FIX TRADING COMMUNITY
Americas Trading Conference 2023

– Orchestra Update –

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Agenda

- Orchestra Technical Standard
  - Objectives
  - Orchestra in a nutshell
- Rules of Engagement with Orchestra
  - Application Level
- Data transformation with Orchestra
  - Use cases
  - Approach

Orchestra Update

Orchestra Technical Standard

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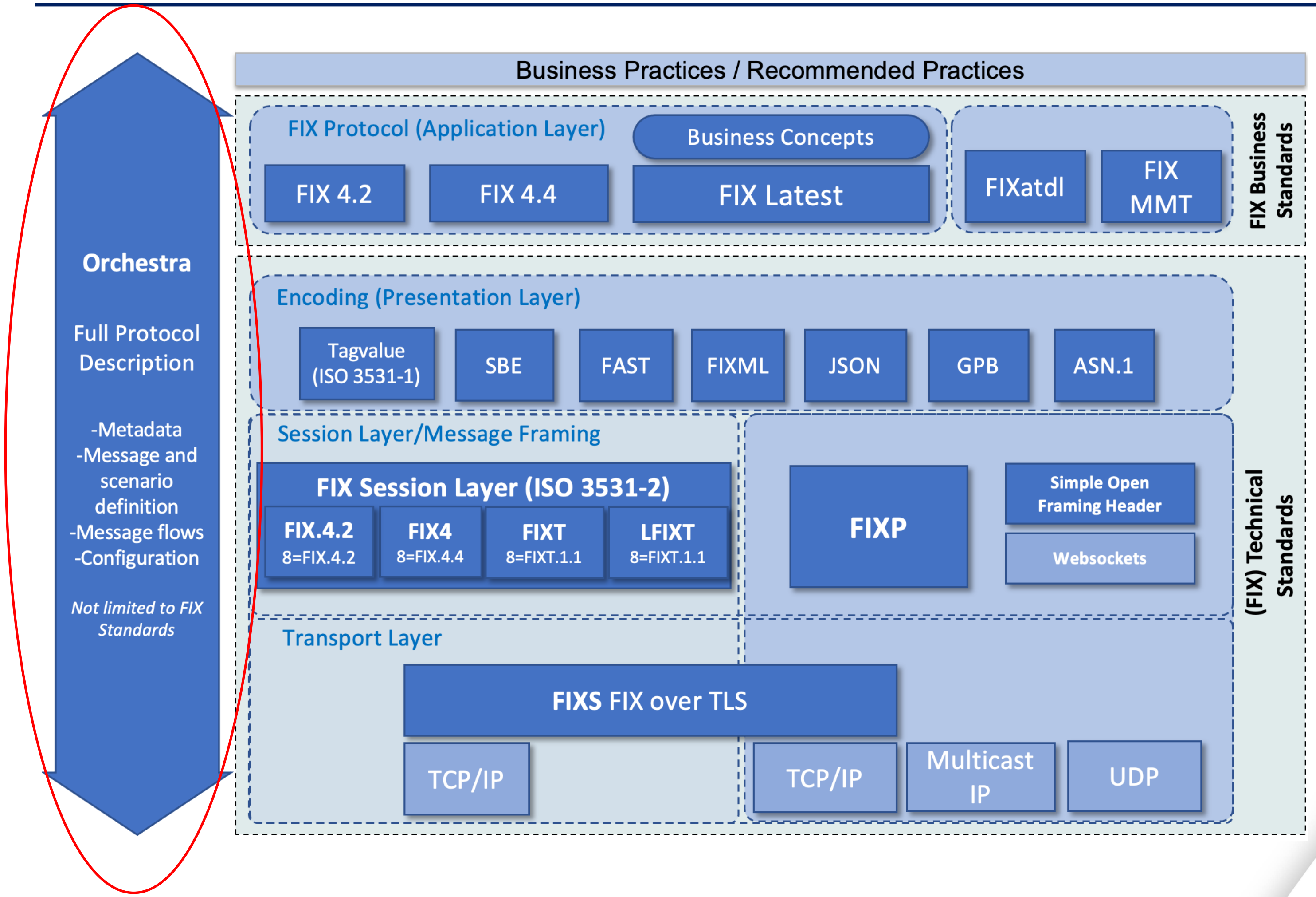
FIX Standards



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

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Objectives for Orchestra

- Machine-readable standard for meta-data describing the content and behavior of an electronic messaging interface.
- Protocol agnostic to be applicable to FIX and non-FIX interfaces.
  - FIX Protocol (across all versions and flavors, including user-defined elements)
  - Regulatory protocols (e.g. US: SEC-CAT, Europe: ESMA/FCA, Asia: SFC-DS-OL)
  - Industry standard protocols (e.g. ISO 20022, FpML)
  - Proprietary protocols (trading venues, clearinghouses, buy/sell-side, vendors)
- Encoding agnostic to separate the business semantics from the wire format (standard/proprietary, ASCII/binary, with/without meta-data).
- Metadata for technical connectivity (counterparties, connections, sessions, versions, encodings, security,...)

Orchestra in a nutshell (application level)

- Basic features
  - Messages, groups, components, fields, code sets, codes, generic datatypes.
  - Nesting of groups/components inside messages, groups, components.
  - Simple presence rules (mandatory, optional, forbidden) for elements.
  - Unique identification and versioning (a.k.a. pedigree) of all elements.

- Advanced features
  - Conditional rules defined with expressions (e.g. Score DSL).
  - Scenarios for most elements to distinguish use cases.
  - Workflows to support request/response models or complex negotiations.
  - Actors and state machines to define transitions.

Orchestra in a nutshell (connection level)

- Basic features
  - An interface is a collection of services, protocols, sessions, and the transport exposed by a counterparty.
  - A service is an offering of an application (e.g. order entry) and requires the identification of an Orchestra XML file describing the messages etc.
  - A protocol relates to a specific layer of the technical stack of the interface, e.g. to the encoding or to the session protocol supported by the interface.
  - A session describes the connection with a counterparty (e.g. IP addresses).
  - A transport describes the lowest layer of the interface (e.g. TCP, UDP multicast).
- Advanced features
  - FIXatdl can be supported as the protocol used for the user interface and requires the identification of an FIXatdl XML file describing the GUI.
  - A session may have an effective time (start/end time) to support configuration prior to use.
  - A session definition may contain security keys (e.g. certificates, private keys) to be used when exchanging messages.

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Orchestra Update

Rules of Engagement with Orchestra

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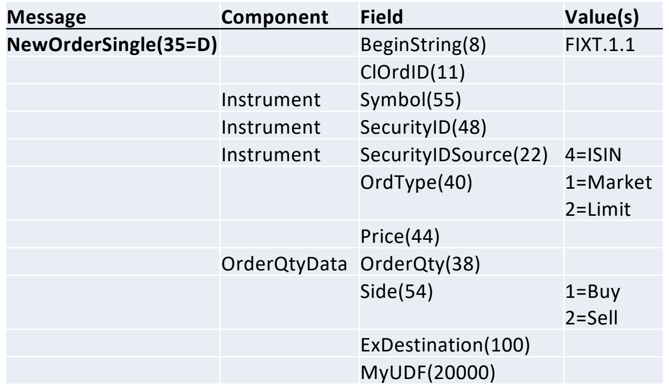
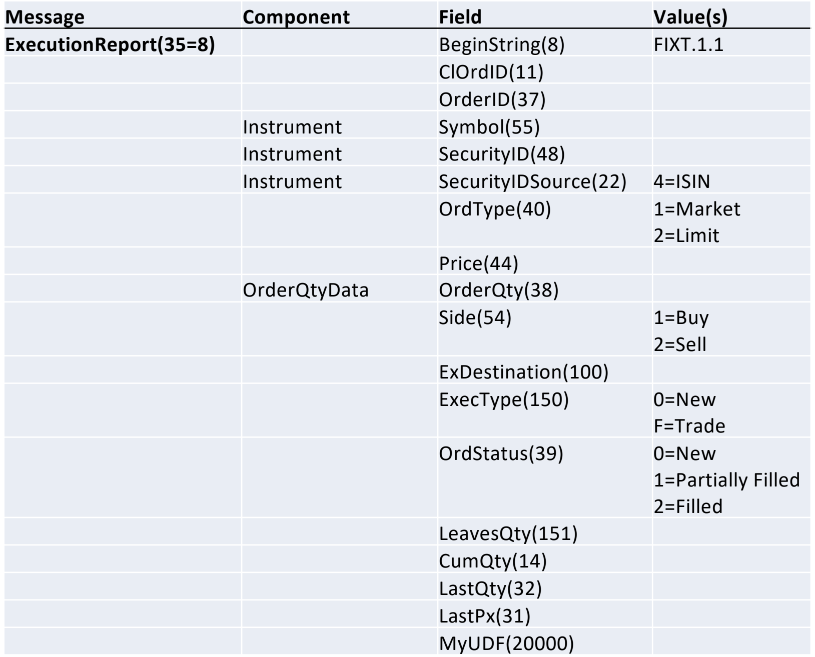
Rules of Engagement (application level)

- Task
  - Design a FIX Latest compliant interface with an order entry message and a response confirming a) the successful addition to the order book and b) the partial or full execution of the order.
  - The order needs to support ticker symbols and ISINs for the security.
  - Order attributes are type (market or limit), side, price, quantity, target venue and an optional custom field “MyUDF” for additional information.
- Approach
  - Use spreadsheet to design messages “top-down”.
  - Use Playlist to design messages “bottom-up”.
    1. Define code sets (SecurityIDSource(22), OrdType(40), Side(54), ExecType(150), OrdStatus(39), MsgType(34), BeginString(8))
    2. Define components (Instrument, OrdQtyData, ExecType, OrdStatus)
    3. Define messages (NewOrderSingle(35=D), ExecutionReport(35=8))
  - Use Orchestra Server to add custom field “MyUDF” and create specification document
  - Export Rules of Engagement as Orchestra XML file and PDF document

