## Contents

- Background
- Interoperability Options
- ISO 15022 XML Working Group - WG10
- ISO Overview
- ISO 15022 Revealed
- SWIFT Standards Methodology
- WG10 Organization
Background
Standards Development

• Leveraging New Technology
• Expanding Coverage
• Focusing on Market Practice
XML and Standards

Two Variations

• Evolving Existing Standards
  • FIX, SWIFT

• Creating New Standards
  • Industry Consortium - FpML
  • Vendor based - FinXML, NTM
Current Environment

XML Standardization Is Increasing

Why?

• Broad Vendor Support Means More Technology Choices
• Platform Independence
• Human Nature
• Vendors
  – Creating standards implies technological leadership
  – Products can be tuned to standard
• Participants lack of knowledge of existing initiatives
Overlapping Initiatives
Transactional Based XML

• **Message Networks**
  – SWIFT - XML on Next Generation Network

• **Consortia**
  – FpML - OTC Derivatives
  – FIXML - FIX Application Messages

• **Vendors**
  – Sungard - NTM
  – FinXML

• **Utilities**
  – GSTPA - XML Message Format Based On ISO 15022
Document Based XML

• Consortia
  – RIXML - Parsing and classifying investment research
  – XBRL - Preparation and exchange of business reports and data

• Vendor
  – IRML (Multex/Consortia) - Exchange and use of financial research content
  – First Call
Interoperability/Convergence Issues

• Interoperability Isn’t a Technology Issue
  – Middleware, XSLT
• Interoperability is a Business Issue
  – Requires Coordination
• XML doesn’t replace standards competition
• Convergence on a single standard syntax (XML or anything else) is not realistic in the short term
Interoperability Options
W3C’s Solution - XSLT

[Diagram showing relationships between FIXML, GSTPAML, NTM, FinXML, FpML, SWIFTML, FIXML, and XSLT]
Modeling - UML*

- FIXML
- GSTPAML
- FinXML
- NTM
- FpML
- SWIFTML

Business Meaning

Java/C++

Mapping Rules

FIXML DTD

SWIFTML DTD

*Unified Modeling Language
Interoperability Requires Coordination
ISO 15022 XML Working Group -WG10
ISO 15022 XML Working Group -
Working Group 10

Mission Statement
Evolve ISO 15022 to permit migration of the securities
industry to a standardized use of XML, guaranteeing
interoperability across the industry and with other industry
sectors, particularly but not restricted to the financial
industry

Participants
• GSTPA, FIX, ISITC-IOA, SMPG, SWIFT, Thomson, FinXML, FpML, ECSDA, EMX, Telekurs,
  Instinet, etc.
• DTCC, Euroclear, CREST, Clearstream, etc.
• SSMB, Merrill, BoNY, ING, State Street, Chase, Morgan Stanley, Deutsche Bk, Goldman,
  Citigroup, Northern Trust, Barclays, etc.

March 6th, 2001
Initial Meeting
Reviewed existing XML initiatives
Discussed Interoperability Opportunities

Established Organization Structure
Developed Mission Framework
Formed Project Teams

Full Working Group Meeting
Formalized TC68/SC4/WG10

Project Team Meetings

Full WG10 Meeting

New York
Feb’ 2000
New York
Jun’ 2000
San Francisco
Sep’ 2000
London
Jan’ 2001
Boston
Mar’ 2001
International Organization For Standardization (ISO)

- Federation of 130 member-countries
- Prepare International Standards
- 200 Technical Committees (TC)
- 600 SubCommittees (SC)
- 2,000 Working Groups (WG)
- 15,000 International Standards prepared on a voluntary basis
ISO 15022 XML Working Group - WG10
SC4 Breakdown

Legend:

P-Members - Countries with full voting rights
Liaison - International organizations which do not vote
O-Members - Countries with no voting rights

P-Members
- Australia
- Austria
- Belgium
- Canada
- France
- Germany
- Italy
- Japan
- Netherlands
- Norway
- Spain
- Sweden
- Switzerland
- UK
- USA

