Open SEAS: A Framework to Transition to a Semantic Enterprise

by Mike Bergman - Monday, March 01, 2010

http://www.mkbergman.com/868/open-seas-a-framework-to-transition-to-a-semantic-enterprise/

New Release Builds on the MIKE2.0 Methodology and Deliverables


Today, Structured Dynamics is pleased to release **Open SEAS**, its methodology for *Semantic Enterprise Adoption and Solutions*. At the same time, we are donating the framework to the open source MIKE2.0 *Method for an Integrated Knowledge Environment* project.

Open SEAS provides a framework for the enterprise to establish a coherent, consistent and interoperable layer across its information assets. It is compliant with the MIKE2.0 Semantic Enterprise Solution Offering.

Open SEAS has been developed for enterprises desiring to initiate or extend their involvement with semantic technologies. It is inherently incremental, low-cost and low-risk.

Donation and Relation to MIKE2.0

Concurrent with this release, Structured Dynamics is also donating the methodology and all of its related intellectual assets to the MIKE2.0 project. Under Creative Commons license and MIKE2.0's content governance policies, the community's current 2000+ members are now free to expand and use the **Open SEAS** methodology in any manner they see fit.
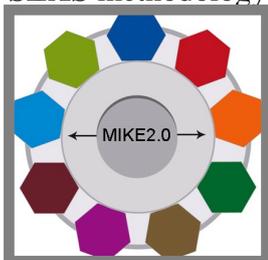
Last week, I began to introduce MIKE2.0 and its methodology to the readers of this blog. MIKE2.0

provides a complete delivery environment and methodology for information management projects in the enterprise. Solutions -- from the specific to the composite -- are described and packaged with respect to plans, management communications, products (open source and proprietary), activities, benchmarks, and deliverables. Delivery is accomplished over multiple increments, split into five phases from definition and planning to deployment. The assets associated with this framework first are based on templates and guidelines that can be applied to any information management area. The framework allows for multiple projects to be combined and inter-related, all under a common methodology. More information and a good entry point is provided on the What is MIKE2.0? page on the project's main Web site.

MIKE2.0 presently has some 800 resources across about 40 solution areas. With Structured Dynamics' donation, there are now about 40 resources related to the semantic enterprise, many of them major, accompanied by many images and figures. This contribution makes the Semantic Enterprise Solution Offering instantly one of the more complete within MIKE2.0. As noted below, this contribution is also just a beginning of our commitment.

Basic Overview of Open SEAS

The **Open SEAS** framework is Structured Dynamics' specific implementation framework for MIKE2.0's Semantic Enterprise Solution Offering. This section overviews some of **Open SEAS**' key facets.

A Grounding in the Open World Approach

Many enterprise information systems, particularly relational ones, embody a closed world assumption that holds that any statement that is not known to be true is false. This premise works well where there is complete coverage of specific items, such as the enumeration of all customers or all products.

Yet, in most areas of the real (”open”) world there is no guarantee or likelihood of complete coverage. Under an open world assumption the lack of a given assertion or fact does not imply whether that possible assertion is true or false: it simply is not known. An open world assumption is one of the key factors that defines the open Semantic Enterprise Offering and enables it to be deployed incrementally. It is also the basis for enabling linkage to external (often incomplete) datasets.
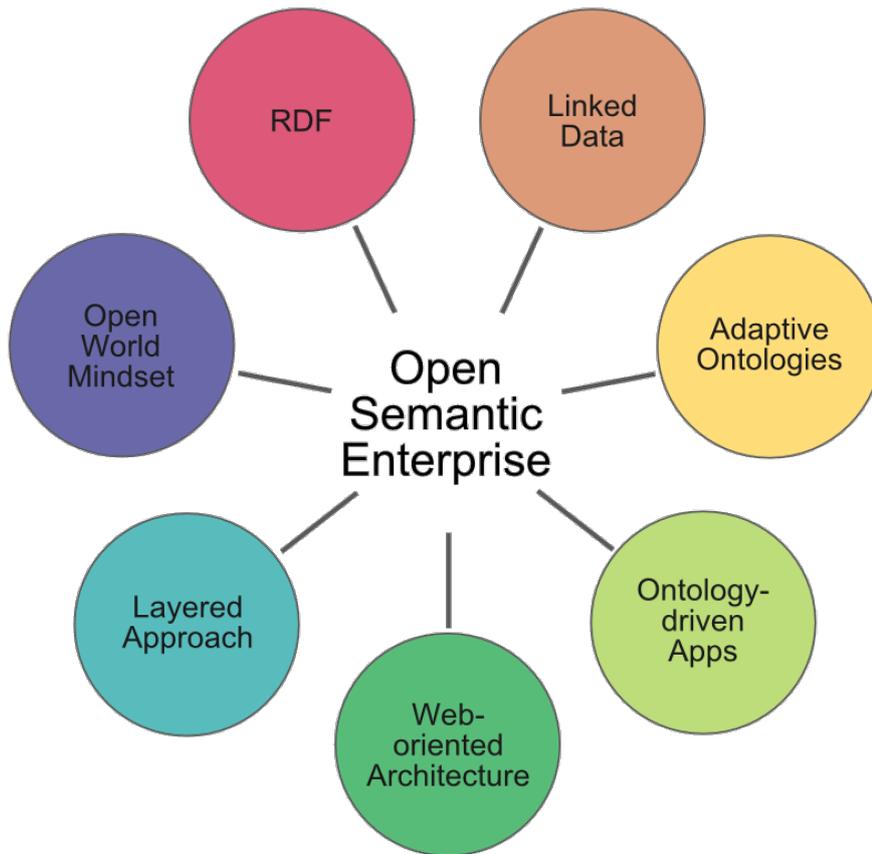
Fortunately, there is no requirement for enterprises to make some philosophical commitment to either closed- or open-world systems or reasoning. It is perfectly acceptable to combine traditional closed-world relational systems with open-world reasoning. It is also not necessary to make any choices or trade-offs about using public *v.* private data or combinations thereof. All combinations are acceptable when the basis for integration is an open-world one.

