Technical Stream:
Reducing FIX Implementation Efforts: Standardizing the Standard

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The FIX Protocol

Standardizing the Standard

Robert Stowsky

November 16, 2004

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What is a standard?

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Evolution of FIX

Early specifications

- Focus on equity
- Open to interpretation

FIX 4.4

- Wide range of asset type
- More stringent definitions

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Industry Organizations

- SIA
- BMA
- FIA
- ISDA

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Other Protocols

- FpML
- TWIST
- ISO
- SWIFT

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Industry Driven

- Business champions
- Organizational recommendations
- Regulation

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Standardization vs. Flexibility

Forces Shaping Market Data

- **Market data will be the next area to experience a standards-renaissance**
  - **We're moving toward a true industry standard for market data dissemination**
  - **The industry is ready for a new, standards-based approach to an old problem**
- **We're seeing the standard evolve due to…**
  - **…the pressures of competition, more listings and product innovations**
  - **…an emphasis on improved customer service**
- **We're seeing business demands that outstrip technology's ability to deliver bandwidth**
  - **Proprietary solutions are becoming expensive to maintain and adapt.**
  - **An effective market data standard requires those characteristics described by Ryan**
    - **Bandwidth**
    - **Performance**
    - **Flexibility**
    - **Effective use of technology**

What is Implicit Tagging of Market Data?

- **FIX continues to be the basis of the message structure**
  - **"Tag number =" is suppressed and replaced by specific unreadable delimiters:**
    - **0x1 (SOH), 0x2 (start of block), 0x3 (end of block), 0x4 (end and start new block), 0x5 (end of message)**

Market Data Message

4.4|12|X|123|10<1|1||1|1234|3|9650|5|1|2||2|CME012
34567|4%1|2||1|3|3|10|5|1|2|2|2|CME01234567|4>123
^

Market Data Template

8|9|35|34|52<279|269|278|280|290|998|271|270|274|4
51|999|207|48|22>10^

Standard Tag=Value Message

279=1|269=1|280=1|290=1234|998=3|271=9650|270=5|274=1|451
=2|207=2|48=CME01234567|22=4|279=1|269=2|280=1|290=3|998=
3|271=10|270=5|274=1|451=2|999=2|207=2|48=CME01234567|22=

What is Implicit Tagging of Market Data?

- **Message structure remains intact and fully serviceable with respect to repeating and nested groups.**
  - **Only an ASCII representation of the data remains (in addition to delimiters)**
- **New parsing algorithms are needed to take the delimiters into account and extract data**
  - **MD work group has developed a delimiter-based parser which is now available**

What is Implicit Tagging of Market Data?

- **Tag order becomes essential to interpret the message. Tag order is pre-determined by use of a template which defines the sequence of tags and groups.**
  - **Dissemination of templates become a pre-condition to processing messages.**
- **Delta's are used for price reporting**
  - **Only the first block carries complete price. Subsequent blocks are delta values**
- **Trades are flagged as high/low in order to reduce the size of market data messages.**

CME's Market Data Proof of Concept (POC)

- **Purpose: to conclusively demonstrate the viability of implicitly tagged market data under a stress that exceeds real life market conditions**
- **The POC demonstrated that implicitly tagged market data accomplishes the following:**
  - **Significantly increases overall throughput – savings of 92% resulted**
  - **Radically reduces message size and provides bandwidth savings - savings of 65% resulted**
  - **Reduces parsing time and improves overall performance - savings of 48% resulted**

CME's Market Data Proof of Concept (POC)

- The POC covered full depth order books for both aggregate and individual orders
- Trades were included as part of the market data in all cases
- POC Conditions:
  - Test Platform – Linux OS, CPU 4 x 2.4GB processors, 2.5GB RAM, 100% CPU utilization
  - Test Data - 750K E-Mini S&P messages injected 50 times, resulting in 37.5 million messages
  - 1GB network bandwidth

