Ontology management research issues

Ontology lifecycle

Initial ontology design: from art to science...
- reusability degree...
  becomes a challenge since the SW boundaries are open
evaluation criteria
- competency questions
- expressivity, accuracy, cognitive adequacy....
ontology learning
- understanding the nature of interaction between linguistic analysis
  and machine learning
- role of a priori ontological constraints in automated learning
learning from heterogenous (multimedia) sources
(purpose of ontology development)
- metadata annotation
- navigation structures
- personalization features

emergent ontologies - incidental ontology acquisition

Conceptual refinement (starts from conceptual structures)
- semi-automatic means for restructuring and enriching data resulting
  from an ontology learning process, exploiting
- already existing (upper-level) ontologies
- formal ontological principles for checking, modifying and enriching
  the conceptual structures...

Different ways of adapt and reuse existing ontologies (different
  commitments about the actual content)
Model re-engineering
- legacy conceptual schemas, thesauri...

Tools and methods for consensus building and for comparing different
  conceptual views
Ways of making modularity decisions
- optimal size of modules
- relationships between modules...
Ways of modeling the interactions between agents engaged in verifying
  potential consensus
- degrees of consensus,
  ways of delegation, trust and control
- minimal consensus necessary for solving a certain task...

Role of inference services in supporting incremental refinement

Inter-ontology linking
- Alignement techniques
- Integration and merging

Evaluation
- Ways of formally evaluating an ontology with respect to its
  requirements
- On-field evaluation of ontologies with respect to usage
  kinds of use
  reuse in different applications
  psychological adequacy (as a result of experiments)
- Experiments for checking ontological agreement
Theoretical ways (metrics) for comparing different ontologies
- expressivity
- accuracy
- domain richness
- cognitive adequacy...

Evolution
- Kinds of relationships between different ontology versions
Recognition of change needs (usage of the ontology, new sources coming in...)

Impact of changes on metadata annotation

Theoretical issues
- theoretical and practical aspects of relevance
- formal ontological principles, foundational ontologies
- notion of identity [and unity]
- unified conceptual analysis methodology (KR, DB, OO, ...)

Strategic domains for ontology development
- Ontology of information and information processing
- Ontology of social entities
- Ontology of social co-operation and interaction

Requirements for tools
- visualization of complex ontologies
- cooperative development environment
- managing argumentations and design rationale
- easy acquisition of arguments

Relationships with other topics
- User interfaces, collaborative engineering environments...
- Language and inferential services
- Computational linguistics (reusing lexical resources for ontology development)
- Infrastructure (ontology transformation)

Links with other communities
- Cognitive science (ontology validation experiments)
- Agents (modeling interaction and cooperation...)

[Introductory comments]
- sloppiness..., engineering methodology
- planning for decay... (robust design techniques)