ISDA® FpML® Survey

February 2018

ISDA® Safe, Efficient Markets

FpML

EY Building a better working world

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Executive Summary

To understand the progress made by firms in adopting the FpML standard and to better understand how FpML can support upcoming changes in the financial services industry, ISDA and EY conducted a survey in 2017. Key findings and observations are summarized below:

- The survey report contains responses from 33 firms representing dealers, technology firms, asset and fund managers, clearing houses, trade repositories and execution facilities. These firms use FpML across the five derivative asset classes (Rates, Credit, Equity, FX and Commodities); and Loans and Repos.
- Regulatory reporting is a major functional addition to FpML since the last FpML Survey. FpML is used for regulatory reporting in every major jurisdiction and every major reporting regime in Asia, Europe and the US. Survey respondents also indicated that, in the near future, regulatory reporting is one of the most important areas for FpML to expand and further develop. This validates the efforts and focus in recent versions on regulatory reporting, work that will continue in 2018.
- Regulatory reporting and confirmation are the two business areas where there is most FpML usage. Usage is strong both for internal purposes (e.g., communication between systems) and in external processes (e.g., regulatory reporting).
- Several parties report volumes of over 1 million FpML messages on a daily basis with a high of 10 million daily FpML messages. Even though not all firms responded to the volume questions, we see a large increase in message volumes compared to the last survey. An important part of the increased volume is related to regulatory reporting.
- Regulatory reporting and internal processing are the top 2 areas where firms are looking for further development in 2018. The FpML Standards Committee continues to work on improvements to the overall reporting framework to ensure it covers the reporting requirements in all jurisdictions and to address complexity concerns (an issue raised by survey participants as a barrier to usage). The LCWD for version 5.10a, published in December 2017, contains the reporting redesign work, which is addressing lessons learned from 5 years of regulatory reporting.
- Multiple versions of FpML are in use across the industry and also within firms. Differences exist along product lines (e.g., rates versus equity) or functional lines (e.g., reporting versus clearing). We see a decent uptake of the newest versions of FpML.
- Half of the respondents are actively involved in the development of the standard through participation in working groups or the Standards Committee. The fact that 50% are not actively engaged in the development but use the standard, speaks to its maturity.
- Distributed Ledger Technology (DLT) and smart contract are moving beyond the proof of concept phase. Of those firms involved in blockchain or DLT projects, some have used or are thinking about using FpML. The review of the FpML product models to facilitate DLT and smart contracts is a key priority of the FpML Standards Committee in 2018. It fits into the broader work ISDA is undertaking with the development of the Common Domain Model (CDM), a key priority for the organization.
- Version management and migration to newer versions has been flagged as a pain point throughout various parts of the survey. The FpML Standards Committee will consider these issues in 2018.

Introduction

ISDA conducted a survey in 2011 to analyze the usage of FpML and help guide the direction of future development of the standard. Since 2011, there have been multiple additions and revisions of the FpML standard. The most recent version, version 5.10, is expected to be released as a Recommendation in early 2018. To understand the progress made by firms in adopting the newer versions of the standard and to better understand how FpML can support upcoming changes in the financial services industry, ISDA and EY conducted another survey in 2017. The survey is designed with a total of 45 questions that are divided into the following six categories:

1. Background
2. Usage
3. Regulatory Reporting
4. Tools
5. Future Development
6. General Questions

The survey received 33 responses from Asset Management firms, Confirmation Platforms, Clearing Houses, Custodians and Fund Administrations, Dealers, Execution Facilities, Technology and Software vendors, and Trade Repositories. The responses are anonymized. The data is analyzed, aggregated and summarized in six sections following the six categories in the questionnaire.

Survey respondents receive an individual report benchmarking their response against the overall survey results.

1. Background

This section provides detail that helps establish the (anonymized) profile of the respondents including the type of firm, the firm's activity, the functional area represented by the respondent and details related to the FpML usage.

39% of respondents ticked the Dealer box, followed by Technology firms (30%), and Asset Management/Custodian/Fund Administration (30%). Table 1 shows the full breakdown. Several firms identified as more than one type of firm.

The respondent firms primary activities in order of importance are transactional (61%), middle/back office (36%), middleware/ infrastructure (36%), trading and risk management (12%), and other activities (9%) – see Table 2. The respondents themselves primarily come from the following functional areas in their firms: Technology, Operations, and Trading, as seen in Table 3.

Table 1: Types of firms

Dealer	39%
Asset Management/Custodian/Fund Administration	30%
Technology	30%
Clearing House	9%
Execution Facility	6%
Trade Repository	6%
Confirmation Platform	3%

Table 2 Firm's Activities

Transactional	61%
Middle/Back Office Service Provider	36%
Middleware/Infrastructure	36%
Trading and Risk Management	12%
Other	9%

Table 3 Functional Areas

Technology	29
Operations	11
Trading	5

FpML is used extensively across the main derivative asset classes (Figure 1). FpML is used for Interest Rates, Credit Derivatives, Equity Derivatives, followed by FX and Commodities. Usage of FpML for Loans and Repos, which have been added more recently to the standard, is developing.

