

Industry Recommendations for the Creation of a Consolidated Audit Trail (CAT)

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Document Control

a) Distribution

The requirements and standards presented herein are presented to the following audiences:

- Self Regulatory Organizations (SROs)
 - BATS Exchange, Inc.
 - BATS Y-Exchange, Inc.
 - BOX Options Exchange LLC
 - C2 Options Exchange, Incorporated
 - Chicago Board Options Exchange, Incorporated
 - Chicago Stock Exchange, Inc.
 - EDGA Exchange, Inc.
 - EDGX Exchange, Inc.
 - Financial Industry Regulatory Authority, Inc.
 - International Securities Exchange, LLC
 - Miami International Securities Exchange, LLC
 - NASDAQ OMX BX, Inc.
 - NASDAQ OMX PHLX, LLC
 - The NASDAQ Stock Market LLC
 - National Stock Exchange, Inc.
 - New York Stock Exchange LLC
 - NYSE Arca, Inc.
 - NYSE MKT LLC
- Securities and Exchange Commission
- CAT Bidders

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¹ The views expressed in this document do not necessarily represent the views or opinions of IBM.

Executive Summary

a) Objectives

This document presents the position and recommendations of the Securities Industry and Financial Markets Association (“SIFMA”) regarding the creation of a Consolidated Audit Trail (“CAT”) for the US Securities Markets.

SIFMA supports the creation of an effective, efficient CAT system that can help advance SIFMA’s goal of strengthening financial markets while building trust and confidence in the financial industry.

This document presents the Industry’s perspective of how the CAT system should be organized, provides key principles on operations, structure, governance, and scope, and outlines the Industry vision of how the CAT system should be implemented and expanded.

The document was developed through iterative dialog with the SIFMA membership, representing a range of firm types, sizes and business models. SIFMA expects this document to help guide the creation and implementation of the CAT.

b) Background

On August 1, 2012, the Securities and Exchange Commission (“SEC” or the “Commission”) adopted Rule 613 of Regulation NMS under the Securities Act of 1934 (“Exchange Act”),

“to require national securities exchanges and national securities associations (“self-regulatory organizations” or “SROs”) to submit a national market system (“NMS”) plan to create, implement, and maintain a consolidated order tracking system, or consolidated audit trail, with respect to the trading of NMS securities, that would capture customer and order event information for orders in NMS securities, across all markets,

from the time of order inception through routing, cancellation, modification, or execution.”²

The CAT will enhance regulators’ ability to detect violations of securities laws and support analysis of market disruptions like those seen in recent years.

The CAT is intended to provide regulators with a searchable database that will allow them to accurately identify the beneficial owner of an order or trade, and to follow the order through the entire trade lifecycle – from origination through routing, modification, cancellation, or execution – recorded on an industry-wide synchronized clock, down to millisecond or finer increments.

Rule 613 mandates that the SROs submit a CAT NMS plan that requires:

1. *Participants to send to a newly created central repository each reportable event with respect to each quote and order, such as its origination, modification, cancellation, routing, and execution.*
2. *This data to be reported to the central repository by 8 a.m. Eastern Time the following trading day – and be subsequently available in an aggregated format to regulators for their analysis.*
3. *All reportable events to be tagged and stored by the central repository in a linked fashion, allowing regulators to accurately follow an order through its entire lifecycle from generation through routing, modification, cancellation, or execution.*
4. *Each broker-dealer and national exchange to be assigned a unique, cross-market identifier to be reported to the central repository along with every reportable event.*
5. *Each customer, as well as any customer adviser who has trading discretion over a customer’s account, to be assigned a unique, cross-market customer identifier to be reported to the central repository for every order originated.*
6. *SROs and their members to synchronize the business clocks they use to record the date and time of any reportable event, and requires timestamps – reported for each event to the central repository – to be in millisecond or finer increments.³*

² CAT Final Rule p.1: <http://www.sec.gov/rules/final/2012/34-67457.pdf>

³ SEC Approves New Rule Requiring Consolidated Audit Trail to Monitor and Analyze Trading Activity: <http://www.sec.gov/news/press/2012/2012-134.htm>

The SROs were originally required to submit a CAT NMS plan to the Commission within 270 days of Rule 613's publication in the Federal Register, but that deadline has been extended to December 6th, 2013.

c) Guiding Principles and Key Dependencies

i) Elimination of Duplicative Systems and Reporting

CAT offers the SROs and the Industry an opportunity to introduce efficiencies into the marketplace. As noted by the SEC in adopting Rule 613, the creation of a single, authoritative source of audit trail information represents an opportunity to address the shortcomings in the completeness, accuracy, accessibility and timeliness of existing audit trail systems by providing regulators with all of the “key elements” required to link an event in the market to an end-client and to provide useful information for regulatory oversight.⁴

The cost of complying with duplicative reporting regimes, with different requirements and incompatible standards across different markets, product types, and customer populations, when multiplied across each reporting firm not only complicates the task of sound regulation, but also serves as a tax on the Industry that can increase costs to the investing public, reduce shareholder value, and reduce the competitiveness of US markets. Eliminating these rules and systems, and consolidating them under a single rule with a single set of standards managed by a single central party, will be of benefit to both regulators and the Industry.

ii) Flexibility and Scalability beyond Reg NMS Securities

The CAT should be designed with multi-product expansion in mind, and not be constrained by an architectural design that would limit the ability of CAT to expand beyond the Regulation National Market System (“Reg NMS”) securities in the future.

⁴ [CAT Final Rule](#) p. 4

SIFMA also supports inclusion of OTC market securities in the CAT from day one to allow existing audit trail systems to be sunset by providing complete coverage of the markets they currently monitor. It may also be necessary to include certain additional data points alongside reportable events or in customer references submitted to the CAT in order to meet the requirements of comprehensive reporting and to meet the SEC's objectives for eliminating legacy systems.

iii) Centralized Administration

Additional efficiency gains can be realized by centralizing the administration of the CAT under a single central party from a legal, administrative, supervisory, and enforcement standpoint. This may include using an existing oversight body as opposed to the creation of a new one in need of fresh funding, which would allow the development of the CAT to be funded from existing sources of revenue and through cost savings derived from retiring redundant legacy reporting systems across the Industry.

iv) Public Transparency and Industry Engagement

The CAT system will require a strong governance framework with effective Industry participation. Market participants should be engaged in governance both during the process of developing the CAT and during its steady state operations. SIFMA members can provide additional guidance and support in both the design and governance of the NMS Plan and in the oversight and governance of a future "CAT Operator."

v) Minimal Disruption to Existing Market and Business Practices

At its core, the CAT is a database of existing business activity. The manner in which the CAT is implemented should support all existing permissible trading behavior. Current business practices should not be required to change solely to conform to CAT technical specifications and requirements. A mechanism to support permissible but unmodelled activities (similar to exception codes in FINRA's Order Audit Trail System "OATS") should be part of the specification and RFP.

The CAT should be designed to minimize disruption or restriction to current market practice, processing, and systems. As much as possible, these changes should augment existing processes and facilities, and not attempt to introduce a completely re-engineered marketplace.

vi) Use of LEI and Reuse of Other Assets and Standards

SIFMA supports the broad principle that the CAT should be built upon existing standards – including regulatory mandates to use standard identifiers such as Legal Entity Identifiers (“LEI”) and the Options Symbology Initiative (“OSI”), existing market practices (e.g., OATS-style linking) and protocols (e.g., FIX).

Regulatory mandates for institutions active in the markets to obtain a standard LEI will be a key step in instituting standard identifiers across the market and creating an efficient approach to CAT reporting. The CAT “requires each broker-dealer and national exchange to be assigned a unique, cross-market identifier to be reported to the central repository along with every reportable event.”⁵ This unique identifier should be LEI. This is consistent with G20 commitments to introduce the LEI for regulatory reporting, and would be consistent with the use of the LEI elsewhere in regulatory reporting, such as the use of the CFTC Interim Compliance Identifier (“CICI”) for swaps reporting.⁶ Mandates for the use of an LEI support SIFMA recommended approaches to Reporter and Customer ID, detailed below.

vii) Data Security, Privacy, and Consumer Protection

Data security is a key requirement, given the sensitive information on clients, client assets, and market activity that will be contained in the CAT database. Investors and market participants need to know that their data is being protected by strict information security standards covering both transmissions to the CAT and the contents of its database.

⁵ SEC Fact Sheet on the Creation of a Consolidated Audit Trail, July 11, 2012: <http://www.sec.gov/news/press/2012/2012-134.htm>

⁶ https://www.financialstabilityboard.org/publications/r_130111a.pdf

viii) *Need for Options-specific approach*

SIFMA members believe that there are unique attributes of the options market that require different treatment than what is provided for equities under Rule 613. In many aspects, this market is even further differentiated from the equities market than some of the potential expansion products addressed under the *Other Products* section of this document.

As such, the *Options* section and *Appendix 2* is dedicated to special considerations for this market.

d) *Executive Summary of Recommendations*

i) *Key Topics*

The key topics to be covered in this paper include the following:

- Governance;
- Customer ID;
- Reporter ID;
- Linkages;
- Options;
- Infrastructure;
- Elimination of Other Rules and Systems;
- Other Products;
- Cost; and
- Implementation Timeline.

ii) Governance

The positions on governance outlined in these recommendations build on SIFMA's comment letter to the SROs and the SEC, filed on January 22, 2013.⁷ The comment letter describes SIFMA's perspective on governance, for both the SRO process for creating the CAT system and governance of the utility itself once operational.

SIFMA members will provide additional guidance and support in both the design and governance of the CAT NMS Plan and in the oversight and governance of a presumed-future "CAT Operator," assuming **adequate Industry representation on an appropriate governance or advisory body** within the governance framework of whatever vehicle the SROs ultimately choose to leverage in complying with Rule 613.

Additional cost and efficiency gains can be realized **by centralizing the administration** of the CAT under a **single central party from a legal, administrative, supervisory, and enforcement standpoint**. An existing oversight body might be the most efficient vehicle through which to accomplish this, rather than creating a new one in need of fresh funding. Development of the **CAT should be funded from existing sources of revenue and through cost savings rather than simply through new fees to the Industry**.

SIFMA will remain engaged with the SROs and regulators to develop and present Industry recommendations on governance as the SROs continue the process of developing a CAT plan, selecting a processor, and moving towards launch of the CAT system. SIFMA will also share recommendations on funding and cost models for the CAT system.

iii) Customer ID

SIFMA strongly supports the alternative approach outlined by the SROs in their initial Concepts Document, which would **not require that broker-dealers obtain and store a unique CAT Customer ID from the CAT processor**. To do otherwise

⁷ <http://www.sifma.org/workarea/downloadasset.aspx?id=8589941622>

would interfere with existing business processes and risk leaking proprietary order and customer information into the market.

There are certain cases in which a CAT Reporter possesses the identity of the end-customer or beneficiary of a transaction, such as in the case of a retail brokerage client entering an order, or a subaccount allocation event in the case of a completed institutional order.

However, in many instances, broker-dealers won't possess the identity of the end-customer or beneficiary of a transaction as defined by Rule 613, but will only possess the identity of their own immediate customer or counterparty. As such they will report the identity of that customer, with the CAT linkages model enabling the reconstruction of the end-customer or beneficiary of a transaction for regulators by the CAT. When reporting customer IDs, SIFMA members wish to **retain the flexibility of submitting either their own unique customer ID, or an account ID associated with one or more customer IDs**. The CAT can then recognize specific individuals by matching the account and/or customer IDs registered by that reporter in its internal database.

SIFMA's recommendation for unique identifying information to be used internally by the CAT is as follows: For **natural persons, date of birth plus social security number ("DOB" and "SSN")**, should constitute the unique identifying information. For non-natural persons the LEI should be the preferred unique identifier for customer ID. Firms should use their LEI if they have one already, obtain and use an LEI if and when required to do so by regulators, otherwise a tax ID number (TIN) should be used. In line with G20 commitments and as mandated by Dodd-Frank, regulators should continue to expand the use of the LEI for regulatory reporting wherever possible. Only by requiring use of the LEI as the authoritative identifier for entities in all regulatory reporting, will full coverage of firm's financial activities be achieved.

iv) Reporter ID

In line with the recommendation of the Financial Stability Board and in recognition

of the broad acceptability of the LEI, **LEI is SIFMA’s strategic recommendation for the CAT Reporter ID.**

v) *Linkages*

SIFMA believes that the model for linking transactions together should **follow the “daisy chain” model proposed by the SROs**, and reconstruction of the audit trail from information provided by various reporters other should occur within the CAT processor. FINRA’s OATS system provides a *general framework for many of the linking requirements specified in Rule 613 and is already widely supported by SIFMA’s member firms*. **CAT should build on the OATS model to aid adoption and minimize impact on existing OATS reporters. However, OATS matching and error correction capabilities and the ability for firms to access and amend data reports, has wide scope for improvement.** The *Error Correction* section in this document outlines areas for improvement. Additionally, OATS does not support the options market.

One of SIFMA’s guiding principles is that the CAT should be as minimally disruptive to current business practices as possible. Therefore, the CAT data model should reflect linkages originating in the Middle Office, which may be created subsequent to order and execution processing. Broker-dealers can provide a set of customer orders and the (full or partial) executions related to those orders. They can also provide a set of orders and allocations (or in lieu of allocation, a step-out transaction to another broker-dealer). There should be no expectation that an allocation will be linked to individual executions by the broker-dealer. Rather, SIFMA recommends that the CAT processor manage the linkages in order to relate the original order to the subsequent allocations.

The **CAT data model should represent post-execution events relevant to the lifecycle of a reportable order**. New post-execution events (post trade allocations, investment advisers allocating to sub accounts at a clearing firm, transfers, give-ups and CMTAs for options) will need to be added to the inventory of reportable transactions to support the CAT data model. This will allow CAT to function and

overcome the shortcomings experienced with EBS reporting across executing and clearing broker-dealers. **In many cases an executing firm will not have a view of the post-execution lifecycle events necessary to reconstruct a CAT.**

When one broker-dealer gives up a trade to another, the attributes of the reported post-trade allocations should be sufficient for the CAT to tie the event back to the original order, such as open/close, origin code, nature, auction and auction responses, other crossing mechanisms and facilitation methods.

vi) Options

SIFMA members believe that there are **unique attributes of the options market that require different treatment than is provided for equities** under Rule 613. In many aspects, this market is even further differentiated from the equities market than some of the potential expansion products addressed under the *Other Products* section of this document.

First, the options market is both heavily quote-driven and has vastly different protocols for quoting and order routing than those in the equities market (or even between different market centers). The **differences in behavior of options quotes and their associated protocols can have dramatic implications for CAT reporting, and merit detailed, separate treatment.**

Second, there is a much **higher volume of quote traffic in the options market** (the FIF recently reported options quote traffic as high as 5 million messages/second with a peak daily message ceiling of **26.8 billion/day**)⁸, stream-based quoting mechanisms, **lack of mapping between quotes and trades, the ability for exchanges to initiate rules-based changes to quotes, 500,000 different names that can change on an intraday basis**, and a proliferation of product types, special attributes and execution mechanisms not prevalent in the equities market.

⁸ FIF CAT Working Group Response to Proposed RFP Concepts Document, p.38-39:
<http://www.catnmsplan.com/web/groups/catnms/@catnms/documents/appsupportdocs/p197808.pdf>

Third, an exchange is always the direct recipient of a quote message and quotes do not route out for execution. Therefore, the CAT will gain no more additional information from member firm reports than is already held by the exchanges for options quotes and the Industry would incur heavy cost for the initial build and on-going operation to provide options quotes data that is available elsewhere.

