

Consolidated Audit Trail (CAT) National Market System (NMS) Plan

Information for CAT Bidders

January 16, 2013

Contents

1	Purpose of Document	4
1.1	Background	4
1.2	Bid Responses	5
1.3	RFP and Build Timelines.....	5
1.4	Response Evaluation Criteria.....	5
2	CAT Oversight and Management Structure	6
3	Data to be Captured by the CAT	7
3.1	Data Types and Sources.....	7
3.2	Customer and Account Database	10
3.3	System and Interface Specifications	10
3.4	Data Validation Requirements	10
4	Processing and Repository Requirements	11
4.1	Overview of Processing and Repository Data Flows	11
4.2	Order Lifecycle Assembly	12
4.3	Processing Timeframes	13
4.4	Central Repository	13
4.5	Data Retention	14
4.6	Technical Architecture.....	14
4.7	Capacity – Performance.....	15
4.8	Security	16
4.9	Data Access Tools	16
4.9.1	Online Query Tools	17
4.9.2	Bulk Data Extractions	17
4.10	System Availability, Disaster Recovery and Business Continuity Plans (BCP)	17
4.11	Build Project Management	18
5	Operational Requirements	19
5.1	Program Management	19
5.1.1	Project Management	19
5.1.2	Change Management.....	20
5.1.3	Industry Testing.....	20
5.1.4	Quality Assurance	20
5.2	Operational Monitoring and Reporting	21
5.3	CAT Support Functions.....	21
5.3.1	CAT Reporter Support	21
5.3.2	CAT User Support.....	22
5.3.3	CAT Help Desk.....	22

6	CAT Reporter Compliance.....	23
7	Business Administration.....	24
7.1	Reporting & Oversight.....	25
7.2	Finance.....	25
7.2.1	Accounts Payable and Receivable – Billing and Invoicing	25
7.2.2	Budgeting and Forecasting	25
7.2.3	Financial Statements and Reports	26
7.2.4	Tax Filings and other Financial Information	26
7.3	Legal.....	26
7.4	General Support.....	26
7.4.1	Procurement.....	26
7.4.2	Facilities Management	27
7.4.3	Audit and Examination Support.....	27
8	Bidder's Cost Estimate.....	27
9	Company Information.....	28
9.1	Company Profile.....	28
9.1.1	Experience and Skills	28
9.2	Company Financial Information	28
9.3	Client Overview	29
9.4	Staffing	29
9.4.1	Onboarding and Training	29
9.4.2	Staffing – Organizational Chart.....	29
9.5	Subcontractors	29
9.6	Outsourcing and Offshoring	29
10	Glossary	31

1 Purpose of Document

The purpose of this document is to provide information on the anticipated content and structure of the Request for Proposal (RFP) for a consolidated audit trail (CAT) described herein that will be published in February 2013, to interested parties that may submit responses (Bidders). While the RFP is still under development, and certain key reporting concepts are still out for industry comment, the Self-Regulatory Organizations (SROs)¹ that are responsible for developing the CAT National Market System (NMS) Plan (NMS Plan) believe it is important that all interested Bidders have the opportunity to review the scope of information they will have to provide in an RFP response. This document contains the technical, business and operational requirements that the SROs anticipate will be included in the RFP and the information that must be provided by Bidders in response to the RFP with respect to each requirement. In addition, this document also contains the key criteria on which Bidders may be evaluated. The content and information in this document are the property of the SROs developing the NMS Plan. The SROs collectively reserve the right to publish an RFP with content materially different from this document.

The document is organized to provide a roadmap of the business and technical processes that must be put in place to comply with SEC Rule 613 (Rule 613). The document begins with a description of the oversight and management framework of the CAT, including the SROs in their governance role of the CAT (hereinafter referred to as the "NMS Plan Participants") and the selected Bidder. The detailed technical and business requirements in this document are organized starting with the data that must be captured by the CAT along with the source. Next, the document contains an overview of the processing and data repository requirements that Bidders will be expected to build for the initial launch of the CAT, including the level of testing and quality assurance that will be expected. The document continues with requirements for the ongoing operation of the CAT, including operational and compliance reporting mechanisms for SRO regulatory staff and the SEC. Finally, the document lays out the requirements for the business support functions, such as finance and legal support that the NMS Plan Participants will rely on the Bidder to perform.

1.1 Background

Rule 613 requires the SROs to jointly file an NMS Plan with the SEC to govern the creation, implementation and maintenance of the CAT including a central repository to receive and store CAT data for NMS equities and options. As described more fully later in this document, the SROs must include in the NMS Plan a complete technology solution, as well as the business, administrative and operational infrastructure required to oversee the technology solution. Additionally, the NMS Plan must include a robust process to monitor for compliance with Rule 613 by all CAT Reporters.

Rule 613 requires that the NMS Plan filed with the SEC include a detailed cost benefit analysis describing all of the approaches considered by the SROs to create, implement and maintain the CAT. In order to effectively perform the cost benefit analysis, the SROs believe it is necessary to solicit bids from interested parties to create, implement and maintain the CAT so that all possible technology alternatives can be identified and the costs and benefits of each analyzed. While the RFP will contain the core requirements and include a certain amount of specificity, the SROs welcome responses that

¹ The SROs, as required by Rule 613, responsible for developing the CAT NMS Plan are the equities and options securities exchanges and FINRA. Currently this includes the following: BATS Y-Exchange, Inc., BATS Z-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, Inc., NASDAQ Stock Market LLC, National Stock Exchange, Inc., New York Stock Exchange, Inc., NYSE Arca, Inc., and NYSE MKT LLC

reflect ideas and innovations that may not be raised in this document or the final RFP, as long as they adhere to the requirements of Rule 613.

Bidders should be mindful that once an entity is selected to implement the CAT, pending the approval by the SEC of the NMS Plan submitted by the SROs, the selected Bidder will develop detailed reporting and interface specifications and submit them to the NMS Plan Participants for approval before implementation can begin.

1.2 Bid Responses

As stated in the Proposed RFP Concepts Document published on the www.catnmsplan.com website on December 5, 2012, the SROs are seeking a single bid that includes all of the technology, business and operational requirements that will be included in the RFP issued by the SROs. The SROs will consider bids with sub-contractors provided that any sub-contractors are directly overseen by the primary Bidder. The primary Bidder will be solely responsible for the performance and oversight of any sub-contractors and would assume liability for any actions of the sub-contractor in its role as a CAT service provider. Bidders will identify all sub-contractors and their roles in the RFP response.

1.3 RFP and Build Timelines

In accordance with the NMS Plan, the NMS Plan Participants will select a vendor to perform or oversee the functions described in this document. Formal selection of a Bidder is subject to SEC approval of the NMS Plan. Currently, the NMS Plan must be filed by April 26, 2013. However, given the significant work and analysis that is required to develop the NMS Plan, including the issuance of an RFP, the SROs plan to submit an exemption request to the SEC to extend the due date for filing the NMS Plan until December 2013. If approved by the SEC, the anticipated RFP timeline will be as follows:

- Publish formal RFP – February 2013
- RFP responses due – April 2013
- Preliminary selection of Bidder – July 2013
- NMS Plan filed – December 2013
- Within two months of SEC approval of NMS Plan – formal selection of Bidder

Once a Bidder is selected, the anticipated build and implementation timeline will be as follows:

- Develop exchange interface specifications and protocols, obtain approval by NMS Plan Participants and publish to exchanges – within six months of effective date of Plan
- Implement exchange reporting – within 12 months of effective date of Plan
- Develop broker-dealer interface specifications and protocols, obtain approval by NMS Plan Participants and publish to broker-dealers – within 12 months of effective date of Plan
- Implement broker-dealer reporting – within 24 months of effective date of Plan
- Develop small broker-dealer reporting tools, obtain approval by NMS Plan Participants and publish to small broker-dealers – within 24 months of effective date of Plan
- Implement small broker-dealer reporting – within 36 months of effective date of Plan

1.4 Response Evaluation Criteria

Bidders will be evaluated based on their experience, expertise, industry knowledge and financial strength as well as the ability to deliver proven solutions. Key evaluation criteria may include the following (there is no relation of order to evaluation priority):

- Ability to clearly and effectively communicate CAT reporting requirements to business, regulatory and technology constituents
- Experience and expertise of key personnel used in the solution

- Experience with and knowledge of securities markets and order and execution practices, including processing large volumes of complex data
- Ability to identify information/data needed to support regulation of new trading practices, market structure changes and new SEC and SRO rules as they evolve
- Architecture, design and technical approach(es) that effectively address all of the CAT requirements and are adaptable to meet future demands of the CAT
- System build, maintenance and operational costs
- CAT business and administrative costs
- Scalability of the solution to adapt to changes and growth of the CAT in a timely, efficient and cost effective manner
- Development, integration and quality practices and approaches that demonstrate the ability to implement a complete systems and software development lifecycle
- System contingency plans (e.g. comprehensive disaster recovery)
- Ability to expertly, efficiently and effectively establish and manage operational, technology, financial, human resource, compliance and legal business functions, among others

2 CAT Oversight and Management Structure

The NMS Plan Participants are seeking to contract with a service provider concerning the overall operation and administration of the CAT, including all technology requirements. Figure 1 represents the proposed CAT oversight structure. As part of the oversight structure, an Advisory Committee will be established by the NMS Plan Participants, whose role will be to advise the NMS Plan Participants on the implementation, operation and administration of the CAT.

