



**SECURITIES AND FUTURES COMMISSION**  
證券及期貨事務監察委員會

## **Consultation conclusions on the regulation of electronic trading**

22 March 2013



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## Executive Summary

1. On 24 July 2012, the Securities and Futures Commission (**SFC**) issued a consultation paper on the regulation of electronic trading (**Consultation Paper**) for a two-month consultation period which ended on 24 September 2012. The Consultation Paper invited comments on various proposals including:
  - (a) the addition of a new paragraph 18 to the Code of Conduct for Persons Licensed by or Registered with the Securities and Futures Commission (**Code of Conduct**) which contains the general principles of electronic trading;
  - (b) the addition of a new Schedule 7 to the Code of Conduct containing the general and specific requirements on electronic trading;
  - (c) amendments to Schedule 6 to the Code of Conduct to apply the principles and the requirements to licensed persons who engage in the trading of leveraged foreign exchange contracts electronically; and
  - (d) amendments to the Fund Manager Code of Conduct to apply the principles and the requirements to fund managers who conduct electronic trading on behalf of collective investment schemes which they manage.
  
2. The SFC received a total of 34 written submissions, including seven that reached the SFC after the end of the consultation period. These written submissions were received mainly from market participants and industry associations. Respondents generally supported the development of the regulatory framework for electronic trading in Hong Kong. Of the proposals set out in the Consultation Paper, respondents mainly provided comments on the following areas:
  - (a) Whilst respondents agreed with the proposed scope of the regulation of electronic trading, some respondents considered that various proposals could be narrowed down.
  - (b) Respondents generally agreed that an intermediary who provides electronic trading services has a duty to ensure that its system is not misused, and commented on the extent of responsibility that is placed on an intermediary.
  - (c) Respondents generally supported the proposals that intermediaries should put in place risk management and supervisory controls to monitor orders, including pre-trade controls and regular post-trade monitoring. Comments were made on the extent to which intermediaries can detect and prevent market misconduct.
  - (d) In general, respondents supported the proposed prohibition on the sub-delegation of DMA services by clients that are not licensed intermediaries or overseas securities or futures dealers.
  - (e) With respect to systems that are designed and developed by third parties, respondents expressed concerns as to the potential difficulties for intermediaries to perform due diligence to ensure that they meet the proposed requirements.
  - (f) A few respondents, in particular fund managers, commented that there are wide variations in the roles of a fund manager and an executing broker, and fund managers should be subject to a different regulatory standard.



3. Key comments made and the SFC's responses are discussed in greater detail in this paper. A list of the respondents is set out in Appendix E. Their submissions are available on the SFC's website at [www.sfc.hk](http://www.sfc.hk). Of the 34 respondents who made submissions to the SFC, two requested that their names and comments not be published and three requested that their submissions be published without disclosing their names. We thank all respondents for their feedback and comments.
4. Having considered the comments received, the SFC now concludes that the proposed revisions to the Code of Conduct and Fund Manager Code of Conduct be adopted, with the amendments discussed in this paper. The final version of the Code of Conduct and Fund Manager Code of Conduct are set out in Appendices A to D to this paper. Amendments made to the proposals after the close of the consultation are highlighted in Appendices A to D for ease of reference.



## Comments received and the SFC's responses

### (i) Scope of the proposal

Q1.	Do you agree that the proposed scope of the regulation of electronic trading is appropriate in terms of
(i)	the types of electronic trading, which include internet trading, DMA and algorithmic trading?
(ii)	the types of products primarily covered by these proposals namely securities and futures contracts that are listed or traded on an exchange?
(iii)	the persons to whom the proposals apply?

#### **Public comments**

5. Most respondents who responded to this question agree that the proposals cover securities and futures contracts that are listed or traded on an exchange and that the proposals apply to licensed or registered persons.
6. Respondents who provided comments on the proposed definitions were mainly market participants, who consider the definitions too broad. With the exception of one industry body, no specific suggestions were made on how the definitions should be amended.
7. Some respondents commented on the following aspects of the proposed definitions:
  - (a) the proposed definition of “electronic trading” would capture any type of trading infrastructure where trades are inputted and/or processed electronically including firms’ internal crossing engines that may already be regulated as automated trading systems. One respondent suggested that it should be limited to internet trading, DMA and algorithmic trading;
  - (b) the definition of “internet trading” should be limited to “retail internet trading” to avoid confusion. A group respondent commented that the proposed definition could be read to include a broad range of platforms, technologies and methods, from order routing systems to fully automated trading systems, to any system where client orders are routed to a market or execution venue via the internet or using internet based technologies and standards;
  - (c) the carve-out for trades “initiated by way of internet trading” in the proposed definition of “DMA” could cause confusion. A group respondent sought clarification of whether an arrangement where a client uses an internet-based trading facility to enter orders which are then electronically routed to market via a DMA channel would constitute DMA service; and
  - (d) the proposed definition of “algorithmic trading” would capture simple automated trading processes and strategies such as automatic hedges. A respondent also sought clarification of whether it would capture trading activities that are not fully automated.



8. One respondent sought clarification on the application of the proposal to intermediaries who only conduct proprietary trading and do not take client orders.
9. One respondent expressed support for the coverage of leveraged foreign exchange contracts while one group respondent questioned why the proposed rules have been specifically extended to leveraged foreign exchange (**LFX**) trading.

***SFC's response***

10. The SFC appreciates the consideration that has been given by industry players to the proposed definitions. The definitions are intended to capture various types of trading infrastructure where orders are inputted, generated and/or processed electronically, and submitted by itself or via another intermediary to an exchange in Hong Kong or overseas. We therefore disagree with the comment that “electronic trading” should be limited to internet trading, DMA and algorithmic trading.
11. It is our understanding that there is no uniform approach in how these terms are used globally. Further, the definitions are to be incorporated to the Code of Conduct, which sets out the standards for intermediaries as general principles. They are not meant to be as precise as the wording in statutes.
12. The comments on the scope of internet trading are noted. As explained in the Consultation Paper, the proposals on internet trading are intended to be the minimum standards that are applicable to intermediaries who provide internet trading services with respect to the trading of securities, futures contracts and leverage foreign exchange contracts, to replace the requirements on internet trading set out in the Guidance Note on Internet Regulation (**Internet Guidance Note**) which was issued in March 1999. This also explains why the proposals cover LFX. Internet trading services referred to in the proposals are intended to cover internet trading whereby clients access a licensed or registered person’s trading services over the internet, as is commonly available to investors in Hong Kong.
13. We have carefully considered the proposed definition of algorithmic trading from an industry body and have concluded that the proposed definition is similar to the one set out in the Consultation Paper. In coming up with an appropriate definition of algorithmic trading for the purpose of regulation, we do not intend to draw a distinction between simple or complex automated trading processes and strategies.
14. In terms of the application of the proposals to orders that involve the use of both internet trading and DMA, for instance, a client places an order instruction to an intermediary’s trading facility through the internet and the intermediary transmits the order instruction electronically to the market via an exchange participant by means of DMA, we wish to clarify that the arrangement between the client and the intermediary will be treated as an internet trading service, whereas the arrangement between the intermediary and the exchange participant will constitute DMA service.
15. In view of the above, we do not see a need to amend the proposed definitions of electronic trading, internet trading, DMA and algorithmic trading.
16. In view of the risks that electronic trading poses, the proposals do not distinguish between proprietary and client trades.