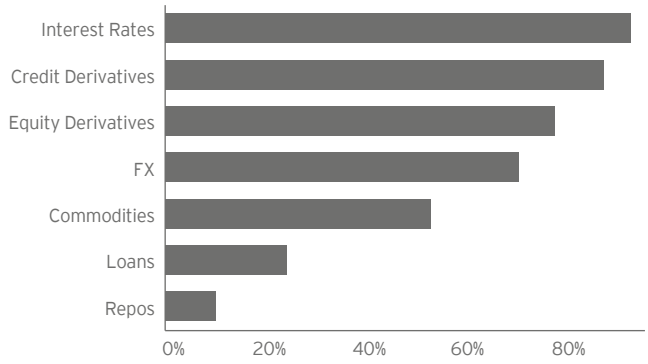

Figure 1 Asset classes

Figures 2a, 2b, and 3 below illustrate the FpML usage patterns when asked to identify the version or versions used by each asset class and business function. The most common uses of FpML were observed in the regulatory reporting (61%) and confirmation (45%) business functions across all the asset classes (Figure 2a). With 42% of the respondents using version 5.5 for various business functions, it is the version most used (Figure 2b).

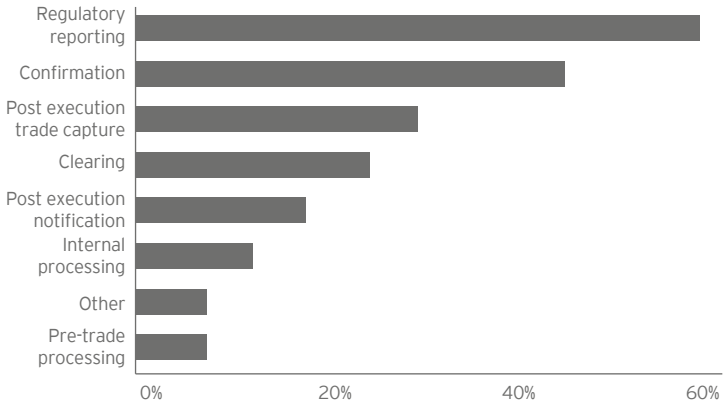

Figure 2.a Business functions for which FpML is used

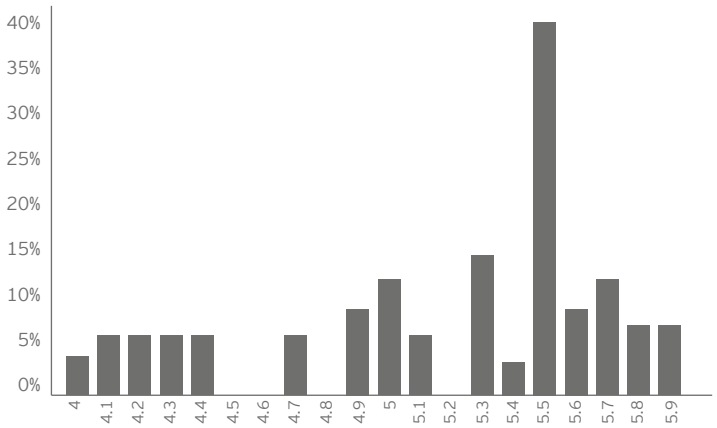

Figure 2.b FpML versions used by firms

The uptake of the versions follows similar patterns across the different asset classes; a different picture emerges if we look across business functions. Figure 3 shows us that version 5.5 is used by most of the firms for regulatory reporting across all asset classes. Multiple versions are in use for confirmation. Newer versions such as 5.7 and 5.9, the most recent recommendation at the time of the survey, see a good uptake as well for confirmation purposes.

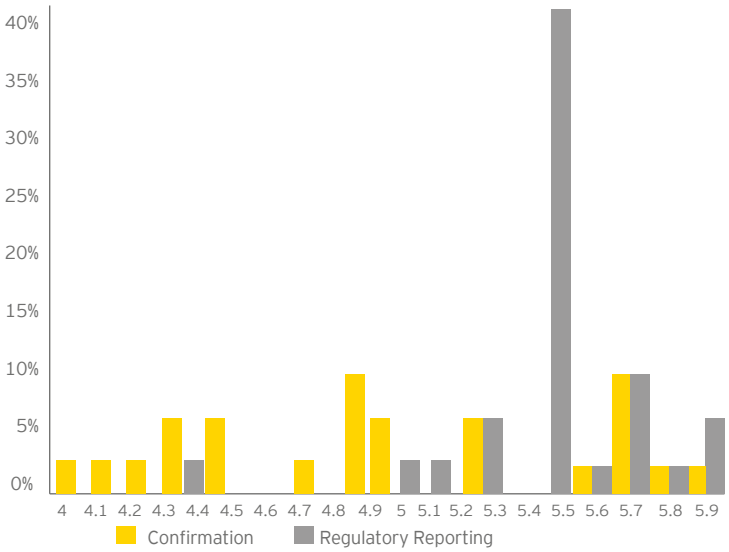

Figure 3 FpML versions used for Confirmation and Regulatory Reporting

FpML 4 was the longstanding major version prior to FpML 5 being introduced in 2010. While FpML 4 is well established FpML 5 has since picked up (figure 4). A large majority (88%) of survey respondents use version 5 of the standard. Note that use of different versions for different business processes is quite common.

FpML History

The initial versions of FpML focused on interest rate derivatives and subsequently expanded into FX, equity, commodity derivatives and credit derivatives. The primary focus early on was the automation of post trade processing of derivatives, in particular the confirmation process. The introduction of version 5 and the concept of "Views" as part of version 5, provided a way to represent additional business processes, such as pre-trade processes and clearing, and adapt the product representation for these particular processes. The views approach was used in version 5.5 to define reporting to trade repositories and public reporting. This coincided with the go-live of the first major regulatory reporting regime: CFTC parts 43 and 45 reporting in 2012. Beyond the expansion into different parts of the trade lifecycle, covering the full pre-trade, trade and post trade parts of the lifecycle, FpML has expanded in recent years to cover commercial loans and repos. Extensions to the standard are available for bonds and securities. See the FpML website for more information.

