Agenda

• Data Management in Context
  – European Stick Figure Video

• Why FIBO is important to the Financial Industry

• My own due diligence on EDMC FIBO
  – Report to the EDMC BoD

• Practically, how will FIBO work

• Demonstration later by David Newman
  – Live demonstration of the current richness of the first FIBO Operational Ontology
"We shouldn't be thinking of regulation as a burden. We should be thinking of it as good business," said Lee Fulmer, managing director for cash management at J.P. Morgan. "The question is how do we give answers to regulators in a useful form that is also useful to us."

“The need to create useful data rather than just lots of data comes as large global institutions face expenditures ranging from $150 million to $350 million each to comply with new post-credit crisis regulatory requirements in the United States, Europe and elsewhere. That is "significantly larger" than the level of expenditures required previously for complying with Sarbanes-Oxley Act, Markets in Financial Instruments Directive and Basel II requirements, from before the crisis”, said Javier Perez-Tasso, head of marketing at SWIFT.
The Need for a Common Vocabulary

“Now! That should clear up a few things around here!”
Semantic Web: Heading, Altitude and Airspeed

(near) Exponential connections ($n^2 - n$)

(near) Linear connections ($2n-1$)

BIG DATA?

I want what I want,
I want what I need,
I want to know it is right,
I want it when I need it.

For the data - SAP says each point to point interface costs $300,000 to build and maintain. Semantic Web Technology reduces the number of connections by orders of magnitude!

Force Directed Graph
Semantic Web Technology

Shift to Connected Intelligence

Data Silo Era
- Closed Proprietary & Hard Wired
- Data Trapped in Relational Databases
- High Price to Extract Interoperability
- Software Specialists Build, Modify, Update
- Complexity Drives Costs & Time Higher

Connected Intelligence Era
- Open for Interoperability
- Data Intelligently Managed in Semantic Databases
- Built for Interoperability and Collaboration
- Business Analysts Build, Modify, Update
- Complexity Growth Managed. Period.

For the Software – HP says, “Industry figures & case studies show between 40% to 80% reduction in effort and time”!
My own due diligence on EDMC FIBO

Report to the EDMC BoD

• Is FIBO as important as staff indicates?

• Is the Council doing the right things with FIBO (what needs to be modified)?

• What areas are most important for the Council to manage (in what order and based on what measurement criteria)?
  – The functionality of the FIBO suite of standards including tools for development, expression and maintenance
  – The analytical use cases and the impact of FIBO on regulatory objectives
  – The research opportunity and FIBO’s relationship to the representation of knowledge

• What are the components of the strategic pathway for FIBO (from the perspective of priorities, milestones, obstacles and resources)?

Dennis E. Wisnosky is the former Chief Architect and Chief Technical Officer in the US Department of Defense Office of the Secretary of Defense. Dennis has over 25 years of experience in manufacturing, IT, engineering and enterprise architecture. The Council has engaged Dennis to evaluate FIBO and provide strategy and operational advice on the development and implementation pathway for the standard.
Questions I Asked

• How long have you been involved with the EDM Council?

• Does your organization have an Enterprise Architecture?

• Does your organization have a Semantic Technology and/or FIBO adoption plan? If yes, please describe. How important is FIBO to this plan?

• What should be the immediate focus of FIBO?

• How should FIBO be governed and maintained?

• What is the importance of the Conceptual Ontology Model?

• What is the importance of the Operational Ontology Model?

• Is it reasonable for regulators to prescribe FIBO, or parts of FIBO?

• How do you interpret Section 719(b) of the Dodd-Frank Wall Street Reform Act?

• CFTC’s regulatory 17 CFR Part45 Swap Data is quite specific. Is it possible to make an OWL model of some of these rules? If yes, what percent?

• What is the role of standards such as FpML, FIX, XBRL, SWIFT, OFSC, FSDM, BIAN, ISO20022, MISMO more

• What component of FIBO would help your organization the most?

• What are the research questions or queries that FIBO should help you to answer?

• What are the top 3 regulators and why?

• What are the top 3 vendors and why?

