

It is 2013, Do you Know Where Your Money is?

Dennis E. Wisnosky
Founder, Wisdom Systems, Inc.

ME!

- Degrees in Physics, EE, Management Science - all part time on a real campus while raising a family
- 5 years private sector, 10 years Gov, 20 years private sector, 5 years Gov and now Wizdom Systems Inc. - reinvented. Google or YouTube or LinkedIn has more than even I know about me.
- Asked in 2006, by the the Sec of Defense to build system that could solve the DoD “where is my money problem”, I accepted.

Little Did I Know!

A Bed Time Story!

Once upon a time, there were no standard definitions of financial terms and the financial institutions could interpret the meaning of the rules and regulations of the industry each in their own way.

Thank you Daniel Pink!

Everyday, new financial instruments and transaction types were invented.

One day, major companies in business for many decades began to collapse and lead the world into general economic depression.

Because of that, regulators struggled mightily to understand the condition of the world's economy and it became clear that the companies themselves did not know their true financial exposure.

They did not know the Provenance the TRUTH, about their data!

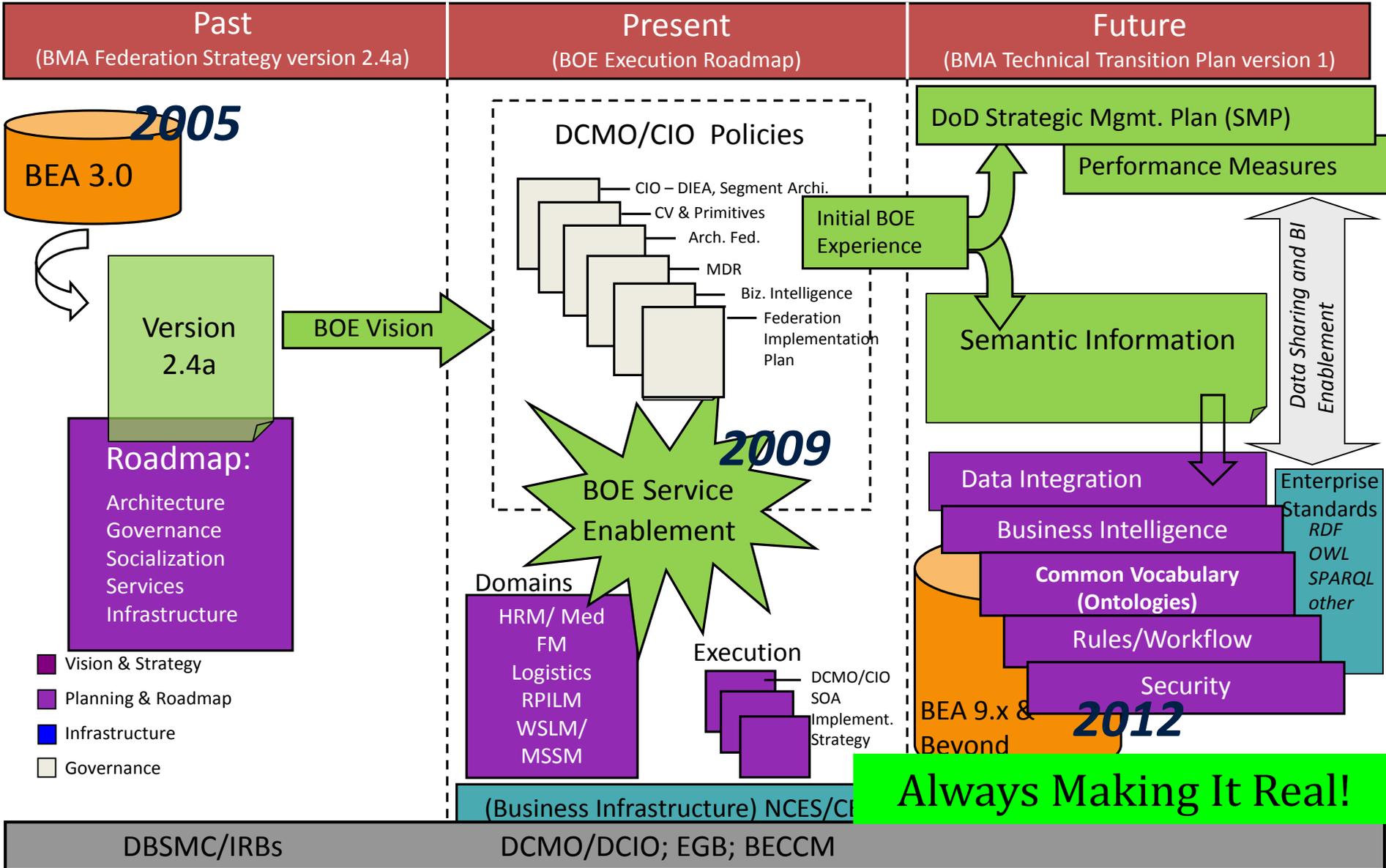
Because of that, an effort was launched by the industry to develop a Financial Industry Business Ontology (FIBO) - a common vocabulary based on international standards, that would enable companies to better communicate within and among themselves and would enable regulators to perform meaningful oversight as required by laws.

Until finally, the dual purpose of reducing the cost of manufacturing data required by law became de minimis and Congress and regulators were confident of the provenance of answers to their questions of the industry.

And, They All Lived Happily Everafter!



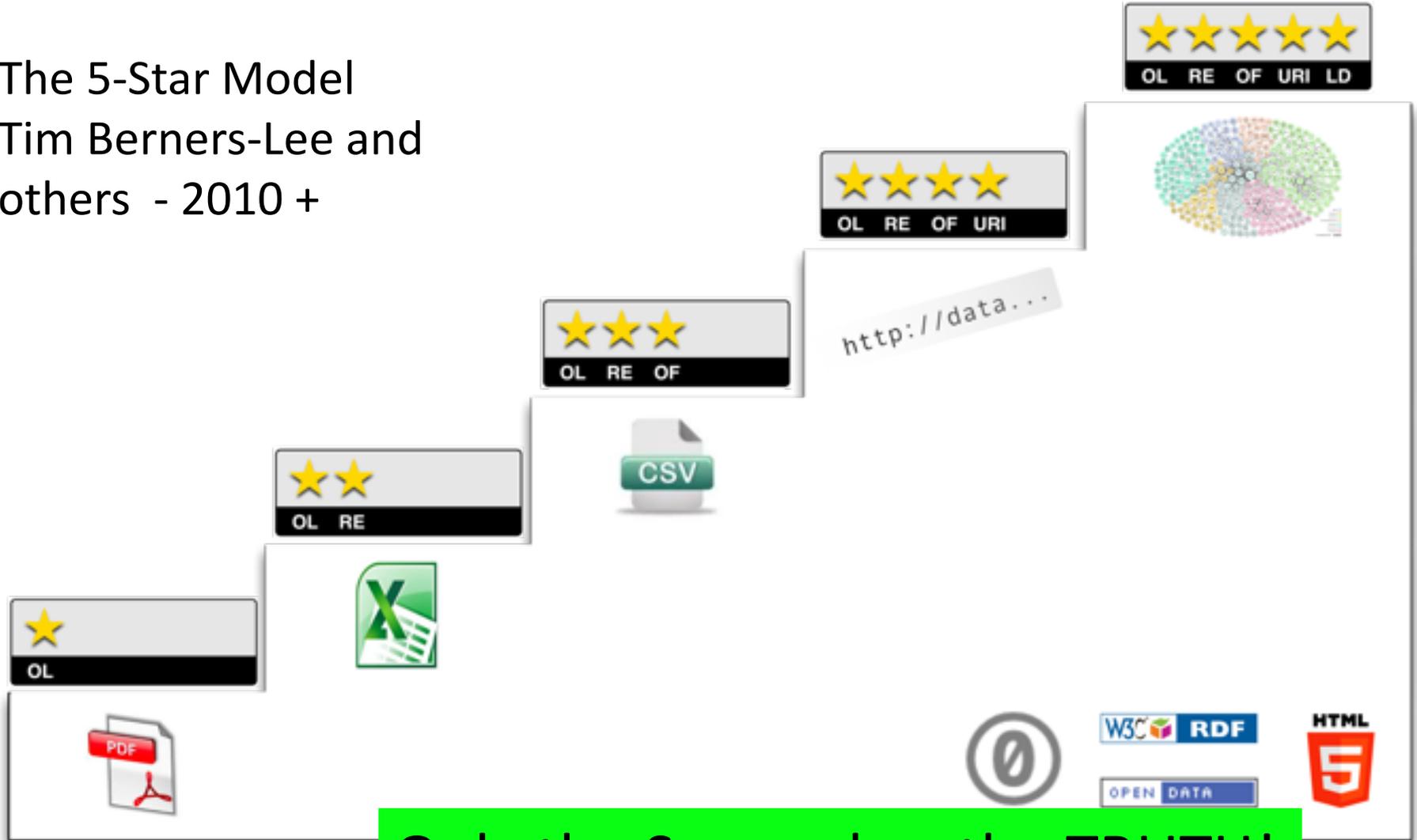
My DoD Experience - A Metaphor for FIBO Implementation



We Are on this Path Now!