For the reasons outlined above and other complicating factors outlined later in this document, SIFMA members believe **exchanges are in the best position to provide options quote information to the CAT as all options must print on an exchange**, and in some instances, initial population of order information on the audit trail. It is a further advantage for the options market in that many otherwise-reportable details of a transaction are already implicit in Options Symbology Initiative (“OSI”) conventions (including FLEX options and options which have been adjusted for corporate actions), or can be provided directly by existing daily files provided by the Options Clearing Corporation (“OCC”).

Additional challenges covered in the Options section of this document include **provision of a sufficiently sophisticated model for representing “net-priced orders”** (a definition of which is provided in the option section of this document), unique attributes and order types specific to the options market, exclusion of exercises and assignments, and the lack of an existing trade reporting framework.

vii) Infrastructure

The CAT system will require top-quality infrastructure to support a large database populated with sensitive information. Further, top-quality infrastructure is essential to enable firms to meet their reporting requirements and submit data in a timely, efficient and secure manner, with opportunities for corrections as needed. SIFMA infrastructure recommendations cover the topics of **Data Transmission, Data Security and Privacy, Error Correction, Testing and Support**.

1) *Data Transmission*

The CAT utility should **support multiple transport mechanisms** (e.g., FIX, web-based, NDM, MQ and the like). However, the interfaces, protocols, or standards developed in the initial phases of the effort should be **designed with multi-product expansion in mind from day one**, and should not be constrained by architectural decisions that might limit the ability of the CAT to expand beyond Reg NMS securities.

CAT Reporters need the **ability to transmit either in batch or near-real-time**. There are cases in which near-real-time reporting (e.g., quoting, trading) may be best coupled to trading systems for some reporters, and cases (e.g., client and account updates, block allocations) in which batch upload would be the desired approach.

2) *Data Security and Privacy*

CAT Reporters will need the ability to specify and **configure their own authorized users and their associated entitlements** within whatever data access facilities the CAT utility provides.

The CAT utility should ensure that **appropriate standards are in place for protecting nonpublic information of any kind**, including masking of personally identifiable information. Web-based submissions and the security of data sent through web-based systems is a particular concern.

There should be an annual certification to ensure the CAT complies or exceeds industry standards for security of data (e.g., SSAE 16, or current standard). Security guidelines should be in line with current Federal initiatives to ensure security of sensitive data.

3) *Error Correction*

With respect to matching and error correction, the CAT should be able to provide **robust matching rules and suggest corrective actions** based on its knowledge of both sides of a transaction through a **repeating matching process that runs multiple times per day**. This matching process should give each party to a transaction an **opportunity to repair information without penalizing their counterparty**. If a **daisy chain is broken at one link, the CAT should not invalidate the rest of the chain**. The CAT should acknowledge the missing link and **preserve child routes and reconstruct them upon correction of a parent order**.

4) *Testing*

The CAT processor should supply robust **testing facilities with rich capabilities** as this will have an enormous positive impact on firms' ability to make a seamless and orderly transition to CAT reporting. For instance, CAT Reporters would greatly benefit from **near-constant availability of production-parallel and UAT/QA environments that are complete hardware and software replicas of the production environment, including encrypted communications channels**. There should, however, be no incremental fees for testing.

5) *Support*

To meet the SEC's expectation of speedy data delivery, CAT Reporters will need near 24/6 technical support. Support requirements should cover **not only technical support, but business and process support as well**.

The CAT utility should support training on its systems and processes, and offer training materials and regular training classes.

viii) Elimination of Rules and Systems

Eliminating legacy systems and rules and consolidating them under the CAT with a **single set of standards managed by a single central party** will be a vital step towards creating an efficient and robust regulatory reporting regime. Eliminating the development, maintenance and support of legacy systems will achieve significant cost savings and allow both broker-dealers and regulators to tap into a pre-existing source of funding for the CAT. It will also free up capital and resources within reporting firms necessary for the update and maintenance of their internal systems to comply with requirements for the CAT.

SIFMA members believe that the principle of **eliminating systems made redundant by the CAT with duplicative reporting** is central to the spirit of Rule 613 and is detailed in the language of the rule as well as in the SEC's own summary of it. In its introduction to Rule 613, the SEC cites the shortcomings and limitations of the current systems, including OATS and EBS, which it calls:

*"...outdated and inadequate to effectively oversee a complex, dispersed and highly automated national market system. In performing their oversight responsibilities, regulators today must attempt to cobble together disparate data from a variety of existing information systems lacking in completeness, accuracy, accessibility, and/or timeliness – a model that neither supports the efficient aggregation of data from multiple trading venues nor yields the type of complete and accurate market activity data needed for robust market oversight."*⁹

To the extent that such legacy systems are supplanted by the more robust capabilities of the CAT, those systems should be retired. The SEC supports this

⁹ [CAT Final Rule](#) p.6

position, and further noted that “data reported to the central repository under Rule 613 **obviates the need for the EBS system,**” and that “the Commission expects that the separate reporting requirements of Rule 13h-1 (Large Trader) related to the EBS system would be eliminated.”¹⁰

Rules and regulatory reporting systems that could be eliminated following implementation of the CAT include but are not limited to, the following:

Systems

- Order Audit Trail System (OATS; FINRA);
- Electronic Blue Sheets (EBS; SEC) (SEC Rule 17a-25 – Electronic Submission of Securities Transaction Information by Exchange Members, Brokers, and Dealers);
- Consolidated Options Audit Trail System (COATS; Options exchanges);

Rules

- SEC Rule 13h-1 – Large Trader Reporting;
- NYSE Rule 410B – Transactions effected in NYSE listed securities.

ix) Other Products

The CAT should be **designed with multi-product expansion in mind from day one** and not be constrained by architectural decisions that might limit its ability to expand beyond Reg NMS securities at some point in the future.

Initially the CAT will cover all Reg NMS securities (all listed securities traded on a registered US stock or options exchange). Within six months after the execution of

¹⁰ [CAT Final Rule](#) p.48

the CAT NMS Plan the SROs will be required to outline how non Reg NMS securities could be added to the CAT.

Rule 613 requires the plan sponsors to jointly provide to the Commission, within six months after effectiveness of the NMS plan, a document outlining how the plan sponsors would propose to incorporate other products into the CAT system. This includes non Reg NMS securities, debt securities and primary market transactions in NMS stocks.

Special arrangements will need to be made for Over-the-Counter (“OTC”) fixed income instruments due to their distinctive market structure. Specifically, the OTC markets, which are purely negotiated markets, do not have the concept of orders and quotes, and thereby lack an order lifecycle as understood in the context of the equities and options markets.

SIFMA sees little from a market-practice or technical perspective that would prevent the expansion of the CAT to other products, once the work of developing the CAT and implementing it for NMS Securities has been completed, and the CAT reporting regime has successfully entered a stable period.

SIFMA has undertaken a preliminary review, based on members’ experience with OATS, EBS, and other trade reporting regimes, of the costs broker-dealers are likely to incur to upgrade their internal trade reporting infrastructure to comply with CAT. Impacts are expected to fall across the entire enterprise, not only in trading, order routing, order management space, but also in the areas of compliance and risk management, middle and back office, and perhaps most heavily, in the client master data management space.

x) Implementation Timeline

SIFMA has reviewed the proposed timeline for implementation of the CAT and has specific concerns with respect to the amount of time assumed for broker-dealers’ internal systems build, internal systems testing, and Industry-wide testing.

SIFMA believes that the proposed timeline for **publication of broker-dealer interface specifications does not leave sufficient time for broker-dealers to complete their internal systems build and testing** before the large broker-dealer reporting implementation date of tentatively scheduled for December 2015.

Based on prior experiences with Industry initiatives on this scale, a completion of this initiative will likely require, at **minimum, three to four rounds of Industry-wide testing, with time to remediate issues between test cycles, which will likely require up to six months per round.** Accordingly, working backwards from the planned large broker-dealer implementation date of December 2015, firms' would need to complete their technology build and testing within six months after publication of the specifications.

SIFMA believes this timeline provides members with insufficient time to complete these activities. In order to meet such a timeline, certain large and complex firms facing an assumed one-year internal build and test program would need to complete all internal systems requirements and design specifications complete and be ready to begin re-writing systems in late 2013, which is before the selection of the winning CAT bidder.

This document further outlines a proposal for **phasing CAT-reportable products in, beginning with all OATS reportable symbols such that OATS can be retired under a proof-of-concept phase during which time CAT reporting is mandatory, but there is a regulatory penalty moratorium.** This would allow time for CAT reports to make adjustments to achieve the desired Service Level Agreements ("SLAs"). Further stages would then cover options, and other products, so that the relevant regulatory bodies could retire EBS and other reporting regimes as discussed above.

Governance

The positions on governance outlined in these recommendations build on SIFMA's comment letter to the SROs and the SEC, filed on January 22, 2013,¹¹ and they are intended to serve as initial statements of principle until the SROs publish a specific governance proposal. The January comment letter describes SIFMA's perspective on governance, for both the SRO process for creating the CAT system and governance of the utility itself once operational.

Overview of Rule 613

i) Industry Involvement

In adopting Rule 613, the SEC was clear that the SROs' member firms should be involved throughout the process of creating and operating the CAT. For example, the SEC stated that Industry input "should be sought during the preparation of the CAT NMS plan submitted to the Commission for its consideration, during the comment process, and subsequent to the approval of CAT."¹² In addition, the SEC called for close collaboration between the SROs and the Industry, with the SROs benefitting from "draw[ing] on the knowledge and experience of [their] members"¹³ Rule 613(a)(1)(xi) directs the SROs to inform the SEC of the process by which they solicited views of their members and other appropriate parties regarding the creation, implementation, and maintenance of the consolidated audit trail, a summary of the views of such members and other parties, and how the SROs took such views into account in preparing the CAT NMS Plan.

¹¹ <http://www.sifma.org/workarea/downloadasset.aspx?id=8589941622>

¹² [CAT Final Rule](#) p. 280

¹³ [CAT Final Rule](#) p. 245

ii) *Advisory Committee*

Rule 613(b)(7) provides for the formation of an Advisory Committee, whose purpose is “to advise the plan sponsors on the implementation, operation, and administration of the central repository.” The Advisory Committee is to include representatives of the member firms of the plan sponsors, and “Members of the Advisory Committee shall have the right to attend any meetings of the plan sponsors, to receive information concerning the operation of the central repository, and to provide their views to the plan sponsors;” provided, however, that the plan sponsors may meet without the Advisory Committee members in executive session.

iii) *Ownership*

In its Adopting Release for Rule 613, the SEC stated that the central repository will be jointly owned by, and a facility of, each SRO. The SEC also stated that it considered the comment that the central repository should be owned by a non-SRO specifically formed to operate the central repository, but that it believes the SEC will have more regulatory authority over the central repository as a facility of each SRO than it would have if the central repository were owned or operated by a non-SRO.

iv) *Fair Representation*

Rule 613(b)(1) states that NMS Plan for the CAT “shall include a governance structure to ensure fair representation of the plan sponsors, and administration of the central repository, including the selection of the plan processor.”

v) *Compliance by Member Firms*

Rule 613(g)(1) states that the SROs must file proposed rule changes with the Commission to require their members to comply with Rule 613 and the NMS Plan for CAT. In addition, Rule 613(g)(3) states that the NMS Plan for CAT must include a provision requiring each SRO to agree to enforce compliance by its members with the provisions of the NMS Plan. Rule 613(g)(4) states that the NMS Plan for CAT must include a mechanism to ensure compliance with the requirements of the NMS Plan by the members of the SROs.

vi) *Security and Confidentiality of Data*

Rule 613(e)(4) states that the NMS Plan for the CAT must include policies and procedures, including standards, to be used by the plan processor to ensure the security and confidentiality of all information reported to the central repository.

vii) *Audit and Review*

Rule 613(b)(5) states that the NMS Plan for CAT must require the appointment of a Chief Compliance Officer to regularly review the operation of the central repository to assure its continued effectiveness in light of market and technological developments, and make any appropriate recommendations for enhancements to the nature of the information collected and the manner in which it is processed. In addition, Rule 613(b)(6) states that the NMS Plan for CAT must include a provision requiring the plan sponsors to provide to the Commission, at least every two years after effectiveness of the Plan, a written assessment of the operation of the Consolidated Audit Trail.

Industry Perspective

- i)** The CAT system will require a strong governance framework with effective Industry participation. Market participants should provide advice during the process of standing up the CAT and be part of governance during its steady state operations, as representatives of the Industry and as required under the language of Rule 613.
- ii)** In steady state operations the governance structure of the CAT should include independent directors (including both non-Industry and Industry professionals) and an audit committee composed of a majority of independent directors. This type of governance structure will provide a form of independent oversight, and it is consistent with the structure of the Board of Governors of FINRA, which includes independent directors comprising both Industry and non-Industry professionals.
- iii)** The Advisory Committee called for by Rule 613 will be critical for providing Industry recommendations and support for both the design and governance of the

NMS Plan and in the oversight and governance of a CAT processor on an ongoing basis. The formal Rule 613 Advisory Committee should be established prior to the SEC's consideration of the NMS plan so that Industry guidance can support the final selection of the processor and participate in the creation of operating procedures for the CAT system and its administrative organization. Once the processor is operational, the Advisory Committee should be involved in supporting financial and operational reviews of the CAT.

- iv) The administration of the CAT should be centralized under a single body from a legal, administrative, supervisory, and enforcement standpoint. Leveraging an existing oversight body would be the most efficient vehicle through which to accomplish centralized administration, rather than creating a new body in need of fresh funding.
- v) The CAT utility should be designed for portability of the CAT processor role to allow for a seamless and cost-effective transition if the processor is replaced. In this regard, the SROs should retain intellectual property around its processes and operations.
- vi) The CAT utility should publish an Annual Report that includes a full set of audited financial statements and detailed disclosure on executive compensation to provide transparency into the CAT utility's revenue, cost structure, and its profitability.

Requirements

i) *Governing Board*

The governing board of the CAT should include independent voting members, with Industry and non-Industry representatives. This representation would provide independent oversight of the CAT processor outside of the SRO owners.

ii) *Central Administration*

The administration of the CAT should be centralized with a single SRO from a legal, administrative, supervisory and enforcement point of view. The SROs can

accomplish this centralization through the use of 17d-2 agreements and regulatory services agreements.

iii) *Advisory Committee:*

- 1) An Advisory Committee with strong Industry participation is essential for the CAT system, and is called for under Rule 613.
- 2) The Advisory Committee should be formed prior to the SEC's approval of the NMS Plan so that the committee can support the final selection of the processor and the set up of operating procedures for the CAT system. Once the processor is running, the Advisory Committee will support financial and operational reviews.
- 3) The makeup of the Advisory Committee should include participants with an appropriate representation of firm sizes and business models, such as: inter-dealer brokers, agency brokers, retail brokers, institutional brokers, proprietary trading firms, small broker-dealers, firms with a floor presence, and trade associations.
- 4) The members of the Committee should be subject to reasonable term limits, and should not hold indefinite succeeding terms.
- 5) The terms of the positions on the Advisory Committee should be staggered so that no more than half of such positions expire at the end of any given calendar year.
- 6) Participation on the Advisory Committee should be limited to no more than one member from a single broker-dealer.
- 7) The committee should be structured so that firms who have a representative on the Advisory Committee are able or allowed to make other firm representatives available if the advisory committee is tasked with evaluating issues outside of the member's subject matter expertise.
- 8) Key areas for the Advisory Committee's input should include:

- a) Oversight of SLAs: The advisory committee should help set operational SLAs in accordance with Industry standards.
- b) Oversight of Cost Model: The advisory committee should participate in regular reviews of the financial and cost model.
- c) Processor Contract Renewal: The Advisory Committee should be part of the review process at the end of CAT processor's contract to determine if the contract should be renewed.
- d) Changes and Enhancements: The Advisory Committee should provide an Industry perspective on any future changes or enhancements to the CAT, including making sure they are cost effective.

iv) Cost Model

- 1) The CAT processor should operate the utility at a cost recovery model, reflecting CAT's role as an Industry utility supporting regulatory reporting and oversight.
- 2) The terms of the cost recovery model should be set by the SROs together with the Advisory Committee.
- 3) The cost of building the CAT is an Industry-wide cost, and should not be shouldered by the member firms alone. The costs should be borne equitably by the Industry, including SROs.
 - a) Costs allocated to the SROs should actually be borne by the SROs themselves from their own independent sources of revenue, rather than simply being passed through to member firms.
 - b) The fees currently received by SROs attributable to regulatory costs should be taking into account before any additional fees are imposed in connection with the CAT. In addition, the SROs should use market data revenue as a source of funding in light of the SEC's intention that

market data revenue should be used to fund SROs' regulatory costs, particularly those relating to market surveillance.