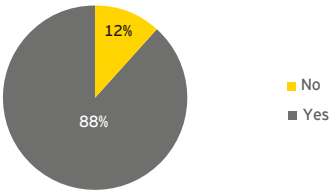

Figure 4: Usage of FpML 5

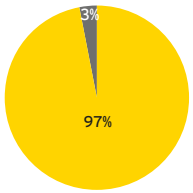

Figure 5: Usage of Master Schema

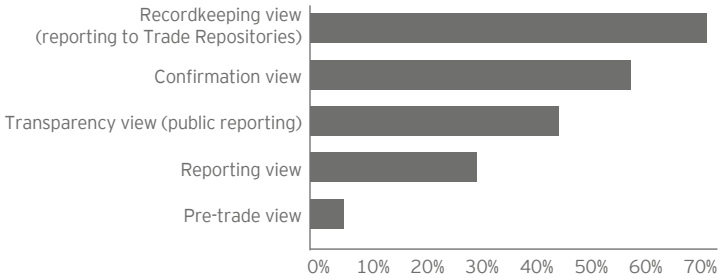

Figure 6 FpML views used by firms

Views

One of the major changes introduced in version 5 is the concept of Views. Views provide a way to tailor the FpML schema (and product representation) for different applications and business processes (e.g., executing a trade, clearing a trade, or reporting). For example, at confirmation stage, all the terms of a deal are known and the FpML Confirmation schema mandates the presence of most product fields accordingly; conversely, prior to execution, not all the terms may be known; the FpML Pre-trade schema (a different view) allows more fields to be optional.

Figure 6 tells us that the two views used most are Recordkeeping (76%) – for reporting to Trade Repositories – and Confirmation (62%) closely followed by the Transparency view (48%), which is the view used for public reporting. The recordkeeping view and the transparency view have been introduced in version 5.5, the first FpML version that covers regulatory reporting requirements.

One respondent uses the FpML master schema (figure 5). The low usage is consistent with the fact that the master schema is a technical schema used for the generation of all the views. It is not intended to be used for particular business processes.

2. Usage

This section provides information on the usage of FpML. It addresses questions such as the frequency of FpML version upgrade, what change management strategy firms have in place for FpML and FpML usage for external communications. Figure 7 shows that the 2 reasons most commonly cited by firms to upgrade to a newer FpML version are 1) the requirements or capabilities from the middleware providers to upgrade and 2) the additional functionality available. Upgrades on a more fixed schedule (every 1 or 2 years), or following the FpML release cycle (every major version or every new version), are less the norm.

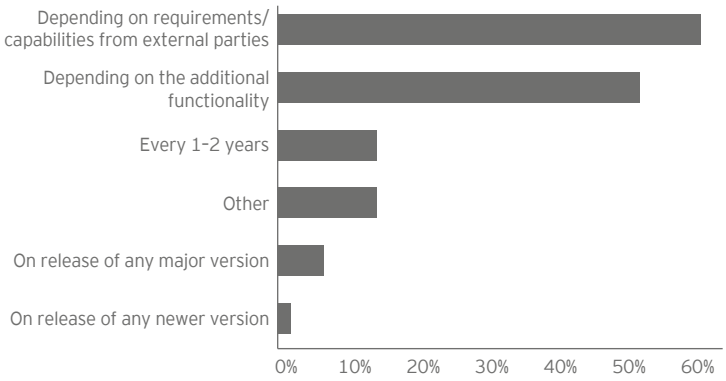

Figure 7 Frequency of FpML version upgrade

The most common drivers identified for FpML version upgrade are new or additional business requirements from external parties; industry demand and compatibility; to leverage additional features in the newer versions; and front-office trading systems and vendor support.

Asked about a specific change management strategy for FpML versions, 2 firms indicated that they have an explicit strategy in place. The strategy includes storing the FpML custom extensions in code repositories, using the extensions with separate namespaces, and swapping the core files followed by regression tests.

The firms that do not have a specific change management strategy in place indicated that changes are implemented based on specific requirements. Before implementing the change, these firms validate the need, evaluate costs, and reach out to industry for compatibility. In some cases, firms have an internal standard or a canonical model and when the need arises to upgrade to a newer version or change to a different format, these firms use tools to enrich and convert or translate the format from the internal standard or canonical model to the target format.

Figure 8 shows hurdles that firms face when upgrading to newer versions. The most elected hurdles are cost, version management concerns, presumably linked to concerns around dealing with extensions and customization, and pushback from external parties. The lack of a change management strategy seems to have some bearing on version management issues. From a standards perspective, FpML has made considerable efforts to facilitate upgrades to newer version by ensuring that minor versions are backward compatible, however more work still needs to be done. See the FpML Change Guidelines published on FpML Website for more information: http://www.fpml.org/asset/1eac9511/df4788bb.pdf

