FICC MARKETS STANDARDS BOARD

Algorithmic trading in FICC markets

Statement of Good Practice for FICC market participants

Transparency Draft

FMSB invites comments on the proposals in this Statement of Good Practice by Friday 21 August 2020. Please address any comments or enquiries to secretariat@fmsb.com.

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I Introduction

1. The FICC Markets Standards Board

The FICC Markets Standards Board (FMSB) was established in 2015 in response to the Fair and Effective Markets Review (FEMR) in the UK with a mandate to issue clear and practical guidance designed to improve conduct and raise standards in the wholesale fixed income, currencies and commodities (FICC) markets. FMSB is building a body of Standards and Statements of Good Practice (SoGPs) over time, prioritising those areas where FMSB member firms (Member Firms) consider there is a lack of clarity in the standards of behaviour expected of market participants, or a lack of understanding of the issues relevant to a product or transaction type, or evidence of poor conduct.

2. Applicability of FMSB Statements of Good Practice

FMSB SoGPs are issued by FMSB from time to time. SoGPs do not form part of FMSB Standards and are not subject to FMSB's adherence framework. Rather they reflect FMSB's view of what constitutes good or best practice in the areas covered by the SoGPs in question. Member Firms are expected, and other firms are invited, to consider their own practices in light of the relevant SoGP and make any changes to such practices that they deem to be appropriate. Save to the extent the SoGP reproduces relevant regulatory obligations, failing to do so will not create any presumption or implication that a firm has failed to meet its regulatory or other obligations.

Full details of the Member Firms are available at fmsb.com. SoGPs are published on FMSB's website and non-member firms and their affiliates are encouraged to consider them. In this way, SoGPs are also made available to users of wholesale FICC markets (e.g. corporates, investors and other end-users) so that they may be made aware of their existence and FMSB's expectation of market conduct.

FMSB will, as part of its normal course of business, periodically review the applicability of its published SoGPs to ensure they are relevant and up to date for market conditions.

3. Relationship with law and regulation

FMSB Standards and SoGPs do not impose legal or regulatory obligations on Member Firms, nor do they take the place of regulation. In the event of any inconsistency, applicable law, rules and regulation will prevail. In developing Standards and SoGPs, certain regulators may have commented on their drafting, alongside Member Firms and other bodies, such that the Standards and SoGPs, once finalised and published, are intended to represent an authoritative statement of global good practices and processes. However, they are not normally endorsed by regulators. Where they are endorsed by a regulator, this will be made clear on the face of the Standard or SoGP in question.

4. Relationship with other industry codes ('Codes')

Other Codes already exist in relation to certain FICC markets, such as the FX Global Code, while others are in the process of being produced. There will be some overlap between FMSB's work and such other bodies and FMSB will seek to ensure it adopts a consistent approach in cases of overlap wherever possible, and will seek to avoid issuing a Standard or SoGP where the subject matter is already covered adequately by existing regulation or a Code issued by another body. It may draw attention to Member Firms of an existing code and request that Member Firms consider its applicability and act in a manner consistent with it, where appropriate.

II Algorithms and Algorithmic Trading

1. Background

The use of computer algorithms which are capable of automatically determining individual parameters of orders, quotes or transactions to facilitate trading in FICC markets has significantly increased in recent years. Such activity has the potential to adversely impact market and firm stability and to harm clients and accordingly it is increasingly the subject of regulatory scrutiny and intervention. This document sets out 10 Good Practice Statements in relation to both the governance of, and conduct risks associated with, the use of algorithms by Member Firms in their FICC business activities.

2. Purpose and context

The algorithmic trading activity of member firms spans across FICC asset classes and markets. Factors including the location from which such trading activity is undertaken and the asset or sub-asset classes involved mean different regulatory requirements will be applicable to member firms in different contexts. The purpose of this SoGP is therefore to enhance the integrity and effective functioning of FICC markets by promoting good conduct and governance practices applicable to participants engaged in algorithmic trading or operating trading venues that allow or enable algorithmic trading across all FICC asset classes and markets.

The Good Practice Statements outlined in this SoGP are informed by relevant UK and European regulatory requirements and policy initiatives including MiFID II, the FCA's publication 'Algorithmic Trading Compliance in Wholesale Markets'[1] and the Prudential Regulation Authority's Supervisory Statement 'Algorithmic trading'.[2] Regulatory requirements deriving from these and other regulatory initiatives will, in some cases, impose more onerous obligations on Member Firms when engaging in algorithmic trading activities in particular jurisdictions or asset classes and Member Firms must ensure they continue to meet such requirements where they are applicable. In markets where existing requirements are less onerous, it is expected that this paper will inform good practices for Member Firms operating in those markets.

