# **Summary of the Consolidated Audit Trail Initiative May 2016**























Financial Industry Regulatory Authority

## The Consolidated Audit Trail (CAT)

SEC Rule 613 represents a paradigm shift in the regulation of U.S. markets with the creation of a central database covering all market participants across multiple asset classes.

#### The CAT will...

- Be the world's largest data repository of securities transactions
- Ingest 58 billion records of quote, order and executions quote life-cycles for equities and options on a daily basis with additional asset classes to be added in the future
- Securely maintain data on more than 100 million customer accounts and associated unique customer information
- Grow to an estimated 21 petabyte footprint within five years of operation
- Maintain and support thousands of daily data and communication interfaces across the industry
- Require a three year implementation timeline

### ..and as a result

- Will require approximately 2,000 firms and 19 Self Regulatory Organizations to report data (CAT Reporters)
- May necessitate changes to equity and options trade reporting systems
- May require firms to capture reporting attributes not currently reported
- May drive change in front, middle and back office operations
- May transform customer master information and associated processes (including client onboarding, name/address changes, account relationship changes)
- Will emphasize need for robust infrastructure for data retention and trade data repositories

## Overview of the CAT Initiative

The national securities exchanges and national securities associations (collectively, the SROs) have been working as a consortium since July 27, 2012 to develop the CAT NMS Plan, and on September 30 2014, filed the CAT NMS Plan. In that time period, the SROs have accomplished interim milestones such as:

- Published the CAT RFP document February 26, 2013
- Established the Development Advisory Group March 25, 2013
- Submitted the Selection Process NMS Plan Approval of Selection Process NMS Plan February 21, 2014
- Received RFP Responses March 21, 2014
- Identified Qualified Bids April 11, 2014
- Conducted Bidder Presentations May 6 to 8, 2014
- Voted to select Shortlisted Bidders July 1, 2014
- Filed CAT NMS Plan with the SEC September 30, 2014

Since September 30, 2014, the SROs have accomplished additional milestones, such as:

- Conducted Shortlisted Bidder Presentations October 8 & 9, 2014
- Filed an Amendment to the Plan Governing the Process of Selecting a Plan Processor and Developing a Plan for the Consolidated Audit Trail (the "Selection Plan") December 12, 2015, with approval on June 23, 2015
- Filed a Request for Exemptive Relief from certain provisions of SEC Rule 613 with the SEC (the "Request for Exemptive Relief") – January 30, 2015
- Filed an amended CAT NMS Plan with the SEC February 27, 2015
- Filed a Second Amendment to the Selection Plan March 4, 2015, with approval on September 24, 2015
- Filed supplements to the Exemptive Relief for Linking Allocations to Executions and Account Effective Date on April 3, 2015 and September 2, 2015 respectively
- Issued Bid Revision Requirements to Shortlisted Bidders July 14, 2015
- Received Bid Revision Responses September 19, 2015
- Conducted Bidder Presentations October 20 to 22, 2015
- Further narrowed Bidders from six to three November 16, 2015
- Filed technical amendment to CAT NMS Plan with the SEC December 23, 2015
- Exemptive Relief Request approved by the SEC March 1, 2016
- CAT NMS Plan noticed for comment by the SEC April 27, 2016

## **Governance of the CAT Initiative**

The 19 SROs have formed various subcommittees to focus on specific issues during the development of the CAT NMS Plan. Representatives from all subcommittees meet to discuss the overall progress of the CAT initiative in the Operating Committee. Subcommittees include the following:

Subcommittee	Purpose of Subcommittee			
Governance	To develop recommendations for decision-making protocols and voting criteria that are critical to the development of the CAT NMS Plan, in addition to developing formal governance and operating structures for the CAT NMS Plan.			
Technical	To develop the CAT RFP document, technical requirements for the plan processor, functional requirements of t plan and generally to provide the recommendations for all technical aspects of the CAT.			
Industry Outreach	To provide recommendations on effective methods for soliciting industry input, in addition to facilitating industry involvement in CAT-related public events. Also has responsibility for engagement with members of the press.			
Cost and Funding	To draft a framework for determining the costs of the CAT, and to provide recommendations on revenue/funding of the CAT for both initial development costs and ongoing costs.			
Other Products	To assist the commission staff, as necessary, when the staff is determining whether and how other products should be added to the CAT.			
Press	To interface with members of the press and to respond to press coverage of the CAT. Press committee can be contacted at <a href="mailto:feedback@catnmsplan.com">feedback@catnmsplan.com</a> .			