## (ii) General requirements on electronic trading

### ***Responsibility for orders (paragraph 18.3 of the Code of Conduct)***

Q2. Do you agree that an intermediary should be ultimately responsible for the orders sent to the market through its electronic trading system and for the compliance of the orders with applicable regulatory requirements?

If not, why not?

### ***Public comments***

17. Some respondents, including market participants, agree that an intermediary should bear ultimate responsibility for the orders. The respondents who disagreed with the proposal sought clarification on the meaning of “ultimate responsibility”. Respondents suggested fine-tuning of the requirement. They generally considered that an intermediary should not be liable for any market misconduct of its clients which are beyond the reasonable control of the intermediary provided the intermediary has put in place reasonable control measures.
18. Some respondents commented that there are practical limitations for an intermediary to detect or prevent all client misconduct. They pointed out that the reference to “applicable regulatory requirements” is potentially very broad and may cover requirements that intermediaries may not be in a position to monitor such as position limits or substantial shareholder controller thresholds.
19. One respondent commented that DMA would be offered to group companies or clients of an intermediary, who are also licensed or registered in Hong Kong, and these licensed or registered persons may in turn offer access to DMA to its underlying clients. The responsibility to perform pre-trade or post-trade controls should be on the immediate client facing entity instead of the intermediary holding an exchange participant status who is merely routing orders to the market for another licensed or registered person.
20. A group respondent is of the view that the requirement appears to impose a form of strict liability on an intermediary for any violations committed by its client.

### ***SFC’s response***

21. We have explained at paragraph 28 of the Consultation Paper that it is not the SFC’s intention to hold an intermediary liable for all market misconduct or other transgressions that involve orders that go through its electronic trading system. Intermediaries will not be held strictly liable for their clients’ misconduct or wrongdoings. However, an intermediary is expected to be responsible for meeting the settlement and financial obligations for the orders sent to the market through its electronic trading system and for implementing policies, procedures and controls to supervise its own and its clients’ trading as required in the Code of Conduct, including pre-trade risk management controls and post-trade monitoring. We do not intend to impose new obligations on intermediaries beyond those that presently exist. We have amended Paragraph 18.3 of the Code of Conduct to add clarity to the principle.



**Management and supervision (paragraph 18.4 of the Code of Conduct; paragraph 1.1 of Schedule 7)**

Q3. Do you agree that an intermediary should effectively manage and adequately supervise the design, development, deployment and operation of the electronic trading system it uses or provides to clients for use?  
If yes, are the proposed requirements sufficient? If not, why not?

**Public comments**

22. Responses to Question 3 focused mainly on two aspects, namely the need to have at least one responsible officer/executive officer responsible for the overall management and supervision of the electronic trading system, and the requirement that an intermediary supervises the design and development of the system provided by third party service providers. Issues concerning third party service providers are dealt with at paragraphs 103 to 117.
23. Some respondents are concerned that a responsible officer or executive officer normally does not have the relevant expertise to manage electronic trading systems which are very technical in nature. A few respondents commented that it would be onerous and not practical to require a single responsible officer/executive officer to supervise the electronic trading system in the case where an intermediary is part of a multi-national group and the system is managed and maintained by an affiliate outside of Hong Kong.
24. Given that some electronic trading systems are very technical in their operation, several respondents suggested that a responsible officer/executive officer should be reliant on other staff members who have relevant qualification or technical knowledge in managing and supervising the systems.
25. A group respondent suggested that paragraph 1.1.4 of the draft Schedule 7 to the Code of Conduct<sup>1</sup> could be read to impose strict liability on an intermediary for any failure or misuse of its electronic trading system. The respondent also commented that where an intermediary provides an electronic trading system to a client, the intermediary should not be required to monitor or approve the client's operation of the system or any subsequent modifications to the system made by the client.

**SFC's response**

26. In line with current regulatory standards expected of the management of an intermediary, responsible officers/executive officers may engage others to assist them to manage and supervise the electronic trading system, but they remain responsible for the operation of the system and the intermediary's compliance with relevant regulatory standards.
27. Similarly, for an intermediary that is part of a multi-national group, irrespective of the arrangements within the group regarding the management of its electronic trading system and the allocation of duties or functions, the responsibility to ensure compliance with the regulations in Hong Kong rests with the responsible officers/executive officers and the management of the intermediary in Hong Kong.

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<sup>1</sup> The paragraph requires that a licensed or registered person should assign adequately qualified staff, expertise, technology and financial resources to the design, development, deployment and operation of the electronic trading system.



28. The proposal is for intermediaries to have at least one responsible officer/executive officer for the overall management and supervision of the electronic trading system. Contrary to some respondents' comments, paragraph 1.1.1(a) of the draft Schedule 7 to the Code of Conduct does not restrict intermediaries to have only one responsible officer/executive officer for this purpose. We expect persons appointed to act as responsible officers/executive officers are familiar with relevant regulatory requirements, and have functions and responsibilities which are relevant to their firms' electronic trading businesses.
29. We have reconsidered the drafting of paragraph 1.1.4 of the draft Schedule 7 to the Code of Conduct and disagree that the paragraph could be interpreted as imposing a strict liability on an intermediary for any failure or misuse of its system. Moreover, an intermediary is not expected to be responsible for any modifications to the system made by its client which are beyond its control.

***Adequacy of system (paragraph 18.5 of the Code of Conduct; paragraph 1.2 of Schedule 7)***

Q4. Do you agree that an intermediary should ensure the integrity of the electronic trading system it uses or provides to clients for use, including the system's reliability, security and capacity, and have appropriate contingency measures in place?  
If yes, are the proposed requirements sufficient? If not, why not?