Conclusion: Implicit Tags Give us Room to Grow

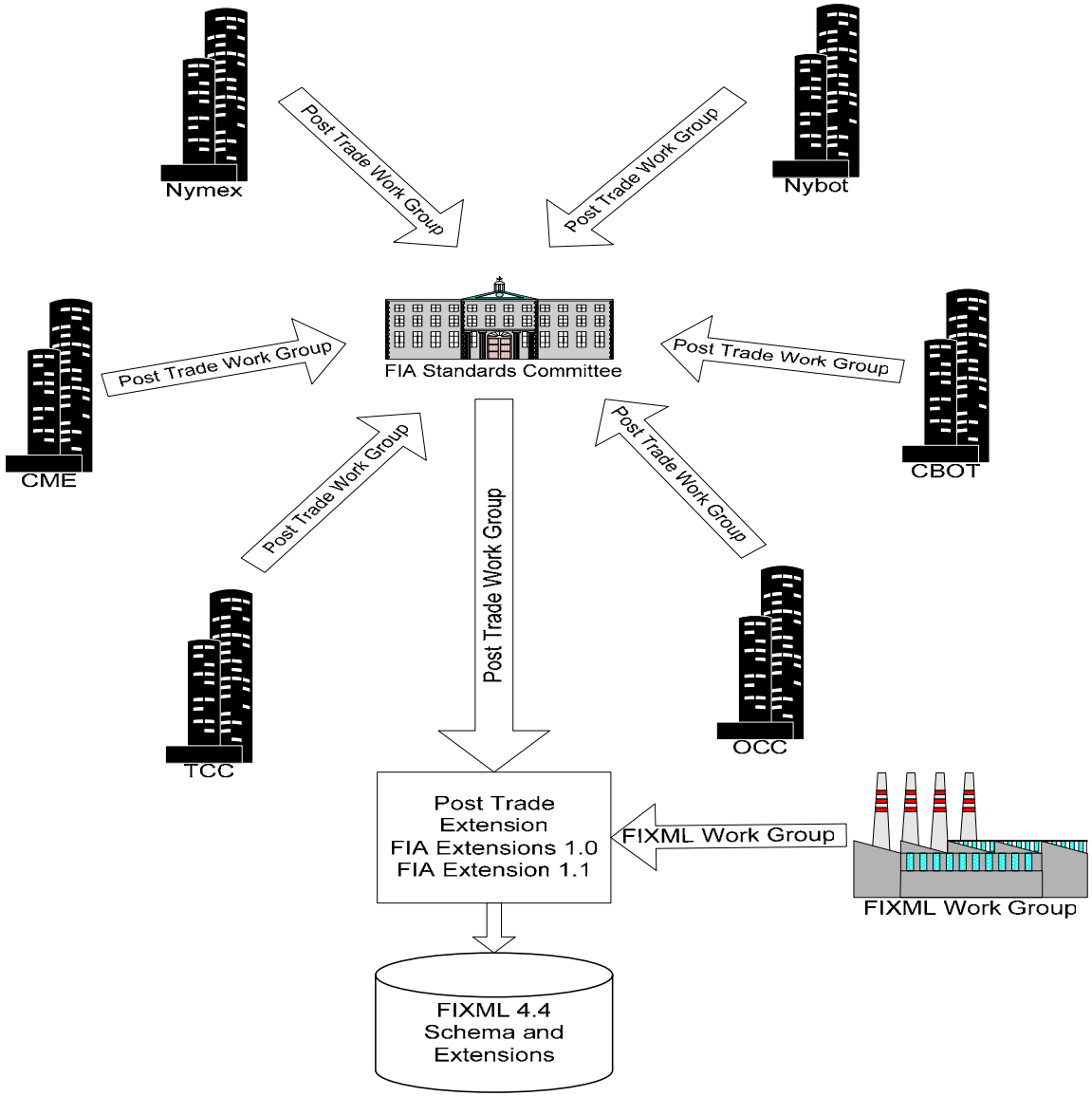
- **The conclusion:**

  Implicitly tagged market data gives new and robust life to the FIX Market Data Standard. Message size is radically reduced and overall throughput nearly doubles.

  It allows full depth order books to be efficiently supported at both an individual and aggregate level and provides a practical solution for eliminating proprietary formats and moving toward a common standard.

  Eventually, delimited messaging using implicit tags may be the format of choice across all FIX interfaces.

FPL – FIA Post Trade Effort



Ryan Andrews, Director of Market Connectivity, Trading Technologies,
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Tonight's Event

5:30PM-7:30PM Cocktail Party at Roy's Restaurant (Music by The Lava Trading Band)

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