INVESTMENT ROADMAP – FREQUENTLY ASKED QUESTIONS

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1. **What is the motivation and purpose of this investment roadmap collaboration between the Standards Coordination Group members (FpML, FIX, SWIFT, ISITC, FISD, and XBRL)?**

Because the financial community is a vast one, encompassing institutions across the globe that deal with diverse asset classes, different organizations have traditionally been responsible for developing their own messaging schemes. Today, financial firms often combine a great range of trading activities. Therefore, the messaging standards from different organizations often intersect, but remain incompatible.

Within the financial services industry, there are multiple standards being used, hence the desire to ensure some level of interoperability. It is clear that the FIX Protocol is the *de facto* standard for pre-trade and trading, that FpML is the *de facto* standard for OTC Derivatives and that ISO is the *de facto* standard for settlement. We need an approach that leverages and includes these standards into a broader framework without reinventing and creating redundant messages that increase implementation costs and cause confusion for the industry.

This collaboration affirms the commitment of each organization to the ISO 20022 standard by laying the groundwork for defining a common underlying financial model. The model allows for 20022 based messages to be created to support the business processes, while at the same time provides in certain circumstances for existing independent protocols to be maintained in order to protect the investments of market participants.

The purpose of the collaboration between these organizations is to produce a consistent direction for financial services messaging standards and communicate that direction clearly. This will allow the industry to spend its money more wisely.

2. **What is the overall role of each of the standard bodies / organizations involved in this collaboration?**

FISD
The Financial Information Services Division (FISD) of the Software and Information Industry Association (SIIA) is a global neutral forum that has been serving the financial information industry for more than 20 years. FISD is comprised of 140 member companies that recognize that market data distribution and efficient trade execution require a high level of consistent and predictable service - all of which are dependent on the close cooperation of many independent organizations and systems, which is why industry stakeholders support FISD as the forum of choice to identify and resolve the business and technical issues that affect the administration, distribution and utilization of market data. For more information, see www.fisd.net.

FPL
FIX Protocol Limited (FPL) is the not-for-profit industry association that owns, develops and promotes the FIX Protocol messaging standard. Nearly 250 firms from across the global buy-side, sell-side, exchange/ATS/MTF, regulatory, association and service provider communities are members of FPL. The Financial Information eXchange ("FIX") Protocol is the de-facto messaging standard for pre-trade and trade communication globally. Having achieved significant levels of adoption within the Equity markets, it is now experiencing horizontal expansion across the Derivatives, Foreign Exchange and Fixed Income markets. Further to this, it has expanded vertically into the post trade space, supporting Straight-Through-Processing (STP) from Indication-of-Interest (IOI) to Allocations, Confirmations, and Regulatory and other reporting. For more information, see www.fixprotocol.org.

FpML
FpML (Financial products Markup Language) is the freely licensed business information exchange standard for electronic dealing and processing of privately negotiated derivatives and structured products. It establishes the industry protocol for sharing information on, and dealing in, financial derivatives and structured products over the Internet. It is based on XML (Extensible Markup Language), the standard meta-language for describing data shared between applications. The standard is developed under the auspices of ISDA, using the ISDA derivatives documentation as the basis. For more information, please visit www.fpml.org.

ISITC
ISITC (International Securities Association for Institutional Trade Communication) is a non-profit industry group in which securities market participants (broker/dealers, investment fund managers, banks, market infrastructures and vendors) collaborate to develop common approaches for

communication to process financial transactions (for example, buying and selling securities.) This collaboration includes defining how the adoption and use of industry-wide standards and consistent data can facilitate this communication. For more information, please visit www.isitc.org.

SWIFT
SWIFT is a member-owned cooperative that provides the communications platform, products and services to connect over 9,000 banking organizations, securities institutions and corporate customers in 209 countries. SWIFT enables its users to exchange automated, standardized financial information securely and reliably, thereby lowering costs, reducing operation risk and eliminating operational inefficiencies. SWIFT brings the financial community together to work collaboratively to shape market practice, define standards and debate issues of mutual interest. SWIFT is also a recognized leader in the area of financial message standards and is the Registration Authority for the ISO 20022 standard, the agreed methodology used by the financial industry to create consistent message standards. These standards and their related messages cover all financial market transactions including payments, cash management, foreign exchange, loans, securities, collateral, derivatives and trade finance. For more information, please visit www.swift.com.

