



OMG Technical Meeting

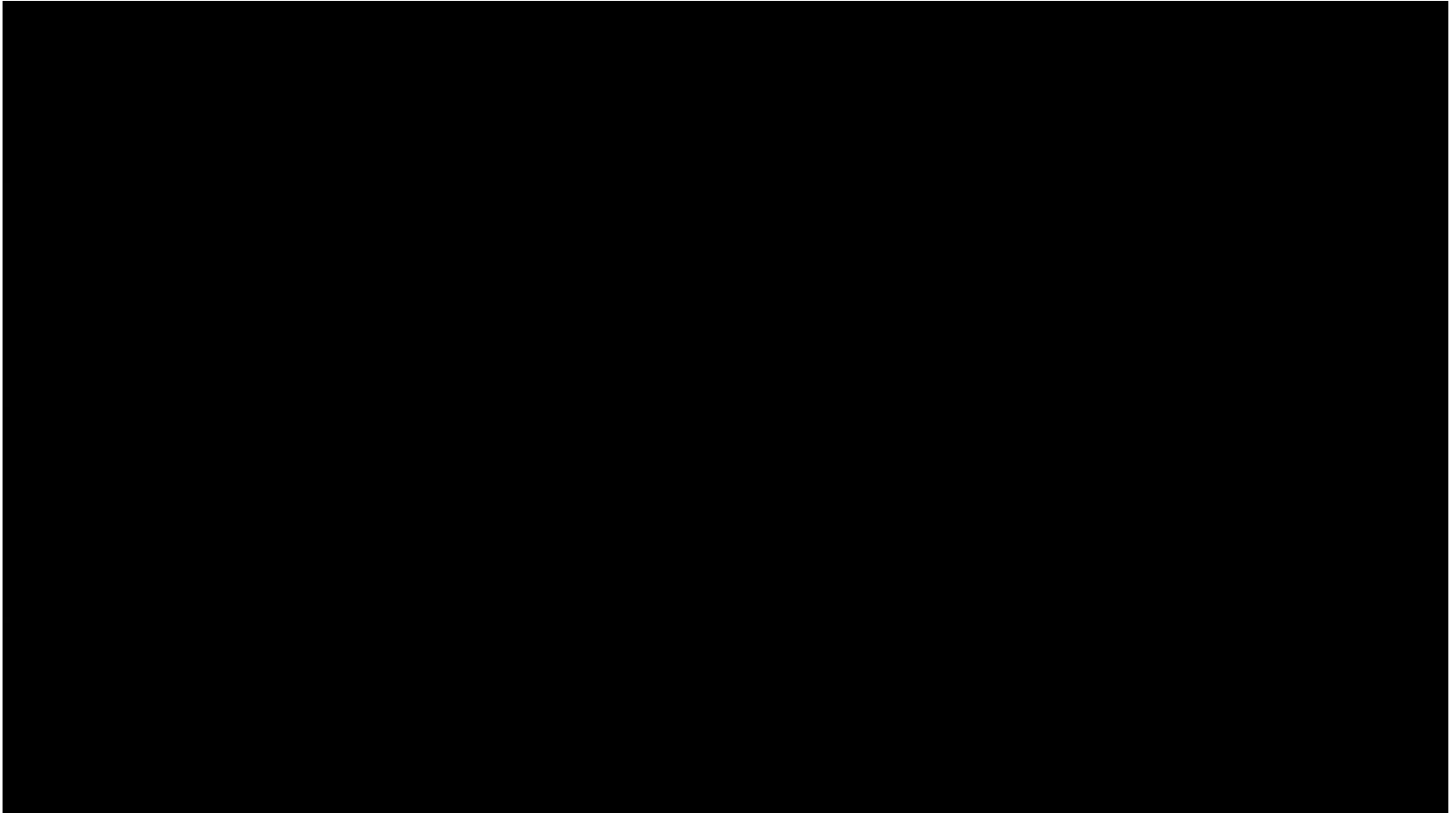
March 20, 2013

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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

EU Journey to a Common Vocabulary



http://ec.europa.eu/isa/documents/isa_wp_second_revision_2012_annex_en.pdf

Interoperability Solutions for European Governments

Why FIBO is important to the Financial Industry

industry

http://www.americanbanker.com/issues/178_45/tame-risk-with-smart-data-not-big-data-1057283-1.html?zkPrintable=1&nopagination=1

"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.

