Technology Advisory Committee

Subcommittee on Automated and High Frequency Trading

Working Group 3
Oversight, Surveillance and Economic Analysis
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Working Group 3 Participants

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Working Group 3 Topics

- Tagging Attributes
- Tagging Methodology Assessment
- Registration of HFTs
- Registration & Examination of Algorithms
- Controls & Monitoring
- Supervision, Oversight and Analysis

Tagging Attributes

- ICE, CME Group and NFA capture common identifying attributes

Clearing Firm	Trading Firm	Session ID	Sender Location
Operator ID	ATS Flag	Account	Give-Up Firm

- Current identifying attributes allow SROs to:
  - Distinguish ATS from non-ATS activity
  - Identify individuals operating an ATS
  - Identify owners behind ATS activity
  - Measure trade volume and messaging by firm, account or operator

- SROs capture highly granular data:
  - Message, transaction, timing and reference data
  - Comprehensive electronic audit trails of market activity and book data
  - SROs enrich source data to create additional tags such as passive/aggressive identifiers

Tagging Methodology Assessment

- **Comprehensive SRO audit trails and reference data provide the information necessary to support effective monitoring and analysis of ATS activity**

- **ATS strategy-type identifiers will not add regulatory value**
  - **Substantial variability and overlap creates definitional ambiguity**
  - **Routine strategy evolution and modification**
  - **Order and transaction activity is fully transparent**

- **If a potential problem is identified, regulators can obtain:**
  - **Detailed information regarding the strategy, inputs and design of the ATS**
  - **Information regarding controls employed, testing conducted and supervision protocols**
  - **Any other relevant information, including front-end audit trails and the participant's activity in related markets, that is deemed necessary**

Registration of High Frequency Traders?

- **Registration of HFT requires static, arbitrary distinctions across different metrics**
  - Distinctions in degree of automation, latency, messaging and volume
  - Distinctions across products, contract months, and range of strategies
  - Distinctions in time horizon over which messaging/volume is measured

- **Participants can be identified and differentiated as desired to serve surveillance objectives using current data**
  - Distinguish ATS from non-ATS activity
  - Distinguish users' type of connectivity
  - Identify high messaging/volume participants at many levels (e.g. firm, account, operator) for any instrument over any time period

Registration of High Frequency Traders?

- SROs already maintain identifying reference data regarding high messaging and high volume participants
- CFTC is poised to capture reference data with proposed Ownership and Control Report for active accounts on DCMs and SEFs
- Market stability and market integrity considerations are not exclusive to HFT - any user can generate orders that disrupt the market or engage in abusive trading practices
- It is unclear what additional information, surveillance or analytical objectives registration of HFTs, however defined, achieves relative to current information and capabilities

Registration and Examination of Algorithms

- **Should Each Algorithm Be Registered?**
  - Algorithms, inputs and parameters change frequently
  - Difficult to consistently define what constitutes a unique algorithm
  - No empirical basis to support need for strategy registration

- **Should Algorithms Be Audited by SRO/Regulator?**
  - Enormous numbers of algorithms deployed
  - Inefficient use of limited regulatory resources even assuming expertise were available in regulatory bodies to assess each algorithm
  - Foresight economic impact study estimated cost of $1.3 billion/year in EU if full descriptions of algorithmic trading strategies were collected and analyzed by regulators
  - Entity employing the algorithm should be responsible for appropriate evaluation and testing

ATS Controls & Monitoring

- ATSs impact on markets
  - Enhanced Market Quality
    - Improved liquidity, lower transaction costs, efficient price discovery
  - Risks
    - Software malfunctions that disrupt markets
    - Inefficient/excessive messaging that increases costs and degrades performance

- Robust and effective controls and supervision are key
  - Properly calibrated controls established at all levels of the infrastructure to mitigate any single point of failure
    - Trading venue, trading firm, clearing firm
  - Active message efficiency monitoring by trading firms
  - Trading venue programs that deter poor messaging practices

