SWSI Rules

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SWSL Plan includes large role for Rules

- LP Rules together with Ontologies, for “SCAMP” group of tasks:
  - Trust Policies representation, enforcement: Security, privacy, authorization, access control
  - Contracting: contracts, advertising and some matchmaking, proposals, requests for proposals, some negotiation (modification of proposals)
  - Monitoring: exception handling, compliance, problem resolution, compliance
    - With Trust policies or Contracts
- LP or FOL Rules together with Ontologies for Semantic Interoperability: data mappings, ontology translation
- LP or FOL Rules together with Ontologies, for Process Models
  - OWL-S Preconditions and Effects
  - PSL-style Process Models
Outbrief from SWSL group

at SWSI F2F

May 24, 2004
Deliverable

Single document covering both:

1. OWL-S Profile + Atomic Process + Grounding, enhanced with Rules

2. Process model with concepts from the core of PSL that replaces the OWL-S (composite) Process model

Target date: September 30, 2004
Target place: W3C (e.g., Member Submission)
The Why and How of Near-term Impact in SWS’s

- Policies in Security/Trust, Contracts, Advertising, Monitoring
  - Combine rules + ontologies in LP
  - Extend OWL-S profile

- Verification of process properties, compatibility; and enactment
  - Combine ordering constraints with pre-conditions/effects as in PSL
  - Extend OWL-S grounded atomic processes
  - Longer term: (semi-)automated composition
**SCAMP drill down: Goals of Version 1**

- **Key foci**
  - Policy specification and enforcement
    - Trust: policies for security authorization, access, privacy/confidentiality
    - Contracts: pricing, delivery, refunds, cancellations, non-performance, …
      - Contract agreements, proposals, requests for proposals, advertisements
    - Monitoring: task of enforcing policies (e.g., for trust or contracts), policies to handle exceptions & non-compliance (compare results to promises)
    - Borrow from ebXML, EDI, XACML, P3P, LegalXML,…??
  - Start from spirit and particulars of OWL-S Profile
    - Add more particular “service ontologies”
  - Choosing good rule language
    - RuleML with extensions, e.g., ontology import/incorporation (DLP OWL and later OO with default inheritance), HiLog, and F-Logic syntax.
    - Need a surface syntax
  - Framework for negotiation

- **Primary deliverable:** technical document - proposal & rationale
- **Later deliverable:** illustrative application scenario examples
- **Defer:** Complex discovery/matchmaking
SCAMP drill down, cont’d

- Develop upper and middle ontology in selected areas
  - Borrow from ebXML, EDI, XACML, P3P, LegalXML,…??
- Simple advertising/discovery
  - E.g., based on keywords and simple ontology
  - More complex dynamic discovery not focus of version 1
1. Policies for security and monitoring and contracts would meet immediate needs in WS today
   - Want them checked at run time
   - Ensuring compliance with trust policies has become high-priority in many areas of business today:
     • USA: Sarbanes-Oxley (financial reporting liability), HIPAA (patient records privacy)
     • EU: privacy reg’s
   • Yet to a great extent they can be specified and enforced using a relatively simple and mature technology: LP rules.
     - Most trust policy languages / engines today are based on, or equivalent to, rules (+ DLP-expressible ontologies).
     - Ditto for Web standards for trust policies e.g., XACML, P3P both have (prioritized) rules.
More about Game Plan, cont. ’d

• Have more in the way of formal coordination with W3C and Oasis etc.
  – Liaison members officially in relevant W3C and Oasis etc. working groups:
    • W3C: WSDL, WS Choreo, SWS Interest Group, WS Policy; P3P, Semantic Web activity incl. www-rdf-rules
    • Oasis: WS Security, XACML, Legal XML, ?ebXML,
    • RuleML; ISO Common Logic
    • ?RosettaNet; ? UN CEFACT EDI / UBL
Policies and Compliance in US Financial Industry Today

- Ubiquitous high-stakes Regulatory Compliance requirements
  - Sarbanes Oxley, SEC, HIPAA, etc.
- Internal company policies about access, confidentiality, transactions
  - For security, risk management, business processes, governance
- Complexities guiding who can do what on certain business data
- Often implemented using rule techniques
- Often misunderstood or poorly implemented leading to vulnerabilities
- Typically embedded redundantly in legacy silo applications, requiring high maintenance
- Policy/Rule engines lack interoperability
## Example Financial Authorization Rules

<table>
<thead>
<tr>
<th>Classification</th>
<th>Application</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merchant</td>
<td>Purchase Approval</td>
<td>If credit card has fraud reported on it, or is over limit, do not approve.</td>
</tr>
<tr>
<td>Mutual Funds</td>
<td>Rep trading</td>
<td><em>Blue Sky</em>: State restrictions for rep’s customers.</td>
</tr>
<tr>
<td>Mortgage Company</td>
<td>Credit Application</td>
<td>TRW upon receiving credit application must have a way of securely identifying the request.</td>
</tr>
<tr>
<td>Brokerage</td>
<td>Margin trading</td>
<td>Must compute current balances and margin rules before allowing trade.</td>
</tr>
<tr>
<td>Insurance</td>
<td>File Claims</td>
<td>Policy States and Policy type must match for claims to be processed.</td>
</tr>
<tr>
<td>Bank</td>
<td>Online Banking</td>
<td>User can look at own account.</td>
</tr>
<tr>
<td>All</td>
<td>House holding</td>
<td>For purposes of silo (e.g., statements or discounts), aggregate accounts of all family members.</td>
</tr>
</tbody>
</table>
Advantages of Standardized SW Rules

- Easier Integration: with rest of business policies and applications, business partners, mergers & acquisitions
- Familiarity, training
- Easier to understand and modify by humans
- Quality and Transparency of implementation in enforcement
  - Provable guarantees of behavior of implementation
- Reduced Vendor Lock-in
- Expressive power
  - Principled handling of conflict, negation, priorities
Advantages of SW Rules, cont’d:

Loci of Business Value

- Reduced system dev./maint./training costs
- Better/faster/cheaper policy admin.
- Interoperability, flexibility and re-use benefits
- Greater visibility into enterprise policy implementation => better compliance
- Centralized ownership and improved governance by Senior Management
- Rich, expressive trust management language allows better conflict handling in policy-driven decisions
Policies for Compliance and Trust Mgmt.: Role for Semantic Web Rules

- Trust Policies usually well represented as rules
  - Enforcement of policies via rule inferencing engine
  - E.g., Role-based Access Control
    - This is the most frequent kind of trust policy in practical deployment today.
    - W3C P3P privacy standard, Oasis XACML XML access control emerging standard, ...

- Ditto for Many Business Policies beyond trust arena, too
  - “Gray” areas about whether a policy is about trust vs. not: compliance, regulation, risk management, contracts, governance, pricing, CRM, SCM, etc.
  - Often, authorization/trust policy is really a part of overall contract or business policy, at application-level. Unlike authentication.
  - Valuable to reuse policy infrastructure