

**VIA HAND DELIVERY**

November 13, 2017

Mr. Brent J. Fields  
Secretary  
U.S. Securities and Exchange Commission  
100 F Street, NE  
Washington, DC 20549

**Re: Request for Exemptive Relief from Certain Provisions of the CAT NMS Plan**

Dear Mr. Fields:

The Participants of the National Market System Plan Governing the Consolidated Audit Trail (“CAT NMS Plan” or “Plan”)<sup>1</sup> respectfully request that the Securities and Exchange Commission (“Commission” or “SEC”) grant the following exemptive relief from requirements in the CAT NMS Plan pursuant to its authority under Section 36 of the Securities Exchange Act of 1934 (“Exchange Act”) and Rule 608(e) of Regulation NMS.

- The Participants request exemptive relief from the requirements set forth in Section 6.7(a)(iii) of the CAT NMS Plan for the Participants to begin reporting Participant Data to the Central Repository by November 15, 2017. The Participants request that the SEC extend this compliance date by one year to permit each Participant to begin reporting Participant Data to the Central Repository by November 15, 2018.
- The Participants request exemptive relief from the requirements set forth in Sections 6.7(a)(iv) and 6.10(a) of the CAT NMS Plan for Participants to implement a new or enhanced surveillance system(s) by January 15, 2018. The Participants request that the SEC extend this compliance date by one year to permit Participants to implement a new or enhanced surveillance system(s) by January 15, 2019.
- The Participants request exemptive relief from the requirements set forth in Section 6.7(a)(v) of the CAT NMS Plan for Industry Members (other than Small Industry Members) to report to the Central Repository Industry Member Data by November 15, 2018. The Participants request that the SEC extend this compliance date by approximately 17 months to permit Industry Members (other than Small Industry Members) to begin reporting Industry Member Data to the Central Repository by April 13, 2020.
- The Participants request exemptive relief from the requirements set forth in Section 6.7(a)(vi) of the CAT NMS Plan for Small Industry Members to report Industry Member Data to the Central Repository by November 15, 2019. The Participants request that the SEC extend this compliance date by approximately 17 months to

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<sup>1</sup> Unless otherwise noted, capitalized terms are used as defined in Rule 613, in the CAT NMS Plan, or in this letter.

permit Small Industry Members to begin reporting Industry Member Data to the Central Repository by April 20, 2021.<sup>2</sup>

- The Participants request exemptive relief from the Maximum Error Rate requirements set forth in Section A.3(b) of Appendix C of the CAT NMS Plan to permit: (1) Participants to have a Maximum Error Rate of 5% until November 15, 2019, and a Maximum Error Rate of 1% after November 15, 2019; (2) Industry Members (other than Small Industry Members) to have a Maximum Error Rate of 5% until April 13, 2021, and a Maximum Error Rate of 1% after April 13, 2021; and (3) Small Industry Members to have a Maximum Error Rate of 5% until April 20, 2022, and a Maximum Error Rate of 1% after April 20, 2022.
- The Participants request exemptive relief from the requirement set forth in Section 6.6(a)(iv) of the CAT NMS Plan to provide to the SEC “within 24 months of effectiveness of the Plan, a report discussing the feasibility, benefits, and risks of allowing an Industry Member to bulk download the Raw Data it submitted to the Central Repository.” The Participants request that the SEC extend this compliance date by approximately 17 months to permit the provision of this report to the SEC by April 13, 2020.
- The Participants request exemptive relief from the requirement set forth in Section 6.6(a)(v) of the CAT NMS Plan to provide the SEC “within 36 months of effectiveness of the Plan, an assessment of errors in the customer information submitted to the Central Repository and whether to prioritize the correction of certain data fields over others.” The Participants request that the SEC extend this compliance date by approximately 17 months to permit the provision of this assessment to the SEC by April 20, 2021.
- The Participants request exemptive relief from the requirement set forth in Section 6.6(a)(vi) of the CAT NMS Plan to provide the SEC “within 36 months of effectiveness of the Plan, a report on the impact of tiered-fees on market liquidity, including an analysis of the impact of the tier-fee structure on Industry Members’ provision of liquidity.” The Participants request that the SEC extend this compliance date by approximately 17 months to permit the provision of this report to the SEC by April 20, 2021.

The Participants understand and represent that they are responsible for complying with the CAT NMS Plan, approved by the Commission on November 15, 2016, as amended to date. The Participants believe that the proposed compliance dates, as well as the proposed target dates for interim milestones and tasks, for the implementation of the CAT will provide sufficient time to perform all development, interpretive, drafting, testing and other work necessary to implement the CAT. In particular, the alternative compliance dates will ensure sufficient time to address

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<sup>2</sup> The Participants also will propose to amend each of their Compliance Rules to reflect the exemptive relief requested in this letter, if approved.

certain critical dependencies and milestones, including ensuring the security of the CAT Data, as discussed below. In addition, the Participants propose to begin reporting production data to the testing environment as soon as a fully secure testing environment with production level security has been established, which the Participants anticipate occurring in July 2018. This approach would permit the Participants to conduct more efficient testing of the CAT using production data, and would permit both the Participants and the SEC to gain experience with viewing and analyzing CAT Data at an earlier time.

The Participants note that in developing the proposed compliance dates and target interim milestones, they have relied heavily on information from the Plan Processor, Thesys CAT LLC (“Thesys”). The Participants understand that Thesys supports the proposed revised compliance dates and target dates for the interim milestones. Similarly, the Participants discussed the revised proposed compliance dates for the implementation of the CAT with the Advisory Committee, and understand that the Advisory Committee supports those dates. If this exemptive request is granted, the Participants represent that they fully expect to meet the milestones within the timeframes identified in this request and that the quality of the work product referenced herein will be consistent with industry best practices.

At the outset, the Participants emphasize that they have spent considerable time and resources, and have worked cooperatively both together and with Thesys, to develop and implement the CAT. Rule 613, and the CAT NMS Plan drafted and adopted pursuant to the rule, set forth specific deadlines for a uniquely significant industry-wide undertaking with substantial security concerns. Indeed, given the complexity and scope of the CAT, the Participants generally could not reliably determine the length of a potential extension at an earlier date.

Throughout the development of the CAT, the Participants have sought to be fully transparent by regularly discussing the status of development with the Operating Committee, Advisory Committee and Commission staff. Moreover, beginning in the summer of 2017, representatives of the Operating Committee also began to provide updates on the development of the CAT to the SEC Commissioners, including discussing short-term milestones and dependencies. Throughout 2017, the Participants have made every reasonable effort to advance the project and implement the CAT by November 15, 2017, when Rule 613 and the CAT NMS Plan require Participants to begin reporting Participant Data to the Central Repository. However, by September 2017, after a series of events that were not reasonably foreseeable, including difficulties approving a Chief Information Security Officer (“CISO”) candidate and determining that the user acceptance testing approach did not permit testing with production level data in an environment with production level security, the Participants concluded that the timely implementation of the CAT was in jeopardy and began to work with Thesys to timely resolve identified issues. Around this time, the Participants also notified the SEC staff that the implementation timeline set forth in Rule 613 and the CAT NMS Plan may not be met. Also in September 2017, the Participants and Thesys, with input and agreement by the Advisory Committee, began to formulate a proposed alternative implementation timeline, which was provided to the SEC staff the following month. The Participants believe the exemptive relief requested in this letter is necessary to ensure the proper development and implementation of the

CAT, notwithstanding the Participants' best, good faith efforts to satisfy the milestones and deadlines set forth in Rule 613 and the CAT NMS Plan. For your convenience, attached as the Appendix to this letter is a summary of the proposed compliance dates, as well as the proposed target dates for interim milestones and tasks, for the implementation of the CAT as set forth in this exemptive request.

