

FIX TRADING COMMUNITY

Nordic Trading Briefing 2022

– FIX Tools in Action –

Thursday 9th June 2022

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Agenda

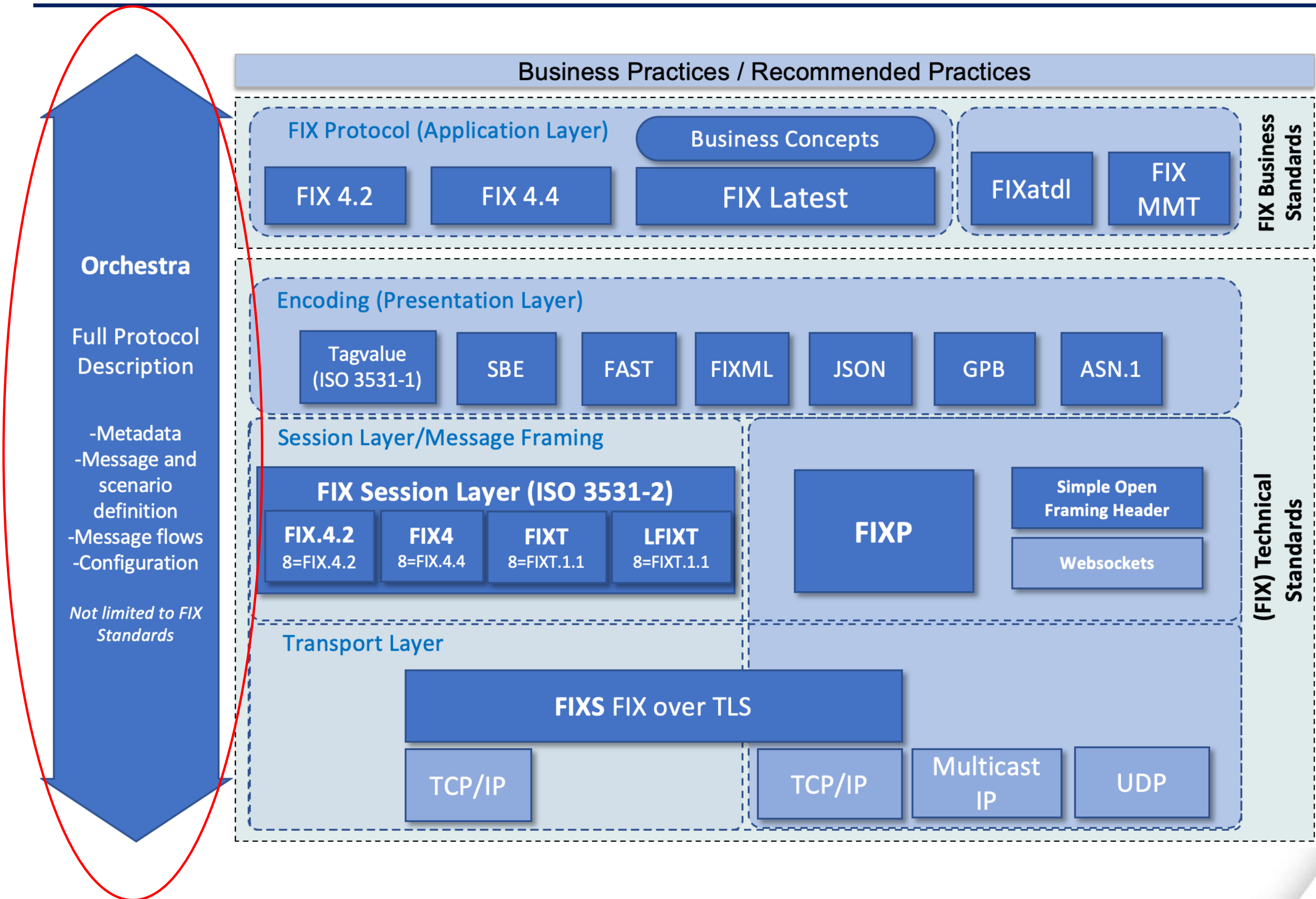
- FIX Orchestra Repository
- FIX Tools
 - FIXimate4
- Generating a Tablature markdown file
 - Log2Orchestra
 - Playlist
 - Tablature
- Generating Rules of Engagement
 - Markdown
 - Style reference document

