Semantic Social Web

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credit:
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Semantic Web
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Social Web
- Describes how people **interact** with each other using internet
  - Rarely meeting face-to-face
- **Share** interests, opinions, photos, …
- Focus on **people**
- Your virtual **identity**

Semantic Social Web
- Use of social web resources to create semantically enriched knowledge
- Improve social web usability with semantics
Social Networks

ISWeb - Information & Semantic Web
Social Web: focus on person
Some ideas from semantic social web

- Link your information using semantics
- Manage your identity on the web
- Web of trust
- Harness collective knowledge
- Exploit users to bring recommendations
Semantically-Interlinked Online Communities
  - pronounced "shock"

Semantic methods and vocabulary to interconnect online discussions as:
  - Blogs
  - Forums
  - Bulletin boards
  - Mailing lists
  - Wikis
Vision of SIOC

- To create an **ontology** that fully describes the content and structure of most **online community sites** – including, but not limited to weblogs, bulletin boards, mailing lists, newsgroups, etc.

- To **create new connections** between discussion channels and posts, and to allow users to browse discussion data in interesting ways using these connections.

- To overcome a "chicken-and-egg" problem with the Semantic Web (no applications without data, and no data without applications) by making it **easy to generate and use** SIOC data.

http://sioc-project.org
SIOC example

<iis:web>
  dc:title>Creating connections between discussion clouds with SIOC</dc:title>
<dc:terms:created>2006-09-07T09:33:30Z</dc:terms:created>
<sioc:has_container rdf:resource="http://johnbreslin.com/blog/index.php?sioc_type=site#weblog"/>
<sioc:has_creator>
    <rdfs:seeAlso rdf:resource="http://johnbreslin.com/blog/index.php?sioc_type=user&sioc_id=
    </sioc:User>
</sioc:has_creator>
<sioc:content>SIOC provides a unified vocabulary for content and interaction description: a semantic
</sioc:content>
<sioc:has_reply>
  <rdfs:seeAlso rdf:resource="http://johnbreslin.com/blog/index.php?sioc_type=comment&sioc_
  </sioc:Post>
</sioc:has_reply>
</sioc:Post>
</is:web>
Using SIOC
Various types of content we create and consume...

- Discussions
- Bookmarks
- Annotations
- Profiles
- Microblogs
- Multimedia

...can connect us to other people
Various types of content we create and consume…

...can connect us to other people
SIOC applications

- Extension of current web applications
  - WordPress, Drupal, vBulletin

- Enterprise 2.0 data integration
  - exchange mechanism between heterogeneous collaborative working environments (Business Collaborator BSCW, NetWeaver)

- Life sciences
  - SWANSIOC initiative - Semantic Web platform for biomedical discourse linked to key biological categories specified by ontologies

- Mobile phone applications
  - Data portability and mobile phonebook services
From SIOC to Web of Trust
Extending FOAF: Web of trust

- Basic FOAF
  - describe information about a person and known friends

- Extended FOAF
  - Trust properties
    - Trusts neutrally, Trusts slightly, Trusts moderately, Trusts highly, Trusts absolutely
  - Distrust properties
    - Distrust absolutely, Distrust highly, Distrust moderately, Distrust slightly

- PGP Signed FOAF files
  - Information source can be verified
Expressing trust

- People annotate their relationships with information about how much they trust their friends

- Trust can be:
  - binary (trust or don’t trust) or
  - on some arbitrary scale

- Example
  - TrustMail uses a 1-10 scale where:
    - 1 is low trust
    - 10 is high trust

Golbeck, Jennifer, James Hendler, "Reputation Network Analysis for Email Filtering". Conference on Email and Anti-Spam 2004
What is TrustMail

- TrustMail is a Message Scoring System

- Adds reputation ratings to the folder views of a message
  - Helps sort messages accordingly by the user after he sees the reputation ratings
  - Highlights the important and relevant messages

- Users can specify level of trust to other users
  - Trust propagates through friend-of-a-friend network

- Uses a distributed, web based social network for calculating trust
Inferring trust

The Goal:

Select two individuals
1. source (node A) and
2. sink (node C)
and recommend to the source how much to trust the sink.
(knowing trust between A and B, and between A and C)
Trust is an opinion …

- How trustful is E?
  - It depends who asks …

- Perspective A:
  - A trust C
  - C do not trust E
  - so … A do not trust C

- Perspective B
  - B trust D
  - D trust a lot E
  - so … B trust quite a lot E
Calculating trust

```
1  getRating(source, sink)
2  mark source as seen
3  if source has no rating for sink
4     denom = 0
5     num = 0
6    for each j in neighbors(source)
7       if j has not been seen
8          denom ++
9          j2sink =
10             min(rating(source,j), getRating(j, sink))
11          num += rating(source, j) * j2sink
12    mark j unseen
13  rating(source, sink) = num/denom
14  return rating(source, sink)
```

- This formula ensures that we will not trust destination more than any intermediate node ....
Subject: Hey, TRUSTY!!!
Date: March 12, 2004 5:36:15 PM
From: Jennifer Colbuck
To: trust@nismat.org

Hey, Trusty One,

Check out the new updates I've made to the website at http://trust.mindsnap.org

-Jen
Conclusions

- Semantics in Social Web
  - Meaningfully interlinks different source
  - Creates additional value from the data
  - Helps to unify identity and site access
  - Makes it more machine searchable for better user experience
  - Helps to build a social web with trust and provenance