## **A. Reporting of CAT Data by Participants**

Pursuant to the CAT NMS Plan, Participants are required to begin submitting Participant Data to the Central Repository by November 15, 2017. Specifically, Section 6.7(a)(iii) of the CAT NMS Plan states that “[u]nless otherwise ordered by the SEC: ... (iii) within one (1) year after the Effective Date, each Participant shall report to the Central Repository Participant Data.” Because the Effective Date of the CAT NMS Plan was November 15, 2016, the Participants are required to begin submitting Participant Data to the Central Repository by November 15, 2017. The Participants believe that there are various concerns and critical dependencies that would justify an extension of the November 15, 2017 deadline for Participants to begin reporting to the Central Repository, in particular those relevant to ensuring the security of the CAT Data. Therefore, the Participants propose to extend this compliance date to November 15, 2018 for the reasons discussed below.

### **1. Security Concerns**

In adopting Rule 613, the Commission included significant security and confidentiality requirements for the CAT NMS Plan “because it believes that keeping the data secure and confidential is crucial to the efficacy of the consolidated audit trail and the confidence of market participants. Exposure of highly-confidential information about the trading strategies and positions of market participants through a security breach, for example, could impact the confidence of the public in the central repository and in trading on the U.S. markets.”<sup>3</sup> In particular, Rule 613(e)(4)(i) requires the CAT NMS Plan to “include policies and procedures that are designed to ensure implementation of the privacy protections that are necessary to assure regulators and market participants that the CAT NMS Plan provides for rigorous protection of confidential information reported to the Central Repository.”<sup>4</sup> The CAT NMS Plan implements the security-related requirements of Rule 613 through various provisions. For example, Section 6.12 of the CAT NMS Plan requires the Plan Processor to “develop and maintain a comprehensive information security program for the Central Repository, to be approved and reviewed at least annually by the Operating Committee, and which contains at a minimum the specific requirements detailed in Appendix D, Data Security.” Section 6.2(b)(v) of the CAT NMS Plan requires the designation of a CISO, who will be “responsible for creating and enforcing appropriate policies, procedures, and control structures to monitor and address data security issues for the Plan Processor and the Central Repository.”

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<sup>3</sup> Securities Exchange Act Rel. No. 67457 (July 18, 2012), 77 Fed. Reg. 45722, 45791 (Aug. 1, 2012) (“Rule 613 Adopting Release”).

<sup>4</sup> Rule 613 Adopting Release at 45782. *See also* Rule 613(a)(1)(iv).

In light of the importance of the security and confidentiality of the CAT, the Participants believe that it is critical that the CAT's security program provides for the rigorous protection of confidential information collected via the CAT.<sup>5</sup> The Participants believe that certain essential events must take place prior to collecting CAT Data to ensure the security and confidentiality of such CAT Data, including the selection of a permanent CISO, the development of a security program with the CISO's contributions, and the development of a fully secure testing environment with production level security. Failing to take these steps heightens the risk of exposure of highly confidential information as noted by the Commission.

**a. Hiring of Chief Information Security Officer**

As a threshold matter, the Participants believe that a complete and robust security plan and system security protocols are critical to the successful implementation and operation of the CAT. A critical step in creating and implementing the security program is the selection of a CISO, the person "responsible for creating and enforcing appropriate policies, procedures and control structures to monitor and address data security issues for the Plan Processor and the Central Repository,"<sup>6</sup> including data security, connectivity and data transfer, data encryption, data storage and environment, data access and breach management, PII data requirements, industry standards and penetration test reviews.<sup>7</sup> Although numerous candidates have been reviewed and interviewed, a CISO is not in place at this time because a suitable candidate has not been identified. The search for a CISO is ongoing. Through a cooperative effort between Thesys and the Participants, including technical security experts of the Participants, a search firm has been retained, resumes are being reviewed and interviews are taking place. The Participants anticipate that the selection process for a highly qualified CISO, which includes time for a search, interviews, contract negotiations, any garden leave or similar requirements, and Operating Committee approval, will last until mid to late first quarter 2018. To facilitate such selection, the Participants and Thesys will work together to prepare and agree upon a plan by December 10, 2017 for the selection, hiring and onboarding of the CISO. The Participants and Thesys then will select and hire the CISO no later than March 1, 2018.

Recent high-profile security breaches, such as the breach at Equifax, have highlighted the vulnerability of systems holding large volumes of sensitive financial data to hacking and other forms of attack. Because the capability of outside actors to launch such attacks is dynamic and evolving, the security measures taken to defend systems such as the CAT must also evolve. The exposure of financial institutions and their customers to cybersecurity breaches has reinforced the importance of hiring the right candidate as the CISO for the CAT, and to some extent the challenges in doing so by increasing the demand for expertise in this area, particularly at a very senior level. It is critical that the CISO for the CAT have both exemplary knowledge and experience from a technical standpoint but also knowledge and experience relevant to the management of a large and complicated technology project. The current environment and

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<sup>5</sup> Members of Congress also have emphasized the importance of ensuring the security and confidentiality of the CAT Data. *See, e.g.*, Oversight of the U.S. Securities and Exchange Commission, Hearings before The Committee on Banking, Housing and Urban Affairs (Sept. 26, 2017).

<sup>6</sup> Section 6.2(b)(v) of the CAT NMS Plan.

<sup>7</sup> Section 6.2(b)(v)(A)-(H) of the CAT NMS Plan.

demand for such expertise, along with the high public profile of the CAT, has necessarily lengthened the time required to bring a suitable candidate on board.

**b. Onboarding of the CISO/Security Finalization**

After a CISO is selected and approved by the Operating Committee, the CISO will need an appropriate amount of time to understand the CAT project, including the CAT System, his or her duties and responsibilities, including those set forth in Section 6.2 of the CAT NMS Plan, and Thesys's structure and role. Additionally, the CISO will need time to review and provide any input on the security plan, security policies and procedures, and the overall security of the CAT System and related implementation. The CISO's input will be crucial to finalizing the security plan and, therefore, the CISO must be afforded sufficient time to complete this task. The Participants believe that this process will last until mid to late second quarter of 2018, assuming the CISO is chosen during the first quarter of 2018.

To reach the goal of finalizing the security plan by the second quarter of 2018 in a timely and efficient manner, the Participants have developed the following target dates associated with various interim milestones. The following target dates have been developed based on the current understanding of the dependencies for meeting the November 2018 date, as well as representations from Thesys:

- Each Participant to complete its security policies and procedures (subject to later CISO review) by January 5, 2018, subject to updates that may be required when the Participants receive the final security plan.
- Thesys to complete the CAT System Security Plan and required supporting artifacts pursuant to the NIST cybersecurity framework (*e.g.*, IT contingency plan, disaster recovery plan) by March 15, 2018, subject to approval of the Operating Committee (and later CISO review and approval).
- Thesys to fully establish (subject to later CISO review and approval) the security controls defined in the CAT System Security Plan to include a functional security operations center as approved by the Operating Committee (subject to later CISO review and approval) by May 31, 2018.
- Thesys to complete all required security policies and procedures by May 31, 2018, subject to approval of the Operating Committee (and later CISO review and approval).
- Thesys to complete internal penetration testing by June 4, 2018.
- Third-party auditor to begin NIST compliant security assessment (including penetration testing and source code security review) by June 5, 2018 and provide such assessments to the Participants for review by July 2, 2018 and sign off on any residual risk by July 9, 2018. SEC staff to receive copies of such assessments by July 9, 2018.

- Participants to complete their review of the CAT Security Assessment and Authorization documentation, to include the identification of necessary corrective actions required to address identified system deficiencies between July 3, 2018 and July 9, 2018, with the SEC to receive a copy of identified corrective action by July 9, 2018.

**c. Alternative Timeline Considered**

The Participants have considered an alternative proposal to immediately select an interim CISO to expedite the finalization of the security policies, procedures, plans and controls currently in draft form while the search for the permanent CISO is in progress, and to rely on the interim CISO for the development of the security policies, procedures, plan and control structures discussed above, subject to the final approval of the permanent CISO. After careful consideration, the Participants have determined that an interim CISO would not expedite the implementation of the CAT given the importance of the permanent CISO's review and approval of the final security plan. More importantly, the Participants do not believe that relying on an interim CISO would be the best practice for creating the most secure environment for the CAT System.

