KO Reports

Organization of Knowledge in a Networked Environment:

A Report on the 6th Networked Knowledge Organization Systems (NKOS) Workshop

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The NKOS (Networked Knowledge Organization Systems/Sources/Services) group has held a series of workshops in conjunction with the Digital Libraries Conferences (*ACM Digital Libraries Conference* (1997-2000) and *ACM+IEEE Joint Conference on Digital Libraries* (since 2001). The purpose of these workshops is to explore the application, use, and transformation of "traditional" techniques, principles, and theories for classification. This year's workshop was held on Saturday, May 31, 2003 at Rice University in Houston, Texas.

The NKOS group's mission is to create a forum where both developers of "traditional" systems and "newer semantic tools" can meet and exchange ideas and experiences. The focus is on services facilitated by the Internet: "NKOS is devoted to the discussion of the functional and data model for enabling knowledge organization systems (KOS), such as classification systems, thesauri, gazetteers, and ontologies, as networked interactive information services, to support the description and retrieval of diverse information resources through the Internet" (http://nkos.slis.kent.edu/).

The theme of this year's workshop was on the transformation of "traditional" knowledge organization systems, such as classification schemes and thesauri to "new forms of knowledge representation such as ontologies, topic maps, and semantic Web components, where relationships between concepts are richer and more extensive and in which the requirements of computer processing are met" (http://nkos.slis.kent.edu/2003workshop/NKOSproposal.pdf). The title of the workshop was "Building a Meaningful Web: From Traditional Knowledge Organization Systems to New Semantic Tools: The 6th Networked Knowledge Organization Systems (NKOS) Workshop."

The workshop consisted of seven presentations:

- *From legacy knowledge organization systems to full-fledged ontologies*. Dagobert SOERGEL and Katy NEWTON, University of Maryland.
- *Reengineering AGROVOC to ontologies: Step towards better semantic structure*. Frehiwot FISSEHA, Anita LIANG, and Johannes KEIZER, Food and Agriculture Organization of the United Nations.
- *From semantic networks, to ontologies, and concept maps: Knowledge tools in digital libraries*. Marcos André GONÇALVES, Virginia Tech.
- *Using the NASA thesaurus to support the indexing of streaming media*. Gail HODGE, Information International Associates, Inc.; Janet ORMES and Patrick HEALEY, NASA Goddard Space Flight Center Library.
- *Concept-based learning spaces: Apply domain-specific KOS principles for organizing collections/services for given applications*. Terence R. SMITH, University of California, Santa Barbara and Marcia Lei ZENG, Kent State University.
- *Semantic network services: Sharing an integrated ontology using topic maps and web services*. Adam FARQUHAR and Thomas BANDHOLTZ, SchlumbergerSema GmbH.
- *Guidelines and principles for developing search and browse vocabularies*. Amy J. WARNER, Lexonomy, Inc.

All PowerPoint presentations are available at: http://nkos.slis.kent.edu/DL03workshop.htm.

The focus was on how "traditional" systems for knowledge organization can be transformed into ontologies. It was noted that there exist many different definitions of and uses of the term "ontology" and

that no unified definition or use of the concept has emerged. A simple way of thinking about the concept is that an ontology is like a "traditional" classification scheme or thesaurus except that the relationships are "richer." Richer means that more relationships are present, and/or the relationships have been expressed in greater specificity. It was argued that there is a need for constructing such ontologies both in the semantic web community and in networked environments in general.

One theme explored by a number of the presenters was how "legacy" systems for knowledge organization can be transformed into ontologies more or less automatically. It was argued that most of the work could be done automatically but that some of the work depends on and requires human interpretation. Even though many of the "legacy" systems were subject specific it was argued that the ultimate goal of the endeavor was to create a general system for reasoning.

Another theme explored by a number of presenters was how "concept maps" could be exploited in the networked environment and which similarities they bear with "traditional" systems. It was found that concept maps are a useful tool in learning situations and that they bear some similarity to "traditional" knowledge organization systems in that they include hierarchical structures and represent concepts, and so forth.

It is clear that much more work is needed to fully understand how "legacy" or "traditional" systems for knowledge organization can be transformed into ontologies. It was interesting to note that many of the presenters talked about "traditional" systems versus "full-fledged" or "strongly structured" systems without clear definitions of what was meant by the latter. It might be that a fuller understanding of the possibilities and limitations in applying "traditional" systems in networked environments is needed before it is explored how the "traditional" systems can be transformed into something else. I am not sure that we have a very sophisticated understanding of how to use knowledge organization systems in the digital environment.

A strong trend in information science and knowledge organization research is the focus on users and domains as the basis for constructing systems for organizing and retrieving information. That aspect was curiously absent at the NKOS workshop. If the goal is to enrich knowledge organization systems with a more complex set of relationships, it seems natural to be concerned with if and how users of the system would potentially understand and use such relationships.

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