March 15, 2016

VIA ELECTRONIC SUBMISSION

Mr. Christopher J. Kirkpatrick
Secretary of the Commission
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, NW
Washington, DC 20581

Re: Proposed Rulemaking on Regulation Automated Trading (Regulation AT)

Dear Mr. Kirkpatrick:

On behalf of Trading Technologies International, Inc. ("TT"), I am submitting this letter to comment on the Proposed Rulemaking on Regulating Automated (Regulation AT), specifically with respect to the proposed definition of Direct Electronic Access and a requirement that AT Persons be required to maintain a source code repository.

I. Background of TT

TT is an independent software vendor with approximately 400 employees located in its Chicago headquarters as well as offices in most major financial centers throughout the world. TT licenses software trading solutions enabling TT's customers to trade on 45 of the world's major electronic exchanges and liquidity platforms. TT's customer base includes the largest banks, commercial firms, hedge funds, proprietary trading firms and other professional traders. TT offers many sophisticated software applications for its customers' use such as its new software as a service "TT" platform, as well as its legacy applications such as X_Trader® and X_Trader® Pro, X_Risk®, ADL®, Autotrader™, Autospreader® and exchange gateways. TT also hosts its customer's infrastructure at facilities co-located or closely situated with exchange matching engine technology.

II. Comments on the proposed rules

A. New defined term: "Direct Electronic Access"

TT believes that the definition of "Direct Electronic Access" ("DEA") should be clarified to indicate that there is no DEA where the orders are routed to a Designated Contract Market through the trading/order routing system of a member of a derivatives clearing organization

("DCO") where the pre trade and other risk controls are controlled by such member, including when a third party maintains the physical location of the systems.

As drafted, the proposed definition is unclear and does not provide sufficient guidance as to what "being routed through a separate person" that is a member of a DCO means. The definition of DEA, as drafted, may suggest that the order would also have to be routed through a system physically controlled by the DCO member, but such physical control has nothing to do with the goal of enhancing risk management of such orders. Control of the risk parameters is the relevant issue and the definition of DEA should be altered to make clear that where such control exists, there is no DEA.

The manner by which TT offers access to its trading system is typical of independent software vendors in the futures industry and although the methods of software distribution are diverse, a futures commission merchant ("FCM") has the ability to fully control the risk management settings in every case.[1] Currently TT offers its software and services in four distinct ways:

1) traditional on-site licensing;
2) hosted servers;
3) shared hosted servers; and
4) software as a service ("SaaS").

On-site licensing involves licensing software that the customer installs at its location. In this case the exchange gateway software that connects the software with the exchanges is installed on servers in a server closet at the customer's location and the client side software, that generates the trading screen, would be installed on the traders' workstations.

The last three methods of distribution help many FCMs achieve significant cost savings by outsourcing order routing technology to third parties without compromising on their control of risk parameters.

Where TT hosts the servers, TT effectively moves its customers' server closets into a TT managed location. In this case TT oversees the installation of all server software and maintenance of the applicable data lines and network.

The shared hosted environment is similar in that TT hosts the server software, but here end users can easily clear trades through multiple brokers because the physical infrastructure is shared and the software enables such relationships.

The last method is as a fully hosted software as a service offering. Here the software is installed on hosted equipment and the trader interface is internet based so there is no software installation on the workstation other than minimal code used in the browser.

[1] Some FCMs choose not to utilize TT's risk controls and instead rely on exchange provided risk tools, but the FCM may always control risk through the TT system if it chooses to do so.

In each of the last three examples (hosted, shared and SaaS) the servers on which the gateway software connects a trader to an exchange sit at a TT managed location – not at a location managed by an FCM. TT manages the technical aspects of the hardware, software and telecommunication connections while the FCM's retain complete control over user set-up and risk management tools that are provided as part of the TT order entry systems.

