FIX TRADING COMMUNITY
Americas Trading Conference 2022

– Standards for Standards –

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Agenda

- Introduction to Metadata

- Orchestra Technical Standard

- My Orchestra

Standards for Standards
Introduction to Metadata
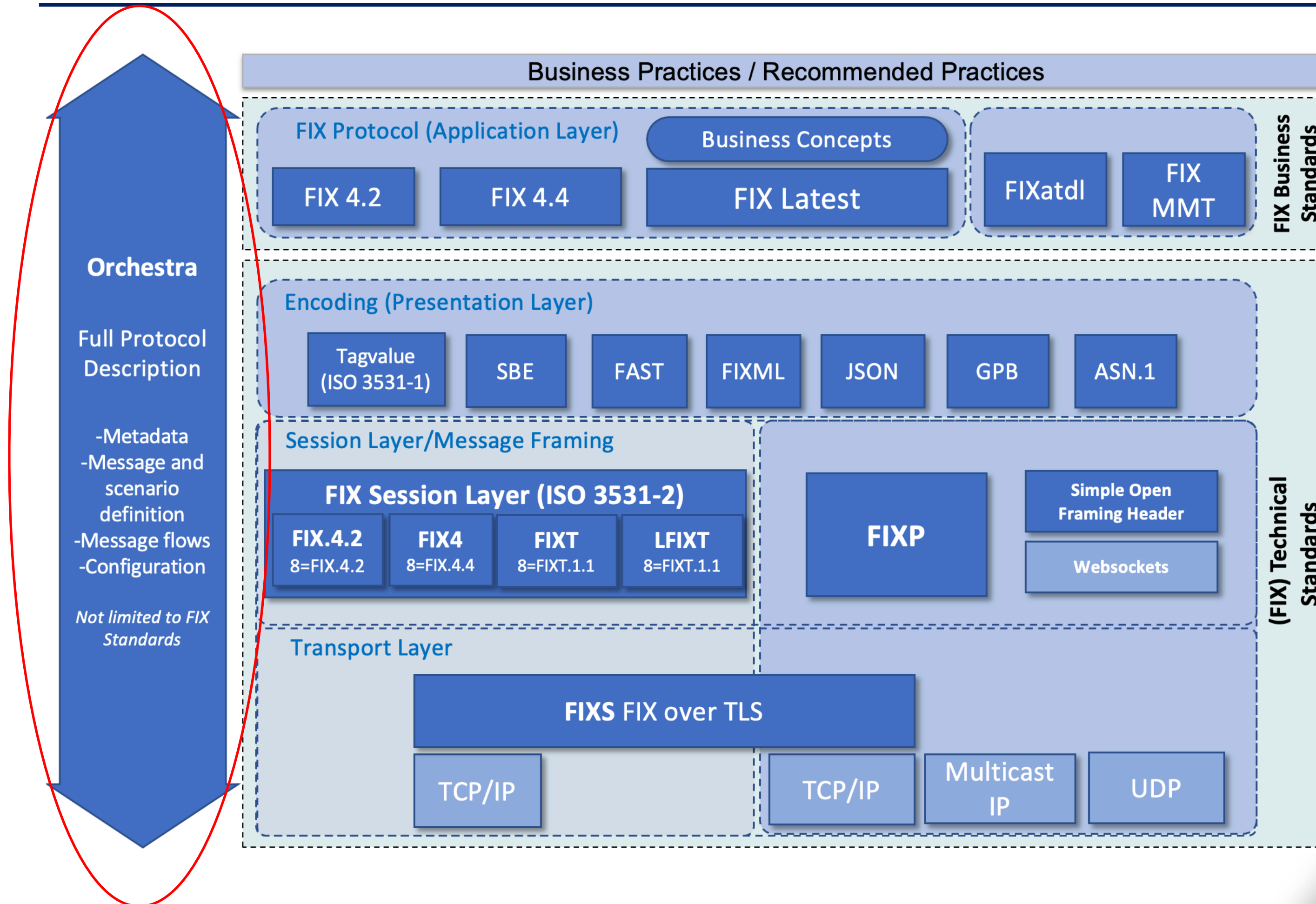
Introduction to Metadata

Metadata is data that provides information about other data

- Metadata for electronic messages

  - Message identifier, name, category, pedigree...

  - Field identifier, name, datatype, length, value range, presence...

  - Repeating group information, e.g. cardinality

- Metadata for technical connectivity

  - Counterparty information, e.g. IP addresses

  - Encoding information, e.g. tagvalue, FIXML, SBE,...

  - Session information, e.g. protocol (FIX4, FIXT, FIXP), reliability (e.g. recoverable)

  - Transport information, e.g. unicast vs. multicast, primary vs. secondary

Introduction to Metadata

- How can electronic interface metadata be provided?

