Vrije Universiteit Brussel
STAR Lab

Interorganizational Ontology Engineering

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Collaborative Communities

- Collaborative communities: goal-oriented
  → effectiveness and efficiency of interactions
- Require a range of collaborative services and applications, e.g. knowledge discovery
- Specification of these services/applications/data requires meaning formalization
- How to balance informality of community interactions with formality of specifications?

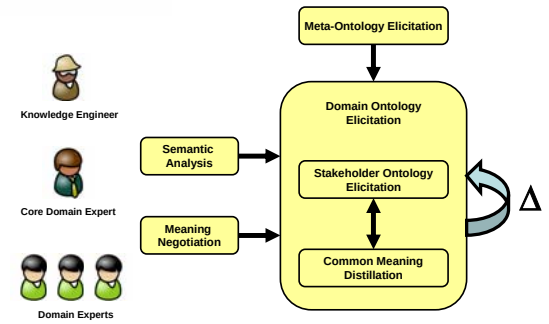
The problem

- Multiple organisations, different conceptual frameworks (=ontologies)
- What are the *similarities*, what are the *differences*?
- How to arrive at a *relevant* common ontology as *efficiently* as possible?
- Not (only) a knowledge representation and reasoning problem, but a *socio-technical process of meaning negotiation*

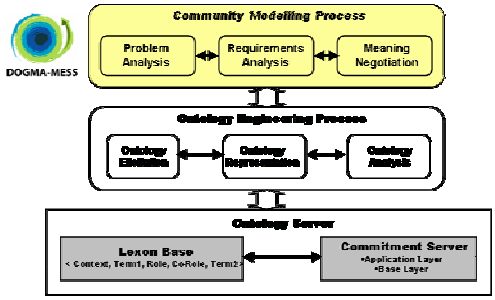
Starting points

- The ontology is modelled by domain experts ("ownership"), not by knowledge engineers.
- No straitjacket: find balance between common ontology and the various organisational ontologies
- Development takes place in various versions, so that evolving insights can best be used.
- Starting point for every version is the *current* insight in the common interest and purpose.
- At the end of each version, this common interest has been refined with relevant insights of the participating organisations.

