

FIX TRADING COMMUNITY

Nordic Trading Conference 2023

– Orchestra Update –

Tuesday 23rd May 2023

Hanno Klein

FIX Technical Director

GTC EMEA Co-Chair

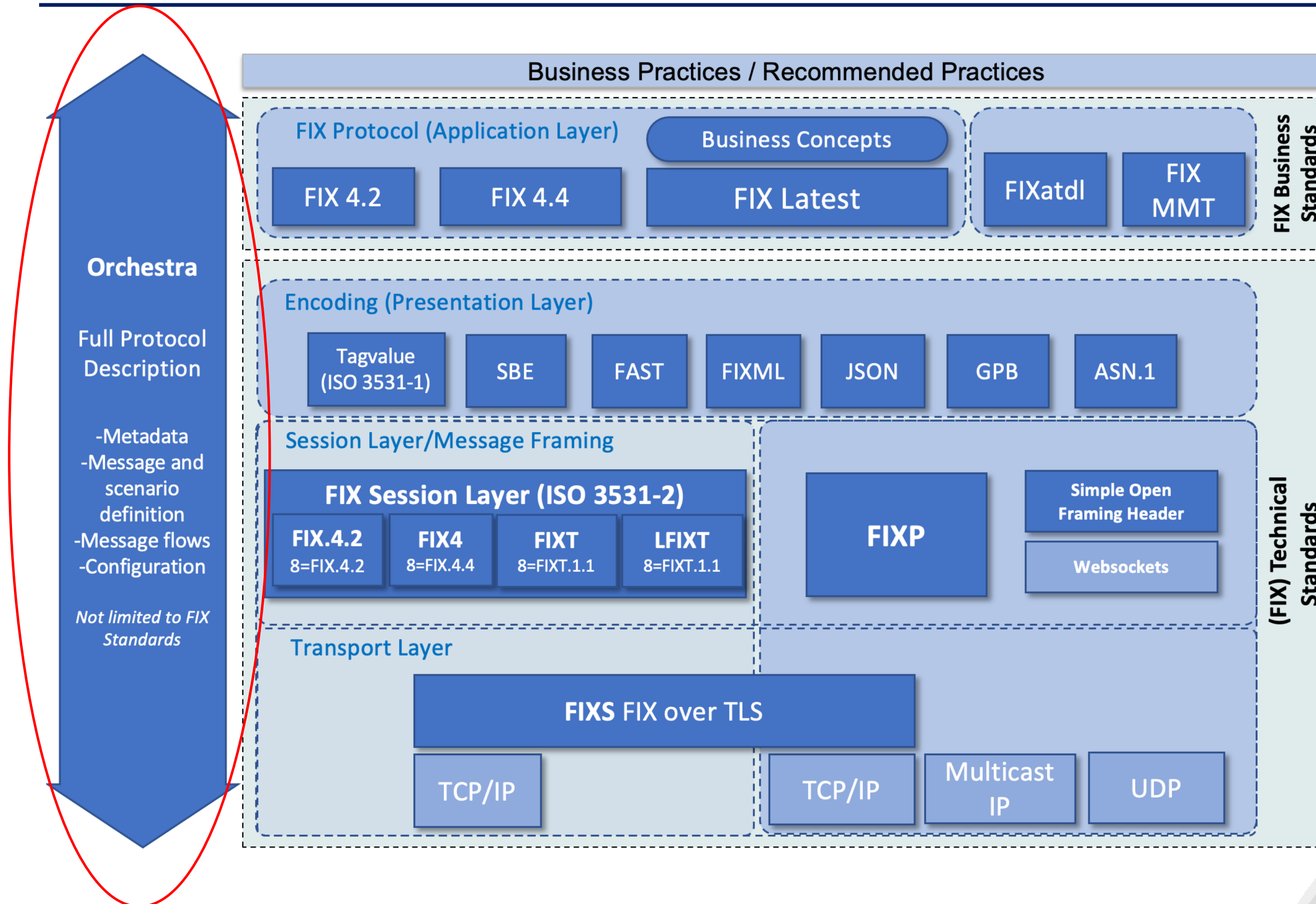
Senior Standards Advisor, FIXdom



Orchestra – Scope for this session

- Which problem(s) can Orchestra solve?
 - Issues related to interface development and testing, on-boarding of customers, syncing software and documentation.
- What does Orchestra have to offer?
 - Free and open standard for machine-readable definition of electronic interfaces.
- Which tools does FIX offer for Orchestra?
 - Open-source tools
 - UI tools developed by FIX for the membership
 - Orchestra Server