The 5-Star Model

Tim Berners-Lee and
others - 2010 +



Only the Source has the TRUTH!

How 5-Star Data Works

- ★ make your stuff available on the Web (whatever format) under an open license¹ [example ...](#)
- ★★ make it available as structured data (e.g., Excel instead of image scan of a table)² [example ...](#)
- ★★★ use non-proprietary formats (e.g., CSV instead of Excel)³ [example ...](#)
- ★★★★ use URIs to denote things, so that people can point at your stuff⁴ [example ...](#)
- ★★★★★ link your data to other data to provide context⁵ [example ...](#)

<http://5stardata.info>

How Open Linked Data Works!

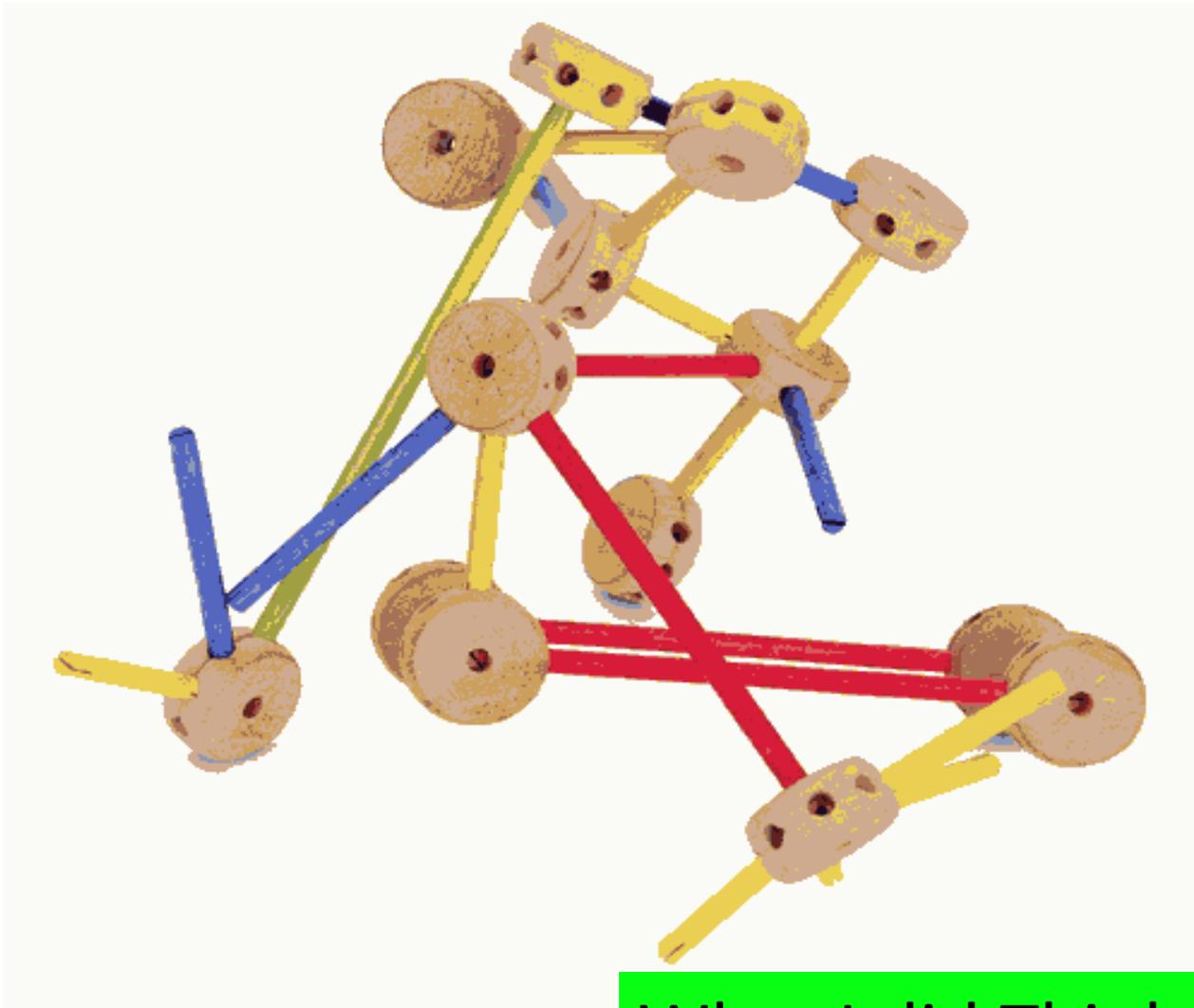
What Could be More Simple!



Courtesy David McComb

Can be Expanded Without Limit!

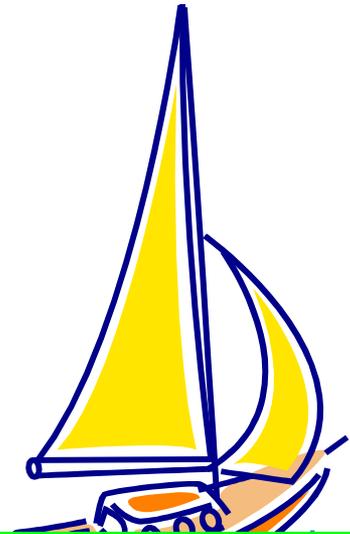
Can be Expanded Without Limit



Courtesy David McComb

What I did Think of!

The need for a Common Vocabulary

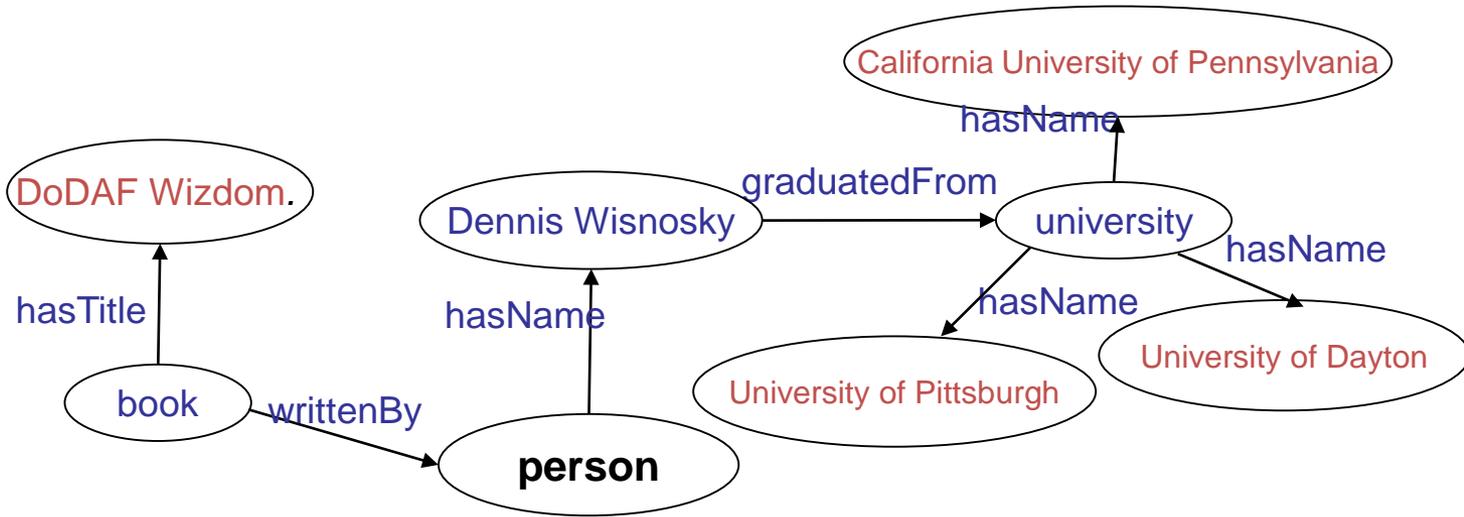


“Now! *That* should clear up a few things around here!”