Specifically, the alternative proposal the Participants considered includes the use of an interim CISO and the following interim milestones:

- Thesys to complete, and the Operating Committee to approve (subject to later CISO review and approval), all CAT NMS, LLC security policies and procedures, by December 1, 2017.
- Thesys to complete, and the Operating Committee to approve (subject to later CISO review and approval), the CAT System Security Plan and required supporting artifacts pursuant to the NIST cybersecurity framework (*e.g.*, IT contingency plan, disaster recovery plan) by January 5, 2018.
- Each Participant to complete its security policies and procedures (subject to later CISO review and approval) by January 5, 2018.
- Thesys to fully establish (subject to later CISO review and approval) the security controls defined in the CAT System Security Plan to include a functional security operations center as approved by the Operating Committee (subject to CISO review and approval) by January 5, 2018.
- Third-party auditor to complete NIST compliant security assessment (including penetration testing and source code security review) and Regulation SCI audits and provide to the Participants so that the Participants can consider and sign off on any residual risk by March 15, 2018. SEC staff to receive copies of such audits by March 15, 2018.

- Participants to complete their review of the CAT Security Assessment and Authorization documentation, to include the identification of necessary corrective actions required to address identified system deficiencies by April 1, 2018. SEC staff to receive a copy of identified corrective action with milestones by April 1, 2018.
- Thesys and the Participants to approve finalized security policies and procedures (System Security Plan and security operations center, reflecting CISO input), and render an authorization to operate decision regarding the operation of the CAT by May 1, 2018. SEC staff to receive copy of the authorization decision, final security assessment and authorization package and schedule for any remaining corrective actions by May 1, 2018.

After careful consideration, the Participants determined that certain aspects of the alternative approach – in particular, assigning target dates to the completion of specific interim milestones and tasks – are reasonable and would assist the Participants’ collective efforts to timely and efficiently develop the CAT. For these reasons, the Participants proposed the target interim milestones discussed in the preceding section. However, as discussed further below, the Participants do not believe that all aspects of the alternative approach, such as the hiring of an interim CISO, are feasible, and, therefore, have not proposed to implement these alternatives.

As a practical matter, neither the Participants nor Thesys have an appropriate internal candidate, with the requisite knowledge, experience and availability, to fulfill the interim CISO role. Thesys has confirmed that they do not have an internal candidate, and the Participants do not believe that they could second one of their employees without introducing risk to their own security. Accordingly, the Participants would be required to turn to external candidates to fulfill the interim CISO role. An external search for a qualified interim CISO consumes the same resources as a search for a permanent CISO. Indeed, finding a qualified candidate willing to work for only a few months makes the search even more difficult. Moreover, splitting the oversight of the CAT’s security between two people, the interim CISO and the permanent CISO, would create opportunities for gaps in the security program. Finally, having a temporary CISO on board would not alleviate the need for the permanent CISO to conduct his or her own review of the security plans and implementation upon hiring. Therefore, the Participants have determined that the interim CISO is not the appropriate approach for maximizing the security of the CAT. The Participants believe that focusing on hiring a permanent CISO is the best approach.

The Participants also believe that the proposed alternative timeline for implementing the CAT’s security program is too abbreviated, fails to take into consideration critical dependencies, and would not maximize the security of the CAT. In particular, based on their experiences to date, the Participants believe that it would be impractical to meet many of the proposed alternative security implementation requirements, such as those related to hiring and onboarding a permanent CISO and the CISO conducting required reviews and approvals in a timely manner. For instance, the Participants believe that the compressed milestones in the proposed alternative timeline do not provide sufficient time for the permanent CISO to adequately evaluate and



amend, as necessary, the security plan, and any limitation imposed on the CISO's review could have broader impact with respect to the security of the CAT. For these reasons, the Participants' requested timeline and target interim milestones discussed in the preceding section permit additional time to complete these critical tasks.

In addition, the Participants note that it is not feasible, as a practical matter, for Thesys to fully establish the security controls defined in the CAT System Security Plan on the same day that they are approved – that is, January 5, 2018 – as set forth in the proposed alternative timeline. There must be a reasonable period after the approval of such controls for Thesys to establish the controls, as set forth in the Participants' requested timeline and target interim milestones discussed in the preceding section.

Finally, under a proposed alternative timeline that would include the appointment of an interim CISO, the third-party auditor would perform its audit on a preliminary security program before it has been reviewed or approved by the permanent CISO; only the interim CISO would have reviewed the program. The Participants believe that the security program should be finalized and reviewed and approved by the permanent CISO before it is audited by a third-party auditor. Moreover, scheduling the audit prior to the permanent CISO's review may limit the value of the CISO's review and assessment of the security program. Such an approach also could make it difficult to find an appropriate permanent CISO candidate in the first instance, as the permanent CISO is required to take full responsibility for the security design. For these reasons, the Participants' requested timeline and target interim milestones discussed in the preceding section permit additional time to complete these tasks.

## **2. CAT System Testing**

### **a. Requested Timeline and Early Data Submission**

The Participants also believe that it is critical that the Participants have sufficient time to test a code complete solution on the final technical architecture that includes all security functionality. Such testing should be completed with production-like data for truly effective and reliable testing. However, the Participants do not believe that production data should be used unless all security functionalities are in place. Accordingly, the Participants propose that they begin to report production data to the testing environment as soon as a fully secure testing environment with production level security has been established. The Participants anticipate that testing with test data will be completed by June 4, 2018 and that the reporting of production data to the secure testing environment will commence by July 17, 2018, assuming, based on representations by Thesys, that the CISO has been chosen, the CISO has approved the testing environment for user acceptance testing by May 31, 2018, the testing environment is code complete by June 4, 2018, and the security program is timely finalized, as previously discussed.

This approach would permit the Participants to conduct more efficient testing of the CAT using production data, and would permit both the Participants and the SEC to gain experience with viewing and analyzing CAT Data at an earlier time. Under this approach, the Participants

also propose using the final two phases of user acceptance testing, which would begin in late August 2018, to test regulator access. The Participants anticipate that this testing will last until late September 2018, assuming the CISO has been chosen and the security program is finalized, and subject to the CISO completing his/her review of the test environment and completing any necessary remediation, including receiving the approval of the Operating Committee, of any issues that may emerge during testing.

Notwithstanding the approach to early data submission outlined in this section, the Participants still believe that the proposed date of November 15, 2018 for the Participants' obligation to report all Participant Data to the Central Repository is appropriate. For instance, although the Participants propose to begin reporting production data to the secure testing environment in July 2018, the Participants believe that the quality of the reported data cannot be reasonably relied upon until the data has been fully tested and verified. Moreover, during such testing and verification, the Participants and/or Thesys may identify minor changes to the Participant Technical Specifications or other aspects of reporting that may be necessary or appropriate in order to support high quality, reliable data.

#### **b. Alternative Timeline Considered**

The Participants have considered a more compressed alternative timeline for completing the testing of the submission of data by Participants and concluded that it is not feasible. Specifically, this alternative timeline would include the following milestones:

- Complete acceptance testing in test environment by December 1, 2017.
- CISO finishes review of test environment and completes remediation (including receiving the sign off of the Operating Committee) of any issues that emerge during testing by April 1, 2018.
- Complete testing of production environment (including the completion of remediation and receiving the sign off of the Operating Committee) by May 1, 2018.

In recognition of data security concerns, the Participants believe that this testing timeline is too compressed. As an initial matter, the Participants note that testing to date with non-production data has resulted, not unexpectedly, in various remediation measures that must be completed. The Participants believe that such remediation may well require modifications to the Participant Technical Specifications. In addition, the Participants believe that the acceptance tests should be conducted with production, not test, data in an environment with production-level security. Accordingly, in light of these concerns, the Participants do not believe that acceptance testing can be successfully completed by December 1, 2017. In addition, the Participants do not believe that production data should be used in testing unless a fully secure testing environment is in place. The risks of using production data in an unsecure testing environment are too great, and such actions would not comport with industry practice. Accordingly, as discussed in the preceding section, the Participants do not believe that testing with production data should begin

until after the permanent CISO has been selected, the security program has been finalized and a fully secure testing environment is in place. Thus, a May 1, 2018 completion date is too short given the concerns regarding the security timeline discussed above.