Orchestra Technical Standard



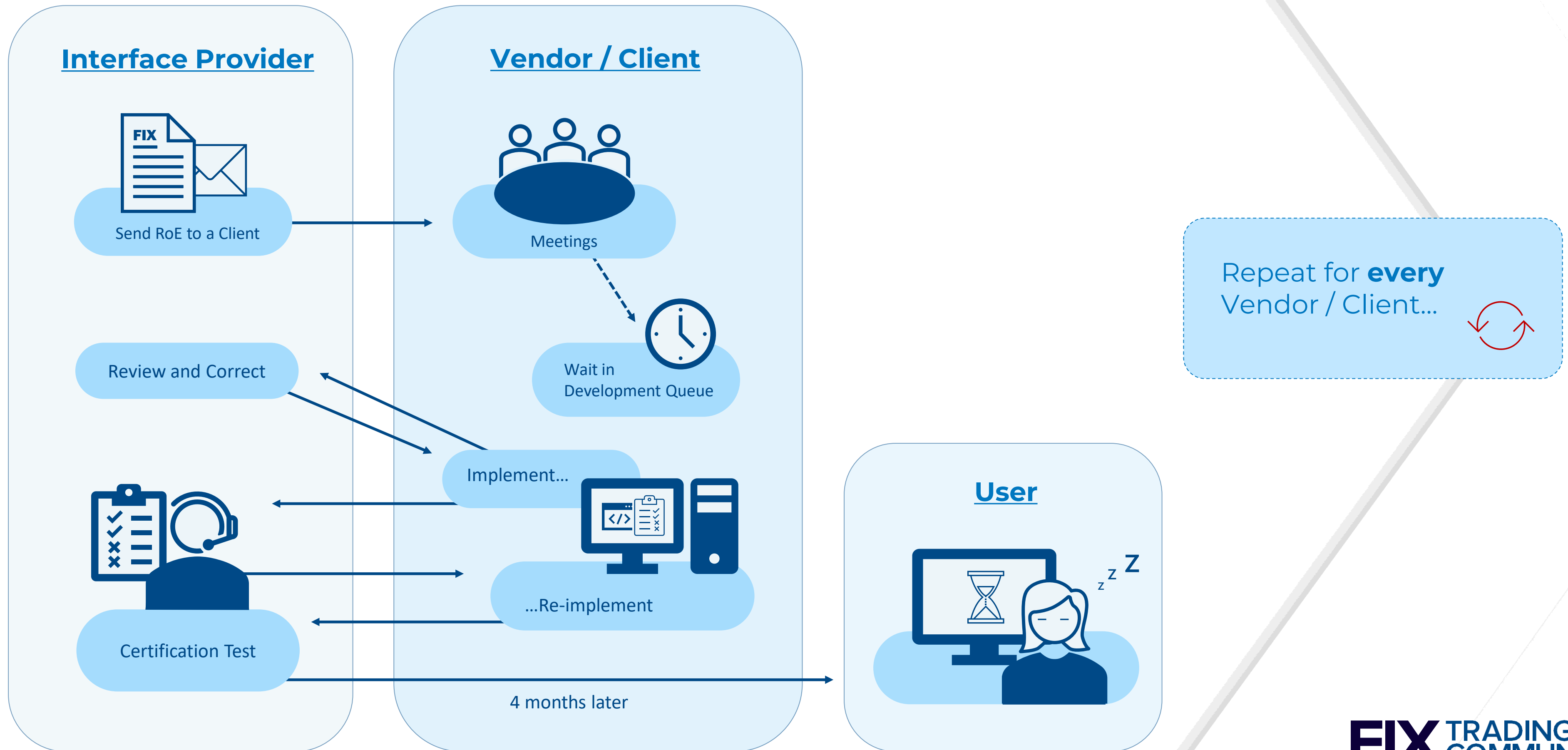
Which problem(s) can Orchestra solve?

