Ontology Sumit 2011 Track 3 Value Metrics, Value Models and Value Proposition

Hyperlink	Case Study (CS) or Use-Case (UC) Name ODF Category	Problem Description	Solution or Proposed Solution	Solution Success Metrics	Synthesis: ValueModel & Value Proposition
Sallie Mae	Integration of Multiple Systems from Multiple Companies (CS) **Integration**	• Multiple systems and sources of knowledge in different parts of the enterprise, owned by different communities of practice. • Gaining time and commitment from subject matter experts to ensure completeness of the model. • Different groups see different shades of meaning and application for similar terms, in different contexts. • Needs a unifying approach supporting local views	• Facilitation of knowledge gathering using ontology engineering methods. • Formal ontology notation for single ontology, while presenting views and facets of this to subject matter experts. • Curation of the ontology .	• Best use of subject matter experts' time and resources • Curatorship of Enterprise Semantic Architect ensures quality, consistency and completeness of the ontology • Collaboration in industry standardization efforts (e.g. EDM Council), via common semantics) • Ensures that the knowledge captured at Sallie Mae is taken forward to industry-wide standardization efforts which we can then use	**Knowledge Capture**

EDM Council	Standardization of Terms and Definitions for Financial Services (CS)	• Industry standardization of terms and definitions • Integration of multiple sources and feeds into disparate database structures • Even a small financial firm has 50 ¨C 100 separate systems each with its own data model • Tried: XML (MDDL); UML data models (ISO 20022) • Industry response: ¡°We need semantics	• Semantic (conceptual) model of terms, definitions • OWL/ODM metamodel with UML tool • Adapted for readability • Present draft to business SMEs for input • Explained format to SMEs as set theory • Reviewed via webcast, direct input to mode	• SMEs understood the format and contributed new knowledge on e.g. exotic structured finance • Answered industry call for standardization of meaning • Industry applications including mapping, master data models, messaging • Atomic building blocks means flexibility in defining novel financial products • Traction from regulators, for tagging of documents at source, reporting, systemic risk oversight	**Knowledge Capture leading to new products**
Sandpiper	Semantic Tech in Rental Product Marketing (CS)	• Help consumers find offerings • Help consumers select offerings	• Semantic aided search • Semantic aided SEO • Rule-based product selection	• Current project is a pilot - stay tuned • Progress in discussions with Search Engine Providers	**Customer Satisfaction**

Trigent Software	Ontology and Rules provide rapid Natural Language Understanding (CS)	• Parsing natural language is complex • Identify specific text within a large set of a documents that contains the same or similar meaning as a given natural language description of interest. • How do we use and grow Ontologies? • How do we map Natural Language to Ontology?	• Given some Natural Language text (one or more sentences or questions), parse and map the various valid constructs to semantic items in an Ontology (we call this mapping the'meaning' of the text) • Generate (non-statistical) 'reader rules' to recognize all combinatorics of language constructs that represent the mapping as having an equivalent 'meaning map'. • Apply the high speed 'reader rules' to a large corpus of text to identify possible meaning matches. • Verify text identified as having the same 'meaning map'. • Generate a report showing the information found and how it relates to the original text along with hyperlinks.	• Changing the Dictionary has immediate effect. • Changing the Ontology has immediate effect. • Ontology grows with use. • Ontology curation is widely leveraged. • Sifts through a large amount of text to find and return just what you are looking for without the need to read the individual files yourself.	