- 4) The CAT will significantly improve the quality of market information available to the SEC, and reduce the costs and burdens it currently faces in obtaining information. SIFMA recommends that the SROs consult with the SEC to determine whether the SEC could potentially contribute part of the cost of the development and ongoing maintenance of the CAT.
 - 5) To help defray the costs of the CAT, the SROs should consider creative and alternative funding mechanisms. For example, provided there is proper oversight and privacy controls, future sale of portions of the data collected by the CAT could provide a valuable alternative funding mechanism, and reduce the costs which need to be allocated between the SROs and their members.
 - 6) The SROs and the Advisory Committee should have strong oversight of any value added services offered by the processor or its affiliate firms in connection with their role as CAT processor, including ensuring that it does not use its role as CAT processor to obtain a competitive advantage for other products and does not discourage competition and innovation in the market.
 - 7) The CAT processor should be prepared to take financial responsibility, such as by assuring potential liability (e.g. in the case of a security breach) and having adequate insurance coverage.
- v) ***Portability and Control of Intellectual Property***
- 1) The entity that controls the CAT should ensure that the role of the CAT processor is portable, such that the CAT processor can be replaced in the future (e.g., if contract renewal terms cannot be reached, the processor ceases doing business or otherwise).
 - 2) The data that resides within the CAT should remain the property of its respective CAT Reporters.

- 3) The entity that controls the CAT should ensure that all intellectual property (data model, Industry-facing interfaces, and so on) developed in the creation of the CAT should be owned by that entity, the SROs or SEC, and not conceded to a third party.

vi) *Audit and Review*

Regular audits should review the operations and finances of the CAT processor, including performance against SLAs and the cost model set by the SROs and Industry. There should be an audit committee with a majority of independent directors, consistent with common SRO governance rules for issuers. Audit results for the CAT should be made publically available.

SIFMA will remain engaged with the SROs and regulators to develop and present Industry recommendations on governance as the SROs continue the process of developing a CAT plan, selecting a processor, and moving towards launch of the CAT system. SIFMA will also share recommendations on funding and cost models for the CAT system when the SROs publish a specific proposal on those issues.

Customer ID

a) Overview of Rule 613

Rule 613 defines customer ID as “a code that uniquely and consistently identifies such customer for purposes of providing data to the central repository.” Rule 613 also defines “customer” as “(i) The account holder(s) of the account at a registered broker-dealer originating the order; and (ii) Any person from whom the broker-dealer is authorized to accept trading instructions for such account, if different from the account holder(s).”¹⁴

b) Industry Perspective

SIFMA strongly supports the alternative approach outlined by the SROs in their initial Concepts Document, which would not require that broker-dealers obtain and store a unique Customer ID from the CAT processor. To do otherwise would interfere with existing business processes and risk leaking proprietary order and customer information into the market.

There are certain cases in which a CAT Reporter possesses the identity of the end-customer or beneficiary of a transaction. These instances include, but are not limited to, a retail brokerage client entering an order, or subaccount allocation event in the case of a completed institutional order. However, in many other cases an individual CAT Reporter will not possess the identity of the end-customer or beneficiary of a transaction

Conversely, many broker-dealers will not possess the identity of the end-customer or beneficiary of a transaction as defined by Rule 613, but only possess the identity of their own immediate customer or counterparty. As such they will report the identity of their customer with the CAT linkages model reconstructing the “client” for regulators after the fact. When submitting customer ID information, SIFMA members wish to retain the flexibility of submitting either their own unique customer account ID, which can be

¹⁴ [CAT Final Rule](#) p.346

associated with an individual account or one or more customer IDs. The CAT can then recognize specific individuals by matching the account and/or customer IDs registered by that reporter in its internal database.

c) Requirements

i) Identifiers

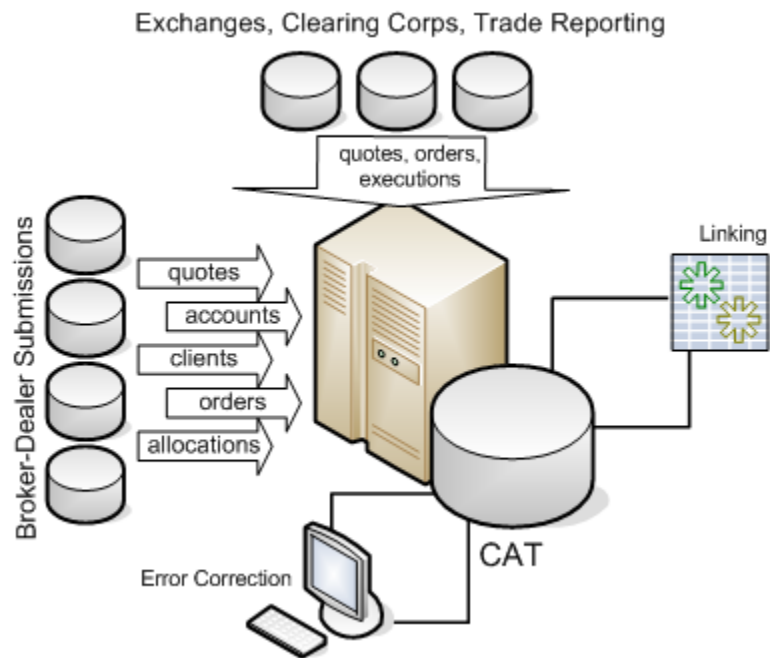
- 1) SIFMA members prefer to generate their own customer identifiers. Each member firm should have the option of choosing the format that best suits it, and provide that identifier to the CAT, along with the unique identifying information that associates that broker-dealer's identifier with an individual person or entity. The CAT processor should use this information to internally link an individual person or entity with the relevant account(s) as recognized by the CAT.
- 2) SIFMA members prefer the flexibility of sending either a unique client identifier or unique account identifier associated with one or more clients.
 - a) Many front and back office systems remain account-centric rather than customer-centric, and customer identification as papered on accounts can be subject to differential or data quality issues from account to account within a firm, and from firm to firm, based on the end-customer's personal situation at the time of registration.
 - b) One account can also have multiple owners, beneficiaries, or associated persons (e.g., power of attorney) making the sending of an account ID associated with a transaction the most meaningful identifier in many cases. If these owners are pre-associated with an account, the CAT utility can easily reference internal account information to determine the person(s) associated with a specific trade.
 - c) For a customer who has accounts at multiple broker-dealers, the combination of unique customer and account number, together with the unique CAT Reporter ID will enable the CAT processor to (a) link the two accounts to the same customer, and (b) delineate the activity of that

customer at one broker-dealer from the activity of that customer at a another broker-dealer.

ii) Transmission Model

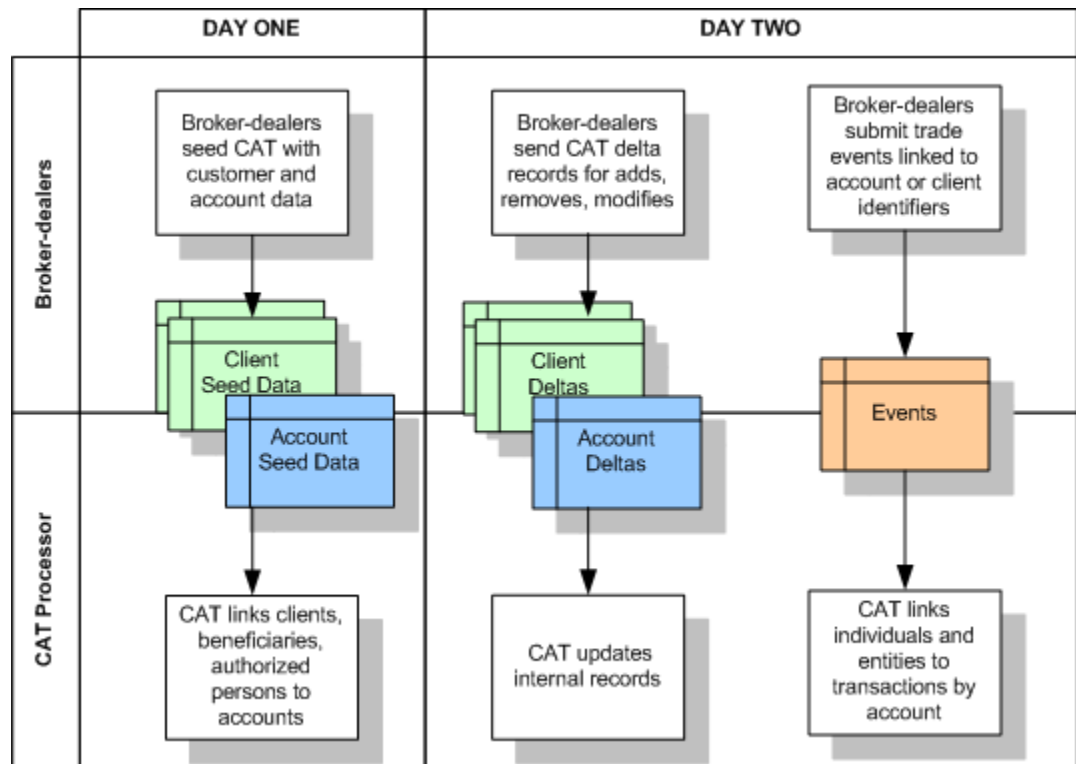
- 1) Reporting to the CAT should be based on a unidirectional or a “straight-through” model, with the CAT having as standing reference data all of the information necessary to reconstruct all of the parties to a transaction with minimal intervention.

Unidirectional or “push” model



- a) The CAT utility should be responsible for linking unique beneficiaries to transactions based on the CAT Reporter ID submitted and account and customer reference data.
- b) Alternative models would be undesirable due to the tax on systems and processes this they would entail. This would require broker-dealers to transmit more information at the time of the transaction, or to engage in frequent, complex intra-day communications with the CAT processor.

- c) SIFMA strongly opposes any model under which broker-dealers would be forced to obtain and store a unique customer ID from the CAT processor. This would interfere with existing business processes and could risk leaking customer information into the market if those identifiers became known to other market participants.
- 2) To accomplish a first-time setup of clients and accounts, the CAT should be able to accept a customer and account list from each CAT Reporter.
- a) Each CAT Reporter can transmit their entire customer and account list along with unique identifying attributes of the customer to the utility as a one-time initial population mechanism.
 - b) Thereafter, broker-dealers should be able to add customer IDs or make changes to existing customer records on an interactive basis, or through a daily (or several times daily) upload process.



- c) The SROs should consider how to handle closed or inactive accounts with respect to the initial customer and account list that it sent to the CAT utility. Specifically, broker-dealers may not wish to send the CAT utility information related to institutional accounts that have not executed a trade over a certain time period (e.g., 18 months), and closed or zero-balance retail accounts, as those accounts are unlikely to trade again. If the accounts do have additional transactions, broker-dealers can resend the relevant account information to the CAT utility.
- d) Note that under this model broker-dealers may report transactions for a customer prior to the establishment of the customer reference data with the CAT utility. The CAT utility should accept mismatched reference data without causing a reject, and should not force a CAT Reporter to resubmit transaction data once the relevant broker-dealer submits updated customer and account information the following day.

iii) Definition of Customer in a Daisy Chain Model

Generally, Rule 613 defines “customer” to include the account owner or account beneficiary at the originating broker-dealer.¹⁵ However, in common practice the term “customer” may refer to any person or firm for whom a broker-dealer is handling an order. This person or firm may or may not be the end-beneficiary, but one of any number of agents handling an order along its way to a market center.

In many cases, the broker-dealer handling an order may not be aware of the identity of the originating customer, but only of the identity of his or her own customer. In these cases, the broker-dealer will submit identifying information to the CAT processor for the person or firm for whom the broker-dealer is handling the order. Once all broker-dealers handling the order(s) along a chain have reported information to the CAT utility, the CAT processor will have all of the

¹⁵ 17 CFR 242.613(j)(3) (defining customer as “(i) The account holder(s) of the account at a registered broker-dealer originating the order; and (ii) Any person from whom the broker-dealer is authorized to accept trading instructions for such account, if different from the account holder(s)”)

individual sections of the chain back to the original order, which will identify the originating customer.

For instance, when broker-dealer-A receives an order from asset manager-B, broker-dealer-A may then route portions of that order to any number of other broker-dealers or points of execution, all of which will identify broker-dealer-A as their customer when reporting to the CAT, as asset-manager-B will be unknown to them. However, the CAT processor can link the orders broker-dealer-A routed within broker-dealer-A's records, and thereby identify asset-manager-B as the originating customer.

In cases where an executing broker has received instructions to step out to a clearing broker for settlement and final allocation, new CAT-reportable events must be added in order to link these actions together. An executing broker should be required to report the step-out to the clearing broker, and the clearing broker should then report the beneficial owner of the transaction.

iv) Unique Identifying Information

1) SIFMA members' recommendation for unique identifying information to be used internally by the CAT is as follows:

- a) For natural persons, date of birth plus social security number (DOB and SSN) (or DOB plus Individual Taxpayer Identification Number (DOB and ITIN) if the customer does not have an SSN), should constitute unique identifying information.
- b) For non-natural persons the LEI should be the preferred unique identifier for customer ID. Firms should:
 - Use their LEI if they have one already;
 - Obtain and use an LEI if and when regulators required its use; or
 - Otherwise a Tax ID Number (TIN) should be used;

In line with G20 commitments and as mandated by Dodd-Frank, regulators should continue to expand the use of the LEI for regulatory reporting wherever possible. Only the required use of the LEI as the authoritative identifier for entities in all regulatory reporting will achieve full coverage of a firm's financial activities.

v) *Other Customer ID Requirements*

- 1) A facility should exist within CAT to accommodate mergers and acquisitions amongst broker-dealers without resubmitting customer ID and account details. It should be possible to “swing” customers and accounts from one broker-dealer to another in the event of a merger or acquisition, and to accomplish the translation of account numbers and customer ownership from one firm's back office to another.
- 2) The CAT framework should accommodate disclosures to end-customers. SIFMA members believe that regulators should, at a minimum, provide members with disclosure language adequate to give their customers notification as to how regulatory bodies and third parties will share and use their personal identifying information.

Reporter ID

a) Overview of Rule 613

Rule 613 defines the CAT Reporter ID as a “code that uniquely and consistently identifies such person for purposes of providing data to the central repository,” “with respect to each national securities exchange, national securities association, and member of a national securities exchange or national securities association.”¹⁶

b) Industry Perspective

In line with the recommendation of the Financial Stability Board, and in recognition of the widespread acceptability of the LEI, the LEI is SIFMA’s recommendation for the CAT Reporter ID.

c) Requirements

i) SIFMA’s recommendation for the CAT Reporter ID is the Legal Entity Identifier (LEI).¹⁷ This contrasts with the SRO’s proposal to leverage CRD numbers for the CAT Reporter ID as discussed on page 19 of the RFP Concepts Document.¹⁸

1) The Financial Stability Board and the G20 generally recommend the use of the LEI, and regulators around the globe are introducing the LEI to identify legal entities in a broad range of activities. Many market participants already use LEIs for reporting of swaps data to the Commodity Futures Trading Commission (“CFTC”) via the CFTC Interim Compliant Identifier (“CICI”). Further, the SEC

¹⁶ [CAT Final Rule](#) Rule p.346

¹⁷ Requirements or a Global Legal Entity Identifier (LEI) Solution:
http://www.gfma.org/uploadedfiles/initiatives/legal_entity_identifier_%28lei%29/requirementsforagloballeisolution.pdf

¹⁸ RFP Concepts Document:
<http://catnmsplan.com/web/groups/catnms/@catnms/documents/appsupportdocs/p197699.pdf>

requires firms to use their LEI when reporting on Form PF, and insurance regulators are expected to call for the use of the LEI in 2014.