XBRL US
XBRL US is the independent non-profit consortium for XML business reporting standards such as XBRL, a "tagging" language that standardizes financial statements in a way that makes them accurate, consistent and comparable. All publicly traded companies are required by new SEC rules to tag their 10-K and 10-Q filings using a digital XBRL dictionary (also called a taxonomy) based on US GAAP accounting standards. For more information, please visit www.xbrl.us.

3. How is the investment roadmap organized?

The Investment Roadmap is broken down into a grid by two types of criteria – functional category areas (vertical axis) and asset classes (horizontal axis). The map is color coded for each messaging standard (blue for FIX, green for ISO, yellow for FpML and orange for XBRL), or combination thereof. For example, FIX is a recognized standard for the pre-trade area in equities; therefore the corresponding cell in the Roadmap grid is colored blue.

Prior to being able to allocate specific business functions to messaging protocols / standards within asset classes, it is necessary to first define the specific functional categories and the specific functions within them. The functional category tables that follow the next few pages aim to provide clarification on the specific functional categories and their sub-categories. The functional categories which are defined are:

- Issuer:
    - o Pre-Investment Decision
- Front Office
    - o Pre-Trade
    - o Trade
- Middle Office
    - o Post-Trade
    - o Clearing/Pre-Settlement
- Back Office
    - o Asset Servicing
    - o Collateral Management
    - o Settlement
    - o Pricing/Risk/Reporting
- Investor Supervision:
    - o Regulatory Reporting

- Issuer Supervision:
  - Regulatory Reporting

The table below reflects the asset classes that have been identified for inclusion in the investment roadmap. Any asset class notations have been included below each of the functional category tables.

Asset class	Description
Equities & Fixed Income	Equities - Common and preferred stock, large and small cap stock, rights, warrants, etc. Fixed Income - Government and corporate debt, agency issues, floaters, callable/puttable bonds, zero coupons, convertibles, bank loans, ABS, MBS, CDO's, revolving credit, CMO's, CBO's, CLO's, etc.
Foreign Exchange	FX Swaps, FX Forwards, NDF's, FX Options, FX hedge, etc.
Listed Derivatives	Equity options, IRS, etc.
OTC Derivatives	Derivative contracts off exchange on the different asset classes: - Interest rate - equities - credit (fixed income) - commodities (physical and financial) - FX - Real estate
Funds	Corporate Pensions, mutual funds, hedge funds, investment funds, trust funds, ETF's, insurance funds, supra-national funds, collective investment funds, etc.

4. **What are the definitions for each of the functions as well as the sub functions in the detail slides?**

Issuer – Pre-Investment Decision
This covers the information from the issuer to Edgar, etc. which is used by the analysts in making their investment decision.

Sub-function	Description
Filing Fundamental Data with the Regulator	An Issuer reports financial statement data that describes the economic fundamentals of the investment. This data can then be processed by automated processes that enhance the accuracy and speed of investment decisions.
Analytical Models	Fundamental evaluation frameworks define evaluation metrics whose value is derived from financial statement data. i.e. Free Cash Flow from Operations, etc.

Front Office - Pre-Trade
Pre-Trade covers all activity which occurs prior to a trade. Examples of pre-trade activity are indications of interest (IOI), trade advertisements, quotes and market data (in support of trade through post-trade functions, i.e. market data dissemination, instrument identifiers, descriptive data, attributes, rates, codes and contact data, etc.).

