Social Semantics for an Effective Enterprise

Abstract

An evolution of the Semantic Web, the Social Semantic Web (s2w), facilitates knowledge sharing with “useful information based on human contributions, which gets better as more people participate.”[1] The s2w reaches beyond the search box to move us from a collection of hyperlinked facts, to meaningful, real time context. When focused through the lens of Enterprise Search, the Social Semantic Web facilitates the fluid transition of meaningful business information from the source to the user. It is the confluence of human thought and computer processing structured with the iterative application of taxonomies, folksonomies, ontologies, and metadata schemas.

The importance and nuances of human interaction are often deemphasized when focusing on automatic generation of semantic markup, which results in dissatisfied users and unrealized return on investment. Users consistently qualify the value of information sets through the act of selection, making them the de facto stakeholders of the Social Semantic Web. Employers are the ultimate beneficiaries of s2w utilization with a better informed, more decisive workforce; one not achieved with an IT miracle technology, but by improved human-computer interactions.

Johnson Space Center Taxonomist Sarah Berndt and Mike Doane, principal owner of Term Management, LLC discuss the planning, development, and maintenance stages for components of a semantic system while emphasizing the necessity of a Social Semantic Web for the Enterprise. Identification of risks and variables associated with layering the successful implementation of a semantic system are also modeled.

Social Semantics for an Effective Enterprise

Sarah Berndt
JSC Taxonomist, DB Consulting
sarah.berndt@nasa.gov
@JSCTaxo

Mike Doane
Principal owner, Term Management, LLC
mike.doane@gmail.com
@TermManagement

Photo by Dane Penland, Smithsonian Institution
I. The State of Search
II. Behind the Interface
III. Additional Tools for Social Semantics
IV. Enterprise
V. Back-up Slides
   A. Variables Affecting the System
   B. Additional Considerations
Search is inside a box.
We search to get results.
Search + Query = Result(s).
Ideally, the data reported in the result offers an answer, but additional context is usually needed.
An evolution of the Semantic Web, the Social Semantic Web (s2w), facilitates knowledge sharing with “useful information based on human contributions, which gets better as more people participate.” [1] The s2w reaches beyond the search box to move us from a collection of hyperlinked facts, to meaningful context.

We ask to get answers.
“Ask” enhanced with social semantics = answer.
It is a conversation, an iterative process of asking, finding and learning.
The answer changes the question.
Behind the Interface

I. Semantic Search, Simplified
II. Components of the Semantic System
III. How are Rulebases Social?
IV. Additional Tools for Social Semantics
V. Enterprise
Semantic Search, Simplified

Semaphore Ontology Manager

Google Search Appliance

CONTENT
Components of the Semantic System

TAXONOMY, ONTOLOGY, & TERM METADATA LIBRARY

- Controlled Vocabulary
  - Hierarchy
  - Preferred terms

- Ontology

- Equiv Relationships
  - Non-Preferred Terms
Components of the Semantic System

TAXONOMY, ONTOLOGY, & TERM METADATA LIBRARY

- **CV** developed through user interviews, research, document review, feedback. *Provides foundation for further exploration.*

- **Ontology** developed as way to extend taxonomy, connect concepts across multiple Directorates. *Allows many types of contextual relationships to exist.*

- **Term Relationships** added to further enhance term usage. *Encourages the semantic exploration of search and retrieval.*
Components of the Semantic System (cont’d.)

Preferred terms generate rulebases!

Rulebases are informed by the taxonomy and ontology, the proximity and location of terms, and different weights to enhance the accuracy of Classification.
Components of the Semantic System (cont’d.)

Preferred terms generate rulebases!

As the taxonomy and ontology are further built out and refined, the rulebases can be refined to provide further clarity and context.
How are Rulebases Social?

User feedback and comments/interactivity are used to refine the ontology, which alter the rulebases and affect the search algorithm.
Feedback Tool

International Space Station Program

Description
Suggest a Term Description?

Suggest an External Link?

Additional Information
has Acronym
- ISSP (International Space Station Program)
Use For
- ISSA (International Space Station assembly)

Narrower Terms
- Assembly Stages
- Elements (ISS)
- International Space Station Modules
- Transportation Elements (TOS)

Feedback (0)
No feedback exists for this term.
An additional example of social semantics for the enterprise is the utilization of semantic components in various systems. In this example, content tagging with taxonomy terms.
Classification Verification, Contemporary

Semaphore Web Administration

Rulebase Map

Below is the Rulebase Map that shows which terms have been commented on or have had template change.