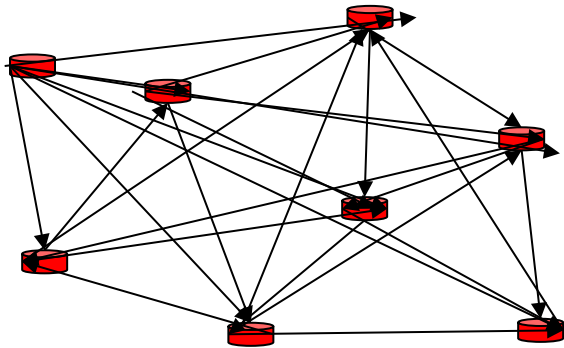
The Need for a Common Vocabulary



**“Now! *That* should clear up
a few things around here!”**



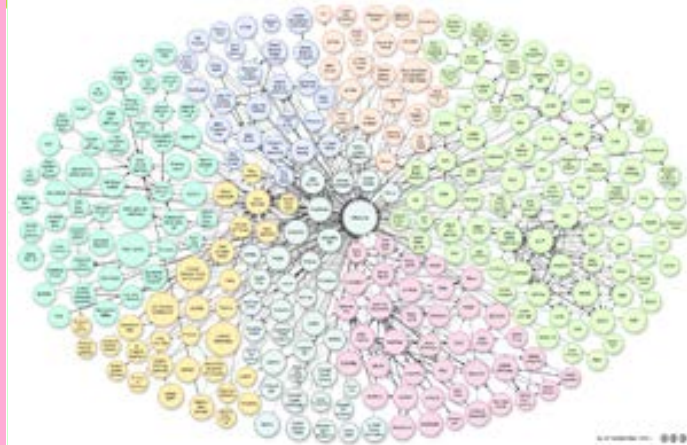
Semantic Web: Heading, Altitude and Airspeed



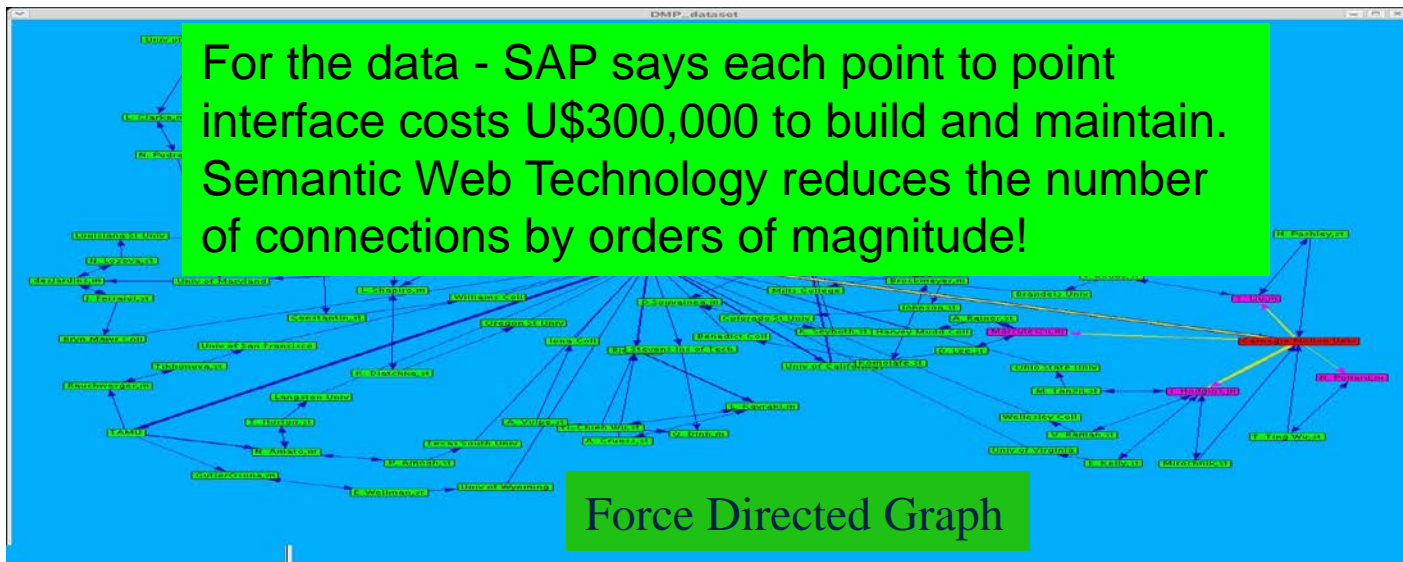
(near) Exponential
connections ($n^2 - n$)

BIG DATA?