***Public comments***

30. Most respondents agree with the proposal that an intermediary has the responsibility to ensure the integrity of its electronic trading system, subject to specific comments made which are set out below.
31. Several respondents commented that there are inherent limitations on the testing of any electronic trading systems. They suggested that HKEx should implement testing facilities that would allow intermediaries to assess how their electronic trading systems may interact with the market under various conditions, including real time simulation of the market for intermediaries to conduct testing.
32. A number of respondents suggested that the proposed requirement on system testing be subject to a reasonable standard as no amount of testing or planning can guarantee with absolute certainty the reliability of any electronic trading systems. Comments were also made that it is not appropriate to mandate how frequently testing should be conducted but to allow individual intermediaries to decide, having regard to the nature, size and complexity of their business. A group respondent suggested that the requirement to test system modifications be subject to a materiality threshold.
33. Some respondents sought clarification on the types of situations that are considered as "material service interruption". Two respondents commented that the requirement to report any material service interruption to the SFC should not apply to intermediaries who do not provide services to clients. One respondent indicated that registered institutions currently report any material service interruption to the HKMA and sought clarification of whether dual reporting is required.



34. With respect to system security, a group respondent suggested that there are practical limitations on the extent to which intermediaries can prevent all forms of unauthorised access, particularly where it is facilitated by authorised users.
35. A respondent commented that the level of system capacity is a commercial decision and should not be subject to regulation. Another respondent suggested that the term “appropriate capacity” should be replaced with “reasonable capacity” as it is impossible to determine what the appropriate capacity for the future would be.
36. In relation to contingency planning, a respondent disagreed that intermediaries have to maintain a backup DMA system as the maintenance cost of such backup system is high. Another respondent sought clarification on what is meant by “system delay”.
37. We have received a comment that HKEx should introduce a circuit breaker in Hong Kong.

### ***SFC’s response***

38. We consider that testing is a critical part of evaluating system reliability. An intermediary should conduct testing prior to deploying an electronic trading system and modifications, including adjustments or updates, to ensure the system and modifications are reliable.
39. HKEx now provides a testing environment for connectivity in both the cash and derivative markets to all exchange participants. Such testing environment is made available on trading days and its setup is basically identical to the production environment. Furthermore, regular load rehearsals are also made available to exchange participants and vendors to verify their systems’ capabilities in handling increasing market data volume. In view of the rapid development of electronic trading activities in Hong Kong, we understand that HKEx would review the frequency and style of load rehearsals and may consider implementing any necessary enhancements to the testing facilities. Such enhancement may include the testing of algorithmic trading systems in a production-like environment.
40. In relation to system testing conducted by intermediaries, the standard expected is not absolute. Similar to the standards set out in the Code of Conduct, the reasonableness test is applied to intermediaries’ testing of their systems.
41. With respect to the phrase “material service interruption”, the Commission takes the view that “material” is a concept not unfamiliar to the industry. An intermediary is in the best position to determine what service interruption is material having regard to the nature and scale of the service it provides, including the transaction volume handled by its electronic trading system.
42. We agree with the views expressed by market practitioners that the requirement to report to the SFC any material service interruption should not apply to licensed or registered persons who do not provide electronic trading services to clients. Paragraph 1.2.3 of draft Schedule 7 to the Code of Conduct has been amended accordingly.
43. A registered institution is expected to report any material service interruption of its electronic trading system to both the HKMA and the Commission.
44. In terms of system security, we do not expect an intermediary to be able to prevent all forms of unauthorised access. Under the proposed requirement, an intermediary is only required to have adequate and appropriate security controls in place to protect the electronic trading system it uses or provides to clients for use from being abused.



45. We have stated in the Consultation Paper that insufficient capacity is often a cause of system delay or failure. Whilst it is not our intention to mandate the level of capacity, we expect an intermediary to ensure that its electronic trading system has “sufficient” capacity to handle order instructions received from its clients.
46. For contingency planning, we proposed that an intermediary should establish a written contingency plan which should at least include “a suitable backup facility which will enable the licensed or registered person to provide electronic trading services or alternative arrangements for order execution in the event of an emergency”. It is not expected that the backup facility or alternative arrangements provide the same level of DMA service offered by its production system.
47. In light of a respondent’s request to clarify “system delay”, we have amended paragraph 1.2.8 of draft Schedule 7 to the Code of Conduct to include a materiality threshold to the requirement.
48. On the issue of the introduction of a circuit breaker or price limit, HKEx has been closely monitoring the development of other major overseas markets and will consult the market before proposing any changes to the Commission.

**Record keeping (paragraph 18.6 of the Code of Conduct; paragraph 1.3 of Schedule 7)**

- Q5. Do you agree that an intermediary should keep, or cause to be kept, proper records on the design, development, deployment and operation of its electronic trading system?  
If not, why not?
- Q6. Do you agree with the proposed periods of record keeping?  
If not, why not?

**Public comments**

49. Several respondents sought guidance as to the scope of the record keeping requirements. They commented that the extent of the specific requirements such as “comprehensive documentation” and “all electronic trading and system documentation” are very broad which could potentially involve an extremely voluminous amount of material that would be burdensome to retain, especially where these systems are “global” or shared within a firm’s group.
50. In respect of the requirement that an intermediary keeps incident reports for all system delays or failures of its electronic trading system, respondents suggested that the requirement be subject to a materiality threshold.
51. Respondents expressed near unanimous support for the proposed record retention period.



### ***SFC's response***

52. The scope of the record keeping requirement is intended to be wide. Intermediaries are given flexibility to determine the types of records that are necessary to fulfil their record keeping obligations.
53. After taking into account the comments received, we consider it appropriate to amend the incident report keeping requirement to the effect that an intermediary is required to keep an incident report for “material” system delays or failures of its system instead of “all” system delays or failures.

### **(iii) Specific requirements on internet trading and DMA**

#### ***Risk management (paragraph 18.7 of the Code of Conduct; paragraph 2.1 of Schedule 7)***

Q7. Do you agree that in providing internet trading or DMA services, the proposed pre-trade controls should be put in place by an intermediary?

If yes, are the proposed requirements appropriate? If not, why not?

Q8. Do you agree that, in providing internet trading or DMA services, an intermediary should conduct post-trade monitoring to reasonably identify any order instructions and transactions which may be manipulative or abusive in nature?