### **3. Normalization of Participant Data**

#### **a. Requested Timeline**

Participant Data normalization and the use of free text fields is the subject of ongoing discussions between the Participants and Thesys. The implementation schedule for normalization of Participant Data depends on the definition and scope of normalization. The Participants and Thesys intend to agree on a precise scope and next steps for normalization by December 15, 2017, including what data elements need to be normalized and which party will normalize the data elements (*i.e.*, regulators or Thesys).

#### **b. Alternative Timeline Considered**

The Participants have considered an alternative proposal regarding the normalization of Participant Data. Under this alternative, the Participants would provide a plan for classifying the information Thesys needs to normalize Participant Data in a manner consistent with the goals of a CAT that is complete, accurate, accessible and timely, including a CAT that minimizes the need to download data from the Central Repository and which allows the Participants to efficiently conduct cross-market surveillance. The plan would provide for the creation by the Participants of: (1) a data dictionary that defines all of the information that will be reported, including order types; (2) a common data model, which is the logical arrangement of all data that will be reported and how those elements relate to each other—the common data model will ensure inter-operability of data from all Participants such that the data can be automatically interpreted; and (3) a schema that is the computer code representation of the common data model—the schema will incorporate validations approved by Thesys to ensure that complete and consistent data is provided to Thesys such that Thesys can normalize Participant Data. Under this alternative, the Participants would provide the plan for normalizing Participant Data to the SEC staff by December 1, 2017, complete the classification by January 5, 2018, and require Thesys to implement the Participant Data normalization process by no later than February 1, 2018.

The Participants do not believe that a definitive deadline for implementing normalization currently can be established. The normalization issues are not yet fully identified, are complex and the implementation schedule cannot be determined without first defining the scope and definition of normalization.

### **4. SIP Data**

Section 6.5 of the CAT NMS Plan requires that the Central Repository collect (from a SIP or pursuant to an NMS Plan) and retain on a current and continuing basis, in a format

compatible with the Participant Data and Industry Member Data, SIP Data. The Participants represent that Thesys will incorporate SIP and OCC data by June 4, 2018.

## **5. Cloud Storage**

The Participants also represent that Thesys will complete a document containing details regarding the usage of cloud storage for the CAT and submit such document to the SEC staff and the Participants by March 15, 2018. Thesys will be prepared to utilize cloud storage for the CAT by May 15, 2018.

## **6. Process/Governance**

As a condition to the requested relief, and to facilitate meeting the milestones set forth in this request, the Participants agree to create enhanced processes for completing the implementation of the CAT. First, the Participants and Thesys (including the Operating Committee Chair, the Chief Compliance Officer, the CISO (when selected) and the Chief Operating Officer of Thesys, as well as Mike Beller or Andre Frank of Thesys) will conduct calls with the SEC staff to report on progress toward the milestones at least weekly or more often as reasonably requested by the SEC staff. Second, the Participants and Thesys will establish new processes, standards and timelines for making decisions by December 15, 2017. Third, the Participants and Thesys will establish and implement a written plan for receiving input from the industry and the Advisory Committee and tracking and giving good faith consideration to any such input by January 5, 2018. Finally, the Participants will submit a written report to the SEC staff by January 5, 2018 discussing their good faith consideration of governance changes – including, if applicable, any Plan amendments – such as, but not limited to, the appointment of committee chairs with meaningful decision-making authority, enhancing the authority of the Operating Committee Chair or creating a newly appointed, more nimble, steering committee of the Participants.

While proposing the enhanced processes noted above to help complete the implementation of CAT, the Participants do not believe that other steps, such as the hiring of a mediator, facilitator or similar professional solely at the Participants' own expense to assist in decision making and cooperation, will expedite the project schedule. Instead, the Participants believe that such measures would inhibit the process with unnecessary additional administrative processes. The Participants believe that a significant contributing factor to delays in implementation is the CAT being a uniquely significant industry-wide undertaking with substantial security concerns. Moreover, given the complexity of the CAT project, any mediator will need significant time to understand the CAT NMS Plan, the role of Thesys and the concerns of the industry. Therefore, the Participants believe that it would be unlikely that any newly hired mediator would be able to serve a productive role in the short term.

## **B. New or Enhanced Participant Surveillance Systems**

### **1. Requested Timeline**

Pursuant to the CAT NMS Plan, Participants are required to begin submitting Participant Data to the Central Repository by November 15, 2017. Specifically, Section 6.7(a)(iv) of the CAT NMS Plan states that “[u]nless otherwise ordered by the SEC: ... (iv) within fourteen (14) months after the Effective Date, each Participant shall implement a new or enhanced surveillance system(s) in accordance with Section 6.10.” In addition, Section 6.10(a) of the CAT NMS Plan states that “[u]nless otherwise ordered by the SEC, within fourteen (14) months after the Effective Date, each Participant shall initially implement a new or enhanced surveillance system(s) as required by SEC Rule 613 and the preceding sentence.” Because the Effective Date of the CAT NMS Plan was November 15, 2016, the Participants currently are required to implement a new or enhanced surveillance system(s) by January 15, 2018, two months after Participants begin reporting to the Central Repository. In light of the proposed extended compliance date for Participants to begin reporting Participant Data to the Central Repository, the Participants propose to extend this compliance date for implementing a new or enhanced surveillance system(s) to January 15, 2019.

Rule 613(f) describes the surveillance systems required to be implemented by January 15, 2018. Rule 613(f) requires every Participant to “develop and implement a surveillance system, or enhance existing surveillance systems, reasonably designed to make use of the consolidated information contained in the consolidated audit trail.” In adopting this provision, the Commission stated that it “believes that it is appropriate to require Participants to enhance their surveillance programs to make full use of the increased functionalities and the timeliness of the consolidated audit trail.”<sup>8</sup> The Commission determined to require the implementation of the new or enhanced surveillance system(s) two months after the Participants begin reporting to the Central Repository. The Commission stated that “it believes the two additional months provided by this timeframe is reasonable and sufficient to allow Participants to update their surveillance systems and allow for testing of new surveillances.”<sup>9</sup>

The Participants agree that two months after the Participants commence reporting will be sufficient time for Participants to update their existing surveillance systems and to test new surveillances. Accordingly, the Participants propose to require the implementation of new or enhanced surveillance systems two months after the proposed new date for Participants to begin reporting Participant Data to the Central Repository (which is proposed to be November 15, 2018) – that is, January 15, 2019.

To meet this goal, each Participant will determine the functionality it needs to implement new or enhanced surveillance systems as required by the CAT NMS Plan and will discuss with the SEC staff how the regulator access method that will be available on January 15, 2019 will provide that functionality. In addition, the Participants and Thesys will discuss the scope of the

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<sup>8</sup> Rule 613 Adopting Release at 45788.

<sup>9</sup> *Id.*

online targeted and direct query tools for accessing CAT before January 15, 2018. This would include an open API that allows the SEC and other regulatory users to use analytics tools (*e.g.*, R, SAS, Python, and Tableau) and ODBC/JBDC drivers to access the data, and it would also include the ability to conduct market reconstruction and visualize the status of order books at varying time intervals. Furthermore, by December 15, 2017, the Participants will evaluate ways to limit the need to bulk download data from the Central Repository and will discuss this with the SEC staff. The online targeted and direct query tools and other functionality for accessing the CAT will be available for testing by June 4, 2018. Each Participant expects to continue to evaluate its surveillance systems and expects such systems to evolve as the Participant gains experience with the CAT.

## **2. Alternative Timeline Considered**

The Participants have considered a more compressed timeline regarding surveillance systems and regulator access and do not believe that it is feasible. Specifically, this alternative timeline would set forth the following milestones:

- By December 15, 2017, the Participants to determine the functionality they need to implement new or enhanced surveillance systems as required by the CAT NMS Plan and Rule 613(a)(3)(iv), and document and submit to the SEC staff how the regulator access method that will be available on May 15, 2018 will provide that functionality.
- Online targeted and direct query tools for accessing CAT will be agreed upon by the Participants and Thesys by January 5, 2018. This would include an open API that allows the SEC and other regulatory users to use analytics tools (*e.g.*, R, SAS, Python, and Tableau) and ODBC/JBDC drivers to access the data. It would also include the ability to conduct market reconstruction and visualize the status of order books at varying time intervals.
- Participants will provide a plan to the SEC staff and Thesys for the regulator access tool that will minimize the need to download data from the Central Repository by January 5, 2018.
- Online targeted and direct query tools and other functionality for accessing CAT available for testing by April 1, 2018.