Add Comment

Rulebase Map Template

This was changed to the Named Entity template on 3/22/2012 to address the following:
The IT branch tends to have proper noun names.

Classification Analysis

Please select two reports to compare: DEV - 3/20/2012 12:12 and

<table>
<thead>
<tr>
<th>Report</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEV</td>
<td>3/23/2012 1:39</td>
</tr>
<tr>
<td>DEV</td>
<td>3/12/2012 10:53</td>
</tr>
<tr>
<td>DEV</td>
<td>3/13/2012 10:07</td>
</tr>
<tr>
<td>DEV</td>
<td>3/20/2012 12:37</td>
</tr>
<tr>
<td>PROD</td>
<td>3/20/2012 1:28</td>
</tr>
<tr>
<td>DEV</td>
<td>3/22/2012 1:07</td>
</tr>
<tr>
<td>DEV</td>
<td>3/29/2012 1:54</td>
</tr>
</tbody>
</table>

Office of the JSC Chief Knowledge Officer: Term Management, LLC
Define: Enterprise

1: a project or undertaking that is especially difficult, complicated, or risky

2: readiness to engage in daring or difficult action: initiative <showed great enterprise in dealing with the crisis>

3a: a unit of economic organization or activity; especially: a business organization
b: a systematic purposeful activity <agriculture is the main economic enterprise among these people>

Merriam-Webster

All of the Above!
I. Variables Affecting the System and Considerations for Effectiveness
I. System Access

II. Software Upgrades

III. Staged Relaxation

A. Default = stringent classification strategy, then make classes progressively more lenient until the results are acceptable. Modifications include: Standard, Named Entity, Named Entity Sentence, Named Entity Paragraph, Named Entity No Preclusion, and Named Entity Single Boosted
Considerations for Effectiveness

I. Licensing
II. Search Logs
III. Unique Searches
   A. User Expectations
IV. User Authentication
V. Social Media
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N2ID are Semaphore terms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Top 100 Queries w/results</td>
<td>#Occurrences</td>
<td>Top 100 Keywords</td>
<td>#Occurrences</td>
<td>#Occurrences</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Shuttle</td>
<td>3274</td>
<td>shuttle</td>
<td>3283</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Engineering Drawing Control Center</td>
<td>557</td>
<td>center</td>
<td>844</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Electronic Document Management System</td>
<td>381</td>
<td>control</td>
<td>586</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Quality Assurance Record Center</td>
<td>282</td>
<td>engineering</td>
<td>570</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Flight Assignment Working Group</td>
<td>238</td>
<td>drawing</td>
<td>551</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Flight Planning Working Group</td>
<td>220</td>
<td>flight</td>
<td>457</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>edms</td>
<td>207</td>
<td>group</td>
<td>463</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Receiving Inspection</td>
<td>197</td>
<td>working</td>
<td>461</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>pondion</td>
<td>190</td>
<td>system</td>
<td>404</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Safety Review Panel</td>
<td>159</td>
<td>management</td>
<td>402</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>techtrans</td>
<td>20</td>
<td>document</td>
<td>392</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>MPLIM</td>
<td>18</td>
<td>electronic</td>
<td>382</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Space</td>
<td>15</td>
<td>quality</td>
<td>285</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>irduploads</td>
<td>14</td>
<td>assurance</td>
<td>285</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>N2ID15683</td>
<td>13</td>
<td>record</td>
<td>282</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>llppt</td>
<td>12</td>
<td>assignment</td>
<td>240</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>IRDUloads</td>
<td>12</td>
<td>planning</td>
<td>225</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>ratification</td>
<td>11</td>
<td>edms</td>
<td>209</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>MLM overview</td>
<td>11</td>
<td>inspection</td>
<td>200</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>N2ID15213</td>
<td>11</td>
<td>receiving</td>
<td>197</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>digital pre assembly</td>
<td>10</td>
<td>pondion</td>
<td>190</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>fpwg</td>
<td>10</td>
<td>review</td>
<td>185</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>James Haslin</td>
<td>9</td>
<td>panel</td>
<td>178</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>BMRRM</td>
<td>9</td>
<td>safety</td>
<td>176</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>starport</td>
<td>9</td>
<td>jsc</td>
<td>158</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td></td>
<td>9</td>
<td>and</td>
<td>84</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>