

# Ontological Engineering With Examples From The Areas Of Knowledge Management E Commerce And The Semantic Web First Edition Advanced Information And Knowledge Processing

Personalized Information Retrieval and Access: Concepts, Methods and Practices  
 Ontology Makes Sense  
 An Introduction to Ontology Engineering  
 Building Ontologies with Basic Formal Ontology  
 Ontology-Based Applications for Enterprise Systems and Knowledge Management  
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 16th East European Conference, ADBIS 2012, Poznan, Poland, September 18-21, 2012, Proceedings  
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 Semi-automatic ontology engineering and ontology supported document indexing in a multilingual environment  
 4th Conference, KESW 2013, St. Petersburg, Russia, October 7-9, 2013. Proceedings

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## SHANE CHERRY

*Personalized Information Retrieval and Access: Concepts, Methods and Practices* Springer Science & Business Media  
 Ontologies are formal knowledge models that describe concepts and relationships and enable data integration, information search, and reasoning. Ontology Design Patterns (ODPs) are reusable solutions intended to simplify ontology development and support the use of semantic technologies by ontology engineers. ODPs document and package good modelling practices for reuse, ideally enabling inexperienced ontologists to construct high-quality ontologies. Although ODPs are already used for development, there are still remaining challenges that have not been addressed in the literature. These research gaps include a lack of knowledge about (1) which ODP features are important for ontology engineering, (2) less experienced developers' preferences and barriers for employing ODP tooling, and (3) the suitability of the eXtreme Design (XD) ODP usage methodology in non-academic contexts. This dissertation aims to close these gaps by combining quantitative and qualitative methods, primarily based on five ontology engineering projects involving inexperienced ontologists. A series of ontology engineering workshops and surveys provided data about developer preferences regarding ODP features, ODP usage methodology, and ODP tooling needs. Other data sources are ontologies and ODPs published on the web, which have been studied in detail. To evaluate tooling improvements, experimental approaches provide data from comparison of new tools and techniques against established alternatives. The analysis of the gathered data resulted in a set of measurable quality indicators that cover aspects of ODP documentation, formal representation or axiomatisation, and usage by ontologists. These indicators highlight quality trade-offs: for instance, between ODP Learnability and Reusability, or between Functional Suitability and Performance Efficiency. Furthermore, the results demonstrate a need for ODP tools that support three novel property specialisation strategies, and highlight the preference of inexperienced developers for template-based ODP instantiation--neither of which are supported in prior tooling. The studies also

resulted in improvements to ODP search engines based on ODP-specific attributes. Finally, the analysis shows that XD should include guidance for the developer roles and responsibilities in ontology engineering projects, suggestions on how to reuse existing ontology resources, and approaches for adapting XD to project-specific contexts.

*Ontology Makes Sense* Walter de Gruyter

This book constitutes the first volume of a series of books focusing on the vital and ever-growing field of web semantics. The primary aim of the series is to investigate, present and promote core concepts, ideas and exemplary technologies for the next generation of semantic web research, stemming from both academia and industry. Topics covered will include process semantics, web services, ontologies, workflows, trust and reputation, and web applications. The 14 papers in this volume, written by key scientists in the field, are preceded by an introduction written by the volume editors. The papers have been divided into three sections on Ontologies and Knowledge Sharing, Applied Semantic Web, and Web Services.

*An Introduction to Ontology Engineering* IOS Press

This book constitutes the thoroughly refereed proceedings of the 16th East-European Conference on Advances in Databases and Information Systems (ADBIS 2012), held in Poznan, Poland, in September 2012. The 32 revised full papers presented were carefully selected and reviewed from 122 submissions. The papers cover a wide spectrum of issues concerning the area of database and information systems, including database theory, database architectures, query languages, query processing and optimization, design methods, data integration, view selection, nearest-neighbor searching, analytical query processing, indexing and caching, concurrency control, distributed systems, data mining, data streams, ontology engineering, social networks, multi-agent systems, business process modeling, knowledge management, and application-oriented topics like RFID, XML, and data on the Web.