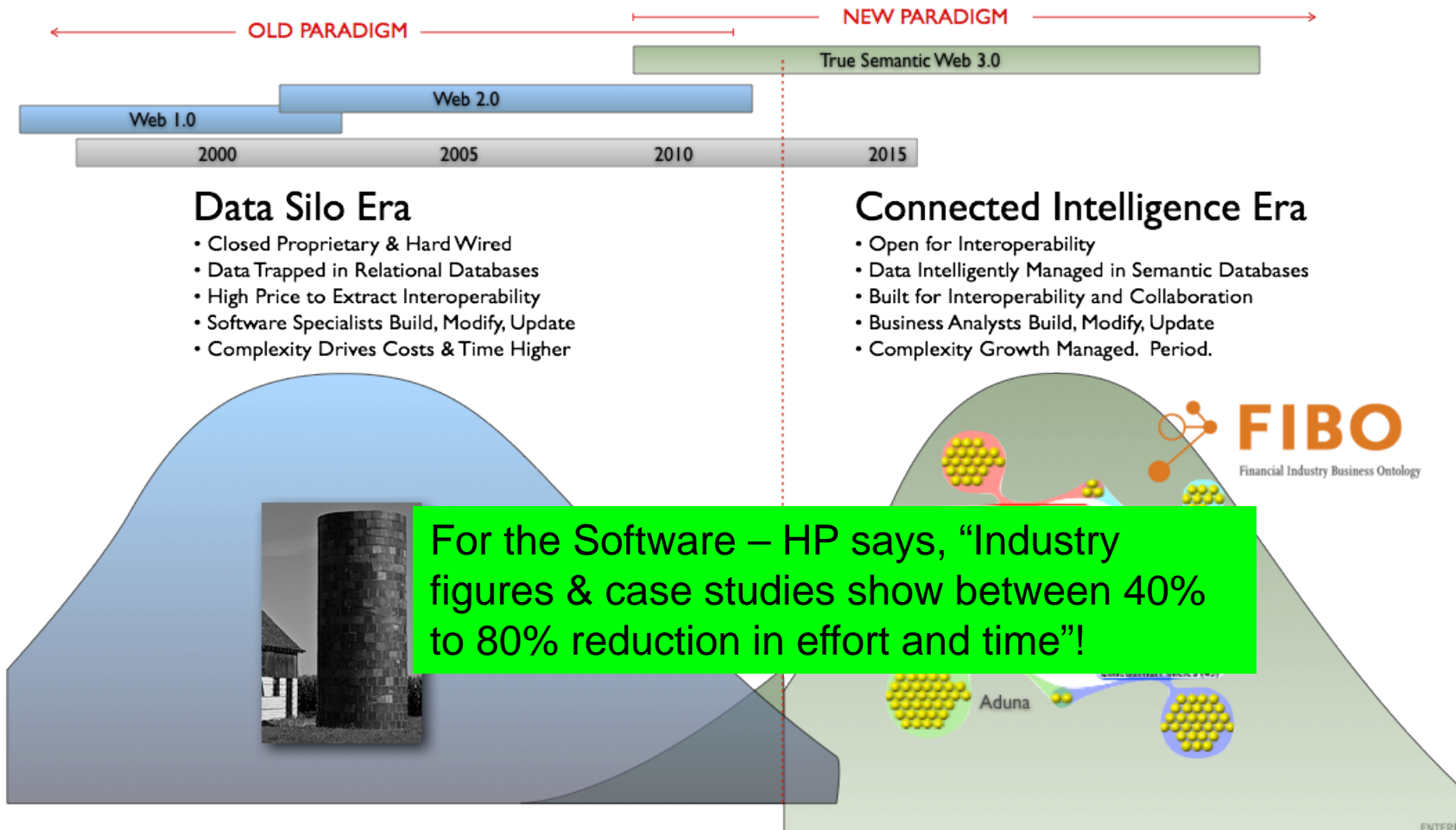
I want what I want,
I want what I need,
I want to know it is right,
I want it when I need it.



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



Shift to Connected Intelligence



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, MISO 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?

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 foundation in this industry
- Regulators don't 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’
- 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**

From the Literature

“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 identify and report risk exposures, concentrations fully, quickly and accurately.”

Data Quality!
Where is it?
What Does it Mean?