Liaison Organizations
- ANNA
- Clearstream
- ECBS
- Euroclear
- FIBV
- IOSCO
- S.W.I.F.T.
- ISITC-IOA
- FIX Protocol Limited?
ISO 15022 Revealed
ISO 15022

• What exactly is the standard?
  – Part 1: Data field and message design rules and guidelines

• Registration Authority - SWIFT
  – Maintains Data Field Dictionary/Catalogue of Messages

• Registration Management Group
  – Monitors Registration Authority
ISO 15022

• Reference Table of Multiple Syntaxes
• Registry of Messages

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Trading
Settlement Instructions
Settlement Status
Settlement Confirmations
Corporate Events
Position/Movements
Depositary Receipts

March 6th, 2001
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<tr>
<th>Field</th>
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<th>MT 502 - Order to Buy or Sell</th>
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</table>
Evolving ISO 15022

Data Field Dictionary

Catalogue of Messages

Evolving ISO 15022

Repository

Business Model

“Business” Messages

XML DTDs/Schemas

Data Fields & Messages

UML models

March 6th, 2001
SWIFT Standards Methodology: A Starting Point
Standards Modeling Process

**Business Layer**
(Domain Information Model)
- Contains:
  - Business Process
  - Business Domain
  - Actors

**Logical Layer**
(Message Information Model)
- Contains:
  - Message Structure
  - System Interaction

**Physical Layer**
(Message Formats)
- Contains:
  - Format Transformation Rules
    (e.g. DTDs, Schemas)
Business Layer

• Definition
  – Focus on Business Not Implementation
  – Describe Business Context Of Solution

• Activities
  – Identify Business Domain
  – Define Structure/Dynamics of Business Context
  – Capture Business Information within Business Context

Analogy: “Architectural Designs for Building a House Based on Client Requirements”
Business Layer - Actors

- Investor
- Trade Instructor
- Post Trade Administrator
- Trader
- Market
- MarketMaker
- MarketPlace
- Confirmation Parties
- Central Securities Depository
- Central Counterparty
- Global Settlement Agent
- Local Settlement Agent
- Regulator
- Settlement Agent
- Interested Agent
- Infrastructure
- Securities Industry
Logical Layer

• Definition
  – Specify the Exchange of Structured Business Data (Messages)
  – Describe Abstract, Technology Neutral Solution

• Activities
  – Message Interaction - Collaboration Diagrams
  – Dynamics of Solution - Activity Diagrams
  – Business Scenarios - Sequence Diagrams
  – Message Structure/Content - Class Diagrams

Analogy: “Detailed Plans for Wiring a Building”
Logical Layer

Message Definition

March 6th, 2001
Physical Layer

• Definition
  – Set of Mapping Specifications from the Logical Layer to Target Implementation (XML, Java, etc)

• Activities
  – Create Design Rules for Each Syntax

Analogy: “Work Plan For Actual Building Construction”
<!ELEMENT NoticeOfExecution
  (Seller, Buyer, InvolvedStepInBroker?, FinancialInstrumentAttributes, TradeDetail_)> 

<!ELEMENT Seller (%_Investor_ ; |%_BrokerDealer_; )> 

<!ELEMENT Buyer (%_Investor_ ; |%_BrokerDealer_; )> 

<!ENTITY %_Investor_
  "Identification"> 

<!ENTITY %_BrokerDealer_
  "Identification, Role?"> 

<!ELEMENT InvolvedStepInBroker
  (Identification, ProcessingReference_)> 

<!ELEMENT FinancialInstrument
  (Identifier [1], CurrencyOfDenomination [1], ClassificationScheme [1])> 

