



FIX Orchestra Technical Standard Proposal

Release Candidate 5

September 19, 2019

V0.1

Proposal Status: Public Review

For Global Technical Committee Governance Internal Use Only

Submission Date	September 19, 2019	Control Number	
Submission Status	Public Review	Ratified Date	
Primary Contact Person	Don Mendelson	Release Identifier	

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Table of Contents

Document History	5
1 Introduction	6
1.1 Roadmap	6
1.2 Authors	6
2 Requirements	6
2.1 Business Requirements	6
2.1.1 Security keys for sessions.....	6
2.2 Technical Requirements	6
2.2.1 Orchestra XML schema	7
2.2.2 Demonstration and utility projects.....	7
3 Issues and Discussion Points.....	7
3.1 Questions to be decided beyond RC5	Error! Bookmark not defined.
3.1.1 Provenance and pedigree format	Error! Bookmark not defined.
4 References	8
5 Relevant and Related Standards.....	8
6 Intellectual Property Disclosure	8
7 Definitions.....	8
8 FIX Orchestra	9
8.1 Project milestones.....	9
8.1.1 Release candidate 5 deliverables.....	9
8.2 Members-only applications.....	9
8.3 Plan for production	9
Appendix A - Usage Examples.....	10
Appendix B – Compliance Strategy.....	10

Table of Figures

Document History

Revision	Date	Author	Revision Comments
RC5 v0.1	Sept. 10, 2019	Don Mendelson Silver Flash LLC	Initial draft

1 Introduction

FIX Orchestra was conceived as **machine readable rules of engagement** between counterparties. As such, it is a standard for exchange of metadata about the behavior of FIX applications. Orchestra is intended to cut time to onboard counterparties and improve accuracy of implementations.

Orchestra does not change FIX protocol itself in any way, nor does it obsolete existing FIX engines or tools.

1.1 Roadmap

The working group believes that Orchestra is nearly ready for production use and barring unanticipated roadblocks, only minor corrections will yet be made. Therefore, it is expected that RC5 will be the last release candidate for Orchestra version 1.0 before promotion to draft standard.

1.2 Authors

Name	Affiliation	Contact	Role
Don Mendelson	Silver Flash LLC	donmendelson@silverflash.net	Working group co-chair
Jim Northey	GTC Co-chair, Americas and ISO TC68 Chair	jim.northey@fintechstandards.us	Working group co-chair

2 Requirements

2.1 Business Requirements

New requirement since Release Candidate 4.

2.1.1 Security keys for sessions

Many firms now mandate authentication using a TLS certificate and private key. The Orchestra interfaces schema was enhanced to optionally include a certificate or private key in an Orchestra file. Thus, keys can be conveyed in the same file as a session configuration including session identifiers and transport settings. The transmission medium is up to users, possibly including secure web access, but obviating the usage of unsecure email or fax.

2.2 Technical Requirements

This section discusses enhancements to the Orchestra standard since Release Candidate 4.

2.2.1 Orchestra XML schema

2.2.1.1 Remove abbreviations section

In previous versions of Orchestra, an abbreviations section was carried forward from Unified Repository. Abbreviations have primarily been used to support FIXML element names and are not considered part of rules of engagement. Therefore, they were removed from the Orchestra schema. In the future, standardization of abbreviations would be better served by managing them in the FIX vocabulary project.

2.2.1.2 Support XML Inclusions

The W3C standard for XML Inclusions (XInclude) supports import of reusable elements. This should be useful in Orchestra for reused message and field definitions.

2.2.1.3 One-of and any-of member selection

Syntax was added to the XML schema to support mutually exclusive members of a message or component. For example, in component OrderQtyData, exactly one of CashOrderQty, OrderQty, or (for CIV only) OrderPercent is required. Alternatively, members can be specified at-least-one-of a group of members.

2.2.2 Demonstration and utility projects

All demonstration projects have been updated to conform to the RC5 schema.

2.2.2.1 Documentation search

A search box with autocompletion was added to HTML page output of the documentation generator.