FIX Tools in Action

FIX Orchestra Repository



FIX Standards



FIX Orchestra Repository

■ Orchestra versus FIX Orchestra Repository

- Orchestra is a Technical Standard for meta-data with a version, currently 1.0
- Orchestra defines a standard for both application and session level.
- FIX Orchestra Repository is the machine-readable representation of a specific version of the FIX Protocol with its messages, fields and values.
- Orchestra supports any FIX or non-FIX electronic interface

■ History

- FIX Basic Repository was the first machine-readable representation in XML and is still provided for backward compatibility. It consists of different XML files per meta-data 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.
- FIX Orchestra Repository is a single XML file and uses Version 1.0 of the Orchestra Technical Standard. It is provided with every Extension Pack since EP255.
- Further details are available in the GTC Blog
<https://www.fixtrading.org/transition-from-fix-5-0-sp2-to-fix-latest-completed/>

FIX Orchestra Repository

▪ Main XML elements

- Root element <fixr:repository> with name and version information
- Meta-data element <fixr:metadata> supporting Dublin Core terms for artifact provenance <http://dublincore.org/schemas/xmls/>
- One section element <fixr:section> per FIX business area, e.g. Pre-Trade
- One category element <fixr:category> per FIX category, e.g. Market Data
- One message element <fixr:message> per FIX message type defined by MsgType(35)
- One group element <fixr:group> per FIX repeating group
- One component element <fixr:component> per FIX component (non-repeating)
- One field element <fixr:field> per FIX field
- One code set element <fixr:codeset> per FIX code set, a.k.a. enum values
- One datatype element <fixr:datatype> per FIX datatype

New
Element

FIX Orchestra Repository

▪ Orchestra features

- Pedigree – keep track of interface changes (additions, updates, deprecations)
- Scenarios – create multiple instances of an element to distinguish use cases (applicable to Orchestra XML files representing recommended practices)
- Conditional rules – express optional presence of fields based on rules (FIX Latest does not support this feature yet)
- 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 FIX TagValue 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

FIX Orchestra Repository

■ Markdown

- Orchestra XML files are not intended for manual changes
- FIX created Tablature markdown as a simple authoring format (<https://github.com/FIXTradingCommunity/tablature/wiki>)
- Tablature tools support conversions between Orchestra XML and Tablature markdown (<https://github.com/FIXTradingCommunity/tablature>)
- Main XML elements correspond to headings in markdown
- Messages, repeating groups, components, and code sets are defined with piped tables
- Scenarios are easily created by duplicating tables and adding a scenario name
- Tablature tool md2orchestra uses a reference file to lookup missing information

FIX Tools in Action

FIXimate



FIX Tools – FIXimate

FIX.Latest_EP269 - English

Find all: [Search](#)
 Regex match: ^=start, \$=end, .=any char
 Match abbreviated name only

Message type: [Lookup](#)

Component: [Lookup](#)

Field tag: [Lookup](#)

Field name: [Lookup](#)

Code set: [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]

FIX Tools – FIXimate

- FIXimate is the visualization tool for the FIX Repository, which contains the meta-data for the FIX application and session layer.
- FIXimate4 uses the FIX Orchestra Repository as data source
- Strong search capabilities, including regular expressions and the ability to search for FIXML abbreviations
- Drop down lists for components, fields and code sets
- Pedigree information from messages all the way down to code values for additions, updates and deprecations
- Permanent URLs to support referencing from within your documents, e.g. <https://fiximate.fixtrading.org/en/FIX.Latest/msg14.html> to reference NewOrderSingle(35=D).