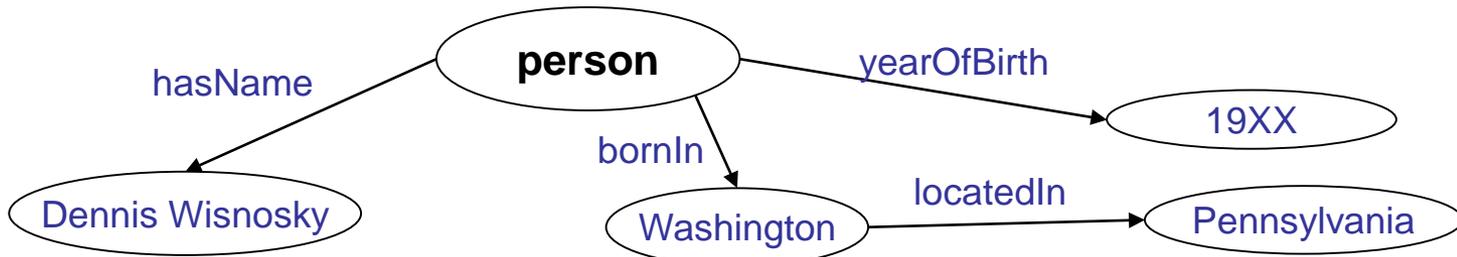
Benefit shown by Example!

Common Vocabulary in Action

DBpedia
(Wikipedia)
Dataset



DoD HR
Dataset



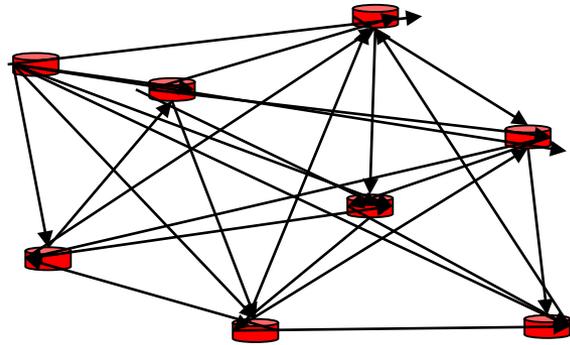
Wikipedia Data: Who wrote "DoDAF Wizdom"?

DoD HR Data: Where

Linked Data: Where was

What is the true meaning of this?

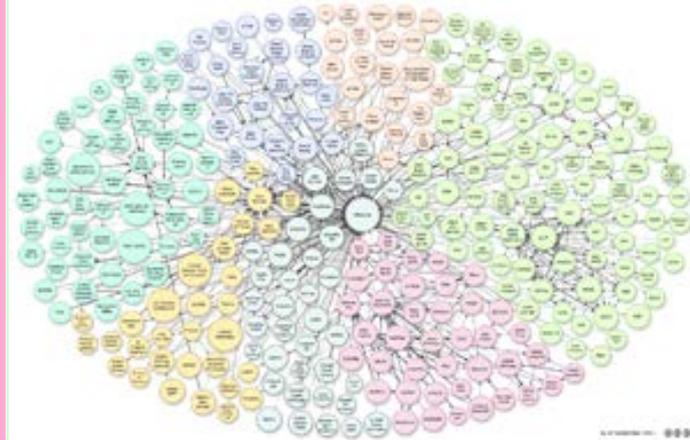
Enormous Efficiency in Operations



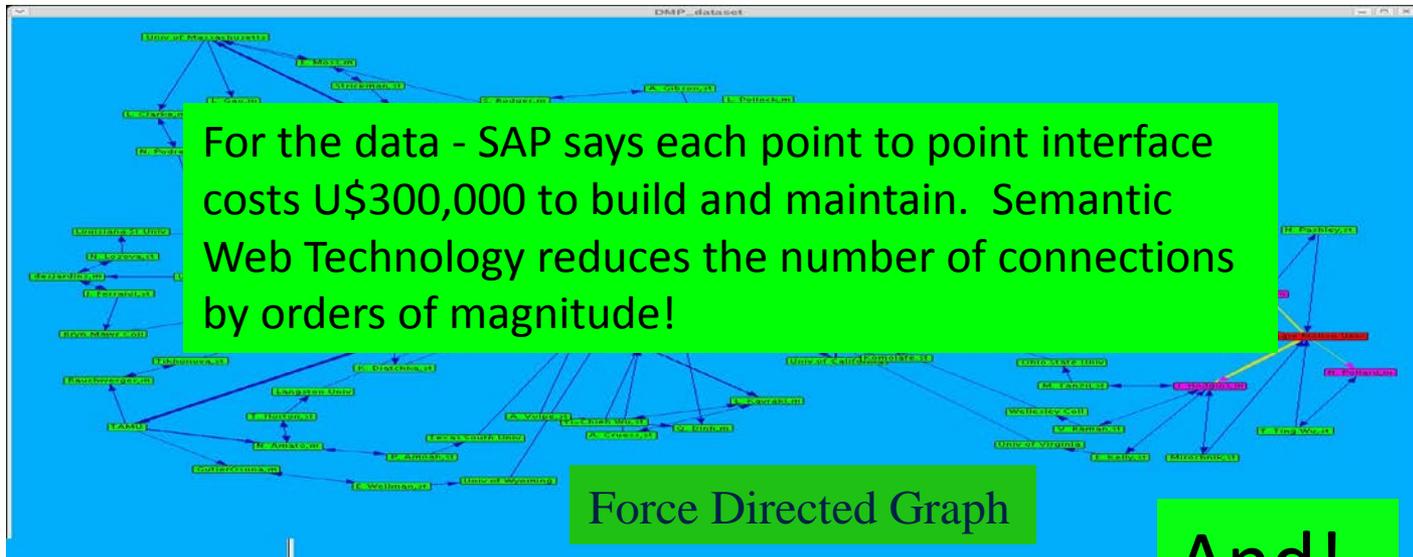
(near) Exponential connections ($n^2 - n$)

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.

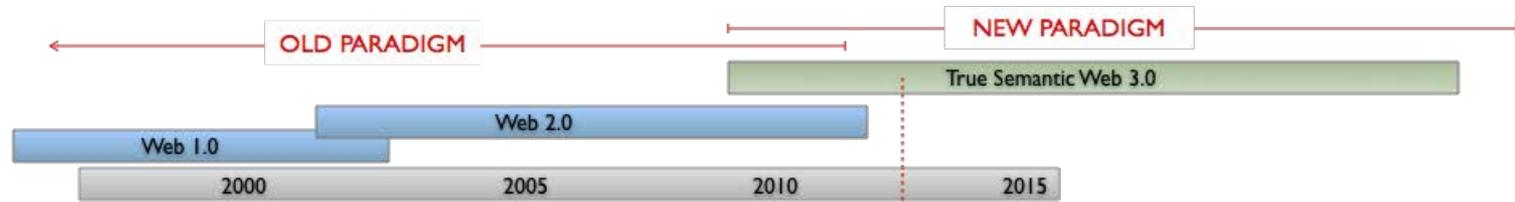


(near) Linear connections ($2n-1$)



Enormous Efficiency in Development

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”!

OK, I Solved the DoD Problem, and then!

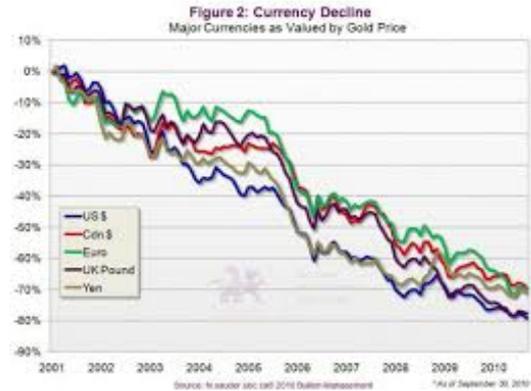
An Bigger Personal Problem!



My War was
Over!



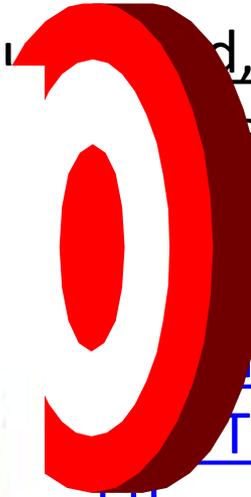
Or was it!



What had
Happened?

What had Happened?