3. How algorithms are used in FICC markets

Algorithms are used in a wide variety of ways in the FICC markets and new uses and applications will continue to emerge. Examples include:

- Dealers and brokers who deal in FICC instruments as principal may use algorithms to assist in the execution of trades for themselves in those instruments, determining at what price and on which markets bids and offers should be submitted electronically to other market participants and execution venues;

- Dealers may use algorithms for principal market making, pricing, trade acceptance and/or automated risk management;

- Dealers may use algorithms for hedging purposes;

- Dealers and brokers may use algorithms for the purposes of executing orders with or for their clients, acting either as principal or agent;

- Clients may use algorithms for the purpose of sending orders to their dealer or broker; and

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[1] February 2018, available at www.fca.org.uk/publication/multi-firm-reviews/algorithmic-trading-compliance-wholesale-markets.pdf

[2] June 2018, available at www.bankofengland.co.uk/prudential-regulation/publication/2018/algorithmic-trading-ss

- Venues will likely use algorithms in their systems to match orders from different participants and determine the prioritisation of how different orders are matched.

4. Definitions

Algorithmic Trading - trading in instruments where a computer algorithm, with limited or no human intervention, automatically determines individual parameters of orders[3] such as:

- whether to initiate the order; or

- the timing, price or quantity of the order; or

- how to manage the order after its submission.

Algorithmic Trading does not include any system that is only used for:

- the purpose of routing orders to one or more Venues (where the router does not have the ability to modify the parameters of the order); or

- the processing of orders involving no determination of any trading parameters; or

- the confirmation of orders or post trade processing of executed transactions.

Algorithmic Trading System - any arrangements or systems of a Venue that allow or enable Algorithmic Trading. A Venue will be regarded as allowing or enabling Algorithmic Trading where order submission and order matching is facilitated by electronic means;

Algorithms - computer algorithms which are capable of automatically determining individual parameters of orders, quotes or transactions.

Broker - a firm which assists Clients in accessing liquidity in FICC instruments and may act as principal or agent;

Client - a firm which is an end user of, or an investor in, FICC instruments, with or for whom Dealers and Brokers deal;

Dealer - a firm which provides liquidity to Clients and makes markets in FICC instruments and generally acts as principal;

Market Participant - Dealers, Brokers and Clients[4] that allow, enable or engage in Algorithmic Trading, in each case active in wholesale FICC markets;

MiFID II - Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments, Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and any associated secondary legislation or Level 3 guidance.

Venue - an exchange, multilateral trading facility, organised trading facility, or analogous concept outside of Europe, which brings together multiple third-party buying and selling interests in FICC instruments;

Venue Operator - an investment or other firm responsible for the operation of a Venue.

5. Scope and application

This SoGP applies to Market Participants that engage in Algorithmic Trading and Venue Operators that operate a Venue utilising an Algorithmic Trading System in FICC markets.

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[3] To the extent applicable in each context, references to orders in this paper should also be read as capturing trade requests, quotes and transactions.

[4] The Good Practice Statements are intended to apply to Clients to the extent that they allow, enable or engage in Algorithmic Trading but will not be directly applicable where such Clients are using Dealer or Broker Algorithms.

III Good Practice Statements and commentary

1. Overarching governance structure

> **Good Practice Statement 1:** Market Participants and Venue Operators should have an appropriate governance framework to provide clear lines of responsibility for, and oversight of, their Algorithmic Trading or the Algorithmic Trading System of a Venue that they operate. This framework should include appropriate governance designed to provide for the proper management of risks associated with Algorithmic Trading, including conduct, market and operational risk. Furthermore, such a framework should allow for sufficient granularity of oversight of such risks.