**International Settlements,
Global Systemically Important Banks
and 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*



FIBO

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

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

3. *Areas of importance (continued)*

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 most surprising to me is that unlike virtually all other e.

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

domain

agenda (in

- Promote the agenda to governmental entities such as NIST, NSF, FFRDC's and the likely research foundations (Sloan, Mellon, Glaser)

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

– 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

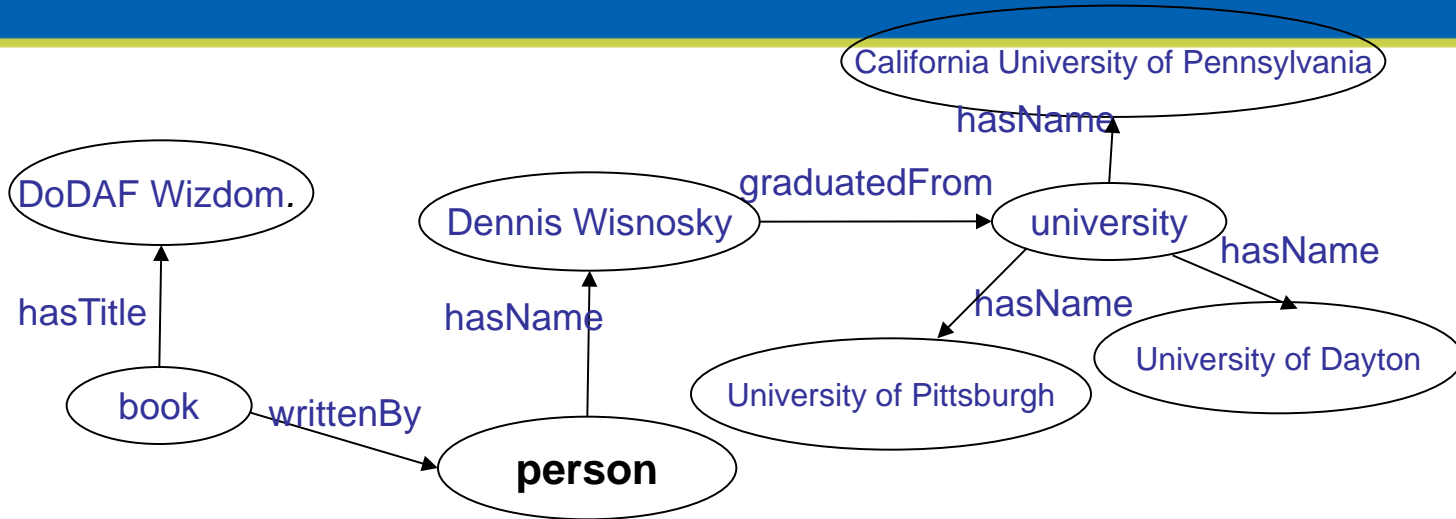
– Resource Requirements:

- 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

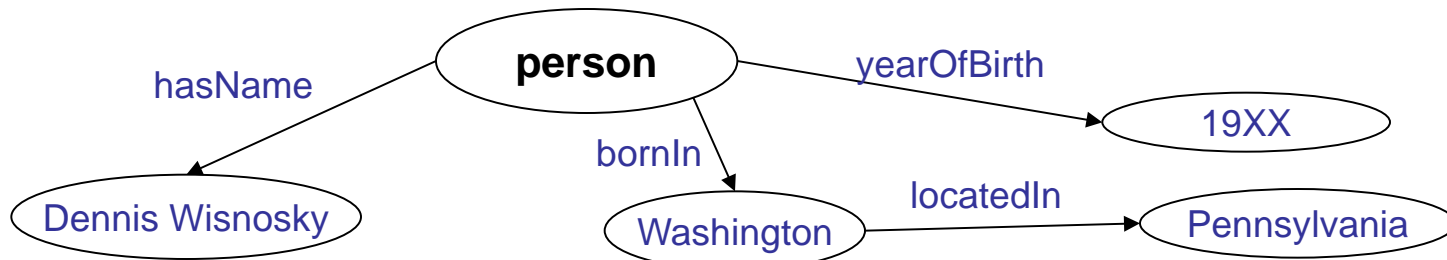
Practically, how will FIBO work?