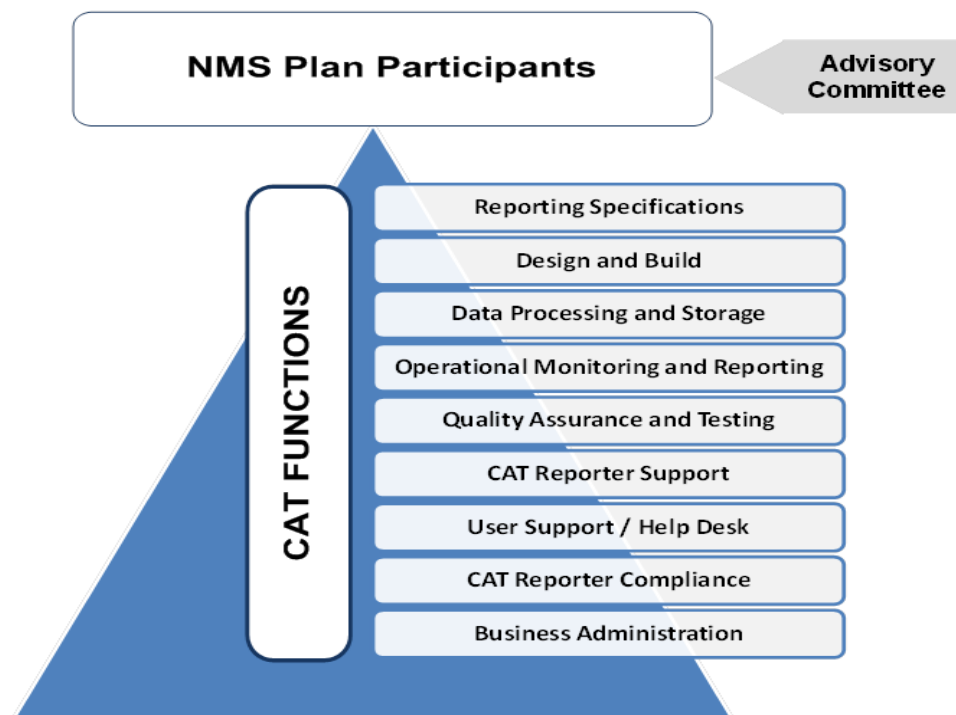


Figure 1- CAT Oversight Structure

The selected Bidder will operate under the direct oversight of the NMS Plan Participants, who are ultimately responsible for all actions of the selected Bidder with respect to the CAT and compliance with Rule 613. The potential Bidder will have professional staff (CAT staff) that will be responsible

under the oversight of the NMS Plan Participants for the overall administration and operation of the CAT. The staff will include a senior executive level Chief Compliance Officer (CCO) who will regularly review the operation of the CAT 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. CAT staff will routinely interface with a wide variety of internal and external constituencies and play a key role in the development of CAT reporting guidance and education of CAT Reporters on CAT reporting requirements. The responsibilities of the CAT staff will include, but not be limited to:

- Ensuring that the CAT operates as intended and meets all requirements of Rule 613
- Developing, obtaining NMS Plan Participants' approval of, and implementing detailed supervisory and operational written policies and procedures for all CAT functions
- Reporting to and taking direction from the NMS Plan Participants committee that will oversee the CAT
- Providing reports and other information to the NMS Plan Participants to assist them in meeting their responsibility to oversee the CAT
- Working with SROs and the SEC to develop detailed reporting guidance that complies with Rule 613 and reflects current trading practices
- Monitoring SRO and SEC rule making to identify changes that will impact CAT reporting requirements and developing new CAT reporting guidance as necessary
- Representing the CAT in relevant industry forums (e.g., CTA, OPRA, UTP)
- Authoring notices, Frequently Asked Questions (FAQs), educational materials, technical materials and interpretive guidance to communicate reporting requirements to CAT Reporters
- Planning and coordinating industry events to educate CAT Reporters on CAT changes
- Soliciting industry feedback as needed for ongoing CAT enhancements and changes
- Supporting CAT Reporters, SRO regulatory staff and the SEC with operational and technical issues
- Monitoring the data quality and performance of CAT Reporters
- Providing support as necessary to assist the NMS Plan Participants and the SEC in overseeing the performance and compliance of CAT Reporters, including referring CAT Reporters exceeding maximum allowable errors to the relevant SRO for further review and possible enforcement action

3 Data to be Captured by the CAT

This section provides a description of the data the NMS Plan Participants anticipate will be captured by the CAT. The section includes sources and data types to be ingested, validated and processed by the CAT. The selected Bidder will be responsible for developing the detailed data and interface specifications for the CAT data submissions that will be presented to NMS Plan Participants for approval.

3.1 Data Types and Sources

The CAT is expected to receive terabytes of data on a daily basis from CAT Reporters. The SROs anticipate that data will be submitted by all CAT Reporters in a uniform electronic data format that will be defined by the CAT.

The following table represents the number of data sources identified by the SROs that are anticipated to submit data to the CAT:

Data Source	# of Sources	
	Equities	Options
Exchanges	14	11
TRF	2	0
ADF	1	0
SIPs/OPRA	2	1
OCC	0	1
Broker/Dealers	2,000	

Note: While there are approximately 5,000 broker-dealers, the anticipated number of broker-dealers that will be engaging in CAT reportable activity (e.g. trading in NMS securities) is approximately 2,000. The SROs also anticipate some broker-dealers will not directly report to the CAT but will rely on other organizations to report on their behalf. However, the CAT will need to have the flexibility to adapt on a timely basis to changes in the number of entities that report information.

The following table is representative of the data types, the respective sources and expected frequencies that are anticipated to be submitted to the CAT.

Item #	Data Type	Data Source	Product	Description	Frequency
1	Customer/ Account	BDs	Equities/Options	Full submission of customer and account information	Periodic
2	Customer/ Account	BDs	Equities/Options	Changes/updates of customer and account information	Daily
3	Market Maker Quotes	BDs	Equities/Options	Market maker quotes submitted to exchanges or the FINRA ADF	Daily
4	Market Participant Information	BDs	Equities/ Options	Market participant identifiers and any associated information	Daily
5	Order Data	BDs	Equities/Options	CAT reportable orders and all related order events received or originated by the BD	Daily
6	Self-help	BDs	Equities/Options	Self-help declarations	Daily
7	Sponsored Access	BDs	Equities/Options	Sponsored and Direct market access (DMA) relationships and applicable market participant identifiers	Daily
8	Administrative Messages	Exchanges	Equities/Options	Admin messages such as halts, circuit breakers, market open/close, etc.	Daily
9	Self-help	Exchanges	Equities/Options	Self-help declarations	Daily
10	Trade Data	NASDAQ	Equities	Transactions reported to an exchange clearing facility	Daily
11	Trade Data	Exchanges	Equities/Options	All exchange trades	Daily
12	Trade Data	FINRA	Equities	All transactions reported to a FINRA trade reporting facility	Daily
13	Market Maker Quotes	SROs	Equities/Options	Market maker quotes received and/or generated by an exchange or the FINRA ADF	Daily
14	Market Participant Information	SROs	Equities/Options	Market participant identifiers and any associated information	Daily
15	Order Data	Exchanges	Equities/Options	CAT reportable orders received by an exchange and all related order events	Daily
16	Sponsored Access	SROs	Equities/Options	Direct Market Access (DMA) relationships	Daily
17	Administrative Messages	SIPs	Equities/Options	Admin messages such as halts, circuit breakers, market open/close, etc.	Daily
18	Quotes	SIPs	Equities/Options	All quotes published by the SIPs, including appended NBBOs	Daily
19	Trade Data	SIPs	Equities/Options	All trades published by the SIPs	Daily
20	Corporate Actions	Listing Market	Equities	Corporate events that impact the underlying instrument	Daily
21	Security Definitions	Listing Market/All Options Exchanges	Equities/Options	Definitions of all products, including complex options orders and complex orders with stock	Daily
22	OCC Exercise/ Assignments, Adjustments and CMTA Transfers	OCC	Options	All exercises, assignments, adjustments and CMTA transfers for options	Daily
23	NBBO	CAT Derived	Equities/Options	NBBO derived by CAT using SRO quote data	Daily
24	PBBO	CAT Derived	Equities/Option	Protected NBBO derived by CAT using SIP and SRO quote data	Daily