Market Participants and Venue Operators should put in place adequate and effective arrangements and processes to provide for appropriate oversight, supervision and control in relation to the Market Participant's Algorithmic Trading or of an Algorithmic Trading System of any Venue that they operate. This Good Practice Statement applies regardless of whether the Market Participant or Venue Operator develops, outsources or procures software or hardware used in the relevant Algorithmic Trading or Algorithmic Trading System. The governance requirement set out in this Good Practice Statement can be discharged by the use of a committee structure or other approach as the firm deems appropriate. Such a structure should ensure:

- Market Participants' Algorithms have assigned owners, who are accountable for the Algorithm's use;

- supervision by senior management and the existence of an appropriate escalation procedure;

- effective management of all relevant risks associated with such Algorithmic Trading or Algorithmic Trading System, including financial risks (such as market, liquidity and credit or counterparty risks) and non-financial risks (such as operational, conduct, reputational, legal, and regulatory risks) as appropriate to the Algorithmic Trading or Algorithmic Trading System in question (see Good Practice Statement 3 for more detail);

- sufficiently granular oversight of the financial and non-financial risks relating to Algorithmic Trading (which, depending on the size of the firm, may include establishing regional, product or asset class specific governance forums) by risk control and compliance (or other relevant supporting function); and

- that the roles of the business and the second and third lines of defence in the governance structure are sufficiently defined and documented to ensure effective allocation of responsibilities for managing risk and independent oversight across the lines of defence.

Additionally, the governance structure should require a periodic revalidation[5] of the firm's activities and governance applied to Algorithmic Trading or Algorithmic Trading Systems of Venues operated by it to ensure the governance structure remains appropriate. Revalidation by Market Participants should include representation from those involved in the second and third lines of defence and approval from senior management.

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[5] Note that for Market Participants subject to MiFID II, Article 9(3) of Regulatory Technical Standard (RTS) 6 requires that a self assessment and validation process be performed on an annual basis.

2. Inventories

> **Good Practice Statement 2:** Market Participants should maintain a complete list (or lists) and description of the Algorithms which they use in the course of Algorithmic Trading.

The list(s) proposed by this Good Practice Statement (referred to as an 'inventory') could include, in respect of each Algorithm, details of: the name of the Algorithm owners who are accountable for the Algorithm's use; supervisor(s) of the Algorithm operation; names of developers; system(s) housing the Algorithm; the scope of approval of the Algorithm; restrictions on its use (e.g. in terms of region, asset class, instrument, desk, portfolio); and a definition of the Algorithm and sufficiently detailed description of its purpose.[6]

An inventory of risk and execution controls applicable to business activity utilising an Algorithm should be maintained. Market Participants should also maintain inventories of external execution Venues which may be used in the course of conducting Algorithmic Trading.

Descriptions of Algorithms should be written such that the behaviour can be easily and fully understood by a third party with experience in Algorithmic Trading (for example by relevant persons in the second line of defence, supervisory function or regulators (where requested)). Where technical terminology is used, clear definitions of such terms should be included.

3. Risk management and controls

> **Good Practice Statement 3:** Market Participants carrying on Algorithmic Trading, or Venue Operators operating a Venue which utilises an Algorithmic Trading System, should have pre- and/or post-trade controls in operation which are appropriate to the activity and the risks posed. Firms shall have regard to the nature of the activity and the size and complexity of their firm when determining appropriateness.

Market Participants and Venue Operators should ensure pre- and/or post-trade risk and execution controls are put in place to control their Algorithmic Trading and Algorithmic Trading Systems. The determination of what is appropriate should consider that Algorithms executing firm orders (i.e. publishing firm quotes or orders as opposed to indicative prices) on Venues can pose risk regardless of their typical daily volume or market share. Market Participants should include pre- and post-trade controls in the inventory of controls referred to in Good Practice Statement 2 above.

When establishing Algorithmic Trading controls, Market Participants should consider both preventative and detective controls. The controls should be designed to ensure the fair and orderly operation of markets and to prevent or mitigate inadvertent market activity including, for example, unauthorised access and system failures.

Market Participants and Venue Operators should have processes in place to enable the systems associated with their Algorithmic Trading and Algorithmic Trading Systems to be resilient, operate with sufficient capacity to ensure orderly trading under stressed conditions, avoid market manipulation, and have effective business continuity arrangements.

The appropriateness of a pre- or post-trade risk and execution control and how it is implemented can vary across different types of instruments and activities.

Market Participants should give consideration to pre- or post-trade risk limits that are appropriate for their capital base and risk appetite, trading strategy, experience, risk tolerance and factors such as the length of time the firm has been engaged in Algorithmic

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[6] Note that applicable regulation may make the inclusion of some or all of these items in the inventory mandatory – this list is therefore without prejudice to Member Firms' need to comply with applicable law and regulation.