- 2) SIFMA members believe that the use of the LEI for the CAT Reporter ID will avoid confusion that could arise from using legacy identifiers such CRD or MPIDs. For instance, one firm may trade under multiple CRDs as a result of mergers, or conversely, one multi-line firm might trade across all of its business lines under a single MPID. SIFMA's belief is that the LEI, which is unique to a single entity, is a more appropriate identifier.
 - 3) Additionally, SIFMA's members do not believe the SROs should introduce new protocols such as CRD which Industry participants do not use in this capacity today, as this would be a new business practice.
- ii)** SIFMA members believe that prior to reporting to the CAT, firms should obtain an LEI and that regulators should mandate the use of the LEI standard for all CAT NMS plan participants and their members.

Linkages

a) Overview of Rule 613

One of the key requirements of the consolidated audit trail is to “provide regulators with a complete record of all of the events that stem from a particular order, from routing to modification, cancellation, or execution.”¹⁹ In addition, these events must be “linked together in a manner that ensures timely and accurate retrieval of the information required for all reportable events.”²⁰

b) Industry Perspective

SIFMA believes that the model for linking transactions together should follow the “daisy chain” model proposed by the SROs, and reconstruction of the audit trail from information provided by various reporters possibly unknown to each other should occur within the CAT processor. FINRA’s OATS reporting system provides a general framework for many of the linking requirements specified in Rule 613 and SIFMA members already widely support the ability to provide information similar to that which is required for OATS. Whatever replaces OATS should embrace the model so as to aid adoption and minimize impact on existing OATS reporters. However, OATS matching and error correction approach, as well as its ability for firms to access and amend data reports, can be improved substantially. Additionally, as outlined later in this document under *Error Correction*, OATS does not support the options market in its present form.

One of SIFMA’s guiding principles is that the CAT should cause minimal disruptions to current business practices. Therefore, the CAT data model should reflect linkages originating in the middle office which may be created subsequent to order and execution processing. Broker-dealers can provide a set of customer orders and the (full or partial) executions related to those orders. They can also provide a set of orders and allocations (or, in lieu of allocation, a step-out transaction to another broker-dealer). There should be no

¹⁹ [CAT Final Rule](#) p. 294

²⁰ [CAT Final Rule](#) p. 340

expectation the broker-dealer will link an allocation to an execution if the order was allocated at an average price. In this scenario, there is no specific execution that the allocation can be linked to. Rather, as outlined in the Customer ID section, SIFMA recommends that the CAT processor manages the linkages in order to tie together the original order and subsequent allocations through the Customer ID.

The CAT data model should represent post-execution events relevant to the lifecycle of a reportable order. New post-execution events (allocations, transfers, give-ups, step ins/outs, DVPs/RVPs, CMTAs) will need to be added to the inventory of reportable transactions to support the CAT data model. In many cases, executing firms will not possess information regarding post-execution lifecycle events necessary to fully reconstruct a CAT.

When one broker-dealer gives up a trade to another, the attributes of the reported post-trade allocations should be sufficient for the CAT to tie the event back to the original order.

c) Requirements

i) 'Daisy Chain' Model

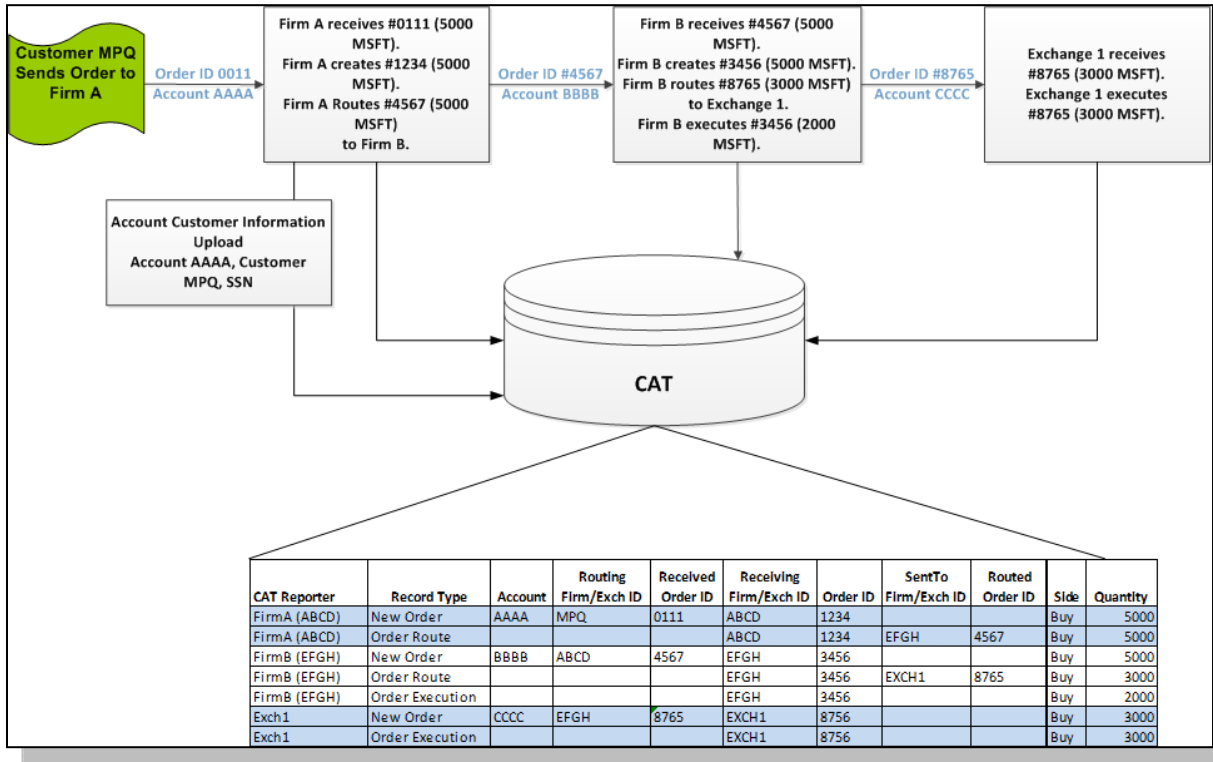
The model for linking transactions together should follow the “daisy chain” model proposed by the SROs, under which broker-dealers are not required to pass a unique single identifier through a transaction’s lifecycle. Further, the “daisy chain” model more accurately reflects frequent market practices where multiple market participants are involved in a single transaction or stream of related orders. In contrast, the universal identifier implies a simplistic and incomplete representation of order handling workflows as a series of events about a single order or transaction.

The “daisy chain” model would enable the CAT processor to construct a full audit trail while preserving anonymity and preventing information leakage. The “daisy chain” model also simplifies reporting business activity events in which a CAT Reporter directly participates in and provides its own event identifiers for the CAT utility to reconstruct an audit trail after-the-fact. The CAT processor should be responsible for reconstructing the audit trail.

By contrast, a universal identifier - issued by the CAT and attached to an order that follows the order for its entire lifecycle - is neither feasible nor desirable. To facilitate a model with a unique ID, market participants and exchanges would likely need to create new processes to support a (potentially) new field on orders and order-related messages. Additionally, there is enormous potential for information leakage assuming that a single order ID could be maintained across all of the aggregation, disaggregation and routing activities of an order. A universal identifier could undermine anonymity in the marketplace, which many market participants highly value. The universal identifier model could force significant business process changes on the industry.

The “daisy chain” model solves many of these issues. It allows members to provide their own event identifiers as hooks for the CAT utility to reconstruct an audit trail after-the-fact. The “daisy chain” model would allow the CAT processor to reconstruct the inter-firm audit trail.

Recommended Linkages Model



In the above illustration Firm B only knows and reports on activity received from Firm A and sent to Exchange 1. Firm B has no direct knowledge of Customer MPQ. By constructing the full audit trail by using the linkages and account information, the CAT can determine that Order #8765 on Exchange 1 represents interest from Firm B, acting as an agent for Firm A, in turn acting as an agent for Customer MPQ, SSN. In other words, Order #8765 represents the end of a sequence, or stream of related orders, reflecting, in part, the original interest of Customer MPQ to acquire 5000 shares of MSFT.

ii) OATS Model Linkages

The requirements for the CAT should leverage and improve upon the model used by FINRA’s Order Audit Trail System. Specifically, the Linkages model for the CAT should be based upon OATS given broker-dealer’s existing investments in that system. SIFMA supports the OATS data model and believes it provides a framework that can be leveraged for linking, however additional improvements will need to be made to make it an effective foundation for CAT.

iii) Post Execution Events

The CAT data model should represent post-execution events relevant to the lifecycle of a reportable order. New post-execution events (allocations, transfers, give-ups/ins, step-ins/outs, DVPs/RVPs, CMTAs) will need to be added to the inventory of reportable transactions to support the CAT data model necessary to fully construct the audit trail to the final beneficiary account(s) receiving an allocation. In many cases executing firms will not possess information regarding the post-execution lifecycle events necessary to reconstruct a CAT. While the SROs initial Concept Document stated that there can be no “fuzzy matching,” give-ups may require information on terms and conditions of orders as opposed to explicit linkages.

SIFMA members recommend that the SROs create an inventory of all reportable fields in EBS that clearing firms or prime broker-dealers are responsible to report in order to prevent any duplicative reporting and allow EBS to be retired in addition to OATS.

iv) Middle Office Linkages

The CAT data model should reflect linkages originating in the middle office, which may be created subsequent to order and execution processing.

Middle office activities such as tracking the accumulation of executions, computing average price, and allocating blocks of trades to customer accounts, may result in information provided to the CAT not tying precisely to an original order.

The SEC and SROs should understand that while orders, executions and allocations may all be linked there may not be a one-to-one relationship between them. Once an order has been fully executed, it can be bunched with other orders, and an average price can be calculated. The CAT should not require that broker-dealers will link an allocation to individual executions or orders. In fact,

common operational practice today is for a customer to allocate end of day **positions**, rather than **orders**.

Broker-dealers can provide a set of customer orders and the (full or partial) executions related to those orders. They can also provide a set of allocations and orders (or, in lieu of allocation, a step-out transaction to another broker-dealer). A combination of account information and possibly an aggregation unit such as a “Ticket ID” provided by the middle office should facilitate creating an association between allocations and orders by the CAT.

v) ***Post Trade Allocations***

When one broker-dealer gives up a trade to another for clearing, the attributes of the reported post-trade allocations should be sufficient for the CAT to tie the event back to the original order.

In the case of a post-trade allocation, the stepping-in firm’s report on quantity, price, and counterparty should be sufficient for the CAT utility to tie subsequent sub-account allocations back to the original order.

For options, the OCC might be the best reporter of this information because it already keeps these records. SIFMA recommends the SROs coordinate with the OCC regarding its ongoing allocations project with the Intermarket Surveillance Group (“ISG”).

vi) ***Reporting of Proprietary Orders***

SIFMA members believe broker-dealers should have the option of asking an exchange to report proprietary orders to the audit trail on their behalf, in parallel with the existing exemption for such transactions under OATS. This should apply when a broker-dealer does not conduct any market making activities, does

not execute principal transactions with its customers, and does not conduct any clearing or carrying activities for other firms.²¹

A single proprietary order, contemporaneously created in whole and routed in whole to a single exchange should be reported by that exchange, as there would be no additional information arising from the relevant broker-dealer not already known and reportable by the exchange. If required by regulators, a broker-dealer can send an additional flag that describes whether the order was proprietary or market making.

vii) *Exchange Front End Systems*

Exchanges may be in the best position to report orders entered directly into their own exchange-provided front-ends, such as the International Securities Exchange's PrecISE system. In such instances the data reported to CAT by the exchange, as a CAT reporter, will be identical to the data reported to CAT by the broker-dealer as a CAT reporter.

viii) *Transactions that Occur within the Same Legal Entity*

Sales or purchases of securities (or as journals of securities between accounts) within the same legal entity should not be reportable to the CAT, as they provide no new information to regulators concerning customer activities.

²¹ Exemptive Relief from the OATS Recording and Reporting Requirements Pursuant to FINRA Rules 7470 and 9610: <http://www.finra.org/Industry/Compliance/MarketTransparency/OATS/PhaseIII/p015647>

Options

a) Overview of Rule 613

While Rule 613 includes options within the scope of CAT, the text of the rule does not distinguish between options and equities. Rule 613 notes that if an order is for a listed option, reportable data elements include “option type (put/call), option symbol or root symbol, underlying symbol, strike price, expiration date, and open/close; and any special handling instructions.”²² However, Rule 613 does not provide extensive detail on how reporting will be accomplished. For the SEC to achieve its objectives for regulatory surveillance of the options market at a realistic cost, it is necessary to take the following issues into account.

b) Industry Perspective

SIFMA believes that the unique attributes of the options market require different treatment than is provided for equities under Rule 613. In many aspects, the options markets are even further differentiated from the equities market than some of the potential expansion products addressed under the *Other Products* section of this document.

First, the options market is heavily quote-driven and has vastly different protocols for quoting and order routing than those that prevail in the equities market. The differences in behavior of options quotes and their associated protocols can have dramatic implications for CAT reporting and merit separate treatment.

Second, other differences include a much higher volume of quote traffic (recently reported by the FIF as being as high as 5 million messages/second with a peak daily message ceiling of 26.8 billion)²³, stream-based quoting mechanisms, lack of mapping between quotes and trades, the ability for exchanges to initiate rules-based changes to quotes, the ability to send

²² [CAT Final Rule](#) p. 347

²³ FIF CAT Working Group Response to Proposed RFP Concepts Document, p.38-39:
<http://www.catnmsplan.com/web/groups/catnms/@catnms/documents/appsupportdocs/p197808.pdf>

a bulk quote on a series of strikes, 500,000 different names which can change on an intraday basis, and a proliferation of product types, special attributes and order execution mechanisms not found in the equities market.

Third, an exchange is always the direct recipient of a quote message (which as opposed to orders) does not route outbound for execution. Therefore, the CAT will gain no additional information from member firm reports than exchanges already hold regarding options quotes. If required to provide quote data, the Industry would incur a heavy cost for initial build and on-going operation to provide data which is already available through exchanges..

For the reasons outlined above and other factors outlined later in this document, SIFMA members believe exchanges are in the best position to provide options quote information to the CAT, and in some instances, initial population of order information on the audit trail. Many reportable attributes of a transaction are already implicit in OSI symbology conventions (including FLEX options and options which have been adjusted for corporate actions), which the OCC can provide through existing daily files.

Additional challenges include a sophisticated model for representing net priced orders (a definition of which is provided below), unique attributes and order types specific to the options market, exclusion of exercises and assignments, and the lack of an existing trade-reporting framework.

c) *Requirements*

i) *Market Maker Quotes*

SIFMA members believe that exchanges are in the best position to report options quotes (but not necessarily orders) to the CAT, given the unique structure of the options market and the exchanges' existing infrastructure. This would avoid duplication of effort on the part of both parties and ensure consistency in reporting, while providing an accurate and timely audit trail according to the requirements of Rule 613. Moreover, if CAT is designed to handle as many as 50 billion messages per day, as the SRO's have indicated in their RFP concepts document, duplicate submission of the previously cited 27 billion daily options quote messages by both

the exchanges and broker-dealers will easily overwhelm CAT's initial specifications.