- Poor translation of interface documents into software
 - Inefficient, error-prone, documents and software out of sync
 - Ambiguous due to different interpretations of verbose text
- Limited information related to interface behaviour
 - Single table per (FIX) message type with superset of all use cases
 - No information regarding conditionally required data elements
- Lack of interoperability between protocols and versions
 - Different protocols in front-office (e.g. FIX) and back-office (e.g. ISO 20022)
 - Manual mapping between proprietary and standard protocols
 - Different versions, flavours and customisations of standard protocols
- Lack of standardisation across meta-data offerings
 - Proprietary definition of XML attributes (e.g. enum/value/code)
 - Machine-readable but proprietary tools needed for conversions

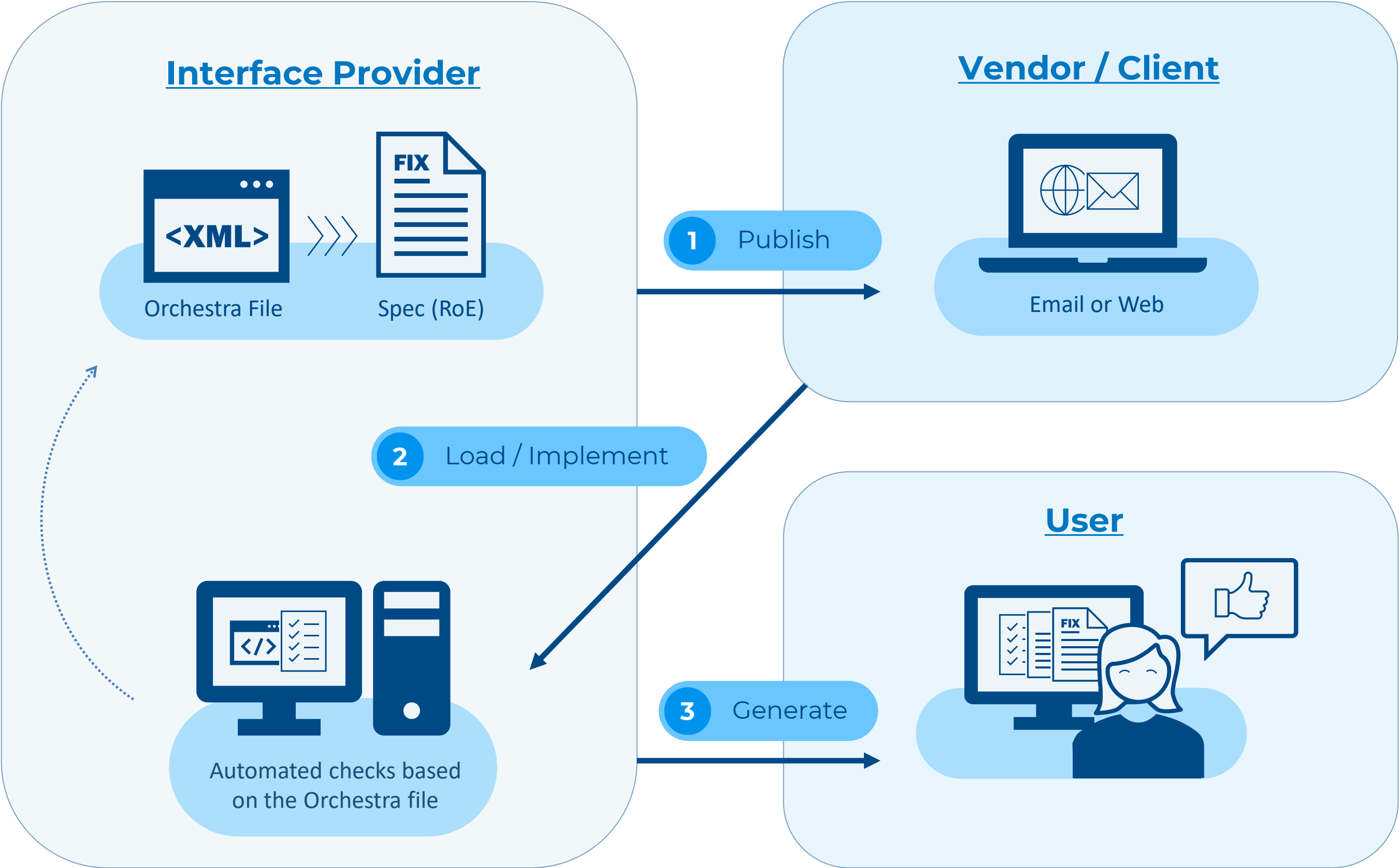
What does Orchestra have to offer?