Many causes for the financial crisis have been studied, with varying weight, and the Levin-Coburn Report identified high risk, complex financial instruments, the failure of regulatory market itself to repeal of the Glass-Steagall separation between the United States and investment mortgage-related not adjust their financial markets.[17] Research into the causes of the financial crisis has also focused on the



Remember my Subtitle?

What lessons have we learned from Lehman?



Traders on the floor of the New York Stock Exchange on Sept. 15, 2008, the day of the collapse of Lehman Brothers. (Andrew Harrer, Bloomberg / September 10, 2013)

<http://www.chicagotribune.com/business/columnists/ct-biz-0915-phil-20130915,0,5125535.column>

The Feds Act!

Dodd-Frank nearly 3000 pages

Must be Interpreted by:



OFR



CFTC



SEC



OCC



FRB



ECB

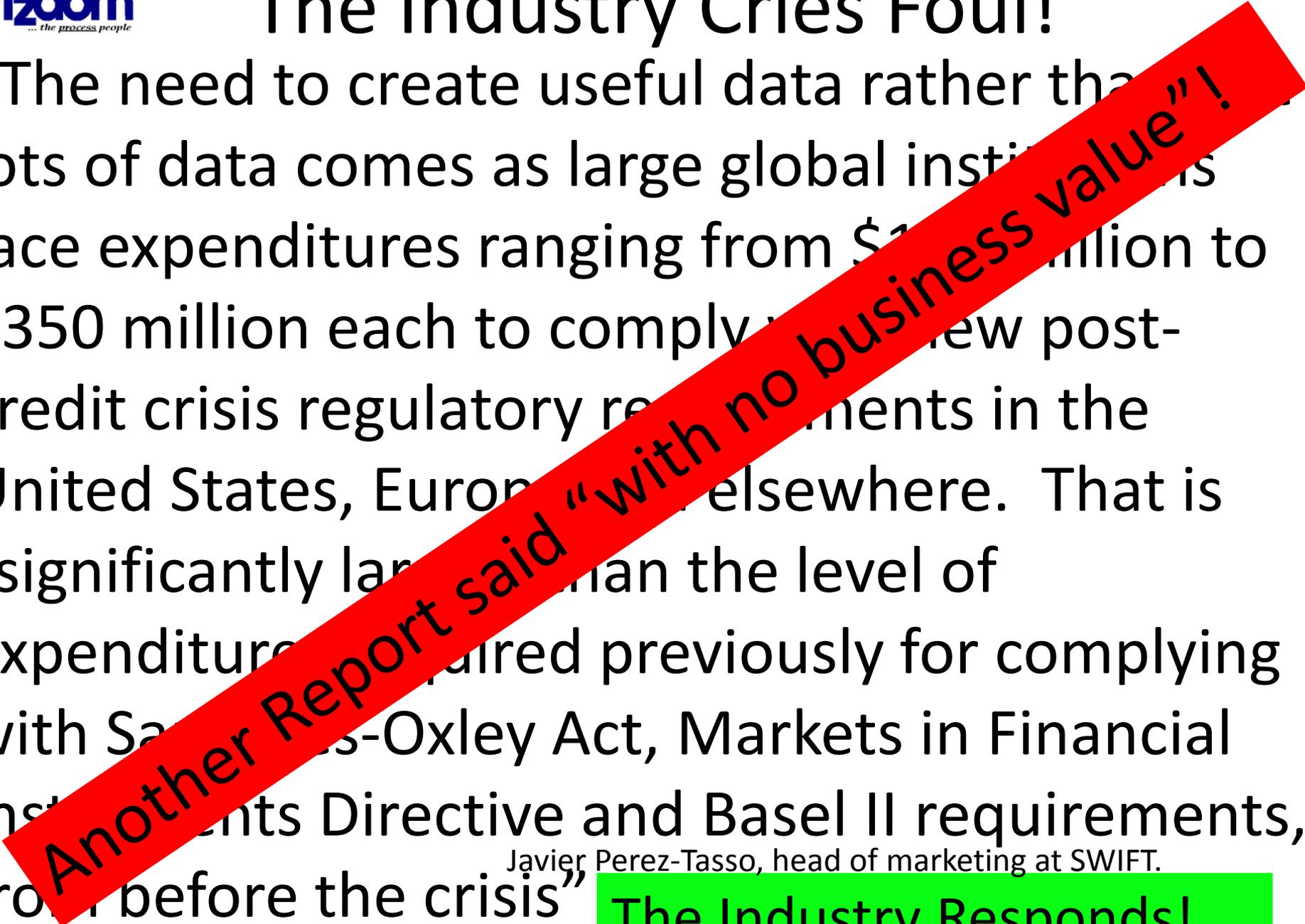


The Industry Cries Foul!

“The need to create useful data rather than just lots of data comes as large global institutions face expenditures ranging from \$100 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 expenditure required previously for complying with Sarbanes-Oxley Act, Markets in Financial Instruments Directive and Basel II requirements, from before the crisis”

Javier Perez-Tasso, head of marketing at SWIFT.

The Industry Responds!



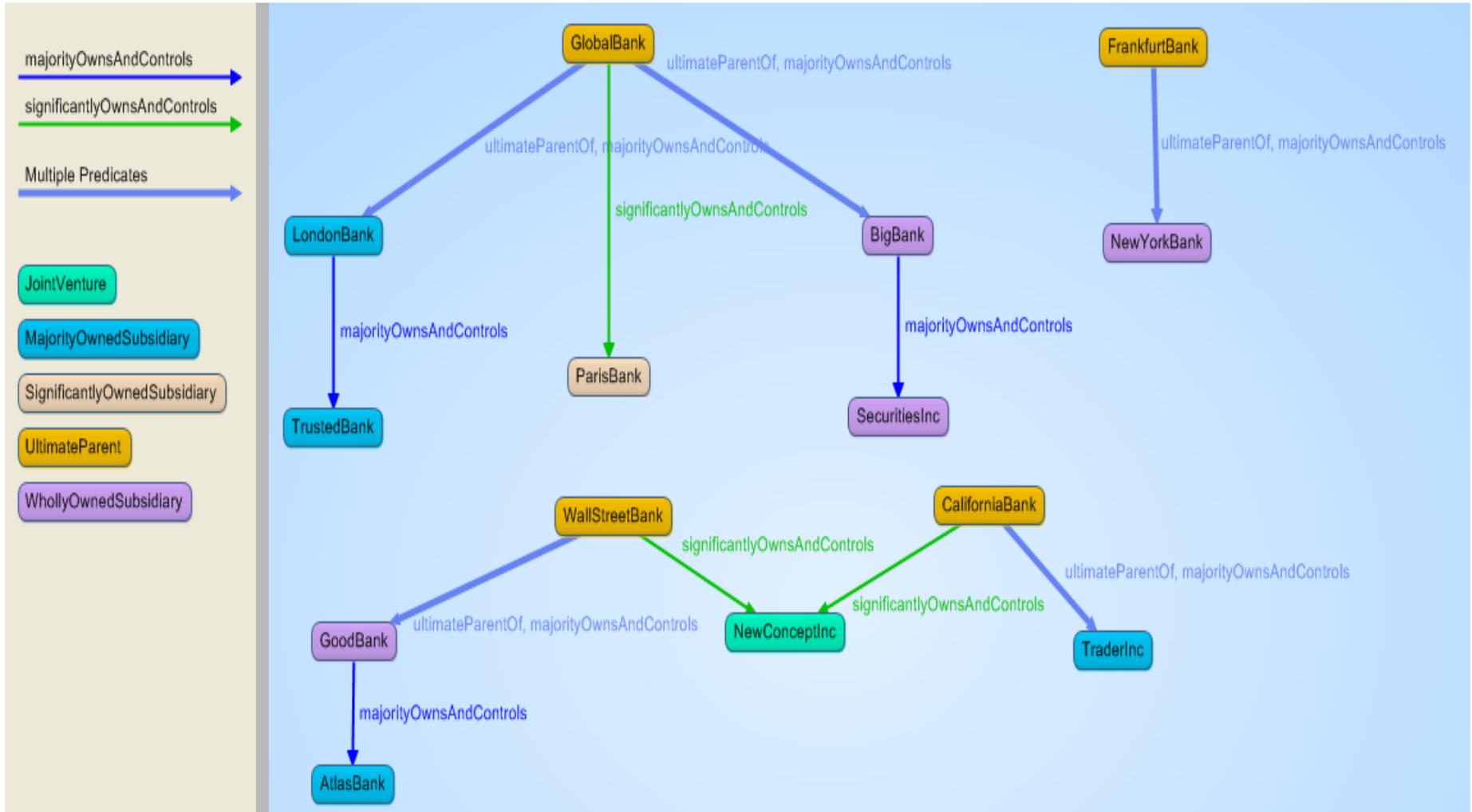
What is Needed!