The current definition of DEA doesn't appear to fully recognize the relationship with such third party providers and should be clarified to allow for these common situations. One suggestion for modifying the definition would be to add "(including through a system physically managed by a third party retained by such member to act on its behalf)" after the phrase "who is a member of a derivatives clearing organization." Such clarification would not diminish any FCMs ability to control risk and therefore the legitimate goal of the new regulation would still be achieved.

As drafted, the definition of DEA will likely capture within the definition of "Floor Trader" many single traders, small trading groups and even larger companies like energy firms who hedge on futures exchanges, all of whom trade through FCMs and are often substantial liquidity providers. This will add layers of administrative complexity to their businesses and require them to hire expensive compliance experts to their staffs. Yet, no further risk oversight would be achieved because an FCM's oversight is already fully integrated into the available trading systems. The goals of the Commission will not be achieved and the cost of compliance for these individuals and small groups will often price them out of the market.

B. Source Code Repository

TT is concerned that the requirement under section § 1.81(a), that AT Persons "maintain a source code repository to manage source code access, persistence, copies of all code used in the production environment, and changes to such code" is unnecessarily and extraordinarily broad, not likely to provide helpful information, likely constitutes an unconstitutional taking of individuals' property and is generally unnecessary to achieve the goal of the proposed regulations. To be clear, TT strongly urges the Commission to remove this requirement from the proposed regulation.

1. Source code is highly proprietary and typically not made available to third parties

Although it is unclear exactly what is meant by the term "source code" in the proposed regulations[2], TT assumes that the term source code generally means software expressed in a high-level language intended to be intelligible by humans. Except with respect to open source

[2] TT believes this term needs to be clarified if the Commission insists on keeping this requirement. The Commission should also clarify which source code is relevant. As written, it seems the Commission is looking for a wide array of code that would touch all aspects of a trading system.

licensing arrangements, to our knowledge, source code is never licensed under any software license agreement offered by any software provider including any independent software vendor in the futures or securities industries or any software firm such as Microsoft or Google. The source code of any trading firm or technology firm goes to the essence of the value of such companies. It is highly proprietary, trade secret information that could expose the fundamental aspects of a business that provide economic advantage over competitors. Making such valuable intellectual property readily available to the Commission is unnecessary to fulfill the intent of the regulations.

TT is very concerned that despite numerous protections for confidential information submitted to the CFTC, there are gaps in such protections as well as too many possibilities to escape the CFTC's control through unintentional means such as third-party cyberattacks[3]. If trade secrets[4] are compromised, the trade secret status would likely be lost along with a firm's economic advantage over its competitors. Such an action would likely amount to an unlawful "taking."[5]

It is also worth noting that much of the relevant source code potentially used by AT Persons comes from third party software providers like TT and others such as Microsoft. TT offers multiple applications through which a trader could implement an algorithmic trading strategy. Yet, TT never licenses its source code and would not provide it to its customers in any circumstances. TT is not alone in this position. For example, many traders utilize commonly available tools such as Microsoft Excel® to implement their trading algorithms. They might develop the algorithm in Excel and connect Excel to a commercial trading application like TT. Based on the movement of the market and the algorithm, orders might be triggered as a result of actions implemented in Excel. TT has not contacted Microsoft, but we suspect that software companies like Microsoft would not be willing to divulge their source code either.

[3] Although TT appreciates that a party submitting information to the CFTC may request that the information be treated confidentially pursuant to the provisions of CFTC Rule 145.9, the Assistant Secretary has discretion to grant or deny requests from requestors of non-public information. Moreover, it is TT's understanding that Congress, and other governmental authorities – both US and non-US – may also request non-public information, and a submitter of non-public information may not be advised of this request or outcome. Finally, despite the best protections by the CFTC, cyberattacks and other unauthorized intrusions, as well as the illegitimate actions of staff acting contrary to their legal requirements, could compromise the sanctity of non-public information submitted to the CFTC.

