OWL General Requirements

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Committee

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Format

- Name and number
- Supported tasks
  - What does requirement allow us to do?
- Justification
  - Why is this requirement needed?
- Possible approach
  - How can the language support the requirement?
- DAML support
  - To what extent does DAML+OIL support it?

What is a "Requirement?"

- Possible criteria
  - "if we don't meet it, we aren't done" – Dan C.
  - must result in language primitives
  - must be implemented in all OWL systems?
  - appropriate for the "ontology layer" of the Semantic Web?
  - critical for some very important use cases?
  - …
- Some of these are debatable!

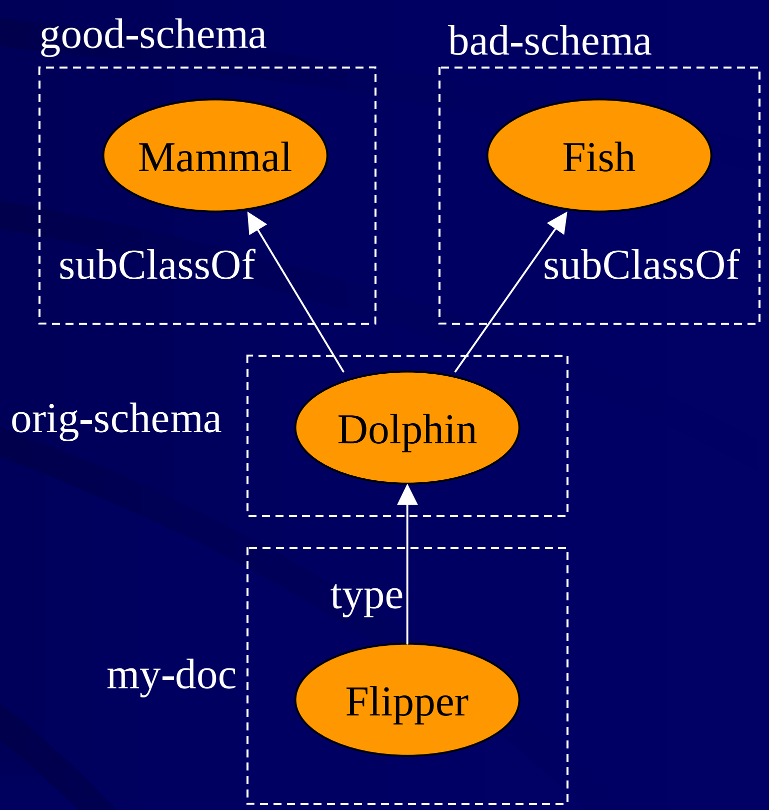
R1. Shared Ontologies

- Ontologies are publicly available and different data sources can commit to the same ontology for shared meaning.
- Possible Approach:
  - Syntax for defining ontologies
  - Syntax for committing to ontologies
  - Syntax for disambiguating terms from different ontologies

R2. Ontology Extension

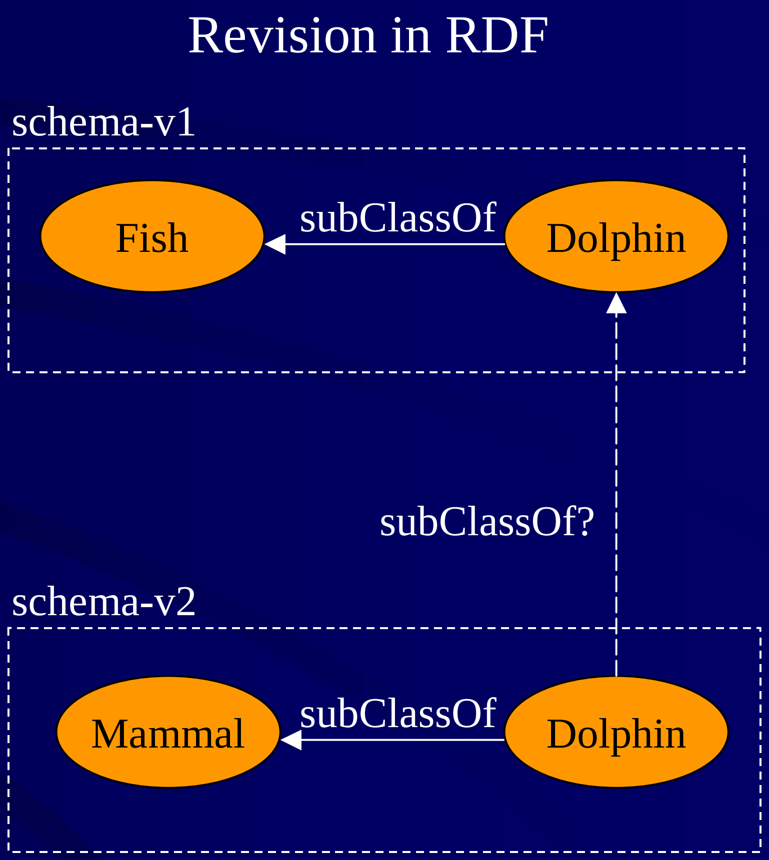
- Ontologies can be extended by other ontologies in order to provide additional definitions
- Possible Approach:
  - Explicit representation of extension

Multiple Schemas in RDF



R3. Ontology Evolution

- Ontologies can be changed over time and data sources can specify which version of the ontology they commit to
- Possible Approach:
  - Revisions are separate documents
  - Explicit links to prior versions
  - Explicit backwards-compatibility
  - Deprecation of terms



R4. Ontology Interoperability

- Different ontologies may model the same concepts in different ways
- Possible Approach:
  - primitives for mapping
  - consider some of (but not all) the following
    - subclass/superclass
    - inverses
    - equivalence
    - implication, arithmetic, aggregation, string manipulation, procedural attachments?

R5. Detect Inconsistency

- Different ontologies or data sources may be contradictory
- Possible Approach:
  - allow language to express inconsistency
  - theory supports efficient detection of inconsistency
  - provide mechanism for reporting inconsistencies

R6. Scalability

- Language can be used with large ontologies and large data sets
- Must balance with R10. Expressiveness
- Possible Approach:
  - restrict language for efficient reasoning
    - description logic
    - datalog

R7. Ease of Use

- Language should provide a low learning barrier and have clear concepts and meaning
- Possible Approach:
  - When possible, use concepts and idioms familiar to average software engineers
    - object-oriented?
    - relational databases?

R8. XML Syntax

- The language should have an XML serialization
- Open Issue:
  - Must the language also build on RDF/RDFS?
    - In favor of RDF
      - W3C standard
      - Existing software support
    - Against RDF
      - Does not have same acceptance as XML
      - Led to an awkward syntax for DAML+OIL

R9. Ontology-based Search

- Search that exploits the meaning of terms instead of just the syntax
- Possible Approach:
  - use background ontologies for:
    - query expansion
    - understanding of term relationships
    - identify parameters and value restrictions

R10. Expressiveness

- The language should be as expressive as possible, given a balance with R6. Scalability
- Should probably combine this with R6 for:
  - Balance of Expressiveness and Scalability

Other candidates (Goals?)

- C1. Explainability
- C2. Internationalization
- C3. Ontology querying
- C4. Tagging
- C5. Proof checking
- C6. Security
- C7. Trust
- C8. Data persistence