The Bidder will be required to provide a detailed description for the following data ingestion processes:

- The infrastructure that will be used to support the ingestion of anticipated daily volume in excess of 50 billion records with an annual growth rate of 25%
- The secure transmission methods that will be supported by the Bidder
- The manual data entry method(s) that will be provided and supported by the Bidder

- The Bidder's data ingestion infrastructure that will be used to support changes to data structures, including the addition of new data types, new data fields, data elements and field values as well as other technology changes required to support changing market structures and new regulatory requirements on an ongoing basis.

3.2 Customer and Account Database

The CAT must capture and store the customer and account information required by Rule 613. At a minimum, a database containing information of sufficient detail to identify each customer must be created and made available to enrich order data with customer and account information for use by SRO regulatory staff and the SEC in both targeted queries and comprehensive data scans. The SROs have proposed an approach that would require the CAT to process and store all accounts and associated customer information from all broker-dealers. Details of this approach are in the Proposed RFP Concepts Document available at www.catnmsplan.com. Bidders should assume that full account lists will need to be periodically submitted in addition to the daily updates to ensure the completeness and accuracy of the account database.

Bidders will provide a detailed description for each of the following based on the approach ultimately selected by the SROs:

- How account information would be captured and stored with associated customer information of sufficient detail to identify each customer
- How a unique Customer ID across all broker-dealers would be generated and stored for each unique customer captured in the account information database
- How Personally Identifiable Information (PII) would be stored and secured

3.3 System and Interface Specifications

The Bidder will have to perform the detailed analysis to develop systems specifications and submit them for review and approval by the NMS Plan Participants. The analysis will include the creation of detailed submission specifications for the data sources (CAT Reporters) and the respective data types in enough detail to enable the CAT Reporters to make changes to their internal systems; enabling them to design, develop, test and interface with the CAT systems.

3.4 Data Validation Requirements

The CAT must ensure data is accurate, timely and complete. The validations required include checking to ensure that data is submitted in the required formats and within established timeframes and that all lifecycle events can be accurately linked. Once errors are identified, they must be efficiently and effectively communicated to CAT Reporters so that data can be corrected and re-submitted.

The initial data checks required to be performed by the CAT, include, but are not limited to:

- Data format validation and syntax check
- Data context check
- Identification of unlinked lifecycle events
- Identification of unregistered account numbers
- Identification of unregistered market participants

The Bidder will be required to handle data correction and re-submission of the corrected data within the established timeframes both in a batch process format and via manual web-based entry.

With respect to the data validation and error handling requirements, Bidders are expected to provide detailed descriptions of the following:

- How data format and context validations will be performed and how rejections or errors will be communicated to CAT Reporters: include a detailed description of the specific format and context validations that will be performed and how rejected records and/or accepted records containing errors will be provided to CAT Reporters for correction (e.g., specific transmission methods and/or web-based downloads)
- A system flow diagram reflecting the overall data format, syntax and context validation process that includes when each type of validation will be completed and errors communicated to CAT Reporters, highlighting any dependencies between the different validations and impacts of such dependencies on providing errors back to CAT Reporters
- How related order lifecycle events submitted by separate CAT Reporters will be linked and unlinked events identified and communicated to CAT Reporters for correction and re-submission: include a description of how unlinked records will be provided to CAT Reporters for correction (e.g., specific transmission methods and/or web-based downloads)
- How account and customer information submitted by broker-dealers will be validated and errors communicated to CAT Reporters: include a description of how rejected records and/or accepted records containing errors will be provided to CAT Reporters for correction (e.g., specific transmission methods and/or web-based downloads)
- Error correction mechanisms that will be provided to CAT Reporters. Include a separate description for batch submissions and manual web-based submissions

4 Processing and Repository Requirements

Once data is ingested and validated, it must be processed to create the complete lifecycle of each order and securely stored in a central repository in a manner that facilitates efficient and effective use of the data by SRO regulatory staff and the SEC. Required processing must be completed within established timeframes so that data is promptly available for regulatory use. This section contains the functional and technical requirements for the processing and storage of CAT data.

4.1 Overview of Processing and Repository Data Flows

This section describes an overview of how the data will be ingested and processed by the CAT. It provides insight to the different types of data that are anticipated to be submitted to the CAT, the order linkages and processing time requirements and the proposed requirements for the central repository. CAT Reporters will be required to submit data to the CAT in accordance with the submission specifications. The CAT will be required to ingest, validate and link order lifecycle events.

The following diagram provides a high-level overview of how broker-dealer order events, customer/account information, exchange quote and order events, FINRA transaction data and other supplemental data (e.g., NBBOs, administrative messages) would flow through the CAT environment and be validated, enriched and stored for regulatory use by SRO regulatory staff and the SEC.

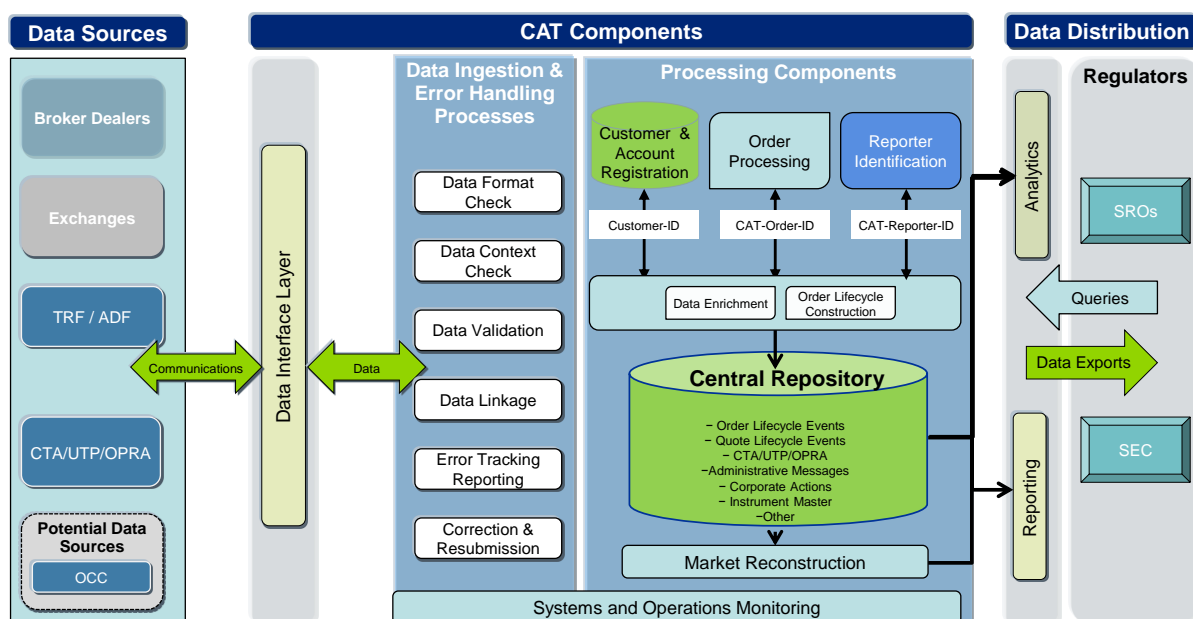


Figure 2: Overview of CAT data flows and processing components

4.2 Order Lifecycle Assembly

Using the CAT Order ID framework ultimately selected by the SROs, the CAT must assemble and store the complete lifecycle of each order and quote, including customer and account information.