The reasoning for this is as follows, and is further elaborated in *Appendix 2* of this document:

1) Options quotes differ significantly from orders in the scope of CAT requirements.

Key differences include:

- a) High message traffic;
- b) Bulk, stream-based quoting mechanisms;
- c) Lack of mapping between quotes and trades;
- d) Lack of mapping between quotes and withdrawals;
- e) The ability for exchanges to initiate changes to quotes (in some cases quotes are updated automatically for market-makers based on risk thresholds and orders traded); and
- f) A large percentage of the quotes in the marketplace never result in an executed trade.

In addition to these distinctions, the large number of broker-dealer reported quotes would create excessive expenses needed to support communication on the order of tens of billions of messages, while adding no additional value over what can be reported by the exchanges.

ii) *Exchange Front End Systems*

Exchanges are in the best position to report option orders entered directly into their own exchange-provided front-ends, such as the International Securities Exchange's PrecISE system.

When using exchange-provided trading front-ends, broker-dealers should not be required to report initial order information to the CAT. Instead, the exchange could provide the information to the CAT processor, including par terminal routes and cabinet trades. With the exchange providing the initial events, the broker-dealer could later supplement information where necessary, such as with Customer ID.

iii) Symbology

Options reporting requirements should enforce the use of a standard symbology. The absence of a universal product identifier for options should necessitate the enforcement of standard OSI symbology for CAT reporting. As exchanges must already send matched trades to the OCC in the recognized OSI symbology for proper clearance, this is an obvious framework under which to unify market practice.

While adoption of the OSI symbology solves a multitude of problems, a few topics will require further consideration:

- 1) An approach for representing net-priced orders, both those with exchange identifiers and those created on an ad hoc basis should be established. Net-priced orders are further discussed in the appendix. Additionally, net-priced orders involving options on commodities (e.g., VStrips) are not represented in OSI and have identifiers which vary across exchanges. Attention must be paid to modeling these instruments which are highly idiosyncratic. Driving toward a canonical representation would be ideal. The broad challenges of net-priced orders are further discussed later in this document.
- 2) While special deliverables are currently represented in the OSI symbology, SIFMA recommends a systematic review of special deliverables for any skew in definition.
- 3) While FLEX options are currently represented in the OSI symbology with a complete list of attributes, SIFMA seeks consistent ordering of the attributes on FLEX options.
- 4) Symbology changes will be a complex challenge for the CAT processor. There are over 500,000 strikes compared with approximately 7,000 listed-stocks and Exchange Traded Funds. Options symbols can be added intraday and new products will continue to drive the development of additional symbols.

iv) Transaction Details Implicit in OSI Symbology

Broker-dealers should not be required to transmit to the CAT transaction details already implicit in the OSI Symbology or daily OCC files. A combination of the OSI symbol and information provided in the OCC's daily files already show all of the terms of an options order, including FLEX options and options which have been adjusted for corporate actions. SIFMA recommends that the CAT does not require redundant information, such as an attribute for expiration date, in the transaction details. Further, detailed treatment of this topic is provided in *Appendix 2*.

In addition, the CAT would obtain more accurate and standardized information from the OCC, rather than depending upon each CAT Reporter to submit this information individually.

v) Net Priced Orders

The CAT processor should provide a sufficiently sophisticated model for representing net-priced orders. SIFMA recommends that the CAT data model focus on basic order types: simple orders (a single order representing a single buy or sell of a call or put on an underlying) and net-priced orders (a catchall for strategies in which a single order is placed for execution of two or more separate products at different prices). Further, SIFMA believes that reporting should be reflective of the way orders are received by/sent from the broker-dealer.

- 1) Simple Orders: when a customer places a simple order, it may in fact be a leg of a spread or another options trading strategy, but the broker-dealer cannot accurately infer this. SIFMA recommends in all cases, if the broker-dealer receives a simple order, the broker-dealer should report a single simple order. Further, a single simple order should not carry an indication of an implicit strategy.
- 2) Net-priced Orders: the CAT processor will need to provide a sufficiently sophisticated model for representing net-priced orders. Today, options

strategies have many diverse naming conventions, many diverse exchange-protocol representations, and can be executed as a single trade or accumulated through a succession of trades. SIFMA recommends that the SROs adopt a standard representation of complex orders and their executions, similar to how the FIX protocol represents multi-leg options. Based on the collective experience of SIFMA members, it is strongly recommended that net-priced orders are modeled first in the CAT processor, with simple orders being modeled second, as a sub-case. SIFMA recommends that the early design phase of the CAT will require Industry discussion on the data modeling of net-priced orders.

vi) Unique Attributes

The CAT should capture unique attributes and order types specific to the options market.

- 1) Open/Close: Options orders typically require an open or close designation with the possible exception of orders placed for a market-maker account.
- 2) Options Origin Codes: From the perspective of the OCC there are only three origin codes: customer, firm, and market-maker. However, different exchanges can have many more origin codes; these may need to be represented and/or mapped to the OCC representation.
- 3) Auction and Auction responses: auctions and behavior around auctions is unique in the options markets. The CAT processor should be capable of modeling appropriate attributes and linkages associated with the representation. Further, SIFMA suggests a canonical form of representing auction and auction responses, as currently all exchanges have exchange-specific representations of similar ideas. While these mechanisms are extremely complicated, and establishing a canonical representation will be a challenge, it will dramatically increase accuracy in reporting. Auction types should be inclusive of all exchange auction mechanisms.

- 4) Qualified Contingent Crosses (“QCC”): the CAT processor should create a representation for QCCs.
- 5) Timestamps unique to manual options order handling: solicitation time and order announcement time should be part of the attributes required in options reporting.

vii) *Exclusion of Certain Reporting Requirements*

Certain activities unique to the options market should be excluded from CAT reporting requirements.

In particular, exercises and assignments should be excluded: These actions are generally dictated by the price movement in the marketplace and are already largely managed by exchange and broker-dealer back-office driven automation.

viii) *Representation of Strategies*

Representation of implicit strategies on simple orders should be excluded: When a customer places a single order, it may be a part of a customer’s options strategy (e.g., spread, butterfly, etc.). Many options strategies involve simultaneous or near simultaneous purchase and/or sale of different options. However, if an order is placed with a broker-dealer as a single simple order, SIFMA recommends that it be reported as a single order to the CAT. Further, since a broker-dealer cannot accurately infer the intention of a customer order, SIFMA recommends excluding an attribute indicating an implicit strategy.

ix) *Linkages in Options*

Today, there is no OATS like system for the options market. As such, the CAT processor will need to deliver similar functionality to the options market as is provided by OATS (for the equity market) with respect to linkages. The CAT processor should support options that are routed either electronically or manually (e.g., telephone) through interdealer-brokers before reaching an exchange. This is a point of emphasis because of the anticipated, significant cost associated with initial build and ongoing maintenance.

x) COATS

The COATS system and processes in place for the systemization of phone orders is one possible starting point for the creation of an OATS-like facility for options. Given the new requirements presented by CAT, the SROs should review the reasons why OATS was not implemented for options.

Infrastructure

a) Overview of Rule

Rule 613 calls for the SROs to create a central repository for the receipt, consolidation and retention of audit trail information, which will store and make this data available to regulators in a uniform electronic format that ensures timely and accurate retrieval.²⁴ Rule 613 further specifies that the repository:

- i) electronically record from each SRO and its members details for each order and each reportable event under Rule 613 by 8:00 a.m. Eastern Time on the trading day following the event;
- ii) ensures the timeliness, accuracy, integrity and completeness of the data;
- iii) enforces appropriate safeguards to ensure the confidentiality of data;
 - 1) agrees not to use such data for any purpose other than surveillance and regulatory purposes;
 - 2) enforces information barriers between regulatory staff and non-regulatory staff; and
 - 3) has a mechanism to confirm the identity of all persons permitted to access the data.
- iv) specifies a maximum error rate to be tolerated and describes a process for identifying and correcting errors; and
- v) specifies a timeframe by when regulators²⁵ will be able to review any corrected data.

²⁴ [CAT Final Rule](#) p. 340

²⁵ [CAT Final Rule](#) p. 343

b) Industry Perspective

The CAT system will require a state-of-the-art infrastructure to support a large database populated with sensitive information, and to ensure firms are able to meet their reporting requirements and submit data in a timely, efficient and secure manner, with opportunities for corrections as needed. SIFMA's infrastructure recommendations cover the topics of Data Transmission, Data Security and Privacy, Error Correction, Testing and Support.

i) Data Transmission

- (1) The CAT utility should support multiple transmission mechanisms (e.g., FIX, web-based, Connect:Direct, Websphere MQ and the like). However, whatever interfaces, protocols, or standards are developed in the initial phases of the effort should be designed with multi-product expansion in mind from day one, and should not be constrained by architectural decisions that might limit the ability of the CAT to expand beyond Reg NMS securities.
- (2) CAT Reporters need the ability to transmit either in batch or near-real-time. There are cases in which near-real-time reporting (e.g., quoting, trading) may be the best reporting mechanism for reporters, and other use-cases (e.g., client and account updates, block allocations) in which batch upload would be the desired approach.

ii) Data Security and Privacy

- 1) CAT Reporters will need the ability to specify and configure their own authorized users and their associated entitlements within whatever data access facilities are provided by the CAT utility.
- 2) The CAT utility should ensure that appropriate standards are in place for protecting nonpublic information of any kind, including masking of personal identifiable information.
- (3) There should be an annual certification to ensure the CAT complies with industry standards (e.g., SSAE 16, or current standard).

- (4) Security should be in line with other Federal standards to ensure security of sensitive data.

iii) Error Correction

- (1) With respect to matching and error correction, the CAT should provide robust matching rules, and suggest corrective actions based on its knowledge of both sides of a transaction, through some form of repeating matching process that runs multiple times per day.
- (2) It should give each party to a transaction an opportunity to repair information without penalizing their counterparty.
- (3) If a daisy chain is broken at one link, the CAT should not invalidate the rest of the chain. The CAT should acknowledge that the link is missing and preserve the remaining linkages.
- (4) The CAT should also preserve child routes and reconstruct them upon correction of a parent order.

iv) Testing

If the CAT processor provides a robust testing facility, it will have an enormous positive impact on firms' ability to make a seamless and orderly transition to CAT reporting. For instance, CAT Reporters would greatly benefit from near-constant accessibility to production-parallel and UAT/QA environments that are complete hardware and software replicas of the production environment, including encrypted communications channels. However, the CAT processor should not charge incremental fees for testing.

v) Support

- 1) CAT Reporters will need near 24/6 technical support to meet the SEC's expectation that broker-dealers provide and correct data more quickly than is required today.

- 2) Support requirements should cover not only technical support, but business and process support as well.
- 3) The CAT utility should support training on its systems and processes, and offer training materials and regular training classes.

c) Requirements

i) Transmission and Storage

- 1) Industry input should be required on the CAT utility's Data Interface and Communications specifications in order to ensure a design that is both cost-effective and supports members' obligations to report under Rule 613.
- 2) Whatever interfaces, protocols, or standards are developed in the initial phases of the effort should be designed with multi-product expansion in mind from day one, and not limit the ability of the CAT to expand beyond Reg NMS securities in the future.
- 3) SIFMA advocates the use of a standard record format and data model to be used for all reporting. The CAT should be able to interpret which fields in a file or message apply to each type of reportable event, accept null values, and not require submitters to embed complex, resource-intensive or rules-based business logic in order to tailor the messages individually from within each firm based on the information being reported.
- 4) Elsewhere in this document, SIFMA advocates that exchanges submit quotes to the CAT. In the event that a broker-dealer is required to provide quote information, there should be different formats for quotes and orders.
- 5) The CAT utility should support multiple transport mechanisms (e.g., FIX, web-based, Connect:Direct, Websphere MQ, etc.). Each CAT Reporter should be free to choose the method most appropriate and supportable for them. However, the message structure should be the same, and should carry the same number of attributes.

- a) Establishing the initial load of reference data may also require the ability to accept physical data stores due to the large amount of data.
- 6) CAT Reporters need the ability to transmit either in batch or near-real-time. There are use cases in which near-real-time reporting (e.g., quoting, trading) may be the best reporting mechanism for some reporters, and other use-cases (e.g., client and account updates, block allocations) in which batch upload would be the desired approach. The CAT utility should provide a facility for CAT Reporters to view their own data in the utility and make any manual entries or corrections as necessary. While SIFMA advocates for a design principle supporting one-way communications with the CAT elsewhere in this paper, CAT Reporters require facilities within the CAT utility for exception processing to enable them to interact directly with their submitted data.
- 7) CAT Reporters will also need the ability to submit corrections either through a “batch with repairs” approach, or as manual correction to individual transactions. This will require a robust user interface and capability for corrections, including:
- a) Filtering and error correction based on error, exception
 - b) Mass repairs based on filter criteria (id, handling codes & etc. and
 - c) Support for mass rollback/deletion of an entire series of previously submitted transactions.
- 8) CAT should provide a robust capability to review broker-dealers’ own reported data such that broker-dealers will not need to maintain more than 7 days of CAT data on hand. Otherwise, broker-dealers would need to build their own long-term stores of their own CAT-reported data, which would be a significant additional expenditure multiplied across every major CAT-reporting firm. This is a major shortcoming in FINRA’s OATS system.

ii) Data Security and Privacy

- (1) CAT Reporters will need the ability to specify and configure their own authorized users and their associated entitlements within whatever data access facilities are provided by the CAT utility.
- (2) CAT Reporters should have the ability to access an audit trail of what user accounts or processes from within their firms have altered or accessed their CAT-reported data, along with a change log and timestamp.
- (3) More generally, safeguard protocols should be established to surveil for the extraction and use of CAT data.
- (4) SIFMA believes that the CAT utility should support file and disk-based encryption in order to safeguard their confidential information and that of their customers. This includes the encryption of data on all back-up or removable media.
- (5) SIFMA believes that any CAT data transported over the internet should utilize a fully end-to-end encrypted channel.
- (6) SIFMA believes that the security of the CAT utility must include both physical and logical access controls for both data centers and access points utilized by regulators and the CAT processor.
- (7) SIFMA recommends that users with access to the CAT utility should receive different levels of CAT access including write, read-only, create, modify; as well as compartmentalization of CAT utility access by firm, business unit, reporter, or end “client,” for both individual firm users, operations personnel, and regulators.
- (8) No person with access to the CAT database should have the ability to access arbitrary data such as financial details pertaining to a celebrity or public figure, or trading behavior of an individual firm, unless specifically authorized to do so for the purposes of their job duties.