FIX Tools – FIXimate

▪ Search URLs

- Message by MsgType(35): <https://fiximate.fixtrading.org?msgtype=D>
- Component by name: <https://fiximate.fixtrading.org?comp=Instrument>
- Field by tag number: <https://fiximate.fixtrading.org?tag=11>
- Field by name: <https://fiximate.fixtrading.org?field=ClOrdId>
- Code set by name: <https://fiximate.fixtrading.org?codeset=AdvSideCodeSet>
- Search by expression: <https://fiximate.fixtrading.org?find=Limit>

▪ URLs for direct access

- Message by identifier: <https://fiximate.fixtrading.org/en/FIX.Latest/msg14.html>
- Component by identifier: <https://fiximate.fixtrading.org/en/FIX.Latest/cmp1003.html>
- Field by tag number: <https://fiximate.fixtrading.org/en/FIX.Latest/tag11.html>
- Code set by identifier: <https://fiximate.fixtrading.org/en/FIX.Latest/cds4.html>
- List of all code sets: https://fiximate.fixtrading.org/en/FIX.Latest/codesets_sorted_by_name.html

FIX Tools – FIXimate

■ Regular expressions

- "Nested.PartyID\$" finds components Nested2PartyID, Nested3PartyID, and Nested4PartyID but not fields like Nested2PartyIDSource(758) due to the "\$" at the end of the pattern.
- "^Nested.*" finds all components and fields starting with "Nested", e.g. "NestedPartyID(524)", and "Nested.*" also finds NoNestedXXX fields, e.g. NoNestedPartyIDs(539).
- "^R\$" or "^r\$" (activate checkbox for abbreviated names) finds all party role fields, e.g. PartyRole(452), as their abbreviated name is simply "R".
- "^[1-4]" finds all elements that start with a character between "1" and "4". This will result in a list of code names (aka field values) that begin with a number. Names of messages, components, fields, and code sets do not begin with a number in FIX.
- "\\([0-9]{4}\\)" finds all elements that contain 4 consecutive digits enclosed in round brackets. This will result in field descriptions and code names that reference FIX fields with 4-digit tag numbers.

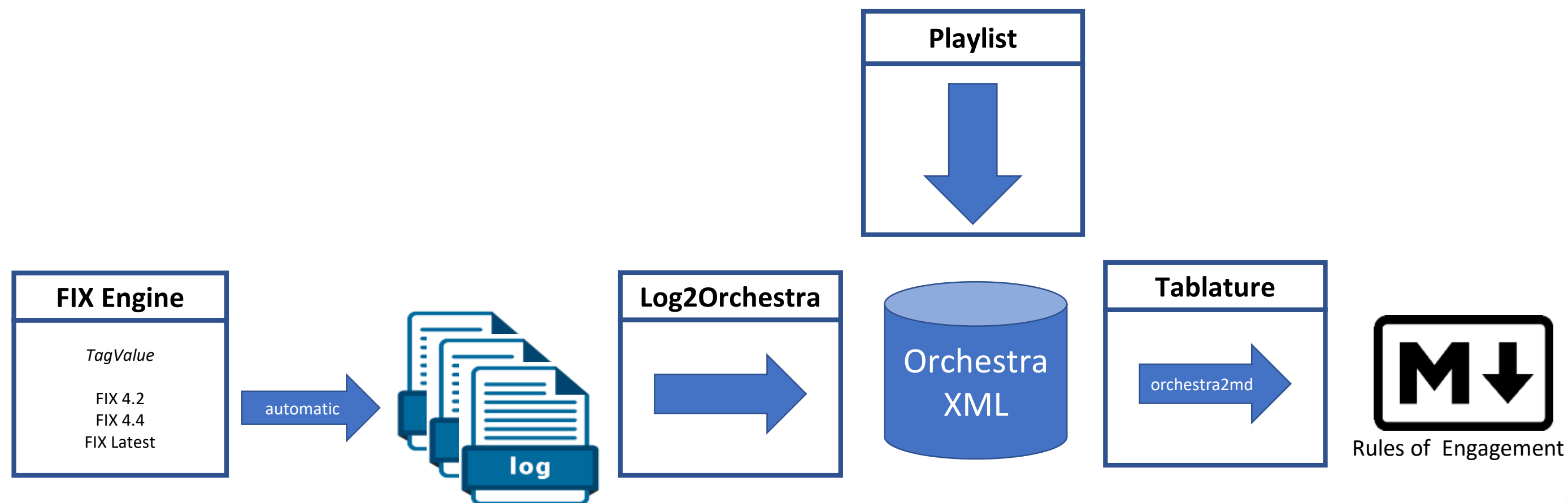
FIX Tools in Action

Generating a Tablature markdown file



Workflow

- 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



FIX Tools

- Log2Orchestra (FIX members only)