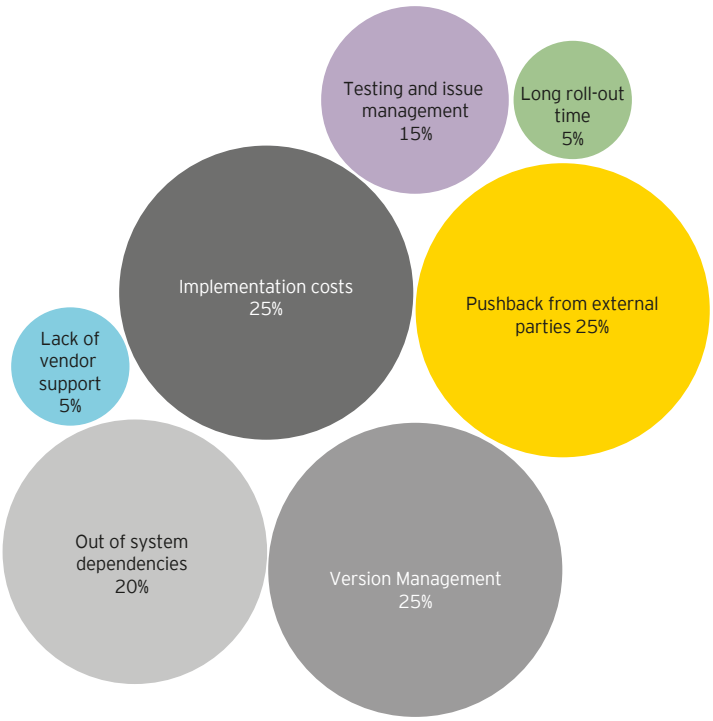

Figure 8 Common issues/hurdles faced by firms

FpML Working Groups, Committees and Website

The FpML development work is done through a number of open industry working groups. The Standards Committee is the senior committee overseeing the work, reporting into the ISDA board Product and Infrastructure Committee and the ISDA board. The standard itself, documentation, examples and related reference data can all be found on the website under "The Standard" section. The working groups' charter and working documents can be found in the working group section. See http://www.fpml.org/wgroup/ for more information.

55% of the firms that responded to the survey are currently participating in the FpML development process through working groups or committees. Some of the working groups ("WG") and committees mentioned are the FpML Architecture WG, Interest

Rate Derivatives WG, Credit Derivatives WG, Equity Derivatives WG, Regulatory Reporting WG and the Standards Committee. See the Working Group section of the FpML website for more information on the active working groups and topics being discussed: http://www.fpml.org/wgroup/.

More participation is better and we encourage firms to participate in the development process. At the same time, the fact that about half of the respondents do not participate in active development of the standard speaks to the maturity of the standard, which is used beyond those firms directly involved in its development.

The next set of questions deal with internal versus external usage of the standard and the type of external counterparties firms interact with. Figure 9 illustrates the distribution of firms based on their usage of FpML with 52% of the firms using FpML for both internal and external communications. A small subset of firms is using FpML only for internal purposes.

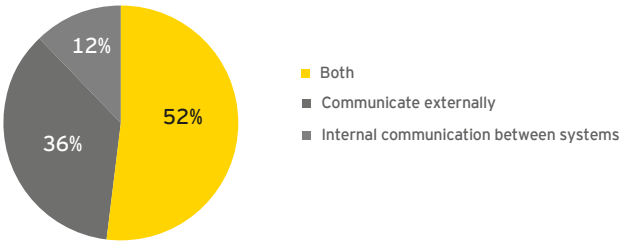

Figure 9 Usage of FpML for internal and external communications

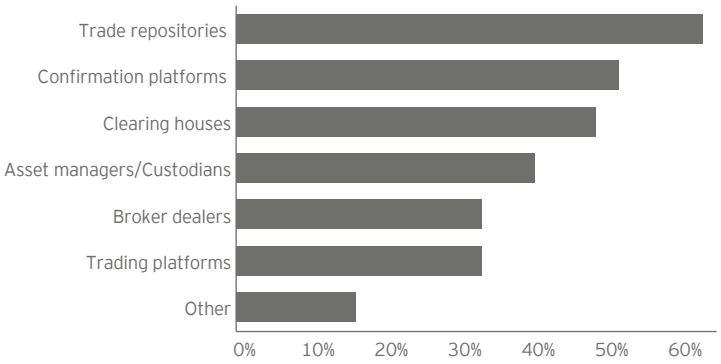

Figure 10 List of external platforms or organizations communicated with using FpML

Firms use FpML to communicate with various external parties including Trade Repositories (67%) followed by Confirmation platforms (48%) and Clearing houses (45%). Figure 10 depicts the percentage of the firms that communicate using FpML with each type of external platform. The "Other" category (15%) includes accounting agents, credit checking hubs, The Markets in Financial Instruments Directive (MiFID) Approved Reporting Mechanism (ARM), and Approved Publication Arrangement (APA). We expect ARMs and APA in particular to become more important going forward as MiFID II went live on January 3, 2018.

Volumes

In the survey we asked firms about their usage, including actual numbers for the internal and the external messages processed in a given day, the volume composition of these messages by asset class and by business function. A limited number of firms responded to this question and some mentioned confidentiality or commercial concerns around providing the actual volume number. Below is a summary where we classified firms in buckets corresponding to the volume of messages.

We see a clear increase in volumes compared to the volume information from the last survey, in particular in the use of external messages. As we can see below, several firms reported over a million messages on a daily basis externally.

Table 4.a Number of firms by internal message volume ranges

1,000,000-10,000,000	1
100,000-1,000,000	2

Table 4.b Number of firms by external message volume ranges

>10,000,000	1
1,000,000-10,000,000	3
100,000-1,000,000	3

The volume compositions (in percentage) of the FpML messages by asset class are detailed in Figure 11. The figure shows the average volume of messages across all the firms using FpML format.