*Building Ontologies with Basic Formal Ontology* Elsevier

Ontology is the philosophical discipline which aims to understand how things in the world are divided into categories and how these categories are related together. This is exactly what information scientists aim for in creating structured, automated representations, called 'ontologies,' for managing information in fields such as science, government, industry, and healthcare. Currently, these systems are designed in a variety of different

ways, so they cannot share data with one another. They are often idiosyncratically structured, accessible only to those who created them, and unable to serve as inputs for automated reasoning. This volume shows, in a non-technical way and using examples from medicine and biology, how the rigorous application of theories and insights from philosophical ontology can improve the ontologies upon which information management depends.

*Ontology-Based Applications for Enterprise Systems and Knowledge Management* IOS Press

Inhaltsangabe: Introduction: The management of large amounts of information and knowledge is of ever increasing importance in today's large organisations. With the ongoing ease of supplying information online, especially in corporate intranets and knowledge bases, finding the right information becomes an increasingly difficult task. Today's search tools perform rather poorly in the sense that information access is mostly based on keyword searching or even mere browsing of topic areas. This unfocused approach often leads to undesired results. The following example illustrates the problem more clearly: An agriculture scientist would like to find out which organisation established the Agreement on Agriculture. A simple search for establish Agreement on Agriculture might result in a huge list of documents containing these words, but actually none of them containing the desired result: WTO or World Trade Organisation. The problem becomes even worse if the result searched for only appears in a foreign language document. Semantically annotated documents, i.e. documents that are indexed with ontological terms and concepts instead of simple keywords, provide several advantages. First, the ontological abstraction provides robustness against changes in the document. In the above example, the document representation might change using the term Agricultural Agreement instead of Agreement on Agriculture. However, since the document has been annotated with the ontological semantics, this will not affect the search results. Second, since the ontology used for annotating the document in this example is domain-specific, the semantic meanings and interpretations of keywords are bound to that domain and therefore the retrieval is likely to be more efficient. A term can have several meanings in different domains. By first mapping the keyword to its semantic representation in a specific ontology and using the ontology's linked knowledge structure, a much more focused search approach can be taken. Third, document specific representations no longer affect the search. This is extremely

important in the case of multilingual representations. Keywords of several languages are mapped to the same concept in an ontology and are therefore given the same meaning. Multilingual search portals can be established to produce the same results, no matter which language is used for retrieval. An important task in knowledge management facilitating above described search scenario id [...]

*NeOn Methodology for Building Ontology Networks* BoD – Books on Demand

This is a comprehensive survey of ontologies with practical guidance on selection and applications in Knowledge Management and e-commerce. Ontologies provide a common vocabulary of an area and define, with different levels of formality, the meaning of the terms and the relationships between them. The book presents the major issues of ontological engineering and describes the most outstanding ontologies currently available. It covers the practical aspects of selecting and applying methodologies, languages, and tools for building ontologies. Ontological Engineering will be of great value to students and researchers, and to developers who want to integrate ontologies in their information systems.

**Ontology Management** MIT Press

This book covers two applications of ontologies in software engineering and software technology: sharing knowledge of the problem domain and using a common terminology among all stakeholders; and filtering the knowledge when defining models and metamodels. By presenting the advanced use of ontologies in software research and software projects, this book is of benefit to software engineering researchers in both academia and industry.

*Applied Ontology* Springer Science & Business Media

Ontological Engineering refers to the set of activities that concern the ontology development process, the ontology life cycle, the methods and methodologies for building ontologies, and the tool suites and languages that support them. During the last decade, increasing attention has been focused on ontologies and Ontological Engineering. Ontologies are now widely used in Knowledge Engineering, Artificial Intelligence and Computer Science; in applications related to knowledge management, natural language processing, e-commerce, intelligent integration information, information retrieval, integration of databases, b-informatics, and education; and in new emerging fields like the Semantic Web. Primary goals of this book are to acquaint students, researchers and developers of information systems with the basic concepts and major issues of Ontological Engineering, as well as to make ontologies more understandable to those computer science engineers that integrate ontologies into their information systems. We have paid special attention to the influence that ontologies have on the Semantic Web. Pointers to the Semantic Web appear in all the chapters, but specially in the chapter on ontology languages and tools.

