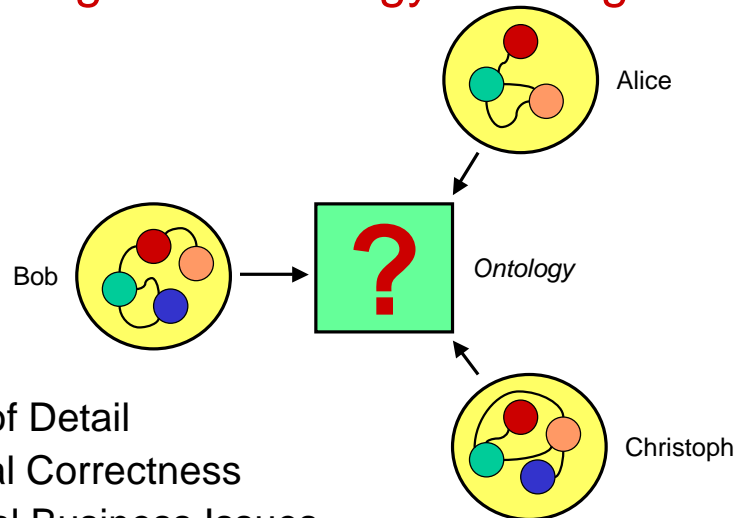


Ontologies – How far can we go?

Position of Dominik Kuroпка

Challenges of Ontology Building



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•Sample for Level of Detail (Traveling Scenario):

- Type-level: Service-Book-Train(departure-city, arrival-city)?
- Sub-Type-level: Some services e.g. Deutsche Bahn can only be used for German cities. How to model this?
- Instance-level: Some services can only be used for German cities, but also for some cities near to Germany. Does it really makes sense to model all cities in the ontology?

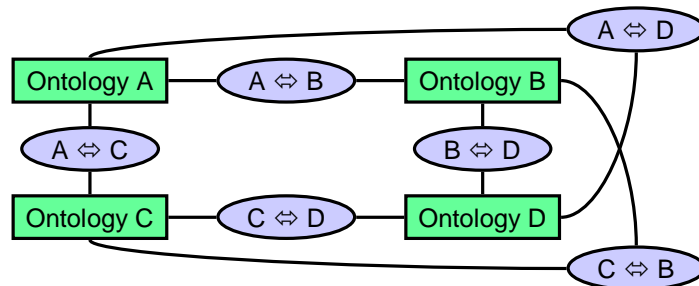
•Sample for Political Correctness

- China's point of view: Taiwan is province of China.
 - Taiwan's point of view: Taiwan is an country of it's own.
 - No real chance for an agreement on one consistent ontology!
- A common ontology might make chargeable things obsolete or put a competitor in a better position. This hindered a lot of Standards (an Ontology is similar to a standard).

My 1st thesis

- The ...
 - fewer the number of involved people, and
 - smaller the represented domainthe better and easier it is to
 - create a consistent ontology, and
 - successfully use an ontology.
- One single ontology trying to represent all aspects of the world is doomed to failure!

Challenges of Ontology Mediation



- How to resolve inconsistencies?
- How many mediators do we need?
- Who is interested in creating and maintaining mediators and who pays them?

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•Sample: How to resolve inconsistencies

- Ontology A is saying light is a particle, for this reason a photo disc gets dark at the position where it's hit by a light particle. A gap in a wall will result in a single light spot.

- Ontology B is saying light is a wave, for this reason a gap in a will result in a diffraction. There is no explanation why a photo disc gets dark.

•Sample: How many mediators so we need?

- Let's assume the concept car is represented in Ontologies C, A and D but not in B. In this case we need an explicit mediator $C \leftrightarrow D$.

- Are there scenarios thinkable where we also need $A \leftrightarrow D$ and $C \leftrightarrow B$? Yes, if every ontology contains parts which are missing in some ontologies but which are also existent in other ontologies.

•Sample: Who is interested in...

- For instance the translation of ontology concepts from one to the other is laborious (e.g. For City-Names)

My 2nd thesis

- Mediators are not a feasible solution to merge all ontologies to one “virtual” world ontology.
- For this reason the Semantic Web will never work as intended on the world-scale!
But it might work well for small, delimited domains if only a few ontologies are involved.

So what shall we do now?

- Maybe we should take a look at how humans “solve” the ontology issues.
- First observations:
 - Humans use natural languages for communication and ontology representation.
 - Humans natural language ontologies are inherently fuzzy and sometimes inconsistent.
 - When two humans communicate they do internally the following things:
 - Exchange of information about internal ontologies, in case misunderstanding is detected.
 - Creation of internal Just-In-Time “Mediator”.
 - Adaptation of internal ontology towards the partners ontology.
- We should try to adapt this behavior for our computer agents!