- (9) The CAT utility should ensure that appropriate standards are in place for protecting nonpublic information of any kind, including masking of personally identifiable information.
- (10) CAT Reporters want to be informed of any security breaches that occur within the CAT utility, including information regarding what data was potentially impacted, the date and time of the incident, and any particulars that the CAT Reporters could use internally to help identify the compromise.
 - (a) Notification should take place within 24 hours of the CAT operator identifying a breach.
 - (b) Ongoing progress reports of investigations and security remediation should be provided to the CAT Reporter and end-customer(s).
 - (c) End-customers impacted by an incident should also be notified in some manner that their personal information may have been compromised.
- (11) The CAT utility should have surveillance procedures including required proactive monitoring to detect abnormal use and behavior.
- (12) The CAT utility should be subject to and pass a certain level of periodic examination as mandated by the Governance Committee. The audit should be performed by an independent provider not affiliated with the SROs or the CAT Processor.
- (13) The CAT utility should have a robust business continuity plan and disaster recovery plan, which should allow for a seamless cutover to a back-up system.
- (14) There should be an annual certification to ensure the CAT complies with industry standards (e.g., SSAE 16, or current standard).

iii) Testing

The incorporation of robust testing facilities with rich capabilities, designed into the CAT utility should be available for broker-dealers well in advance of the CAT

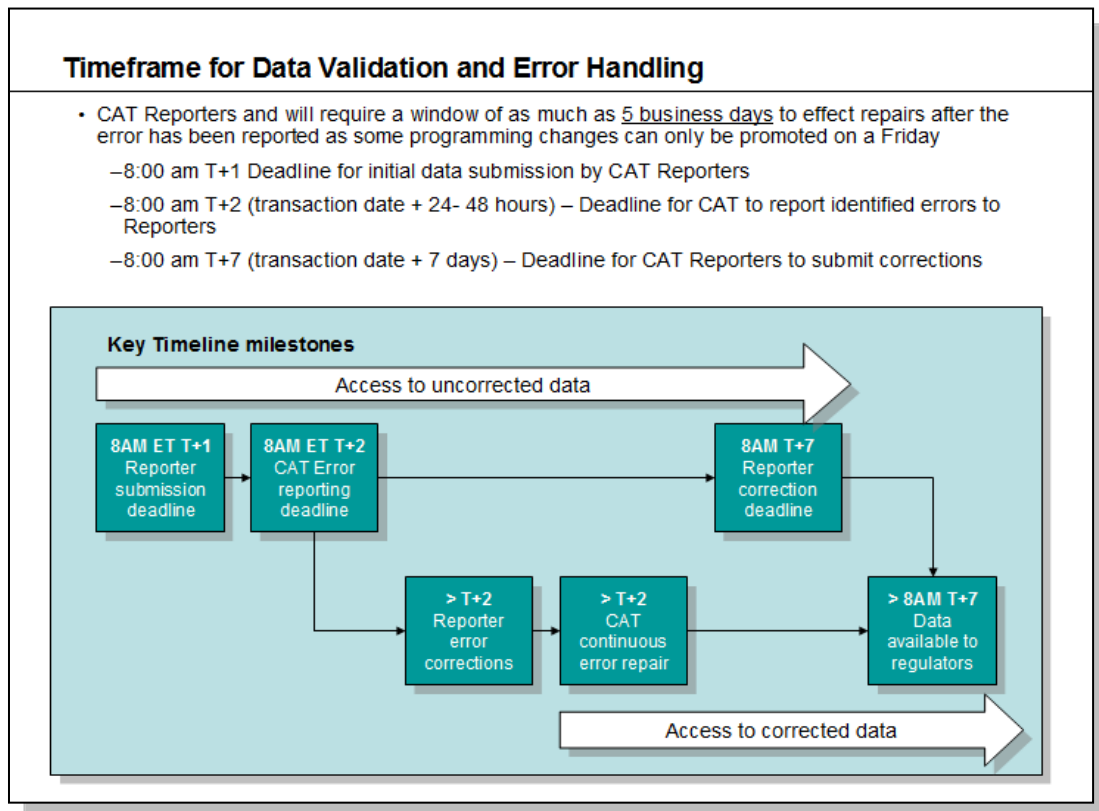
utility's initial go-live date. This would positively impact a firms' ability to make a seamless and orderly transition to the CAT reporting model.

- 1) CAT Reporters will require constant access to a test environment (excluding regularly scheduled maintenance windows), including weekends and evenings.
- 2) The test environment should be a complete hardware and software replica of the production environment, including encrypted communications channels.
- 3) There should be at least three distinct environments provided for testing:
 - a) Production (with test symbols)
 - b) Production-parallel; and
 - c) UAT/QA environment.
- 4) Members would expect rejects back within the same timeframes and SLAs as for production, if not faster, so that testing replicates what will be required by firms in production once the CAT goes live.
- 5) The CAT test environment should include a test bed that includes a full copy of production data for each reporting firm. The data must be secured and masked similar to production.
- 6) The CAT should provide test symbols that exist in both test and production environments. Elsewhere in this document SIFMA argued for the convergence of symbology across execution venues. If this were to include test symbols, it would greatly enhance members' ability to ensure that new systems function properly in test and production environments.
- 7) The CAT test data should include the ability to provide real or simulated matching information from test counterparties.
- 8) Access to a full technical specification would allow users to develop their own test cases.

- 9) The CAT utility should provide a certification process for vendors and members based on their successful test results.
- 10) The CAT processor should charge no incremental fees for testing.

iv) Error Correction

- 1) The SROs propose a one-day turnaround time for repairs. SIFMA believes that this is insufficient time and would prefer if the model mirrored existing error-correction standards on OATS.
- 2) CAT Reporters should be informed of any errors detected by the CAT system within 24 to 48 hours of original submission.
- 3) CAT Reporters will require a window of as much as five business days to effect repairs after the error has been reported. It should be noted that the CAT processor can only implement some programming changes on a Friday and the error-correction policy should account for this.



- 4) CAT Reporters should also have the ability to request ad-hoc/immediate matching subsequent to submission of a correction.
- 5) SIFMA believes that the CAT should be able to perform catch-up and re-run its analysis through an inter-day repeating match process to resolve rejects and mismatches, unlike OATS today, which runs once at the end of day.
- 6) SIFMA believes that the CAT should have much more robust matching rules behind error detection than exist in OATS today, including a better understanding of where errors have occurred.
- 7) While it is each broker-dealers' responsibility to ensure that their data is correct, there are circumstances in which the CAT processor may be in a better position to detect the existence and source of an error, since it will see activity on both sides of every transaction.
- 8) The CAT utility should be smart enough to inform a CAT Reporter of an error and make suggestions for remediation based on its knowledge.
 - a) Where possible, the CAT should leverage existing data available through clearing corporations and exchanges to help construct portions of the audit trail automatically. Examples would include the Matched Trade files from the OCC or Equity Cleared reports from NSCC.
- 9) The CAT should give each party to a transaction an opportunity to repair information without penalizing the counterparty. The OATS process in place today penalizes both counterparties to an OATS mismatch rather than targeting the firm that caused the error. This is a design flaw in OATS that is unfair to the conforming side of an error.
 - a) If a daisy chain is broken at one link, the CAT should not invalidate the rest of the chain. The CAT should be able to acknowledge that the missing link is missing and direct the error to the proper correcting firm.

- b) The CAT should preserve child routes and be able to reconstruct them upon correction of a parent order.
- c) The CAT should provide the ability to amend previously submitted data that has not yet resulted in an error.

v) *Support*

- 1) The CAT utility should provide some form of web-based ticketing tool, which captures the history of a support request, reference numbers and comments as well as a record of actions taken, escalations and email reminders, as might be expected of any modern IT services firm.
- 2) CAT Reporters will need near 24/6 technical support if the SEC's expectation is that all data will be provided more quickly than is the case today.
- 3) Support requirements should cover not only technical support but business and process support as well.
- 4) The CAT utility should support training on its systems and processes, offer training materials, and regular training classes.
- 5) CAT Reporters will require a specific test support help desk, whose staff has the required expertise to work with a broker-dealer on all aspects of testing and have access to a broker-dealer's test data.
- 6) CAT Reporters expect a frequently-asked-questions and knowledge-base to be available online.

Elimination of other Rules and Systems

a) Overview of Rule 613

As the SEC has clearly indicated in its commentary around Rule 613, CAT is envisioned as an opportunity to replace a number of disparate systems and reporting regimes that have proven inadequate, and replace them with a single comprehensive, consolidated audit trail that fully meets regulators' needs. Rule 613 itself declares that these other regulatory rules and requirements should be absorbed into CAT.

“Planning for Future System Efficiencies. The adopted Rule requires that the NMS plan provide a plan to eliminate existing rules and systems (or components thereof) that are rendered duplicative by the consolidated audit trail, including identification of such rules and systems (or components thereof). Further, to the extent that any existing rules or systems related to monitoring quotes, orders, and executions provide information that is not rendered duplicative by the consolidated audit trail, such plan must also include an analysis of (1) whether the collection of such information remains appropriate, (2) if still appropriate, whether such information should continue to be separately collected or should instead be incorporated into the consolidated audit trail, and (3) if no longer appropriate, how the collection of such information could be efficiently terminated. Finally, such plan must also discuss the steps the plan sponsors propose to take to seek Commission approval for the elimination of such rules and systems (or components thereof); and a timetable for such elimination, including a description of how the plan sponsors propose to phase in the consolidated audit trail and phase out such existing rules and systems (or components thereof).”²⁶

²⁶ [CAT Final Rule](#) p.12

b) Industry Perspective

Eliminating legacy systems and rules and consolidating them under Rule 613, with a single set of standards managed by a single central party, will be a vital step towards creating an efficient and robust regulatory reporting regime for Reg NMS securities. The sun setting of legacy systems will achieve significant cost savings, and allow both broker-dealers and regulators to tap into a pre-existing source of funding for the CAT. This cost savings will free up capital and resources within reporting firms necessary for the update and maintenance of their internal systems to comply with requirements for the CAT.

The SEC specifically cites in its introduction to Rule 613 the shortcomings and limitations of the current systems including OATS and EBS, which it calls:

“...outdated and inadequate to effectively oversee a complex, dispersed and highly automated national market system. In performing their oversight responsibilities, regulators today must attempt to cobble together disparate data from a variety of existing information systems lacking in completeness, accuracy, accessibility, and/or timeliness – a model that neither supports the efficient aggregation of data from multiple trading venues nor yields the type of complete and accurate market activity data needed for robust market oversight.”²⁷

As legacy systems are replaced by the more robust capabilities of the CAT they should be retired. This aligns with the SEC’s position that “data reported to the central repository under Rule 613 obviates the need for the EBS system,” and that “the Commission expects that the separate reporting requirements of Rule 13h-1 [Large Trader] related to the EBS system would be eliminated.”²⁸

The scope of rules and systems that could be positioned for elimination by the CAT include Order Audit Trail System (OATS; FINRA), Electronic Blue Sheets (EBS; SEC) (, SEC Rule 17a-25 – Electronic Submission of Securities Transaction Information by Exchange Members, Brokers, and Dealers), Consolidated Options Audit Trail System (COATS;

²⁷ [CAT Final Rule](#) p. 6

²⁸ [CAT Final Rule](#) p. 48

Options exchanges), and Large Options Position Reporting (LOPR; Options Clearing Corp), while meeting the requirements of various rules including SEC Rule 13h-1 – Large Trader Reporting, FINRA Rule 4560 – Short Interest Reporting, NYSE Rule 410B – Transactions effected in NYSE listed securities, and others.

The following table that follows describes some of these rules and systems, and their potential overlap with Rule 613.

Overview of Other Reporting Systems and Rules

| Reporting System / Rule | Nature of Rule | References |
|---|---|---|
| Order Audit Trail System (OATS) Owner: FINRA Rule: FINRA Rules 7410 - 7470 | An integrated audit trail of order, and trade information for NMS securities. FINRA uses this audit trail system to recreate events in the lifecycle of orders and to more completely monitor the trading practices of member firms. FINRA member firms are required to develop a means for electronically capturing and reporting to OATS specific data elements related to the handling or execution of orders, including recording all times of these events in hours, minutes, and seconds, and to synchronize their business clocks. | FINRA Rule 7400 Order Audit Trail System OATS Reporting Technical Specifications OATS Reportable Securities |
| Electronic Blue Sheets (EBS) Owner: SEC Rule: SEC Rule 17a-25 | Requires brokers and dealers to submit electronically to the SEC, upon request, information on customer and firm securities trading, including order execution time. Designed to improve the Commission's capacity to analyze electronic submissions of transaction information, thereby facilitating Commission enforcement investigations and other trading reconstructions. | Final Rule: Electronic Submission of Securities Transaction Information by Exchange Members, Brokers, and Dealers EBS Submission Specification |
| Equity Cleared Reports Owner: NSCC | This report is generated on a daily basis by the SROs and is provided to the NSCC in a database accessible by the SEC, and shows the number of trades and daily volume of all equity securities in which transactions took place, sorted by clearing member. | |
| Large Trader Reporting Owner: SEC Rule: SEC Rule 13h-1 | Assists the SEC in both identifying and obtaining trading information on market Participants that conduct a substantial amount of trading activity, as measured by volume or market value, in the NMS Securities. Rule 613 requires broker-dealers to maintain and report | Final Rule: Large Trader Reporting |

| Reporting System / Rule | Nature of Rule | References |
|---|---|--|
| | <p>data that is largely identical to the information covered by the Commission’s Electronic Blue Sheets (EBS) system ²⁹– the system the SEC currently uses to collect transaction data from broker-dealers. LTR provides a source of data to support investigative and enforcement activities, and helps to reconstruct trading activity following periods of unusual market volatility, and to analyze significant market events for regulatory purposes.</p> | |
| <p>Consolidated Options Audit Trail System (COATS)</p> <p>Owner: FINRA, Options Exchanges</p> <p>Rule:</p> | <p>A consolidated audit trail that enables the Options Exchanges to reconstruct markets promptly, effectively surveil them and enforce order handling, firm quote, trading reporting and other rules. Requires that each order, change to an order, or cancellation of an order transmitted to the exchange be “systematized,” in a format approved by the exchange, either before it is sent to the exchange or contemporaneously upon receipt on the floor of the exchange, and prior to representation of the order.</p> | |
| <p>NYSE Rule 410B</p> | <p>Transactions effected in NYSE listed securities by members and member organizations, which are not reported to the Consolidated Tape must be electronically reported to NYSE including date of transaction, customer name, address(es), branch office number, registered representative number, whether order was solicited or unsolicited, date account opened and employer name and the tax identification number(s).</p> | <p><u>Rule 410A.</u> <u>Automated</u> <u>Submission of</u> <u>Trading Data</u></p> |
| <p>PHLX 1022</p> <p>Owner: Philadelphia Stock Exchange</p> | <p>Specialists or Registered Options Traders must report orders for the purchase or sale of securities underlying any stock or Exchange Traded Fund Share options contract traded on the exchange, including securities convertible into or exchangeable for such underlying securities regardless of whether the Specialists or Registered Options Trader makes a market for the related option.</p> | |
| <p>CBOE 8.9</p> <p>Owner: Chicago Board Options Exchange</p> | <p>Clearing firms, with respect to transactions to be cleared in accounts of market makers, must report executed orders for the purchase or sale of positions in securities underlying options</p> | |

²⁹ SEC Adopts Large Trader Reporting Regime: <http://www.sec.gov/news/press/2011/2011-154.htm>

| Reporting System / Rule | Nature of Rule | References |
|---|---|---|
| | traded on the Exchange, including securities convertible or exchangeable into such securities, regardless of whether the market maker makes a market for the related option. In addition, clearing firms must also report market maker executions and positions with respect to securities traded on the Exchange. | |
| Large Options Position Reporting (LOPR) ³⁰ Owner: FINRA Rule: FINRA Rule 2360(b)(5) | Requires member firms to file reports for each account in which a member has an interest, each account of a partner, officer, director, or employee of the member; and of each customer, non-member broker, or non-member dealer that has an aggregate position of 200 or more options contracts (whether long or short) on the same side of the market covering the same underlying security or index. | FINRA Rule 2360 Reference Guide for LOPR Firms |
| Rule 4560 – Short Interest Reporting Owner: FINRA | Member firms are required to report total short positions in all customer and proprietary firm accounts in all equity securities to FINRA on a bi-monthly basis. | Short Interest Reporting |

c) Requirements

i) Data Elements

The CAT data model should include elements and features that can be used to retire/replace EBS, OATS, Large Trader Reporting, as well as reporting frameworks for products targeted for future expansion, such as fixed income. This will improve the efficiency of Industry implementation of CAT.

ii) Avoiding Duplicative Reporting Regimes

As functionality is added to the CAT, other regulatory reporting requirements should be incorporated into it. SIFMA strongly believes that firms should not be subject to duplicative reporting regimes. While SIFMA members are willing to provide

³⁰ Because LOPR and Short Interest Reporting are position reports, depending on the future evolution of CAT, there may be opportunities to shift the obligations to a more transaction-based reporting regime or incorporate reporting of position information such that CAT could be a central source for this information

information to support regulators' requirements, duplicative reporting is burdensome and costly.

iii) Timeline for Over-the-Counter Equities

OTC equities should be included in the CAT at the inception so that other reporting systems can be retired quickly and the costs of maintaining them recouped. Early inclusion of OTC equities will allow for OATS and EBS to be retired on day one. This will require a revision of the proposed time table for the coverage of OTC equities.