    - Paper (PDF) or online (html), e.g. RoE documentation

    - Embedded (as part of the specific encoding), e.g. FIX tag=value

    - Machine-readable (e.g. XML)

- What is the problem?

    - Metadata provided on paper or online is not machine-readable

    - XML is a standard, but only for the structure/syntax (elements, attributes)

    - Embedded metadata is tied to a specific encoding

- What is the solution?

    - Provide a machine-readable metadata standard that is agnostic to a specific set of standards for the application, encoding, session, and transport layer.

FIX Standards

Orchestra

Full Protocol Description

-Metadata
-Message and scenario definition
-Message flows
-Configuration

Not limited to FIX Standards

Business Practices / Recommended Practices

FIX Business Standards

FIX Protocol (Application Layer)

Business Concepts

FIX 4.2	FIX 4.4	FIX Latest

FIXatdl	FIX MMT

(FIX) Technical Standards

Encoding (Presentation Layer)

Tagvalue (ISO 3531-1)	SBE	FAST	FIXML	JSON	GPB	ASN.1

Session Layer/Message Framing

FIX Session Layer (ISO 3531-2)

FIX.4.2 8=FIX.4.2	FIX4 8=FIX.4.4	FIXT 8=FIXT.1.1	LFIXT 8=FIXT.1.1

FIXP

Simple Open Framing Header

Websockets

Transport Layer

FIXS FIX over TLS

TCP/IP		TCP/IP	Multicast IP	UDP

Standards for Standards
Orchestra Technical Standard

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Orchestra Technical Standard – History

- FIX Basic Repository was the first machine-readable representation in XML and was developed specifically for the FIX Protocol. It consists of different XML files per metadata type, e.g. messages, fields, enums.

- FIX Unified Repository (a.k.a. Repository 2010 Edition) merged the individual files into a single XML with the exception of plain text (a.k.a. phrases) for multi-language support.

- Both FIX Basic Repository and FIX Unified Repository were defined with schema files (XSD) but were not implemented as a FIX Technical Standard.

- The development of the Orchestra Technical Standard Version 1.0 started with the first Release Candidate in December 2016.

- The fifth Release Candidate was published in September 2019 and served as the basis for the Draft Standard published in February 2020.

- The final Version 1.0 was published in February 2021.

- The FIX Orchestra Working Group is currently working on the first Release Candidate for Version 1.1.

Orchestra vs FIX Orchestra Repository

- Orchestra is a Technical Standard for metadata with a version, currently 1.0 (https://www.fixtrading.org/standards/fix-orchestra-online/)

- Orchestra defines a standard for both application and session level.

- Orchestra supports any FIX or non-FIX electronic interface.

- FIX Orchestra Repository uses Orchestra v1.0 and is the machine-readable representation of FIX Latest, the highest version of the FIX Protocol (messages, components, fields, and values).

- FIXimate (https://fiximate.fixtrading.org/) visualizes the FIX Orchestra Repository.

- FIX Orchestra Repository has yet to make use of some of the advanced features of the Orchestra Technical Standard, e.g.

  - Presence rules, e.g. StopPx(99) is conditionally required when OrdType(40)=3 (Stop/Stop Loss) or 4 (Stop Limit)

  - Default values for optional fields, e.g. TimeInForce(59)=0 (Day)

  - Cardinality of repeating groups, e.g. SideCrossOrdModGrp must have 1 or 2 instances

- Extensions of the FIX Protocol are currently still applied to the FIX Basic Repository (does not have the capabilities of Orchestra) and then converted to the FIX Orchestra Repository

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FIX Orchestra Repository – FIXimate

FIX.Latest_EP269 - English

Find all: [Pattern] [Search]

Regex match: ^=start, $=end, .=any char
☐ Match abbreviated name only

Message type: [D] [Lookup]
Component: [Name] [Lookup]
Field tag: [11] [Lookup]
Field name: [Name] [Lookup]
Code set: [Name] [Lookup]

About this orchestration
Message Summary
Components
Fields
- Sorted by Tag Number
- Sorted by Field Name
- Sorted by Datatype
- User Defined Fields

Code Sets
Datatypes

Message Layouts
Session
PreTrade
Trade
- SingleGeneralOrderHandling
  - DontKnowTrade
  - ExecutionAck
  - ExecutionReport
  - NewOrderSingle
  - OrderCancelReject
  - OrderCancelReplaceRequest
  - OrderCancelRequest
  - OrderStatusRequest
- ProgramTrading
- OrderMassHandling
- CrossOrders
- MultilegOrders

PostTrade
Infrastructure

NewOrderSingle [type 'D']

<Order>

The new order message type is used by institutions wishing to electronically submit securities and forex orders to a broker for execution.

