Using Semantic Analysis and SOA Convergence for Enrichment of Business Capabilities

Systems implemented over many years typically degenerate into stovepipes because they focus on a particular set of requirements for a particular set of business needs at a particular time. Sometimes these systems are inherited as part of an acquisition and need to be integrated to the rest of the enterprise. This presents tremendous integration challenges due to the existence of different vocabularies for the data that evolve in these isolated domains. With adoption of Service Oriented Architecture (SOA), best practice suggests designing services based on a common controlled vocabulary through the entire enterprise or its part or domain. Traditionally, large efforts were made to create elaborate data models, however due to the complexity of these models, organizational challenges in achieving consensus, and difficulties in enforcing adoption and governance, this is not always achievable.

This is where semantic technologies can complement a SOA service model by creating ontology models that formally capture characteristics and relationships of vocabulary elements into common controlled vocabularies. The net benefit of this approach is that it reduces the need to map and transform data from one format to another.

The same philosophy can be extended to the large amount of unstructured data on the web as well as in the enterprise if knowledge information needs to be extracted with virtually unlimited potential. At the moment, this potential is relatively untapped because it is difficult for machines to process and integrate this information meaningfully. This is where using the semantic web helps address these challenges.

A semantic technology approach can facilitate multilayered application, process, and service interoperability across disparate environments. When combined with Enterprise Service Bus (ESB), it can be a powerful tool to address the challenges described earlier. To date, there has been little production implementation of Semantic Web standards in the ESB arena. However, there are a few vendors who are starting to adopt semantics, ontologies, and RDF to describe the conceptual models implemented by application endpoints, agents, and intermediary nodes within ESB-like middleware.

Dovel Technologies has implemented this solution. To view it in action, please go to www.fdausdaalerts.com. It is single place where we have taken public data published by both the FDA and USDA in free text format and demonstrate how correlations can be drawn across disparate data sources. Using semantic technologies along with service data layer, the data is published on an ESB in the form that allows any interested party to obtain this data by subscribing to the content of interest. One application of such subscription allows to get data and to publish it to GIS map. Another potentially useful business case can be allowing the DoD commissaries to subscribe to the alerts and provide value added services to their business customers.

This presentation provides detailed technical design and explanation of technologies used for implementing suggested solution along with live demonstration.