Sub-function	Description
Indications of Interest (IOIs)	A buyer or seller communicating to others an interest in finding the opposite side to a trade. For equities, this typically is a broker

	communicating to its customers while representing another customer's order.
Trade advertisements	An executing party (broker) publicly disclosing that (when and how much) they have executed large block trades in an effort to publicize their role and volume in a particular security.
Quotes	The bid or ask quotes are the most current prices and quantities at which the shares can be bought or sold. The bid quote shows the price and quantity at which a current buyer is willing to purchase the shares, while the ask shows what a current participant is willing to sell the shares for.
Market Data	Refers to numerical price data, reported from trading venues, such as stock exchanges. The price data is attached to a ticker symbol and additional data about the trade.
Short Sale Locate	Location of stock prior to the execution of short sale.
Reference Data	Includes securities reference data (instrument identifiers, descriptive data, attributes, rates / codes, calendars and taxes), entity reference data (counterparty data, entity identifiers, client data, contact data) and ancillary reference data (location of trading).

Front Office - Trade

The trade area includes the order and execution processes, including order management, order routing and trade execution.

Sub-function	Description
Order Routing	Order routing and execution for single instruments and multi-leg instruments; crossing order routing and execution; and basket and list order processing.
Trade Execution	The process in which a trade is executed. The trade may be a single, multi-leg, cross, basket, list, etc.
Trade Date Position Reporting	Management of traded and tradable positions on trade date.
Reference Data	Client data, credit profiles, account numbers, commission rates, place of trade, etc.

Middle Office - Post-Trade

Post-trade covers all activity after execution up until clearing and pre-settlement begins.

SUB-FUNCTION	DESCRIPTION
Trade Capture & Validations	The process in which trades (block and or allocations) are captured by a central counterparty or locally, for purposes of trade matching and confirmation.
Allocation	Allocation of trades from both two and three party models.
Matching	Trade and allocation level matching. May be performed locally (two party) or centrally (three party). Matching may occur prior to and also after allocation.
Confirmation/Affirmation	The process of confirming and affirming trades executed.
Position Management	Affects start of day positions, positions created through trading activity, deliveries, transfers, and end of day position management. Depending on the type, position may be liquidated, adjusted, exercised, and marked to the market.
Novation/Assignment Process (OTC Derivatives Post Trade Processing)	The full or partial transfer of the rights and obligations defined by an OTC derivative contract to other consenting counterpart. A fee may be payable between the parties (actual payments are part of the settlement function) to account for the contract value. The novated and remaining contracts maybe subsequently confirmed (see confirmation sub-function). Note:

	FpML uses FIX messages to carry FpML data (trade messages).
Amendments / Modifications (OTC Derivatives Post Trade Processing)	The process by which one or several economic parameters in an OTC contract is changed. The process typically includes a confirmation part (see confirmation sub-function) and fee payments between the parties (actual payments are part of the settlement function), to account for the change in the contract value.
Termination (OTC Derivatives Post Trade Processing)	The full or partial reduction of the notional amount or number of options defined in an OTC derivatives contract prior to the scheduled termination date (swaps) or the last exercise date (options); the process typically involves a confirmation part (see confirmation sub-function) and fee payments between the parties. Note: FpML uses FIX messages to carry FpML data (trade messages).
Increases (OTC Derivatives Post Trade Processing)	Process by which the notional amount or number of options of an OTC contract increases.
Affirmation (OTC Derivatives Post Trade Processing)	
Exercise (OTC Derivatives Post Trade Processing)	The full or partial exercise of an option.

Middle Office - Clearing / Pre-Settlement
This denotes all activities from the time confirmation is made for a transaction until settlement begins. In theory, this includes the management of post-trading, pre-settlement credit exposure, ensuring trades are settled in accordance with market rules.

It is important to note that clearing may occur either bi-laterally or through a central party.

SUB-FUNCTION	DESCRIPTION
Matching	The process of "pre-matching" in order to alleviate issues (fails) in the settlement process, prior to instruction of settlement.
Netting	The process of netting trading obligations (cash, securities or other), with a goal to reduce the number of settlement transactions.
Funding	The process in which a party, individual corporate or central counterparty is responsible for ensuring that trades are properly funded, prior to settlement process initiating.
Reference Data	Settlement location, clearing account numbers, CSD identifiers, etc.

Back Office - Asset Servicing
Administration activities performed for others, e.g. processing of corporate actions, tax reclaims and portfolio valuation.