Open SEAS is grounded in this "open" style. It can be employed in virtually any enterprise circumstance and at any scope, and expanded in a similar way as budget and needs allow.

Other Basic Pillars to the Framework

Open SEAS is based on seven pillars, which themselves inform the basis for the MIKE2.0 Guiding Principles for the Open Semantic Enterprise. These principles cover data model, architecture, deployment practices and approach for how an enterprise can begin and then extend its use of semantics for information interoperability.

Important aspects are linked data or Web-oriented architecture, but it is really the unique combination of open-world approach and the RDF data model and its semantic power that provide the distinctive differences for **Open SEAS**. An exciting prospect -- but still in its early stages of discovery and implementation -- is the role of adaptive ontologies to power ontology-driven applications. These prospects, if fully realized, could totally remake how knowledge workers interact and specify the applications that manage their information environment.

Embracing the Layered Semantic Enterprise Architecture

Open SEAS also fully embraces the Layered Semantic Enterprise Architecture of MIKE2.0's Semantic Enterprise Offering. This architecture acts as a subsequent set of functions or middleware with respect to the MIKE2.0's standard SAFE Architecture. Most of the existing SAFE architecture resides in the *Existing Assets* layer. The specific aspects of Open SEAS resides in the layers above, namely *Access/Conversion*, *Ontologies* and the *Applications Layers*.

Using (Mostly) Open Source to Fill Gaps in the Technology Stack

Stitching together this interoperability layer above existing information and infrastructure assets requires many diverse tools and products, and there still are gaps. The layer figure below shows the semantic enterprise architecture overlaid with some representative open source projects and tools that plug some of those gaps.

Open SEAS also maintains a comprehensive roster of open source and proprietary tools in all aspects of semantic technology, ranging from data storage and converters, to Web services and middleware, and then to ultimate user applications. A database of nearly 1,000 tools in all areas is maintained for potential applicability to the methodology.
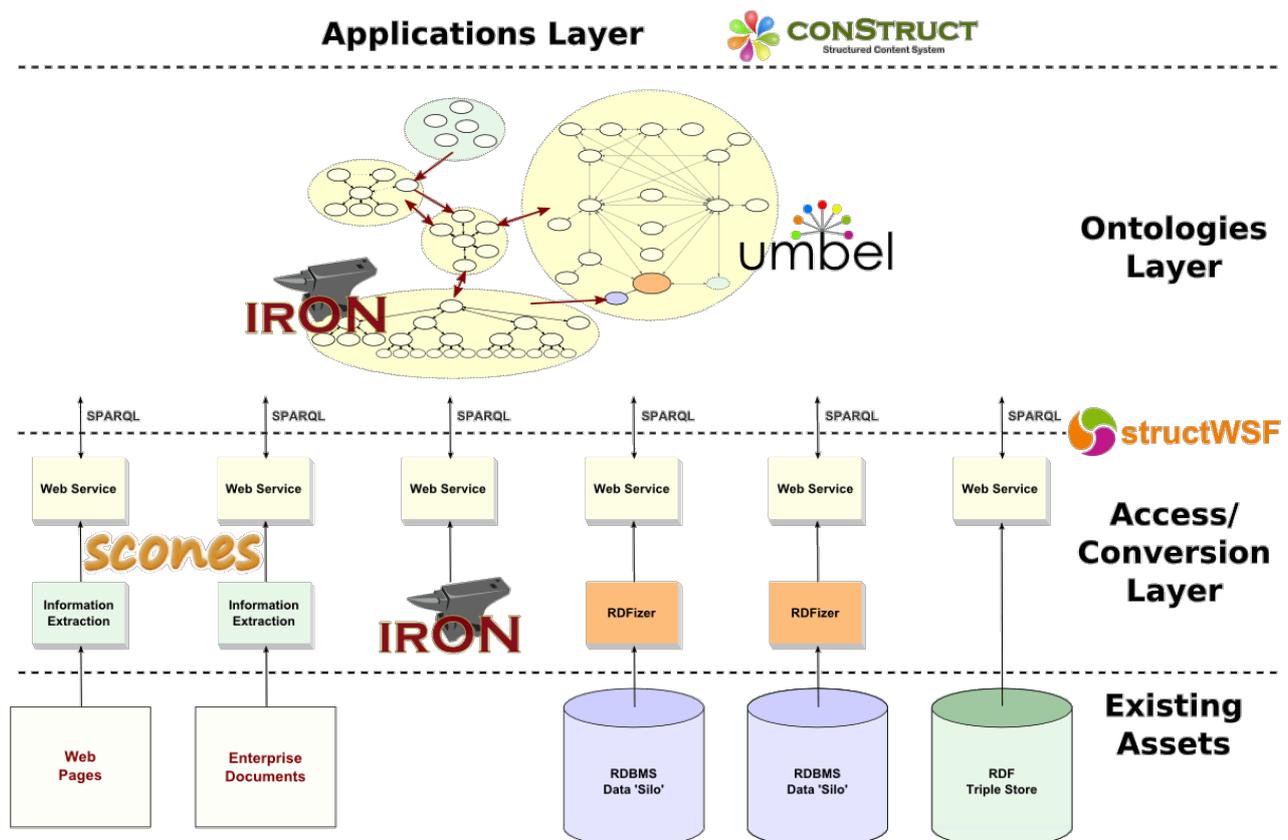
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Quick, Adaptive, Agile Increments