If not, why not?

### ***Public comments***

54. With respect to the proposed prohibition of DMA arrangements where clients place orders directly on a market without going through the “intermediary’s infrastructure”, a few respondents pointed out that the requirement seems to indicate that the intermediary must actually own the infrastructure. In practice, there are various arrangements under which the intermediary does not itself own the infrastructure through which trades pass but nonetheless retains pre-trade controls, including the ability to unilaterally halt the client’s trading activities. For client orders to be able to go through the intermediary’s infrastructure, the intermediary must build its own hardware infrastructure which would cause undue burden on small to medium size brokerage firms.
55. Whilst most respondents agreed that an intermediary should put in place pre-trade controls for its internet trading and DMA services, comments were made on the following issues:
- (a) The extent to which intermediaries can be expected to monitor and prevent “erroneous orders” and client trading that violates “regulatory requirements” on a pre-trade basis. One respondent suggested that the latter requirement is not implementable in practice as it is impossible for an intermediary to determine whether a particular order is in compliance with all of the regulatory requirements.
  - (b) The SFC should provide more prescriptive pre-trade controls including the types of limits, maximum order size and maximum market value that an intermediary should apply so that intermediaries are subject to the same standards.



- (c) Additional controls at the level of the exchanges should be introduced to provide more comprehensive protection to market integrity.
56. A respondent commented that as electronic trading is instantaneous without significant human intervention, it would be impossible to determine in practice whether a particular order is in compliance with regulatory requirements. The respondent suggested that an intermediary and users of its electronic trading systems can enter into legally binding contracts setting out inter alia the respective parties' obligations including compliance with applicable regulatory requirements in order to discharge the intermediary's obligation.
57. In respect of the requirement to conduct regular post-trade monitoring, comments were raised about the practical difficulties that intermediaries may encounter in detecting and preventing "manipulative or abusive trading activities" as an intermediary generally has very limited information about a client's investment intent or about trading activities which are conducted through other brokers. A few respondents sought clarification on the types of transactions which are manipulative or abusive in nature.
58. One respondent suggested the requirement to identify any suspected manipulative or abusive trading activities be limited to the market misconduct or offences as defined in Part XIII or Part XIV of the SFO.

#### ***SFC's response***

59. In response to the comments that the reference to "intermediary's infrastructure" would seem to indicate that an intermediary must own the infrastructure, we have amended the proposed requirement by replacing "licensed or registered person's infrastructure" with "the infrastructure used by the licensed or registered person". In view of this change, we consider it necessary to make clear that the pre-trade controls put in place by an intermediary must be in the intermediary's direct control. Paragraph 2.1.1 of draft Schedule 7 to the Code of Conduct has been amended accordingly.
60. In the proposals, we introduced the minimum level of risk management and supervisory controls that must be addressed by each intermediary. We consider that an appropriate level of guidance on controls has been provided. We do not intend to mandate specific parameters for these controls. Specific controls may vary depending on the business model and risk tolerance of each intermediary. As explained in the Consultation Paper, the measures that are put in place for compliance with the proposed requirements are expected to be commensurate with the nature, size, and complexity of an intermediary's business.
61. In relation to the comments on the prevention of "erroneous orders", the requirement is for intermediaries to establish and implement automated pre-trade controls that are "reasonably designed" to prevent the entry of orders that are set out in paragraph 2.1.1 of draft Schedule 7 to the Code of Conduct, including erroneous orders. Intermediaries are not expected to ensure or guarantee that no erroneous orders are sent to the market.
62. We expect intermediaries to put in place pre-trade controls to prevent orders that are not in compliance with regulatory requirements, for example, position limits and the prohibition of naked short selling, which are current requirements that intermediaries should meet. This requirement is in line with the intermediaries' obligations under paragraph 12.1 of the Code of Conduct.



63. An intermediary may enter into a written agreement with each user of its electronic trading systems setting out the conditions and obligations for using the systems, but the arrangement will not discharge the intermediary's regulatory obligations including putting in place pre-trade controls.
64. In respect of the requirement to conduct post-trade monitoring to identify "manipulative or abusive orders", this is intended to be limited to market misconduct or offences as defined in Part XIII and Part XIV of the SFO. Under paragraphs 12.5(a) and (f) of the Code of Conduct, an intermediary is required to report:
- (a) any material breach, infringement or non-compliance with applicable law, rules regulations and codes by themselves or their employees; and
  - (f) any material breach, infringement or non-compliance of market misconduct provisions set out in Part XIII or Part XIV of the SFO that it reasonably suspects may have been committed by its clients.
65. In terms of compliance with this requirement, we wish to clarify that we do not require intermediaries to conduct any investigation beyond post-trade monitoring or make any decision on whether a client has been guilty of misconduct. We require intermediaries to report the facts or matters indicating that a client may be guilty of misconduct.
66. We expect that the regularity of post-trade monitoring should be commensurate with the volume of order flow an intermediary handles.
67. Regarding the comments on controls at the level of the exchanges, HKEx has put in place in both the cash and derivative markets certain pre-trade controls to guard against irregular orders and established measures to handle erroneous trades. In addition, its market surveillance function also conducts post-trade monitoring of manipulative or abusive trading activities. Although such controls are implemented at the market level, intermediaries must also implement specific controls to manage the risks arising from electronic trading at the broker/firm level.

***Minimum client requirements for DMA services (paragraph 18.8 of the Code of Conduct; paragraph 2.2 of Schedule 7)***

Q9. Do you agree that an intermediary should establish minimum client requirements for its DMA services and assess whether each client meets the requirements before granting DMA services to a client?  
If not, why not?

***Public comments***

68. Some respondents suggested that the SFC should provide more specific guidelines to standardise the minimum client requirement such that intermediaries could carry out the assessment more objectively.
69. A few respondents suggested that there should be a presumption that professional and institutional investors are qualified to access DMA services without being subject to the vetting process.