SUB-FUNCTION	DESCRIPTION
Issuance	The process in which securities are created/issued. Also referred to as underwriting. Includes the IPO process and activities of the agent, registrar, transfer agent, etc
Corporate Actions	An event issued by a company that effects the securities issued by the company, ie, dividends, stock splits, coupon payments, factor updates, etc.
Proxy Voting	The process of voting by members or shareholders and the related management of this process.
Securities Lending	Transfer of ownership of securities from the lender to the borrower for a specified period of time against fees. The transfer of ownership

of the securities is not a sale. The borrower assumes all rights of ownership and receives interest, dividend, bonus, rights and any other corporate actions due from the securities, but is obliged to pay these to the lender (original owner).

Back Office – Reconciliation (Note: this is not in the roadmap)
The process of reconciling with counterparties details of some or all transaction data such as positions or cash flows.

SUB-FUNCTION	DESCRIPTION
Portfolio Reconciliation	Automated process for reconciling with counterparties details of some or all of the positions outstanding between them. A position includes the transaction details and may include valuation information as well. The need to reconcile portfolios may be met either through bilateral arrangements or through the use of vendors providing centralised matching services.
Cash Flow Matching	Automated process for reconciling with counterparties details of some or all of the pre-settlement OTC Derivatives cash flows between them. A pre-settlement cash flow may include its calculation details to facilitate its reconciliation.

Back Office - Collateral Management
The process used to control counterparty assets against the exposure calculated as part of the risk management process. Management of risk via collateral, margin, positions, voting rights, etc. This includes repo collateral management associated positions resulting from trading activities - includes assignments, substitutions, inquiries, and request of collateral.

SUB-FUNCTION	DESCRIPTION
Initial Margining	The process of assessing the risk of a position based on volatility and market conditions, calculating a performance bond based on these factors, and comparing the requirement to the assets that are currently on deposit. A margin requirement that is greater than what is on deposit is referred to as a margin deficit. A margin requirement that is less than what is on deposit is referred to as a margin surplus. The clearing house is responsible for collecting more collateral in the case of a deficit.
Margin Call	End to end process of collateral call, including collateral call issuance, collateral call issuance responses, collateral assignment and responses to proposed collateral assignment, and notification of collateral to be moved. It also includes dispute resolution in case of rejection of collateral call.
Substitution	End to end process from initial request for a collateral substitution and expected responses.
Recall	End to end process from initial request for a collateral recall and expected responses.
Transfer	The process of requesting the transfer of collateral between clearing member sub-accounts
Interest Payment	Process that support the interest payment notifications and the dispute resolution in case there is no matching of the notifications.

Back Office - Settlement
Settlement can be simply defined as the actual exchange of obligations (cash, securities, others). Settlement is the next step in the trade lifecycle after clearing / pre-settlement.

SUB-FUNCTION	DESCRIPTION
Pre-advisement	The process whereby a party prevents its transactions from settling on a temporary basis. This can be, for example, for pre-matching purposes without committing for settlement.
Settlement Notification	The process in which a trading party, ie, an investment manager, notifies, or instructs, their settlement agent of settlement instructions for a trade.
Settlement	The process in which obligations are settled between counterparties to fulfill contractual obligations of a trade. The settlement process includes the process of pre-settlement matching, in that settlement instructions are matched prior to actual settlement being initiated in the local market. The settlement process includes settlements of financial instruments, physical or non physical and the cash payments.
Transaction Management	The process in which transactions related to settlement are managed. The process includes advice of settlement status, pending transactions, allegements, intra-position instructions, etc. The transaction management process also includes the reconcilement of settlement transactions.
Fail and Claim Management	The process in which failed trades and their associated claims are tracked, communicated and reconciled.

Back Office - Pricing, Risk and Reporting

Pricing, Risk and Reporting covers all processes across products related to the pricing and valuation of securities and derivatives, series of risk measures (or values), and all types of reporting including position management and regulatory reporting.