Individual lifecycle events must be stored so that each unique event (e.g., route, execution, modification) can be quickly and easily associated with the originating customer(s) for both targeted queries and comprehensive data scans. For example, an execution on an exchange must be linked to the originating customer(s) regardless of how the order may have been aggregated, disaggregated or routed through multiple broker-dealers before being sent to the exchange for execution.

The CAT-Order-ID, which under Rule 613 may be a unique order identifier or a series of unique order identifiers, is the key to the creation of a complete order lifecycle as this number will be used by the CAT to assemble each order and quote lifecycle. Currently, two approaches for CAT-Order-ID, a single order ID approach and a daisy chain approach using a series of unique order IDs, are under consideration by the SROs. Detailed explanations of the two approaches are included in the Proposed RFP Concepts Document on the www.catnmsplan.com website. For the selected approach Bidders will be required to provide a lifecycle assembly solution that accommodates all types of order routing scenarios including, but not limited to, agency orders, orders executed in a riskless principal capacity, orders routed between exchanges, orders executed through average price accounts and order aggregation scenarios.

Bidders will provide a detailed description of the following based on the approach selected by the SROs and included in the RFP:

- How customer and account information and all events in the life of an order or quote will be linked and stored so that they may be quickly and easily retrieved for either targeted queries or comprehensive data scans. The explanation must include a detailed description of how customer information will be extracted from the customer information database and associated with individual lifecycle events. Each of the following scenarios must be specifically addressed in the response:
 - Agency route to another broker-dealer or exchange
 - Riskless principal route to another broker-dealer or exchange capturing within the lifecycle both the customer leg and the street side principal leg

- Order routed from one exchange to a second exchange
- Order worked through an average price account capturing both the individual street side executions and the average price fill to the customer
- Order aggregated with other orders for further routing and execution capturing both the street side executions for the aggregated order and the fills to each individual customer order
- Subaccount allocations

4.3 Processing Timeframes

CAT order events must be processed within established timeframes to ensure data can be made available to SRO regulatory staff and the SEC in a timely manner. The processing timelines start on the day the order event is received by the CAT for processing.

The SROs are considering the following timeframes (Figure 3) for the identification, communication and correction of errors from the time an order event is received by the processor:

- 12:00 pm ET T+1 (transaction date + 1 day) – Initial data validation, lifecycle linkages and communication of errors to CAT Reporters
- 8:00 am ET T+3 (transaction date + 3 days) – Re-submission of corrected data
- 8:00 am ET T+5 (transaction date + 5 days) – Corrected data available to SRO regulatory staff and the SEC

It is expected that at any point after data is received by the CAT and passes basic format validations, it will be available to SRO regulatory staff and the SEC which may be before 12:00 pm ET T+1.

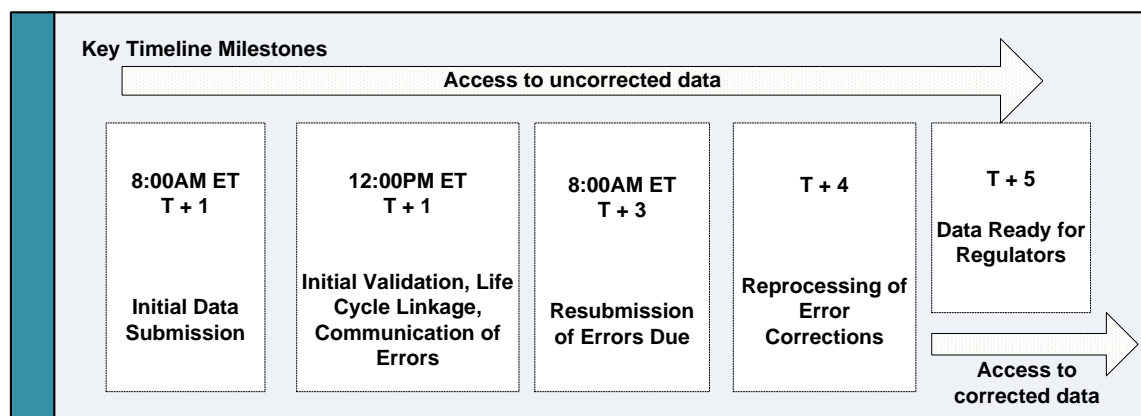


Figure 3: Timeframes under consideration for data error handling and data re-submission

Bidders will be expected to provide a detailed description of how the above described timeframes will be met using the data validation and error correction approach. To illustrate this, a process flow chart must be provided that reflects the timeframe that each aspect of the Bidder's data validation and error correction process will be completed.

4.4 Central Repository

Rule 613 requires the creation and maintenance of a central repository for historical retention and consolidation of all data reported to and any data derived by the system. Rule 613 requires that SRO regulatory staff and the SEC have the ability to access all data, which includes both processed and unprocessed data.

The central repository will store data and make it available to regulators, in a convenient and usable standard electronic format that is directly available and searchable electronically without any manual intervention for a period of not less than five years. The data in the central repository will include the

original data submitted by the CAT Reporters, data rejected by the system including the rejection reasons, corrected (and resubmitted) data, data accepted by the system, any derivations, summaries and metadata generated by system.

The solution must allow timely and accurate retrieval of the information by SRO regulatory staff and the SEC.

The data stored in the central repository will be used for market reconstruction analysis, surveillance and regulatory purposes by SRO regulatory staff and the SEC.

4.5 Data Retention

The CAT processor will be required to keep all the data in the central repository online for a rolling five-year period. Some of the information, such as stock and options series symbols, used by the market participants may be re-used over a period of time; therefore, the system should store the data received from CAT Reporters and should not overwrite it with new information, creating a five year historical audit trail.

In order to meet the above mentioned requirements, the Bidders are expected to address the following:

- The strategy for managing five years of data that will need to be accessible to SRO regulatory staff and the SEC.
- The strategy for archiving data once it is removed from the central repository (after five years). Indicate the estimated annual cost to maintain the archive for each year of archived data
- Data protection to ensure no data loss, such as backup/recovery and/or replication adequate to protect the repository from both physical and logical loss of data
- Describe how the central repository can be scaled for growth in data volumes and future products
- The optimizations used in the solution including any strategies to optimize data storage costs
- Technical interfaces that will enable timely and accurate retrieval of the information by SRO regulatory staff and the SEC
- Any similar commercial solutions the Bidder has deployed; provide examples of how these solutions manage large data sets

4.6 Technical Architecture

The CAT must be designed and sized to ingest, process and store large volumes of data. The CAT technical infrastructure will need to be scalable, able to adapt to new requirements and operate within a rigorous processing and controlled environment. As a result the technical infrastructure will require an environment with significant throughput capabilities, advanced data management services and robust processing architecture.

The CAT technology environment must be periodically updated/upgraded to accommodate new processing capabilities, lower cost of operation and improve performance. The technology refresh will need to support established processes, data submission standards and other industry dependencies.

The Bidder will describe the entire infrastructure, hardware, components and software proposed in their solution, providing details of where the technology is sourced, including vendors, internally developed, open source, leveraged, licensed or shared with existing solutions. The Bidder will describe how the architecture and various components will be used to meet the processing, retention and access requirements and how it can be enhanced and expanded for future capacity and functional capabilities. The Bidder is expected to address the following in its response:

- Describe the solution's overall technical architecture, that should address

- System architecture
- Application(s)
- Logical and physical data architecture
- Describe hardware and software requirements for the proposed solution including the following:
 - Operating systems
 - Hardware
 - Storage, DBMS, in memory databases
 - Application/web server technology
 - Programming language(s)
 - Hosting/firewall architecture
 - Middleware, message queues, use of clustering or high-availability features
 - Other system resources requirements, such as job scheduler, system and security monitoring tools; identify third party products that will be used in the build and operation, and provide descriptions and details on how they will be used in the solution.
- Describe the initial hardware requirements and how the hardware architecture and design addresses:
 - Scalability – to increase capacity to handle a significant increase in the data volume beyond the baseline capacity
 - Adaptability – to support future technology developments and new requirements
 - Maintainability – to ensure that technology is kept current, supported and operational
- Describe the system interfaces including data submission, data access and user interfaces
- Describe the network architecture and describe how the solution will handle the necessary through-put, processing timeline and resubmissions
- Describe the availability of the solution, which should address the ability of the system to complete processing and respond to user queries and data requests; describe the hours of operation, including any planned system down-time or maintenance windows and start-up time requirements
- Describe the different environments required to support the different system development lifecycles (e.g., development, production, disaster recovery) and the sizes and how they are used
- Describe the testing environment(s)
- Describe expected response time for a query, concurrency and supported user loads
- Identify any existing technical architectures or solutions used in the response and any licensing arrangements needed
- Describe any system redundancy and fault tolerance the proposed architecture includes protecting against soft application or operating system failure (e.g. operational with downgraded response)
- Describe any hardware, software or network requirements for CAT Reporters to submit data to the CAT processor; if multiple methodologies are supported provide the details for each

4.7 Capacity – Performance

The system should be sized to receive, process and load over 50 billion records resulting in approximately 10 terabytes of data per day. The number of records is expected to grow approximately 25% annually. It is expected that the central repository will be required to retain data for a period of no less than five years resulting in a central repository growing to over 12 petabytes of data required for the five years of retention. The system must be designed such that additional capacity can be quickly and seamlessly integrated while maintaining system access and availability requirements.