Common Vocabulary in Action

DBpedia
(Wikipedia)
Dataset



DoD HR
Dataset



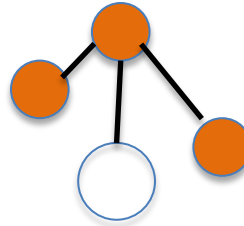
Wikipedia Data: Who wrote "DoDAF Wizdom"?

DoD HR Data: Where was Dennis Wisnosky born?

Linked Data: Where was the person who wrote "DoDAF Wizdom" born?

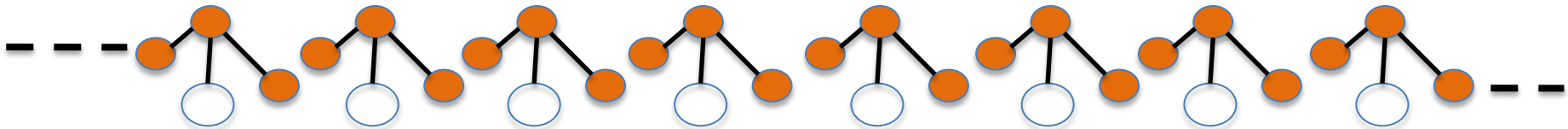
FIBO Operational Ontologies

There are ontologies that detail each concept and the relationships between and among them.



FIBO Conceptual Ontology

Defines and links high level Financial Industry concepts unambiguously. Examples include: Business Entity, Derivatives, Debt, Loans