Step 1: Define messages in spreadsheet



Message	Component	Field	Value(s)
NewOrderSingle(35=D)		BeginString(8)	FIXT.1.1
		ClOrdID(11)	
	Instrument	Symbol(55)	
	Instrument	SecurityID(48)	
	Instrument	SecurityIDSource(22)	4=ISIN
		OrdType(40)	1=Market 2=Limit
		Price(44)	
	OrderQtyData	OrderQty(38)	
		Side(54)	1=Buy 2=Sell
		ExDestination(100)	
		MyUDF(20000)	



Message	Component	Field	Value(s)
ExecutionReport(35=8)		BeginString(8)	FIXT.1.1
		ClOrdID(11)	
		OrderID(37)	
	Instrument	Symbol(55)	
	Instrument	SecurityID(48)	
	Instrument	SecurityIDSource(22)	4=ISIN
		OrdType(40)	1=Market 2=Limit
		Price(44)	
	OrderQtyData	OrderQty(38)	
		Side(54)	1=Buy 2=Sell
		ExDestination(100)	
		ExecType(150)	0=New F=Trade
		OrdStatus(39)	0=New 1=Partially Filled 2=Filled
		LeavesQty(151)	
		CumQty(14)	
		LastQty(32)	
		LastPx(31)	
		MyUDF(20000)	

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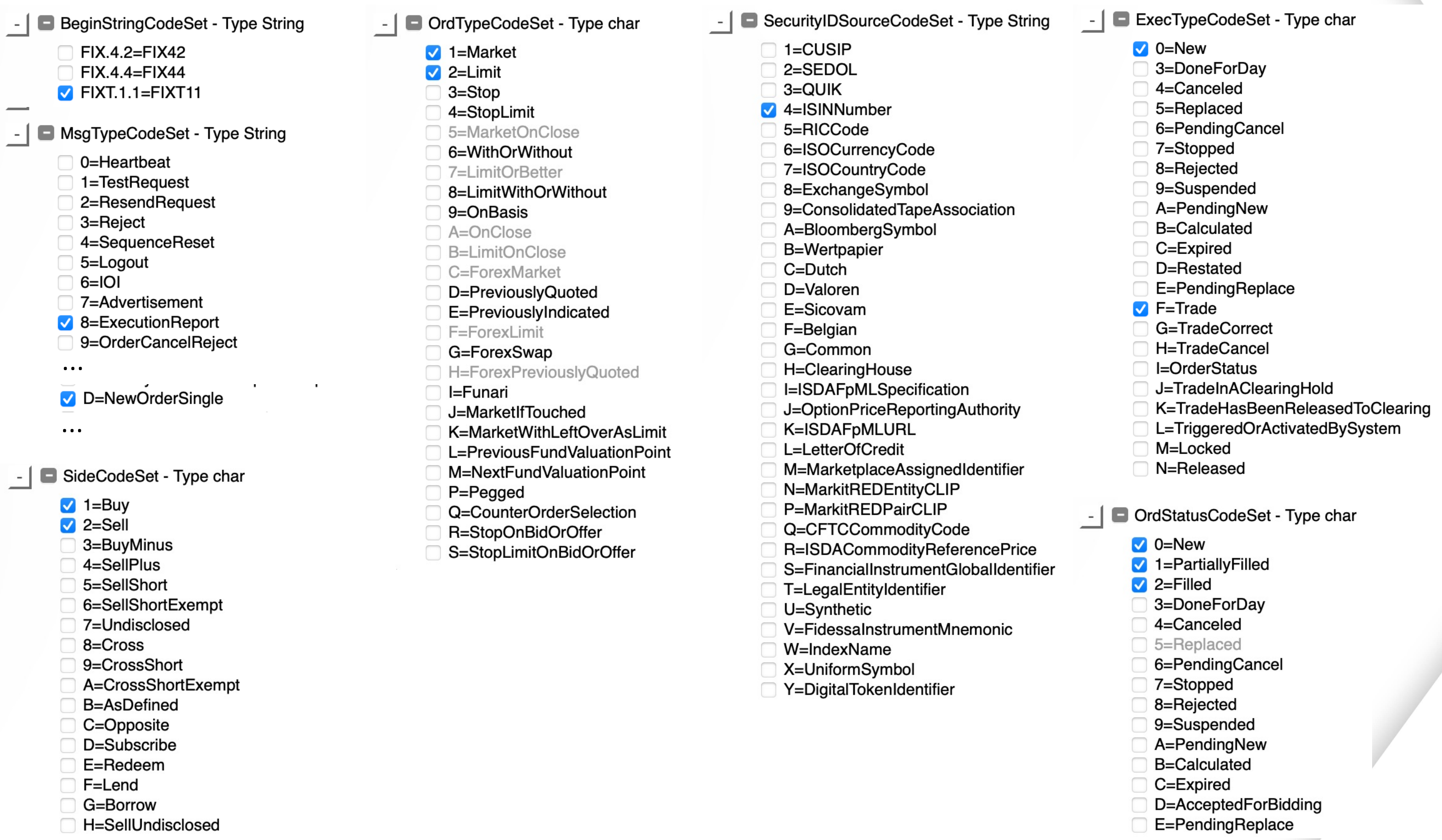
Step 2: Define code sets in Playlist



⊟ BeginStringCodeSet - Type String

- ☐ FIX.4.2=FIX42
- ☐ FIX.4.4=FIX44
- ☑ FIXT.1.1=FIXT11

⊟ MsgTypeCodeSet - Type String

- ☐ 0=Heartbeat
- ☐ 1=TestRequest
- ☐ 2=ResendRequest
- ☐ 3=Reject
- ☐ 4=SequenceReset
- ☐ 5=Logout
- ☐ 6=IOI
- ☐ 7=Advertisement
- ☑ 8=ExecutionReport
- ☐ 9=OrderCancelReject
- …
- ☑ D=NewOrderSingle
- …

⊟ SideCodeSet - Type char

- ☑ 1=Buy
- ☑ 2=Sell
- ☐ 3=BuyMinus
- ☐ 4=SellPlus
- ☐ 5=SellShort
- ☐ 6=SellShortExempt
- ☐ 7=Undisclosed
- ☐ 8=Cross
- ☐ 9=CrossShort
- ☐ A=CrossShortExempt
- ☐ B=AsDefined
- ☐ C=Opposite
- ☐ D=Subscribe
- ☐ E=Redeem
- ☐ F=Lend
- ☐ G=Borrow
- ☐ H=SellUndisclosed

⊟ OrdTypeCodeSet - Type char

- ☑ 1=Market
- ☑ 2=Limit
- ☐ 3=Stop
- ☐ 4=StopLimit
- ☐ 5=MarketOnClose
- ☐ 6=WithOrWithout
- ☐ 7=LimitOrBetter
- ☐ 8=LimitWithOrWithout
- ☐ 9=OnBasis
- ☐ A=OnClose
- ☐ B=LimitOnClose
- ☐ C=ForexMarket
- ☐ D=PreviouslyQuoted
- ☐ E=PreviouslyIndicated
- ☐ F=ForexLimit
- ☐ G=ForexSwap
- ☐ H=ForexPreviouslyQuoted
- ☐ I=Funari
- ☐ J=MarketIfTouched
- ☐ K=MarketWithLeftOverAsLimit
- ☐ L=PreviousFundValuationPoint
- ☐ M=NextFundValuationPoint
- ☐ P=Pegged
- ☐ Q=CounterOrderSelection
- ☐ R=StopOnBidOrOffer
- ☐ S=StopLimitOnBidOrOffer

⊟ SecurityIDSourceCodeSet - Type String

- ☐ 1=CUSIP
- ☐ 2=SEDOL
- ☐ 3=QUIK
- ☑ 4=ISINNumber
- ☐ 5=RICCode
- ☐ 6=ISOCurrencyCode
- ☐ 7=ISOCountryCode
- ☐ 8=ExchangeSymbol
- ☐ 9=ConsolidatedTapeAssociation
- ☐ A=BloombergSymbol
- ☐ B=Wertpapier
- ☐ C=Dutch
- ☐ D=Valoren
- ☐ E=Sicovam
- ☐ F=Belgian
- ☐ G=Common
- ☐ H=ClearingHouse
- ☐ I=ISDAFpMLSpecification
- ☐ J=OptionPriceReportingAuthority
- ☐ K=ISDAFpMLURL
- ☐ L=LetterOfCredit
- ☐ M=MarketplaceAssignedIdentifier
- ☐ N=MarkitREDEntityCLIP
- ☐ P=MarkitREDPairCLIP
- ☐ Q=CFTCCommodityCode
- ☐ R=ISDACommodityReferencePrice
- ☐ S=FinancialInstrumentGlobalIdentifier
- ☐ T=LegalEntityIdentifier
- ☐ U=Synthetic
- ☐ V=FidessaInstrumentMnemonic
- ☐ W=IndexName
- ☐ X=UniformSymbol
- ☐ Y=DigitalTokenIdentifier

⊟ ExecTypeCodeSet - Type char

- ☑ 0=New
- ☐ 3=DoneForDay
- ☐ 4=Canceled
- ☐ 5=Replaced
- ☐ 6=PendingCancel
- ☐ 7=Stopped
- ☐ 8=Rejected
- ☐ 9=Suspended
- ☐ A=PendingNew
- ☐ B=Calculated
- ☐ C=Expired
- ☐ D=Restated
- ☐ E=PendingReplace
- ☑ F=Trade
- ☐ G=TradeCorrect
- ☐ H=TradeCancel
- ☐ I=OrderStatus
- ☐ J=TradeInAClearingHold
- ☐ K=TradeHasBeenReleasedToClearing
- ☐ L=TriggeredOrActivatedBySystem
- ☐ M=Locked
- ☐ N=Released

