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Technologies

Performance from Experience

The “Emergent” Semantic Web: Top Down Design or Bottom Up Consensus ?

Panel Discussion

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What makes the “Syntactic” Web click ?

- Technology ?
 - Yes, but ...
 - Why wasn't the internet (telnet, ftp, gopher) as successful ?
 - Why were DBMS servers, CORBA/RMI not as successful ?
 - Multimedia ?
 - Probably...
 - Better “cognitive compatibility” as compared to text...
 - Ease of use ?
 - We are getting there ... !
 - Just point and click Easy to publish information ...
 - People ?
 - Bingo !
 - “For the people/by the people”
- The WWW is a huge and successful sociological experiment !!!!

What is the “Semantic” Web ?

From the article in Scientific American [Berners-Lee, Lassila, Hendler]

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**.

The Semantic Web will be **decentralized**.

What is “semantics” ?

- Meaning of information
 - Who decides meaning ?
 - People
 - How does communication take place ?
 - By mutual agreements between people in a community
- Meaning and “software programs/agents”
 - Need formal representations of “semantics” and “services”
 - Vocabularies/Schemas/Ontologies for capturing domain specific “terms” and “agreements”
 - Languages for representing data/knowledge/processes/services

Ontologies: Two Perspectives

From Dieter's presentation at the Semantic Web Panel at WWW10:

Perspective 1: Ontologies define a formal semantics of information allowing for information processing by a computer

Perspective 2: Ontologies define real-world semantics linking machine processable content with meaning for humans based on consensual terminologies

Ontologies and the Semantic Web

- **Perspective 2** is more compatible with the Semantic Web
 - in tune with the sociological nature of the web
 - in tune with the “consensual” nature of semantics
 - supports the dynamic, changing and uncertain nature of semantics
 - in tune with a “bottom up” approach of propagation of the Semantic Web
- **Perspective 1** is necessary for “automation” of the Semantic Web
 - in tune with a “top down” approach of rigorous semantic specifications and well-defined interfaces and procedures
 - pre-supposes “crisp/static” semantics of information

Consensus: common to both perspectives ...

- Top down approach:
 - International committees
 - (e.g. W3C working groups, metadata standards groups)
 - Subject Matter Experts
 - Time consuming and costly/More accurate
 - Relatively static
- Bottom Up approach
 - Social Network Analysis approaches
 - “Connection/Data Mining” approach, e.g., Google
 - Collaborative filtering, e.g., Net Perceptions, Group Lens, Amazon recommender
 - “Collaborative Web Building”, e.g., Open Directory Project (dmoz.org)
 - Consensus Analysis across SMEs
 - Processes for generating consensus (workflow ?)
 - More efficient and cheaper/Less accurate

Semantic Web: How do we proceed ?

- Have we learnt our lessons from the “Syntactic Web” ?
 - Ease of use ?
 - “For the people/by the people”
- Work on refining social processes for quicker and more precise generation of terminologies ?
- Work on automating processes for generation of consensus and automatic SME identification ?
- Work on sophisticated mechanisms of representing and reasoning with semantics ?
- Is it a combination of both the perspectives ?
 - How ? What are the articulation points ?

The Panel

- Ora Lassila, Nokia Research Center, Nokia
Knowledge Representation, Planning
- Dieter Fensel, Free University, Amsterdam
Knowledge Representation with a Sociological Perspective
- James Hendler, DARPA
Knowledge Representation
- Umeshwar Dayal, HP Labs, HP
Databases, Workflow, Agents
- Clifford Behrens, Applied Research, Telcordia Technologies
Cultural Anthropologist, Information Retrieval