Each Bidder is expected to describe the following in its response:

- The performance of the system including processing times and the peak volume the system can handle within the processing timeline
- The data access response times for various example queries and data requests and how the system will handle concurrent user requests including any limits the system has
- The strategy to support the expected increase in the data volumes. Including what hardware changes or upgrades are anticipated to support the increases in data volumes
- The estimated costs to add capacity and scale the system

4.8 Security

Rule 613 requires that the CAT processor must ensure the security and confidentiality of all information reported to, and maintained by the CAT in accordance with the policies, procedures and standards in the NMS Plan.

The CAT processor must have appropriate solutions and controls in place to ensure data confidentiality and security during transmission from CAT Reporters, receipt by the CAT processor, data extraction, transformation and loading to the central repository, and data maintenance by the system. The solution must provide appropriate tools, logging, and the ability to manage access to different components of the system such as access to the central repository, access for CAT Reporters, access to rejected data, processing status and CAT Reporter calculated error rates.

PII such as customer social security number and tax ID numbers should not be made available in the query tools or reports. Instead, Bidders should provide for separate limited access query capability that allows this information to be retrieved only when required by specific SRO regulatory staff and the SEC.

- The solution should anticipate protection of data during transmission, processing, and at rest (stored in the central repository)
- Access to the data must be controlled and system(s) must have a mechanism to confirm the identity of persons (e.g. username/password) who are permitted to access the data; every instance of user access must be logged
- The system controls should allow for users to be granted different levels of access and capabilities depending on their role or function

To ensure that proper security and controls are built into the system, Bidders are expected to: describe the strategy, tools and techniques, operational and management practices that will be used to maintain security of the system; provide a description of the proposed system controls, operational practices, and governance functions; and describe how security practices may differ across system development lifecycles (e.g., development, testing, and production).

4.9 Data Access Tools

The CAT processor must provide and maintain a suite of tools that will allow SRO regulatory staff and the SEC to query the data in the central repository and extract targeted segments of data. In addition, the CAT processor must provide the ability for bulk data extractions and downloading of data to the SEC and SROs so they may use their own tools for analysis.

Bidders should provide details of the tools and the interfaces they will provide to SRO regulatory staff and the SEC. The following sub-section outlines the tools the NMS Plan Participants expect to see included in any qualifying bid. For basic search criteria, minimum acceptable response times would be measured in time increments of less than one minute. Complex queries against large sets of data would be expected to take longer, but must generally be available within 24 hours of making the request. Bidders should describe how they will accommodate multiple simultaneous users from SRO regulatory staff and the SEC submitting queries.

4.9.1 Online Query Tools

The solutions provided must allow for targeted queries against data in the central repository across equities and options, both separately and together, on at least the following criteria:

- Symbol(s)
- CAT Reporter(s)
- Customer ID(s)
- CAT-Order-ID(s)
- Date and/or time range(s)
- Product type (equities or options)
- All orders, quotes, BBOs or trades above or below a certain size within a date and/or time range
- All order, quotes, BBOs or trades within a range of prices within a date and/or time range
- All orders and/or trades cancelled within a specified time range
- All CAT Reporters exceeding specified volume or percentage of volume thresholds in a single symbol or market-wide during a specified period of time

In the response, Bidders are at a minimum expected to address the following:

- Describe the tools, reports and front end user interfaces that will be provided to allow for targeted queries of data by a particular symbol, a particular CAT Reporter, a particular customer, a particular CAT-Order-ID, a particular day or any other combination of fixed search criteria
- Describe the tools and reports that would be provided to allow for the extraction of data based on dynamic search criteria
- Describe the expected response times for query results, the manner in which simultaneous queries will be managed, and the maximum number of concurrent queries and users that can be supported by the query tools within the described minimum response times
- Describe the form in which the results of targeted queries will be provided to users (e.g., online, spreadsheet files, .txt files, .csv files, zip files)

4.9.2 Bulk Data Extractions

The solutions provided must also allow for the bulk extraction and downloading of data based on a specified date and/or time range.

In the response, Bidders are at a minimum expected to describe the following:

- The methods of data delivery that would be made available to SRO regulatory staff and the SEC
- Any limitations on size of data that can be delivered at one time, such as number of days or number of terabytes in a single transmission
- How simultaneous bulk data requests will be managed to ensure fair and equal access to CAT data by SRO regulatory staff and the SEC

4.10 System Availability, Disaster Recovery and Business Continuity Plans (BCP)

The Bidder will be expected to develop and implement disaster recovery and business continuity plans that will meet the specific requirements of the CAT environment. The plan should address the protection of data, service for the data submissions, processing, data access, support functions and operations.

To support the data availability requirements and anticipated volumes, the CAT will require efficient and cost-effective backup and disaster recovery capability that will ensure no loss of data. The Bidder's BCP will need to be inclusive of the technical and business activities of the CAT as outlined in this document. A secondary processing site will need to be capable of recovery and restoration of services at the secondary site within 48 hours of a disaster event. The separate processing sites, Disaster Recovery and Business Continuity must adhere to the "Interagency Paper on Sound Practices to Strengthen the Resilience of the U. S. Financial System."²

The Bidder is expected to provide a comprehensive disaster recovery and backup plan.

The system must be available at a minimum, during the period between 12:00am ET Monday through 12:00am ET Sunday to accept data submissions, corrections, service queries and data requests. The Bidder will describe the expected availability for each of these functions during the hours of operation and based on the described architecture; indicate the expected reliability of the system.

The Bidder's response should provide the following information:

- A solution for routing the data submission processes and the data retrieval requests to the secondary data processing site
- A detailed description of how the secondary data processing site will be synchronized
- A detailed description of its redundant components and interfaces; indicate how redundancy is achieved and how redundant components and interfaces will be managed
- A detailed description of its failure detection, operational monitoring and failover processes for an entire site or for individual components
- Examples of a BCP that is similar to the complexity of the CAT
- A detailed description of the Bidder's experience and capabilities to develop a robust BCP

4.11 Build Project Management

The Bidder will be responsible for providing project management services to manage the initial implementation of the system including the planning, execution, monitoring and controlling of the analysis, specifications, requirements, infrastructure, testing, change management and solution implementation activities. To ensure the success of the project to build and deploy the system the Bidder will have to describe their project management practices, disciplines and deliverables. The Bidder will be expected to provide the services and functions outlined in sections 5.1.2, 5.1.3 and 5.1.4 that are applicable to the build and initial deployment.

The build project management services will be responsible for the following:

- Documentation of functional and technical requirements
- Prioritization and management of technical and non-technical requirements, modification requests and defect correction
- Development and maintenance of a project plan, project status report, risk and issue logs
- Maintenance and execution of a communication plan with all stakeholders
- Management of the scheduled changes
- Capturing and tracking of issues, problems, and defects identified during testing
- The initial population of any data (e.g., reference data, customers and accounts)
- The initial coordination and testing of CAT Reporters

Bidders are expected to provide the following:

² SEC Release No. 34-47638; File No. S7-32-02; <http://www.sec.gov/news/studies/34-47638.htm>

- Information on the tools and systems that will be used for managing the project
- Project milestones and completion times relevant to a start date
- Description of project management practices and processes
- Description of the system development methodology and approach that will be used

5 Operational Requirements

5.1 Program Management

The Bidder will be responsible for providing program management services to manage ongoing operation and maintenance of the CAT and any enhancement projects to the CAT.