⊟ OrdStatusCodeSet - Type char

- ☑ 0=New
- ☑ 1=PartiallyFilled
- ☑ 2=Filled
- ☐ 3=DoneForDay
- ☐ 4=Canceled
- ☐ 5=Replaced
- ☐ 6=PendingCancel
- ☐ 7=Stopped
- ☐ 8=Rejected
- ☐ 9=Suspended
- ☐ A=PendingNew
- ☐ B=Calculated
- ☐ C=Expired
- ☐ D=AcceptedForBidding
- ☐ E=PendingReplace

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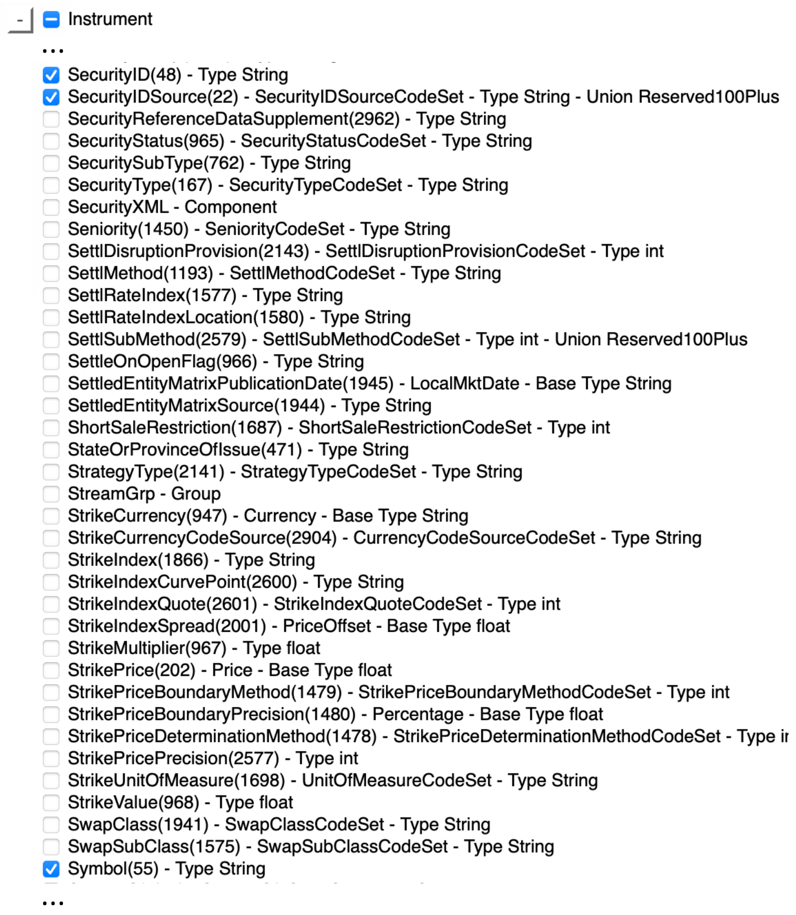
Step 3: Define components in Playlist

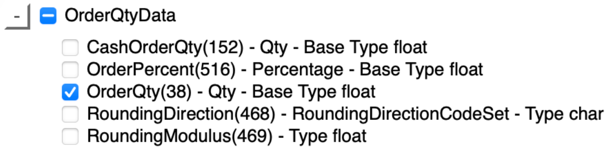


- ⊟ Instrument

…

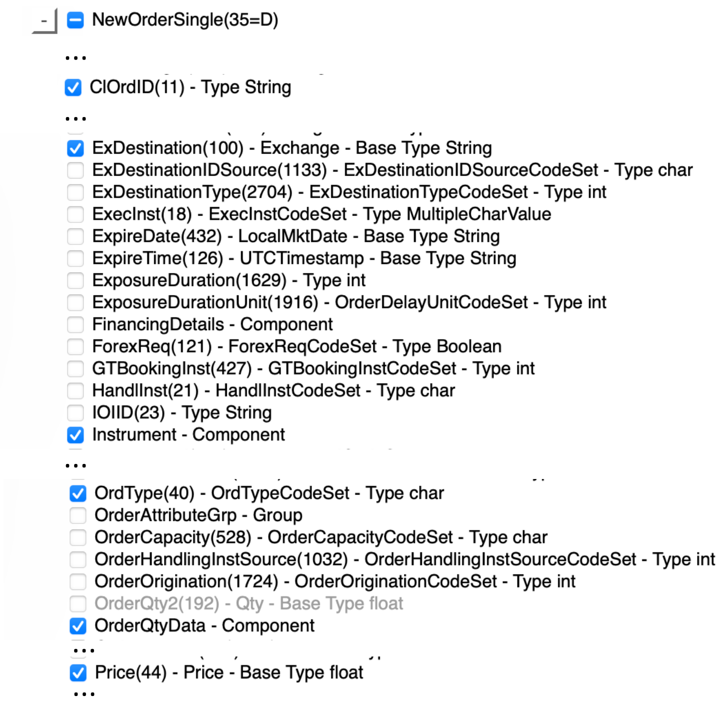
- ☑ SecurityID(48) - Type String
- ☑ SecurityIDSource(22) - SecurityIDSourceCodeSet - Type String - Union Reserved100Plus
- ☐ SecurityReferenceDataSupplement(2962) - Type String
- ☐ SecurityStatus(965) - SecurityStatusCodeSet - Type String
- ☐ SecuritySubType(762) - Type String
- ☐ SecurityType(167) - SecurityTypeCodeSet - Type String
- ☐ SecurityXML - Component
- ☐ Seniority(1450) - SeniorityCodeSet - Type String
- ☐ SettlDisruptionProvision(2143) - SettlDisruptionProvisionCodeSet - Type int
- ☐ SettlMethod(1193) - SettlMethodCodeSet - Type String
- ☐ SettlRateIndex(1577) - Type String
- ☐ SettlRateIndexLocation(1580) - Type String
- ☐ SettlSubMethod(2579) - SettlSubMethodCodeSet - Type int - Union Reserved100Plus
- ☐ SettleOnOpenFlag(966) - Type String
- ☐ SettledEntityMatrixPublicationDate(1945) - LocalMktDate - Base Type String
- ☐ SettledEntityMatrixSource(1944) - Type String
- ☐ ShortSaleRestriction(1687) - ShortSaleRestrictionCodeSet - Type int
- ☐ StateOrProvinceOfIssue(471) - Type String
- ☐ StrategyType(2141) - StrategyTypeCodeSet - Type String
- ☐ StreamGrp - Group
- ☐ StrikeCurrency(947) - Currency - Base Type String
- ☐ StrikeCurrencyCodeSource(2904) - CurrencyCodeSourceCodeSet - Type String
- ☐ StrikeIndex(1866) - Type String
- ☐ StrikeIndexCurvePoint(2600) - Type String
- ☐ StrikeIndexQuote(2601) - StrikeIndexQuoteCodeSet - Type int
- ☐ StrikeIndexSpread(2001) - PriceOffset - Base Type float
- ☐ StrikeMultiplier(967) - Type float
- ☐ StrikePrice(202) - Price - Base Type float
- ☐ StrikePriceBoundaryMethod(1479) - StrikePriceBoundaryMethodCodeSet - Type int
- ☐ StrikePriceBoundaryPrecision(1480) - Percentage - Base Type float
- ☐ StrikePriceDeterminationMethod(1478) - StrikePriceDeterminationMethodCodeSet - Type i
- ☐ StrikePricePrecision(2577) - Type int
- ☐ StrikeUnitOfMeasure(1698) - UnitOfMeasureCodeSet - Type String
- ☐ StrikeValue(968) - Type float
- ☐ SwapClass(1941) - SwapClassCodeSet - Type String
- ☐ SwapSubClass(1575) - SwapSubClassCodeSet - Type String
- ☑ Symbol(55) - Type String

…



- ⊟ OrderQtyData
- ☐ CashOrderQty(152) - Qty - Base Type float
- ☐ OrderPercent(516) - Percentage - Base Type float
- ☑ OrderQty(38) - Qty - Base Type float
- ☐ RoundingDirection(468) - RoundingDirectionCodeSet - Type char
- ☐ RoundingModulus(469) - Type float

Step 4: Define messages in Playlist



- ⊟ NewOrderSingle(35=D)

...

☑ ClOrdID(11) - Type String

...