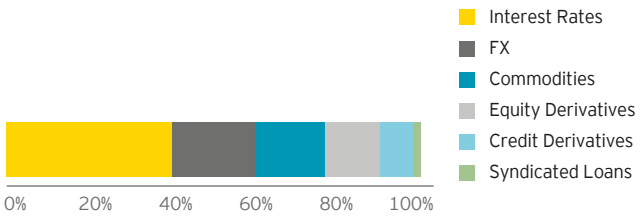

Figure 11 Average volume by asset class

The volume compositions (in percentage) of the FpML messages by the business function provided by respondents are shown in Figure 12. The biggest volume of messages relates to regulatory reporting. Figure 12 confirms that regulatory reporting and confirmation are not only the most common business functions for which FpML is used but also represent a majority of the daily volumes.

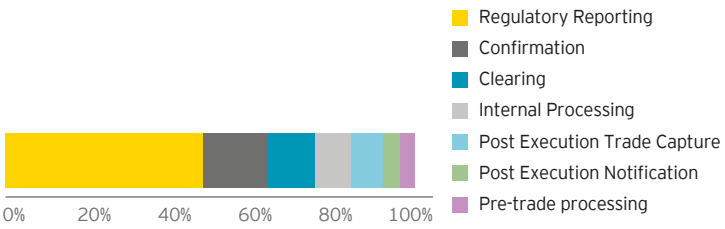

Figure 12 Average volume by business function

3. Regulatory Reporting

As seen in the background section (Figure 2.a), regulatory reporting is one of the most popular business functions for FpML usage across different asset classes. Figure 13 shows that FpML is used for reporting in all the major jurisdictions where regulatory reporting is live, in Europe, Asia and the US.

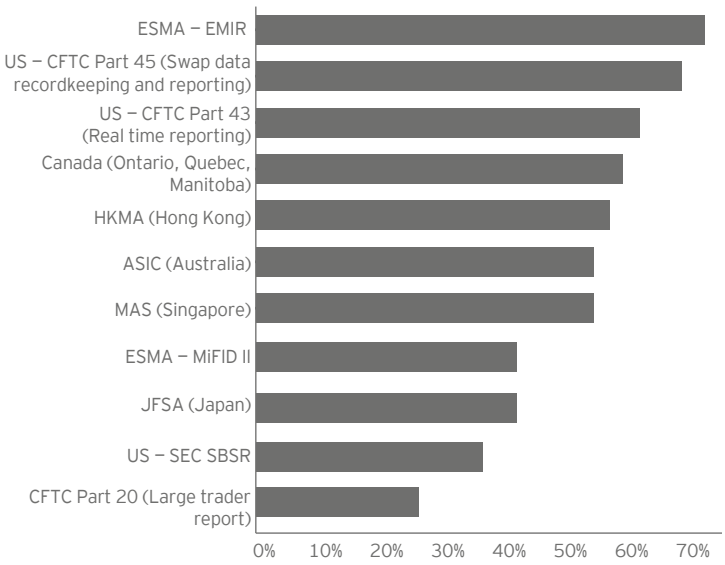

Figure 13 Regulations for which FpML is used

Regulatory Reporting

Following the 2008 financial crisis, one of the commitments related to OTC derivatives made by the G20 was to "report all OTC derivatives to Trade Repositories"[1]. The US Commodities and Futures Commission (CFTC) was the first regulator to implement these requirements. Part 43 (Public Reporting)[2] and Part 45 (Recordkeeping – reporting to Swap Data Repositories)[3] went live in 2012–2013. Since then regulatory reporting for OTC derivatives has gone live in all major jurisdictions. Figure 13 in the survey results gives an overview of the major jurisdictions and the FpML use in each of these jurisdictions.

Regulatory reporting was first introduced in FpML in version 5.5 with the Recordkeeping and Transparency views, covering the CFTC requirements. It has since been expanded to include the data requirements in other jurisdictions.

Recently FpML has been working on a redesign of the regulatory reporting framework – see "Reporting Redesign" background box)

More than half of the firms using FpML for regulatory reporting also report multi-legged swaps using, in most cases, the FpML generic product representation. Some firms have built extensions for highly exotic products to represent these internally. In the case of regulatory reporting for packages, firms answered that they report the individual components of the package as separate trades, however, for clearing purposes in certain instances firms report sending packages as a single trade. As some firms are building extensions and several others are indicating issues with the representation of multi-leg and complex products, this might be an area for the standard to focus on in the upcoming development cycles.

Reporting Redesign

With regulatory reporting live in several jurisdictions, the Reporting Working Group and the FpML Standards Committee assessed the state of regulatory reporting and looked at ways to improve the regulatory reporting framework. A discussion paper on Reporting Design Improvement Ideas published by FpML Reporting Working Group (See http://www.fpml.org/asset/c69661e9/8496d63c.pdf), details the experience of 5 years of regulatory reporting, the issues identified and proposed solutions to deal with these issues. Part of the work is implemented in version 5.10a. See the FpML 5.10a Last Call Working Draft published on FpML website for more information: http://www.fpml.org/latest_news/isda-has-published-fpml-5-10a-last-call-working-draft/

[1] G20 Pittsburgh Summit, September 2009.

[2] 17 CFR part 43, Real-Time Public Reporting of Swap Transaction Data: http://www.cftc.gov/idc/groups/public/@lrfederalregister/documents/file/2011-33173a.pdf.

[3] 17 CFR part 45, Swap Data Recordkeeping and Reporting Requirements: http://www.cftc.gov/idc/groups/public/@lrfederalregister/documents/file/2011-33199a.pdf.