### **SFC's response**

70. The proposed requirement sets out the minimum standards that the SFC considers important in ensuring that a client is competent and has the requisite knowledge of both the system and applicable regulatory requirements in using DMA services provided by an intermediary. Each client has a different risk profile and therefore there is no one-size-fits-all approach with respect to the level of minimum standards for clients.
71. In advance of providing DMA services to a client, an intermediary should assess whether the client meets the appropriate minimum client requirements. The intermediary is expected to have a good understanding of its clients and the electronic trading systems they use, including trading algorithms that its clients use to place orders to the market via the intermediary's DMA. After obtaining information about its clients and their electronic trading systems, the intermediary is expected to put in place appropriate measures to identify issues that may arise out of the clients' use of their electronic trading systems to place orders to its DMA. Such measures should include appropriate pre-trade controls and post-trade monitoring, taking into account the information it has obtained about its clients and the electronic trading systems used by its clients.
72. In the event that an intermediary permits its client to sub-delegate the DMA services to another person, the arrangement between the intermediary and its client pursuant to paragraph 2.2.4 of Schedule 7 to the Code of Conduct should ensure that the client has a good understanding of the other person and the electronic trading systems used by the other person and to have appropriate pre-trade controls and post-trade monitoring in place for orders placed by the other person.
73. We do not agree with the presumption that professional and institutional investors are competent in using an intermediary's DMA services. In view of the risks posed to the market and to the intermediary that provides DMA services to clients, we consider it both necessary and in an intermediary's interest to require that an intermediary conducts appropriate due diligence on all its clients before providing DMA services to them.

### **Sub-delegation of DMA services (paragraph 18.8 of the Code of Conduct; paragraph 2.2 of Schedule 7)**

Q10. Do you agree that an intermediary should not allow its client to sub-delegate the DMA services to another person unless the client is a licensed or registered person or an overseas securities or futures dealer? Do you agree with the proposed definition of "overseas securities or futures dealer"?

If not, why not?

### **Public comments**

74. Respondents were generally in support of the proposal relating to the sub-delegation of DMA services. However, some respondents sought clarification of the meaning of "sub-delegation".
75. Two respondents commented that there should be no restrictions on sub-delegation of DMA services provided that reasonable risk controls are in place.



76. One respondent suggested that sub-delegation be permitted for institutional and professional investors. It commented that the proposed prohibition on the sub-delegation of DMA by clients that are not licensed intermediaries or overseas securities or futures dealers is overly restrictive. In some jurisdictions, certain entities may trade via DMA facilities on an unlicensed basis pursuant to exemptions from local licensing requirements, e.g. proprietary traders may provide access to their affiliates and overseas banks may be exempt securities or futures dealers in certain overseas jurisdictions. In the case of fund management, investment managers are unlikely to be required to be licensed or registered as a securities or futures dealer and therefore would not qualify as an overseas securities or futures dealer.

### ***SFC's response***

77. In terms of the meaning of "sub-delegation", we clarify that the arrangement where a corporate client grants access to some individuals within its organisation for placing order instructions on behalf of the corporate client is not considered sub-delegation under the proposals. Where the client of a broker (**Broker A**) places an order to another broker (**Broker B**) via the DMA service provided by Broker B to Broker A and without manual re-entry by Broker A, the arrangement between Broker A and its clients is considered sub-delegation.
78. In the second example described in paragraph 77, Broker B may not have any information on Broker A's clients. Broker B will have to rely on Broker A to ensure that Broker A's clients meet the minimum client requirements established by Broker B, and order instructions submitted by Broker A's clients are subject to risk management and supervisory controls of Broker A. We therefore consider that the proposed restriction on sub-delegation is reasonable.
79. A person who is not an overseas securities or futures dealer may obtain DMA services from an intermediary in Hong Kong directly or the person may obtain DMA services from an overseas securities or futures dealer. Moreover, if an investment manager has a discretionary power to trade on behalf of a fund or a client through a written management agreement, such arrangement will not be treated as sub-delegation of DMA services.
80. In terms of the application of the proposals to orders that involve the use of both internet trading and DMA, for instance, a client places an order instruction to an intermediary's trading facility through internet and the intermediary transmits the order instruction electronically to the market via an exchange participant by means of DMA, we wish to clarify that such an arrangement will not be treated as sub-delegation of DMA services. Internet trading services referred to in these proposals are intended to cover internet trading whereby clients access an intermediary's trading services over the internet, as is commonly available to investors.
81. We agree with the comment that an overseas bank may conduct dealing in securities or futures contracts on behalf of its clients. Paragraph 2.2.4 of Schedule 7 to the Code of Conduct will be modified to allow a licensed or registered person to permit its client which is a regulated overseas bank to sub-delegate the DMA services to the bank's clients.



#### (iv) Specific requirements on algorithmic trading

##### **Qualification (paragraph 18.9 of the Code of Conduct; paragraph 3.1 of Schedule 7)**

Q11. Do you agree that an intermediary should establish and implement effective policies and procedures to reasonably ensure that persons involved in the design and development of, or approved to use its algorithmic trading system and trading algorithms are suitably qualified?

If not, why not?

##### **Public comments**

82. Several respondents sought clarification on the meaning of “suitably qualified”. Another respondent requested further guidance on the type of qualifications and training expected for qualified staff. A group respondent suggested that an intermediary should be deemed to have satisfied this requirement if it acted reasonably under the circumstances.
83. Two respondents pointed out that the requirement to provide training to individual users of an algorithmic trading system should not extend to the employees of clients and other third parties who purchase a system from an intermediary. They took the view that an intermediary’s responsibility in this respect should be regarded as discharged where it has provided a client with sufficient information about an algorithmic trading system to enable the client to adequately train its own staff on the characteristics and operation of the system.
84. A respondent disagreed with the requirement on an intermediary to provide users of the algorithmic trading system with an “up-to-date user manual”, and preferred that an intermediary be permitted to prepare and provide relevant staff with relevant documentation to ensure that such staff have a suitable understanding of the trading system.

##### **SFC’s response**

85. For the meaning of the term “suitably qualified”, we believe that an intermediary, which designs, develops and uses algorithmic trading systems and trading algorithms, is in the best position to determine who is suitably qualified to conduct work on its systems and algorithms. We expect that intermediaries take into account the complexity and sophistication of the systems and algorithms in question in making the decision.
86. We understand that intermediaries may consider it difficult in practice to meet the proposal on providing training to users of their algorithmic trading system or trading algorithms, especially where the users are their clients. We are aware that the proposal, in so far as providing training to clients is concerned, is new. We however consider it necessary that users of algorithmic trading systems or trading algorithms are competent in their use of the systems and algorithms. We have therefore proposed that training be provided “where necessary” so that there is room for an intermediary to exercise judgment on whether training to clients is necessary. In providing for this flexibility, we expect that intermediaries have a good knowledge of their clients’ competence and ability in their use of the systems and algorithms the intermediaries provide to them.