The program management responsibilities will include the following:

- Managing and coordinating tasks between various projects run by the technical and administrative functions, in addition to the resources responsible for maintaining and enhancing the system
- Identifying, managing and tracking of business requirements for new or changed functionalities of the CAT
- Communicating and coordinating priorities and implementation activities for identified changes in requirements
- Managing future changes to business, administrative and technical functions as a result of changes in the requirements of Rule 613
- Seeking approval of changes

Bidders are expected to provide the following:

- A description of the Bidder's program management strategy and methodology
- Examples from previous engagements

5.1.1 Project Management

The Bidder will be responsible for providing project management services to manage the CAT processor solution(s) and support the on-going enhancement, operations and support functions.

Project management responsibilities will include the following:

- Documenting changes to functional and technical requirements
- Prioritizing and managing technical and non-technical requirements, modification requests and defect correction
- Developing and maintaining a project plan, project status report, risk and issue logs
- Maintaining and executing a communication plan with all stakeholders
- Developing and implementing a full incident management program
- Managing scheduled changes
- Identifying, managing and tracking functional requirements for new or changed functionalities of the CAT
- Coordinating change management and program management priorities with respect to CAT administrative functions and the CAT processor for system upgrades, system testing, integration testing and industry testing
- Producing status reports and performance metrics of project management activities
- Capturing and tracking issues, problems, and defects identified during tests; assuring continuous process improvements, including root cause analysis and resulting benefits

Bidders are expected to provide the following:

- A description of the project management methodology
- Information on the tools and systems that will be used for managing the project
- Examples from previous engagements

5.1.2 Change Management

The Bidder will be responsible for providing change management services. Changes may include regulatory changes and/or changes initiated by new industry practices and trends that may impact the CAT.

Change management responsibilities will include the following:

- Managing future changes to business, administrative and technical functions as a result of changes in the requirements of Rule 613
- Managing the process to recognize changes in regulations and new business requirements
- Coordinating with project resources
- Communicating and coordinating priorities and implementation activities for identified changes in requirements
- Seeking approval for change management initiatives
- Facilitating appropriate training and education for CAT Reporters and other internal functions to efficiently implement changes
- Coordinating, facilitating and communicating testing events with CAT Reporters and users

Bidders are expected to provide the following:

- A description of the change management strategy
- A description of the experiences in change management processes and methodologies used
- Information on change management tools; include samples if available

5.1.3 Industry Testing

The Bidder will be expected to conduct industry wide testing for CAT Reporters, both at initial implementation and on an on-going basis when there are CAT-related changes or other industry changes that directly impact data and/or reporting. In addition, the CAT must participate in other applicable industry wide tests conducted by other parties that are relevant to CAT, such as industry wide disaster recovery testing.

The Bidder's response should include the following:

- A detailed description of how the Bidder will coordinate industry wide tests, including the technology environment where the testing will be conducted, the scope of CAT Reporters to be included in the testing (e.g., all CAT Reporters, or subsets of CAT Reporters based on profile information), other data providers that need to participate (e.g., SIPs, OCC) and how the industry wide test will be communicated to testing participants.
- A detailed description of how testing results will be identified and communicated to testing participants. The description should address how errors identified during testing will be communicated to CAT Reporters (e.g., will errors identified during testing be communicated to CAT Reporters in the same manner as in a regular production environment.)

5.1.4 Quality Assurance

Quality assurance is a critical part of the CAT solution. Comprehensive quality assurance, risk management and testing practices and standards are key requirements.

Quality assurance procedures should be applied to all components of the CAT processor and external interfaces and changes.

The response should include both the functional and non-functional testing that includes, but is not limited to, the following:

- System testing
- Integration testing
- Regression testing
- Software performance testing
- System performance testing
- Application programming interface (API) testing
- User acceptance testing
- Industry testing
- Interoperability
- Security
- Load and performance testing
- CAT Reporter testing

5.2 Operational Monitoring and Reporting

The Bidder will have a robust operational monitoring program to ensure the CAT processor and central repository are functioning as intended, system outages and delays are identified and escalated and necessary upgrades and enhancements are promptly identified and implemented.

The Bidder will produce, at a minimum, the following operational and status reports:

- System status reports on a real time basis
- Processing run times
- Data load status updates
- Daily and historical processing volumes
- Storage utilization and available space
- Processor and memory utilization
- Data access connections and query response times

5.3 CAT Support Functions

The CAT will be required to provide support tools and services to CAT Reporters, SRO regulatory staff and SEC staff. The following sections outline the specific tools and support functions that will be required.

5.3.1 CAT Reporter Support

Bidders will provide operational and business support to CAT Reporters for all aspects of CAT reporting. A suite of tools must be developed to allow each CAT Reporter to monitor data submissions, identify and correct errors, manage reporting relationships and monitor its compliance with CAT reporting requirements. In addition, communication protocols must be developed to notify CAT Reporters of the CAT system status, outages and other issues that would impact CAT Reporters' ability to submit data.

At a minimum, the following operational and business support tools for CAT Reporters will be required:

- Secure website containing daily reporting statistics for all CAT Reporters, CAT system status, system notifications, system maintenance and system outages reporting relationship

management tools and web entry mechanism for submitting CAT data and correcting and resubmitting rejections or inaccurate data

- Public website containing comprehensive CAT reporting information, including but not limited to, technical specifications, reporting guidance, pending rule changes impacting CAT reporting, software/hardware updates and upgrades and CAT contact information
- Communication mechanisms, such as email messaging and web announcements, to notify CAT Reporters of system outages, delays and other relevant information that would impact CAT Reporters' ability to submit data
- Mechanism for assigning CAT Reporter IDs and managing changes to CAT Reporter IDs
- CAT Reporter Compliance Report Cards to be created and published on a periodic basis to assist CAT Reporters in monitoring overall compliance with CAT reporting requirements

Bidders are expected to provide detailed descriptions of the following:

- The design and content of the secure website, including functionality available for both broker-dealers and SROs with respect to daily monitoring of data submissions and reporting and correcting data, the description should include who within the Bidder's organization would be responsible for the development and ongoing maintenance of the website
- The design and content of the public website, including who within the Bidder's organization would be responsible for the development and ongoing maintenance of the website
- How the Bidder would communicate with CAT Reporters for all aspects of CAT reporting, including but not limited to, system outages, delays, software/hardware updates and upgrades, testing and other issues impacting CAT Reporters' ability to submit data to CAT
- How CAT Reporter IDs would be assigned, validated and tracked
- How information about CAT Reporters, including contact information, would be managed
- How CAT Reporter entitlements and reporting relationships would be managed
- The design and content of the CAT Compliance Report Cards, including the frequency of publication

5.3.2 CAT User Support

Bidders will provide operational and business support to CAT users (SRO regulatory staff and the SEC). A suite of tools must be developed to allow each CAT user to monitor data requests and extractions. In addition, communication protocols must be developed to notify users of the CAT system status, outages and other issues that would impact SRO regulatory staff and the SEC's ability to access, extract and use CAT data. At a minimum, SRO regulatory staff and the SEC should each have access to a secure website where they can monitor data requests, CAT system status, receive system notifications and submit data requests.

5.3.3 CAT Help Desk

In addition to the suite of tools described above, the NMS Plan Participants will require that a CAT Help Desk be provided to support both broker-dealers and SRO CAT Reporters. The CAT Help Desk must be able to address business questions and issues, as well as technical questions and issues. The CAT Help Desk must also be able to assist SRO regulatory staff and the SEC with questions and issues regarding obtaining and using CAT data for regulatory purposes.

The SROs will require that the CAT Help Desk be available on a 24x6 basis. The CAT Help Desk must manage large volumes of incoming calls and be able to handle at minimum, 2,500 calls per month. Bidders are expected to create and maintain a robust electronic tracking system for the CAT Help Desk that must include call logs, incident tracking, issue resolution and volume escalation.