<!ELEMENT Trade
  (DealPrice [1], FilledQuantity [1])> 

<!ENTITY TypeOfSeller/Buyer
  "<<abstract>>"> 

<!ENTITY ConsistencyOnBuyer/Seller
  "0..1"> 

<!ENTITY +StepInBroker
  "0..1"> 

<!ENTITY +FinancialInstrumentAttributes
  "1"> 

<!ENTITY +TradeDetail
  "1..*"> 

<!ENTITY +Seller
  "1"> 

<!ENTITY +Buyer
  "1"> 

<ENTITY %_Investor_ “Identification”> 

<ENTITY %_BrokerDealer_ “Identification, Role?”> 

<!ELEMENT InvolvedStepInBroker
  (Identification, ProcessingReference_)> 

....
Physical Layer

Syntax Specific Design Rules

<table>
<thead>
<tr>
<th>UML</th>
<th>XML instance</th>
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<tbody>
<tr>
<td>Class containing attributes</td>
<td>Attributes become nested XML elements.</td>
</tr>
<tr>
<td>Class having roles</td>
<td>Roles become nested XML elements</td>
</tr>
</tbody>
</table>

Model

DTD

```xml
<!ELEMENT NoticeOfExecution (Buyer, FinancialInstrumentAttributes)>  
<!ELEMENT FinancialInstrumentAttributes (Identifier)>  
```
WG10 Organization
ISO 15022 XML Working Group - WG10

Structure

- Steering Committee
  - Project Teams
    - Design Rules
      - UML Business Modeling
      - UML to XML Conversion Rules
    - Reverse Engineering
      - Reverse engineering existing message to business model
    - Registry/Repository
      - Organization of repository
      - Procedures to register business models

March 6th, 2001
ISO 15022 XML Working Group - WG10

WG10

Steering Committee
- Design Rules
- Reverse Engineering
- Registry/Repository

“Observers”

Other interested parties

Nominated by ISO

March 6th, 2001
Design Rules Project Team

• Define a Standards Development Approach
  – Common, Syntax Independent Business Model (UML) ending in a specific physical representation (XML)

• Create Standards Development Rules
  – UML for business modeling
  – XML for its physical representation

• Ensure Technical and Business Interoperability
  – ebXML
  – HL7
Reverse Engineering Project Team

• Provide Reverse Engineering User Guidelines
• Validate Rules Defined by Design Rules Group
  – Build Portion of Securities Business Model,
  – Generate Logical Model
  – Derive XML Outputs
• Build Initial Repository
Reverse Engineering Project Team

Identification of Business Processes
Detailed Description of Business Entities
Relationships Between Business Entities

Business Analysis
ISO 15022
DFD
Existing Message Sets

Top-Down
Reverse-Engineering (Bottom-Up)
Registry/Repository Project Team

- Review responsibility/SLA of the ISO 15022 Registration Authority (RA) and Registration Management Group (RMG)

- Determine input/output of future ISO 15022 Repository
  - Business Models
  - DTD/Schemas
  - Data Elements
Repository Interoperability

Syntax-specific design rules

Syntax-1 (FIX) Interoperability Syntax-2 (ISO XML) Interoperability Syntax-3 (FIN ISO15022)

Standards Repository

March 6th, 2001
WG10 Deliverables -
Recommend Changes to ISO 15022

• Development Methodology
  – Business Models
  – Logical/Message Models
  – Rules to Derive XML Syntax

• Registry/Repository
  – Maintenance Procedures
  – RA Service Level Agreement
ISO Submission

Steps

• Circulate Draft To 16 ISO P-Member Countries
• Allow Five Months for P-Member Comments/Revisions
• Create Draft International Standard
• Circulate To ISO Member Countries
• Allow Two Months for Member Comments/Revisions
• Create Final Draft International Standard
• Circulate To ISO Member Countries
• Allow Two Months for Member Comments/Revisions
• Publish International Standard
WG10 - How to Participate

• Two Types
  – Observer - Register on eGroups
  – Project Team Member

• Project Team Member
  – Requires ISO Sponsorship
    • Local Standards Body (U.S. - ANSI-X9)
    • Liaison Organizations (ISITC-IOA, FIX Protocol?)
ISO 15022 XML Working Group - WG10

More Information

Main Site:
http://groups.yahoo.com/group/XML_Init_Main

Project Teams:
www.tc68.org