- “A simplified and replicable method of calculating exposure to risk that can be universally applied to sources of transactions that are reconcilable to accounting records
- Global identification standards for legal entities, products and financial events to facilitate the aggregation and comparison of risk exposure data within and between financial institutions and across the industry
- A ‘Big Data’ framework that is able to provide regulators and others with complete and accurate real-time information relating to the global financial system”

This needs statement is summarized by the Basel Committee as “an intelligent semantic network for systemic risk analysis.”

Basel Committee on Banking Supervision in June 2013 issued for comment a paper entitled Supervisory Framework for Measuring and Controlling Large Exposures. <http://www.>

Must Solve Problems Like This



What Do You See?

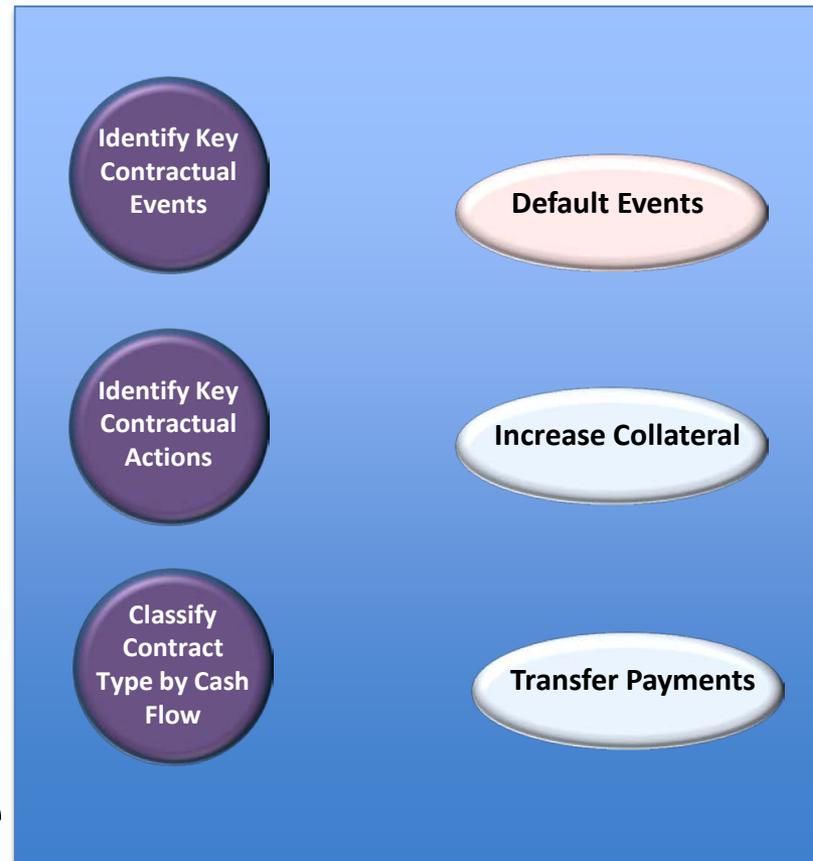
Is it ok for
different people
to interpret this
picture in
different ways?



What Should You See?

Is it ok for different people to interpret this picture in different ways?

Of course not! The meaning = semantics – of the data must be precisely defined.





- identification of legal entities, their jurisdictions and ownership control hierarchies
- Identification of financial contracts and instruments
- classification and data linkage for aggregation
- actionable risk intelligence

Requires Participation at all Levels

Enterprise Data Management Council (EDMC) FIBO Participants



✓ Wells Fargo chairs the EDM Council's Semantic Technology Program, interfaces directly with regulatory authorities and leads the working group that is responsible for constructing the operational capabilities of FIBO



Deep Technical Dive!

**Iman
hs**

And with the support of Regulators

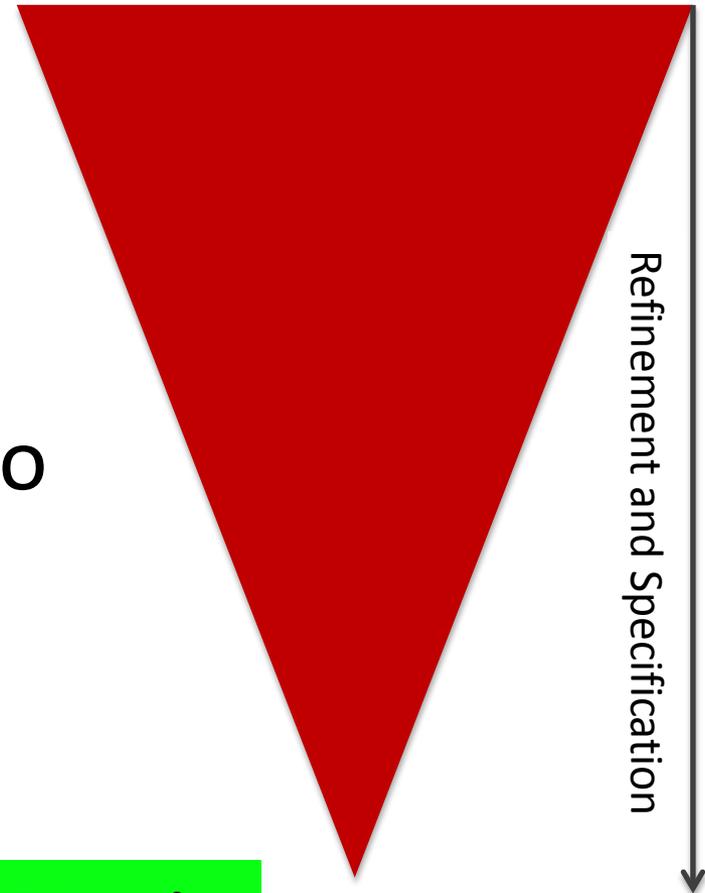


Conceptual Level

– Abstraction is necessary to preserve Operational Options



- Operational Level
 - Precision is necessary to ensure consistent and compliant execution



Refinement and Specification



Technical Dive!

FIBO Business Conceptual and Operational Ontologies are Two Sides of the Same Coin

- **FIBO Business Conceptual Ontologies**

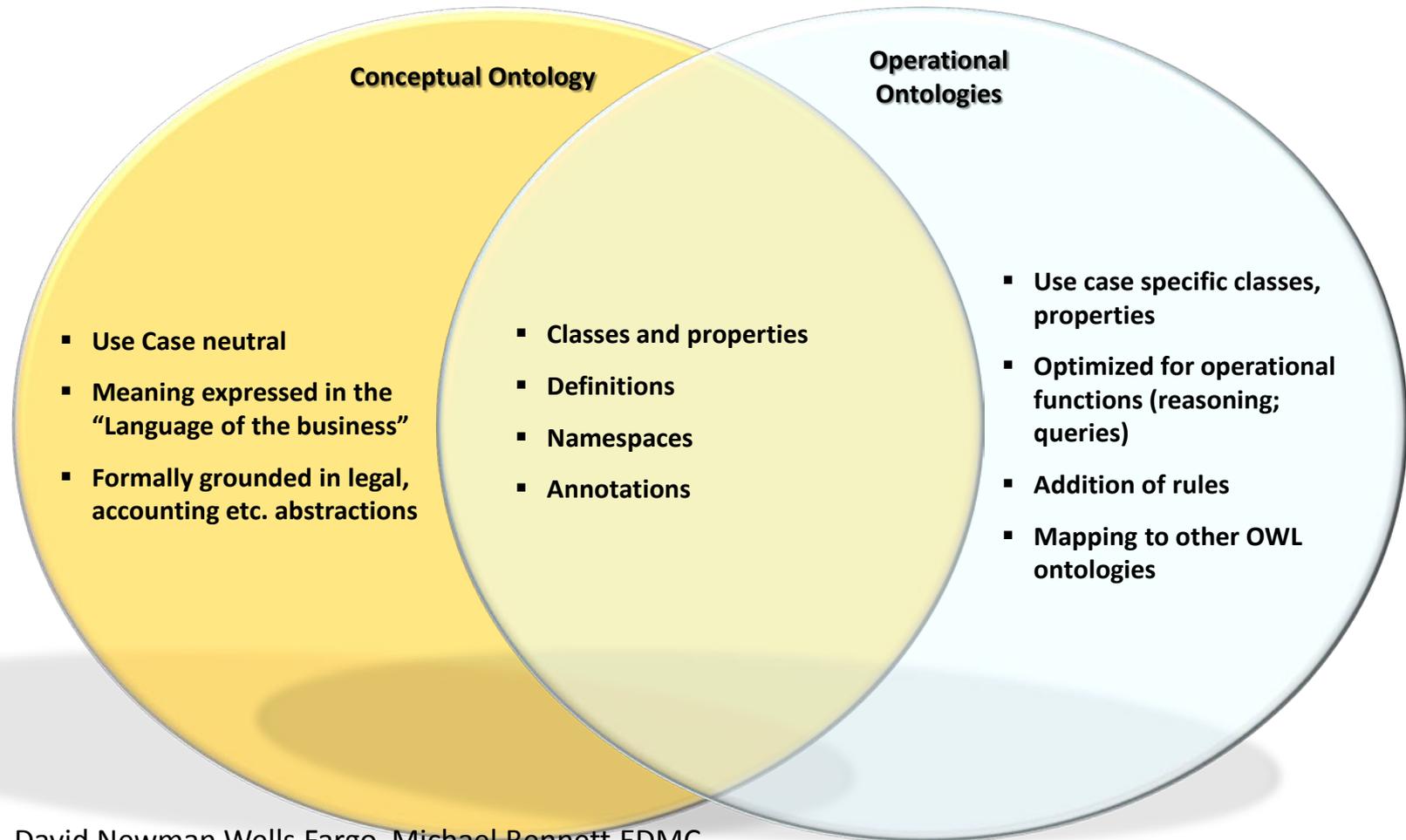
- Primarily human facing
- Visual blueprint
- Standard terms and definitions for business concepts
- Broad based expressions of conceptual specifications, provenance, linkage and context of business constructs