Other Products

a) *Overview of Rule 613*

While the first phase of the CAT covers NMS securities, the SEC has included language in Rule 613 that clearly anticipates the extension of CAT reporting to OTC equities and fixed income:

“Other Securities and Other Types of Transactions. The national market system plan submitted pursuant to this section shall include a provision requiring each national securities exchange and national securities association to jointly provide to the Commission within six months after effectiveness of the national market system plan a document outlining how such exchanges and associations could incorporate into the consolidated audit trail information with respect to equity securities that are not NMS securities, debt securities, primary market transactions in equity securities that are not NMS securities, and primary market transactions in debt securities, including details for each order and reportable event that may be required to be provided, which market participants may be required to provide the data, an implementation timeline, and a cost estimate.”³¹

b) *Industry Perspective*

One of SIFMA’s guiding principles for the CAT discussed above is that that the CAT should be designed with multi-product expansion in mind from day one and not be constrained by architectural decisions that might limit the ability of the CAT to expand beyond Reg NMS Securities at some point in the future.

Initially the CAT will cover all Reg NMS securities (all listed securities traded on a registered US stock or options exchange). Within six months after the CAT NMS Plan comes into effect, the SROs will be required to submit to the SEC a plan for the extension of CAT to OTC equities, primary and secondary equity offerings and debt securities.

³¹ [CAT Final Rule](#) p. 345

SIFMA anticipates minimal issues expanding the CAT to other products once the development and implementation of the CAT for Reg NMS securities is complete and the system is operational. However, special consideration should be made for OTC and fixed income instruments because significant differences exist between the market structures of the OTC market and exchange traded securities. Specifically, the OTC markets, as negotiated markets, do not have the concept of order and quote, and thereby lack an order lifecycle as understood in the context of the equities and options markets.

c) Requirements

i) Consistent Symbology

- 1) To facilitate efficient and accurate reporting, SIFMA believes that reporting within each asset class should use consistent symbology.

ii) Over- the-Counter Markets

- 1) Since there is no concept of quotes in the OTC fixed income markets, the actual transaction is the only event that should be reported. Price negotiations directly and privately between counterparties who know each other (unlike in electronic trading). SIFMA recommends that in negotiated markets the only reportable event is the execution.
- 2) In most other respects, reporting of a final transaction on these OTC markets, including counterparties, time, size, and price, provision of client/beneficiary, will require the same considerations as those requirements of reporting OTC transactions to the CAT will substantially overlap with those for reporting on NMS Securities. The reporting on these transactions should mirror the systematization of other types of manual orders, given the lack of complex interdealer handling and the primary participation of counter-parties in the transaction. This assumes the appropriate reference data for the instrument is available in the CAT.

- 3) Indications of interest (“IOIs”) are used in the OTC transactions to help participants better understand the market, but SIFMA agrees with the SEC’s point of view that indications of interest are a materially different concept than that of orders or quotes and should be excluded because “the utility of the information such data would provide to regulators would not justify the costs of reporting the information. Indications of interest are different than orders because they are not firm offers to trade, but are essentially invitations to negotiate.”³²

iii) Fixed Income

- 1) Exchange or ATS-traded bonds can be reported under the CAT model for equities. Allocation events created for capturing post-trade events in the equities market should be equally applicable across fixed income products.
- 2) Likewise, all concepts and requirements for customer ID and CAT Reporter ID should be portable to fixed income products.
- 3) OTC transactions in fixed income instruments should be indistinguishable from OTC transactions in other securities.

iv) Hybrid Instruments

- 1) SIFMA recommends that the SROs provide clear definitions and explicit guidance when hybrid instruments (those with debt and equity characteristics) are reportable under the CAT.
- 2) Clarification is needed about which bonds would be CAT reportable (Treasury bonds, Municipal bonds, To Be Announced bonds, Mortgage bonds, TIPS, STRIPs and zero coupon bonds).

v) Interagency Coordination

- 1) The SEC and SROs should coordinate closely with other regulatory bodies in identified expansion markets to ensure there is no duplication of effort. For

³² [CAT Final Rule](#) p.97

instance, SIFMA is aware that the MSRB is planning a next-generation trade reporting system which might duplicate the CAT's planned scope of coverage during its second phase of expansion.

- 2) Expanding the CAT into fixed income would open up the possibility of integrating or eliminating fixed-income trade reporting systems such as RTRS, TRACE/TRAQs, just as the CAT promotes the removal of duplicative systems and reporting regimes extant in the equities and options markets.
 - (i) If other trade reporting already exists in these markets and if the only information that can be reported is the trade itself, existing trade reporting systems in the fixed income market could simply feed into the CAT.
 - (ii) Some of the systems used today for reporting other products (e.g., RTRS, TRACE, TRACS) may have faster reporting objectives than the CAT, or serve other purposes such as feeding transactions to a clearing corporation for netting and/or settlement; nonetheless the systems in place today may already carry the data attributes necessary to populate an initial audit trail of the transaction. Further analysis will be required for how to best integrate these systems into the CAT.

Cost

a) Overview of Rule 613

Rule 613 requires that the NMS Plan include “an estimate of the costs to members of the plan sponsors, initially and on an ongoing basis, for reporting the data required by the national market system plan;”³³

b) Industry Perspective

SIFMA has undertaken a preliminary review of the costs broker-dealers are likely to face to upgrade their internal trade reporting infrastructure to comply with CAT based on their experience with OATS, EBS, and other trade reporting regimes. Costs are expected to impact the entire enterprise – trading, order routing, order management, compliance, risk management, middle and back office, and client master data management.

SIFMA assumes a change phase during CAT implementation when OATS, EBS, and other regulatory reporting systems would remain in production. During the change phase, the cost of developing and implementing CAT is above and beyond operating existing regulatory reporting systems. CAT development and testing efforts will be run in their own environment that is not shared with the production OATS infrastructure.

To determine how regulatory reporting costs could be impacted, SIFMA made four assumptions in our cost analysis:

- CAT will be based on or built upon OATS or use a sufficiently OATS-like data model, otherwise broker-dealers will be unable to leverage their existing investments in OATS linking and reporting as is recommended in the *Linkages* section of this document.

³³ [CAT Final Rule](#) p.329

- Broker-dealers will not be required to report orders captured by exchange front ends, as recommended in the *Linkages* and *Options* sections of this document.
- Broker-dealers will not be required to report options quotes, as recommended in the *Options* section of this document.
- CAT will provide a robust capability to review broker-dealers' own reported data such that broker-dealers will not need to maintain more than 7 days of CAT data on hand as is recommended in the *Infrastructure* and *Error Correction* section of this document (otherwise, broker-dealers would need to store their own CAT reported data).

SIFMA examined the impact of relaxing these assumptions on the cost model, and relaxing each assumption individually increases projected costs by 50%, while relaxing all four factors together would raise the estimated cost of CAT compliance by 200%.

SIFMA will continue to revisit the cost survey in greater depth as the SROs release additional data on the scope and technical specifications of their plan.

c) Observations

Firms will incur additional costs across front office, customer master data, middle office, compliance and risk and data management. All costs detailed below are above those costs already borne by firms to staff, operate and maintain their existing OATS infrastructure, and it is assumed CAT development and testing efforts are run in their own environment. Key costs will include:

vi) Front Office

- 1) Amend front office systems (trading, order management) across duplicative order entry/execution systems and across product lines to systematically capture client IDs and other required fields, including linkage information;
- 2) Transmit quotes and orders into CAT on a near-real-time and next-day batch basis;

- 3) Cost to systematize the capture of manual orders and executions (both equities and options);
- 4) Report on options and equities quotes as well as proprietary trading that is not OATS reportable today;
- 5) Investments in infrastructure (hardware/software); and
- 6) Project team salaries;

vii) Customer Master Data

- 1) Create new reference data access methods (including service bus, data warehouse, etc.) for consolidated customer and account data;
- 2) Create transmission process/technology for initial client load and daily delta files;
- 3) Develop transmission monitoring and alert system for both reference data and daily updates;
- 4) Develop data solutions to resolve different views of the client and counterparties in reference data stores across middle, front, back office;
- 5) Develop data solutions to model all other remaining aspects of CAT events and attributes for equities and options that have a customer reference dependency;
- 6) Investments in infrastructure (hardware/software); and
- 7) Project team salaries

viii) Middle Office

- 1) Update middle office systems to report post-execution events (average price, allocations, away execution information) manually or automatically into CAT (reporting not currently reportable through OATS);

- 2) Update middle office systems with order-related information that does not exist there today so that this information can be reported to CAT;
- 3) Develop middle office system to collect and generate reports for reportable order lifecycle events;
- 4) Build interfaces from Omgeo, other third parties (if required);
- 5) Develop middle office monitoring and alert systems to manage and support error detection and correction efforts;
- 6) Investments in infrastructure (hardware/software); and
- 7) Project team salaries

ix) Compliance and Risk

- 1) Define/develop internal surveillance and reporting based on CAT reportable events; capabilities to support CAT regulatory inquiries;
- 2) Investments in infrastructure (hardware/software); and
- 3) Project team salaries;

x) Data Management

- 1) Develop interfaces from trading and middle office systems into CAT data repository;
- 2) Create a repository of firm's own CAT reported data (assuming CAT does not provide a robust capability to review and retrieve broker-dealers' own reported data);
- 3) Develop user interfaces, interactive tools, analytics necessary to make CAT data available and useful to end users (compliance, error correction, other);
- 4) Investments in infrastructure (hardware/software); and
- 5) Project team salaries

Implementation Timeline

a) Overview of Rule 613

Rule 613 states that the national securities exchanges and securities associations should jointly file an NMS Plan within 270 days of the publication in the Federal Register³⁴. And further:

- that within two months after effectiveness of the plan, participants select a plan processor;
- that four months after effectiveness of the plan, the SROs synchronize their business clocks and require members of each such exchange and association to synchronize their business clocks;
- that within one year, the exchanges begin to provide the central repository with required data to construct an audit trail from their own systems;
- that within fourteen months, the participants implement a new or enhanced surveillance system;
- that within two years, large broker-dealers provide audit trail information to the central repository; and
- that within three years small broker-dealers are also required to comply with the CAT requirements.³⁵

Rule 613 further requires that within six months of the effectiveness of the plan, the plan sponsor should “propose to incorporate into the consolidated audit trail information with respect to equity securities that are not NMS securities, debt securities, primary market transactions in NMS stocks, primary market transactions equity securities that are not NMS securities, and primary market transactions in debt securities.”³⁶

³⁴ [CAT Final Rule](#) p. 328

³⁵ [CAT Final Rule](#) p. 331

³⁶ [CAT Final Rule](#) p. 345

The SROs have published additional milestones, which may be factored into an overall implementation timeline, including the publication of specifications and protocols within six months of the implementation of Rule 613, and interface specifications within 12 months of implementation.³⁷

b) Industry Perspective

SIFMA has reviewed the proposed timeline for implementation of the CAT and has specific concerns around the amount of time that is implicitly assumed for broker-dealers' internal systems build, internal systems testing, and Industry-wide testing. In addition, SIFMA has several requirements for additional key milestones to be called out during implementation planning. The timeline below illustrates our understanding the proposed timeline and our recommended adjustments.

³⁷ Pre-RFP Bidders Conference Presentation, p.13: <http://www.catnmsplan.com/upcoming/P197774>

2) Based on prior experiences with Industry initiatives of this scale, a minimum of six months would be required to complete three to four rounds of Industry-wide testing with time to remediate issues between test cycles. Backing into a December 2015 large broker-dealer implementation date, all firms would need to complete internal technology build and testing by June 2015, which is only six months after publication of the specification. SIFMA believes this timeframe provides them with insufficient time to complete these activities.

a) For example, when the existing OATS reporting regime was recently expanded to all NMS stocks a longer implementation period was needed for a change many orders of magnitude smaller than what is proposed for the CAT. The planned implementation timeline of 180 days after final publication of the rule had to be extended an additional five months to “allow for additional testing time for member firms,” and “for any remaining implementation issues to be resolved before the rule became effective.”³⁸ In the diagram above six months is used for the purpose of illustrating that the implied timeframe for testing may be inadequate.

a. Test Facility

An important consideration that has not yet been addressed with respect to the timeline is when the CAT processor’s test environments will be ready. The *Infrastructure* section of this document outlines requirements for a robust test environment. Firms will not be able to complete their internal testing, nor can Industry testing commence until the test facility is in production.

1) Additionally, any test support requirements identified in the *Infrastructure* section of this document, such as the availability of test

³⁸ OATS Expansion to all NMS Stocks
<http://www.finra.org/Industry/Compliance/MarketTransparency/OATS/NMS/index.htm>

support and help desk staff, will need to be in place before broker-dealers can begin testing with the CAT processor.

b. Timeline

The actual time required for internal development and testing could be considerably longer than is implied by the overall timeline and will likely vary by type of firm and client. For instance, a larger clearing broker-dealer, who must also redeploy systems and test with their correspondents would require a build time of well over a year.

Under the current timeline, firms would need to have all internal systems requirements and design specifications completed and ready to begin re-writing systems in late 2013, before the selection of the CAT Operator.

Given the scale of changes required by the CAT, Industry estimates for timeline will continue to be revised as more details become available on the specifics of the proposed plan.

c. Phased Approach

Instead of a big-bang implementation in December 2015, SIFMA prefers a more conservative, phased approach to implementation, over a series of releases.

i) Proof-of-concept phase and regulatory-penalty moratorium

- a) SIFMA recommends that the “large broker-dealer implementation” date should constitute a proof-of-concept phase during which CAT reporting is required but no regulatory penalties are assessed.
- b) During this phase, all normal error correction and conformance reporting would be provided by the CAT under Rule 613’s SLAs, and broker-dealers will still be required to repair errors under the same SLAs. However, regulatory penalties for missing the SLAs would either be suspended, or subject to significant time extensions so that broker-dealers have ample time to measure themselves and improve performance.

ii) OATS / EBS Target

- a) As discussed elsewhere in this document, all audit trail data of interest to regulators should be available through a single Consolidated Audit Trail and redundant reporting of the same information elsewhere should be eliminated. CAT reporting can be phased in by the SROs targeting OATS-reportable symbols in a phased cutover.
 - a) The SROs could take a symbols-based approach to implementation by starting with a small set of NMS equities using FINRA's OATS-reportable daily file³⁹. During the phase-in, these select symbols would be reported through the CAT while the remaining symbols would continue to report through OATS.
 - b) In a second phase, the CAT could go live for all NMS equities; and following that, all OTC equities. At that time the sunsetting of the OATS system can begin.
- b) Once post-trade events are in place for all NMS and OTC equities the CAT can target the additional data fields necessary to replace EBS for equities. While EBS cannot be fully retired until both options and fixed income are available through the CAT, it will be a significant reduction in cost and complexity for broker-dealers not to have to report the same equity information in two places. It will be a benefit to the regulatory agencies as well, providing them a significant uptick in functionality, and an increase in the speed with which they are able to obtain information. Regulatory agencies can source their equity inquiries through the CAT rather than making specific information requests to broker-dealers.
- c) SIFMA believes that it makes sense to extend CAT reporting to the options market after all OATS-reportable securities have been moved

³⁹OATS Reportable Securities List
<http://www.finra.org/Industry/Compliance/MarketTransparency/OATS/P123526>

into the CAT reporting regime. This timing should be six months after the a successful phase-in of CAT reporting for equities. This will allow time for the SEC, SROs, and broker-dealers to work out any earlier issues experienced earlier in the launch before taking on the more difficult challenge of the options market, which features many more quotes and symbols than the equities market.