87. We agree with the comment regarding an intermediary providing users with an “up-to-date user manual”. Our intention is that users are provided with up-to-date and relevant information with respect to the operation of its algorithmic trading system. We therefore propose to replace “user manual” with “documentation” in paragraph 3.1.5 of draft Schedule 7 to the Code of Conduct. The substantive meaning of the requirement remains the same.

**Testing (paragraph 18.10 of the Code of Conduct; paragraph 3.2 of Schedule 7)**

Q12. Do you agree that an intermediary should ensure that the algorithmic trading system and trading algorithms it uses or provides to clients for use are adequately tested to ensure that they operate as designed at all times?

If not, why not?

**Public comments**

88. One respondent sought clarification of whether an intermediary is responsible for the testing of an algorithmic trading system and trading algorithms developed and used by its client.
89. Several respondents suggested that the requirement to test algorithmic trading systems and trading algorithms to ensure that they operate “at all times” is an unrealistically high standard. Another respondent suggested that the degree of testing should be commensurate with the risks that the relevant algorithmic trading strategy may pose to the operation of a fair and orderly market.
90. A respondent sought clarification on what constitutes “foreseeable extreme market circumstances”.

**SFC’s response**

91. As explained in the Consultation Paper, an intermediary is only responsible to ensure that the algorithmic trading systems and trading algorithms it uses or provides to clients for use, are adequately tested. Under the proposal, an intermediary would not be responsible for the testing of a system and algorithms developed by its client over which it has no control.
92. We note the concerns relating to the proposal for an intermediary to test an algorithmic trading system and trading algorithms to ensure that they operate as designed “at all times”. We wish to clarify that an intermediary is expected to comply with the requirement to the standard of reasonableness. We have removed “at all times” at paragraph 18.10 of the Code of Conduct and paragraph 3.2 of Schedule 7 to the Code of Conduct.
93. Regarding the testing of the algorithmic trading system and trading algorithms, one respondent sought clarification of the phrase “foreseeable extreme market circumstances”. We expect that an intermediary takes into account market conditions such as high price volatility and low liquidity in varying degrees in conducting testing of the system and algorithms.



**Risk management (paragraph 18.11 of the Code of Conduct; paragraph 3.3 of Schedule 7)**

Q13. Do you agree that an intermediary should have effective controls to ensure the integrity of its algorithmic trading system and trading algorithms and that they operate in the interest of the integrity of the market?

If yes, are the proposed requirements for risk management sufficient? If not, why not?

**Public comments**

94. Most of the respondents reiterated their previous comments to question 7 regarding the risk management requirements on internet trading and DMA. Some respondents sought clarification on the meaning of “market integrity”. One respondent considered that the threshold implied by the term is too high.
95. Another respondent suggested that the proposed requirement set out in paragraph 3.3.1 of draft Schedule 7 to the Code of Conduct should be subject to a reasonableness standard and proposed to replace the term “ensure” with “reasonably ensure”.

**SFC’s response**

96. “Market integrity” in this proposal has the same meaning as references to “the integrity of the market” in General Principles 1 and 2 of the Code of Conduct, which should be familiar to all licensed or registered persons in Hong Kong. It is not our intention to introduce a new concept for electronic trading in this regard.
97. In response to the comment that the proposed requirement on risk management should be subject to a reasonableness standard, we have amended paragraph 3.3.1 of draft Schedule 7 to the Code of Conduct to the effect that an intermediary should put in place controls that are reasonably designed to ensure the integrity of its algorithmic trading system and trading algorithms. In view that an intermediary is asked to conduct post-trade monitoring of suspicious market manipulative or abusive activities, we have removed the proposal that an intermediary puts in place pre-trade controls to prevent manipulative or abusive orders from an algorithmic trading system.

**Record keeping (paragraph 18.6 of the Code of Conduct; paragraph 3.4 of Schedule 7)**

Q14. Do you agree that an intermediary should keep, or cause to be kept, proper records on the design, development, deployment and operation of its algorithmic trading system and trading algorithms?

If not, why not?

Q15. Do you agree with the proposed periods of record keeping and details of the records to be kept?

If not, why not?



### **Public comments**

98. Most respondents agreed with the proposed record keeping requirement and the proposed record retention period, subject to specific comments made which are set out below.
99. Several respondents commented that the requirement would impose an obligation on intermediaries to keep a large volume of records and suggested that records should be kept at a “reasonable level”.
100. Some respondents expressed concerns that the requirement on keeping a “complete audit trail” of the design and development, including any modifications, of the algorithmic trading system is too burdensome. There were also comments that more clarity should be given regarding the types of logs and parameters of the system to be kept.

### **SFC’s response**

101. For the proposal to keep a complete audit trail of the design and development of an intermediary’s algorithmic trading system and trading algorithms, the aim, as set out in draft paragraph 3.4.1 of draft Schedule 7 to the Code of Conduct, is to show the rationale for and the intended outcome of the design, development and modification of the system or algorithm. After considering the comments we received, we feel that the same regulatory intent can be met by removing “complete audit trail”, to allow for more room for an intermediary to decide how they meet the requirement.
102. In coming up with the proposal on record keeping for an algorithmic trading system and trading algorithms, a key consideration is to determine the amount of information that is necessary for proper regulation in this area. Through our experience in cases and incidents involving algorithmic trading, we feel that it is important for both the SFC and an intermediary to be able to reconstruct how an algorithm places an order to the market. The proposal for an intermediary to keep records of all the parameters that its algorithmic trading system and trading algorithms take into account should be read in this light. Parameters referred to in the proposal include the factors that an algorithm takes into account in acting the way it does, resulting in the placing of an order to the market. While we understand that intermediaries consider this requirement burdensome, we have decided to keep this proposal in view of the potential risks that algorithmic trading may cause to the market and to intermediaries.

### **(v) Electronic trading system not developed by the licensed or registered person**

- Q16. Do you agree that where an electronic trading system is provided by third party service provider, an intermediary should perform appropriate due diligence to ensure that the intermediary meets the proposed requirements set out in paragraph 18 of and Schedule 7 to the Code of Conduct in its use of the system?
- If not, why not?
- Q17. What is your view on requiring an intermediary to make arrangements with the service provider for the purpose of meeting the proposed requirements on record keeping?