- Automatic creation of an Orchestra XML file with FIX engine logfiles as input
- Logfiles encoded in FIX TagValue with automatic detection of delimiter
- Orchestra XML reference file to retrieve meta-data from tag number
- Integrated access to public GitHub project for official reference files from FIX
<https://github.com/FIXTradingCommunity/orchestrations>

- Playlist (FIX members only)




- Web-based visualisation of input reference file with check boxes for selections of messages, groups, components, their fields and values of these fields
- Export of selected subset into a new Orchestra XML file
- Automatic selection of nested elements
- Read-only sections for fields and datatypes (automatically selected)

FIX Tools – Log2Orchestra

FIX Log to Orchestra

Creates an Orchestra file from one or more FIX message logs (tag-value encoding)

Input

Reference Orchestra file	FIX message log files	Configuration file for scenarios (optional)
 Drag file to read or Choose File FIX Standard	 Drag file to read or Choose Files	 Drag file to read or Choose File
Clear Input Files		

Output

Orchestra file to create (*.xml)

Append only (removes no scenarios)

[Create Orchestra file](#)

[Terms of Service](#)

[Help](#)

FIX Tools – Playlist

FIX Playlist

Creates a subset of an Orchestra file



Input

Reference Orchestra file

100%

Drag file to read or

Choose File

OrchestraEP269.xml

Clear Input File

Select Your Content

(All elements sorted alphabetically. Greyed out items are deprecated)

- MESSAGES
- GROUPS
- COMPONENTS
- FIELDS
 - Tags 1-999
 - Tags 1000-1999
 - Tags 2000-2999
 - Tags 40000-49999
- CODESETS
- DATATYPES

Output

Orchestra file to create (*.xml)

myorchestra.xml

Create Orchestra file

Terms of Service

Version 1.0
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- NewOrderSingle(35=D)
 - Account(1) - Type String
 - AccountType(581) - Type AccountTypeCodeSet
 - AcctIDSource(660) - Type AcctIDSourceCodeSet
 - AffiliatedFirmsTradeIndicator(2525) - Type Boolean
 - AllocID(70) - Type String
 - AuctionAllocationPct(1804) - Type Percentage
 - AuctionInstruction(1805) - Type AuctionInstructionCodeSet
 - AuctionType(1803) - Type AuctionTypeCodeSet
 - BookingType(775) - Type BookingTypeCodeSet
 - BookingUnit(590) - Type BookingUnitCodeSet
 - CancellationRights(480) - Type CancellationRightsCodeSet
 - CashMargin(544) - Type CashMarginCodeSet
 - ClOrdID(11) - Type String
 - ClOrdLinkID(583) - Type String
 - ClearingAccountType(1816) - Type ClearingAccountTypeCodeSet
 - ClearingFeeIndicator(635) - Type ClearingFeeIndicatorCodeSet
 - CommissionData - Component
 - CommissionDataGrp - Group
 - ComplianceID(376) - Type String
 - ComplianceText(2404) - Type String
 - ContraOrderOrigination(2882) - Type OrderOriginationCodeSet
 - ContraRoutingArrangementIndicator(2884) - Type RoutingArrangementIndicatorCodeSet
 - CopyMsgIndicator(797) - Type Boolean
 - CoveredOrUncovered(203) - Type CoveredOrUncoveredCodeSet
 - Currency(15) - Type Currency

FIX Tools – Tablature

...
Message ExecutionReport type 8 (9)

The execution report message is used to...