The Participants do not believe that they can determine the functionality they need to implement new or enhanced surveillance systems and the regulator access method for providing that functionality by December 15, 2017. Nor can the dates above be met given the outstanding issues under consideration. The regulator access and surveillance system requirements raise complex definitional issues. Until these are defined, Thesys cannot commit to development timelines for the means of regulatory access, such as sandboxes. Similarly, it is difficult for the Participants to determine their needs for new or enhanced surveillance systems within the proposed timeline. Further, there is currently a disagreement between the Participants and Thesys

regarding whether sandboxes are required by the Plan or the contractual agreement between the Participants and Thesys.

**C. Reporting of CAT Data by Industry Members (other than Small Industry Members)**

Pursuant to the CAT NMS Plan, Industry Members (other than Small Industry Members) are required to begin submitting Industry Member Data to the Central Repository by November 15, 2018. Specifically, Section 6.7(a)(v) of the CAT NMS Plan states that “[u]nless otherwise ordered by the SEC: ... (v) within two (2) years after the Effective Date, each Participant shall, through its Compliance Rule, require its Industry Members (other than Small Industry Members) to report to the Central Repository Industry Member Data.” Because the Effective Date of the CAT NMS Plan was November 15, 2016, Industry Members (other than Small Industry Members) currently are required to begin submitting Industry Member Data to the Central Repository by November 15, 2018. The Participants propose to extend this compliance date by approximately 17 months to April 13, 2020 to ensure that Industry Members (other than Small Industry Members) have adequate time for the completion, implementation and testing of the Industry Member Technical Specifications.

**1. Completion of Industry Member Technical Specifications**

**a. Requested Timeline**

A critical step in the implementation of the CAT is the completion of the Industry Member Technical Specifications for both the submission of orders as well as the submission of Customer Account Information and Customer Identifying Information. The process for completing the Industry Member Technical Specifications must include sufficient time for Thesys to publish iterative drafts of the Industry Member Technical Specifications and to engage in discussions with the industry. In particular, and based largely on its review of the draft Industry Member Technical Specifications, the Advisory Committee and the industry have raised a significant number of interpretive questions that will require close review by the Participants and the Plan Processor and, in many cases, interpretations issued by the Operating Committee (*e.g.*, scope of items required by the Industry Member Technical Specifications versus the CAT NMS Plan and SEC Rule 613). The resolution of these issues may have a significant impact on the development work and testing required of Industry Members to begin reporting to the Central Repository. In addition, the Advisory Committee noted that, as a point of comparison, the revisions to the technical specifications for recent electronic blue sheet (“EBS”) changes took approximately eleven months. Based on the complex nature of the Industry Member Technical Specifications, the input of the Advisory Committee and other members of the industry, as well as prior experience with revisions to technical specifications, the Participants anticipate that Industry Member Technical Specifications regarding both the submission of orders and Customer Account Information and Customer Identifying Information will be completed by late

October 2018.<sup>10</sup> These two sets of Industry Member Technical Specifications will be developed at the same time prior to October 2018.

To meet the October 2018 deadline for finalizing both sets of Industry Member Technical Specifications, the Participants expect Thesys to publish iterative drafts of the Industry Member Technical Specifications for the submission of orders, incorporating regulator and industry feedback, on February 15, 2018, April 15, 2018 and June 15, 2018, incorporating regulator and industry feedback, and to publish iterative drafts of the Industry Member Technical Specifications for the submission of Customer Account Information and Customer Identifying Information, incorporating regulator and industry feedback, on May 15, 2018, July 15, 2018 and September 15, 2018. The Industry Member Technical Specifications will be complete and vetted with the Advisory Committee by October 2018.<sup>11</sup>

In addition, the Participants and the Advisory Committee will work together on a plan for classifying the information Thesys needs to normalize Industry Member Data in a manner consistent with the goals of a CAT that is complete, accurate, accessible and timely, including a CAT that minimizes the need to download data from the Central Repository and which allows the Participants to efficiently conduct cross-market surveillance. This plan will provide for the creation of: (1) a data dictionary that defines all of the information that will be reported, including order types; (2) a common data model, which is the logical arrangement of all data that will be reported and how those elements relate to each other—the common data model will ensure inter-operability of data from all Industry Members such that the data can be automatically interpreted; and (3) a schema that is the computer code representation of the common data model—the schema will incorporate validations approved by Thesys to ensure that complete and consistent data is provided to Thesys such that Thesys can normalize Industry Member Data. The Participants and Advisory Committee will determine the scope of data subject to the above described plan by January 15, 2018 and provide the plan to the SEC.

#### **b. Alternative Timeline Considered**

The Participants have considered a more compressed timeline for completing the Industry Member Technical Specifications and do not believe that it is workable. Under this alternative timeline, Thesys would publish iterative drafts of Industry Member Technical Specifications for Order and Customer Data, incorporating regulator and industry feedback, on January 15, 2018, February 15, 2018 and March 15, 2018, with the goal of completing the Industry Member Technical Specifications that have been vetted by the Advisory Committee by May 15, 2018. In addition, under the alternative timeline, the Participants would be required to complete the normalization plan for Industry Member Data by December 1, 2017, publish iterative drafts for industry review, with a completed and approved classification of information, by no later than April 1, 2018, and complete the normalization process by May 15, 2018. As discussed above,

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<sup>10</sup> “Complete” means that only minor, nonmaterial changes should be made before industry go-live.

<sup>11</sup> As previously noted, “complete” means that only minor, nonmaterial changes should be made before industry go-live.



the Participants believe that a May 2018 deadline for completing the Industry Member Technical Specifications is too compressed.

In particular, the Advisory Committee, the CAT committee charged with providing industry input into the governance of the CAT, agrees that this proposed deadline is too compressed and urges the Participants to take the additional months to analyze the many interpretive and other issues raised by such a complex project. For example, as with the normalization of Participant Data, the Participants do not believe that the proposed alternative timeline for normalization is feasible as the normalization issues are complex. Until the approach to normalization is defined, Thesys cannot commit to specific development timelines. In addition, the Participants understand that the Advisory Committee does not believe that there is sufficient time for the Participants to consult with the Advisory Committee to obtain the views of the industry on the normalization plan by December 1, 2017. Moreover, this expedited timeline requires the finalization of the Industry Member Technical Specifications shortly after the permanent CISO is onboarded. However, the Participants believe that it is critical that the permanent CISO provide input into the security related to the Industry Member Technical Specifications, particularly the requirements related to personally identifiable information (“PII”).

## **2. Implementation of Industry Member Technical Specifications**

Based on discussions with the Advisory Committee, the Participants understand that Industry Members (other than Small Industry Members) anticipate that they will need approximately 12 months after the Industry Member Technical Specifications are complete to fully implement (*e.g.*, code, build infrastructure) any changes required to conform to the Technical Specifications (*e.g.*, system updates, logic updates). Based on prior experience with the implementation of technology projects, the Advisory Committee believes that full implementation of the Industry Member Technical Specifications will take approximately 12 months. For example, the Advisory Committee noted that T+2 settlement development took approximately 14 months, and the migration for FINRA’s over-the-counter reporting facility (“ORF”) took approximately 17 months. Accordingly, the Participants anticipate that Industry Members (other than Small Industry Members) will complete their implementation of the Industry Member Technical Specifications by mid-October 2019.