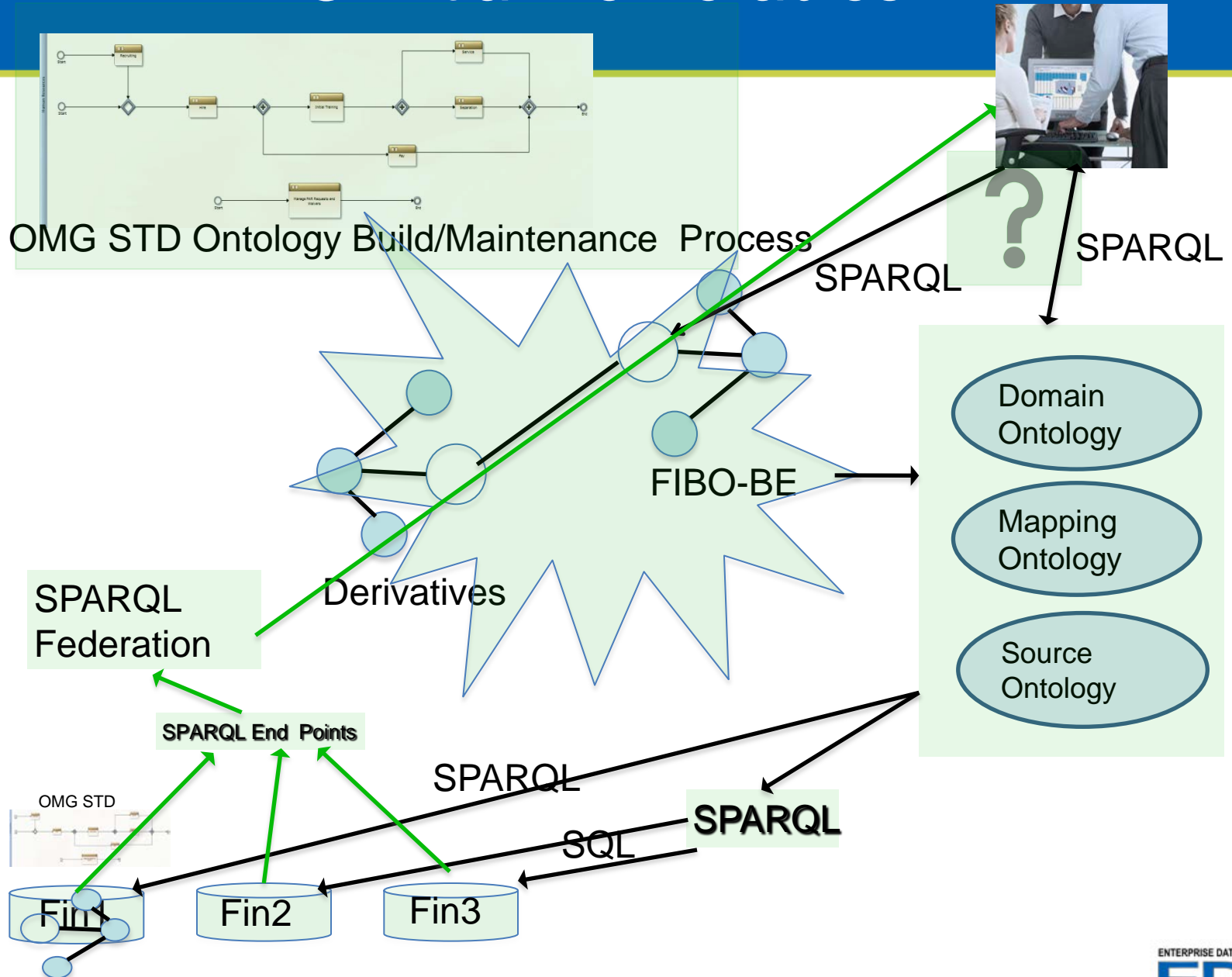


The exact same term must have the exact same meaning in both the conceptual ontology and the operational ontologies within the same context.

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

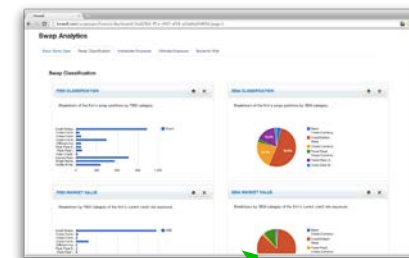
FIBO Initial Deliverables



The diagram illustrates the integration of Financial Industry Business Ontology (FIBO) with various data sources and processes. At the top left, a BPMN diagram shows the 'OMG STD Ontology Build/Maintenance Process'. The central part features a 'FIBO-BE' (FIBO Business Engine) represented as a green star-like shape with nodes for 'Derivatives', 'Loans', and 'Stocks'. To the right, a vertical stack of ovals represents the 'Domain Ontology', 'Mapping Ontology', and 'Source Ontology'. Below this, three database cylinders labeled 'Fin1', 'Fin2', and 'Fin3' are shown. Arrows indicate data flow: 'SPARQL' queries connect the databases to the 'FIBO-BE' and the 'Domain Ontology'. A 'SQL' query connects 'Fin3' to 'Fin2'. A 'SPARQL Federation' box is connected to 'Fin1' and 'Fin2'. A large green arrow points from the 'FIBO-BE' to the 'Domain Ontology'. A small image of people at a computer is in the top right corner, with a large question mark below it.

FIBO in Real Life

What is the Organizations position in each type of Swap?



Domain Ontology

Mapping Ontology

Source
Ontology

~~SPARQL~~

R2RML

SPARQL Federation

[illegible]

FIBO in Real Life



Risk Dashboard Credit Swaps

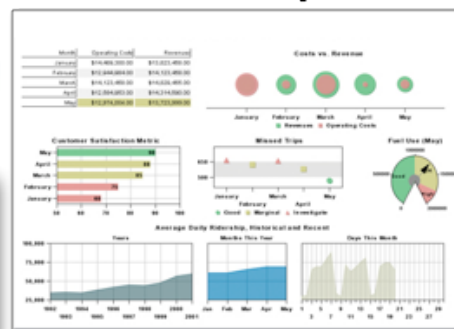
Here's some data.
See what you can find.