☑ ExDestination(100) - Exchange - Base Type String
☐ ExDestinationIDSource(1133) - ExDestinationIDSourceCodeSet - Type char
☐ ExDestinationType(2704) - ExDestinationTypeCodeSet - Type int
☐ ExecInst(18) - ExecInstCodeSet - Type MultipleCharValue
☐ ExpireDate(432) - LocalMktDate - Base Type String
☐ ExpireTime(126) - UTCTimestamp - Base Type String
☐ ExposureDuration(1629) - Type int
☐ ExposureDurationUnit(1916) - OrderDelayUnitCodeSet - Type int
☐ FinancingDetails - Component
☐ ForexReq(121) - ForexReqCodeSet - Type Boolean
☐ GTBookingInst(427) - GTBookingInstCodeSet - Type int
☐ HandlInst(21) - HandlInstCodeSet - Type char
☐ IOIID(23) - Type String
☑ Instrument - Component

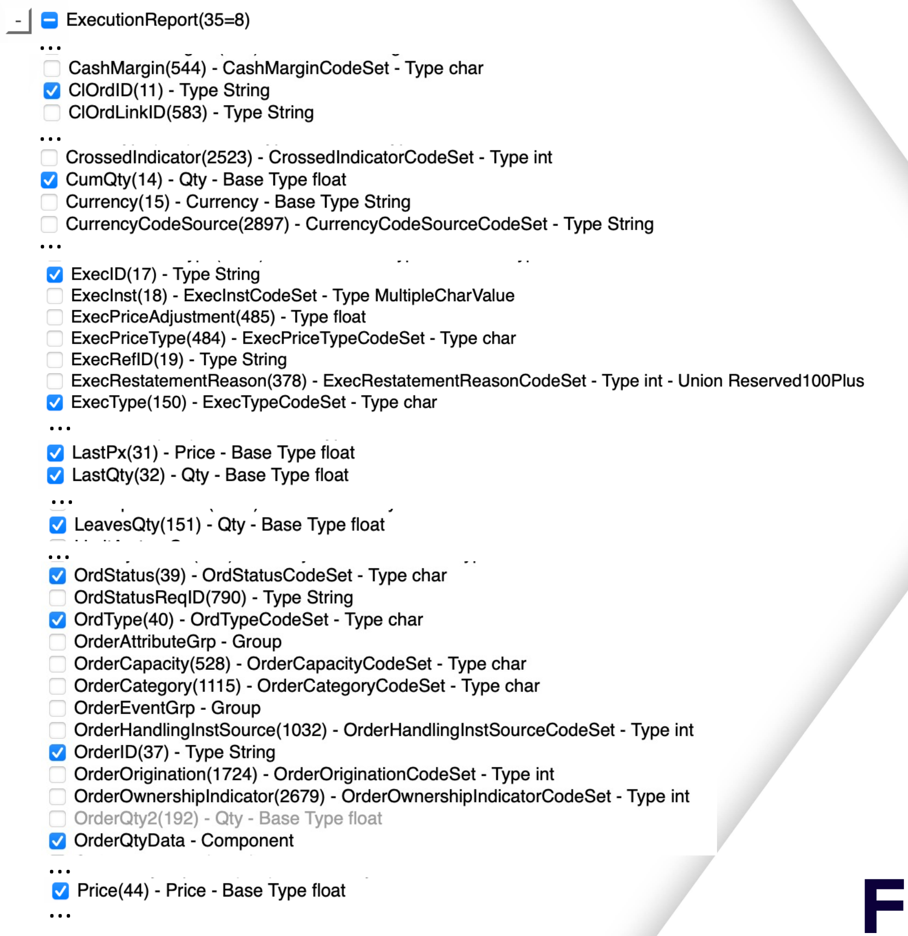
...

☑ OrdType(40) - OrdTypeCodeSet - Type char
☐ OrderAttributeGrp - Group
☐ OrderCapacity(528) - OrderCapacityCodeSet - Type char
☐ OrderHandlingInstSource(1032) - OrderHandlingInstSourceCodeSet - Type int
☐ OrderOrigination(1724) - OrderOriginationCodeSet - Type int
☐ OrderQty2(192) - Qty - Base Type float
☑ OrderQtyData - Component

...

☑ Price(44) - Price - Base Type float

...



- ⊟ ExecutionReport(35=8)

...

☐ CashMargin(544) - CashMarginCodeSet - Type char
☑ ClOrdID(11) - Type String
☐ ClOrdLinkID(583) - Type String

...

☐ CrossedIndicator(2523) - CrossedIndicatorCodeSet - Type int
☑ CumQty(14) - Qty - Base Type float
☐ Currency(15) - Currency - Base Type String
☐ CurrencyCodeSource(2897) - CurrencyCodeSourceCodeSet - Type String

...

☑ ExecID(17) - Type String
☐ ExecInst(18) - ExecInstCodeSet - Type MultipleCharValue
☐ ExecPriceAdjustment(485) - Type float
☐ ExecPriceType(484) - ExecPriceTypeCodeSet - Type char
☐ ExecRefID(19) - Type String
☐ ExecRestatementReason(378) - ExecRestatementReasonCodeSet - Type int - Union Reserved100Plus
☑ ExecType(150) - ExecTypeCodeSet - Type char

...

☑ LastPx(31) - Price - Base Type float
☑ LastQty(32) - Qty - Base Type float

...

☑ LeavesQty(151) - Qty - Base Type float

...

☑ OrdStatus(39) - OrdStatusCodeSet - Type char
☐ OrdStatusReqID(790) - Type String
☑ OrdType(40) - OrdTypeCodeSet - Type char
☐ OrderAttributeGrp - Group
☐ OrderCapacity(528) - OrderCapacityCodeSet - Type char
☐ OrderCategory(1115) - OrderCategoryCodeSet - Type char
☐ OrderEventGrp - Group
☐ OrderHandlingInstSource(1032) - OrderHandlingInstSourceCodeSet - Type int
☑ OrderID(37) - Type String
☐ OrderOrigination(1724) - OrderOriginationCodeSet - Type int
☐ OrderOwnershipIndicator(2679) - OrderOwnershipIndicatorCodeSet - Type int
☐ OrderQty2(192) - Qty - Base Type float
☑ OrderQtyData - Component

...

☑ Price(44) - Price - Base Type float

...

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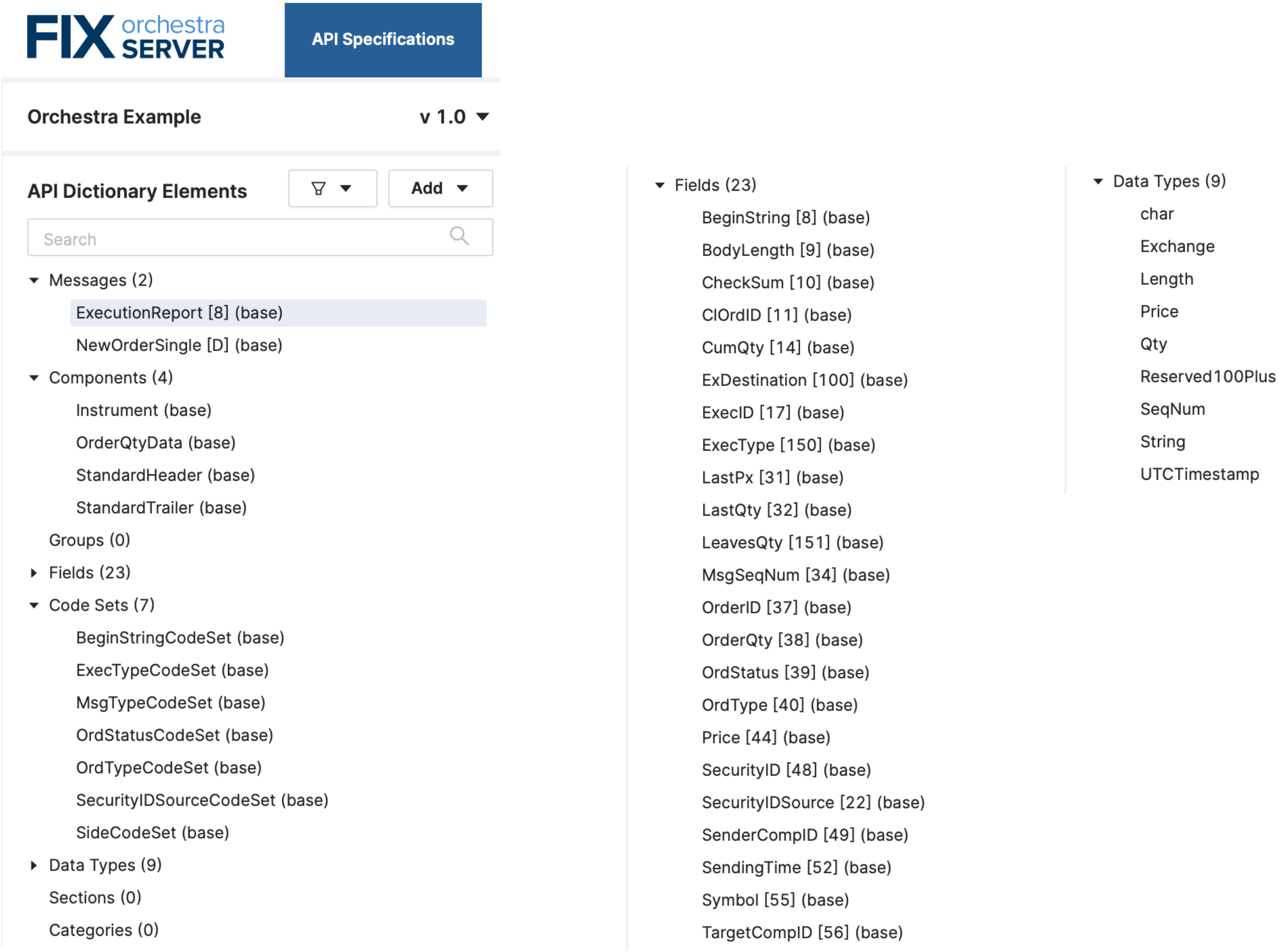
Step 5: Upload to Orchestra Server (1)



Orchestra Example v 1.0

API Dictionary Elements

- Messages (2)
  - ExecutionReport [8] (base)
  - NewOrderSingle [D] (base)
- Components (4)
  - Instrument (base)
  - OrderQtyData (base)
  - StandardHeader (base)
  - StandardTrailer (base)
- Groups (0)
- Fields (23)
- Code Sets (7)
  - BeginStringCodeSet (base)
  - ExecTypeCodeSet (base)
  - MsgTypeCodeSet (base)
  - OrdStatusCodeSet (base)
  - OrdTypeCodeSet (base)
  - SecurityIDSourceCodeSet (base)
  - SideCodeSet (base)
- Data Types (9)
- Sections (0)
- Categories (0)