### ***Public comments***

103. Responses on these proposals were mixed. A respondent who was supportive considered that the requirement has the effect of filling a gap that would exist if the activities regulated in the Code of Conduct were farmed out to unregulated service providers.
104. Some respondents expressed concerns with the proposal. A summary of key comments is set out below:
- (a) Clarification was sought on the types and extent of “due diligence” measures to undertake that would satisfy the requirement. Given that the development of electronic trading systems involves highly sensitive, proprietary technologies, third party service providers are unlikely to submit to intermediaries a detailed, invasive audit of their operations or the design and development process of their systems.
  - (b) Intermediaries generally do not have the relevant expertise to conduct due diligence. There are also practical difficulties for an intermediary to perform due diligence if the third party is located overseas.
  - (c) It may not be possible for an intermediary to manage and supervise the design and development of an electronic trading system as well as to ensure the persons involved in the design and development of the system are suitably qualified.
  - (d) Intermediaries should be permitted to rely on the testing of systems carried out by their third party service providers.
  - (e) It would be difficult for intermediaries to make arrangements with service providers for the purpose of meeting the requirements on record keeping, particularly service providers that are located outside of Hong Kong. Third party developers of electronic trading systems may choose not to sell their systems to Hong Kong rather than comply with this requirement, thereby reducing the choice of systems available to Hong Kong intermediaries.
105. A group respondent suggested that any “due diligence” requirement be limited to factors such as the third party service provider’s general reputation, track record and expertise in the development of relevant electronic trading systems.
106. One respondent pointed out that where a third party service provider is itself a licensed or registered person, it would already be subject to the requirements. There should not be any additional obligation imposed on the intermediary to conduct due diligence.
107. Several respondents suggested that the SFC should consider the establishment of an independent industry-wide certification standard for vendors of electronic trading systems. An intermediary seeking to use a third party system could meet its due diligence obligation by using a system that has been pre-certified.

### ***SFC’s response***

108. The SFC appreciates the commercial rationale for an intermediary to use electronic trading systems provided by a third party. It is however important to bear in mind that once an electronic trading system from a third party is adopted by an intermediary, its use becomes part of the intermediary’s business for which it is responsible, in particular with respect to its compliance with regulatory requirements. Accordingly, it is in the intermediary’s interest to take steps to ensure that the electronic trading system is up to standard.



109. In considering the level of due diligence that an intermediary is required to conduct, we have the following key principles in mind:
- (a) Intermediaries must comply with the same standard, whether their systems are developed in-house or provided by third party providers, so that a level playing field is maintained and regulatory arbitrage is minimised.
  - (b) Intermediaries are expected to use systems that they understand and are satisfied with.
110. Accordingly, we have decided to keep the proposal that an intermediary should perform appropriate due diligence where an electronic trading system is provided by a third party service provider, including affiliates of the intermediary.
111. We note the comments that intermediaries face practical difficulties to comply with these requirements where the electronic trading system is provided by a third party service provider, for instance, with respect to the management and supervision of the design and development of an electronic trading system. We wish to clarify our expectation of intermediaries in this regard.
112. An intermediary that engages in the business of electronic trading is expected to have a sufficient level of technical expertise to understand and explain how the system operates, including the system's scope and the nature of its functions, its work flow process, its capacity, as well as its limitations and risks, and to ensure that the system is fit for purpose, before adopting the system for use. However, we do not expect the level of understanding needs to be as technically sophisticated as the third party's.
113. Further, an intermediary who uses an electronic trading system provided by a third party is expected to work with the service provider to ensure that the service provider understands the regulatory requirements and that the system provided to the intermediary meets the regulatory requirements, taking into account the nature, size and complexity of the intermediary's business.
114. If the intermediary is using its own in-house system, we would expect the intermediary to have on hand sufficient technical and manpower resources to deal with any issues or problems, including regulatory issues, when they arise. Equally, if the intermediary is using a third party system, the intermediary should assess, at least on an annual basis or when there is a material change on the third party's part, that the third party has on hand and available to the intermediary sufficient technical and manpower resources to deal with any issues or problems, including regulatory issues, when they arise.
115. Comments concerning the difficulty in complying with the recording keeping requirements are noted. We would reiterate that an intermediary that uses a third party electronic trading system is asked to make arrangements with its service provider to ensure that records are kept in accordance with the regulatory requirements. Service providers are not asked to pass proprietary information to intermediaries. Such information can be provided to the SFC directly as required by the SFC.



116. Respondents' concern that service providers may not be willing to co-operate with intermediaries in conducting due diligence is noted. In the event that a service provider is unwilling to provide information or keep records, an intermediary should consider the appropriateness of using the electronic trading system provided by the service provider. We believe that the inclusion of the due diligence obligation in the Code of Conduct would facilitate intermediaries' discussion with service providers in making arrangements to meet the regulatory requirements.
117. As for the comment on the certification of electronic trading systems, the SFC does not certify services or systems provided by third parties to intermediaries. We do not intend to change this approach.

## **(vi) Other matters**

### ***Application of the proposals to fund managers***

#### ***Public comments***

118. Some respondents believed that fund managers should not be subject to the proposed regulation or should be subject to a different standard than brokers who provide electronic connectivity services. They were of the view that a fund manager presents less risk to the financial markets because its trades are submitted to the market through an executing broker.
119. One respondent commented that fund managers who place orders via electronic trading platforms (e.g. DMA, algorithms, etc.) provided by brokers should not fall within the scope of the proposals.
120. Two respondents commented that the use of "where applicable" in paragraph 9.2 of the Fund Manager Code of Conduct causes confusion. They suggested clarifying which requirements are applicable to fund managers and how fund managers would comply with these requirements.

#### ***SFC's response***

121. The proposals refer to two types of licensed or registered persons, i.e. users and providers. Fund managers fall under the former category and therefore are expected to comply with the requirements that are applicable to electronic trading system users. Further, where a fund manager uses an electronic trading system that is provided by a third party service provider, the fund manager should perform due diligence to ensure that it meets the requirements set out in paragraph 18 of the Code of Conduct and Schedule 7 to the Code of Conduct in its use of the system.
122. We wish to clarify that the requirements on internet trading and DMA services do not apply to fund managers as fund managers do not provide these services. However, fund managers who use algorithmic trading systems to trade are expected to comply with the requirements on algorithmic trading.
123. After taking into account comments received, we have decided to make the following changes to paragraph 9.2 of the Fund Manager Code of Conduct:



- (a) to remove the term “where applicable”; and
- (b) to set out the principles and requirements on electronic trading that a fund manager should comply with, namely
  - (i) Paragraphs 18.3 to 18.6 and 18.9 to 18.11 of the Code of Conduct; and
  - (ii) Paragraphs 1.1 to 1.3 and 3.1 to 3.4 of Schedule 7 to the Code of Conduct.