[4] The Uniform Trade Secrets Act ("UTSA") defines a trade secret as:

- information, including a formula, pattern, compilation, program, device, method, technique, or process,
- that derives independent economic value, actual or potential, from not being generally known to or readily ascertainable through appropriate means by other persons who might obtain economic value from its disclosure or use; and
- is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

[5] See, *Ruckelshaus v. Monsanto Co.*, 467 US 986 (1984)

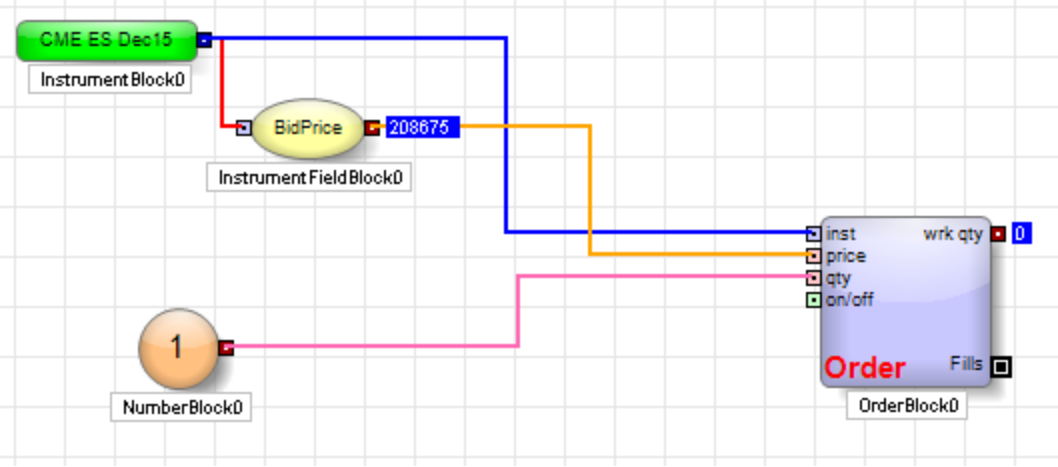
2. Source code is complicated and the potentially relevant amount of source code is enormous

Even if the Commission was able to overcome the legal impediments relating to forcing disclosure of trade secrets, it is doubtful that such information would readily be useful to the Commission. One engineer's source code is rarely drafted in the same manner as another engineer's and without proper documentation to help decipher the code it is often meaningless. Even with proper documentation it would often take insight from multiple engineers to decipher the intent of the code and documentation.

The breadth of the relevant code might also be so expansive that it is hard to fathom how it would be compiled, stored or used effectively. Each layer of code is very relevant to how an algorithm might function. Additionally, any number of different coding languages might be used in each application and at each layer of software. TT, alone, uses over 30 different coding languages.

In the Excel example above, Excel interacts with TT software, which includes and interacts with multiple layers of applications and libraries, which interact with other layers of messaging software and other systems on down the line until the operating system is utilized. In order to recreate the intent of the algorithm through the source code, the Commission would need to compile the code in the same environment where it was set up, including the same version of each layer of code and the same version of the exchange's software. Short of that, it would likely not work the same as it was intended or as it might have worked at a moment in time. The code behind each layer of production software changes often. New releases occur regularly (often monthly) plus smaller code patches are released in between. Assuming there will always be a time lag between trading activity and when an investigation is started, the Commission would need to be able to recreate the exact version of code including revisions and interim patches of each layer of code that was in use at the point in time of the trade. Each layer of code interacts and depends on the other layers to work as planned. A single version of a single layer of such code could be millions of lines; a repository of all possible code versions going back in time for years would be much, much larger and impose an immeasurable burden on the industry.

As an example, consider the following simple algorithm that is depicted in TT's "Algo Design Lab" application:



The logic of this simple algorithm is as follows: 1) submit a limit order for the given instrument and quantity at a price equal to the bid; 2) when the bid price changes, re-price the order to be the same as the bid.