Trigent Software	Ontology and Rules provide Mass Customization of Vehicles (CS)	• Mass Customization of Trucks and Busses. o Customers describe the desired vehicle by selecting the base model and a wide range of attributes (e.g. vehicle length) and features (e.g. number of exits) • Combinatorics of parts and assemblies o More than 480,000 combinations of parts, assemblies, and locations for a given vehicle ¨C Each vehicle off the assembly line can be one-ofa- kind. • Given an order that may never have been previously built, identify the best set of parts, assemblies and component locations for the vehicle (the Vehicle Configuration) • Different parts and assemblies will be available at different plants at different times. So, need to select a configuration that can be built at a plant prior to the promised delivery date.	• Solution Ontology o Ontology defined both bottom-up and top-down. • Solution Rules Engine. • Domain-specific UI o Engineers identify specific combinations in terms of both abstractions and instances o Rules are generated; They are not directly written by the engineers o Engineers work only in terms of their domain Ontolog. • Employ a fast Rules Engine o Over 600K rules with avg. 24 condition elements o Truck configured in under 10 seconds on my laptop o Worlds fastest most scalable rules engine ¨C recently patented (2008).	• Ontology allows quick and reliable specification of new variations. • Rules are specified in terms of the Ontology (incl. features and attributes). • Changes in Ontology and Changes in Rules can take effect immediately (or at designated times and plants. o Allows flexible change in suppliers and parts. o New models and variations reuse previously proven engineering work.	**Business Agility**

Innovative Query	Content Intelligence and Smart Applications (CS)	Content Intelligence: the ability to generate insights to improve business outcomes with content.	IQExplore * Semantic Analysis with Natural Language Processing.	• Improved search, discovery and collaboration. • Pushing the right information to the right users to do their job . • Improved information and content publishing. • Mashups of and with content for new classes of BI and publishing applications. • Unlocking information for actionable insights.	**Business Efficiency**
Innovative Query	Semantic BI for Blogging (CS)	• Utilize data obtained from news, social media, and internal sources. • Optimize and personalize search. • Work with open sources. • Respond quickly to chatter.	• NLP and Semantic index for unstructured sources. • Custom scoring/alerts for results. • Authoring tools to expedite content creation and analysis tasks.	• Save time on analysis of conten. • More complete intel from text sources. • Quicker and more precise responses to social media. • Better and faster content creation.	**Operating Efficiency; Customer Satifaction**

Top Quadrant	Valuing the Harvest from using Ontologies (CS)	Complex information spaces o Need to turn these into "Layered information spaces" that are fit for purpose. o Filter to context.	• Enterprise Vocabulary Management. o Flexible solutions for managing business vocabularies in support of content delivery, search, navigation, data integration and disambiguation of terms. • Semantic-XML Message Builder Workbench o Enables XML-based data exchanges that are specific to the local context while remaining compliant with industry and enterprise standard. • Data Integration) o Federated access to disparate information sources. • Enterprise Architecture o Solutions for IT governance and management.	• Canonical data - Subject-Predicate-Object Triples. • Identifiers - Composition Construct for Aggregation. • Schemas are also expressed in Triples and can be queried using same query language - SPARQL. • Evolvability¨Cschemas, vocabs and datasets can readily evolve.	

Model Driven Solutions	Architectures and Ontologies for Business Value (CS)	Fragmented architecture domains: • Enterprise Architecture. • Business Intelligence. • Business Process, etc.	• Requirements, processes & services are less often captured as ontologies • Yet the ontology of a domain must include these viewpoints • Better support for other viewpoints with architecturally focused ontologies would provide increased value • Links between architectural an ontological tools provides a bridge between these related approaches	• Architectures and ontologies are mutually supportive • Ontological precision and the ability to federate ontologies brings value to architecture • Architectural tools can provide a more friendly way to express ontological information to stakeholders) • Automating parts of systems from models and ontologies using MDA (model driven architecture) provides the much of the value without runtime overhead • The strategic opportunity is to bring all of this information into focus for the enterprise ¨C we are only starting to do so.	**Business IT Effeciency**
ZAgile	Model-driven Framework for Process Deployment, eXtreme Traceability (CS)	• Project Mgmt is Costly (2OXK) • Siloed Tools (2OXL) • Distributed Environment (2OXM) • Lack of Formal Processes (2OXN) • Lack of Traceability (2OXO)	• Integration of People, Tools and Processes. • Application Integration Platform & Connectors. • Methodology and Process Modeling. • Integrated B. • Model-driven Architecture.	• Reduced Costs and Increased Visibility. • Effective Collaboration. • Efficient Project Tracking. • Rapid Knowledge Access.	