- Fields (23)
  - BeginString [8] (base)
  - BodyLength [9] (base)
  - CheckSum [10] (base)
  - ClOrdID [11] (base)
  - CumQty [14] (base)
  - ExDestination [100] (base)
  - ExecID [17] (base)
  - ExecType [150] (base)
  - LastPx [31] (base)
  - LastQty [32] (base)
  - LeavesQty [151] (base)
  - MsgSeqNum [34] (base)
  - OrderID [37] (base)
  - OrderQty [38] (base)
  - OrdStatus [39] (base)
  - OrdType [40] (base)
  - Price [44] (base)
  - SecurityID [48] (base)
  - SecurityIDSource [22] (base)
  - SenderCompID [49] (base)
  - SendingTime [52] (base)
  - Symbol [55] (base)
  - TargetCompID [56] (base)

- Data Types (9)
  - char
  - Exchange
  - Length
  - Price
  - Qty
  - Reserved100Plus
  - SeqNum
  - String
  - UTCTimestamp

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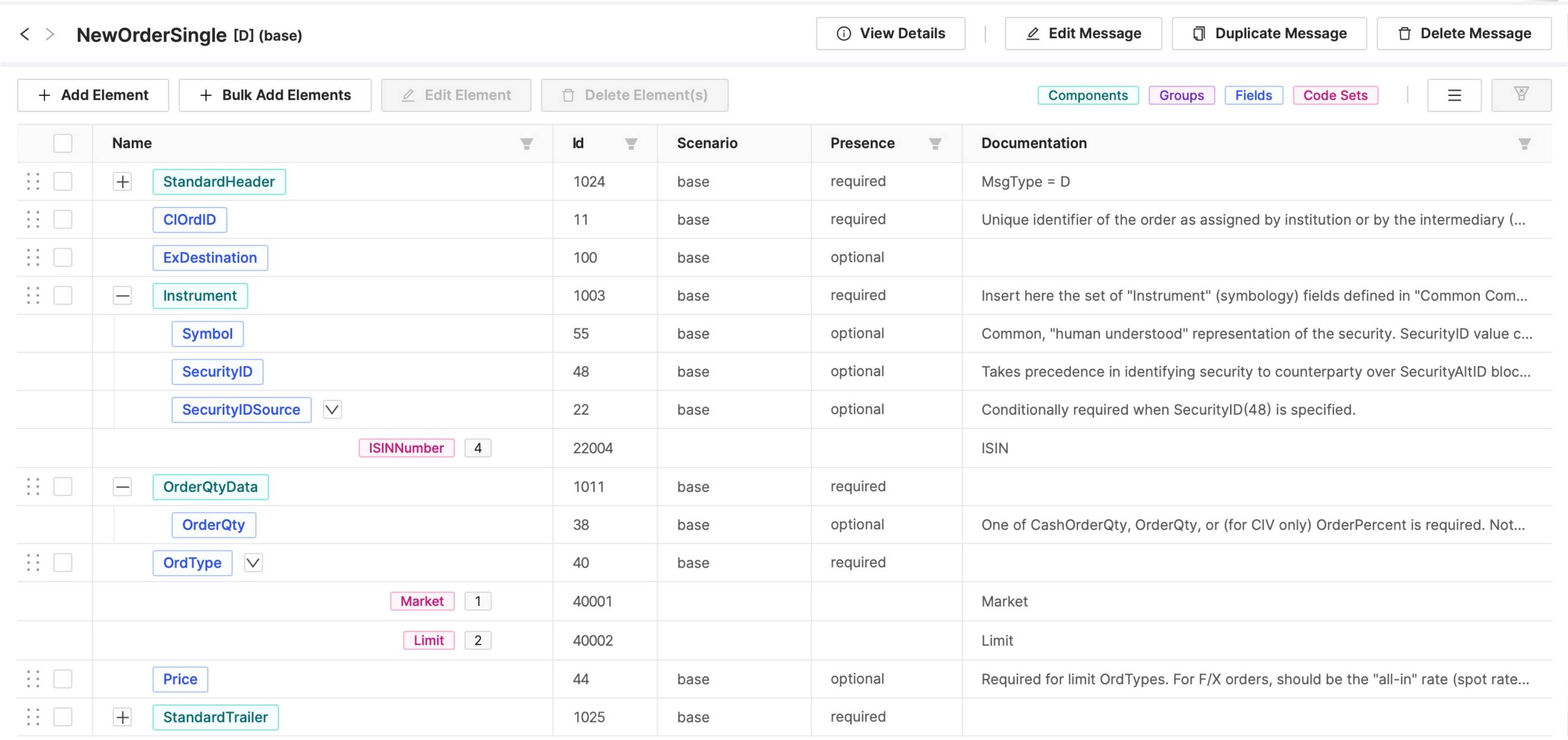
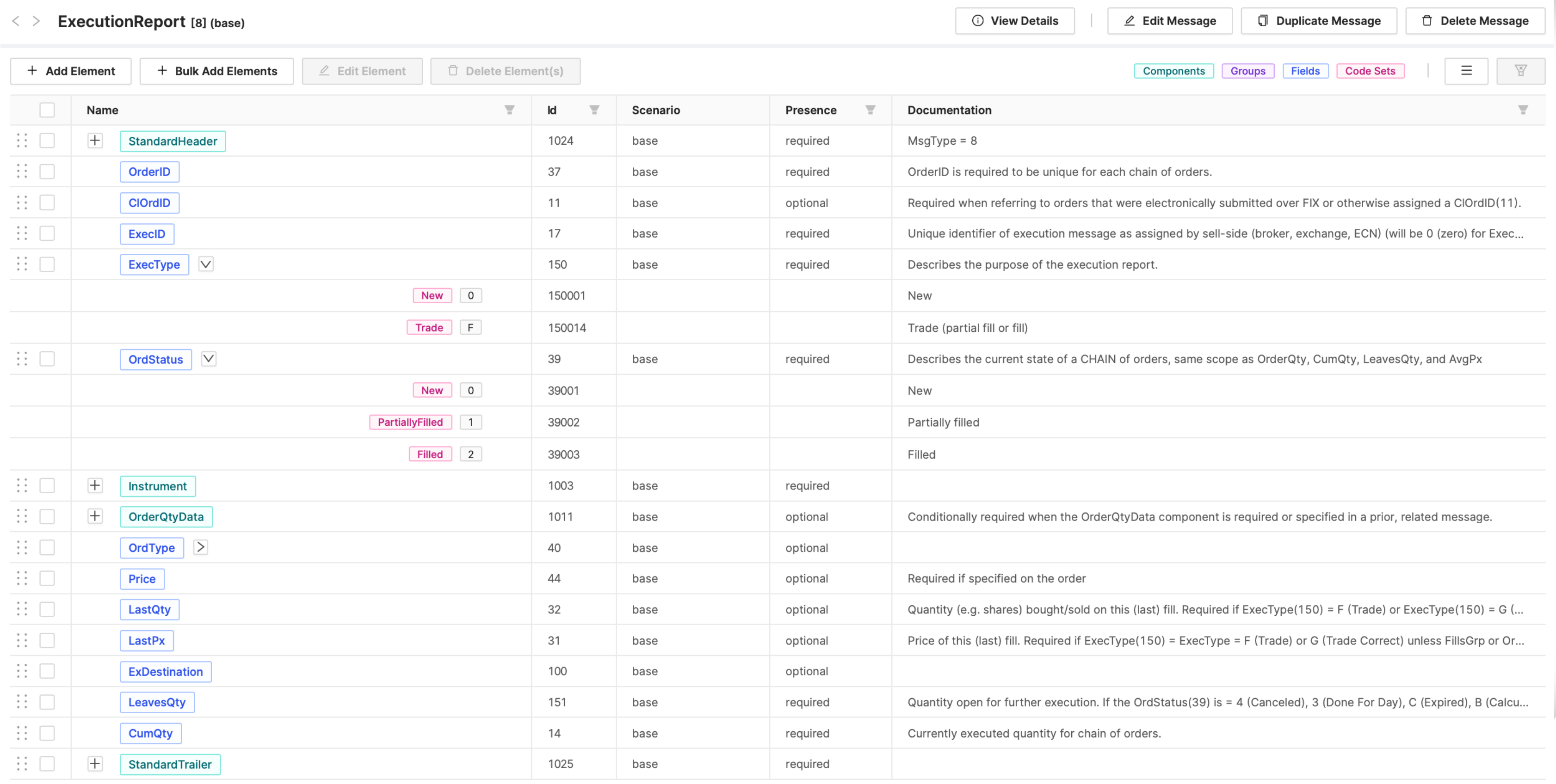
Step 5: Upload to Orchestra Server (2)



NewOrderSingle [D] (base)

Name	Id	Scenario	Presence	Documentation
+ StandardHeader	1024	base	required	MsgType = D
ClOrdID	11	base	required	Unique identifier of the order as assigned by institution or by the intermediary (...
ExDestination	100	base	optional	
− Instrument	1003	base	required	Insert here the set of "Instrument" (symbology) fields defined in "Common Com...
Symbol	55	base	optional	Common, "human understood" representation of the security. SecurityID value c...
SecurityID	48	base	optional	Takes precedence in identifying security to counterparty over SecurityAltID bloc...
SecurityIDSource	22	base	optional	Conditionally required when SecurityID(48) is specified.
ISINNumber 4	22004			ISIN
− OrderQtyData	1011	base	required	
OrderQty	38	base	optional	One of CashOrderQty, OrderQty, or (for CIV only) OrderPercent is required. Not...
OrdType	40	base	required	
Market 1	40001			Market
Limit 2	40002			Limit
Price	44	base	optional	Required for limit OrdTypes. For F/X orders, should be the "all-in" rate (spot rate...
+ StandardTrailer	1025	base	required	

