

October 12<sup>th</sup>, 2012

The NASDAQ OMX Group, Inc. (“NASDAQ OMX”) is submitting this letter to the Technical Committee of the NMS Plan participants to provide committee members with insights into NASDAQ OMX’s technical capabilities and how they may be brought to bear on the development of the consolidated audit trail (“CAT”). While we believe there is potential to work with other third parties on a joint proposal that leverages our respective strengths, we believe that it would be beneficial for the committee to have an understanding of our unique perspectives as it works to develop a request for proposals.

NASDAQ OMX believes it is well qualified to help the industry to implement a cost effective utility solution for the CAT, based on state of the art and scalable technology components. Recent market events have showed how easily market confidence can be shaken when regulators and exchanges do not have immediate access to critical data. Market fragmentation and the limits of current surveillance tools also have eroded confidence in regulators’ ability to detect fraud and manipulation.

Against this background, NASDAQ OMX believes it is able to provide the industry with cost effective technology components in the following areas:

- Collection and normalization of data that will be submitted to the CAT
- Consolidated surveillance of the CAT data
- Storage of CAT data on behalf of the Central Processor

### **Collection and normalization of data**

NASDAQ OMX is an industry leader in large scale data aggregation and normalization and has technology and intellectual property that allows for real time aggregation, mapping and normalization of order and execution data across multiple asset classes, liquidity venues and formats.

NASDAQ OMX systems aggregate and normalize data in real time from over 40 U.S. liquidity venues on behalf of some of the industry’s largest broker dealers. These systems provide both the managed connectivity infrastructure as well as the aggregation, normalization and mapping technologies that allow broker dealers to power their risk, surveillance and compliance systems with accurate real time data.

NASDAQ OMX is the largest processor of real-time financial securities risk management in the world - each trading day NASDAQ OMX provides real-time risk management and surveillance for up to 17 billion executed shares of U.S. equities.

As the Central Processor addresses the challenges in collecting vast sums of transaction information, the associated files linking order chains and firm identifiers, NASDAQ OMX has industry leading and proven technology that:

- a) Provides managed connectivity to brokers and liquidity destinations
- b) Normalizes transaction data into a common format
- c) Enriches transaction data with firm identifiers

### **Industry-wide surveillance delivered on a utility basis**

NASDAQ OMX is the world's leading provider of cross asset surveillance technology to regulators and exchanges with over 35 marketplaces and 10 government regulators running our technology. Regulators in Australia, Canada, Hong Kong, Singapore and the UK are using our SMARTS surveillance technology to conduct market-wide surveillance on a cross asset class basis.

NASDAQ OMX's global experience in surveillance, in combination with our proven experience in the organization and analysis of real-time and historical market data means that the CAT can benefit from best of breed technology that could be delivered as a low cost utility service. Adoption of NASDAQ OMX's surveillance technology will enable the industry to conduct much greater and more in-depth analysis across all of the related CAT data. This could also be extended to other asset classes - for example, if the CAT is required to oversee derivatives trading or other asset classes in the future.

NASDAQ OMX has already implemented a similar solution in Canada where more than 10 market venues have been consolidated into a real-time market surveillance solution. NASDAQ OMX's experience in consolidating and sequencing data across multiple venues will be instrumental in ensuring that the objectives of the rule (being able to reconstruct order events) will be met at the lowest possible cost.

Self-regulatory organizations ("SROs") have an obligation to develop, or enhance existing surveillance capabilities to utilize data from the CAT. The use cases presented within the rule leave open the possibility of SROs utilizing software services from within the central repository, extracting data from the central repository, or connecting software applications to the central repository using an established API.

NASDAQ OMX can provide the SROs with a single implementation of SMARTS Integrity within the Central Processor environment, which is accessed on a "user account" basis by each SRO. We believe, given the consolidated nature of the data and the fact that the CAT will look the same to each SRO, a single surveillance system with unified automated alerting rules, accessed through secure remote access, is the most cost effective approach to meeting SROs' obligations under the rule. The alternative of each SRO enhancing its own systems would be much more costly to the industry and would result in different standards at each SRO.

In summary, the NASDAQ OMX technology solution would enable the SROs and the SEC to utilize the following functionalities:

- a) Replay order books on a consolidated or venue-by-venue basis
- b) Track the entire lifecycle of an order within the overall ecosystem
- c) View and act upon automatically generated alerts spanning market manipulation, insider trading, and trade practice surveillance (order handling rules)
- d) Visualize trading on a consolidated or venue-by-venue basis, rapidly speeding up investigation time
- e) Run surveillance reports that highlight unusual behaviour by client/participant
- f) Rapidly sort alerts between true and false positives.

#### **Low cost storage of CAT data on behalf of the Central Processor – FinQloud**

We recommend that the Central Processor leverage NASDAQ OMX's FinQloud cloud computing platform to ensure that the most cost effective storage and security solution is adopted. FinQloud is exclusively designed for the financial services industry and combines Amazon Web Services' (AWS) secure, flexible, and cost-effective cloud infrastructure with NASDAQ OMX's experience in providing technology platforms and advisory services for exchanges, regulators and broker-dealers to provide cost-effective and efficient management and storage of financial data mandated by regulation. FinQloud differentiates itself in a number of key ways:

- **Cost-Effective Data Storage:** FinQloud will provide organizations with the ability to significantly reduce the cost of data storage related to technology, facilities and operational overhead. Using the platform, firms can easily scale their data storage capacity to meet demand without the need to purchase and support additional infrastructure.
- **Privacy:** FinQloud leverages private networking, direct connectivity and encrypted storage capabilities via Advanced Encryption Standard (AES) 256 encryption to provide privacy and anonymity of data. Combined with audit and verification capabilities, FinQloud is designed to maintain the integrity of customer data.
- **Expertise and Domain Knowledge:** FinQloud draws on AWS proven enterprise cloud experience serving a wide variety of enterprise customers and NASDAQ OMX's extensive experience providing technology platforms to exchanges, regulators and broker-dealers, to deliver an industry-specific cloud platform that meets the complex security and compliance of the financial services industry. With

this expertise, members of FinQloud can be confident that their data is being managed in a confidential manner and through a method that takes into consideration the stringent security and compliance requirements necessary to manage data in the financial services industry.

- **Enhanced Security**: NASDAQ OMX is in the process of adding advanced security measures on top of AWS robust existing security infrastructure. To meet the stringent operational and regulatory security requirements of the financial services industry, all connections to FinQloud will pass through a rigorous AES 256 encryption key management system, which will be housed in private NASDAQ OMX Data Centers, before directly connecting to AWS.

With the implementation of the CAT, there is an unprecedented opportunity to improve the ability of the SEC and the SROs to oversee trading in the U.S. securities markets. With this in mind, we believe NASDAQ OMX is well positioned to deliver best of breed technology components to the industry on a cost effective utility basis. We look forward to working with you on this important project.

Paul McKeown  
Vice President - Market Technology  
NASDAQ OMX