BUSINESS RULES IN THE SEMANTIC WEB

are there any, or are they different?

european semantic web conference heracleion 2005 S. spreeuwenberg
### RUMOURS SAY

Reference to taxonomies and ontologies by vendors of mainstream enterprise-application-integration (EAI) solutions are becoming commonplace.

<table>
<thead>
<tr>
<th><strong>O’REILLY xml.com.</strong></th>
<th>The Semantic Web represents a huge potential technology disrupter, enabling new and more flexible approaches to data integration, Web services, and knowledge discovery;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Butler Group</strong></td>
<td><strong>CUTTER CONSORTIUM</strong> We think the Semantic Web has already started; today we may be using 40% of the potential power we could use to improve man-to-machine interaction and 10% in improving machine-to-machine interactions</td>
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<tr>
<td></td>
<td><strong>Butler Group</strong> Business rules technology can enable rapid changes to be made without programming, and as such is likely to deliver longer term ROI, with reduced development and maintenance costs once the initial phase of capturing rules has been completed.</td>
</tr>
</tbody>
</table>
Drs. S. Spreeuwenberg has a background in artificial intelligence and many years experience in business rules modeling and application development were rules play an important role. She is the co-founder and director of LibRT. LibRT helps customers to assess and improve the quality of business rules. We believe that focus on quality is necessary to profit of all promises of the business rules approach.

Silvie is involved in the business rules work group of the OMG working on standardization of business rules and is editor of the European section of the Business Rules Community. LibRT is co-organizer of the European Business Rules Conference and a member of the REWERSE Network of Excellance.

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<table>
<thead>
<tr>
<th>Concept</th>
<th>Concept with definition 'a motorized vehicle' has signifier 'car' and 'automobile' for the English language</th>
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</thead>
<tbody>
<tr>
<td>Fact type 1</td>
<td>A car has wheels</td>
</tr>
<tr>
<td>Fact type 2</td>
<td>A normal car is a category of an automobile where the car has exactly four wheels</td>
</tr>
<tr>
<td>Fact type 3</td>
<td>A car drives with a speed</td>
</tr>
<tr>
<td>Fact</td>
<td>A mercedes is a 'normal car'</td>
</tr>
<tr>
<td>Rule</td>
<td>It is forbidden to drive with a speed greater than 100 km. per hour with a three-wheeled-car</td>
</tr>
</tbody>
</table>
CREATE UNDERSTANDING
artificial intelligence

- knowledge representation
- formal logic
- expert systems

offspring

- product vendors decouple themselves from this ancestor
- positioning in business rules management
- positioning in knowledge management.
COMMON ROOTS

are we on a better way?

- IT-organizations are more mature
  more skills, better infrastructure, finished basic business support
- business rules do not stand on their own
  business rules are positioned in relation to business goals and policies
- there is a need to improve IT performance
  flexibility, agility, time to market, business control, compliance, normalization, re-use
SEMANTIC WEB & BUSINESS RULES

different target audience

business rules

semantic web
DIFFERENT TARGET AUDIENCE

positioning in MDA

Computation Independent Model
business terminology -
no technological specification

Platform Independent Model
technology oriented (e.g. OO)
but vendor/product/platform neutral

Platform Specific Model
particular technology choices
languages, packages, middleware, ...
DIFFERENT TARGET AUDIENCE

positioning in MDA

**business rules**
- independent of implementation in IT systems
- improve human communication
- positioned in CIM
- transformation to several run-time platforms possible

**ontology model**
- used in a run-time environment
- support communication between objects
- run time positioned in PSM
- edit time positioned in PIM
DIFFERENT TARGET AUDIENCE

**tools**

survey among ontology tool builders

- decrease complexity of building an ontology
- support ontology building by domain experts

this sentiment echoes back a few decades to when practitioners were trying to use expert system shells productively

- training in formal logic or computer programming not needed
- support standards (in a standard way)
SEMANTIC WEB & BUSINESS RULES

same goal

business rules

semantic web
SAME GOAL

re-use

ELIGIBILITY ASSESSMENT → PROCESS X → PROCESS Y → PAYMENT

If the applicant is not at least 18 years old, the application must be signed by one of its parents.

If the applicant is not at least 18 years old and the application is signed by one of its parents, the application is considered payable.

The application must be signed by a person that is at least 18 years old.
**SEMANTIC WEB & BUSINESS RULES**

**similar form**

**business rules**
- human readable descriptions to specify meaning

**semantic web**
- machine readable descriptions to specify meaning
business rules

It is forbidden to drive with a speed that is more than 100 km. per hour with a three wheeled car.

semantic web (human readable syntax)

three_wheeled_car (X) ∧ drive(X)
⇒

driving_speed (X) ≤ 100
ontology and rules standards evolution

**semantic web standards**
- follow HTML, XML, RDF evolution
- a lot of variants

**business rules standards**
- follow HTML, XML, XMI evolution
- limited number of initiatives
**Semantic Web & Business Rules**

**Different Expression Power**

**Semantic Web**
- Open world assumption
- Horn clause logic / Description logic

**Business Rules**
- Closed world assumption
- Higher order logic
- Predicate / Deontic logic
DIFFERENT EXPRESSION POWER

higher order

why do business people need higher order?

car is of car model

is designed by person

car is of car model type

is designed by person

**conclusion**

- researchers and practitioners should work more closely together to explore fundamental issues at the level of capturing the semantics of real world domains
- process is already started
  - EBRC05 workshop on rules (speakers from ISO, W3C and OMG) - [www.eurobizrules.org](http://www.eurobizrules.org)
- process will be driven by tool builders
SEMANTIC WEB & BUSINESS RULES

challenges

**business rules**
- should be automated
- natural language
- closed world

**semantic web**
- are executed
- formal language
- open world

mapping
QUESTIONS?

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