SUB-FUNCTION	DESCRIPTION
Tax Management	Tax Payments, reclaims, repatriations, etc.
Income Collection	The process in which income due on an investment or otherwise, is tracked, collected and paid to an account.
Risk Management	The process of monitoring and controlling the financial exposure created by a collection of financial obligations with respect to fluctuating risk factors (e.g. market price, credit worthiness, etc).
Pricing & Valuation	The determination of a financial instrument's 'fair value' by theoretically valuing the current and future financial behaviour. Financial measures other than just price/NPV may also be calculated such as the 'greeks' for derivatives or duration/convexity for fixed income products. Valuations are in general considered for books and records, not for trading.
Reporting	The process of reporting on transactions, positions, currency accounts, etc. The reporting process includes general ledger and accounting statements.
Position Management	The process in which positions (interests) in financial instruments are managed by an account servicing institution on behalf of an account owner.

Investor Supervision – Regulatory Reporting

This includes the functions listed below.

Sub-function	Description
Short Sale Reporting	The practice of selling assets, usually securities, that have been borrowed from a third party (usually a broker) with the intention of buying identical assets back at a later date to return to the lender.

	The short seller hopes to profit from a decline in the price of the assets between the sale and the repurchase, as the seller will pay less to buy the assets than the seller received on selling them. Conversely, the short seller will incur a loss if the price of the assets rises. Other costs of shorting may include a fee for borrowing the assets and payment of any dividends paid on the borrowed assets. Shorting and going short also refer to entering into any derivative or other contract under which the investor profits from a fall in the value of an asset.
Trade Surveillance Reporting	Designed to assist with surveillance and investigations of member firms by regulators and exchanges for potential violations of federal securities laws and related rules.
Position Management Reporting	Affects start of day positions, positions created through trading activity, deliveries, transfers, and end of day position management. Depending on the type, position may be liquidated, adjusted, exercised, and marked to the market.
Tax Lot Reporting	The process of reporting (from custodian to authorities) or transporting tax lot information (from custodian to custodian). Tax lots can be defined as a breakdown of position per historical purchase.

Issuer Supervision – Regulatory Reporting
This includes short interest reporting for example.

Sub-function	Description
Short Interest Reporting	Reporting short positions to the regulator including the value and details of the short positions held.
Financial Statement Reporting	Reporting of financial statement information such as a 10Q or 10K.
Investment Reporting	Reporting investment positions to the regulator including the value and details of the investments held.

5. Why is there usage of multiple standards in some of the cells?

The goal in supporting this redundancy at the message syntax level is to create an environment where users predominately using one of the syntaxes, do not have to adopt an additional standard and the resulting infrastructure costs for a subset of business processes. The ultimate success in terms of improving efficiencies and driving out costs will come from the commitment by these roadmap participants in creating a single model from which the various messaging syntaxes and supporting technologies can be derived.

a) Why is FIX and ISO represented in the Post-Trade space for Cash Equities, Fixed Income, Forex and Listed Derivatives?

For buy-side to sell-side, whether post-trade will be FIX or ISO largely depends on who within the buy-side firm is driving STP (Straight Through Processing) initiatives. If the initiative is driven by the front-office they will likely already have an investment in FIX and it will be easier to implement post-trade functions via FIX. If the initiative is driven by the back-office (as is the case with some investment managers) they will likely be using ISO 15022 and eventually ISO 20022, making it less expensive to automate post-trade using ISO messaging.

b) Why is FIX and ISO represented in the Clearing / Pre-Settlement space for Listed Derivatives?

FIX has been used in the clearing space for listed derivatives for a number of years by US based exchanges and clearinghouses. FIX is increasingly being adopted by other non-US exchanges and clearinghouses for clearing in listed derivatives due to FPL's collaboration with FIA/FOA.

ISO has been used in Europe and in the US between trading parties or their customers and clearing members to communicate deals mostly for accounting purposes but also for give up, take up and other derivative related process notifications. A SMPG market practice has been defined with the support of ISITC to clarify the usage of ISO standards in that field. ISO 20022 messages are also currently being developed for communication between clearing members and CCPs. ISO support also exists for communication between exchanges and CCPs.
The choice between FIX and ISO will be driven the same way than for Post-trade, that is, depending on who will be driving STP initiatives.

c) Why is ISO and XBRL represented in the Asset Servicing space for Cash Equities & Fixed Income and Funds?