The New Order message type may also be used by institutions or retail intermediaries wishing to electronically submit Collective Investment Vehicle (CIV) orders to a broker or fund manager for execution.

Pedigree Added FIX.2.7
Expand Components | Collapse Components

Field or Component	Field Name	Abbr Name	Req'd	Comments	Pedigree
Component	**StandardHeader**	BaseHeader	Y	MsgType = D	Added FIX.2.7
11	ClOrdID	ID	Y	Unique identifier of the order as assigned by institution or by the intermediary (CIV term, not a hub/service bureau) with closest association with the investor.	Added FIX.2.7
2422	OrderRequestID	OrdReqID			Added EP188
526	SecondaryClOrdID	ID2			Added FIX.4.3
583	ClOrdLinkID	LnkID			Added FIX.4.3
2829	DuplicateClOrdIDIndicator	DupClOrdIDInd			Added EP253
Component	**Parties**	Pty		This is party information related to the submitter of the request.	Added FIX.4.3 Updated EP131

Tag	Field Name	Abbr Name	Data Type	Union Datatype	Description	Pedigree
11	ClOrdID	ClOrdID / ID in SingleGeneralOrderHandling	String		Unique identifier for Order as assigned by the buy-side (institution, broker, intermediary etc.) (identified by SenderCompID (49) or OnBehalfOfCompID (5) as appropriate). Uniqueness must be guaranteed within a single trading day. Firms, particularly those which electronically submit multi-day orders, trade globally or throughout market close periods, should ensure uniqueness across days, for example by embedding a date within the ClOrdID field.	Added FIX.2.7

Used in messages:
[CollateralAssignment][CollateralInquiry][CollateralInquiryAck][CollateralReport][CollateralRequest][CollateralResponse][Email][ExecutionAck][ExecutionReport][MultilegOrderCancelReplace][NewOrderMultileg][NewOrderSingle][OrderCancelReject][OrderCancelReplaceRequest][OrderCancelRequest][OrderMassActionReport][OrderMassActionRequest][OrderMassCancelReport][OrderMassCancelRequest][OrderStatusRequest][QuoteRequest][QuoteResponse][RegistrationInstructions][RegistrationInstructionsResponse][SettlementInstructions][TradeCaptureReportRequest]

Used in components:
[InstrmtStrkPxGrp][ListOrdGrp][OrdAllocGrp][OrdListStatGrp][OrderAggregationGrp][OrderEntryAckGrp][OrderEntryGrp][SideCrossOrdCxlGrp][SideCrossOrdModGrp][TradeReportOrderDetail]

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Orchestra Technical Standard – Features

- Scenarios – create multiple instances of an element to distinguish use cases (applicable to Orchestra XML files representing recommended practices)

- Pedigree – keep track of interface changes (additions, updates, deprecations)

- Conditional rules – express optional presence of fields based on rules

- Cardinality of repeating groups – define minimum/maximum number of occurrences

- Length and value ranges – define length/minimum/maximum values for a field

- Mapped datatypes – map datatypes to other type systems, e.g. XML

- Workflows – define the messages (and quality) flowing between counterparties

- Actors – define counterparties together with workflows or external entities with states

- State machines – define states and transitions

- Documentation – annotation of elements that can be used to generate specifications

Standards for Standards
My Orchestra

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My Orchestra – Objectives and Approach

- ## My Objectives

  - Reduce my cost and increase efficiency and quality of the development, testing, and documentation of my electronic interface(s).

  - Require only a single machine-readable interface definition to generate my software code, my test cases, and my specification of a given electronic interface.

  - Cover my internal as well as external (customer-facing) interfaces.

- ## My Approach

  - Automate the development, testing, and documentation of my electronic interface(s) by generating software code, test cases, and specifications.

  - Create XML file(s) compliant with the Orchestra Technical Standard, using tools available from FIX (website and/or GitHub) or from a vendor.

  - Generate Rules of Engagement documents from Orchestra XML files for review, discussion and agreement between counterparties (internal or external).

  - Use Orchestra workflows and scenarios to identify test cases and generate specific documents and Orchestra XML files for (acceptance) testing.

  - Use Orchestra pedigree attributes for versioning of interface elements.

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My Orchestra – Getting Started

- Option 1: start with Log2Orchestra (https://log2orchestra.fixtrading.org/)
  - Download Orchestra XML file of FIX Latest as reference file
  - Use Log2Orchestra to generate Orchestra XML file from your logfiles
  - Use Tablature to generate markdown file from your Orchestra XML file

- Option 2: start with Playlist (https://playlist.fixtrading.org/)
  - Download Orchestra XML file of FIX Latest as reference file
  - Use Playlist to select subset of FIX Latest representing your FIX interface
  - Use Tablature to generate markdown file from your Orchestra XML file