## **Industry Engagement**

The SROs have actively engaged the industry and the public to provide information and seek feedback on CAT development efforts

- The SROs have created a website (<a href="www.catnmsplan.com">www.catnmsplan.com</a>) to keep the public updated on the progress of the CAT. The website includes FAQs, Bidder Q&As and other industry feedback, announcements and upcoming events, documents released by the SROs, and links to SEC filings and other important information.
- The SROs published a request for comment on multiple issues related to the CAT NMS Plan in April 2013.
- The SROs have held a number of public events to inform the industry on the progress of the CAT and to address inquiries <sup>1</sup>:
  - CAT Industry Call (September 19, 2012).
  - CAT Industry Events (October 15 & 16 2012, December 10 2012).
  - CAT Industry Call and WebEx (November 29, 2012).
  - CAT Industry Events (February 27, 2014, April 9, 2014).
  - CAT Cost Study Webinars (June 25, 2014, July 9, 2014).
  - CAT Industry Call and WebEx (December 10, 2014).
  - CAT Industry Call and WebEx (March 21, 2016).
- In addition to the above events, some SROs individually attended or participated in additional industry events such as SIFMA conferences and FIF working groups where updates were provided on the status of the CAT NMS Plan development and areas of expected CAT functionality were discussed.
- Additionally, the Development Advisory Group (DAG) was formed to solicit input on the CAT from representatives of the Broker/Dealer community. The DAG meets regularly with the SROs to discuss a variety of topics related to the CAT.

<sup>&</sup>lt;sup>1</sup> Further details of these events can be found here: http://catnmsplan.com/PastEvents/

# **Development Advisory Group (DAG) Members**

The DAG is comprised of the SROs, as well as 24 representative firms (broker-dealers, vendor firms, and a clearing firm) and 3 industry trade associations (FIF, SIFMA, and STA). Industry trade associations represent numerous securities firms, banks, asset managers, traders, vendors, exchanges, ATSs, and broker-dealers.

SRO DAG Members									
BATS	вох	CBOE	CHX	FINRA	ISE	MIAX	NASDAQ	NSX	NYSE

Industry DAG Members as of December 2014					
Firms		3 <sup>rd</sup> Party Service Providers	Industry Organizations	Clearing House	
Credit Suisse Securities	New Albion Partners, LLC	Fidessa Corporation	Financial Information Forum	Options Clearing Corporation	
Casey Securities, LLC	Optiver US LLC	Thomson Reuters BETA Systems	Securities Industry and Financial Markets Association		
Citigroup Global Markets Inc. ("CGMI")	Pershing LLC, A BNY Mellon Company		Security Traders Association		
Edward Jones	Susquehanna International Group, LLP			_	
FOG Equities, LLC	TD Ameritrade				
Goldman Sachs	TD Securities USA LLC				
Group One Trading	UBS Securities LLC				
JP Morgan Chase	Vandham Securities Corp				
Keybanc Capital Markets	Wells Fargo Advisors				
Morgan Stanley	Wolverine				
National Financial Services	Trading/Wolverine Execution Services				

# **Examples of Discussion Topics with the DAG**

The following table provides examples of key ongoing discussion topics that impact the development of the CAT NMS Plan.