2.2.2.2 State machine demonstration

Orchestra provides syntax to define a state machine with enumerated states and transitions. A new demonstration generates code from an Orchestra file containing state machine definitions. Examples include order states and market phases.

2.2.2.3 XML diff/merge

The XML diff/merge utility was originally created to handle extension packs in Orchestra. That usage is still planned. However, the utility is general purpose. The FIXatdl working group anticipates making use of it, for one. Therefore, the module was moved out of the Orchestra project in GitHub to its own project.

3 Issues and Discussion Points

3.1 Header and trailer

Traditionally, FIX Repository has included StandardHeader and StandardTrailer components on each message definition. However, those components are specific to tag value encoding. One complication is

that StandardHeader spans application and session layers. In the future, consideration should be given to separating the layers. Also, special syntax could be proposed for inclusion of technical elements based on encoding or session protocols.

4 References

Reference	Version	Relevance	Normative
None			

5 Relevant and Related Standards

Related Standard	Version	Reference location	Relationship	Normative
Dublin Core XML Schemas	2008-02-11	http://dublincore.org/schemas/xmls/	Dependency	Yes
XML Schema for FIX	2016		Technical guide	Yes
XML Schema	2012	https://www.w3.org/TR/xmlschema11-1/	Dependency	Yes
Namespaces	2006	https://www.w3.org/TR/xml-names11/	Dependency	Yes

6 Intellectual Property Disclosure

Related Intellection Property	Type of IP (copyright, patent)	IP Owner	Relationship to proposed standard

7 Definitions

Term	Definition
Pedigree	The recorded history of an artifact
Provenance	A record of ownership of an artifact

8 FIX Orchestra

8.1 *Project milestones*

Since Orchestra has many facets, features will be delivered in several release candidates rather than attempting a big-bang approach.

8.1.1 Release candidate 5 deliverables

These artifacts will be delivered as Release Candidate 5:

- The technical specification is a separate document “FIX Orchestra Technical Specification”. The document will be displayed in the Tech/Specs section of FIX Trading Community website as well as in GitHub project [FIXTradingCommunity/fix-orchestra-spec](#).

These resources have been published in GitHub project [FIXTradingCommunity/fix-orchestra](#):

- XML schema (XSD) for Repository 2016 Edition and Orchestra plus documentation of the schema
- XML schema (XSD) for interfaces and session configuration plus documentation of the schema
- Grammar and implementation of the Score DSL
- Scripts to populate Orchestra from Repository 2010 Edition and vice versa (message structure only)
- Example Orchestra files
- Demonstration projects:
 - Documentation generator
 - QuickFIX data dictionary and code generators
 - QuickFIX session configuration
 - Test generator

8.2 *Members-only applications*

Certain advanced applications should be considered premium and only be made available to FIX members. Complex applications require more development time and maintenance, and therefore should be made available to firms that contribute. At the same time, those applications will serve as a value-added to membership, providing an incentive for firms to join.

Premium applications currently in alpha testing are:

Orchid—Orchestra Editor

Log2orchestra—creates an Orchestra file from FIX message logs

8.3 *Plan for EP production*

In addition to standard development, a plan will be created to migrate the building of Extension Packs from Repository 2010 Edition to Orchestra. In addition to modernizing build facilities, this plan will need to account for the tools that consume Repository, including FIXimate, FIXML schema generation, and so forth.

Appendix A - Usage Examples

These example Orchestra files are posted in GitHub.

Example order entry file developed by MilleniumIT

[fix-orchestra/repository2016/src/test/resources/examples/](https://github.com/FIXTradingCommunity/fix-orchestra/blob/master/interfaces2016/src/test/resources/examples/)

Sample interface file

<https://github.com/FIXTradingCommunity/fix-orchestra/blob/master/interfaces2016/src/test/resources/SampleInterfaces.xml>

A non-FIX exchange API interpreted in Orchestra

<https://github.com/FIXTradingCommunity/orchestrations/tree/master/NYSE%20Pillar>

Appendix B – Compliance Strategy

The first level of compliance will be provided by existing XML tools that verify conformity of a file to its schema. A test is provided to validate that isolated DSL expressions conform to the grammar. However, a comprehensive compliance test has not yet been developed.