**Ontology Engineering in a Networked World** Springer  
Computer aided process engineering (CAPE) plays a key design and operations role in the process industries. This conference features presentations by CAPE specialists and addresses strategic planning, supply chain issues and the increasingly important area of sustainability audits. Experts collectively highlight the need for CAPE practitioners to embrace the three components of sustainable development: environmental, social and economic progress and the role of systematic and sophisticated CAPE tools in delivering these goals. Contributions from the international community of researchers and engineers using computing-based methods in process engineering Review of the latest developments in process systems engineering  
Emphasis on a systems approach in tackling industrial and societal grand challenges

*16th East European Conference, ADBIS 2012, Poznan, Poland, September 18-21, 2012, Proceedings* Ontological Engineering with examples from the areas of Knowledge Management, e-Commerce and the Semantic Web. First Edition

This book constitutes the refereed proceedings of the 4th Conference on Knowledge Engineering and the Semantic Web, KESW 2013, held in St. Petersburg, Russia, in October 2013. The 18 revised full papers presented together with 7 short system descriptions were carefully reviewed and selected from 52 submissions. The papers address research issues related to knowledge representation, semantic web, and linked data.

*An Introduction* Springer Science & Business Media

"This book documents high-quality research addressing ontological issues relevant to the modeling of enterprises and information systems in general, and business processes in particular covering both static and dynamic aspects of structural concepts. It provides reference content to researchers, practitioners, and scholars in the fields of language design, information systems, enterprise modeling, artificial intelligence, and the Semantic Web"--Provided by publisher.

**Applied Ontology of Geography** Springer Science & Business

Media

In this 2012 edition of *Advances in Knowledge-Based and Intelligent Information and Engineering Systems* the latest innovations and advances in Intelligent Systems and related areas are presented by leading experts from all over the world. The 228 papers that are included cover a wide range of topics. One emphasis is on Information Processing, which has become a pervasive phenomenon in our civilization. While the majority of Information Processing is becoming intelligent in a very broad sense, major research in Semantics, Artificial Intelligence and Knowledge Engineering supports the domain specific applications that are becoming more and more present in our everyday living. Ontologies play a major role in the development of Knowledge Engineering in various domains, from Semantic Web down to the design of specific Decision Support Systems. Research on Ontologies and their applications is a highly active front of current Computational Intelligence science that is addressed here. Other subjects in this volume are modern Machine Learning, Lattice Computing and Mathematical Morphology. The wide scope and high quality of these contributions clearly show that knowledge engineering is a continuous living and evolving set of technologies aimed at improving the design and understanding of systems and their relations with humans.

**Ontological Engineering Approach of Developing Ontology of Information Science** Springer Science & Business Media

Across numerous industries in modern society, there is a constant need to gather precise and relevant data efficiently and quickly. As such, it is imperative to research new methods and approaches to increase productivity in these areas. Ontologies and Big Data Considerations for Effective Intelligence is a key source on the latest advancements in multidisciplinary research methods and applications and examines effective techniques for managing and utilizing information resources. Featuring extensive coverage across a range of relevant perspectives and topics, such as visual analytics, spatial databases, retrieval systems, and ontology models, this book is ideally designed for researchers, graduate students, academics, and industry professionals seeking ways to optimize knowledge management processes.

*Law and the Semantic Web* IOS Press

This book constitutes the refereed proceedings of the 14th International Conference on Conceptual Structures, ICCS 2006, held in Aalborg, Denmark in July 2006. The volume presents 24 revised full papers, together with 6 invited papers. The papers address topics such as conceptual structures; their interplay with language, semantics and pragmatics; formal methods for concept analysis and contextual logic, modeling, representation, and visualization of concepts; conceptual knowledge acquisition and more.

**Modular Ontologies for Spatial Information** Linköping University Electronic Press

An Introduction to Ontology Engineering introduces the student to a comprehensive overview of ontology engineering, and offers hands-on experience that illustrate the theory. The topics covered include: logic foundations for ontologies with languages and automated reasoning, developing good ontologies with methods and methodologies, the top-down approach with foundational ontologies, and the bottomup approach to extract content from legacy material, and a selection of advanced topics that includes Ontology-Based Data Access, the interaction between ontologies and natural languages, and advanced modelling with fuzzy and temporal ontologies. Each chapter contains review questions and exercises, and descriptions of two group assignments are provided as well. The textbook is aimed at advanced undergraduate/postgraduate level in computer science and could fit a semester course in ontology engineering or a 2-week intensive course. Domain experts and philosophers may find a subset of the chapters of interest, or work through the chapters in a different order. Maria Keet is an Associate Professor with the Department of Computer Science, University of Cape Town, South Africa. She received her PhD in Computer Science in 2008 at the KRDB Research Centre, Free University of Bozen-Bolzano, Italy. Her research focus is on knowledge engineering with ontologies and Ontology, and their interaction with natural language and conceptual data modelling, which has resulted in over 100 peer-reviewed publications. She has developed and taught multiple courses on ontology engineering and related courses at various universities since 2009.