- a) Upon CAT implementation, EBS for options can be migrated to the CAT, as well as Large Trader Reporting, which covers both equities and options and leverages EBS reporting.
- d) COATS can also be retired upon CAT implementation, as options data will be available in the CAT.
 - a) This could additionally set the stage for retirement of LOPR as well, with the CAT transaction data used to provide adjustments over some baseline or point-in-time snapshot of position data; however this will require further SRO analysis.
- e) The section of this document on *Other Products*, discusses the reporting of fixed income instruments, a topic that the SEC has requested the SROs review within six months of the implementation of the CAT for NMS Securities. Once fixed income securities have been implemented, EBS can be fully retired.

iii) Customer Support

Availability of the CAT helpdesk, training materials, industry materials, frequently asked questions, implementation guidelines and technical guidelines, as outlined under the *Infrastructure* section of this document should be another milestone on the overall timeline. Additionally, they should begin to become available shortly after the final selection of the successful CAT bidder.

Appendix

Appendix 1 Glossary

| | |
|---------|--|
| ACK | Acknowledgement |
| CAT | Consolidated Audit Trail |
| CICI | CFTC Interim Compliant Identifier |
| CFTC | U.S. Commodity Futures Trading Commission |
| CMTA | Clearing Member Trade Agreement |
| COATS | Consolidated Options Audit Trail |
| CRD | Central Registration Depository Number |
| DOB | Date of Birth |
| DVP/RVP | Delivery vs. Payment / Receive vs. Payment |
| EBS | Electronic Blue Sheets |
| FIF | Financial Information Forum |
| FIX | Financial Information eXchange Protocol |
| LEI | Legal Entity Identifier |
| LOPR | Large Options Position Reporting |
| MPID | Market Participant Identifier |
| MSRB | Municipal Securities Rulemaking Board |
| NMS | National Market System |
| NSCC | National Securities Clearing Corporation |
| OATS | Order Audit Trail System |
| OCC | Options Clearing Corporation |
| OSI | Options Symbology Initiative |

| | |
|---------|--|
| OTC | Over-the-Counter |
| QA | Quality Assurance |
| QCC | Qualified Contingent Cross |
| RTRS | Real-time Transaction Reporting System |
| SSAE 16 | Statement on Standards for Attestation Engagements (SSAE) No. 16 |
| SEC | Securities and Exchange Commission |
| SSN | Social Security Number |
| SRO | Self-Regulatory Organization |
| TIN | Tax Identification Number |
| TRACE | Trade Reporting and Compliance Engine |
| TRAQS | Trade Reporting and Quotation Service |
| UAT | User Acceptance Testing |

Appendix 2 Options Challenges

SIFMA would like to highlight the challenges unique to option market participants reporting quotation data to the CAT. The Industry lacks experience reporting quote data on Reg NMS securities to OATS. The industry's familiarity with FINRA's OATS seems to have informed much of the content and discussion around the CAT. Unfortunately the options market differs enough from the cash equities market that it is an ill-fitting model for options quotations.

For instance, the equities market model seems to make the implicit assumption that quotes are similar to orders, which is not true in the options market. Quoting behavior in the options market is more closely modeled by a market-data-like-stream. It also involves a stream of state changes, not a transaction-based system like orders. In quoting, portions of a transaction replace portions of other transactions and unlike orders there is not a one-to-one relationship.

Today the options exchanges offer vastly different protocols for quoting that separate them both from the equities market and amongst themselves. The differences in behavior of options quotes and their associated protocols have dramatic implications for CAT reporting.

- a. **Exchanges have all the information the CAT will require for options quotes, making reporting by broker-dealers duplicative and unnecessary.** For options quoting, the exchange is always the direct recipient of a quote message from a member firm. Hence, it is difficult to see any additional value in having a representation of an options quote from both the exchange and the broker-dealer. That is, the exchange has all the information necessary to construct an audit trail for options quotes; therefore reporting from the broker-dealers is not needed.
 - i. This is in contrast to order routing where the exchanges simply do not have because the exchange lacks the customer information and other routing details (the exchange is not privy to any information other than what it receives in the form of an order). The audit trail needs to trace the origination of the order to the final allocation, detailing all the various hops and

executions in between: multiple desks within a broker-dealer multiple broker-dealers, and exchanges. In the case of inter-dealer routing, the information about the various hops of an order is simply not available in the information held by the exchanges.

- ii. The only exception to the exchange having all information mandated by the CAT for quotes is the broker-dealer quote origination time and quote sending time. It is important to note, however, for options quotes, the only time that matters to the marketplace is the time the quote appears on the exchange. This is in stark contrast with order routing, where the time each hop takes place is important. Clearly, the exchange has the quote times and SIFMA believes this is sufficient for the CAT.

- b. **The message and data volumes for quotes in the options market are an order of magnitude larger than the equities markets.** Representing both the broker-dealer-version and the exchange-version of options quotes in the CAT will cause dramatic message volume increases for all concerned: broker-dealers; exchanges; and the CAT processor. Options quotes are measured in tens of billions of messages per day. By requiring both broker-dealers and exchanges to report the same information an already large number of messages per day would be doubled. The effects of this message inflation exist throughout the processing life-cycle, including but not limited to: generation; transmission; production processing; error processing; compression; archiving; storage; retrieval; reporting; trending; management of a very large data set; development systems: test systems and staging systems.
- c. **Duplicative matching processing between the broker-dealer and exchange-captured versions of the same event would further and unnecessarily compound message traffic that is already in the tens of billions.** If broker-dealers and exchanges are required to report options quotes, tens of billions of quotes would need to be matched, yielding no additional meaningful information. This would be inefficient, costly, and yield little benefit.
- d. **Specific technical challenges unique to options quote processing would cause unusually high complexity and cost of reporting quotes.**

- i. **Choosing the correct model for quote reporting.** Due to the significantly different behavior of options quotes versus orders, SIFMA recommends the regulators look at the requirements around options quotes with a fresh and questioning eye. If options quotes are treated like orders, the model will be unwieldy and ill-suited to representing important, fundamental and efficient aspects of quoting behavior. SIFMA has concerns that the reporting protocol for the CAT processor will be designed with an order-centric mind-set.

Quoting behavior is closely modeled by a market-data-like-stream. Quoting is a stream of state changes, not a transaction-based system like orders. In quoting, portions of a transaction replace portions of other transactions and unlike orders, this is not a one-to-one relationship. In summary, trying to model options quotes as a transaction-based model will add unnecessary complexity.

- ii. **Issue around the “CAT Order ID,” or unique identifier for options quote messages.** As a pre-cursor, it is important to note that unlike order routing protocols, options quoting protocols generally have a transaction ID on a message which contains many individual quotes. Rather than having every broker-dealer and exchange, and the CAT processor create, persist, send and track an independent, unique identifier, SIFMA suggests creating a unique identifier out of existing attributes in quote messages (much like a composite key in database parlance):

1. Transaction ID;
2. OSI Symbol;
3. Side;
4. Session ID; and
5. Exchange ID.

- iii. **Issues with quote withdrawals, transaction IDs, and linking the withdrawal with the original quote.** In today’s options quoting protocols, quote withdrawals do not always have an explicit transaction ID. The SROs need to explicitly address the lack of a transaction ID. Additionally, linking

withdrawals to original quotes is a technical challenge. This is in stark contrast to the simplicity of linking order cancellation requests to the original order.

1. Quote withdraws do not necessarily map one-to-one to a specific quote transaction ID, but often to the options series or the underlying. The quoting protocols generally support withdrawing the entire series in a given underlying. The CAT data model will need to address this issue. Additionally, in order to properly link the withdrawal transaction ID with the quote ID, the broker-dealers and exchanges will have to maintain state in a currently stateless system. This is a potentially expensive technical challenge.
 2. There is a tricky in-flight problem with cancelling quotes. There is always a chance that the last-exchange-acknowledged-quote is not the broker-dealer's last-sent-quote. In fact, this could vary across many transaction IDs. This can happen for a variety of reasons including exchange throttling. And, hence, to properly link the withdrawal transaction ID with the quote ID, a broker-dealer will have to maintain state in a currently stateless system. This is a technical and expensive challenge.
 3. If an exchange withdraws quotes, as in the case of a QRM, the exchange typically withdraws quotes of the entire underlying. This presents a challenge for the exchange and for the broker-dealer in attempting to stitch back together state for reporting purposes. This is a technically expensive requirement.
- iv. **Issues around negative acknowledgments (“ACKs”) on quotes, transaction IDs and linking the ACKs with the original quote.** The challenge around ACKs is similar to the quote withdrawal challenge of section (iii). Linking ACKs to original quotes is a difficult.. This is in stark contrast to the simplicity of linking order rejects to the original order. Further, this complicates maintaining state for active quotes for the same reasons.

1. An exchange may acknowledge all or part of a transaction and the exchange does not return the transaction ID associated with it. This would cause significant complexity of linking an ACK to the original quote.
- v. **Issues for two-sided quote messages.** Another subtlety for reporting is the case of two-sided quote messages, which some exchanges support. If a protocol supports two-sided quotes, a firm is often changing one side of a quote and not the other. For simplicity SIFMA members strongly recommend reporting only the first time a quote is sent, and not requiring a report on the duplicative messages when the quote is not altered.

Appendix 3 Records for FLEX and Standard Options

The following two records are for FLEX options and standard options on ABV. The only difference in the terms is in the Exercise Style. The Flex is European and the Standard is American. (Third character of the CFI.)

FLEX Options

```
<SecDef RptID="8166020" BizDt="2012-12-06" Ccy="USD"><Instrmt Sym="2ABV"
Desc="FLEX" CFI="OXESPS" StrkValu="100" Mult="100" StrkCcy="USD" StrkMult="1"
NTPosLmt="0" PosLmt="25000000" AsgnMeth="R" SettlOnOpenFlag="N"><Evt
EventTyp="5" Dt="2012-11-15"/><Pty ID="XASE" R="22"><Sub ID="2012-11-15"
Typ="27"/></Pty><Pty ID="XCBO" R="22"><Sub ID="2012-11-15"
Typ="27"/></Pty><Pty ID="XPHO" R="22"><Sub ID="2012-11-15"
Typ="27"/></Pty><Pty ID="XPSE" R="22"><Sub ID="2012-11-15"
Typ="27"/></Pty><Pty ID="OCC" R="21"/></Instrmt><Undly Sym="ABV"
ID="20441W203" Src="1" Qty="100" SettlStat="1" AllocPct="100" CFI="EXXXXX"
SettlTyp="4" SetMeth="CCC"></Undly></SecDef>
```

Standard Options

```
<SecDef RptID="20784" BizDt="2012-12-06" Ccy="USD"><Instrmt Sym="ABV"
Desc="STAN" CFI="OXASPS" StrkValu="100" Mult="100" StrkCcy="USD" StrkMult="1"
NTPosLmt="0" PosLmt="25000000" AsgnMeth="R" SettlOnOpenFlag="N"><Evt
EventTyp="5" Dt="2001-07-03"/><Pty ID="XASE" R="22"><Sub ID="2010-01-25"
Typ="27"/></Pty><Pty ID="XCBO" R="22"><Sub ID="2007-02-14"
Typ="27"/></Pty><Pty ID="XISX" R="22"><Sub ID="2008-12-10"
Typ="27"/></Pty><Pty ID="XPHO" R="22"><Sub ID="2001-07-05"
Typ="27"/></Pty><Pty ID="XPSE" R="22"><Sub ID="2008-12-08"
Typ="27"/></Pty><Pty ID="XBOX" R="22"><Sub ID="2009-10-23"
Typ="27"/></Pty><Pty ID="XNDQ" R="22"><Sub ID="2011-06-23"
Typ="27"/></Pty><Pty ID="OCC" R="21"/></Instrmt><Undly Sym="ABV"
ID="20441W203" Src="1" Qty="100" SettlStat="1" AllocPct="100" CFI="EXXXXX"
SettlTyp="4" SetMeth="CCC"></Undly></SecDef>
```

The two records below are for options on AME, the first has not been adjusted, as denoted by the fact that the Instrmt Sym does not have a numeral at the beginning or end, and that the sixth character of the CFI is S (Standard Settlement). The second (AME1) had been adjusted (1 at the end and N in the sixth place of the CFI). This record shows that option for AME1 have a multiplier of 150 and a deliverable quantity of 150.

Example 1

```
<SecDef RptID="5001280" BizDt="2012-12-06" Ccy="USD"><Instrmt Sym="AME"
Desc="STAN" CFI="OXASPS" StrkValu="100" Mult="100" StrkCcy="USD" StrkMult="1"
NTPosLmt="0" PosLmt="30000000" AsgnMeth="R" SettlOnOpenFlag="N"><Evt
EventTyp="5" Dt="2004-01-29"/><Pty ID="XASE" R="22"><Sub ID="2010-02-26"
Typ="27"/></Pty><Pty ID="XCBO" R="22"><Sub ID="2008-08-20"
Typ="27"/></Pty><Pty ID="XPHO" R="22"><Sub ID="2004-01-29"
Typ="27"/></Pty><Pty ID="XPSE" R="22"><Sub ID="2012-07-27"
Typ="27"/></Pty><Pty ID="BATO" R="22"><Sub ID="2010-04-12"
Typ="27"/></Pty><Pty ID="XNDQ" R="22"><Sub ID="2012-09-28"
Typ="27"/></Pty><Pty ID="OCC" R="21"/></Instrmt><Undly Sym="AME"
ID="031100100" Src="1" Qty="100" SettlStat="1" AllocPct="100" CFI="EXXXXX"
SettlTyp="4" SetMeth="CCC"></Undly></SecDef>
```

Example 2:

```
<SecDef RptID="8160127" BizDt="2012-12-06" Ccy="USD"><Instrmt Sym="AME1"
Desc="STAN" CFI="OXASPN" StrkValu="150" Mult="150" StrkCcy="USD" StrkMult="1"
NTPosLmt="0" PosLmt="30000000" AsgnMeth="R" SettlOnOpenFlag="N"><Evt
EventTyp="5" Dt="2012-07-02"/><Pty ID="XASE" R="22"><Sub ID="2012-06-29"
Typ="27"/></Pty><Pty ID="XCBO" R="22"><Sub ID="2012-06-29"
Typ="27"/></Pty><Pty ID="XPSE" R="22"><Sub ID="2012-07-27"
Typ="27"/></Pty><Pty ID="XPHO" R="22"><Sub ID="2012-06-29"
Typ="27"/></Pty><Pty ID="BATO" R="22"><Sub ID="2012-06-29"
Typ="27"/></Pty><Pty ID="OCC" R="21"/></Instrmt><Undly Sym="AME"
ID="031100100" Src="1">
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Appendix 4 Participating Firms

The following SIFMA member firms were party to the discussions leading to the creation of this proposal, but the views expressed in the proposal do not necessarily represent the individual views or opinions of any of these firms. The participants included representation from both large and small broker-dealers engaged in the agency, institutional, retail, and private wealth segments of the Industry.

Participating Firms

Bank of America Merrill Lynch

Barclays

Citigroup Global Markets Inc.

Deutsche Bank Securities Inc.

Edward D. Jones & Co. L.P.

E*Trade Financial

Goldman Sachs

Jefferies & Company, Inc.

JP Morgan Securities LLC

Knight Capital Group, Inc.

LiquidPoint LLC

Morgan Stanley

National Financial Services LLC (Fidelity)

Pershing, a BNY Mellon company

Raymond James & Associates, Inc.

Robert W. Baird & Co., Inc.

Sanford C. Bernstein

Southwest Securities

Susquehanna International Group

TD Ameritrade

UBS

Wells Fargo