Item #	Topics Discussed	Key Activities
1	Option market maker quotes	<ul> <li>A cost analysis was conducted by FIF, SIFMA and STA to analyze the impact of market maker quote reporting, as well as adding a "quote sent" timestamp to messages sent to exchanges by all options market makers.</li> <li>The SROs have included in their letter for exemptive relief a request to remove the requirement for option market maker quotes to be submitted given that exchanges will be reporting this data to the CAT.</li> </ul>
2	Customer-ID	The SROs and industry discussed the requirements for capturing Customer-ID. The SROs proposed a customer information approach in which broker-dealers assign a unique firm-designated identifier to each customer and the CAT plan processor creates and stores the Customer-ID. The SROs have included in their letter for exemptive relief a request related to CAT Customer-ID.
3	Timestamps, clock synchronization, and clock drift	Timestamp granularity has been discussed between the SROs and industry with regard to exemptive relief on the timestamp requirements for manual order events. The SROs have reviewed industry clock synchronization processes as well as the feasibility of specific clock drift requirements (e.g., 50ms).
4	<ul> <li>The DAG has discussed potential CAT reporting requirements for six order handling sce additional corresponding sub-scenarios (e.g., riskless principal order and sub-scenarios post-execution print-for-print matching, pre-execution one-to-one matching, pre-execution one matching, complex options and auctions).</li> <li>An industry and SRO working group was established to discuss order handling scenarios detail.</li> </ul>	
5	Cost and funding analysis	<ul> <li>The DAG members aided in the development of the Cost Surveys distributed to the industry</li> <li>The SROs have discussed the model for funding CAT operational costs with the DAG on multiple occasions. This model has been developed and was presented to the DAG in December 2014.</li> </ul>
6	Error handling and correction process	Industry has provided recommendations for making the CAT error correction processes more efficient.
7	Elimination of systems	<ul> <li>Preliminary gap analyses of OATS and EBS were conducted and published on the public website in an attempt to identify commonalities and redundancies between the systems and the functionality of the CAT.</li> <li>Additional systems and rules being analyzed include, but are not limited to: CBOE Rule 8.9, PHLX Rule 1022, COATS, Equity Cleared Reports, LOPR, and FINRA Rule 4560.</li> </ul>

## **Request for Exemptive Relief**

On January 30, 2015 the SROs filed a Request for Exemptive Relief from certain provisions of Rule 613. The SROs gathered input from the DAG in formulating the Request for Exemptive Relief. The SROs also received feedback from the SEC Staff on the content of the Request. Additionally, on request from the SEC Staff, the SROs filed supplements to the Linking Allocations to Executions and Customer-ID exemptive relief requests on April 3, 2015 and September 2, 2015 respectively to further elaborate the SROs' proposed approaches for these provisions.

On March 1, 2016, the SEC approved the Request for Exemptive Relief.

#### **Options Market Maker Quotes**

- Rule 613(c)(7) requires every member of a national securities exchange or national securities association to submit details for each order and each reportable event to the CAT. Under Rule 613(c)(8) options market maker quotes are included within the meaning of an order.
- Given this, the options exchanges and options market makers would both be submitting virtually identical information to the CAT. The SROs and industry believe this would nearly double the options market maker quote detail submitted to the CAT and impose unnecessary burdens on the industry and costs to implement the CAT. For these reasons, the SROs requested exemptive relief from certain provisions of Rule 613(c)(7) such that only the SROs would be required to report option market maker quotes to the CAT.
- The Participants estimated that having both parties report options market maker quotes to the CAT would increase the size of data submitted to the CAT by approximately 18 billion records each day.
- According to an industry cost study, the cost to options market makers to meet their quote reporting obligations absent the exemptive relief ranges from \$307 million to \$382 million over a five year period<sup>1</sup>.