**Theories, Domains, Methodologies** Springer Science & Business Media

As the (in)famous definition states: "An ontology is an explicit specification of a conceptualization". However, an ontology is also a philosophical theory of existence, a knowledge management resource, a database schema, or a type of knowledge representation artefact on the semantic web. Over the years the term 'ontology' has been used in so many different ways that one

can no longer be sure what is meant by it at any given occasion.

This book clarifies the role ontologies play in knowledge representation; it discusses the distinctions with their use in philosophy, gives insight in the features, rationale and limitations of the OWL 2 web ontology language, and provides a critical review of methodologies and design principles advocated to improve the quality of ontologies. It covers both theory and practice of knowledge acquisition, representation and ontologies; it emphasises human understanding as knowledge structuring principle, and demonstrates this approach in the development of a core ontology of basic legal concepts (LKIF Core) and in the exploration of expressive ontology design patterns for the representation of social reality, change and causation, actions and transactions. In doing so it contributes to a better understanding of the representation of ontologies; or rather, what it means to do ontology representation.

*Ontology Representation* IOS Press/InC

The book on Ontology in Information Science explores a broad set of ideas and presents some of the state-of-the-art research in this field concisely in 12 chapters. This book provides researchers and practitioners working in the field of ontology and information science an opportunity to share their theories, methodologies, experiences, and experimental results related to ontology development and application in various areas. It also includes the design aspects of domain ontologies considering the architecture, development strategy, and selection of tools. The intended audience of this book will mainly consist of researchers, research students, and practitioners in the field of ontology and information science.

*New Frontiers in Artificial Intelligence* Springer

Ontological Engineering with examples from the areas of Knowledge Management, e-Commerce and the Semantic Web.

First Edition Springer Science & Business Media

*Advances in Web Semantics I* IGI Global

This volume comprises the 6th IFIP International Conference on Intelligent Information Processing. As the world proceeds quickly into the Information Age, it encounters both successes and challenges, and it is well recognized nowadays that intelligent information processing provides the key to the Information Age and to mastering many of these challenges. Intelligent information processing supports the most advanced productive tools that are said to be able to change human life and the world itself. However, the path is never a straight one and every new technology brings with it a spate of new research problems to be tackled by researchers; as a result we are not running out of topics; rather the demand is ever increasing. This conference provides a forum for engineers and scientists in academia and industry to present their latest research findings in all aspects of intelligent information processing. This is the 6th IFIP International Conference on Intelligent Information Processing. We received more than 50 papers, of which 35 papers are included in this program as regular papers and 4 as short papers. We are grateful for the dedicated work of both the authors and the referees, and we hope these proceedings will continue to bear fruit over the years to come. All papers submitted were reviewed by two referees. A conference such as this cannot succeed without help from many individuals who contributed their valuable time and expertise.

**11th International Conference, KES 2007, Vietri sul Mare, Italy, September 12-14, 2007, Proceedings, Part II** Springer Nature

Nicola Guarino is widely recognized as one of the founders of applied ontology. His deep interest in the subtlest details of theoretical analysis and his vision of ontology as the Rosetta Stone for semantic interoperability guided the development and understanding of this domain. His motivations in research stem from the conviction that all science must be for the benefit of society at large, and his motto has always been that ontologies are not just for making information systems interoperable, but – more importantly – for ensuring that systems' users understand each other. He was among the first to recognize that applied ontology must be an interdisciplinary enterprise if it is to capture the intended meaning of the terms used by an information system. This book is a collection of essays written in homage to Nicola Guarino; a tribute to his many scientific contributions to the discipline of applied ontology. The papers presented here reflect the wide variety of research topics that marked Nicola's impact on the applied ontology community. They are grouped according to the five general areas addressed by Nicola in his career: what is an ontology; knowledge engineering; ontologies and language; ontological categories and relationships; and ontologies and applications. Nicola Guarino's work and dedication will undoubtedly continue to influence the applied ontology community, and this book will be of interest to the many researchers aiming to establish ontologically sound bases for their research areas.

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