- Controls should not be limited to post-deployment operation
  - Appropriate best practices and associated controls should be considered during every phase of ATS development and operation

ATS Development Control Considerations

- Planning and analysis – new system, new functionality or enhancement
  - Organizational objectives, economic and risk analysis, feasibility assessment
- Employ best practice standards for technology development
  - Algorithm, trading software, risk management protections
  - Hardware infrastructure and data networks
- Conduct appropriate testing (internal & external conformance)
  - Administrative (user, product and market setup)
  - Quantitative (back testing algorithm changes against historic trade data)
  - Technical (connection logic, disconnect/reconnect management)
  - Functional (order entry, trade & market data processing, market support)
  - Error (trade bust/adjust management)
  - Alerting (exchange message & internal alerting notification and display)
  - Regulatory (clearing and regulatory tag validation)
  - Stress (load, capacity, performance under unusual market conditions)
  - Pre-trade risk management (order validation, position management, throttles)
- Acceptance, installation and deployment/validation of systems
- Maintenance and monitoring

ATS Control Testing Considerations

- **Conformance Testing and Certification**
  - Trading venues should expand conformance testing include ATS risk mitigation controls that are able to be tested by the trading venue
    - Kill button, cancel on disconnect
  - Trading venues should require certification by the connecting entity that appropriate front-end controls have been implemented and tested
  - Clearing firms should require client conformance certification establishing that appropriate controls have been implemented
  - The industry should establish appropriate industry-wide standards

- **Conformance recertification/retesting requirements**

Control Recommendation Summary

RECOMMENDED RISK CONTROLS	TRADING FIRM (ATS)	CLEARING FIRM	MARKET VENUE
Pre-Trade Price Reasonability Validation	☑		☑
Maximum Order Size Limits (Fat-Finger Protection)	☑		☑
Protection Points for Market and Stop Orders			☑
Price Spike Alerting	☑		☑
Volume Spike Alert (Account/Trader/Firm/Market)	☑		☑
Kill Button	☑	☑	☑
Alternate Order/User Management Interface	☑	☑	☑
User Connection Monitoring/Alerting	☑		☑
Cancel Orders on Disconnect Functionality	☑		☑
Messaging Throttle/Alerting & VR Monitoring	☑		☑
Intraday Position Monitoring/Alerting & Risk Monitoring	☑	☑	
Credit Controls & Alerting		☑	☑
Post Trade Validation (Drop Copy)	☑	☑	☑
Clear Trade Cancellation/Price Adjustment Policies			☑
Automated Market Session Pause / Circuit Breakers			☑
Error Control Procedures	☑	☑	☑
Emergency Notification Procedures	☑	☑	☑
Software Development Standards & Change Management	☑	☑	☑
Conformance/Certification Testing	☑	☑	☑

Supervision, Oversight and Analysis

- Market abuse is not fundamentally a function of the means, speed or frequency of order entry and transactions
- Defining specific behaviors that undermine market integrity, irrespective of the means or pace of order entry, is paramount
- Data capture and surveillance technology must scale to meet the demands of the market
- Surveillance methods must evolve with the strategies and market structures
- Diversity of regulatory skill sets must be appropriate to today's highly technical trading environment

Supervision, Oversight and Analysis

- Comprehensive exchange and front-end audit trails
- Data available on real-time and historical basis
- Data supports effective surveillance for market abuse
- Data supports robust economic analysis
- Technology is available to effectively mine and analyze data and to alert on market, user and system anomalies
- Technology will continue to evolve – traders, market centers and regulators will continue to innovate

Cross-Market Surveillance

- Competition, market structure changes, and blurring of lines across asset classes creates greater fragmentation
- Requires appropriate coordination and information sharing among regulators to ensure comprehensive and effective surveillance
- SROs can surveil activity in their own markets and can obtain information regarding activity in other markets from the market participant or trading venue when necessary, but do not have data to perform direct cross-market surveillance
- Federal regulators with access to data across venues should focus on cross-market abuses