Name	Tag	Presence	Implmaxlength	Values
StandardHeader	component	required		
ApplicationSequenceControl	component	optional		
OrderID	37	required		
OrderRequestID	2422	optional		
MassOrderRequestID	2423	optional		
SecondaryOrderID	198	optional	20	
SecondaryClOrdID	526	optional	20	
SecondaryExecID	527	optional		
ClOrdID	11	optional	20	assign in.ClOrdID
QuoteMsgID	1166	optional		

...

Tablature
markdown

Message ExecutionReport type 8 (9)

The execution report message is used to...

Name	Tag	Presence	Implmaxlength	Values
StandardHeader	component	required		
ApplicationSequenceControl	component	optional		
OrderID	37	required		
OrderRequestID	2422	optional		
MassOrderRequestID	2423	optional		
SecondaryOrderID	198	optional	20	
SecondaryClOrdID	526	optional	20	
SecondaryExecID	527	optional		
ClOrdID	11	optional	20	assign in.ClOrdID
QuoteMsgID	1166	optional		

Standard
Pandoc

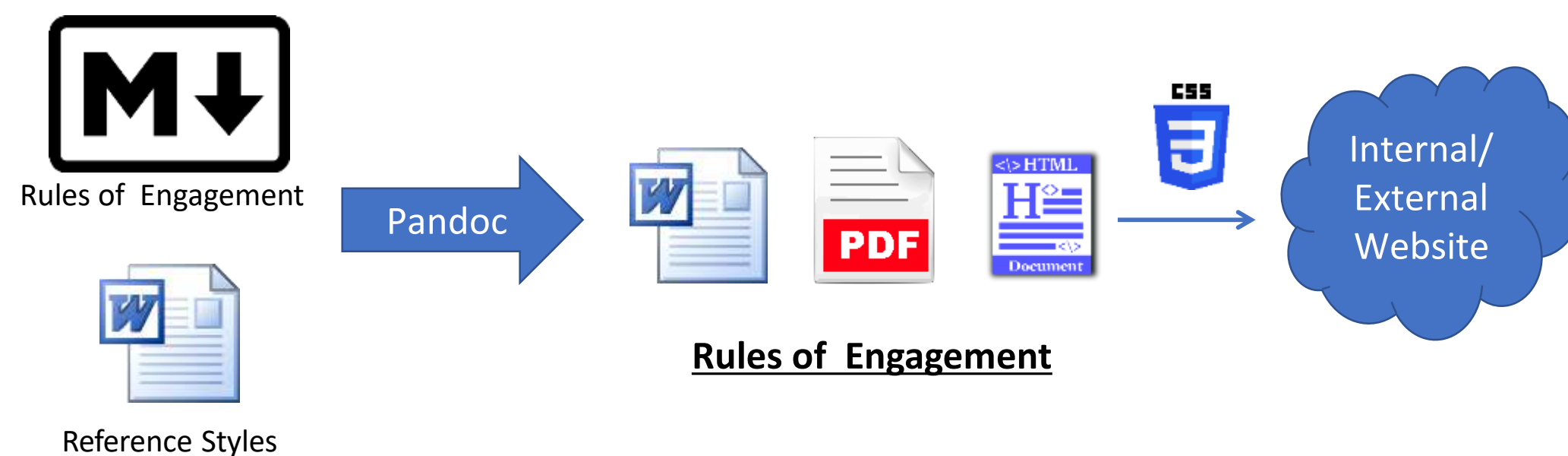
FIX Tools in Action

Generating Rules of Engagement



Workflow

- Enhance the initial markdown file generated with Log2Orchestra or Playlist with documentation and/or Orchestra features, e.g. conditional rules.
- Create a Pandoc (<https://www.pandoc.org>, open source) reference style document in Microsoft Word to define layout of your Rules of Engagement document.
- Generate your Rules of Engagement document (docx/pdf) from your markdown file with Pandoc using the reference style document and upload to your website for download.
- Optionally, generate an online version of your Rules of Engagement (html) for your website using your standard CSS file for layout.



Maintaining your Rules of Engagement