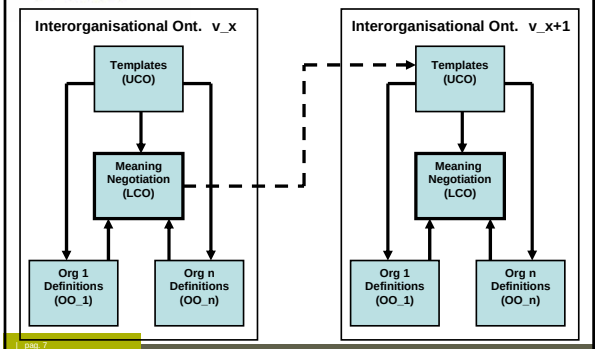
Meaning evolution support



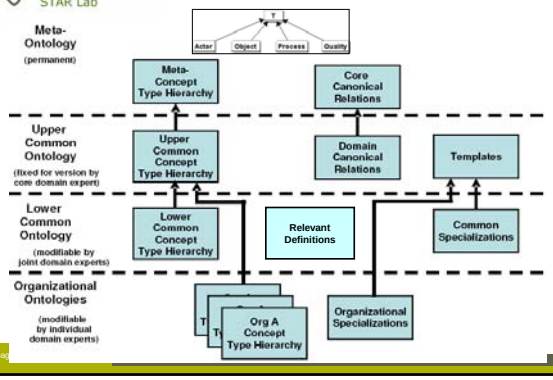
DOGMA methodology



The process

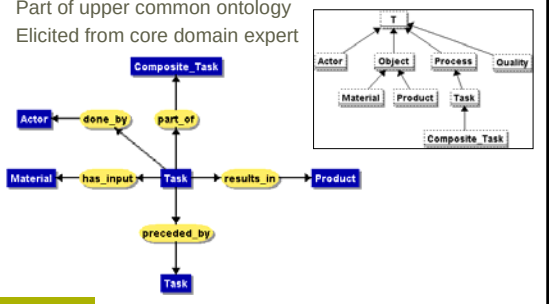


Ontological Framework



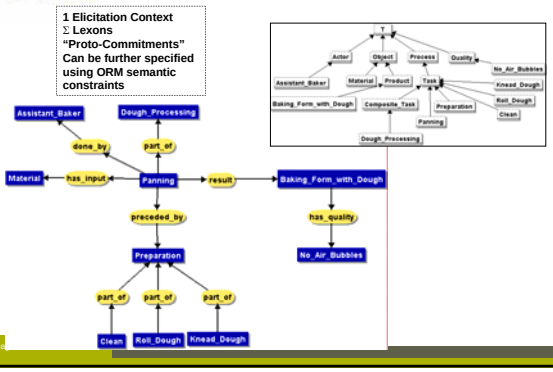
Elicitation: task template

- Part of upper common ontology
- Elicited from core domain expert



Elicitation: task graph Org. A

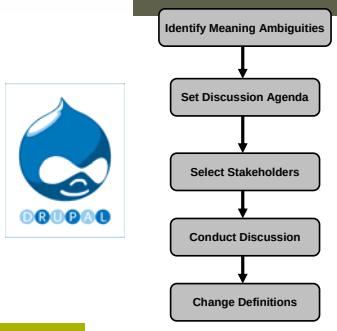
1 Elicitation Context
Σ Lexons
"Proto-Commitments"
Can be further specified using ORM semantic constraints



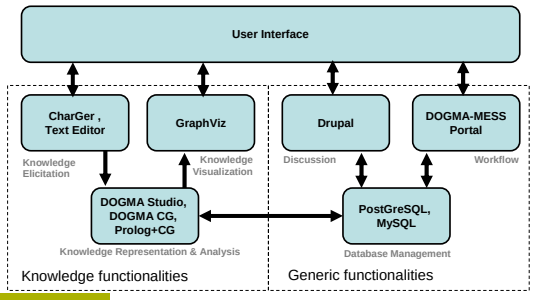
Creating the LCO meaning negotiation agenda

- Many organizational specializations of the same template
- How to efficiently distill common patterns for next version of IOO? => scalability...
- Idea: core domain expert defines *relevance definitions* indicating *current interest* of community (human interpretation essential, cannot be automated!)
- Project (parts of) definition into organizational specializations, using *organizational* concept type hierarchies => if according to local semantics the definition is relevant its score is increased
- The most relevant definitions are put on the agenda for (human) meaning negotiation

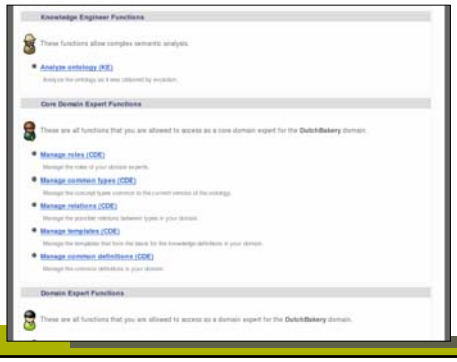
Meaning negotiation



The system



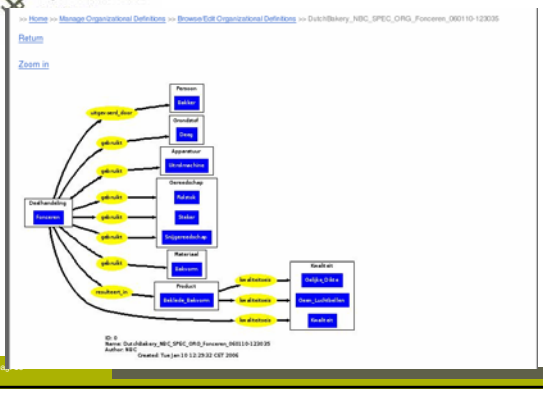
The implementation



Testbed for OE tools (1)

T
> Actor
>> Persoon
>>> Bakker
>>>> Banketbakker
>>>> Broodbanketbakker
> Object
>> Apparatuur
>>> Geleispuitmachine
>>> IJsgruismachine
>>> Koekjesspuitmachine
>>> Koekjesvormmachine
>>> Kookplaat

Testbed for OE tools (2)



Results and agenda

- Results
  - philosophy
  - architecture
  - knowledge representation and analysis (KRA) module
  - initial portal
  - initial user tests in CODRIVE case
- Agenda
  - Meaning negotiation module
  - Relevance computation
  - Integration KRA and meaning negotiation modules
  - Multiple, in-depth use cases

Conclusions

- Interorganizational ontology engineering: a *socio*-technical problem
- Human MESS is essential part of the ontological process: meaning elicitation, interpretation, negotiation...
- Understanding efficiency and relevance of this very complex socio-technical process is key to acceptance
- More testbeds of conceptualizations, implementations, and combinations of operations and tools needed for org ontology engineering theory and tools to progress
- To be continued....