NCOIC™

One Model

Application Logic

Application Data



STANDARD
& POOR'S
RATINGS SERVICES

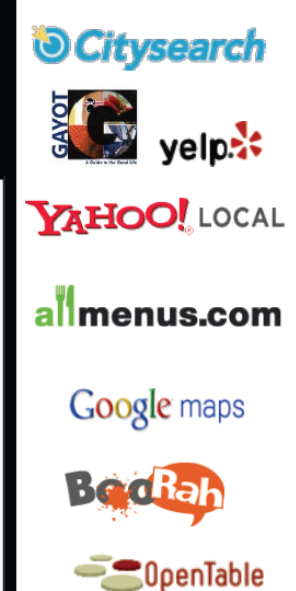
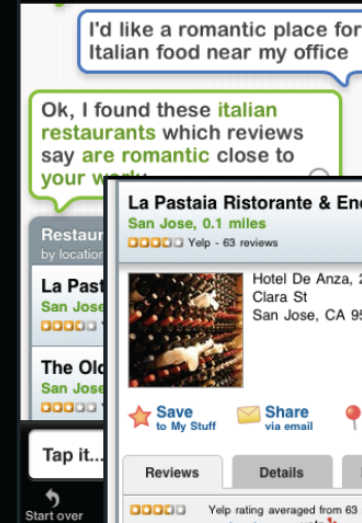
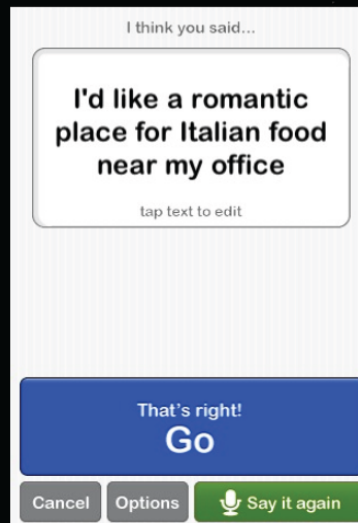
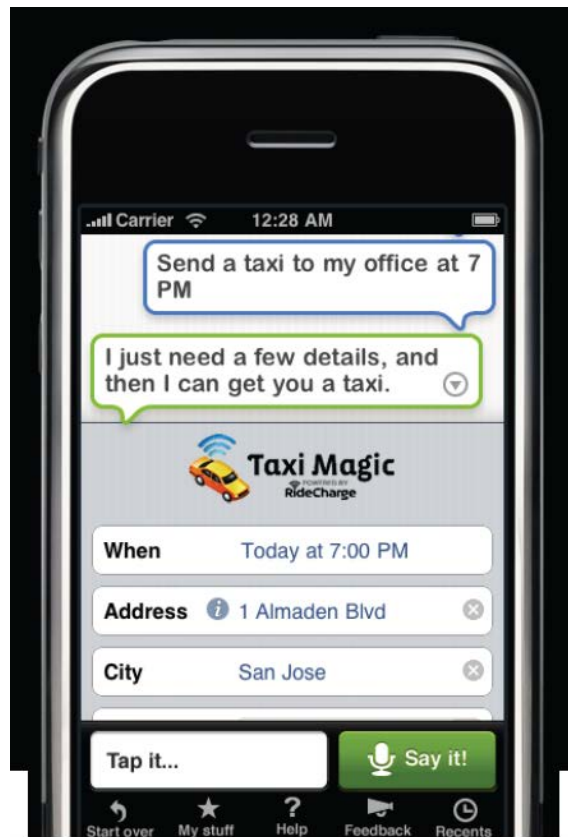


ENTERPRISE DATA MANAGEMENT
EDM
COUNCIL

Other Ontologies in Real Life

Think *Apple iPhone Siri!!*

Applying multiple sources to solve a problem



Source: Tom Gruber, Inventor of Siri
<http://www.tomgruber.com>

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



And, in Conclusion!

