Ontology Summit 2014:
Big Data and Semantic Web Meet Applied Ontology

Track A: Common Reusable Semantic Content

Andrea Westerinen, Gary Berg-Cross and
Mike Bennett

Co-Champions

Motivation

- **Context:** the diverse communities of Semantic Web, Linked Data, Big Data, and Applied Ontology

- **Perception:** there is less re-use of ontology content than there could be… (?)
- **Motivation:** bring together the different communities and explore issues of re-use as experienced in those communities
  - Could Linked Data be better served by a set of interoperable or mutually coherent ontologies?
  - Can ontology developers make better use of content from elsewhere? Are there issues with reasoning and performance when reusing content?
  - Can the Big Data community be better served by a consistent set of concepts?
  - Are the issues faced by any of the above the same or are there different lessons for each of them in re-use of semantics?

Mission Statement

- Semantic technologies such as ontologies and reasoning play a major role in the Semantic Web and are increasingly being applied to help process and understand information expressed in digital formats. Indeed, the derivation of assured knowledge from the connection of diverse (and linked) data is one of the main themes of Big Data (1).
- One challenge in these efforts is to build and leverage common semantic content thus reducing the burden of new ontology creation while avoiding silos of different ontologies. Examples of such content are whole or partial ontologies, ontology modules, ontological patterns and archetypes, and common theories related to ontologies and their fit to the real world.
- However, crafting of whole or partial common semantic content via logical union, assembly, extension, specialization, integration, alignment and adaptation has long presented challenges. Achieving commonality and reuse in a timely manner and with manageable resources remain key ingredients for practical development of quality and interoperable ontologies.
- Despite development of such things as foundational top-level ontologies (such as DOLCE (2) & BFO (3)), and the availability of broad domain models (such as SWEET (4)) as starting points, the amount of reuse seems quite low in practice.

Mission Statement (continued)

- This track will discuss the reuse problem and explore possible solutions. Among these are practical issues like the use of ontology repositories (5) and tools, and the possibility of using basic and common semantic content in smaller, more accessible pieces. The goal is to identify exemplary content and also define the related information to enable use/reuse in semantic applications and services.

- A secondary goal is to highlight where more work is needed and enable the applied ontology community to further develop semantic content and its related information.

- We will work to make the results of our discussions useful to both the ontology and Big Data communities.

Approach / Track Plan

1. Enlist a variety of speakers and the community to discuss reuse issues and problems, and present their efforts and experiences to address these. In addition, specific examples of reuse and common content will be presented. The goal is to have a diverse set of speakers from both the research and application arenas, to stimulate email discussion within the broader Ontology Summit community.

2. Reference and possibly build on past Ontology Summits (for example, the Ontology Repositories discussions) as well as connect to other tracks in this Summit (e.g. discussing tools and heterogeneity, aka variety, issues).

2. Promote discussion of track session topics on the Ontolog/Summit forum both before and after sessions and leading up to the face-to-face meeting

3. Explore the possibility of a Hackathon reuse exercise.

4. Work with our speakers and the attending community to distil the virtual meeting topics to a useful summary and set of speakers for the face-to-face meeting.

5. Help add to the final communique.

Sessions Plan

- Session 1 – 23rd January 2014
  - **Take a look at the problem space and the possible approaches**
  - **Get some examples of re-use or ontology patterns and challenges in practice**
    - **Challenges in reasoning over event ontologies**
    - **Ontology patterns for ocean science repository integration**
    - **Experience in re-using content from ISO 15926 and FIBO**
- Email conversations
  - **Flesh out the possible approaches**
  - **Get some alternative viewpoints on the table**
    - **Reusable content versus common patterns versus upper ontologies usage**
    - **Challenges for applications (reasoning etc.)**
    - **Ontology assessment: when is it reusable? Design for re-use v stand-alone**
    - **Do the challenges for any one community have relevance to the others?**
- Session 2 – 6th March 2014 (date tbc)
  - **Try and bring together the possible approaches and problem documentation**
  - **Presentations on industry experience, theoretical approaches, cross-domain integration etc.**
    - **GeoVoCamp, Descartes Core (Geo ontology content; ontology patterns)**
    - **Others e.g. REA Ontology for Transactions?**
  - **Use of upper ontologies / partitions / lattice of theories**

Contributions

- Track champions will develop and carry out the above plan as well as contribute their experience in this area, recruit speakers, facilitate running of the track session and help to promote useful discussions.
- Track champions will look for prior statements of the problem and possible solutions, both from earlier Ontology Summits and in the literature (which will be added to the Library!)

References

1. Research Trends Issue 30 (2012): Special Issue on Big Data

2. Descriptive Ontology for Linguistic and Cognitive Engineering (DOLCE)

3. Basic Formal Ontology (BFO)

4. Semantic Web for Earth and Environmental Terminology (SWEET)

5. Open Ontology Repository (OOR)