The proposed 12-month implementation period is the same as currently set forth in the CAT NMS Plan. Specifically, Appendix C states that, with regard to Industry Members’ (other than Small Industry Members) submission of order data to the Central Repository, the “Plan Processor publishes Technical Specification(s) for Industry Member submission of order data” “[n]o later than 1 year before Industry Members (other than Small Industry Members) are required to begin reporting data to the Central Repository.”<sup>12</sup>

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<sup>12</sup> Section C.10, Appendix C, Securities Exchange Act Rel. No. 79318 (Nov. 15, 2016), 81 Fed. Reg. 84696, 85012 (Nov. 23, 2016) (“Plan Adopting Release”).

### **3. Testing of Industry Member Technical Specifications**

In addition to being afforded sufficient time to fully implement the Industry Member Technical Specifications, the Participants understand that Industry Members (other than Small Industry Members) also must have sufficient time to fully test, including through multiple iterations, their systems and ability to report to the Central Repository. Based on discussions with the Advisory Committee, the Participants believe that six months is necessary to fully test the Industry Member Technical Specifications. Based on prior experience with the testing of technology projects, the Advisory Committee believes that full implementation of the Industry Member Technical Specifications will take approximately six months. For example, the Advisory Committee noted that testing for T+2 settlement took approximately six months, testing for the ORF migration took approximately six months, and testing for FINRA's expansion of its Order Audit Trail System ("OATS") to all NMS stocks took approximately four months. The Advisory Committee also noted that the total development and testing time for recent EBS changes took approximately 19 months. Accordingly, the Participants anticipate that Industry Members (other than Small Industry Members) will complete testing by mid-April 2020.

#### **D. Reporting of CAT Data by Small Industry Members**

Pursuant to the CAT NMS Plan, Small Industry Members are required to begin submitting Industry Member Data to the Central Repository by November 15, 2019. Specifically, Section 6.7(a)(vi) of the CAT NMS Plan states that "[u]nless otherwise ordered by the SEC: ... (vi) within three (3) years after the Effective Date, each Participant shall, through its Compliance Rule, require its Small Industry Members to report to the Central Repository Industry Member Data." Because the Effective Date of the CAT NMS Plan was November 15, 2016, Small Industry Members are required to begin submitting Industry Member Data to the Central Repository by November 15, 2019. In light of the proposed extended compliance date for Industry Members (other than Small Industry Members), the Participants propose to extend this compliance date to April 20, 2021.

Based on discussions with the Advisory Committee, the Participants anticipate that Small Industry Members will be in a position to begin reporting to the Central Repository one year after Industry Members (other than Small Industry Members) begin reporting to the Central Repository in April 2020. Based on discussions with the Advisory Committee regarding implementation times, as discussed above, the Participants understand that Small Industry Members will need approximately 12 months additional time after Industry Members (other than Small Industry Members) begin reporting to the Central Repository to fully implement (*e.g.*, code, build infrastructure) the Industry Member Technical Specifications. Specifically, the Participants anticipate that Small Industry Members will complete their implementation of the Industry Member Technical Specification by October 2020, which is 12 months after October 2019.

Once Small Industry Members have implemented the Industry Member Technical Specifications, the Participants understand that Small Industry Members also must have sufficient time to fully test, including through multiple iterations, their systems and ability to report to the Central Repository. Based on discussions with the Advisory Committee regarding testing, as discussed above, the Participants anticipate that such testing will take approximately six months, beginning in October 2020 and ending in mid-April 2021. The Participants anticipate that Small Industry Members will begin reporting to the Central Repository upon completion of their testing, in April 2021.

The extension of the compliance date for Small Industry Members to one year after the compliance date for Industry Members (other than Small Industry Members) corresponds with the timeline set forth in Rule 613(a)(3)(vi), as adopted by the Commission. In requiring Small Industry Members to begin reporting Industry Member Data to the Central Repository one year after Industry Members (other than Small Industry Members), the Commission recognized that:

small broker-dealers, particularly those that operate manual systems, might be particularly impacted because of their more modest financial resources and may need additional time to upgrade to an electronic method of reporting audit trail data to the central repository, and thus believes that allowing the NMS plan to permit such broker-dealers up to an extra year to begin reporting data to the central repository if the plan sponsors believe such an accommodation is reasonable, is appropriate. The Commission believes up to an additional year could allow small broker-dealers extra time to explore the most cost-effective and most efficient method to comply with the Rule.<sup>13</sup>

The Participants believe that the Commission's arguments continue to apply to the proposed extended implementation timeline. Accordingly, the Participants propose to require Small Industry Members to begin reporting to the Central Repository by April 20, 2021.

#### **E. Error Rate Calculation**

Appendix C of the CAT NMS Plan describes a phased approach to lowering the maximum Error Rate whereby, one year after each CAT Reporter's respective reporting obligation commences, the CAT Reporter's Maximum Error rate would be reduced from 5% to 1%.<sup>14</sup> Appendix C sets forth a table indicating the Maximum Error Rate for Participants, large broker-dealers and small broker-dealers for one year, two years, three years and four years after the effectiveness of the CAT NMS Plan ("Error Rate Table"). The timing of these error rate milestones was intended to coincide with the dates set forth in the CAT NMS Plan for the commencement of reporting to the Central Repository for each category of CAT Reporters. However, if the compliance dates for CAT Reporters to report CAT Data to the Central Repository are extended as requested in this exemptive request, then the timing of the Maximum Error Rates set forth in the Error Rate Table will no longer correspond to the CAT reporting

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<sup>13</sup> Rule 613 Adopting Release at 45749.

<sup>14</sup> Section A.3(b) of Appendix C, Plan Adopting Release at 84979.

compliance dates. The Participants believe that the error rate milestones should continue to correspond to the dates by which each category of CAT Reporters is required to commence reporting CAT Data to the Central Repository. Accordingly, the Participants request that the SEC extend the dates for compliance with the Maximum Error Rates as follows:

- As set forth in the Error Rate Table, Participants would have a Maximum Error Rate of 5% for the first year after the effectiveness of the CAT NMS Plan – that is, until November 15, 2018. November 15, 2018 would have provided the Participants with a Maximum Error Rate of 5% for their first year of reporting. The Maximum Error Rate then would be reduced to 1% after November 15, 2018. The Participants request exemptive relief from this error rate requirement to permit the Participants to have a Maximum Error Rate of 5% until November 15, 2019, and a Maximum Error Rate of 1% after November 15, 2019.
- As set forth in the Error Rate Table, Industry Members (other than Small Industry Members) would have a Maximum Error Rate of 5% for the second year after the effectiveness of the CAT NMS Plan – that is, until November 15, 2019. November 15, 2019 would have provided Industry Members (other than Small Industry Members) with a Maximum Error Rate of 5% for their first year of reporting. The Maximum Error Rate then would be reduced to 1% after November 15, 2019. The Participants request exemptive relief from this error rate requirement to permit Industry Members (other than Small Industry Members) to have a Maximum Error Rate of 5% until April 13, 2021, and a Maximum Error Rate of 1% after April 13, 2021.
- As set forth in the Error Rate Table, Small Industry Members would have a Maximum Error Rate of 5% for the third year after the effectiveness of the CAT NMS Plan – that is, until November 15, 2020. November 15, 2020 would have provided Small Industry Members with a Maximum Error Rate of 5% for their first year of reporting. The Maximum Error Rate then would be reduced to 1% after November 15, 2020. The Participants request exemptive relief from this error rate requirement to permit Small Industry Members to have a Maximum Error Rate of 5% until April 20, 2022, and a Maximum Error Rate of 1% after April 20, 2022.

#### **F. Report on Risks and Benefits of Industry Member Bulk Downloads**

Pursuant to Section 6.6(a)(iv) of the CAT NMS Plan, Participants are required to provide the SEC, “within 24 months of effectiveness of the Plan, a report discussing the feasibility, benefits, and risks of allowing an Industry Member to bulk download the Raw Data it submitted to the Central Repository.” The timing of this report is intended to coincide with the commencement of the reporting of Industry Member Data to the Central Repository by Industry Members (other than Small Industry Members). Specifically, Industry Members (other than Small Industry Members) are required to begin reporting Industry Member Data to the Central Repository by November 15, 2018, and Participants are required to provide the report on the

risks and benefits of Industry Member bulk downloads on November 15, 2018. In approving this provision, the SEC stated that:

The Commission believes it is important to consider the potential efficiencies of allowing Industry Members bulk access to their own CAT data, so long as such access does not impact the security of the CAT Data, and accordingly believes that requiring a report discussing this issue by the date Industry Members first begin reporting to the CAT, is appropriate.<sup>15</sup>

The Participants believe that it is appropriate that these two deadlines remain the same. Accordingly, the Participants request that the SEC extend the compliance date for providing the SEC with the report on the risks and benefits of Industry Member bulk downloads by approximately 17 months to permit the provision of the report to the SEC by April 13, 2020. This is the same requested extension period for the reporting of Industry Member Data to the Central Repository by Industry Members (other than Small Industry Members).