- **FIBO Operational Ontologies**

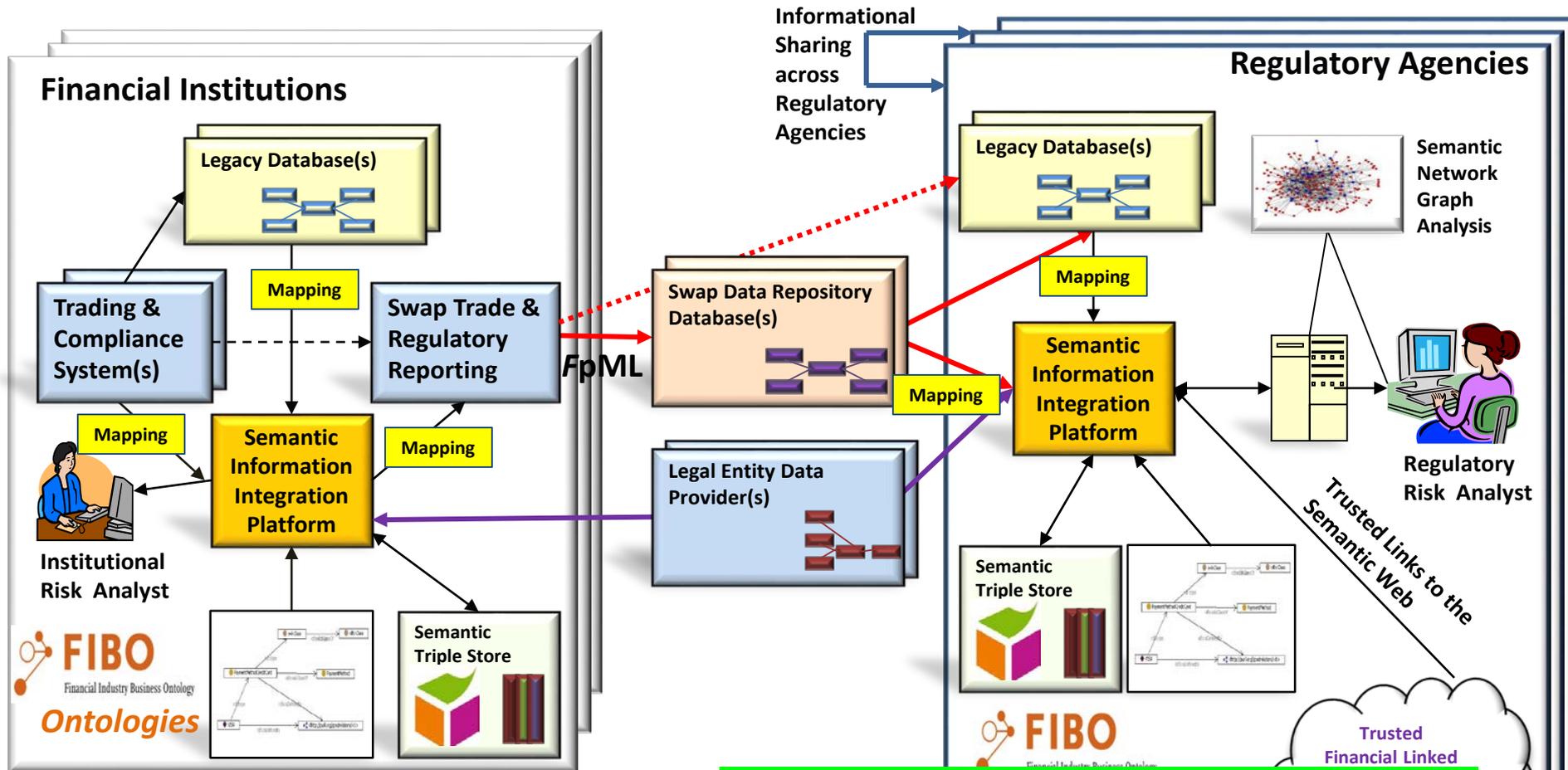
- Primarily machine facing (RDF/OWL)
- Derived from FIBO Conceptual Ontologies
- Optimized for performance and scalability. Fewer abstractions. Inferred relations, mappings.
- Classification, data linkage, validation and semantic query.
- Deliver executable functionality to fulfill use cases, enable data linkage, transparency and risk analytics