Trading. These risk limits may include a variety of hard limits, such as position size and order size, burst/throttles or maximum notional/quantity limits.

Market Participants (depending on their size and the scale of their Algorithmic Trading businesses) could consider:

- having second line of defence teams (e.g. compliance, operational risk and market risk) specifically covering electronic trading;[7]

- establishing processes to compare controls associated with Algorithmic Trading on a cross-asset class basis;

- sharing information across asset classes following an operational or conduct risk event in order to ensure that lessons learned are applied across all asset classes where Algorithmic Trading is engaged.[8]

> **Good Practice Statement 4:** Market Participants should ensure they consider conduct, market, operational and other risks prior to deployment and as part of their periodic review of Algorithms. The second line of defence should provide oversight of this process and if they have specific risk concerns, should have authority to prevent an Algorithm from being used or deployed.

Market Participants should consider their firm's risk taxonomy when evaluating against potential risks. For example, factors to consider in assessing inherent conduct risks are those characteristics intrinsic to the firm and its trading environment, such as information asymmetries between the firm and its Clients, sophistication and capability of Clients and knowledge, competence and incentives of staff.

The risk assessment for Algorithms should be undertaken by the business area that operates the Algorithm, and should be subject to review and challenge by an independent team.

4. Policies and procedures

> **Good Practice Statement 5:** Market Participants and Venue Operators should define and require adherence to minimum standards applicable to Algorithmic Trading and Algorithmic Trading Systems and ensure that these are documented and implemented through written internal policies and procedures. Such documentation should be kept up to date.

Market Participants and Venue Operators should define and clearly articulate minimum standards applicable to Algorithmic Trading, or of the Algorithmic Trading Systems of the Venues which they operate, and ensure policies and procedures reflecting these minimum standards are implemented and kept up to date. Documentation may differ depending upon the nature of the activity and size and complexity of the firm.

At a minimum these policies and procedures should deal with the following areas:

- risk controls;

- kill switches;

- testing practices;

- monitoring;

- continuity of business;

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[7] Note that electronic trading includes Algorithmic Trading.

[8] Note that applicable regulation may make the implementation of processes or controls covering some or all of the above mandatory – this list is without prejudice to Member Firms' need to comply with applicable law and regulation.

- change processes;

- Algorithm development and release procedures; and

- documentation requirements.

Additional internal facing documentation that Market Participants could consider in support of this Good Practice Statement include:

- 'how to use' instructions;

- description of the relevant governance arrangements, including the design and implementation processes, approval requirements, change management processes, issue management and escalation;

- roles and responsibilities, including the names of the owner of the Algorithm and of the relevant code developer;

- the name of the responsible owner of each Algorithm who monitors performance[9] of that Algorithm;

- playbooks;

- approaches to testing (e.g. conformance testing and testing against disorderly trading); and

- flow diagrams and detail of pre- and post-trade risk and execution controls (e.g. execution control location in flow).[10]

In all cases documentation should have a clear internal owner and a process should be put in place to ensure documentation is validated as complete and accurate by the owner on a periodic basis.

> **Good Practice Statement 6:** Market Participants providing client execution services using Algorithms should provide appropriate information to those Clients that takes account of the services being provided and consider reviewing Client materials relating to Algorithmic Trading periodically in order to ensure that they are clear, fair and not misleading.

When undertaking Algorithmic Trading with or for Clients, Market Participants should provide disclosures as appropriate to those Clients to enable each Client to evaluate the performance of such activity, in a manner that is consistent with appropriate disclosure of related confidential information (for the avoidance of doubt, such disclosures are not applicable in the context of principal market making activity where the workings and performance of an Algorithm may contain sensitive intellectual property).

Where making available Algorithms for use by others, Market Participants should also produce documentation for their Clients that provides an adequate description of the way in which the Algorithm works and, where relevant, how it should be used. Such disclosure could include:

- a clear description of the algorithmic execution strategy, such as the logic used, intended behaviour and outcomes;

- whether the algorithm provider can execute as principal;

- fees applicable to the provision of the client execution services;

- general information regarding how routing preferences may be determined (and if

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[9] Taking into account different factors including the performance of the Algorithm from a compliance perspective.