The inherently incremental nature of the **Open SEAS** framework encourages experimentation, affordable deployments, and experience gathering. Because the systems and deployments put into place with this framework are based on the open world approach and use the extensible RDF data model, expansions in scope, sophistication or domain can be incorporated at any time without adverse effects on existing assets or systems or prior **Open SEAS** deployments.

Quick and (virtually) risk-free increments means that adopting semantic approaches in the enterprise can be accelerated (or not) based on empirical benefits and available budgets.

An Emphasis on Learning

The **Open SEAS** framework is built on a solid foundation, but it also one that is incomplete. Deployments of semantic technologies and approaches are still quite early in the enterprise, whether measured in numbers, scope or depth. In order for the framework -- and the practice of semantic adoption in general -- to continue to expand and be relevant in the enterprise, active learning and documentation is essential. One of the reasons for the affiliation of **Open SEAS** with MIKE2.0 is to leverage these strong roots in methodological learning.

Where Do We Go From Here?

The nature of **Open SEAS** and its parent Semantic Enterprise Solution Offering touches most offerings within the MIKE2.0 framework. There is much to be done to integrate the semantic enterprise perspective into these other possibilities, plus much that needs to be learned and documented for the offering itself. The concept of the semantic enterprise, after all, is relatively new with few prominent case studies.

As the offering points out, there are some dozens of addition necessary resources that are available and ready to be packaged and moved into the MIKE2.0 framework. These efforts are a priority, and will continue over the coming weeks.

But, more importantly, beyond that, the experience and practitioner base needs to grow. Much is unknown regarding key aspects of the offering:

- What are the priority application areas which promise the greatest return on investment?
- What are best practices for adoption and technologies across the entire semantic enterprise stack?
- Many tools and techniques are still legacies and outgrowths of the research and academic communities. How can these be adopted and modified to meet enterprise standards and expectations?
- What are the "best" ontology and vocabulary building blocks upon which to model and help frame the enterprise's interoperability needs?
- What are the most cost-effective strategies for leveraging existing information and infrastructure assets, while transitioning away from them where appropriate?

Despite these questions, emergence is the way complex systems arise out of a multiple of relatively simple interactions, exhibiting new and unforeseen properties in the process. RDF is an emergent model. It begins as simple "fact" statements of triples, that may then be combined and expanded into ever-more complex structures and stories. As an internal, canonical data model, RDF has advantages for information federation and development over any other approach. It can represent, describe, combine, extend and adapt data and their organizational schema flexibly and at will. Applications built upon RDF can explore and analyze in ways not easily available with other models.

Combined with an open-world approach, new information can be brought in and incorporated to the framework step-by-step. Perhaps the greatest promise in an ongoing transition to become a semantic enterprise is how an inherently incremental and building-block approach might alter prior practices and risks across the entire information management spectrum.

We invite you to join us and to contribute to this effort. I encourage you to join MIKE2.0 if you have not already done so, and check out announcements on this blog for ongoing developments.

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