Intersecting Ontologies: Conceptual and Operational



David Newman Wells Fargo Michael Bennett EDMC

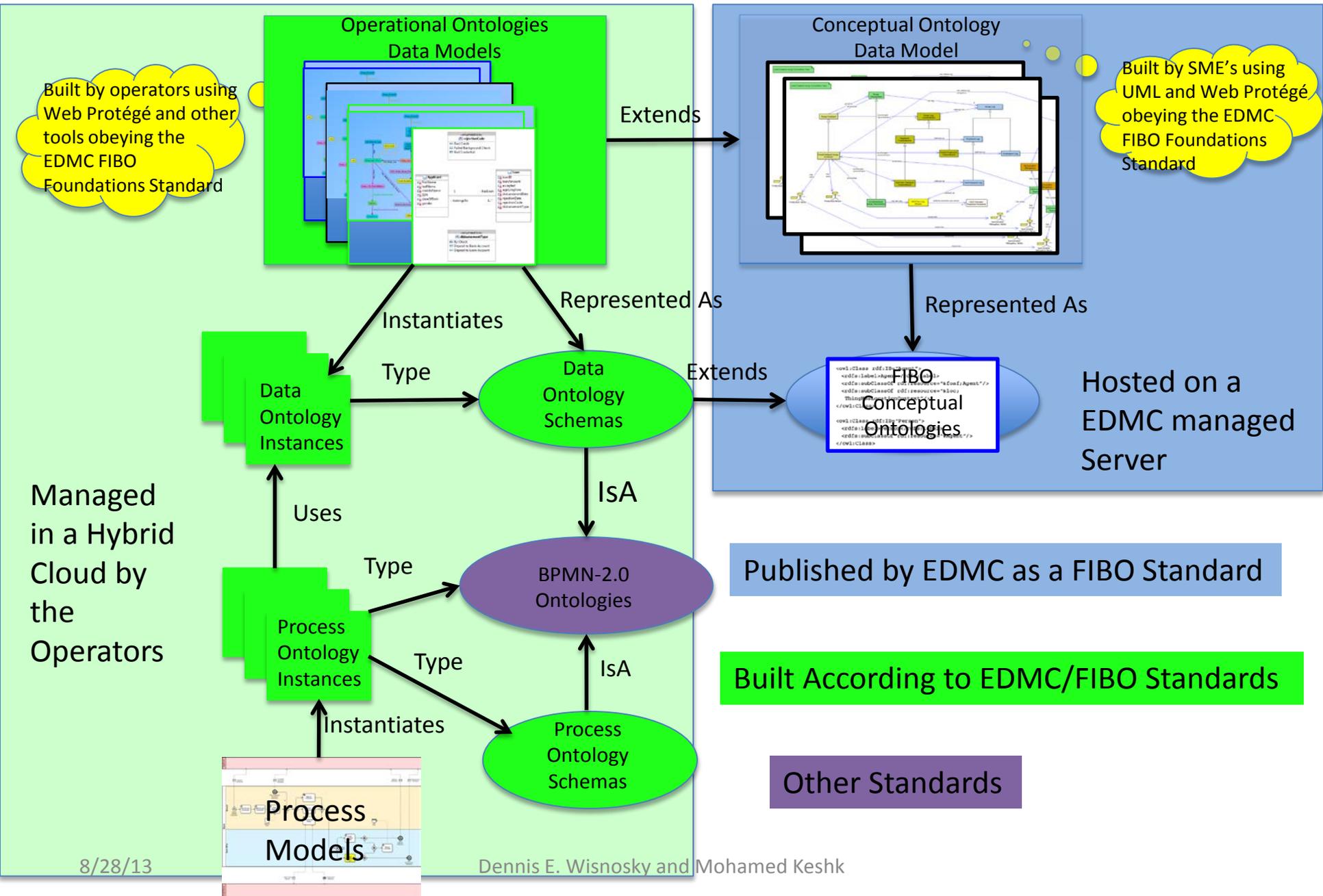
What the Bankers and Feds Will See



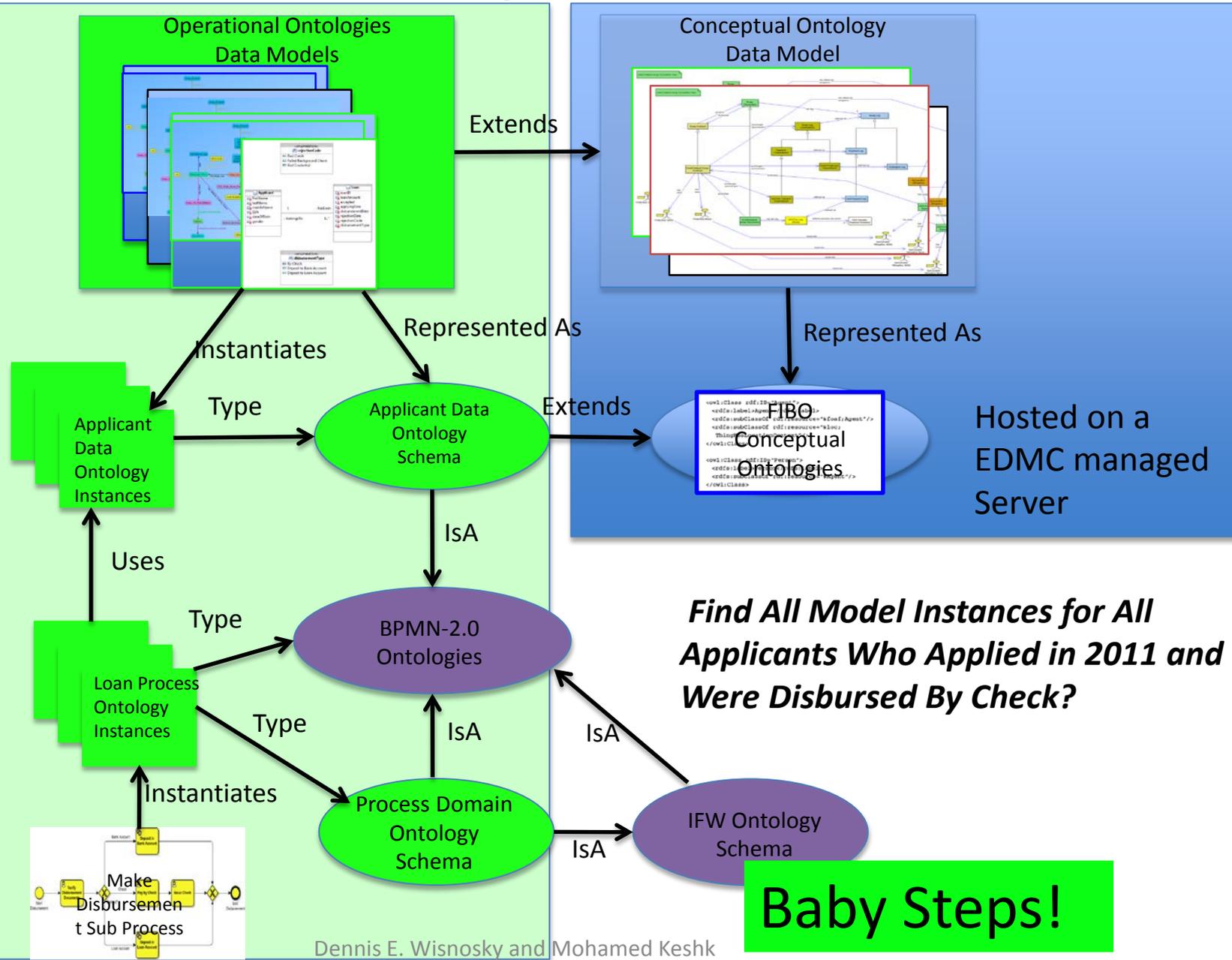
Deep Technical Dive!

David Newman Wells Fargo

EDMC/FIBO Generic Use Case

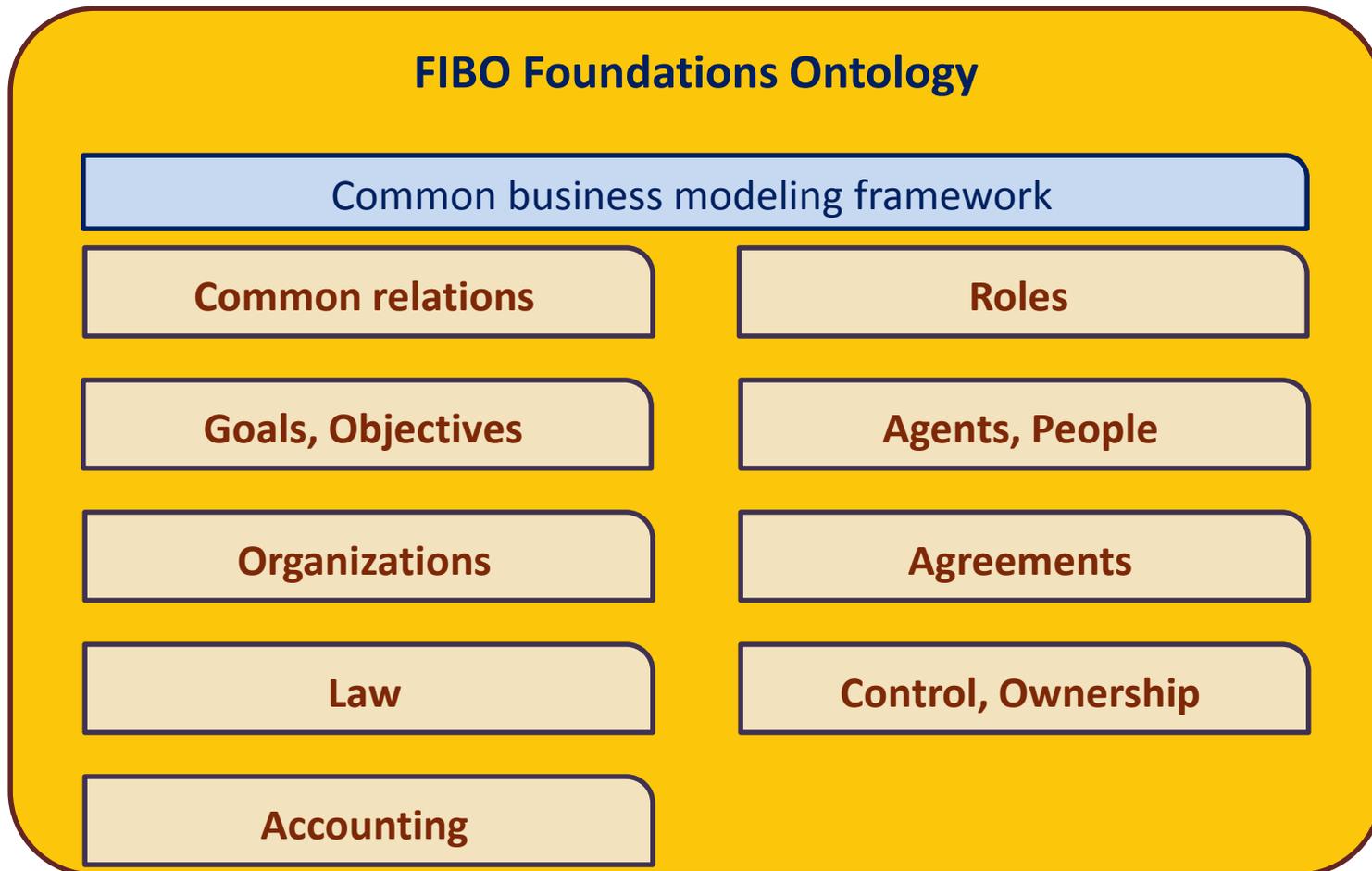


What the Operators Will See



FIBO Foundations

OMG-EDMC Draft Standard



- FIBO Foundations provides the basic conceptual “Glue”
- Common abstractions grounded in law and business