Step 5: Upload to Orchestra Server (3)



□	Name	Id	Scenario	Presence	Documentation
□	+ StandardHeader	1024	base	required	MsgType = 8
□	OrderID	37	base	required	OrderID is required to be unique for each chain of orders.
□	ClOrdID	11	base	optional	Required when referring to orders that were electronically submitted over FIX or otherwise assigned a ClOrdID(11).
□	ExecID	17	base	required	Unique identifier of execution message as assigned by sell-side (broker, exchange, ECN) (will be 0 (zero) for Exec...
□	ExecType	150	base	required	Describes the purpose of the execution report.
	New 0	150001			New
	Trade F	150014			Trade (partial fill or fill)
□	OrdStatus	39	base	required	Describes the current state of a CHAIN of orders, same scope as OrderQty, CumQty, LeavesQty, and AvgPx
	New 0	39001			New
	PartiallyFilled 1	39002			Partially filled
	Filled 2	39003			Filled
□	+ Instrument	1003	base	required	
□	+ OrderQtyData	1011	base	optional	Conditionally required when the OrderQtyData component is required or specified in a prior, related message.
□	OrdType	40	base	optional	
□	Price	44	base	optional	Required if specified on the order
□	LastQty	32	base	optional	Quantity (e.g. shares) bought/sold on this (last) fill. Required if ExecType(150) = F (Trade) or ExecType(150) = G (...
□	LastPx	31	base	optional	Price of this (last) fill. Required if ExecType(150) = ExecType = F (Trade) or G (Trade Correct) unless FillsGrp or Or...
□	ExDestination	100	base	optional	
□	LeavesQty	151	base	required	Quantity open for further execution. If the OrdStatus(39) is = 4 (Canceled), 3 (Done For Day), C (Expired), B (Calcu...
□	CumQty	14	base	required	Currently executed quantity for chain of orders.
□	+ StandardTrailer	1025	base	required	

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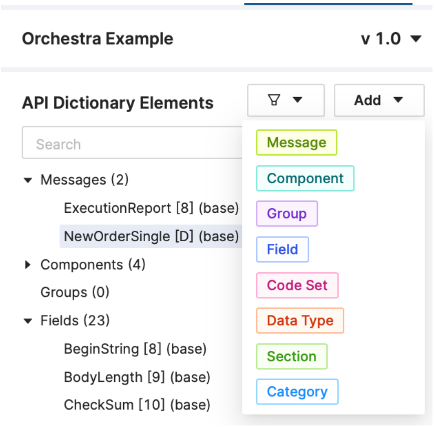
Step 6: Add UDF with Orchestra Server

1

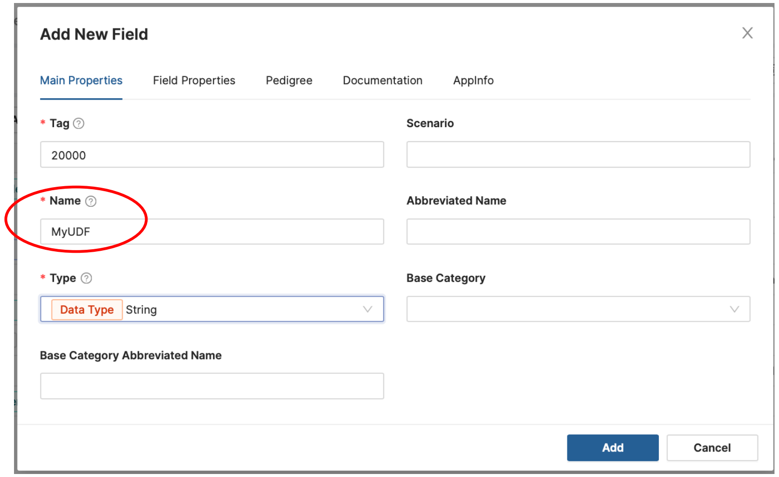


Orchestra Example v 1.0

API Dictionary Elements

- Messages (2)
  - ExecutionReport [8] (base)
  - NewOrderSingle [D] (base)
- Components (4)
- Groups (0)
- Fields (23)
  - BeginString [8] (base)
  - BodyLength [9] (base)
  - CheckSum [10] (base)

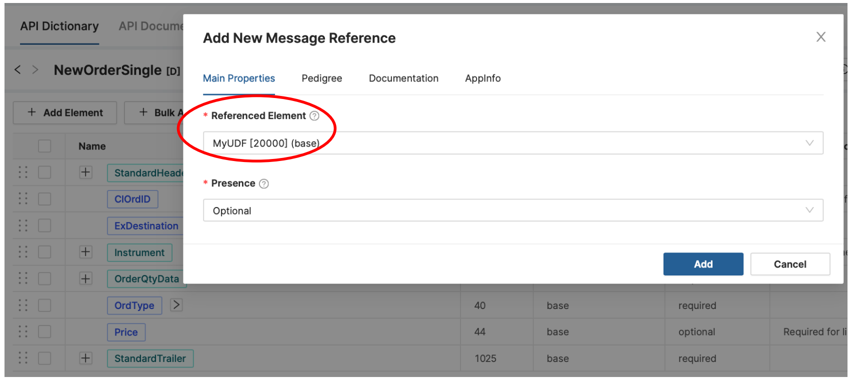
2



Add New Field

* Tag: 20000	Scenario:
* Name: MyUDF	Abbreviated Name:
* Type: Data Type String	Base Category:
Base Category Abbreviated Name:	

3



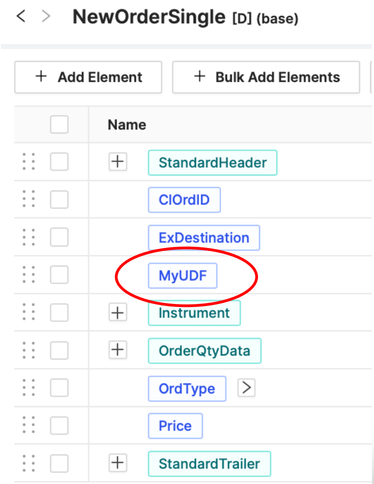
Add New Message Reference

* Referenced Element: MyUDF [20000] (base)

* Presence: Optional

Name				
StandardHeade				
ClOrdID				
ExDestination				
Instrument				
OrderQtyData				
OrdType	40	base	required	
Price	44	base	optional	Required for li
StandardTrailer	1025	base	required	

4



NewOrderSingle [D] (base)

Name
StandardHeader
ClOrdID
ExDestination
MyUDF
Instrument
OrderQtyData
OrdType
Price
StandardTrailer

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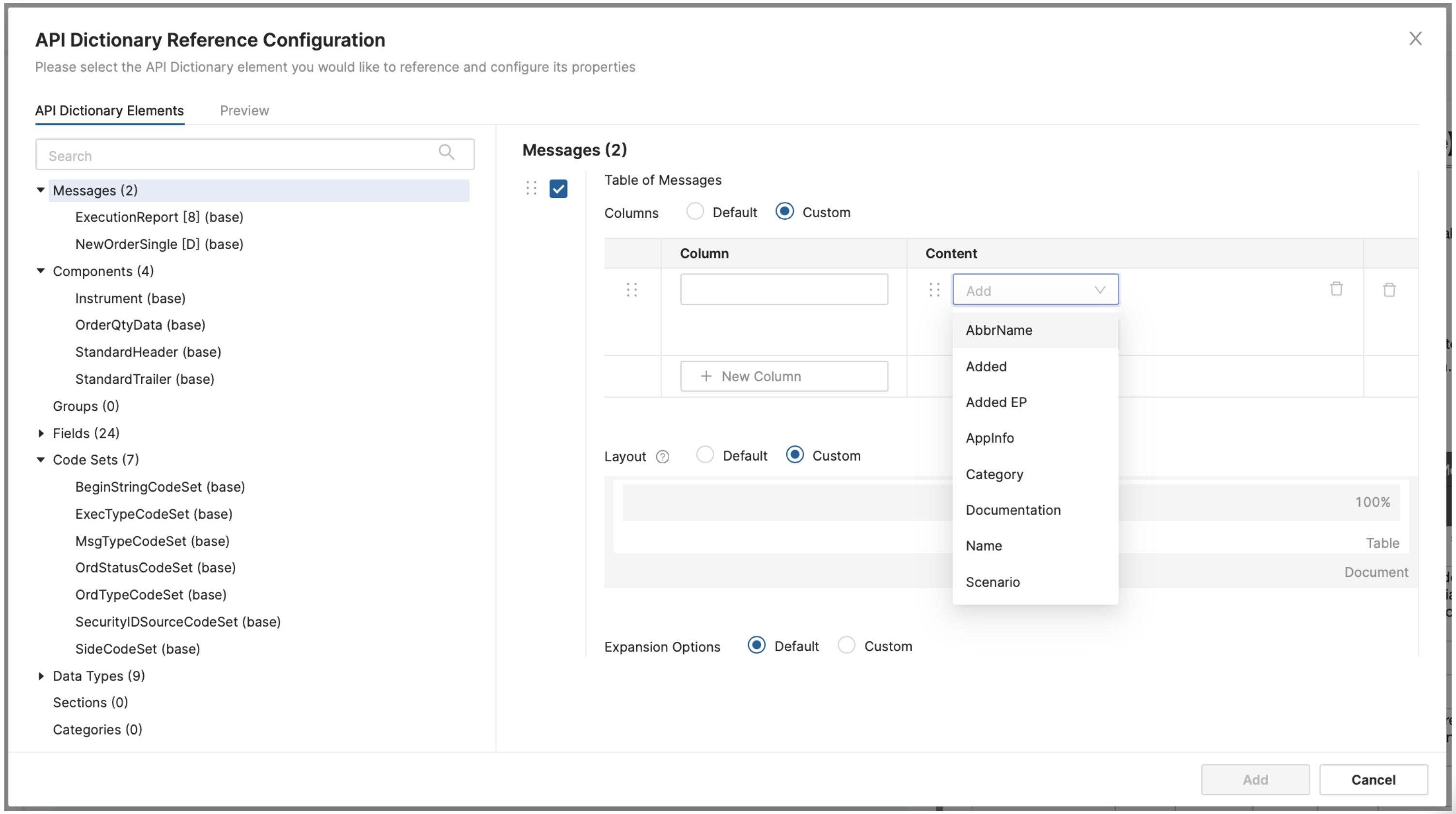
Step 7: Create specification document