- Free and open standard for interface definitions
 - Single standard for FIX and non-FIX interfaces
 - Machine-readable definitions enabling automation across development, testing, on-boarding, and documentation
- Repository – business information
 - Static information: messages, fields, values,...
 - Behavioural aspects: scenarios, workflows, rules, ...
- Interfaces – technical information
 - Service (application name with repository reference)
 - Encoding information (e.g. tag=value, FIXML, SBE)
 - Transport information (e.g. TCP, UDP)
 - Client connectivity (sessions with Sender/Target and IP addresses)
- Mapping – automated protocol conversion (work in progress)
 - Machine-readable rules to convert between Orchestra repositories
 - Mapping between FIX versions as well as between FIX and non-FIX

Life without Orchestra...



The Orchestra way



Write Orchestra file once, **automate** on-boarding ✓

How should Orchestra be used?

- Single source for interface definition and description
 - Use repository (a.k.a. dictionary) for messages and data elements
 - Combine dictionary, additional text/tables, and images into RoE document
 - Provide RoE document (PDF) and Orchestra XML file(s) to clients
- Single source for software development and testing
 - Use Orchestra XML file for code generation
 - Use Orchestra XML file for test case generation
- Single source for client connectivity
 - Define all client connections in an Orchestra XML file (Interfaces Schema)
- Versioning and pedigree
 - Define schema versions in sync with software and RoE versions
 - Support previous version(s) of schemas to ease version upgrades
 - Use Orchestra pedigree attributes to maintain an audit trail of changes

Orchestra Update 2023

FIX Tools for Orchestra



Orchestra Tools in GitHub (open-source)

- **Tablature** (<https://github.com/FIXTradingCommunity/tablature>)
 - Conversion between markdown and Orchestra XML files
- **Schema Conversions**
 - Orchestra to QuickFIX (<https://github.com/FIXTradingCommunity/fix-orchestra-quickfix>)
 - Orchestra to SBE (<https://github.com/FIXTradingCommunity/fix-sbe-utilities>)
 - Orchestra to Avro (<https://github.com/FIXTradingCommunity/fix-orchestra-avro>)
- **XmlDiff/Merge** (<https://github.com/FIXTradingCommunity/xml-diff-merge>)
 - Compare Orchestra XML files and create difference instructions in RFC 5261 format
 - Apply difference instructions (add/replace/remove) to existing Orchestra XML file
- **Repository Validator**
(<https://github.com/FIXTradingCommunity/fix-orchestra/tree/master/repository-util>)
 - Validate Orchestra XML file against Orchestra schema

UI tools developed by FIX for members

- Log2Orchestra
 - 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
- Playlist
 - Web-based visualisation of input reference file to select 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)

Orchestra Server Tool

Welcome to Orchestra Server, a service offered by FIX Trading. Access to the Orchestra Server is complimentary for members of the FIX Trading Community.

