

**Commodity Futures Trading Commission  
Technology Advisory Committee  
Data Standardization Subcommittee**



Semantics Working Group Status Report  
December 13, 2011

# Executive Summary

- ▶ FpML can be currently be used to meet the analytical requirements needed for regulatory oversight but may not be the ideal long term solution for data extraction, classification and computation
- ▶ Semantics (including both business conceptual ontologies and semantic processing) offers a promising alternative pathway for meeting the objectives of 719(b)
- ▶ The semantic standards for both financial instruments and legal entities are underway but not yet fully complete and not an immediate option for CFTC rulemaking
- ▶ Semantics and XML schema are synergistic and complementary – the goal is to leverage FpML and incrementally enhance it with semantics as a leap forward for analysis and derivatives oversight
- ▶ A public/private partnership should be nurtured to expedite the completion of the semantic standards and demonstrate their application and business justification to the derivatives (and systemic risk) markets

# The Semantics Value Proposition

- ▶ Provides a precise and unambiguous way of identifying the contractual structure of derivatives contracts based on legal fact, rather than elements in a message
- ▶ Describes concepts in natural language/English grammar (subjects, predicates, objects) in ways that are understood by both computers and humans to promote interoperability across messaging protocols/data sources and reduce reliance on legacy data structures
- ▶ Facilitates classification based on the characteristics and attributes of the instrument/participant so one can construct new instrument types as the derivatives industry innovates
- ▶ Uses logically consistent rules and definitions to infer classification and create links/relationships from the structure of the contract in order to identify levels of exposure and links disparate information for risk analytics
- ▶ Allows data schemas to change as regulatory assumptions change without incurring high IT costs, applications restructuring efforts or implementation delays
- ▶ Can be implemented incrementally and work in conjunction with FpML and other data standards



# FpML for Risk Analysis

1. Evaluation of Canadian Securities Administrator consultation paper on derivatives trade repositories
2. Implementation of questions in established open standards FpML and Xquery
3. Data sufficiently structured to retrieve information in an unambiguous way
4. Identifiers (such as LEI and UPI) will further facilitate the implementation of the queries
5. Bespoke products through the generic product representation are supported



# XML Schema Challenges

- ▶ XML schema is the best standard for messaging (tags data elements with standard labels organized in hierarchies)
- ▶ The meaning of the data labels are not designed to explicitly represent business terms and must use custom programming logic in order for them to be processed
- ▶ Classification is difficult with FpML because there are conflicting interpretations on how to define the product hierarchy
- ▶ Classification codes are fixed and hardcoded into the message making it hard to construct new instrument types and create new regulatory categories as the derivatives market evolves
- ▶ Complex queries in FpML requires programmers who are experts in derivatives to implement and is not conducive to analysis during “risk situations”
- ▶ XML is ingested into relational databases frequently consisting of hundreds of complex tables/data relationships and needs specialized programming to extract meaningful content

# Recommendations and Next Steps

- ▶ Document and verify the overall semantics business case (including how semantics and XML schema complement each other) among the participants in the derivatives industry
- ▶ Work collaboratively among EDM Council, ISDA, FPL, MISMO, OMG and XBRL under the coordination of ISO to align messaging and semantic standards
- ▶ Create public/private partnership to expedite the completion of the semantic standard for financial instruments/entities and demonstrate its application to derivatives transparency, market surveillance and financial stability
  - Demonstrate the metadata value of semantics by creating hyperlinks from regulatory rules to sources, examples, formal definitions, other instances
  - Demonstrate the practical use of semantics by leveraging the existing derivatives POC into a reference benchmark for implementation
  - Support the regulatory objectives of aligning data currently reported to various agencies with the semantic standard and in using semantics for internal analysis
  - Bring in semantics experts from the intelligence, defense, logistics, information, medical, travel and scientific communities under coordination of NIST to share knowledge on operational semantics deployment

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- ▶ *“We can’t solve problems by using the same kind of thinking we used when we created them”* – **Albert Einstein**
  - ▶ *“This is a once in a lifetime opportunity to change the market. This is the culmination of everything we have been training for in our quest to serve the public”* – **Andrei Kirilenko**