#### **Customer-ID**

- Specific sections of Rule 613(c)(7) require each national securities exchange, national securities association, or member of such an exchange or association to report a CAT Customer-ID and customer account information for each customer account when reporting order receipt or origination information, or an order modification or cancellation instruction. Furthermore Rule 613(c)(8) states that all CAT Reporters should use the same Customer-ID for each customer.
- The SROs have carefully considered the Commission's goal and conducted multiple discussions with the DAG and believe the best way to achieve this is to use a model that requires all broker-dealers to provide detailed account and customer information to the CAT and have the CAT use existing identifiers to assign a unique customer identifier to each customer. Broker-dealers would supply existing firm-designated identifiers on order information reported to the CAT rather than Customer-IDs. The SROs requested exemptive relief from certain requirements in Rule 613(c)(7) and Rule 613(c)(8) to allow this approach.
- According to cost estimates provided by the DAG, the cost for the top 250 CAT reporters to implement the Customer-ID absent the
  exemptive relief would be at least \$195 million<sup>2</sup>.

http://catnmsplan.com/web/groups/catnms/@catnms/documents/appsupportdocs/p601771.pdf

<sup>&</sup>lt;sup>2</sup> http://catnmsplan.com/web/groups/catnms/@catnms/documents/appsupportdocs/p602494.pdf

# **Request for Exemptive Relief (Continued)**

#### **CAT-Reporter-ID**

- Rule 613(c)(7) requires that a CAT-Reporter-ID be reported to the CAT for each order and reportable event. In addition Rule 613(c)(8) mandates all CAT Reporters use the same CAT-Reporter-ID for each broker-dealer.
- While the SROs recognize the need for a CAT-Reporter-ID they believe that the implementation should minimize both the cost to the industry and the effect on current business process practices and therefore suggest leveraging existing business practices and identifiers rather than requiring new identifiers to be established. The SROs requested exemptive relief from certain provisions in Rule 613(c)(7) and Rule 613(c)(8) that would require that a CAT-Reporter-ID be reported to the Central Repository for each order and Reportable Event and that all CAT Reporters use the same CAT-Reporter-ID for each broker-dealer.
- According to cost estimates provided by the DAG, the cost for the 250 largest CAT Reporters to implement the CAT-Reporter-ID absent the exemptive relief would be \$78 million<sup>1</sup>.

#### **Linking Allocations to Executions**

- Rule 613(c)(7)(vi)(A) requires the CAT Reporter to record and report the account number for any subaccounts to which an execution is allocated (in whole or part) if the order is executed. In order to do this CAT Reporters would need to create a linkage between specific execution(s) and allocation(s).
- After careful consideration and multiple discussions with the DAG, the SROs have identified two issues with the allocation reporting requirements in Rule 613(c)(7): (1) there are major practical problems with linking multiple executions to multiple allocations, specifically there often is not a one-for-one connection between a particular execution and an allocation to a particular subaccount; and (2) reporting such information would require major re-engineering of broker-dealer middle and back office systems. For these reasons, the SROs requested exemptive relief from this provision in Rule 613(c)(7)(vi)(A).
- According to cost estimates provided by the DAG, the cost for the 250 largest CAT Reporters to link allocations to executions absent the
  exemptive relief would be \$525 million<sup>1</sup>.

#### **Timestamp Granularity**

- Rule 613(c)(7) requires the recording and reporting of the time of certain reportable events to the central repository, specifically the time of order receipt or origination, the time at which an order is routed, and the time at which an order is received. Under Rule 613(d)(3), the granularity required for these time stamps should reflect current industry standards and be at least to the millisecond.
- Following input from the DAG, the SROs established that while industry time stamping practice with respect to electronic orders is to the millisecond, the industry standard with respect to manual orders is one second. The SROs therefore requested exemptive relief from recording and reporting Reportable Events to the millisecond for manual orders to allow reporting of manual order events with granularity of one second.
- The Participants estimate that the total minimum cost to the industry to comply with a single time stamp requirement absent the exemptive relief would be approximately \$10.5 million.