FIBO Business Entities

OMG-EDMC – Draft Spec

FIBO Business Entities Ontology

Entity Types

Legal Persons

Formal Organization

Corporations

Partnerships

Trusts

Ownership

Control

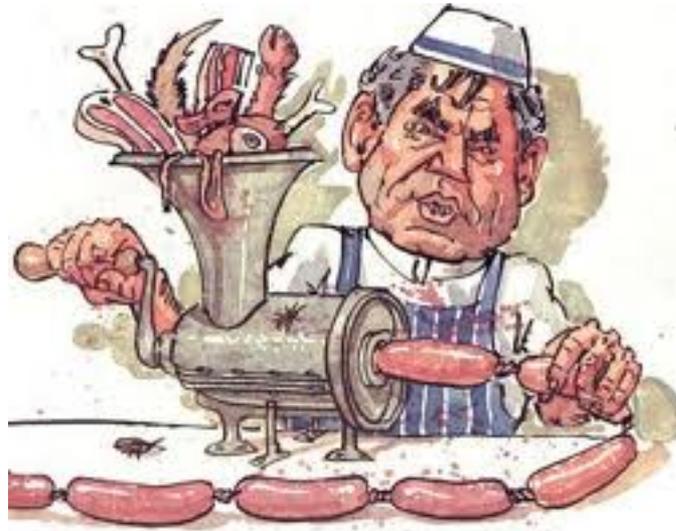
By Function

Legal Entity ID

- Types of corporate structure
- Organizational hierarchies / relationships

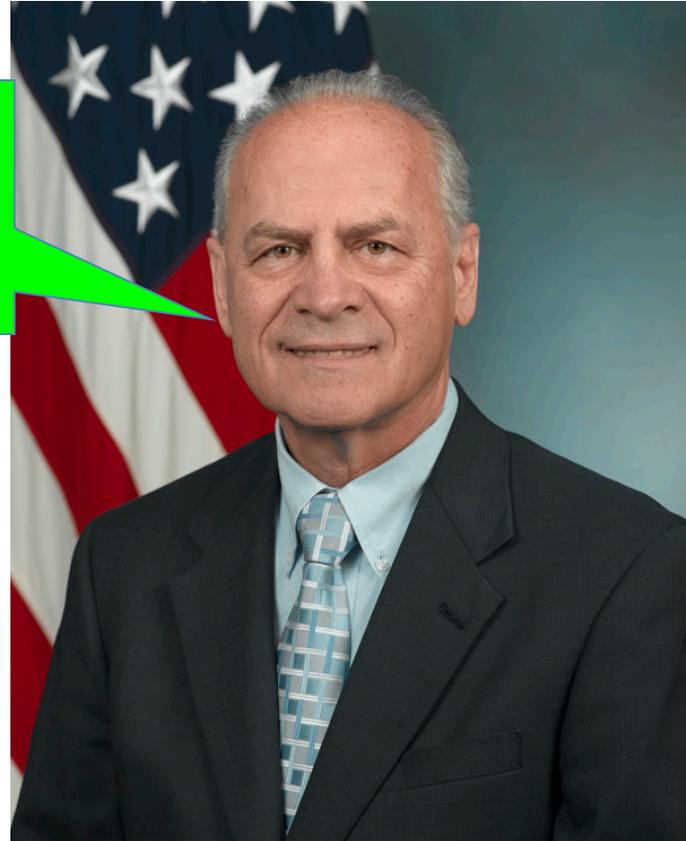
Stay Tuned for Much More!

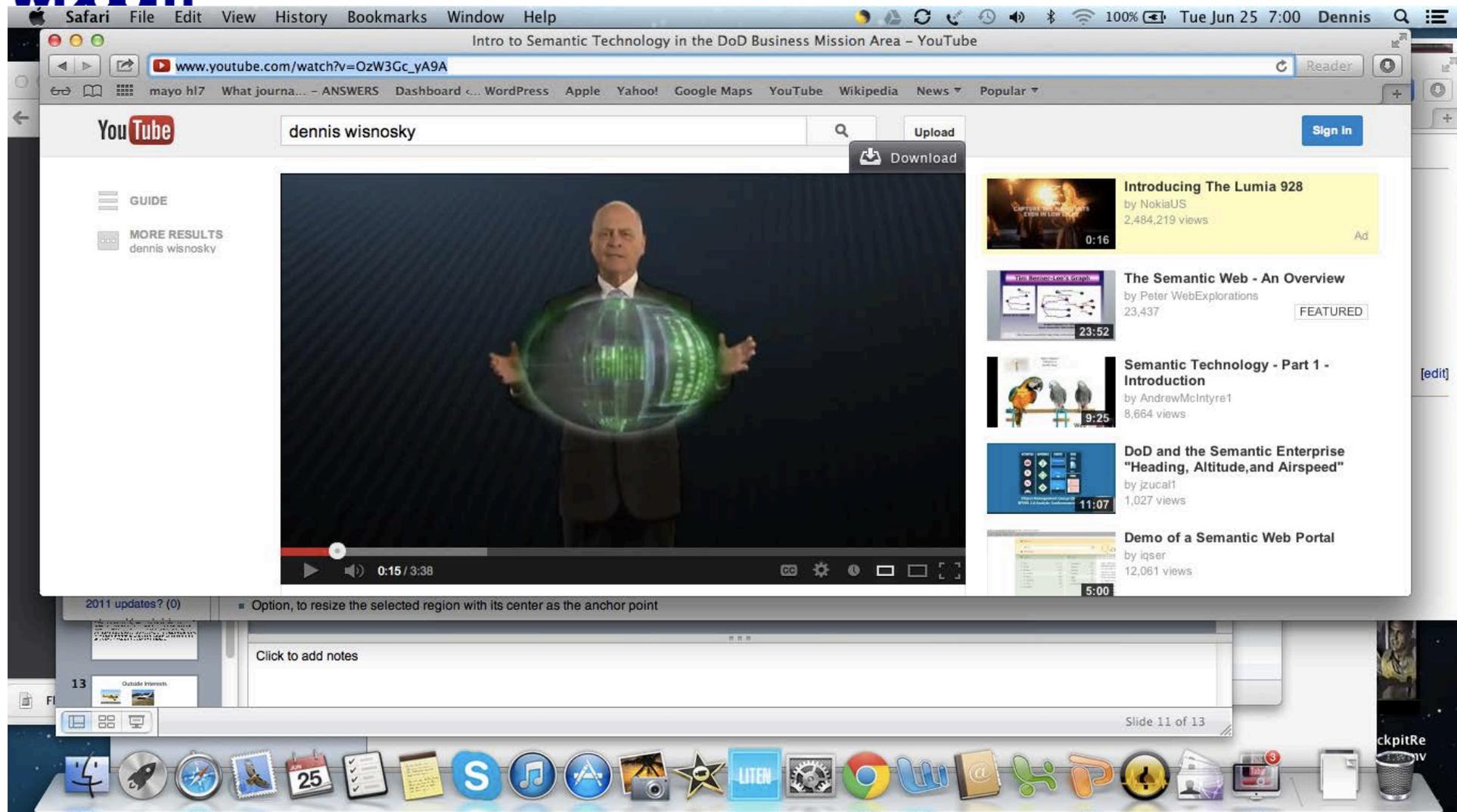
FIBO Guarantees Sausage



Thank you!

Questions?
Dennis@wisnosky.net





http://www.youtube.com/watch?v=OzW3Gc_yA9A