett, and Chris Partridge: Software Stability: Recovering General Patterns of Business Content. [Making the connection between software stability and ontology.]
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/sr/DagaDeCesareLycettPartridge_SoftwareStability.pdf
 - * Partridge, Chris: Business Objects: Re-Engineering for Re-use. Butterworth Heinemann, Oxford: 1996. [Tying in O-O implementation with philosophy/ontology.]

- * Partridge, Chris: What is Pump Facility PF101? Padova, The BORO Program, LADSEB CNR, Italy: 2002. LADSEB-CNR - Technical report 04/02. [An example of the use of philosophical ontology in the offshore process industry.]
http://www.loa-cnr.it/Papers/ladseb_tr04-02.pdf
- * Smith, Barry: Ontology. [For a more general and much more thorough account than the one provided in "Towards Industrial-Strength Philosophy" .]
http://www.ifomis.uni-leipzig.de/Events/ECOOP/2004/WS_PhilosophyOntologyInformationSystems/sr/SmithOntology.pdf