4/2/2013
Some of What I have Learned

“Quotes”

- A new vocabulary (i.e. the impact of global systemically important banks (G-SIBs))
- Reduce the variety of data demands from the regulators (alignment of reporting requirements and re-use of data to reduce reporting burdens)
- Get to consensus on fundamental concepts
- The foundational body of knowledge/research in this industry is missing.
- Regulators don’t know the impact of what they are asking
- Material weakness is that each unit in a financial institution has its own way of collecting data
- Desks are not intended to cooperate (one trading desk loss is another one’s gain). So the discombobulated and disconnected data is now further fragmented at the regulatory level
- Make business process changes such as “all swaps go through a central counterparty”
- Risk management is not a revenue generating function so the tendency is to under invest. Data gets ahead of the ability to manage it
- Existing standards bodies focus on the transmission mechanism (the envelope) not on the content. As a result, many ‘envelopes’ contain the same content and this costs money and leads to analytical mistakes.
- We are perhaps the last industry without a common vocabulary and body of best practices in place at the operational level.
- FIBO could be the unifier that help us make sense out of our data

Reduce Cost/Improve Profitability
Manage Risk

4/2/2013
“Better theories can always help, but the main obstacle to better assessments of systemic risk is the data.”

- Nomura Holdings

“The financial crisis that began in 2007 revealed that many banks, including global systemically important banks (G-SIBs), were unable to aggregate risk exposures and identify concentrations fully, quickly and accurately.”

- Bank for International Settlements, Principles for Effective Risk Data Aggregation and Risk Reporting 2013

A bank should be able to capture and aggregate all material risk data across the banking group. Data should be available by business line, legal entity, asset type, industry, region and other groupings, as relevant for the risk in question, that permit identifying and reporting risk exposures, concentrations and emerging risks.

A bank should establish integrated data taxonomies and architecture across the banking group, which includes information on the characteristics of the data (metadata), as well as use of single identifiers and/or unified naming conventions for data including legal entities, counterparties, customers and accounts.
Questions Answered

1. Is FIBO as important as we think it is?

– While there are a variety of understandings of the technology, with regard to ...

• Risk: the work of the EDMC in developing and promoting FIBO is regarded as essential for compliance with the new reality of Financial Market Regulation.

• Reward: FIBO will lower the cost of internal data management

YES!
Questions Answered

2. *Is the Council doing the right things with FIBO?*

In general, **Yes!**

- Simplify the message
- Publish long range plan with short term deliverables
- Publish FIBO Version 1 as a ratified standard this year
- Demonstrate FIBO in 3 practical scenarios to prove usefulness and to establish a repeatable methodology

4/2/2013
Questions Answered

3. What areas are the most important for us to manage (in what order and how will be measure success)?

The most important activity is the standard and making it functional for operational usage

- FIBO will be a family of standards
- FIBO will never be ‘finished’
- Consensus that FIBO Version 1.0 is the standard for Business Entities (FIBO-BE)
- Focus on FIBO-BE integrated with an initial product type (i.e. a swap, debt or loan) as an operational use case
- Publish V 1.0 and the standard FIBO methodology so that financial institutions have guidance on how to extend FIBO into their internal production environments
The second critical component is to align the regulatory analytical use case for semantic processing with FIBO

- There is no ‘one size fits all’ as to what is important to the regulators, but uncertainty is the sweet spot for the semantic approach to data management

- Pick an analytical use case that is very important to the most cooperative regulators (i.e. derivatives transparency and the conclusions of DFA Title VII Section 719(b) or financial stability and the focus of DFA Title I)
3. **Areas of importance (continued)**

The third critical component relates to the research opportunity and the future of knowledge representation

Perhaps most surprising to me is that unlike virtually all other domains critical to the nation’s economy and well-being (i.e., healthcare, energy, manufacturing), there is practically no government research funding or direction in the financial domain—there should be a law covering this fundamental gap—Bring research universities into the EDMC ecosystem—Establish a research consortium to develop the research agenda (in cooperation with the FFRDC network)—Promote the agenda to governmental entities such as NIST, NSF, FFRDC’s and the likely research foundations (Sloan, Mellon, Glaser)

**NEWS FLASH! EDMC is holding a FIBO Technology Workshop with SemTechBiz on June 4-5. This will be by invitation only.**
Questions Answered

4. What does the strategic pathway forward look like in terms of timing, priorities, obstacles and resources

– Technical Requirements (over the next 12 months):
  - FIBO-BE standard (business conceptual ontology)
  - Initial product ontology (to support the regulatory POC’s)
  - Standard FIBO methodology (FIBO Foundations)
  - FIBO strategic roadmap
  - Documentation of the research agenda