The simple image above belies the complexity and enormous amount of source code that generates this image and effects the strategy. One can imagine the image above as a depiction of the highest level of code used to effect the strategy. The strategy itself would run on a server application in the TT environment but it would also touch and be dependent upon almost every part of the TT trading system. The way that the algorithm subscribes for prices, downloads contract information, and routes orders is specific to the way that the underlying components have implemented and exposed this functionality. So technically, one would need all of the TT system software in order to *attempt* to reproduce its behavior. Hundreds of applications and libraries within the TT system itself are essential components and the source code would likely add up to millions of lines of code for the TT applications only. If the trader used Excel for the algorithm, the Microsoft code would also add millions of lines of code most likely. Add to that the many other third party applications involved in the process for price feeds, analysis, messaging, the operating systems of the workstation and the servers among other layers of code and there would be an immeasurable morass of code that, in theory, would need to be stored and made available to the Commission.

This is a very simple example. The complexity of this simple example is magnified dramatically in a more complex and realistic example, not to mention situations where multiple algorithms are in question.

3. Market data adds another level of complexity

Similarly, without the exact same market data flowing through it, the myriad software applications interacting together may not work the same. Replicating the market data is likely a bigger problem than it seems because trading programs often coalesce data and how and when coalescing happens may vary from moment to moment depending on many factors such as network routers, firewalls, switches, server hardware, operating system, vendor software,

coalescing and conflation factors. Multiplying the complexity exponentially, the Commission would likely have to replicate market data at a particular moment from multiple markets, because trading algorithms will typically use and analyze data from multiple related markets, for example, equities and/or stock options if trading stock index futures. So, even if the Commission could recreate the prices in a market precisely as they were disseminated by the exchanges or other relevant markets, the software would likely act differently on different occasions despite using the same market data.

Consuming market data is like drinking from a fire hose. The basic process by which TT delivers market data to clients is as follows:

1. TT receives a market data update from an exchange (e.g., bid price = 100)
2. TT broadcasts the update to other servers in TT's trading network.
3. The TT system notifies the client application.
4. TT receives another market data update (e.g., bid price = 101). If the client has finished processing the last update, the TT system notifies the client of the update. If not, the system waits - and then delivers it when they are ready.

    (i) While waiting, the TT system might receive thousands more updates. TT conflates this data, meaning it overwrites the values that will be delivered to them when appropriate. This is done because no one wants to receive "old" market data updates.

    (ii) The time it takes a client to process an update depends on a variety of factors, including system load, network load and operating system scheduling. This makes it extremely difficult to determine the exact price update that the client might process to re-price the order. So even with access to identical system software, intermediate network and server infrastructure and the algorithm, one would likely be unable to reproduce the exact behavior of an algorithm for most liquid markets.

Even assuming, for the sake of argument, that the Commission could make heads or tails of the morass of relevant source code and the complexities of dealing with market data, there is no compelling need to gain access to the code because it adds very little to reduce the risks of algorithmic trading. The outcome of the trades are indisputable evidence of the actual outcome of an algorithm and are already available to every exchange and the Commission in the form of the trade data (orders, fills, quotes sent to and matched at each exchange). Unusual results and/or repeated outcomes demonstrate the intent of traders and usually no more is necessary to establish intent. Even where more is necessary, the subpoena power of the Commission would be more than adequate to insure that the code is reviewed when truly necessary, although we continue to question when that would ever truly be necessary. In fact, subpoenaing a written description of the intent of a trade or the basic algorithm that describes the strategy should be enough without even delving into source code. This would amount to a document detailing the logic of the algorithm that would direct the trade (e.g., "if market price = X then enter buy order at Y.")

The extraordinary burdens described above, the potentially illegal or overly damaging intrusion into proprietary source code incurred by trading firms and their software suppliers and the questionable benefit of obtaining any further code far outweigh any benefit from acquiring the code.

* * *

TT is very concerned that, as drafted, Regulation AT will not positively enhance the existing regulatory regime for automated trading. We addressed two aspects of the proposal about which independent software vendors like TT seem to have good insight. We are more than willing to provide additional input about these matters or others matters within our expertise.

Please contact me at (312) 476-1081 if you have any questions or seek additional information.

Respectfully submitted,

Michael G. Ryan
Executive Vice President and General Counsel