<sup>&</sup>lt;sup>1</sup> http://www.catnmsplan.com/industryfeedback/p602494.pdf

## **CAT Plan Processor Selection**

- The SROs published a 56-page RFP on February 26, 2013 that includes more than 200 questions in approximately 40 distinct categories. The SROs held two in person Bidder events on January 29, 2013 and March 8, 2013 to provide interested parties information related to the creation of the CAT and the RFP process.
- On March 21, 2014, the SROs received Bids from 10 organizations. Prior to Bidders submitting their proposals, the SROs provided answers to 74 RFP-related questions in the following categories:

Question Categories	Topics Addressed			
Selection Process	<ul><li>Transparency to Bidders</li><li>Ability to partner with other firms and subcontractors</li></ul>	<ul><li>RFP submission deadlines</li><li>Non-disclosure agreement</li></ul>		
Timeframe of CAT Activities	Filings with the SEC (e.g., Selection Process NMS Plan)	Additional industry events		
Timeframe of CAT Implementation	Timeframe of contract terms	Implementation timeline		
CAT Capacity	<ul><li>Types of data to be stored</li><li>Capacity requirements</li></ul>	<ul><li>Estimated growth rates of the CAT</li><li>Average volume of data submitted</li></ul>		
Ownership of the CAT	CAT ownership     Intellectual property ownership	Hardware/software/network ownership		
CAT Functionality	Order linkages	Processing timeframes		
Cost and Funding	<ul><li>Initial build costs of the CAT</li><li>Collections and billing</li></ul>	Cost estimate requirements		
Usage of the CAT	Estimation of concurrent users	"Peak" hours of usage and data submissions		
Security	Security requirements			

## **CAT Plan Processor Selection (Continued)**

- On July 1, 2014, the SROs voted to reduce the number of Bidders under consideration to a shortlist of six Bidders under the terms of the Selection Plan (Shortlisted Bidders).
- The SROs hosted in-person discussions with the Shortlisted Bidders on October 8 and 9, 2014 to allow the Shortlisted Bidders to discuss their bids with the SROs.
- The SROs requested specific additional detail regarding the Shortlisted Bidders' solutions on December 12, 2014 in the below categories. At the same time, the SROs outlined the minimum functional and technical requirements for the Plan Processor, the "CAT NMS Plan Processor Requirements". These can be found in Appendix D of the <a href="CAT NMS Plan">CAT NMS Plan</a>.

Question Categories	Topics Addressed				
Query Functionality	Querying interfaces for SEC and SRO Regulators	Technologies for Bulk Data Extraction			
Linkage and Error Correction	Implementation of daisy chain linkage process	Error handling			
Testing and Disaster Recovery	Industry testing environments and approach	Logistics for Disaster Recovery testing			
Security and PII	PII Storage	Access controls for PII data			
Support Function	Help Desk functionality	User creation and maintenance			
Cost and Funding	Cost estimate methodology	Potential for future cost savings			
Conflict of Interest	Separation of duties between Plan Processor and Regulators	Role of the Chief Compliance Officer and Chief Information Security Officer			

## **CAT Plan Processor Selection (Continued)**

- The SROs asked the Shortlisted Bidders in July 2015 to revise their Bids based upon the requirements included in the amended CAT NMS Plan, as well as to address specific additional considerations and clarifications.
- On September 19, 2015, the SROs received revised Bids from the six Shortlisted Bidders. The revised Bids contained updates to the Shortlisted Bidders' solution, including a revised cost estimate for their Bid. Topic areas in revised Bids included:

Categories	Topics Addressed			
Clock Sync	<ul> <li>Monitoring and reporting</li> <li>Self-reporting of non-compliance by Reporters</li> </ul>	<ul> <li>Flagging of out-of-sync data in query results</li> </ul>		
Costs and Funding	Implementation and operational financing	Cost schedule		
Bidder Readiness	PMO and change management procedures	Technical file specifications		
Retirement of Duplicative Reporting Systems	Support for retirement of potentially duplicative reporting systems			
Query Functionality	Query monitoring and management			
Bulk Data Extraction for Reporters	<ul><li>Data security</li><li>Scalability</li></ul>	Capacity and performance		
Scenario-based Workflows	CAT Reporter Portal and tools	CAT Regulator Portal and tools		