XBRL has aligned with the ISO 20022 standard in the Asset Servicing space by developing a Corporate Actions taxonomy. The Concepts (the XBRL term for data elements) used in the taxonomy are based on the elements available in ISO 20022 common model and corporate action messages. The corporate actions taxonomy is composed of roughly 200 concepts covering over 40 different actions. Each separate action may use 20-40 of these concepts.

A unique identifier, equivalent to the ISO official corporate actions event reference, also is included in the taxonomy so that each corporate action can be more easily tracked by intermediaries and investors alike. For each corporate actions event tagged using XBRL, a style sheet (XSLT) will be made publicly available to execute message conversion (rearrange elements) from an XBRL instance to create an ISO 20022 Corporate Action Notification message in a matter of seconds.

The first implementation of the taxonomy will be in the US based on a pilot among DTCC (the US central securities depository), SWIFT and XBRL US as the initial implementation of ISO 20022 corporate actions messages for the US market.

d) Why is FIX and ISO represented in the Collateral Management space for Cash Equities & Fixed Income and Listed Derivatives and FpML and ISO for OTC Derivatives?

The FIX standard has support for collateral management, used in the market primarily for listed derivatives. Similarly, ISO 15022 also has some coverage for collateral management but with very limited adoption.

In response to a recent Fed-Letter commitment by the major dealers to improve levels of automation around OTC related collateral, the Standards Coordination Group decided that the industry would be best served by a common underlying ISO 20022 model for collateral management covering a wide range of exposure types. SWIFT, FIX, FpML, and ISITC collaborated to create this model.

From a syntax perspective, ISO 20022 XML, FIX, and FpML will co-exist.
   a. The FIX collateral management messages will be mapped into the model and, following completion of what is required by ISO 20022, will become ISO 20022 compliant using a domain specific syntax.
   b. ISDA/FpML will build messages in FpML syntax based on the model specifically for the OTC derivatives community.

c. The ISO 20022 XML syntax is broadly defined to cover all exposure types, and so can be used for collateral relating to OTC products, repos, securities lending, and others.

e) Why is FpML and ISO represented in the Pricing / Risk / Reporting space for Cash Equities & Fixed Income, Forex, Listed Derivatives, OTC Derivatives and Funds?

FpML has coverage for pricing, risk, and reporting definitions for Forex, Listed Derivatives and OTC Derivatives including valuation reporting, market data (Yield Curves, FX spot rates), and Market risk reporting (Delta Risk vs. Curve Inputs, FX exposures) for trades. There is also support for position and activity reporting.

Part of this coverage also exists in ISO. It includes, among others, tri-party and bilateral valuation reporting, position and activity reporting,

f) Why is FIX and ISO represented in the Investor Supervision – Regulatory Reporting space for Cash Equities & Fixed Income, Forex and Listed Derivatives?

With the emergence of new regulations such as MiFID in Europe, the Industry has been confronted to modified or new reporting requirements. The very same way than for post-trade, whether regulatory reporting will be FIX or ISO largely depends on who is driving STP (Straight Through Processing) initiatives. If the initiative is driven by the front-office they will likely already have an investment in FIX and it will be easier to implement regulatory functions via FIX. If the initiative is driven by the back-office (as is the case with some investment managers and certainly if outsourced to a service provider such as a custodian) they will likely be using ISO 15022 and eventually ISO 20022, making it less expensive to automate regulatory reporting using ISO messaging.

6. What is the plan going forward?

The organizations will continue to meet on a consistent basis going forward to ensure the roadmap continues to accurately depict the current as well as future standards environment.

Note: A plan to update the roadmap is being drafted (Nov 2018).

We will continue to build onto this list of FAQs as queries come through so please send any questions through to roadmap@fixprotocol.org. This will be sent to all parties from the Standards Coordination Group that were involved in the overall effort.