Orchestra Server provides the necessary tools to manage FIX and binary API Specifications based on the Orchestra standard from FIX Trading. You can create, browse, and export your API Specifications easily.

With Orchestra Server, you can import your existing API Specifications from various formats such as QuickFIX XML and FIX Unified Repository XML, edit your API Dictionary with a user-friendly editor to describe your messages, groups, and tags, and export it to machine-readable XML formats to share it with your team and clients. For the API Document part, you can use the included Markdown editor to create PDF documents that match your company's *look and feel* and the PDF specifications that you are accustomed to.

If you are a member of the FIX Trading Community and want to access Orchestra Server, click on [this link](#) to notify the team at FIX Trading, and they will contact you to provision your account.

Contact Details

FIX Trading

System Access: jim.kaye@fixtrading.org
Memberships: nicoleta.racu@fixtrading.org

Espro

Technical Support: support@espro.com
Information: info@espro.com

Welcome to
FIX orchestra SERVER
Central Repository for FIX and non-FIX
API Specifications

Powered by Espro ETP S-Box ©

Log in

Get access to the API Specifications Server

* Email

* Password

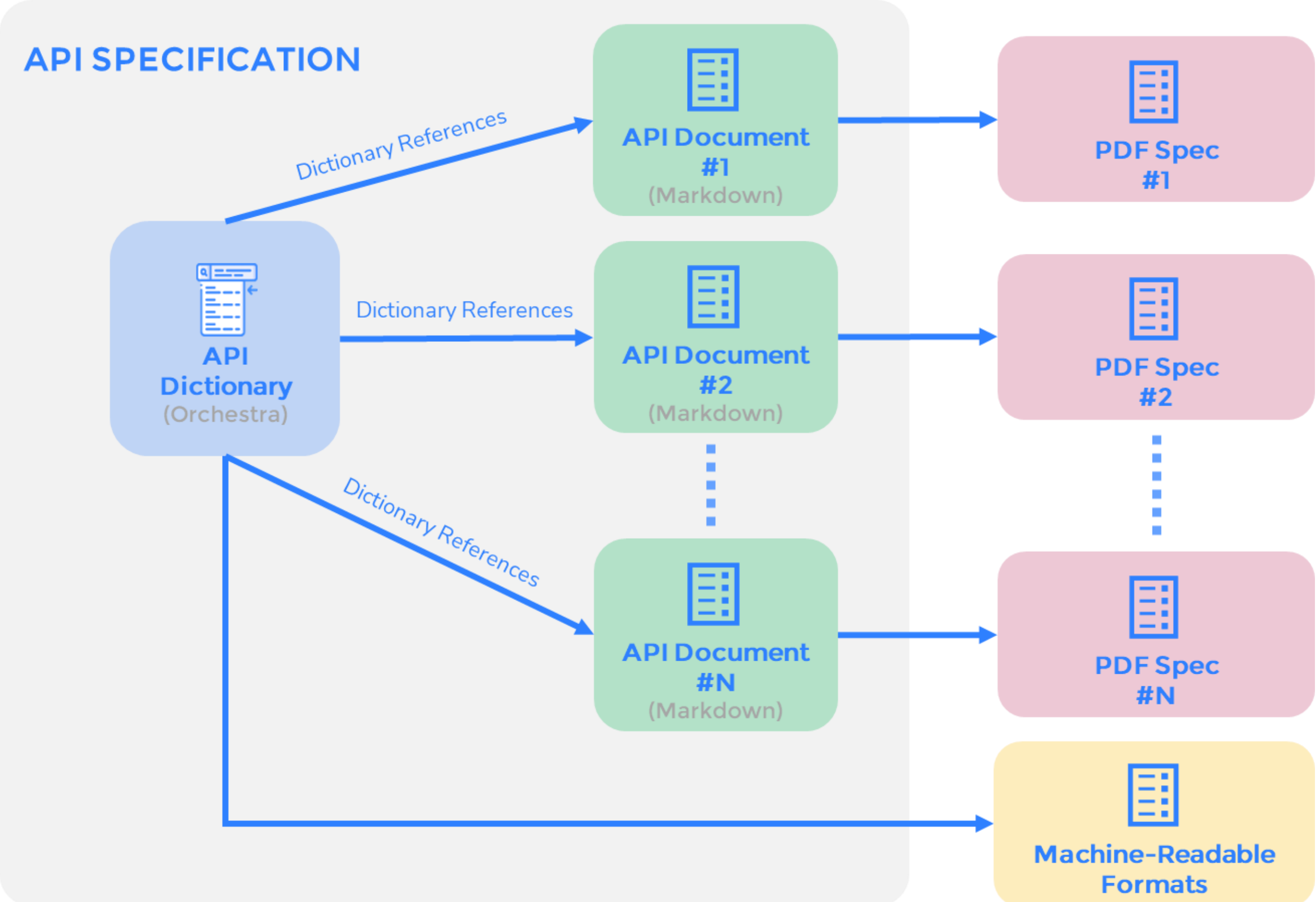
Login

Orchestra Server Tool

Web application for creating, managing, and publishing FIX and non-FIX API specifications, based on Espro's ETP S-Box technology. Available for free to FIX members.

- Convert existing API specifications to Orchestra or create new APIs
- API Dictionary Visual Editor
- API Document Markdown Editor
- API Specification versioning
- Export to Orchestra XML
- Export to PDF
- Standard FIX specifications pre-loaded
- and more...

Orchestra Server Concept




Orchestra Server – NewOrderSingle(35=D)