[10] Note that applicable regulation may make the production of documentation covering some or all of the above mandatory – this list is without prejudice to Member Firms' need to comply with applicable law and regulation.

determined by the Client or Algorithm provider), if applicable;

- information on the liquidity sources to which access may be provided;
- all order types which impact the quality of execution; and
- any relevant conflicts of interests and how these conflicts are mitigated.

In order to ensure fair disclosure to Clients, periodic reviews should be carried out on Client documentation. Marketing materials and product specifications should consider the following areas, where applicable:

- specific fee pricing bands for execution;
- ability of Clients to request or set preferences (examples of preferences could include liquidity sources that an Algorithm may interact with or degree of anonymity with which the order is treated);
- types of connectivity channels available, detailing limitations where applicable;
- technical information relating to how the Algorithm behaves in certain market conditions or time periods (e.g. continuous trading versus auctions) and details of any hard-coded limits;
- additional customisation that may be available; and
- details of any exchange or Venue the Algorithm operates on and any additional routing to internal venues.

Consideration should be given to notifying existing Clients when the product offering changes materially.

Venue Operators utilising an Algorithmic Trading System should have appropriate documentation describing the responsibilities of participants of the Venue engaged in Algorithmic Trading. These should cover but not be limited to the following:

- requirements in relation to on-boarding, enabling or restricting access;
- an error trade policy;
- rules concerning monitoring and configuring any risk limits maintained by the Venue; and
- rules and responsibilities in the processes surrounding connectivity.

5. Software development and change process

> **Good Practice Statement 7:** Market Participants engaged in Algorithmic Trading or Venue Operators operating a Venue which utilises an Algorithmic Trading System should have appropriate software development and change management processes in place applicable to their development and deployment of new, or changes to existing, Algorithms used in Algorithmic Trading or their Algorithmic Trading System.

Market Participants engaged in Algorithmic Trading or Venue Operators operating Venues utilising Algorithmic Trading Systems should put in place an initial development and change approval process to ensure risks associated with the implementation of the initial development or of the change request are appropriately reviewed by relevant stakeholders. The approval process required should be appropriate to the complexity, risks and nature of the proposed development or change in question.

A 'materiality' trigger may be agreed and applied to change requests. It is possible that a series of minor (i.e. non-material) changes viewed collectively result in a material alteration to an Algorithm. It may be impractical to consider this every time a minor change is made. However, as set out in Good Practice Statement 4, there should be a periodic review of both

conduct and prudential risks so that Market Participants will be able to reassess the consolidated impact of a series of minor changes. Market Participants should also consider whether material changes require updates to be reflected in the inventory described in Good Practice Statement 2.

As appropriate for the Algorithmic Trading or Algorithmic Trading System in question, Market Participants and Venue Operators should consider a software development methodology which generates a maintainable source code repository which can manage access, persistence and changes and produces software that is implemented to specified requirements. Any development environment should be segregated from the production trading environment.

As part of a development and change process, Market Participants and Venue Operators should require a process for testing software components in an environment which resembles the production environment before they are released into a production environment. Market Participants and Venue Operators should consider whether automation of such testing is appropriate.

Market Participants and Venue Operators could consider the following testing types when defining appropriate testing for a particular change type:

- unit testing;

- functional testing (for example, integration and regression testing);

- non-functional testing (for example performance, stability usability, capacity stress testing, market stress testing and scenario testing); and

- end user acceptance testing and venue conformance testing.[11]

Market Participants should establish a change management process which appropriately controls and manages the propagation and deployment of new and changing software and infrastructure into a production environment. Any process should create an evidential audit trail of the change request and development lifecycle and appropriate approval by a designated responsible party within the firm, and include a summary of the second line of defence's role and responsibilities in the change management process.

Depending upon the context and the materiality of the change or new request, the approval process might consider:

- conceptual description of the Algorithm (i.e. internal documentation);

- if relevant, the external and Client documentation;

- intended usage (e.g. asset classes, Clients and trading venues);

- confirmation that the development and testing has been carried out in line with the firm's requirements;

- results of tests carried out – this should be appropriately documented and supplied with supporting evidence and sign-offs as appropriate;

- identification of potential risks, limitations and conflicts of interests and how they will be monitored or mitigated;

- who will be authorised to use the Algorithm, in what environment and the supervision model for the Algorithm; and

- financial and non-financial risks involved in operating the Algorithm or category of Algorithm.

