

SWSI Rules

Benjamin Grosf

*MIT Sloan School of Management,
<http://ebusiness.mit.edu/bgrosf>*

Presented at DAML PI Mtg., May 25, 2004, New York City

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

Business Value \Rightarrow Strategy

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 CEFAC 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

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

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