API Dictionary Reference Configuration

Please select the API Dictionary element you would like to reference and configure its properties

API Dictionary Elements | Preview

Search

- Messages (2)
  - ExecutionReport [8] (base)
  - NewOrderSingle [D] (base)
- Components (4)
  - Instrument (base)
  - OrderQtyData (base)
  - StandardHeader (base)
  - StandardTrailer (base)
- Groups (0)
- Fields (24)
- Code Sets (7)
  - BeginStringCodeSet (base)
  - ExecTypeCodeSet (base)
  - MsgTypeCodeSet (base)
  - OrdStatusCodeSet (base)
  - OrdTypeCodeSet (base)
  - SecurityIDSourceCodeSet (base)
  - SideCodeSet (base)
- Data Types (9)
- Sections (0)
- Categories (0)

Messages (2)

☑ Table of Messages

Columns ○ Default ● Custom

Column	Content
	Add
+ New Column	

Add:
- AbbrName
- Added
- Added EP
- AppInfo
- Category
- Documentation
- Name
- Scenario

Layout ○ Default ● Custom

100%

Table

Document

Expansion Options ● Default ○ Custom

Add | Cancel

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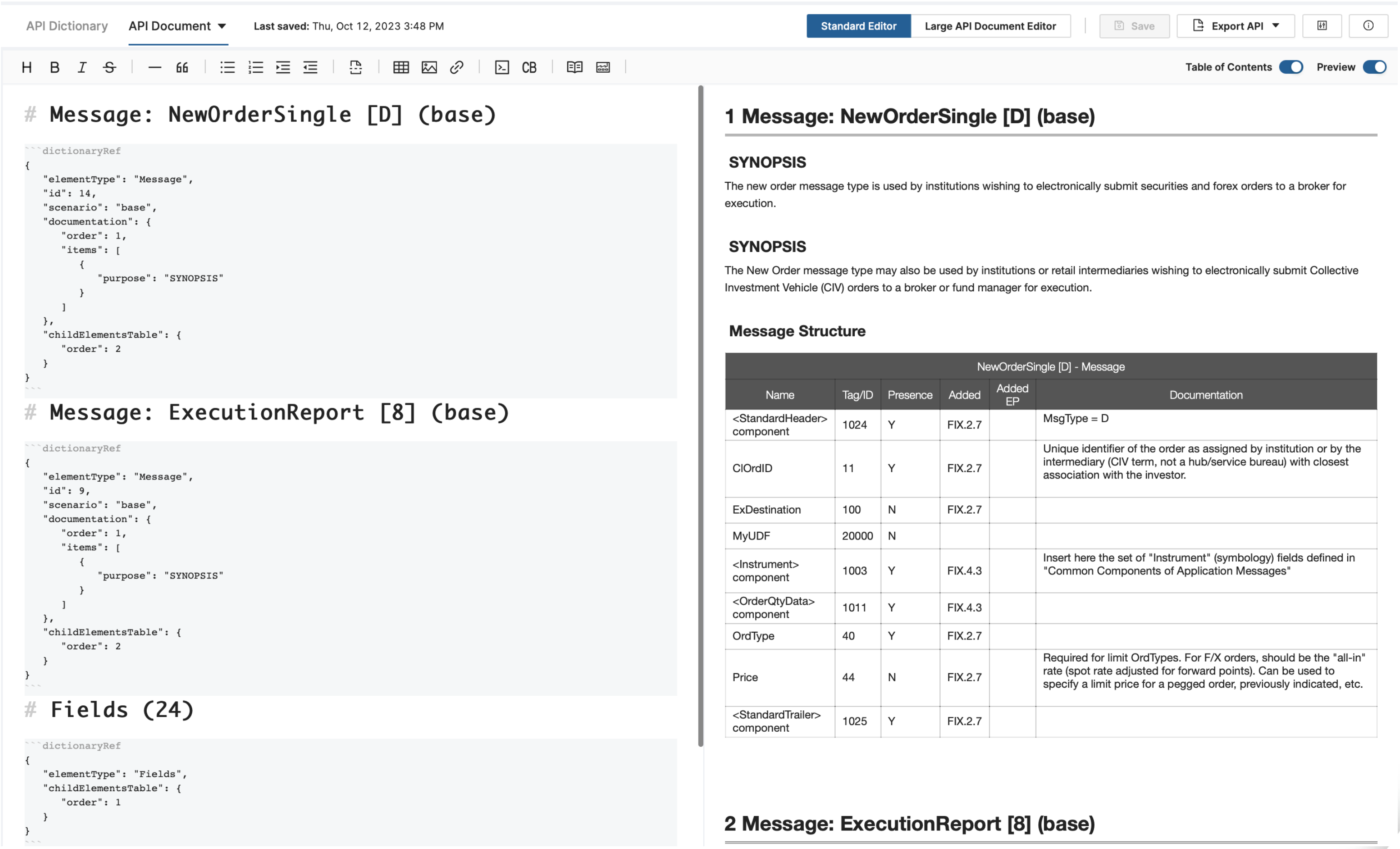
Step 7: Create specification document



~~~~
# Message: NewOrderSingle [D] (base)

```dictionaryRef
{
   "elementType": "Message",
   "id": 14,
   "scenario": "base",
   "documentation": {
      "order": 1,
      "items": [
         {
            "purpose": "SYNOPSIS"
         }
      ]
   },
   "childElementsTable": {
      "order": 2
   }
}
```
# Message: ExecutionReport [8] (base)

```dictionaryRef
{
   "elementType": "Message",
   "id": 9,
   "scenario": "base",
   "documentation": {
      "order": 1,
      "items": [
         {
            "purpose": "SYNOPSIS"
         }
      ]
   },
   "childElementsTable": {
      "order": 2
   }
}
```
# Fields (24)

```dictionaryRef
{
   "elementType": "Fields",
   "childElementsTable": {
      "order": 1
   }
}
```
~~~~

1 Message: NewOrderSingle [D] (base)

SYNOPSIS

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

SYNOPSIS

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.

Message Structure

NewOrderSingle [D] - Message					
Name	Tag/ID	Presence	Added	Added EP	Documentation
<StandardHeader> component	1024	Y	FIX.2.7		MsgType = D
ClOrdID	11	Y	FIX.2.7		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.
ExDestination	100	N	FIX.2.7		
MyUDF	20000	N			
<Instrument> component	1003	Y	FIX.4.3		Insert here the set of "Instrument" (symbology) fields defined in "Common Components of Application Messages"
<OrderQtyData> component	1011	Y	FIX.4.3		
OrdType	40	Y	FIX.2.7		
Price	44	N	FIX.2.7		Required for limit OrdTypes. For F/X orders, should be the "all-in" rate (spot rate adjusted for forward points). Can be used to specify a limit price for a pegged order, previously indicated, etc.
<StandardTrailer> component	1025	Y	FIX.2.7		

2 Message: ExecutionReport [8] (base)

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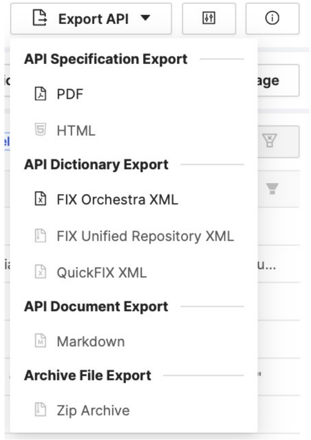
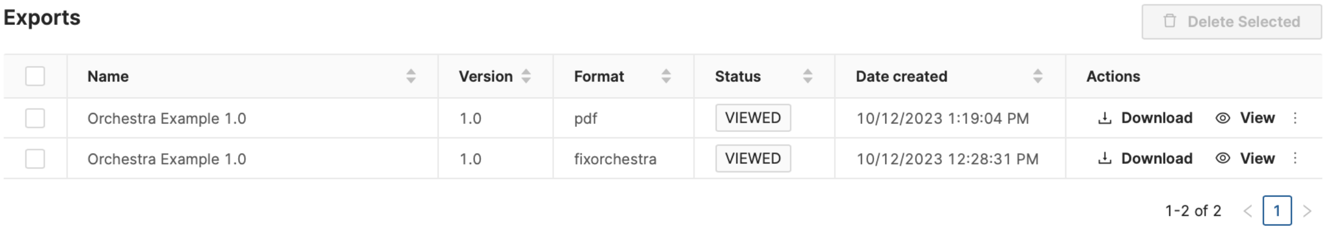
Step 8: Export Rules of Engagement (XML)

