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Ontology-based authoring environment

Research Proposal  
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This research aims to develop a prototype of an ontology-based authoring environment for the Semantic Web. An environment composed of ontology technologies to support authors in relating texts to ontologies and automatically creating an ontology of the document at authoring time. By annotating the terms in the document and relating to the ontology, documents will be generated with a hyperlinked specific ontology to be used for indexing and conceptual navigation of associated sources. This environment will allow documents to be produced, indexed, hyperlinked, disclosed and retrieved based on precise semantics provided by the document ontology.

Methodology

• Present the state-of-the-art in ontology-based applications
• Draw a model of the authoring environment with functions, tasks, technologies, stakeholders and components via the CommonKADS methodology and tools
• Study and define an architecture for this environment.
• Elaborate the requirement specification based on the IEEE Std 830
• Develop and test a prototype of the environment in SWI-Prolog

General Requirements

1. Easy to use and set up, according to author’s needs
2. Semantic annotation of the terms/concepts recognized by the ontologies
3. Ontology edition of new terms (not recognized by the related ontology)
4. Automatic/Semi-automatic generation of metadata
5. Hyperlinking terms in the document to related background ontologies
6. Interoperability with related technologies: word processors, ontology editors and visualizers, thesauri, metadata and annotation tools.
7. Compliance with the Semantic Web recommendations and guidelines.
Components Description

a. Authoring and editing
   i. Compose documents linked to ontologies and knowledge sources
   ii. Environment provided by existing editors (Word, Tex, XMLeds)

b. Ontology Visualization
   i. Concept validation
   ii. Concept location in knowledge tree
   iii. Link to discovery environment

c. Ontology and Metadata editing
   i. Population of ontology
   ii. Merging between domain ontologies
   iii. Creation of document ontology
   iv. Creation of document metadata

d. Information Extraction
   i. Automatic extraction of contents from docs/kbs
   ii. Metadata generation and integration (with other sources MD, thesaurus, etc)

e. Discovery environment
   i. Conceptual navigation structure
   ii. Trail blazing for hyperlinked referencing

Proposed Model