- The SROs hosted in-person discussions with the Shortlisted Bidders on October 20-22, 2015, to discuss the revised Bids with the Bidders.
- On November 16, 2015, the SROs reduced the number of Bidders under consideration from six to three (as per terms of the approved Selection Plan and Amendments)
- On April 26, 2016, the SROs conducted working sessions with each of the three Bidders in order to obtain greater understanding and clarification regarding their proposals, particularly in the area of Cyber and Information Security

# **Summary of CAT Meetings**

As of October 31, 2015 the SROs have held approximately 750 internal and external meetings since August 2012, to facilitate the development of the CAT NMS Plan. Industry members are actively engaged in this process.

Meeting Type	Purpose of Meeting	Number of Meetings to Date (as of October 31, 2015)	Frequency of Meetings <sup>1</sup>
Meetings with the SEC	<ul> <li>In person meetings are held with the SEC Staff and/or Commissioners to receive feedback on and discuss in detail the development of the CAT NMS Plan, Functional Requirements of the CAT and progress of all other areas of the CAT initiative.</li> <li>Bi-weekly meetings are held with the SEC staff to discuss the current status and progress of the CAT initiative.</li> </ul>	With Staff – 78, including 4 in-person (since Mar. 2013) With Commissioners – 6	As Needed
DAG Meetings	<ul> <li>DAG meetings are held to discuss the technical and operational aspects of the CAT as a joint group of SROs and industry representatives.</li> <li>The SROs put out a press release soliciting participants for the DAG. A wide spectrum of firms was deliberately chosen to provide insight from various segments of industry affected by the CAT.</li> </ul>	DAG – 53 (since Apr. 2013) Order Scenarios Working Group - 6 (since Nov. 2013)	Monthly
Subcommittee Meetings	<ul> <li>Subcommittee meetings are held to discuss the development of the CAT NMS Plan, Exemptive Relief and CAT Functional Requirements and to address questions from Bidders and other industry members.</li> <li>Subcommittees consist of SROs participating in Governance, Technical, Industry Outreach, and Cost and Funding working groups. There is also a Joint Subcommittee Group to discuss issues affecting multiple subcommittees</li> <li>A small sub-group focusing on Order Handling Scenarios was spun off.</li> </ul>	GC - 69 (since Sept. 2012) TC - 151 (since Aug. 2012) IO - 58 (since Aug. 2012) CF - 95 (since Sept. 2012) JSG - 229 (since Apr. 2013)	Weekly

# **Summary of CAT Meetings (Continued)**

Meeting Type	Purpose of Meeting	Number of Meetings to Date (as of October 31, 2015)	Frequency of Meetings <sup>1</sup>
Full Committee Operating Committee	Full Committee meetings are held to provide an update on the overall progress of the CAT initiative. The Full Committee consists of members from all subcommittees.	FC – 45 (since Oct. 2012) <sup>2</sup>	As Needed
Steering Committee	Steering Committee meetings are comprised of one representative from each SRO and are held to provide direction on the efficiency and effectiveness of the CAT initiative as a whole.	36 (since Jan. 2013)	Monthly
Industry Events	<ul> <li>Events (including webcasts and in-person meetings) are hosted and attended by the SROs to communicate the progress of the CAT initiative, and receive feedback from industry.</li> <li>Events have also been used as an opportunity to provide answers to Bidders on RFP-related questions, the selection process in general, the RFP process and CAT NMS Plan Development (February 2014), RFP progress (April 2014), the SRO CAT Cost Study (July 2014), and an update on the Plan filing and cost/funding issues (December 2014).</li> </ul>	9 (since Sept. 2012)	As needed

<sup>&</sup>lt;sup>1</sup> – The frequency of meetings is an approximation.

