Highlights slides (5-10 minute version) of:
E-Services on the New Generation Web:
Automating Business Process Knowledge Management

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Outline of Talk

• Intro: Research on Semantic Web Services (SWS), its Business Uses
  – Rules, contracting, trust, policies
  – Integration, knowledge representation, standards
• Problem: Reusable Knowledge to Describe Services
  – Technique: knowledge representation to standardize on
  – Content investment: how to leverage legacy business process K
• New Technical Approach to represent OO Frameworks using SW
  – Courteous Inheritance: default rules increases reuse in ontologies
• New Strategy: go where the knowledge already is, then work outwards
  – Begin with MIT Process Handbook – open-source version in development
    • Example: process knowledge about selling
  – Future: Transformational wrappers around various legacy OO frameworks
• Roadmapping Market Evolution
  – Early adopters, creators, catalysts
  – Strategic players, forces
Big Questions about the New Generation Web

• What are the critical features/aspects of the new technology?

• What business problems does it help solve?

• What are the likely innovation evolution paths, and associated entrepreneurial opportunities?
Some Answers to: “Why does SWS Matter to Business?”


2. “Business processes require communication between organizations / applications.” - Data and programs cross org./app. boundaries, both intra- and inter- enterprise.

3. “It’s the automated knowledge economy, stupid!” - The world is moving towards a knowledge economy. And it’s moving towards deeper and broader automation of business processes. The first step is automating the use of structured knowledge.
   - Theme: reuse of knowledge across multiple tasks/app’s/org’s
**Problem: Reusable Knowledge to Describe Services**

- Has two aspects:

  1. **Technical/technique problem:** what form of knowledge? I.e., what knowledge representation to standardize on?

  2. **Content investment problem:** how to leverage to accomplish the reuse of legacy business process knowledge?
Opportunity for MIT Process Handbook in SWS

• Need for Shared Web Services / Business Processes Knowledge Bases

• MIT Process Handbook as candidate nucleus for shared business process ontology for SWS
  – 5000+ business processes, + associated class/property concepts, as structured knowledge

• Related: use in particular for E-Contracting
  – Interoperable business objects, business processes
  – Also for policies (e.g., trust), 3rd-party services

• Use SW KR and standards to represent Object-Oriented framework knowledge: class hierarchy, types, generalization-specialization, domain & range, properties/methods’ association with classes
• Surprise: use SW rule language not the main SW ontology language! I.e., use RuleML not OWL.
• Exploit RuleML’s nonmonotonic ability to represent prioritized default reasoning as kind of knowledge representation (KR)
New Technical Approach, continued

• Courteous Inheritance KR is built simply on top of the (Situated) Courteous Logic Programs KR of RuleML
  – A few dozen background axioms. Linear-size reformulation. Inferencing is tractable computationally.
• Particularly: represent PH's structured part
  – a scheme specific to PH’s flavor of OO
• PH becomes a SWS process ontology repository
  – to be combined, fed, used with/by other SWS
• Kill two birds with one stone:
  – form of K that facilitates leveraging of legacy process K content including PH, OO
New Technical Approach, continued more

- Example(s): selling, PO, price, shipping, delivery, payment, lateness.

- For details, see submitted paper “Beyond Monotonic Inheritance: Towards Semantic Web Process Ontologies” on webpage.
  - Example: selling process
Larger Approach: Transformation Wrappers for OO Frameworks

- New Strategy: go where the knowledge already is, then work outwards
- Future: **Transformational wrappers** around various legacy OO frameworks
  - C++
  - Java, C#
  - UML
- Can use XSLT, SW tools, and/or XQuery engines to implement the transformations, guided by SWS ontology standardization practices
Market Evolution: Discussion

Questions

• Existing and prospective early adopters

• Importance of open source content: seems to be an assumption/axiom for many people

• Prospective sources of open source content