Ontologies, Web 2.0 and Beyond

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outline

- situate ontologies in Web 2.0 and Semantic Web
- characterizing the space of ontologies
- Confluence of social and semantic web ontologies
Doug Engelbart, 1968

"The grand challenge is to boost the collective IQ of organizations and of society."
Tim Berners-Lee, 2001

“The Semantic Web is not a separate Web but an extension of the current one, in which information is given well-defined meaning, better enabling computers and people to work in cooperation.”

NY Times, Nov 2, 2006
"The central principle behind the success of the giants born in the Web 1.0 era who have survived to lead the Web 2.0 era appears to be this, that they have embraced the power of the web to harness collective intelligence"
Web 2.0 is about The Social Web

- 1 billion people connect to the Internet
- 100 million web sites
- Over a third of adults in US have contributed content to the public Internet. - 18% of adults over 65

Source: Pew Internet and American Life Project via futureexpolporation.net

Diagram source: http://web2.wsj2.com/
Is “Collective Intelligence” the wisdom of clouds?

http://flickr.com/photos/tags/
Roles for Technology

- capturing everything
- storing everything
- distributing everything
- many-to-many communication
- creating value from the data

- PCs, cameras, mobile phones
- databases and cheap storage
- Internet and Web
- Internet, Email, and collaboration software
- Web 1.0: ecommerce, search
- Web 2.0: social software
- Web 3.0: Semantic Web
Killer App for Web 3.0: “Collective Knowledge” Systems

- provide useful information
- based on human contributions
  - augmented with structured data
- from multiple, heterogeneous sources
  - integrated meaningfully
- which gets better as more people participate.

Adapted from http://tomgruber.org/writing/social-meets-semantic-web.htm
Place of Ontologies in the Semantic Web Stack

from Tim Berners-Lee's talk at XML2000  http://www.w3.org/2000/Talks/1206-xml2k-tbl/slide10-0.html
Space of Ontologies

- Formal Ontologies
- Data Modeling
- Terminologies & Taxonomies
- Folksonomies

Cost to develop and maintain vs. Computational Service
Interesting Correlations

Role of Computation
- reasoning
- retrieval
- search

Breadth of intended use
- data interop
- language processing
- semantic search

Cost to develop and maintain

Formal Ontologies

Data Models

Terminologies & Taxonomies

Formality and structure
Expressiveness of representation
Level of granularity / detail

Computational Service

Reasoning
Retrieval
Search

Data Interop
Language Processing
Semantic Search
Example Ontologies

Cost to develop and maintain

Computational Service

Del.icio.us

WordNet

Dublin Core

Gene Ontology

EngMath

BFO

Formal Ontologies

Data Models

Terminologies & Taxonomies

Folksonomies

Cost to develop and maintain
Confluences

- Folksonomies
  - Suggest Tags
  - Data Interop
- Terminologies & Taxonomies
  - Augment Vocabulary
  - Semantic Interop
- Data Models
  - Serve as Corpora
- Formal Ontologies

Power of Computational Service

Cost to develop and maintain
What will the future look like?

Graffiti

Art

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