SEMANTIC SOLUTIONS FOR OIL & GAS: ROLES AND RESPONSIBILITIES

Jeremy Carroll, Ralph Hodgson, Chip Masters
Doing any complex task:
- Multiple people
- Doing different things
- Needing different tools

- A bit of planning

Oh Wow, we can do ....
- is not very helpful.
What are you trying to achieve?

- Some specific goals to do with better use of knowledge (i.e. information that is usable, adequately credible, actionable)
- Almost always involves:
  - A specialist who understands the knowledge: they help put the information together
  - A person who will act on the knowledge: needs a friendly usable tool, to see the knowledge.
Types of Semantic Solutions

- Information Integration/Mash-ups
- Linked Data Discovery with On-Demand Search and Analysis
- Enterprise Architecture
- Enterprise Metadata Management
- Vocabulary Management

Most involve mixing heterogeneous information

Most involve mix of internal and Web information.
Exploring RSS earthquake feeds …
Key Roles

- Domain Expert
- Ontologist (practical, not theoretical)
- Semantic Web Specialist
- UI Team
- End user (acts on the information)

Goal is to encapsulate the knowledge of the domain expert for reuse by the end user.
Knowledge reuse and costs

- The main planks have been around for decades …
- But not economically viable: because of the cost of maintaining high-quality information
- Cross-company, cross-industry collaboration needed to amortize costs
Areas for reuse

- Reuse of information framework, the Semantic Web technologies
- Reuse of information: both globally and within an enterprise
- Reuse of ontologies and schemas
Units and Measures

- For engineering types of applications, these are needed:

<table>
<thead>
<tr>
<th>Name</th>
<th>Annotation</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>property:StressProperty</td>
<td></td>
<td>Stress is a measure of the average amount of force exerted per unit area.</td>
</tr>
<tr>
<td>property:StressProperty</td>
<td></td>
<td>Stress property</td>
</tr>
<tr>
<td>property:ElasticProperty</td>
<td></td>
<td></td>
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<tr>
<td>property:ForcePerUnitAreaProperty</td>
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<td></td>
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<td>property:propertyCategory:has property:StressProperty:Type</td>
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**Table: Units and Measures**

<table>
<thead>
<tr>
<th>property:StressProperty, ...</th>
<th>rdf:type</th>
<th>property:symbol</th>
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<tbody>
<tr>
<td>property:StressProperty</td>
<td></td>
<td>Coefficient of Thermal Expansion</td>
</tr>
<tr>
<td>property:StressProperty</td>
<td></td>
<td>Critical Stress</td>
</tr>
<tr>
<td>property:CGNSProperty, ...</td>
<td></td>
<td>Laminate viscosity</td>
</tr>
<tr>
<td>property:ShearProperty, ...</td>
<td></td>
<td>Modulus of Elasticity in Shear</td>
</tr>
<tr>
<td>property:StressProperty</td>
<td></td>
<td>Normal Stress</td>
</tr>
<tr>
<td>property:StressProperty</td>
<td></td>
<td>Normal Stress on Inclined Plane</td>
</tr>
<tr>
<td>property:StressProperty</td>
<td></td>
<td>Normal Stress on Planes Perpendicular</td>
</tr>
</tbody>
</table>
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- UI Team
- End user (acts on the information)

- Data entry, data laundry
- On-going maintenance
TopQuadrant Products

- **Ontologist:**
  - TopBraid Composer

- **UI Team**

- **End user**
  - TopBraid Ensemble

- Tying it altogether
  - TopBraid Live
(old version)
Key Roles

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- Data entry, data laundry
- On-going maintenance
Motherhood and Apple Pie

- Doing any complex task:
  - Multiple people
  - Doing different things
  - Needing different tools

- Worth buying appropriate tools, and getting consultancy on areas outside your expertise.
Backup
The Themes

- (undigested) information vs. (usable, adequately credible, actionable) knowledge
- From undirected mash-up to considered information merging
- Web presentation of (digested) Semantic Web information to enable action
- TopBraid Suite (or similar) to bridge from Semantic Web to the Web
The Players

- **Ontologist**
  - Assesses information sources (both SW and enterprise):
    - fitness for purpose
  - Designs ontologies transforms
  - Merges information

- **Rich Client Designer**
  - Designs information presentation
  - Configures/extends rich client platform

- **Server administrator**
  - Permits appropriate access to enterprise information
  - Manages reliability
The Tools

- An Ontologist Workbench
  - E.g. TopBraid Composer
- A Semantic Web enabled Rich Client Platform
  - E.g. TopBraid ensemble
- A Semantic Web enabled Web Server
  - E.g. TopBraid Live
- An integrated framework
  - E.g. TopBraid Suite
TopBraid Composer

You must inspect this stunning and very beautiful waterfront townhouse to appreciate the location and quality of the property. From the moment you enter you can see and feel the superb quality of inclusions including spotted gum timber floors, timber plantation shutters and the finished elegant bathrooms which all happen to be ensuites. The kitchen is only 12 months old and is ergonomic and provides a large working area for those who need to get on with their daily work.
TopBraid Ensemble

15 seconds 125/150
Building a SW Application on the Web

Diverse Problems

- Integrating appropriate information
- Presenting usable information
- Linking it all together

Easiest to use an integrated platform

- TopBraid Suite
Technical Topics

- Please chat to me about:
  - Integrating ontologist workbench and server
  - Importance of client side caching
  - Choice of Rich Client Platform framework