Semantic Arts	Applying Semantics to Enterprise Systems - Proctor and Gamble Case Study (CS)	• Large consumer products company. • Looking for ways to integrate research findings across disciplines. • Over 10,000 researchers in nearly 100 disciplines. • Each discipline has its own language. • Traditional key word search not useful when searching across domains. • Problem compounded by departure of many key researchers (retirement, re-organization, etc.).	• Enterprise Ontology for the R&D domain. • Interviews with retiring researchers. • Re-use of terms from GIST upper ontology. • Semantic Wiki built based on ontology. • Two additional domains have been modeled (feminine care and baby care) and both reinforce the original abstractions. • Additional domains planned for this year.	• Of the nearly 600 classes in the R&D ontology, only 2 were not derived from gist: o Brand o Invention. • Most R&D data is findable without needing to know the specialized dialect of each subdomain.	**Knowledge Capture; Foster Enterprise/Cross-Business Collaboration leading to new products**
AmDocs	Ontologies and CRM for Telecoms (CS)	Customer Relationship Management. • Massive scale. • Inferencing requirements. • Structured and unstructured data. • Past, present and future views.)	Built a "Guided Interaction Advisor: * Pre-built ontology and rule set.	• Eliminates system and agent diagnosis time. • Provides consistent and efficient call handling. • Increases agent and customer satisfaction.) • Anticipated benefits based on 100K actual accounts assessment. o AHT reduction of 10-15.	**Operating Efficiency; Customer Satifaction**

Link to Use-Case	2006CRM-TopTierIT-ProviderFor-AutomativeAftermarketRetailer (UC) **Integration**	Eroding Customer Loyalty & Aging Technology requires Retailer to Improve Customer Shopping Experience	"Open Standards" (EDI-SQL-based RDBMS) and up-to-date (J2EE-based Platform) "Flexible, Web-based" IT system used for company-wide "Integration Framework."	Quantitative Metrics: 3-year Conventionally Measured ROI Faster Checkout measured Reduced costs cited 12-month Implementation Qualitative Metric: Improved Customer Loyalty	

Link to Use-Case	Digital Music Archive (DMA) for the Norwegian National Broadcaster (NRK) (UC)	Public broadcasters have large archives ranging back 60+ years including sound assets on bakelite, vinyl and wax. Some older assets show remarkable longevity, but modern storage formats like digital video tape, certain CDs, tapes, etc are not as robust. At NRK many tapes recorded in the late 80s and early 90s could be recovered within 5 years without immediate action tor preserve these assets for the future	Model the Repository using semantic web technology (XML-based business rules), including transcription of metadata from well-structured, high-quality paper-based non-relational analog system to digital, semantically aligned, relational database system while completely revamping entire radio and television broadcasting production process and remastering library of recordings. An ontology-based solution was necessary, albeit couched in Semantic Web terminology. However, with an estimated 150+ million triplestore anticipated, a semantically-aligned RDBM was implemented to scale up to a Semantic Web based publication layer for the user interface.	It continued to be tested to evaluate scalability of available systems as of 2007. Specific tests and results were not given. Success is measured against expected benefits: * enhanced (improved) archive access * discovery of and navigation to hidden facts associated by metadata previously unavailable without object-based technology * efficient, multi-channel archive access with automated ordering and production flow also previously unavailable * enhanced (improved) metadata representation, including multiple file formats (including multimedia, images, interviews, links, etc) * ease of integration across multiple archives and resources in future.	

Link to Use-Case	Suppliers' Benefit from IT Use in Supply Chain Relationships (UC) **Decision Support**	Supply chain management systems (SCMS) championed by network leaders in their supplier networks are now ubiquitous (2004). Demonstrating the benefit to the supplier needs to be established. Data from 131 suppliers using an SCMS implemented by one large retailer support hypotheses that relationship-specific intangible investments play a mediating role linking SCMS use to benefits. The results support the vendors-to-partners thesis that IT deployments in supply chains lead to closer buyer-supplier relationships.	This Use-Case comes from 2004 so that needs to be understood.The solution examines and depends on the "intangible" value of exploitation and exploration by suppliers in the Integrated IT supply-chain management relationship. An Ontology-Based Solution was called for in this Use-Case, but this is not an endorsement of OWL at large. The reason why is because the value of semantic consistency which is needed for any solution to this problem topic is only now becoming more or less widely accepted. In the supply chain scenario, it is essential that buyer and seller use the same well-defined and understood terminology. Understanding the "intangible" values in exploitation and exploration is the solution proposed through the use of an integrated IT from a top tier vendor.	This Use-Case was chosen in part because it is available online http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.90.5279&rep=rep1&type=pdf in order to allow us to look at how Relationship-Specific Intangible Assets are measured in fairly complete detail.	