4. Tools

This section addresses different aspects of tool usage by firms as listed below:

- Usage of tools and methods by firms to convert FpML to and from other formats, usage of binding tools in FpML application development, and generally firms' need for any tool functionalities.
- Input from the technology providers on whether they offer any services and/or tools related to FpML.
- Reasons and approach for schema extensions and awareness of the FpML schema extension guidelines.

64% of the firms that responded to the survey use tools to convert or translate FpML to other formats or from other formats to FpML depending on firms' needs. The conversion most often mentioned is a conversion to and from internal data models and internal XML formats. Figure 14 gives additional formats to which or from which FpML is converted.

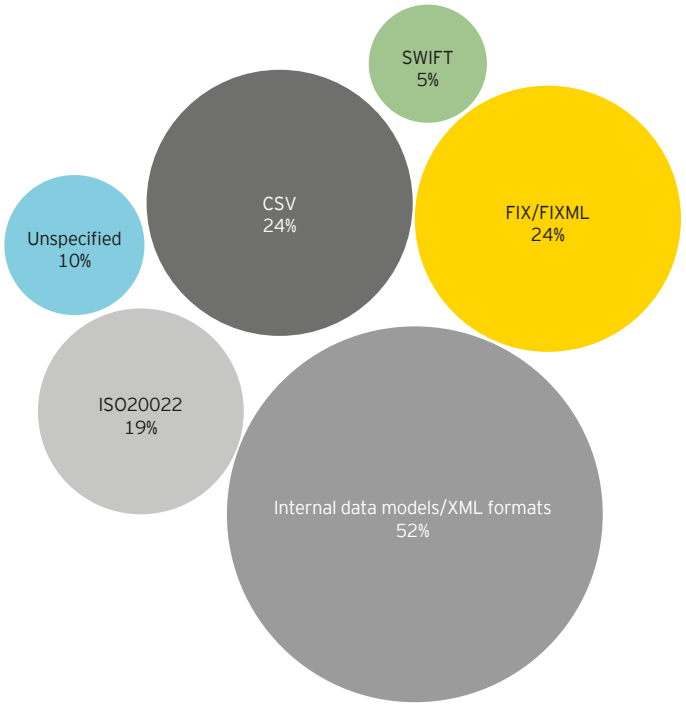

Figure 14 Other formats commonly converted to/from FpML

To transform the FpML formats from/into other formats, firms primarily use Custom XSLT and Custom Java applications. Figure 15 lists the other approaches chosen by firms to transform to and from FpML.

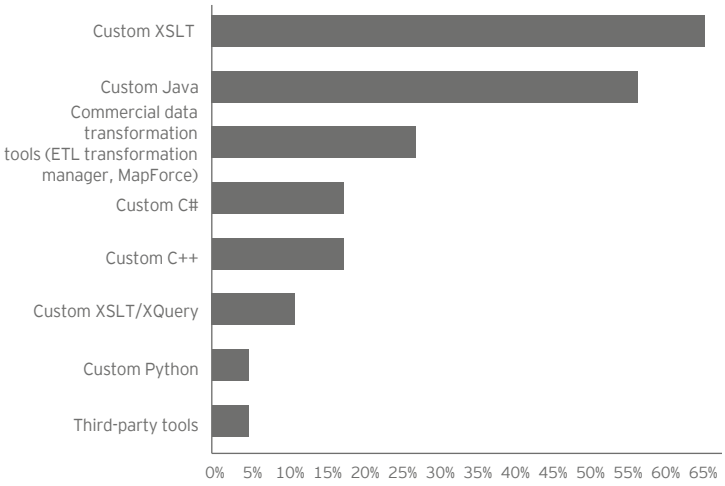

Figure 15 Tools used for converting FpML to other formats

45% of the firms specified using binding tools for FpML application development and Jax-b is their popular choice. The other binding tools used by firms include .NET .XSD, XML Beans, Liquid XML, NetBeans, Castor, XPath, and in-house tools, as shown in Figure 16.

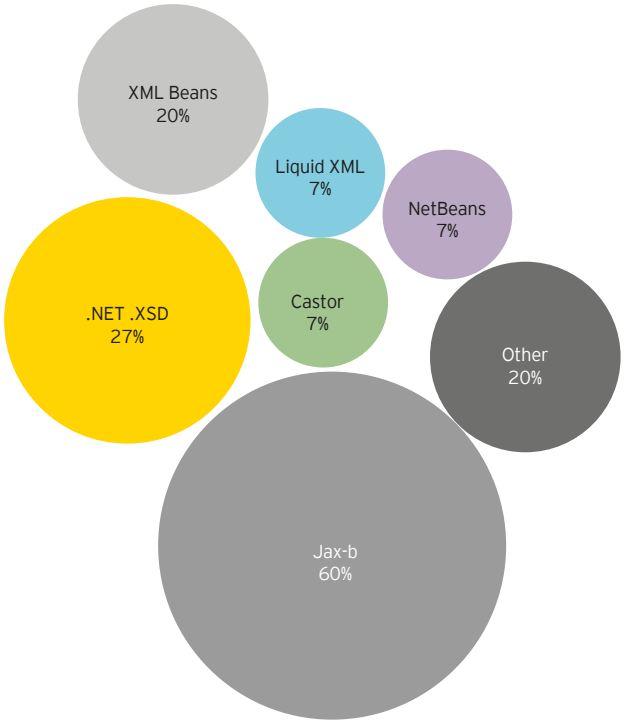

Figure 16 Binding tools

Firms use multiple tools while working with FpML. When asked if there is a particular tool functionality that is currently missing in the market place, the following types of tools were mentioned: tools for validation; tools for creating and managing the documentation; tools for mapping between internal formats; data lineage tools and conversion, and third-party FpML editor tools.