– Resource Requirements:
  - Expand the spectrum of volunteers to include the universities (Stanford, RPI, Stevens, MIT, Berkley, Maryland, etc.)
  - Extend the “skin-in-the-game” commitment from among the membership
  - Continue the OMG relationship and cultivate W3C (engagement of the semantics community)
  - Establish one or more rotating “fellows” (positions paid for by the providing organization)
  - Obtain grant funding (or payment-in-kind) as a first step to government-funded R&D

– Obstacles
  - New leaders in the regulatory community (politics and priorities)
  - Alignment among the three constituencies in most financial institutions (CTO, CIO, CRO)
  - Buy in from tools vendors on the importance of open standards and open source
  - Maintaining focus with an all volunteer work force
Practically, how will FIBO work?
**Common Vocabulary in Action**

**DBpedia (Wikipedia) Dataset**
- DoDAF Wizdom
  - hasTitle
  - writtenBy
- Dennis Wisnosky
  - hasName
  - university
    - hasName
  - California University of Pennsylvania
  - graduatedFrom
  - University of Pittsburgh
- University of Dayton

**DoD HR Dataset**
- Dennis Wisnosky
  - hasName
  - 19XX
  - yearOfBirth
  - bornIn
    - Washington
  - locatedIn
    - Pennsylvania

**Wikipedia Data:**
- Who wrote “DoDAF Wizdom”?

**DoD HR Data:**
- Where was Dennis Wisnosky born?

**Linked Data:**
- Where was the person who wrote “DoDAF Wizdom born?”
The exact same term must have the exact same meaning in both the conceptual ontology and the operational ontologies within the same context.

Use cases must determine what should be in the initial operational ontologies

- There must be a methodology for determining the correctness of any ontology syntax – i.e. is the ontology technically correct. (OMG)
- There must be a methodology for making decisions relative to ontology content. (OMG/EDMC)
- FIBO must guarantee that Graphs (Operational Ontologies) can be discovered and can be linked
FIBO Initial Deliverables

OMG STD Ontology Build/Maintenance Process

SPARQL

Domain Ontology

Mapping Ontology

Source Ontology

SPARQL Federation

Derivatives

SPARQL End Points

OMG STD

Fin1

Fin2

Fin3

SPARQL

SQL
FIBO Extensions to Additional Instruments

OMG STD Ontology Build/Maintenance Process

SPARQL Federation

SPARQL End Points

OMG STD

FIBO-BE

Derivatives

Loans

Stocks

Domain Ontology

Mapping Ontology

Source Ontology

SPARQL

SQL
What is the Organizations position in each type of Swap?
FIBO in Real Life

Understand Market Issues
Gather data & Intelligence
Determine Client Needs
Formulate Strategy
Implement

Here's some data. See what you can find.

Risk Dashboard Credit Swaps

One Model
Application Logic
Application Data

Credit Risk Dashboard

FIBO
Financial Industry Business Ontology

EDM Council Inc.
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Other Ontologies in Real Life

Think Apple iPhone Siri!!

Applying multiple sources to solve a problem

Source: Tom Gruber, Invenor of Siri
http://www.tomgruber.org

Aroundme
Sky Map
Evi
FIBO Objectives 2013

**FIBO Objectives**

- Release FIBO-BE (business conceptual, foundational and methodology)
- Implement two POC activities (derivatives and loans)
- Embed FIBO-BE as common language for LEI and relationship reporting
- Align FIBO with commercial data models for operational implementation
- Solidify SME review process within membership for onward FIBO components
- Launch FIBO research initiative
- Complete migration into Adaptive repository
- Define and publish FIBO value proposition for all constituencies

4/2/2013
And, in Conclusion!

• **FIBO is the Right Idea at the Right Time**
  
  – Semantic Web technology was invented for exactly the purpose of FIBO
  – International standards govern the underlying technology (no inventions required)
  – Financial domain providers have Semantic Web software and/or a practice

• **EDMC is Uniquely Positioned to Lead the Industry**
  
  • Scope of membership is outstanding
  • Reputation of the Council is stellar
  • Semantics work is leading the industry (big lead)
FIBO Provisional Roadmap

2012

- **Q1**: FIBO-Foundations Global Terms and modeling framework
- **Q2**: FIBO Business Entity Domain ontology
- **Q3**: FIBO Derivatives Domain ontology
- **Q4**: FIBO Loans Domain ontology

2013

- **Q1**: FIBO Securities Domain ontology
- **Q2**: FIBO Market Data, CAE, Portfolio, Payments
- **Q3**: Other Domain ontologys
- **Q4**: Other Domain ontologys

Beyond

- **Final**: Industry review
- **Final**: OMG finalization
Thank you!

Questions?
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