CAT Help Desk support functions must include:

- Setting up new CAT Reporters, including the assignment of CAT Reporter IDs, CAT entitlements and testing prior to submitting data to CAT
- Managing CAT Reporter authentication and entitlements
- Managing SRO regulatory staff and SEC authentication and entitlements to obtain data for regulatory purposes
- Supporting CAT Reporters with data submissions and data corrections, including submission of customer and account information
- Coordinating and supporting system testing for CAT Reporters to perform individual system tests based on changes to their respective systems
- Responding to questions from CAT Reporters about all aspects of CAT Reporting, including reporting requirements, technical data transmission questions, upcoming rule changes, software/hardware updates and upgrades, entitlements, reporting relationships and questions about the secure and public websites
- Responding to questions from SRO regulatory staff and the SEC about obtaining and using CAT data for regulatory purposes

Bidders are expected to provide detailed descriptions of the following:

- How the Bidder will staff the CAT Help Desk, including its planned management structure and how many FTEs will be devoted to the Help Desk as well as the skill level of the FTEs and their locations
- The telecommunications technology that will be used to manage a minimum of 2,500 calls per month on a 24x6 basis
- The Bidder's BCP for both staff and technology
- How Help Desk staff will be trained to ensure they can efficiently and effectively respond to all inquiries
- The tools that will be available to Help Desk staff to respond to inquiries from CAT Reporters, SRO regulatory staff and the SEC

6 CAT Reporter Compliance

Bidders should address how they will meet the requirement that the CAT include a comprehensive compliance program to monitor for adherence to Rule 613 by CAT Reporters. The compliance program will be directly managed by a Chief Compliance Officer (CCO), who will have unfettered access to the NMS Plan Participants. The CCO will regularly review the operation of the CAT 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.

A fundamental component of this program is the requirement to identify on a daily basis all CAT Reporters exceeding the maximum allowable error rate. Once identified, all CAT Reporters exceeding the maximum allowable error rate must be notified that they have exceeded the maximum allowable error rate and be informed of the specific reporting requirements that they did not fully meet (e.g., timeliness, rejections, matching). In addition to daily notification, CAT Reporters must also be notified of ongoing issues that may constitute a pattern and practice of CAT reporting violations over a prolonged period of time via periodic CAT Reporter Compliance Report Cards.

The CAT will be required to analyze reporting statistics and recommend propose changes to the maximum allowable error rate defined in the NMS Plan. It is expected the maximum allowable error rate will decrease over time as overall compliance rates improve after initial implementation.

The CAT Reporter Compliance program must also include:

- Reporting to and interfacing with the NMS Plan Participants
- Providing periodic reports, including relevant metrics, to the NMS Plan Participants that allow them to oversee the quality and integrity of the reporting to the CAT
- Providing ad-hoc customized reports to NMS Plan Participants as requested
- Providing information to the NMS Plan Participants on the performance of individual or multiple CAT Reporters
- Working with the SEC and the NMS Plan Participants to address CAT Reporter deficiencies

When addressing how Bidders anticipate meeting the required compliance functions, Bidders should provide detailed descriptions of the following:

- The approach and methodology that the Bidder will use to monitor the maximum allowable error rate defined in the NMS Plan and to identify and recommend potential future adjustments
- The process that will be used to calculate the daily error rate, including all of the individual components that will be included in the error rate calculation (e.g., timeliness, rejections, matching)
- The internal tools and reports that will be used to monitor daily error rates and identify all CAT Reporters exceeding the maximum allowable error rates both daily and on an ongoing basis
- The tools and reports that will be provided to CAT Reporters monitor daily error rates and aggregate error rates over periods of time, including CAT Reporter Compliance Report Cards
- The tools and reports that will be provided to the NMS Plan Participants to monitor the quality and integrity of CAT reporting

7 Business Administration

This section describes the business administration functions the NMS Plan Participants believe will be necessary to operate the CAT. These functions include the oversight and performance of day-to-day business operations, including ensuring all aspects of the CAT, whether related to processing data or administration, operate in a coordinated fashion to ensure the overall cohesiveness and efficiency of the CAT. It is anticipated that the CAT will be administered by senior professional staff under the oversight and guidance of the NMS Plan Participants that will approve materiality thresholds of when certain administrative activities require the involvement and/or approval of the NMS Plan Participants (e.g., dollar amount and impact of certain projects and contracts, personnel decisions regarding senior staff, parameters for engaging offshore vendors).

As a general matter, each Bidder should expect to be responsible for ensuring the following business administration functions are performed (either by the Bidder itself or outsourced to a sub-contractor overseen by the Bidder) under the direction and oversight of the NMS Plan Participants:

- Set-up, performance and management of the following functions for the CAT:
 - Reporting and Oversight
 - Finance
 - Legal
 - General Support

High-level overviews of the business administration functions are provided in the following sections. All of the functions performed will be subject to the general oversight of the NMS Plan Participants, and potential Bidders should be prepared to report on these functions to the NMS Plan Participants as requested. Potential Bidders are invited to identify any additional functional requirements not listed that they believe may be pertinent to the administration or operation of the CAT.

7.1 Reporting & Oversight

The NMS Plan Participants anticipate that they will hold regular meetings as participants in the CAT NMS Plan approved by the SEC. The selected Bidder will attend these meetings as requested and provide regular reports on the operation and maintenance of the CAT for review by the NMS Plan Participants and the SEC. These reports may include board-level operational and performance management information on issues such as financial performance and risk management, among others.

7.2 Finance

The business functions of the CAT will require the establishment and support of a Finance function for the CAT. The person responsible for the financial functions of the CAT will be allowed unfettered direct access to the NMS Plan Participants. The Finance functions will include setting up and maintaining the following:

- General ledger
- Accounts payable
- Accounts receivable (i.e., invoicing and billing)
- Bookkeeping
- Annual budgeting and forecasting
- Cost allocation among the NMS Plan Participants
- Financial statements
- Tax information

7.2.1 Accounts Payable and Receivable – Billing and Invoicing

A billing structure must be established that allows for expense allocation and billing. As such the CAT will need to perform accounts receivable and accounts payable finance activities. These activities may include the following:

- Setting up, managing and administering accounts payable and accounts receivable; including providing the resources, systems and tools necessary to successfully implement and scale as needed
- Setting up and managing an accounts receivable methodology and processes

7.2.2 Budgeting and Forecasting

As part of the Finance activities, the CAT will require the development and management of annual operating budgets, forecasting and cost controls. Budgets will need to be prepared for review and approval by the NMS Plan Participants. The budgets will be managed by and coordinated with different functions of the CAT.

The Bidder may be required to:

- Implement a budgeting methodology and create standardized models, and processes to develop and manage an annual operating budget
- Evaluate budgets on a periodic basis, including generation of budget analysis recommendations
- Implement tools and systems or carry out the budgeting aspects of the Finance activities
- Document analysis and allocation of costs to the appropriate parties
- Report to the NMS Plan Participants if any budget shortfalls or other issues arise

7.2.3 Financial Statements and Reports

Financial statements will be a requirement of the CAT NMS Plan to ensure transparency to the costs, revenues and operations of the CAT. Finance will be required to develop, generate and prepare financial statements and reports for the NMS Plan Participants.

The Finance activities may include the following:

- Creating and disseminating financial statements and reports on a periodic basis, including the balance sheet, revenue and expense report and statement of cash flows
- Providing resources, tools, and systems to carry on these functions
- Providing reports to the NMS Plan Participants as warranted

7.2.4 Tax Filings and other Financial Information

The CAT may be required to file federal, state and local taxes. The NMS Plan Participants may hire an outside third party approved by the NMS Plan Participants to prepare and file taxes for the CAT. The CAT will be required to support the tax preparation process by performing financial analysis, producing financial information and generating reports.

As part of the Finance function, administrative services requirements include:

- Preparing the appropriate tax report information and producing additional financial reports
- Creating and documenting other financial reporting requirements depending on the geographic location (e.g. state)
- Providing reports to the NMS Plan Participants as warranted

7.3 Legal

From time to time, the CAT may be required to perform legal activities in the management and business activities of the CAT. Activities may include the following:

- Supporting creation and review of non-disclosure agreements, non-compete agreements and other contracts
- Advising and managing licensing and maintenance agreements (e.g., software, vendor, etc.), which includes initiating and drafting the legal contracts, coordinating with various parties and escalating as needed; working closely with procurement services
- Modifying service level agreements (SLAs) as necessary
- At the direction of the NMS Plan Participants, interacting with the SEC and providing analysis on interpretive issues

7.4 General Support

7.4.1 Procurement

The CAT may require the acquisition of supplies, services and professional services to operate. Such procurement activities will be required of the CAT. These activities may include:

- Gathering information from suppliers who can satisfy the documented CAT requirements if a supplier relationship needs to be established
- Investigating background reviews and reference checks for product/service quality and any requirements for follow-up services including installation, maintenance and warranty
- Undertaking negotiations for price, availability customization possibilities, delivery requirements and completing contracts on that basis, subject to the approval of NMS Plan Participants

- Ensuring contract fulfillment and that supplier preparation, shipment, delivery and payment are completed based on contract terms; installing and training of procured products may also be performed
- Ensuring evaluation and performance of products/services based on the usage, maintenance, and any accompanying service support as they are consumed
- Renewing contracts as they expire or the product or service is to be re-ordered; additional consideration should be undertaken on whether other suppliers should be considered or the same supplier should continue being utilized
- Producing reports for the procurement function such as purchase orders, supplier reports and asset management reports

7.4.2 Facilities Management

Facility management services will maintain the facilities to support the CAT including data centers, back-up centers, etc.