The following analysis provides insights into the FpML based products/services offered by the technology firms with the percentage of firms offering each product/service depicted in Figure 17.

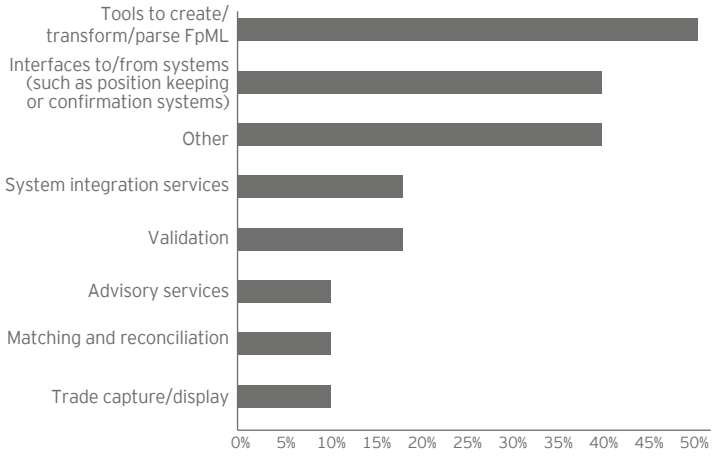

Figure 17 Products/services offered by technology firms

Extensions

Extensions are an integral part of FpML. FpML was designed with extensions in mind as it was always expected that firms would need to customize FpML for particular implementations whether it is to add a few elements for straight through processing between internal systems, or add new product features not (yet) available in standard FpML.

There are many ways one can customize an XML schema. ISDA has issued very specific guidelines on how to properly extend the FpML schema; in addition, ISDA provides advanced training on how to extend FpML to make sure custom extensions are maintainable, flexible, and separate from the FpML schema, while aligned with general FpML architecture guidelines.

Respondents that do extend FpML were asked for the reasons or drivers to do so. The responses are summarized below in decreasing order of significance:

- To include extensions/fields/proprietary information to meet firm's needs.
- To add missing functionalities/extensions/product features for local regulatory reporting or client requirements.
- It is more economic, less time consuming, and risk-averse to extend the existing schema when compared to making a complete upgrade to a newer version.
- To make the content global and available across all events/views and to build consistent event models.

To extend FpML, firms take various approaches which predominantly include wrapping the components and/or type extensions. Other approaches mentioned by the firms include editing the schemas, creating own schemas similar to FpML, and building validation tags.

More than half (55%) of the firms that do have extensions follow the schema extension guidelines published by FpML Architecture Working Group. The remainder of the respondents either do not follow the guidelines (15%) or do not know (30%) whether their firm follows the guidelines. More can be done to make firms aware of the FpML extension guidelines for example through education or easier access to the extension guidelines and examples on the FpML website.

5. Future Development

Under the section "Future Development", firms were asked to provide insight into their future plans of FpML usage. We asked about additional areas FpML should cover and inquired about the familiarity with ongoing developments in working groups. In addition we asked for obstacles in using FpML, areas of improvement for FpML implementation or training, and finally, the potential for use of FpML in Smart Contracts and Blockchain or Distributed Ledger Technology (DLT) applications.

In response to the first question under this section, firms listed all the asset classes and some business functions for which they anticipate or plan on expanding the FpML usage. Regulatory reporting clearly is the area most often mentioned where firms seek to expand their use of FpML. Figure 18 gives the complete picture.

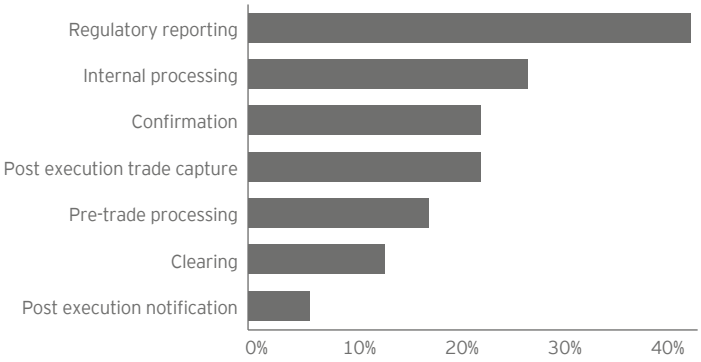

Figure 18 Business Areas for future development

Of the 33 firms responding to the survey, one third (11) of the firms are familiar with the discussion paper on Design Improvement Ideas (available at http://www.fpml.org/asset/c69661e9/8496d63c.pdf).

The feedback from these 11 firms included the following points: need for further development of generic product representation, need for simplification to avoid data loss during internal/external messaging and reporting, and making reporting structures available across all events. The relatively limited number of firms that are aware of the initiative shows that additional effort is needed to socialize and promote the important work done by the Reporting Working Group.