The screenshot displays the FIX Orchestra Server interface for the NewOrderSingle message. The left sidebar shows a navigation menu with categories like Messages (164), Components (166), Groups (561), Fields (5948), Code Sets (664), Data Types (38), Sections (5), and Categories (32). The main area shows the 'NewOrderSingle [D] (base)' message specification. A table lists the fields and their details:

Name	Id	Scenario	Presence	Documentation
StandardHeader	1024	base	required	MsgType = D
CIOrdID	11	base	required	Unique identifier of the order as assigned by institution or by the intermediary (CIV term, not a hub/...
OrderRequestID	2422	base	optional	
SecondaryCIOrdID	526	base	optional	
CIOrdLinkID	583	base	optional	
DuplicateCIOrdIDIndicator	2829	base	optional	
Parties	1012	base	optional	This is party information related to the submitter of the request.
PartyID	448	base	optional	Required if NoPartyIDs(453) > 0. Identification of the party.
PartyIDSource	447	base	optional	Required if NoPartyIDs(453) > 0. Used to identify classification source.
PartyRole	452	base	optional	Required if NoPartyIDs(453) > 0. Identifies the type of PartyID(448).
ExecutingFirm	452001	base		Executing Firm (formerly FIX 4.2 ExecBroker)
BrokerOfCredit	452002	base		Broker of Credit (formerly FIX 4.2 BrokerOfCredit)
ClientID	452003	base		Client ID (formerly FIX 4.2 ClientID)
ClearingFirm	452004	base		Clearing Firm (formerly FIX 4.2 ClearingFirm)
InvestorID	452005	base		Investor ID
IntroducingFirm	452006	base		Introducing Firm
EnteringFirm	452007	base		Entering Firm
Locate	452008	base		Locate / Lending Firm (for short-sales)
FundManagerClientID	452009	base		Fund Manager Client ID (for CIV)
SettlementLocation	452010	base		Settlement Location (formerly FIX 4.2 SettlLocation)
OrderOriginationTrader	452011	base		Order Origination Trader (associated with Order Origination Firm - i.e. trader who initiates/submits t...
ExecutingTrader	452012	base		Executing Trader (associated with Executing Firm - actually executes)

