

Towards Community-Driven Ontology Engineering



Problem: Lack of Domain Ontologies

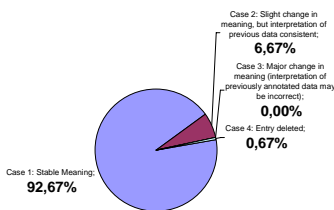
Specificity needed for domain ontologies: It's not about bread - but about wheat bread, bran bread, spice bread, ... → Upper ontologies exist, a **higher degree of specificity** is required for many practical applications

Bottlenecks of Ontology Building

1. **Conceptual dynamics**
2. **Intended meaning** can not only be expressed by formal means
3. The **serialization** of an ontology specification (e.g. RDF/XML) is only a **poor communication channel** for conveying the intended meaning
4. **Evolution** of the ontology is not under control of the **user community**

Almost 1.5 Million stable concepts in the English version of Wikipedia

Conceptual Reliability of the Entries in the Sample
(n=150; sample taken Jan 13, 2007)



Advantages of Community-Driven Ontology Building

- A community can keep up with the **pace reality is changing** more easily
- **Evolution** of the ontology **under direct control of the community**
- Ontologies **reflect the view of the actual user community**, not of a small ontology engineering team
- **Real community contracts**
- A concept can be better understood with the **discourse that led to the specification** available
- Community can **track and resolve inconsistencies**
- **Collective intelligence**

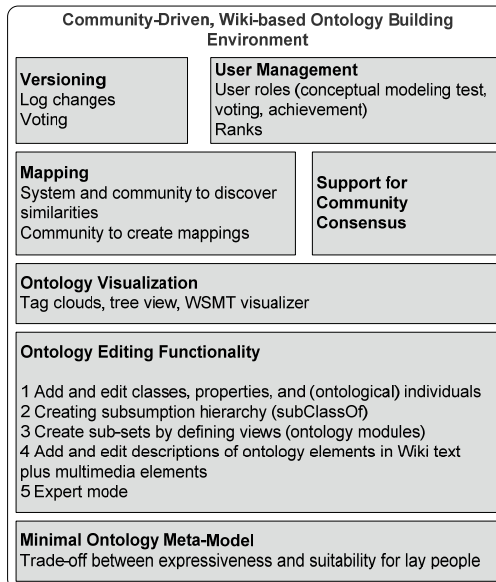
Design Principles

1. Tap the „**Wisdom of Crowds**“
2. Integration of different **resources** with various techniques
3. Combination of (collective) **human and computational intelligence**
4. Easy-to-use, media-rich, Wiki-based **User Interface**
5. **Simplicity and Minimality**

Contribution

An **integrated methodology, prototype implementation, and real-world evaluation...**

- (1) Showing that building domain ontologies benefits from the **involvement and commitment of the user community**
- (2) Lowering entrance barriers by following the **Wiki** philosophy
- (3) Combining **human and computational intelligence**
- (4) Defining processes and roles to support **community consensus**
- (5) Proposing ways to **combine Web resources** for building domain ontologies



Group solutions usually **outperform** the group's **individuals'** solutions!

Evaluation Plan

Evaluation of the methodology by comparing the domain ontologies for real-world applications produced in the (a) **traditional** (a small team of engineers and/or domain experts construct an ontology) and (b) **community-driven** ontology engineering approach, analysing:

- domain coverage,
- stability of concept definitions,
- cost, and
- precision of usage

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