#### **G. Assessment of Errors in Customer Information**

Pursuant to Section 6.6(a)(v) of the CAT NMS Plan, Participants are required to provide the SEC “within 36 months of effectiveness of the Plan, an assessment of errors in the customer information submitted to the Central Repository and whether to prioritize the correction of certain data fields over others.” In requiring this assessment, the SEC stated that it “believes that the assessment will help to identify any unanticipated issues with the accuracy of the customer information fields,”<sup>16</sup> among other things. The SEC required the report to be submitted after the initial reporting period for Industry Members (other than Small Industry Members) during which sufficient data would have been submitted to the Central Repository to allow for an analysis of errors in customer information. The Participants believe that the assessment should be provided to the SEC at the end of the initial reporting period for Industry Members (other than Small Industry Members) as requested in this exemption request. In that way, sufficient data will be available to perform the analysis. Accordingly, the Participants request that the SEC extend the compliance date for providing the assessment of errors in customer information by approximately 17 months to permit the provision of this assessment to the SEC by April 20, 2021.

#### **H. Report on Impact of Tiered Fees on Market Liquidity**

Pursuant to Section 6.6(a)(vi) of the CAT NMS Plan, the Participants are required to provide the SEC “within 36 months of effectiveness of the Plan, a report on the impact of tiered-fees on market liquidity, including an analysis of the impact of the tier-fee structure on Industry Members’ provision of liquidity.” In approving this requirement, the Commission stated that it “believes that a report that explains the observed impact on liquidity after reporting begins will allow the Commission and the Participants to determine whether or not the tier-fee structure

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<sup>15</sup> Plan Adopting Release at 84799.

<sup>16</sup> *Id.* at 84843.

discourages Industry Member[s] from providing liquidity.”<sup>17</sup> Therefore, the Commission determined to require the submission of the report on the impact of tiered fees on market liquidity by the date on which all Industry Members are required to be reporting to the Central Repository. Accordingly, the Participants request that the SEC extend the compliance date for providing the SEC with the report on the impact of tiered fees on market liquidity by approximately 17 months to permit the provision of the report to the SEC by April 20, 2021. This is the same date by which Small Industry Members would begin reporting Industry Member Data to the Central Repository as requested in this exemptive request.

## **I. Conclusion**

The Participants believe that the proposed compliance dates, as well as the proposed target dates for interim milestones and tasks, for the implementation of the CAT set forth in this exemptive request are necessary to ensure sufficient time for certain critical dependencies and milestones, including ensuring the security of the CAT Data. The Participants welcome any feedback regarding this exemptive request, including any thoughts on how to proceed.

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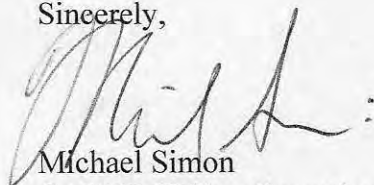
<sup>17</sup> *Id.* at 84940.

Mr. Brent J. Fields  
November 13, 2017  
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\* \* \* \* \*

Thank you for your attention to this matter. Please contact me at (212) 229-2455 if you have any questions or comments.

Sincerely,



Michael Simon  
CAT NMS Plan Operating Committee Chair

*[Participant Signature Pages Follow]*

cc (via email): The Hon. Jay Clayton, Chairman  
The Hon. Michael S. Piwowar, Commissioner  
The Hon. Kara M. Stein, Commissioner  
Mr. Brett Redfearn, Director, Division of Trading and Markets  
Mr. Gary L. Goldsholle, Deputy Director, Division of Trading and Markets  
Mr. David S. Shillman, Associate Director, Division of Trading and Markets  
Mr. David Hsu, Assistant Director, Division of Trading and Markets  
Mr. Shane Swanson, Chief Compliance Officer, Thesys CAT LLC  
Mr. Ed Watson, Chief Operating Officer, Thesys CAT LLC  
CAT NMS Plan Participants

## APPENDIX A

This Appendix outlines the Participants' proposed compliance dates and target dates for interim milestones described in this request for exemptive relief from certain provisions of the CAT NMS Plan. The Participants are providing the summary chart in this Appendix for your convenience. However, the language in the body of the letter controls as to the details of our requested exemptive relief.

Milestone	Proposed Date
<b>A. Reporting of CAT Data by Participants</b>	
Each Participant to begin reporting Participant Data to the Central Repository	By November 15, 2018
<b>Section A.1(b) (Security Concerns - Onboarding of the CISO/Security Finalization)</b>	
Participants and Thesys will work together to prepare and agree upon a plan to select, hire and onboard a CISO	By December 10, 2017
Each Participant to complete its security policies and procedures (subject to later CISO review and updates that may be required when Participants receive the final security plan)	By January 5, 2018
Thesys to complete the CAT System Security Plan and required supporting artifacts pursuant to NIST cybersecurity framework (e.g., IT contingency plan, disaster recovery plan) subject to approval of the Operating Committee (and later CISO review and approval)	By March 15, 2018
Participants and Thesys will select and hire a CISO	By no later than March 1, 2018
Thesys to fully establish (subject to later CISO review and approval) the security controls defined in the CAT System Security Plan to include a functional security operations center as approved by the Operating Committee (subject to CISO review and approval)	By May 31, 2018
Thesys to complete all required security policies and procedures, subject to approval of the Operating Committee (and later CISO review and approval)	By May 31, 2018
Thesys to complete internal penetration testing	By June 4, 2018
Third-party auditor security assessments	
i. Third-party auditor to begin NIST compliant security assessment (including penetration testing and source code security review)	By June 5, 2018
ii. Copy of third-party assessment provided to Participants for review by July 2, 2018 and sign off on any residual risk by July 9, 2018	July 2, 2018 to July 9, 2018
iii. SEC staff to receive copies of such assessments	By July 9, 2018
Participant security review	
i. Participants to complete their review of the CAT Security Assessment and Authorization documentation, to include the identification of necessary corrective actions required to address identified system deficiencies	Between July 3, 2018 and July 9, 2018
ii. SEC to receive a copy of identified corrective action	By July 9, 2018
<b>Section A.2(a) (CAT System Testing - Requested Timeline and Early Data Submission)</b>	
CISO approves the testing environment for user acceptance testing	By May 31, 2018
Testing with test data is completed	By June 4, 2018
Testing environment is code complete	By June 4, 2018
Reporting of production data to the secure testing environment will commence (provided that the testing environment is code complete by June 4, 2018)	By July 17, 2018
Participants propose using the final two phases of user acceptance testing	Late August 2018 to late