1



2

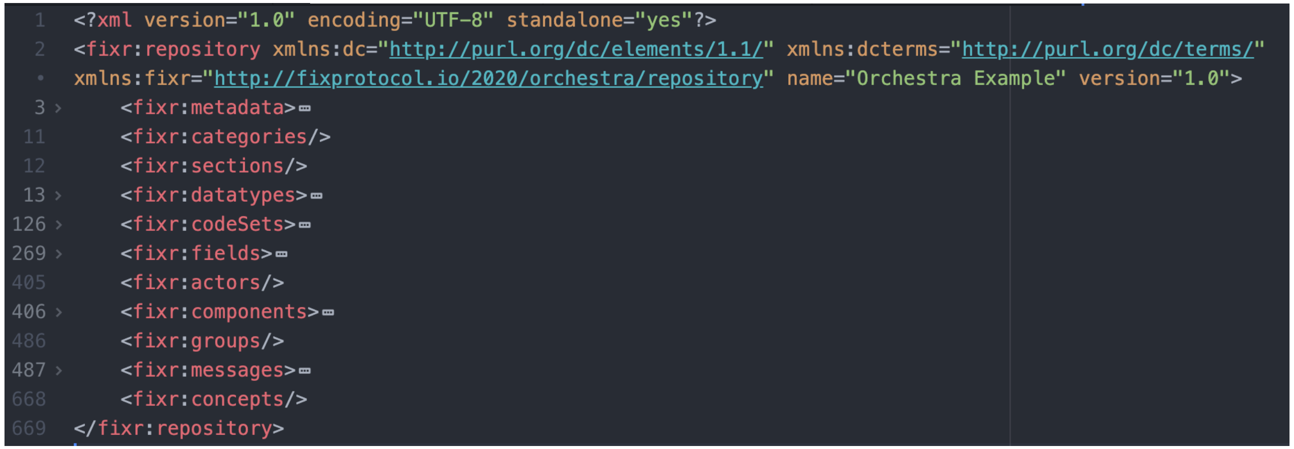


Exports

□	Name	Version	Format	Status	Date created	Actions
□	Orchestra Example 1.0	1.0	pdf	VIEWED	10/12/2023 1:19:04 PM	Download View
□	Orchestra Example 1.0	1.0	fixorchestra	VIEWED	10/12/2023 12:28:31 PM	Download View

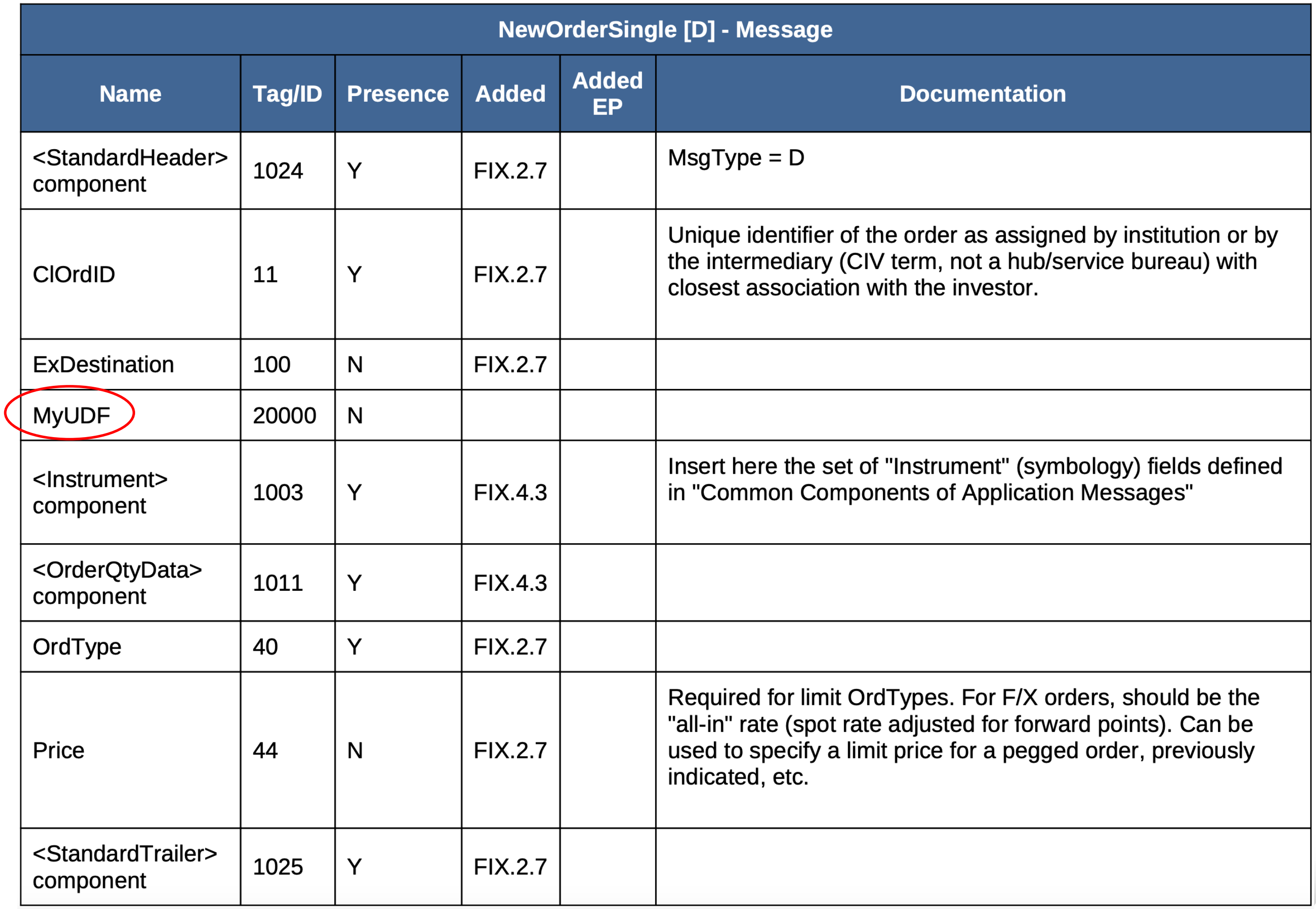
1-2 of 2 < 1 >

3



```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<fixr:repository xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:dcterms="http://purl.org/dc/terms/"
xmlns:fixr="http://fixprotocol.io/2020/orchestra/repository" name="Orchestra Example" version="1.0">
    <fixr:metadata>⋯
    <fixr:categories/>
    <fixr:sections/>
    <fixr:datatypes>⋯
    <fixr:codeSets>⋯
    <fixr:fields>⋯
    <fixr:actors/>
    <fixr:components>⋯
    <fixr:groups/>
    <fixr:messages>⋯
    <fixr:concepts/>
</fixr:repository>
```

Step 8: Export Rules of Engagement (PDF)



NewOrderSingle [D] - Message					
Name	**Tag/ID**	**Presence**	**Added**	**Added EP**	**Documentation**
<StandardHeader> component	1024	Y	FIX.2.7		MsgType = D
ClOrdID	11	Y	FIX.2.7		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.
ExDestination	100	N	FIX.2.7		
MyUDF	20000	N			
<Instrument> component	1003	Y	FIX.4.3		Insert here the set of "Instrument" (symbology) fields defined in "Common Components of Application Messages"
<OrderQtyData> component	1011	Y	FIX.4.3		
OrdType	40	Y	FIX.2.7		
Price	44	N	FIX.2.7		Required for limit OrdTypes. For F/X orders, should be the "all-in" rate (spot rate adjusted for forward points). Can be used to specify a limit price for a pegged order, previously indicated, etc.
<StandardTrailer> component	1025	Y	FIX.2.7		

Orchestra Update

Data Transformation with Orchestra

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Use cases for data transformations

- FIX versions and customizations
  - Convert between external (e.g. FIX 4.2) and internal layouts (e.g. FIX Latest)
  - Convert layouts with customizations to standard FIX
- Regulatory reporting interfaces
  - Convert FIX to SEC-Consolidated Audit Trail
  - Convert FIX to MiFIR (ESMA/FCA) reporting
  - Convert FIX to SFC-DS-OL (order life cycle reporting)
- Standards interoperability
  - Convert between front-office (e.g. FIX) and back-office(e.g. ISO 20022)
  - Convert between FIX and FpML for OTC product defnitions
- Migration from proprietary interfaces to FIX
- Provide backward compatibility

Approach for data transformations

- Objective is to enhance the Orchestra standard with a schema that defines the syntax for meta-data related to data transformations.
- Data transformation expressed as mapping of meta-data
  - The Orchestra standard supports FIX and non-FIX interfaces.
  - Source and target interface can be defined as an Orchestra XML file.
  - A mapping schema is required to transform messages from one interface into semantically equivalent messages of another interface.
  - Data transformations can be pipelined for automation (e.g. FIX 4.2 converted to FIX Latest converted to SEC-CAT).
- Types of data transformation
  - No transformation for fields using ISO standards (e.g. currencies, MICs).
  - Simple transformations for 1:1 mappings of fields and/or values only having different names in the respective Orchestra XML file.
  - Complex transformations for 1:n/n:1 mappings of fields or mappings between fields and instances of repeating groups.

Orchestra Governance

- Organizational structure
  - The FIX Global Technical Committee (GTC) has an Orchestra Subcommittee looking after the Orchestra standard and related tools.
  - The Orchestra Subcommittee has multiple working groups for the standard
    - Repository Schema WG for the application level
    - Interfaces Schema WG for the connection level
    - Mapping schema WG for the interoperability of message standards
  - The Orchestra Subcommittee submits proposals for the standard to the GTC (proposal for Version 1.1 RC1 currently being reviewed by the WG).
- Options to contribute
  - FIX members can join the working groups and (sub)committees to engage in the development of the different schemas of the Orchestra standard.
  - Others can contribute through the public GitHub repositories maintained by the FIX Trading Community for the standard and open-source tools.

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