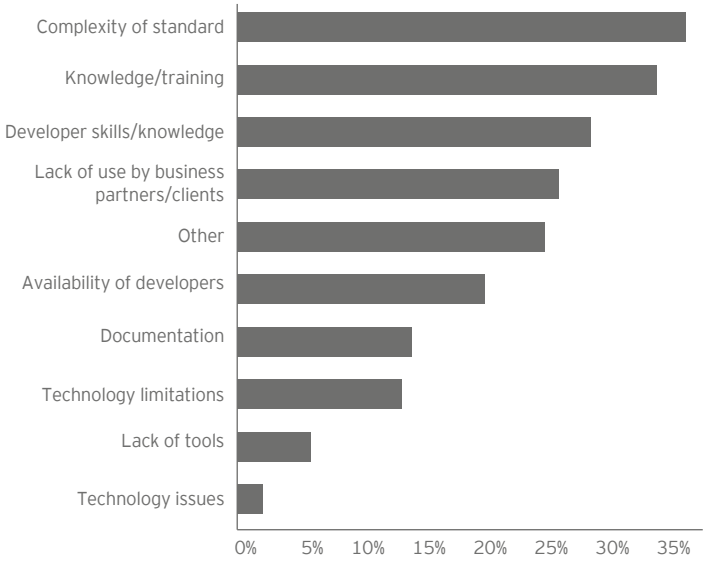

Figure 19 Significance of common obstacles for FpML usage

In Figure 19 and Table 5, we see a ranking of a number of potential obstacles to implement FpML. Documentation in this context refers to the technical documentation that is provided as part of the FpML standard. The technical documentation, which includes examples helps implementers with the implementation.

The regulatory reporting redesign work that is part of version 5.10a (see also section 3 on page 9), goes a long way in addressing the concerns around "the complexity of the standard" in the context of regulatory reporting.

Table 5 Count of firms ranking each obstacle from 1–3

	Rank-1	Rank-2	Rank-3
Complexity of the standard	7	5	4
Knowledge/training	7	4	4
Developer skills/knowledge	4	5	5
Lack of use by business partners/clients	5	4	2
Other	3	3	4
Availability of developers	2	3	3
Documentation	1	4	2
Technology limitations	2	2	2
Lack of tools	0	1	3
Technology issues	0	0	2

Obstacles mentioned by the firms under "Other" include the inability to use FpML as a standard for all regulatory reporting purposes, lack of examples, the cost of an FpML version upgrade, and a lack of a well-defined FpML (internal) usage strategy.

In order to help the firms with future implementations the survey requested respondents to indicate areas of preference for further developments. The results are shown in table 6 below.

Table 6 Areas of improvement for FpML implementation

Examples	21
Open source tools/example applications/programs	17
Reference documentation	15
Executive summaries/introductory materials/user guides	14
Tutorials	13
Data dictionary/lists/cross-references	11
Case studies	9
Less flexibility in the standard	5
Training courses	5
More flexibility in the standard	3
Books	2

65% of the firms have not participated in ISDA trainings on FpML. A few firms requested for specific trainings on multiple topics including implementation of business rules, representation of different types of interest rates, and regulatory reporting.

With the ongoing developments of implementing Smart Contracts and Blockchain technologies across the financial services industry, ISDA requested respondents to indicate whether they are involved in such projects and if they use FpML for these purposes. 52% of the firms reported involvement in the development of proof of concepts, two firms mentioned the use of FpML, with one specifying an indirect usage of FpML for messaging. Few firms noted that they have not (yet) investigated the use of FpML and some expect to use FpML in near future in the context of Blockchain and Smart Contracts.

6. General Questions

In the final section respondents were asked to identify how they raise any issues identified in FpML. Two thirds of the respondents (22) that do raise issues did this either through discussions in the FpML working groups or discussing directly with other firms (77%), in writing with FpML.org (59%) and using the FpML Tracker (32%).

In the closing question – any additional comments on the use of FpML or the survey, respondents mentioned concerns around ease of use and asset class specific questions. Overall, they acknowledged a good experience with their issues being resolved in a prompt manner.

Annex 1: List of firms that participated in the survey

- Alliance Bernstein L.P.
- Bank of America Merrill Lynch
- Barclays Capital
- Banco Bilbao Vizcaya Argentaria, S.A.
- Bloomberg
- Bloomberg Financial Markets
- BNP Paribas
- Bank of New York Mellon
- CIBC
- Citibank
- Chicago Mercantile Exchange
- Credit Suisse
- Depository Trust & Clearing Corporation
- Ecofin Limited
- Hong Kong Monetary Authority
- HSBC
- Intercontinental Exchange
- IHS Markit
- J.P. Morgan
- London Clearing House
- Legal & General – Investment Management
- London Market Systems
- Morgan Stanley
- Murex
- New Soft Technology Corp.
- Oracle
- Orcon
- RegTek Solutions/ Riskfocus
- Societe Generale
- State Street
- TD Securities
- Trioptima
- UBS

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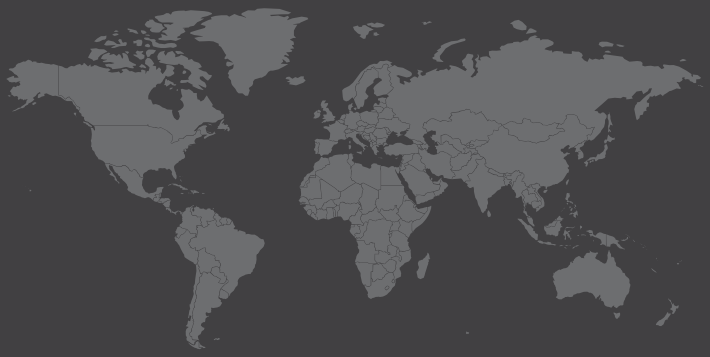

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ISDA

Contacts

Karel Engelen
Senior Director
kengelen@isda.org

Lyteck Lynhiavu
FpML Senior Technical Analyst
llynhiavu@isda.org

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Contacts

Pete D McEvoy
Principal – FSO Advisory
pete.mcevoy@ey.com

Nutty K Venkatasubramaniam
Senior Manager – FSO Advisory
natarajan.kalvaivenkatasubramaniam@ey.com