<b>Milestone</b>	<b>Proposed Date</b>
to test regulator access	September 2018
<b>Section A.3(a) (Normalization of Participant Data)</b>	
Participants and Thesys intend to agree on a precise scope and next steps for normalization	By December 15, 2017
<b>Section A.4 (SIP Data)</b>	
Participants represent that Thesys will incorporate SIP and OCC data	By June 4, 2018
<b>Section A.5 (Cloud Storage)</b>	
Participants represent that Thesys will complete a document containing details regarding the usage of cloud storage for the CAT and submit such document to the SEC staff and Participants	By March 15, 2018
Thesys will be prepared to utilize cloud storage for the CAT	By May 15, 2018
<b>Section A.6 (Process/Governance)</b>	
Participants and Thesys (including the Operating Committee Chair, the Chief Compliance Officer, the CISO (when selected) and the Chief Operating Officer of Thesys, as well as Mike Beller or Andre Frank of Thesys) will conduct calls with the SEC staff to report on progress toward the milestones	At least weekly or more often as reasonably requested by the SEC staff
Participants and Thesys will establish new processes, standards and timelines for making decisions	By December 15, 2017
Participants and Thesys will establish and implement a written plan for receiving input from the industry and the Advisory Committee and tracking and giving good faith consideration to any such input	By January 5, 2018
Participants will submit a written report to the SEC staff discussing their good faith consideration of governance changes	By January 5, 2018
<b>B. New or Enhanced Participant Surveillance Systems</b>	
<b>Section 1 (Requested Timeline)</b>	
Participants will evaluate ways to limit the need to bulk download data from the Central Repository and discuss this with the SEC staff	By December 15, 2017
Participants and Thesys will discuss the scope of the online targeted and direct query tools for accessing CAT	Before January 15, 2018
Online targeted and direct query tools and other functionality for accessing CAT will be available for testing	By June 4, 2018
Participants propose to implement new or enhanced surveillance systems	By January 15, 2019
<b>C. Reporting of CAT Data by Industry Members (other than Small Industry Members)</b>	
Industry Members (other than Small Industry Members) will begin reporting Industry Member Data to the Central Repository	By April 13, 2020
<b>Section 1 (Completion of Industry Member Technical Specifications)</b>	
Participants and Advisory Committee will work together to create a plan for classifying the information Thesys needs to normalize Industry Member Data, determine the scope of data subject to this plan and provide the plan to the SEC	By January 15, 2018
Thesys to publish iterative drafts of the Industry Member Technical Specifications for the submission of orders, incorporating regulator and industry feedback	February 15, 2018, April 15, 2018, and June 15, 2018
Thesys to publish iterative drafts of the Industry Member Technical Specifications for the submission of Customer Account Information and Customer Identifying Information, incorporating regulator and industry feedback	May 15, 2018, July 15, 2018, and September 15, 2018
Anticipated completion of Industry Member Technical Specifications regarding both the submission of orders and Customer Account Information and Customer Identifying Information	By late October 2018

<b>Milestone</b>	<b>Proposed Date</b>
Industry Member Technical Specifications will be complete and vetted with the Advisory Committee	By October 2018
<b>Section 2 (Implementation of Industry Member Technical Specifications)</b>	
Anticipated completion of implementation by Industry Members (other than Small Industry Members) of the Industry Member Technical Specifications	By mid-October 2019
<b>Section 3 (Testing of Industry Member Technical Specifications)</b>	
Anticipated completion of testing by Industry Members (other than Small Industry Members) of their systems and ability to report to the Central Repository	By mid-April 2020
<b>D. Reporting of CAT Data by Small Industry Members</b>	
Anticipated completion of implementation by Small Industry Members of the Industry Member Technical Specifications	By October 2020
Small Industry Members to complete testing of their systems and ability to report to the Central Repository	October 2020 to mid-April 2021
Small Industry Members requirement to begin reporting Industry Member Data to the Central Repository	By April 20, 2021
<b>E. Error Rate Calculation</b>	
Participants to have a Maximum Error Rate of 5%	Until November 15, 2019
Participants to have a Maximum Error Rate of 1%	After November 15, 2019
Industry Members (other than Small Industry Members) to have a Maximum Error Rate of 5%	Until April 13, 2021
Industry Members to have a Maximum Error Rate of 1%	After April 13, 2021
Small Industry Members to have a Maximum Error Rate of 5%	Until April 20, 2022
Small Industry Members to have a Maximum Error Rate of 1%	After April 20, 2022
<b>F. Report on Risks and Benefits of Industry Member Bulk Downloads</b>	
Participants to provide the SEC with a report discussing the risks and benefits of Industry Member bulk downloads of Raw Data	By April 13, 2020
<b>G. Assessment of Errors in Customer Information</b>	
Participants to provide the SEC with an assessment of errors in customer information submitted to the Central Repository and whether to prioritize the correction of certain data fields over others	By April 20, 2021
<b>H. Report on Impact of Tiered Fees on Market Liquidity</b>	
Participants to provide the SEC with a report on the impact of tiered fees on market liquidity	By April 20, 2021

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

BOX Options Exchange LLC

By:     *LJ Fall*    

Name: Lisa J. Fall

Title: President

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Cboe Exchange, Inc.

By: \_\_\_\_\_

Name: Chris Cocca

Title: Pres

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

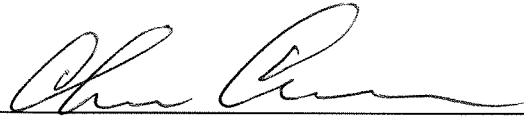
By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Cboe BZX Exchange, Inc.

By:  \_\_\_\_\_

Name: Chris Caradonna

Title: Pres

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

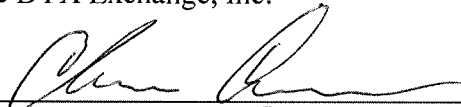
By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Cboe BYX Exchange, Inc.

By:  \_\_\_\_\_

Name: Chris Conca

Title: Pres

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Cboe C2 Exchange, Inc.

By:  \_\_\_\_\_

Name: *Chris Concaanon*

Title: *Pres*

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Cboe EDGX Exchange, Inc.

By:  \_\_\_\_\_

Name: Chris Coccamora

Title: Pres



Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Cboe EDGA Exchange, Inc.

By:  \_\_\_\_\_

Name: *Chris Conca*

Title: *Pres.*

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Chicago Stock Exchange, Inc.

By:  \_\_\_\_\_

Name: PETER D. SANTORÌ

Title: EVP & CRO

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Financial Industry Regulatory Authority, Inc.

By:  \_\_\_\_\_

Name: Jon Kroeper

Title: Executive Vice President

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

INVESTORS EXCHANGE, LLC

By:  \_\_\_\_\_

Name: John Schwall

Title: COO

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Miami International Securities Exchange, LLC

By:  \_\_\_\_\_

Name: Edward Deitzel

Title: EVP, CRO

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Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

MIAX PEARL, LLC

By:  \_\_\_\_\_

Name: Edward Deitzel

Title: EVP, CRO

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Very truly yours,

CATNMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

The NASDAQ Stock Market LLC

By: 

Name: Thomas A. Wittman

Title: Chief Executive Officer

Please sign one copy of this letter in the space provided below and return it to us to indicate your acknowledgement and acceptance.

Very truly yours,

CATNMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

NASDAQ PHLX LLC

By:  \_\_\_\_\_

Name: Thomas A. Wittman

Title: Chief Executive Officer



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Very truly yours,

CATNMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

NASDAQ BX, Inc.

By: Thomas A Wittman

Name: Thomas A. Wittman

Title: Chief Executive Officer

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Very truly yours,

CATNMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Nasdaq MRX, LLC

By:  \_\_\_\_\_

Name: Thomas A. Wittman

Title: Chief Executive Officer

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Very truly yours,

CATNMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Nasdaq GEMX, LLC

By:  \_\_\_\_\_

Name: Thomas A. Wittman

Title: Chief Executive Officer

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Very truly yours,

CATNMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

Nasdaq ISE, LLC

By: Thomas A Wittman

Name: Thomas A. Wittman

Title: Chief Executive Officer

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Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

NEW YORK STOCK EXCHANGE LLC

By:  \_\_\_\_\_

Name: Elizabeth K. King

Title: General Counsel & Corporate Secretary

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Very truly yours,

CAT NMS, LLC


By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

NYSE ARCA, INC.

By:  \_\_\_\_\_

Name: Elizabeth K. King

Title: General Counsel & Corporate Secretary

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Very truly yours,

CAT NMS, LLC

By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

NYSE AMERICAN LLC

By:  \_\_\_\_\_

Name: Elizabeth K. King

Title: General Counsel & Corporate Secretary

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Very truly yours,

CAT NMS, LLC


By: \_\_\_\_\_

Name: Michael Simon

Title: Authorized Representative

ACKNOWLEDGED AND ACCEPTED:

NYSE NATIONAL, INC.

By:  \_\_\_\_\_

Name: Elizabeth K. King

Title: General Counsel & Corporate Secretary