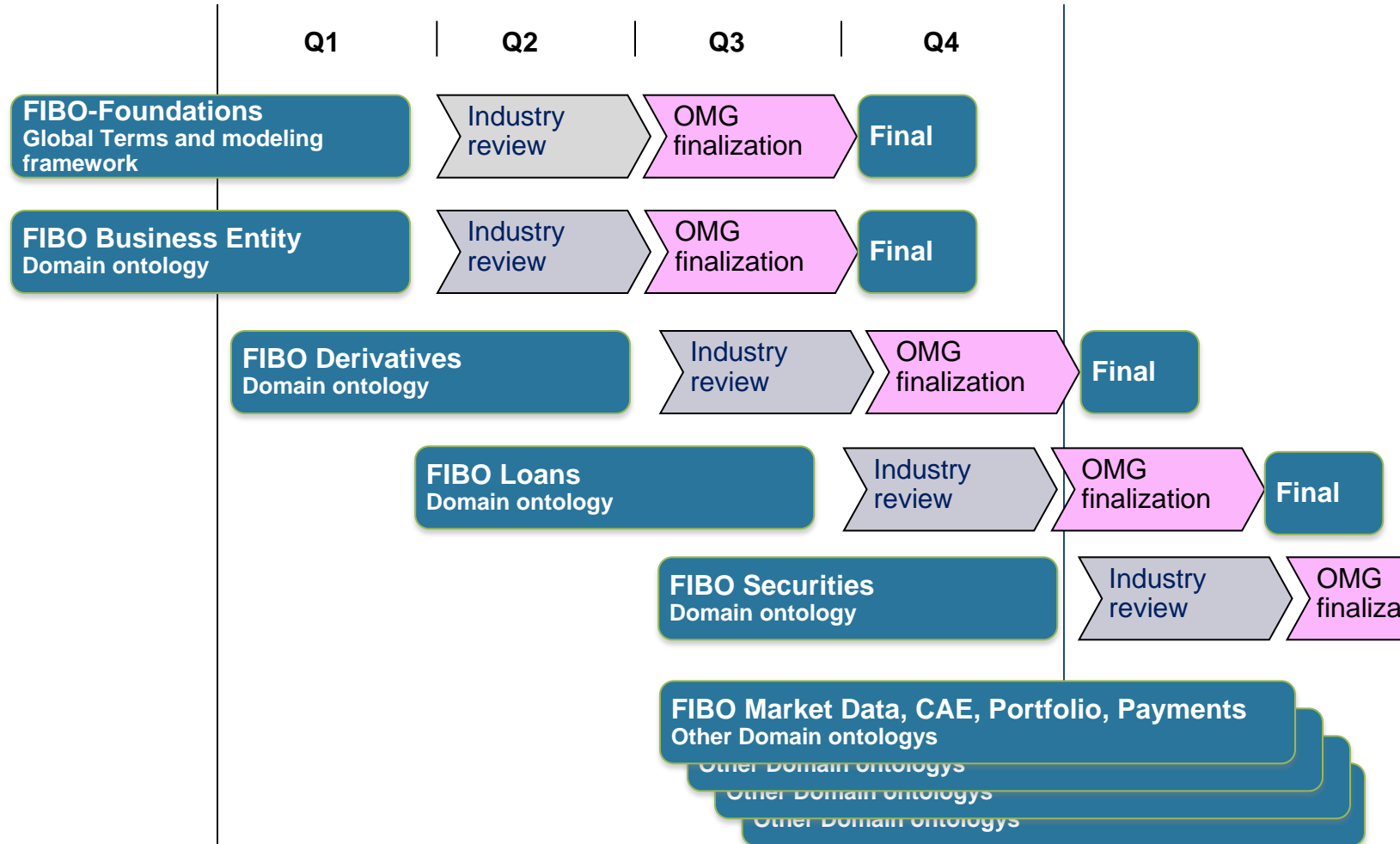
- FIBO is the Right Idea at the Right Time
 - Semantic Web technology was invented for exactly the purpose of FIBO
 - International standards govern the underlying technology (no inventions required)
 - Financial domain providers have Semantic Web software and/or a practice
- EDMC is Uniquely Positioned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

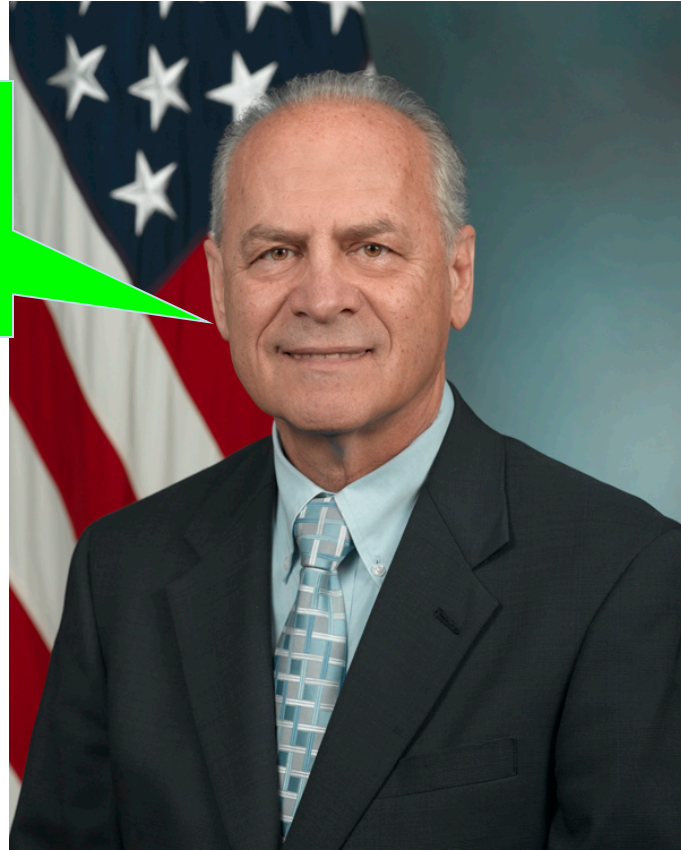
2013

Beyond



Thank you!

Questions?
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EDM Council Board of Directors



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Clearing Corporation

Bloomberg

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WELLS
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