Approval processes for proposed initial developments or change requests should involve the

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[11] Note that applicable regulation may make some or all of the testing set out above mandatory – this list is without prejudice to Member Firms' need to comply with applicable law and regulation.

relevant functions in the second line of defence and Market Participants should consider whether any updates to the inventory are required.

6. Ongoing oversight, surveillance and monitoring

> **Good Practice Statement 8:** Market Participants engaged in Algorithmic Trading or Venue Operators operating a Venue utilising an Algorithmic Trading System should establish processes to ensure appropriate ongoing oversight, surveillance and monitoring of Algorithmic Trading or the Algorithmic Trading System (as applicable) as part of any governance structure.

Market Participants and Venue Operators should consider the nature of their activity type(s) and the size and complexity of their firm when defining requirements and the need for a holistic oversight across a range of activities incorporating second line of defence oversight. Market Participants and Venue Operators should maintain a robust control and compliance environment to identify and manage the risks associated with their Algorithmic Trading activities or the Algorithmic Trading System utilised by Venues which they operate.

Topics which may be appropriate for consideration are: the management of conflicts of interest; pre- and post-trade execution control limits; 'business as usual' monitoring; events and incident monitoring; business continuity management; change management processes; issue management and remediation (e.g. control improvements, outages, market data); outstanding issues from conduct reviews of the business; real time monitoring and alerting by the second line of defence and Client outcomes.[12]

Market Participants and Venue Operators should tailor their surveillance and monitoring to include control measures for conduct surveillance to identify potential market abuse or creation of disorderly markets. These controls might include monitoring the trading messages between the Market Participant and the relevant Venue to identify any potential abusive or disruptive trading behaviour.

FMSB's 'Surveillance Core Principles for FICC Markets Participants: Statement of Good Practice for Surveillance in Foreign Exchange Markets'[13] sets out core principles for surveillance for all FICC markets. The principles in that paper apply equally when considering trades executed using Algorithms.

In addition to surveillance, Market Participants should consider whether to implement real-time monitoring independent of their Algorithmic Trading desks. In making this assessment, firms could consider, among other things, optimal location for personnel given the expertise needed and the complexity of the business and Algorithms. Where first line control teams are performing real-time monitoring, risk and compliance functions should provide oversight and there should be clear escalation protocols.

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[12] Note that applicable regulation may make some or all of the oversight, surveillance and monitoring topics set out above mandatory elements of governance structures – this list is without prejudice to Member Firms' need to comply with applicable law and regulation.

[13] December 2016, available at https://fmsb.com/wp-content/uploads/2017/01/16-12-08-SoGP_Surveillance-in-FX-Markets_FINAL.pdf.

7. Record keeping

> **Good Practice Statement 9:** Market Participants and Venue Operators (where applicable) should keep timely, consistent, and accurate records of their Algorithmic Trading to facilitate appropriate levels of transparency and auditability.

Market Participants and Venue Operators (where applicable) should keep timely, consistent and accurate records of trade and account information relating to their Algorithmic Trading activities. In addition to applicable regulatory requirements, such information may include:

- receipt of redundant drop copies as well as order drop copies, where relevant and available;
- client details where providing client execution services;
- time and date of transactions;
- order price and an indication as to whether the order was to buy or sell; and
- order ID.

8. Training and education

> **Good Practice Statement 10:** Market Participants and Venue Operators should ensure relevant personnel are appropriately trained to support Algorithmic Trading or to manage the Algorithmic Trading System they operate. Such training should be tailored to the activity and role performed.

Market Participants engaged in Algorithmic Trading or Venue Operators operating a Venue which utilises an Algorithmic Trading System should ensure relevant personnel are appropriately trained to support Algorithmic Trading or to manage the Algorithmic Trading System they operate. Such training should be tailored to the activity and role of the relevant persons involved in Algorithmic Trading, or in the operation of an Algorithmic Trading System, so that such persons:

- understand the relevant Algorithms with which they are involved and the relevant processes, procedures and applicable governance framework; and
- have technical training proportionate to their role on applicable tools associated with the relevant Algorithms where necessary.[14]

When considering the population of 'relevant personnel' to attend such training, Market Participants should take into account the multi-disciplinary nature of the teams involved in the development and deployment of Algorithms and ensure that each of the relevant individuals and teams across the development and deployment chain are identified.

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[14] Note that applicable regulation will, in some instances, impose additional training requirements on Market Participants and Venue Operators – this list is therefore without prejudice to Member Firms' need to comply with applicable law and regulation.