Orchestra Server Tool – Rules of Engagement

API Specifications User Manual Hanno Klein

FIX Standard v Latest_EP276 API Dictionary API Document Export version

Table Of Contents

- 1 Sample Specification
- 2 Introduction
 - 2.1 Versions
 - 2.2 Publishing
 - 2.3 Dictionary
 - 2.4 Document
 - 2.4.1 Headings
 - 2.4.2.1 Heading References
 - 2.4.3 Lists, Links, Tables, and others
 - 2.4.4 Images
 - 2.4.5 PlantUML Diagrams
 - 2.4.6 Captions and References
 - 2.4.7 Page Break
 - 2.4.8 Message: ExecutionReport [8] (base)
 - 2.4.9 Dictionary References
 - 2.4.10 Message: OrderSingle [D] (base)
 - 2.4.11 Message: OrderList [E] (base)
 - 2.4.11.1 Messages (48)
- 3 Next Steps

```
1 # Sample Specification
2 This specification contains several versions of the standard FIX Protocol
3 Dictionary, and this sample Document Markdown, demonstrating ETP S-Box features.
4 # Introduction {#h01}
5 In ETP S-Box, a specification has two main parts:
6
7 * Dictionary
8   * This is the structured data of the specification, namely, the list of
9     messages and related elements, such as components, groups, fields, etc.
10  * The Dictionary contains textual documentation for elements, however, its
11    primary purpose is to describe the protocol's structured, machine-readable
12    data.
13 * Document
14 * This is the human-readable part of the specification, which explains in
15   textual and graphical form how the API works and how it can be used.
16
17 ## Versions
18 To switch between different versions of the specification, open the version
19 dropdown menu above, between the specification name and the Dictionary menu, and
20 click the version you would like to switch to.
21
22 ## Publishing
23 You can publish your specification version by selecting the "Export version"
24 button in the top right corner of the screen.
25 You have the choice to export the Dictionary content in machine-readable format
26 (for example, as Orchestra XML or QuickFIX XML), or the Document in
27 human-readable format (for example, as PDF). Additional export formats will be
28 added in later versions of ETP S-Box.
29
30 ## Dictionary
31 To browse and edit the Dictionary contents of the selected version, click on the
32 Dictionary menu above.
33 ETP S-Box supports the FIX Orchestra standard dictionary model.
34
35 If you are in the Dictionary editor, you can switch back to this page (Document
36 editor) simply by clicking the Document menu above.
37
38 ## Document
39 The human-readable part of the specification can be edited and viewed here, in
40 the Document editor.
41
42 The Document editor supports Markdown format with additional features, such as
43 images stored together with the specification, PlantUML diagrams, and references
```

Sample Specification

This specification contains several versions of the standard FIX Protocol Dictionary, and this sample Document Markdown, demonstrating ETP S-Box features.

Introduction

In ETP S-Box, a specification has two main parts:

- Dictionary
 - This is the structured data of the specification, namely, the list of messages and related elements, such as components, groups, fields, etc.
 - The Dictionary contains textual documentation for elements, however, its primary purpose is to describe the protocol's structured, machine-readable data.
- Document
 - This is the human-readable part of the specification, which explains in textual and graphical form how the API works and how it can be used.

Versions

To switch between different versions of the specification, open the version dropdown menu above, between the specification name and the Dictionary menu, and click the version you would like to switch to.

Publishing

You can publish your specification version by selecting the "Export version" button in the top right corner of the screen. You have the choice to export the Dictionary content in machine-readable format (for example, as Orchestra XML or QuickFIX XML), or the Document in human-readable format (for example, as PDF). Additional export formats will be added in later versions of ETP S-Box.

Table of contents Preview

Get Started

Orchestra Update 2023

Working Groups



Interested?

- Please join the Orchestra Subcommittee
 - Defines strategy for the Orchestra standard and its tools
 - Maintains the Orchestra Technical Standard
 - Creates small working groups for deliverables
 - Register at <https://www.fixtrading.org/groups/theorchestrasub/>
- Current activities
 - Compile Orchestra V1.1 Release Candidate 1 Specification
 - Extend the Interfaces Schema
 - Design syntax for mapping schema