Link to Use-Case	Resource List Management (RLM) (UC) **Knowledge Management**	Resource Lists are collections of text books, journal articles, and other content defined by instructors for students. Once, these were provided as paper handout lists requiring students to visit various suppliers for the resources. Now, these materials are available over the Web, and in an e-delivery model.This move to electronic resources in itself has improved the access landscape somewhat. However, as an institution shifts subscription agents, the landscape for access rights becomes complex and changes frequently. Link resolver solutions go some way to solving these issues, but are potentially confusing.In addition, the interoperability of data between publishing platforms, the University library catalogue, the University Virtual Learning Environment (VLE) and RLM tools themselves has been poor.	As well as re-using existing ontologies, Provider developed and published two new ontologiesn and a web-based delivery system as part of the project. The Resource List ontology [1] underpinned the semantics of the relationships between resources and intended uses. The Academic Institution Internal Structure ontology (AIISO) described the courses, modules, departments and schools that make up an institution, which was required to enable instructors to link lists to the relevant module or course, to enable students to find lists.	This example is characterized most by the lack of metrics, except what one can infer from the fact that the system was launched at the University of Plymouth, one of the existing focus group partners, in September 2008, initially with just 1000 students. Throughout the autumn semester, Plymouth increased adoption of the system with the aim of giving access to all 22000 students in early 2009. However, we have no data on the cost, nor metrics on the effectiveness, though there is a bulleted list of "Benefits."	

Link to Use-Case	Supply Chain Quality of Service (QoS) (UC) **Knowledge Management** was cited in 2004, but **Decision Support** is appropriate, too..	Retailer must optimize its supply chain on the basis of timely supplier quotes via web-service based on its quality of service criteria. Selection criteria for supply chain decisions are needed for the dynamic composition of late-binding Semantic Web Services. A key criterion is quality of service (QoS). Traditionally, supply chains are static with close collaborations between suppliers and retailers. Recently, exchanges and auctions have added dynamism to these chains. Web services allow the creation of dynamic supply chains. The high cost of integrating retailer's forecasting software with supply chain management is a hurdle, but web services combined with semantic technologies offers a less costly solution. The web service to gather quotes from a number of suppliers with near real-time acquisition of domain constraints, behavioral signatures, and Quality of Service (QoS) parameters. Hence the need for dynamic composition of semantic web services.	The proposed solution requires the use of QoS in conjunction with semantics for creating and optimizing dynamic, realtime business intelligence processes. Domain specific ontologies are crucial for agreement between retailers and suppliers about domain specific parameters. This use case uses ontologies and semantic metadata for representation and automated discovery of candidate services. This is necessary to provide service selection criteria to use for decision making from amongst the group of suppliers a retailer may have for a given manufactured part or raw material. A generic QoS ontology (currently a prototype is under development in the METEOR-S project http://lsdis.cs.uga.edu/proj/meteor/) is needed. (This has undergone further work from the point it was mentioned in this Use-Case from 2004. The semantic consistency of BPEL4WS is assumed.	QoS criteria can either be generic or domain specific. Generic QoS metrics, a standard component of these metrics involves time, cost and reliability. There is a need for a well accepted ontology for the generic QoS criteria for candidate suppliers..Specific criteria relevant to service selection are part or material delivery time and part- or material-specific details like reliability of the part or purity of material. These must fulfill the requirements of the Manufacturer. Specifically, Web Service QoS metrics of delay, jitter, packet loss rate, and availability were cited. Measurement was further defined as Constraint Analysis. This leads to a deduction that mechanical performance of a web service that otherwise met the criterion of supplying up to date supplier quote was the main metric to be evaluated.	