# SEMANTIC WEB FOR BANKING AND INSURANCE INDUSTRIES

The transition from document-based to meaning-based paradigm is a crucial development for many fields of online activity, and it can be safely assumed that all vital modes of online economics will be influenced by the semantic approach. This obviously includes **one of the most essential industries, namely the banking and insurance sectors.**

Considering the tremendous scale and – perhaps most importantly – the diversity of financial products in circulation, a need for a truly **systematic, transparent and accessible method of data organization** arises. Within the traditional paradigm, there are countless numbers of different formats, standards and systems. This heterogeneity of structures results in many obstacles, often unavoidable within the document-based paradigm, such as:

- incompatibility of systems and formats,
- difficulty in transferring data of different origin
- data stored in multiple, independent silos leading to inconsistency
- lack of  systematic method of verification of naming

Introduction of **semantic mechanisms**, among other things, provides the following benefits:

- create **a uniform framework** for data organization
- enable **easy transfer** of information across different formats – e.g. from custom-made business applications to universal formats of spreadsheets
- since not the document, **but the** information is what is essential, it becomes possible to trace the origin and history of a given financial product, thus preventing errors and confusion as to the nature and provenance of an object.
- Easier means for regulatory governance in monitoring financial activity by legal institutions
- **Better risk management** due to transparency of instruments

In the article published in American Banker, the author Michael Cataledo makes a claim that the more transparent and accessible approach provided by the Semantic Web could have prevented or alleviated the 2008 mortgage crisis:

*A recent example of the benefits of semantic technologies can be found in collapse of the subprime mortgage market. Financial organizations could not quickly identify and quantify the exposure to subprime mortgages that might have existed in their own portfolios. Imagine how things might have turned out if management teams, shareholders and investors could have been told exactly what they owned and where it was. (..)*

*The underlying components were stored across numerous organizations and departments, and the knowledge of how those packages were assembled and stored was lost as they were moved and repackaged over time. Once the names changed and the linkages were broken, there was no way for existing data management systems to follow the path back and assess the extent of the problem.*

However bold his claim might seem initially, one cannot fail to notice that these are precisely the obstacles of electronic finance that the Semantic Web promises to overcome -- and it offers **the precise means and technologies** to do so.

**The Semantic Web puts** content **in the forefront, removing the constraints of form.** No matter the format, location or author, a financial product becomes visible in its truly important aspects.

## FINANCIAL INDUSTRY BUSINESS ONTOLOGY

**FIBO (Financial Industry Business Ontology**) is an initiative aimed at formulating a semantic framework for the financial sector, whose main direction is to contain financial reporting and data. The main goal is to standardize the financial vocabulary and define terms and characteristics by which financial instruments are to be described in a universal semantic ontology. It can be used to describe and contain financial products, legal obligations and structures of business entities. It also provides means for achieving consistency of data

located in multiple locations, and a common methodology of communication between different organizations. It is a joint project of **The Enterprise Data Management Council** and the **Object Management Group**.

Members of **FIBO** are engaged in ongoing efforts of implementation of semantic technologies in the financial industry. It holds cyclic talks concerning technological and conceptual challenges faced in the endeavor.

*"The idea behind FIBO is to standardize the language used to precisely define the terms, conditions, and characteristics of financial instruments; the legal and relationship structure of business entities; the content and time dimensions of market data; and the legal obligations and process aspects of corporate actions. As an open-source, global financial initiative, it is planned to bring health to the financial system, through defining a vast amount of information semantically and providing a better capability for the industry and its regulators to look at more complex patterns and relationships of information in friendlier ways than conventional technology can offer."*
– Jennifer Zaino, "FIBO Technology Summit At SemTechBiz..."

## EXAMPLES OF APPLICATION OF FIBO

Application of semantic technologies of FIBO provides particular benefits for the market of derivatives. It is an area were various standards and naming conventions meet, and as a result, organization of instruments becomes difficult and prone to mistakes. FIBO provides a **common vocabulary** and **reasoning techniques** which enable to avoid such confusion.

*"Today, financial institutions spend hundreds of millions of dollars gathering data for regulators, with no advantage internally. The carrot [of FIBO] is to reduce those costs. Ignore the carrot and wait for regulators to ask for more data, and watch costs go up."*
– Dennis Wisnosky

*"If information is highly trustworthy, then the perception of risk regulators have of the financial industry might be lessened, if they can govern and certify an institution aligns with a*

*common data standard, which is FIBO in our proposal."*
– David S. Newman

Semantic techniques vastly improve on the process of conversion of formats, which, as mentioned earlier, is a task of crucial importance.

*XML trade messages can be translated into RDF with OWL reasoners then clumping all derivatives that have a contract pattern into a single class; calculations can be performed that could lead to discoveries – for example, that some party has taken a position for which it doesn't have the assets on hand to make the required payouts, should circumstances require that.*
– Jennifer Zaino, "FIBO, FIBO, It's Off To A Financial Industry Business Ontology We Go".


## RESOURCES

FIBO official website http://www.edmcouncil.org/financialbusiness

FIBO, FIBO, It's Off To A Financial Industry Business Ontology We Go by Jennifer Zaino, Semanticweb.com, http://semanticweb.com/fibo-fibo-its-off-to-a-financial-industry-business-ontology-we-go_b27391#more-27391

FIBO Technology Summit At SemTechBiz: Financial Industry And Sem Tech Leaders Discuss Ontology Evaluation Tools, http://semanticweb.com/fibo-technology-summit-at-semtechbiz-financial-industry-and-sem-tech-leaders-discuss-ontology-evaluation-tools-flora-2s-potential-and-more_b37810#more-37810

The Semantic Web's New Frontier by Michael Cataldo, American Banker
http://www.americanbanker.com/btn/22_11/the-semantic-webs-the-next-frontier-1003476-1.html?pg=1

Semantics & Big Data Go to the Bank by Angela Guess http://semanticweb.com/semantics-big-data-go-to-the-bank_b36818

Object Management Group official website http://www.omg.org/