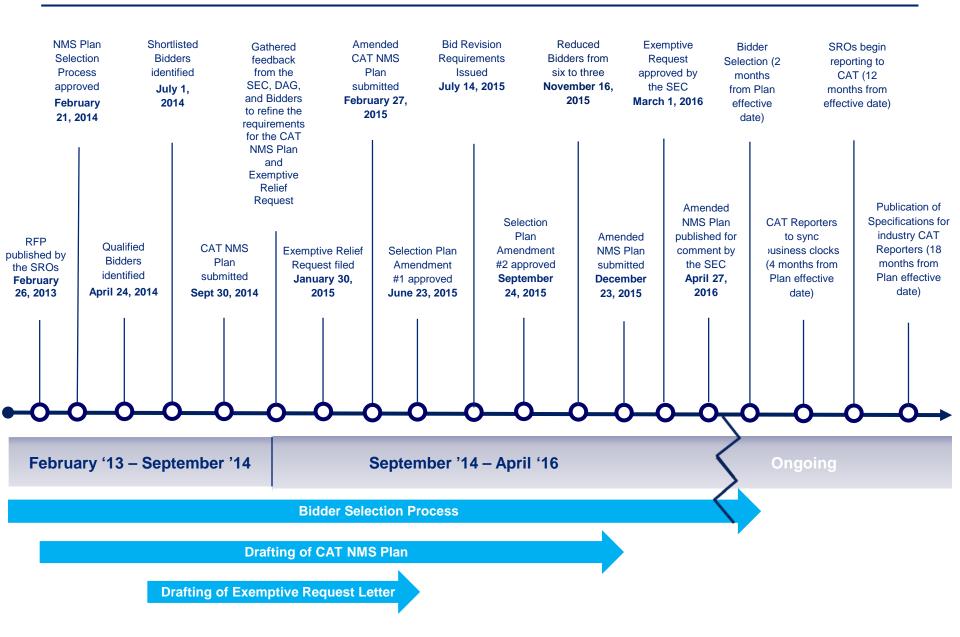
<sup>&</sup>lt;sup>2</sup> – The Full Committee now meet as the JSG

## **Summary of CAT Meetings – Topics Discussed After Plan Filing**

Since the filing of the amendment to the CAT NMS Plan with the SEC February 27, 2015, the SROs have held approximately 80 meetings and have discussed a wide variety of topics both internally and with industry members and the SEC staff, including the below topics:

- Bidder Selection Process
- CAT Funding Model
- Clock Sync
- DAG Engagement and Requests for Clarification
- Exemptive Relief and Supplements
  - Allocations
  - CAT Reporter ID
  - o Customer-ID
  - o Timestamp Granularity
  - Options Market Makers
- Industry Cost Studies and Economic Impact Analysis
- Industry Outreach
- Plan Processor Requirements
- Retirement of Duplicate Reporting Systems
- Security Requirements for the CAT

## **Current CAT Timeline**



## **Contact and Further Information**

The SROs encourage market participants and others to share their questions and thoughts regarding the CAT by submitting an email to <a href="mailto:feedback@catnmsplan.com">feedback@catnmsplan.com</a>.

Further information can be found on the CAT NMS Plan website, <a href="http://catnmsplan.com/">http://catnmsplan.com/</a>, including links to:

- SEC Rule 613
- Amended and Restated CAT NMS Plan (2/27/2015 submission)
- Selection Plan
- Selection Plan Amendment #1 Approval
- Selection Plan Amendment #2 Approval
- Exemptive Request Letter
  - Supplement #1 to Exemptive Request Letter
  - Supplement #2 to Exemptive Request Letter
- SRO guiding principles for creating the CAT
- SEC Rule 613 implementation timeline
- RFP process
- FAQs
- Past questions posted for industry consideration
- GAP analyses between existing regulatory process and Rule 613's requirements
- Industry feedback on the CAT
- Past events and current CAT announcements
- Links to CAT NMS Plan Participants' web pages