7.4.3 Audit and Examination Support

The Bidder will be required to support internal and external audits as well as SRO or SEC oversight. For example, it is anticipated that the CAT will come under the oversight of the SEC's Automation Review Policy (ARP) program. Additionally, the CAT may be subject to a controls review, (i.e., SSAE 16). An external auditor may be hired by the NMS Plan Participants to conduct periodic audits of the CAT.

8 Bidder's Cost Estimate

The CAT RFP process will require the CAT Bidder to provide estimates for fees and expenses to cover the total cost of ownership (TCO) for the build, operation and maintenance of the CAT. The cost estimates reflect the fees and expenses that will be paid to the vendor. These estimates may include investment and operating costs required to establish, develop, deploy and maintain the CAT. The Bidder should present this information across a three year horizon. If a Bidder's solution includes usage of any existing capabilities, the costs to be allocated to the CAT as part of the services should be clearly documented.

The cost estimates may require the following categories:

- CAT technical architecture:
 - Hardware, data centers facilities, network infrastructure, servers
 - Software – requirements, design, build testing, integration, rollouts, licensing, other
- CAT infrastructure and architecture support and maintenance (to support ongoing enhancements, scale and maintain the platform)
- CAT support tools (e.g., CAT Help Desk, telephone, financial packages, support networks, email, website)
- CAT business administration functions
 - Reporting and Oversight
 - Finance
 - Legal
 - General Support

The Bidder should identify any key drivers, requirements or threshold considerations that will materially impact the cost of the CAT to the extent such items are not included in this Bidder's document.

9 Company Information

This section provides an overview of the Bidder information that the SROs will consider when evaluating the RFP responses. The company information will be broken down into several sections to provide specific areas of focus. The Bidder will be required to supply information about its areas of focus, industry expertise, hiring and management of talent and the processes and methodologies used to deliver services.

9.1 Company Profile

This section highlights the key elements that Bidders are expected to respond to with supporting information. The response should include details of current and past experiences of the company, including an overview of the structure, years in operation, experience within the industry and with projects similar to the scope and scale of the CAT Solution, and the typical services and clients to which the company has provided its services.

Additional relevant information that supports the company's previous and present day experiences may include:

- The legal entity or entities that will be providing the services, including details of relevant jurisdictions of incorporation
- The company's ownership structure (privately held or publicly owned)
- The total years of operations of business and when the entity was established. If proposed to be established, indicate the equivalent information for the parent company or companies
- Summary of parent company's ownership structures, including affiliates and details of relevant jurisdictions of incorporation, etc.
- The business purpose of the company and the organization responding to the RFP

9.1.1 Experience and Skills

This section outlines what the Bidder is expected to provide as a summary of the company's pertinent experience and skills in the securities industry. Information should include the following details, in addition to any other relevant information that will highlight the past experience and skills:

- Details regarding the company's past experience within the securities industry, including all relevant projects and previous engagements
- Any other experience the Bidder believes is relevant to its response
- Examples of Bidder's existing technologies and capabilities

9.2 Company Financial Information

This section highlights the financial details of the Bidder that demonstrates the viability and stability of the company to build the CAT technical infrastructure and operations. Relevant information that supports the financial viability of the company should be outlined in this section.

- Provide two years of audited financials, including but not limited to, balance sheet, cash flows and income statements
- Provide the credit rating of the company over the last two fiscal years
- Describe any extraordinary financial obligations that the company is committed to over the next three years that might impact its ability to perform
- List any regulatory or business changes anticipated that may positively or negatively impact the financial condition of the company

9.3 Client Overview

This section highlights the areas the Bidder should describe as an overview of its client base and market focus as well as any other relevant information as described below:

- High profile clients
- Types of clients and the typical sizes of engagements
- Typical services provided to the clients
- Three client references for the services provided

9.4 Staffing

This section highlights the company's approach to hiring, training and retention as well as for staffing the CAT activities.

9.4.1 Onboarding and Training

The following sections should provide detailed descriptions of the policies, processes and facilities in place to hire, onboard and train professionals.

- Hiring: Provide detailed descriptions regarding the various criteria considered while recruiting/hiring professionals. The details are expected to include the following information, in addition to any other relevant points:
 - Procedures and criteria for background checks of employees
 - Details of drug testing the company performs
 - Details of current process for fingerprinting employees
 - The approximate timeframe involved in hiring and onboarding of professionals
- Training: Provide detailed descriptions of the training program to ensure employees maintain current technical and industry knowledge

9.4.2 Staffing – Organizational Chart

The Bidder will provide an overview of the staffing model, skill sets and an organizational chart that describes the team structure, roles and responsibilities in the execution of the build, operations and administration. In addition the Bidder should provide detailed biographies of the anticipated key staff of the engagement.

9.5 Subcontractors

This section is expected to provide details of all vendor relationships that the Bidder will directly or indirectly use to deliver the functions contained in the RFP. The Bidder will be expected to provide at a minimum the following information:

- A list of third party product/subcontractor/alliance partner relationships that are material to the delivery of the functions contained in the RFP
- The relationship with each subcontractor/partner, including a description of the role of the subcontractor/partner
- How the company will manage the subcontractors/partners

9.6 Outsourcing and Offshoring

This section should provide details of the Bidder's outsourcing and offshoring operating models and capabilities. Details and supporting evidence should be provided to illustrate the actions and measures that the company has taken to remain in compliance with applicable SEC and other regulatory requirements. Information is expected to include the following details and all other relevant information to describe the current and future state of outsourcing and offshoring models:

Outsourcing:

- Details of past experience with functions contained in the RFP
- A description of the scope of services that are proposed to be outsourced

- A description of the approach and methodologies used for managing outsourcing

Offshoring:

- Firm Subsidiaries: Describe any affiliates or subsidiaries the Bidder intends to leverage to deliver the functions contained in the RFP
- External Offshoring: Describe any offshore services the Bidder intends to use to deliver the functions contained in the RFP, including process and communication protocols between the onshore and offshore staff. Describe the measures that will be taken to ensure the safety of intellectual property and data

10 Glossary

ADF: Alternative Display Facility (ADF): An SRO display only facility that is operated by FINRA. The ADF provides members with a facility for the display of quotations, the reporting of trades, and the comparison of trades.

CAT Reportable Event: CAT reportable events, including but not limited to, new orders, quotes, modifications, cancels, order transmittals and executions.

CAT Reporter: A national securities exchange, national securities association or a member of a national securities exchange or a national securities association.

CAT-Order-ID: A unique order identifier or series of unique order identifiers that allows the central repository to efficiently and accurately link all reportable events for an order, and all orders that result from the aggregation or disaggregation of such order.

CAT-Reporter-ID: With respect to each national securities exchange, national securities association, and member of a national securities exchange or national securities association, a code that uniquely and consistently identifies such person for purposes of providing data to the central repository.

Customer: The account holder(s) of the account at a registered broker-dealer originating the order; and any person from whom the broker-dealer is authorized to accept trading instructions for such account, if different from the account holder(s).

Customer Account Information: Customer account information shall include, but not be limited to, account number, account type, customer type, date account opened, and large trader identifier (if applicable).

Error Rate: The error rate shall mean the percentage of reportable events collected by the central repository that the data reported does not fully and accurately reflect the order event that occurred in the market.

NMS Securities: Any security or class of securities for which transaction reports are collected, processed, and made available pursuant to an effective transaction reporting plan, or an effective national market system plan for reporting transactions in listed options.

OPRA: The Options Price Reporting Authority (OPRA) provides last sale information and current options quotations from a committee of Participants.

SIP: Securities Information Processor

TRF: FINRA Trade Reporting Facility (TRF). Transactions in exchange listed securities effected by FINRA members otherwise than on an exchange are reported to a FINRA TRF. While each FINRA TRF is affiliated with a registered national securities exchange, each FINRA TRF is a FINRA facility and is subject to FINRA's registration as a national securities association.