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Mazzocchi, Fulvio, Tiberi, Melissa, De Santis, Barbara, and Plini, Paolo. **Relational Semantics in Thesauri: An Overview and Some Remarks at Theoretical and Practical Levels.** *Knowledge Organization*, 34(4), 196-213. 39 references.

ABSTRACT: A thesaurus is a controlled vocabulary designed to allow for effective information retrieval. It consists of different kinds of semantic relationships, with the aim of guiding users to the choice of the most suitable index and search terms for expressing a certain concept. The relational semantics of a thesaurus deal with methods to connect terms with related meanings and are intended to enhance information recall capabilities. In this paper, focused on hierarchical relations, different aspects of the relational semantics of thesauri, and among them the possibility of developing richer structures, are analyzed. Thesauri are viewed as semantic tools providing, for operational purposes, the representation of the meaning of the terms. The paper stresses how theories of semantics, holding different perspectives about the nature of meaning and how it is represented, affect the design of the relational semantics of thesauri. The need for tools capable of representing the complexity of knowledge and of the semantics of terms as it occurs in the literature of their respective subject fields is advocated. It is underlined how this would contribute to improving the retrieval of information. To achieve this goal, even though in a preliminary manner, we explore the possibility of setting against the framework of thesaurus design the notions of language games and hermeneutic horizon.

Trentin, Guglielmo. **Graphic Tools for Knowledge Representation and Informal Problem-Based Learning in Professional Online Communities.** *Knowledge Organization*, 34(4), 215-226. 24 references.

ABSTRACT: The use of graphical representations is very common in information technology and engineering. Although these same tools could be applied effectively in other areas, they are not used because they are hardly known or are completely unheard of. This article aims to discuss the results of the experimentation carried out on graphical approaches to knowledge representation during research, analysis and problem-solving in the health care sector. The experimentation was carried out on conceptual

mapping and Petri Nets, developed collaboratively online with the aid of the CMapTool and WoPeD graphic applications. Two distinct professional communities have been involved in the research, both pertaining to the Local Health Units in Tuscany. One community is made up of head physicians and health care managers whilst the other is formed by technical staff from the Department of Nutrition and Food Hygiene. It emerged from the experimentation that concept maps are considered more effective in analyzing knowledge domain related to the problem to be faced (description of what it is). On the other hand, Petri Nets are more effective in studying and formalizing its possible solutions (description of what to do to). For the same reason, those involved in the experimentation have proposed the complementary rather than alternative use of the two knowledge representation methods as a support for professional problem-solving.

DeRidder, Jody L. **The Immediate Prospects for the Application of Ontologies in Digital Libraries.** *Knowledge Organization*, 34(4), 227-246. 53 references.

ABSTRACT: The purpose, scope, usage, methodology, cross-mapping and encoding of ontologies is summarized. A snapshot of current research and development includes available tools, ontologies, and query engines, with their applications. Benefits, problems, and costs are discussed, and the feasibility and usefulness of ontologies is weighed with respect to potential and current digital library arenas. The author concludes that ontology application potentially has a huge impact within knowledge management, enterprise integration, e-commerce, and possibly education. Outside of heavily funded domains, feasibility depends on assessment of various evolving factors, including the current tools and systems, level of adoption in the field, time and expertise available, and cost barriers.

Golub, Koraljka, Hamon, Thierry, and Ardö, Anders. **Automated classification of textual documents based on a controlled vocabulary in engineering.** *Knowledge Organization*, 34(4), 247-263. 33 references.

ABSTRACT. Automated subject classification has been a challenging research issue for many years now, receiving particular attention in the past decade due to rapid increase

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of digital documents. The most frequent approach to automated classification is machine learning. It, however, requires training documents and performs well on new documents only if these are similar enough to the former. We explore a string-matching algorithm based on a controlled vocabulary, which does not require training documents—instead it reuses the intellectual work put into creating the controlled vocabulary. Terms from the Engineering Information thesaurus and classification scheme were matched against title and abstract of engineering papers from the Compendex database. Simple string-matching was enhanced by several methods such as term weighting schemes and cut-offs, exclusion of certain terms, and en-

richment of the controlled vocabulary with automatically extracted terms. The best results are 76% recall when the controlled vocabulary is enriched with new terms, and 79% precision when certain terms are excluded. Precision of individual classes is up to 98%. These results are comparable to state-of-the-art machine-learning algorithms.

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