### ***Application of the proposals to Automated Trading Services (ATS)/dark pools***

#### ***Public comments***

124. A number of respondents queried whether the proposals would apply to ATS/dark pools.

#### ***SFC’s response***

125. ATS is regulated under Part III or Part V of the SFO. The SFC’s Guidelines for the Regulation of Automated Trading Services issued in 2003 cover, among other things, the principles and standards in relation to the authorization, registration and licensing of ATS providers. A failure to follow the spirit of these guidelines may reflect adversely on the fitness and properness of the licensed, registered or authorized ATS. Operators of ATS/dark pools who are licensed or registered for Type 7 regulated activity must comply with the licensing conditions imposed on their Type 7 licence. They must also comply with the general regulatory requirements that apply to intermediaries, including financial resources, books and records, audit and protection of client assets, and codes for business conduct.
126. The proposals for the regulation of electronic trading covered in this consultation exercise apply to a licensed or registered person who places orders to the market electronically, including via the internet or by trading algorithms, for the trading of securities and futures contracts that are listed or traded on an exchange. Some respondents have asked whether these proposals are also applicable to the operations of ATS/dark pools. Given that ATS/dark pools also involve the operation of different kinds of internalised matching processes which raise separate and different regulatory concerns, the SFC has decided to separately consult the public specifically in relation to the regulation of ATS/dark pools and the obligations on the intermediaries operating them. The SFC intends to publish its proposals concerning the regulation of ATS/dark pools later this year. The proposed requirements apply to the operators of ATS/dark pools to the extent that the orders are transmitted to the ATS/dark pools by their electronic trading systems, including via the internet. They do not apply to the operations of ATS/dark pools as a trading platform.

#### **Effective date**

127. The proposals as amended and set out at Appendices A to D will become effective on 1 January 2014 to allow for sufficient time for intermediaries to prepare and implement appropriate internal control policies and procedures, as well as to make changes to their electronic trading systems and record keeping systems. The proposals will apply to all electronic trading systems that are in use on the effective date.



## **Internet Guidance Note**

128. As foreshadowed in the Consultation Paper, in considering the proposals for the regulation of electronic trading, the SFC took the opportunity to review the Internet Guidance Note which was issued in March 1999. References were made in that note to statutes, codes and guidelines which have been replaced by the SFO and revised codes and guidelines issued on and after the enactment of the SFO.
  
129. After the review, the SFC is satisfied that the regulatory standards set out in the Internet Guidance Note have been superseded by updated standards provided for in the SFO and subsequent revised codes and guidelines, as well as the new proposals on electronic trading when they become effective. Accordingly, the Internet Guidance Note will be repealed on the effective date of the proposals.



## Paragraph 18 of the Code of Conduct for Persons Licensed by or Registered with the Securities and Futures Commission

### Electronic Trading

#### 18.1 Application

This paragraph applies to a licensed or registered person which conducts electronic trading of securities and futures contracts that are listed or traded on an exchange.

#### 18.2 Interpretation

- (a) “Algorithmic trading” for the purposes of this paragraph means computer generated trading activities created by a predetermined set of rules aimed at delivering specific execution outcomes.
- (b) “Algorithmic trading system” for the purposes of this paragraph means the system through which algorithmic trading is conducted. It includes a system designed and developed in-house or by a third party service provider.
- (c) “Direct market access” (hereafter referred to as “DMA” in this paragraph) for the purposes of this paragraph means the access to a market provided to a client by a licensed or registered person through which the client transmits orders, directly or indirectly, to the market’s trade matching system for execution under the licensed or registered person’s identifier other than those initiated by way of internet trading.
- (d) “Electronic trading” for the purposes of this paragraph means the trading of securities and futures contracts electronically and includes internet trading, DMA and algorithmic trading.
- (e) “Electronic trading system” for the purposes of this paragraph means the system through which electronic trading is conducted. It includes a system designed and developed in-house or by a third party service provider.
- (f) “Internet trading” for the purposes of this paragraph means an arrangement where order instructions are sent to a licensed or registered person through its internet-based trading facility.

#### 18.3 Responsibility for orders

A licensed or registered person is **ultimately** responsible for [the settlement and financial obligations of](#) orders sent to the market through its electronic trading system and for [implementing policies, procedures and controls to supervise](#) ~~the compliance of~~ the orders [in accordance](#) with applicable regulatory requirements.

#### 18.4 Management and supervision

A licensed or registered person should effectively manage and adequately supervise the design, development, deployment and operation of the electronic trading system it uses or provides to clients for use, as may be appropriate in the circumstances.



## 18.5 Adequacy of system

A licensed or registered person should ensure the integrity of the electronic trading system it uses or provides to clients for use, as may be appropriate in the circumstances, including the system's reliability, security and capacity, and have appropriate contingency measures in place.

## 18.6 Record keeping

A licensed or registered person should keep, or cause to be kept, proper records on the design, development, deployment and operation of its electronic trading system.

## 18.7 Risk management: internet trading and DMA

In providing internet trading or DMA services, a licensed or registered person must ensure that all the client orders are transmitted to the ~~licensed or registered person's infrastructure~~ [infrastructure used by the licensed or registered person](#) and are subject to:

- (a) appropriate automated pre-trade risk management controls; and
- (b) regular post-trade monitoring.

## 18.8 Minimum client requirements: DMA

A licensed or registered person should establish minimum client requirements for its DMA services and assess whether each client meets the requirements before granting DMA services to a client.

## 18.9 Qualification: algorithmic trading

A licensed or registered person should establish and implement effective policies and procedures to ensure that persons

- (a) involved in the design and development of; or
- (b) approved to use

its algorithmic trading system and trading algorithms are suitably qualified.

## 18.10 Testing: algorithmic trading

A licensed or registered person should ensure that the algorithmic trading system and trading algorithms it uses or provides to clients for use are adequately tested to ensure that they operate as designed **at all times**.

## 18.11 Risk management: algorithmic trading

A licensed or registered person should have **effective** controls [that are reasonably designed](#) to ensure:

- (a) the integrity of its algorithmic trading system and trading algorithms; and
- (b) its algorithmic trading system and trading algorithms operate in the interest of the integrity of the market.



## Schedule 7 to the Code of Conduct for Persons Licensed by or Registered with the Securities and Futures Commission

### INTRODUCTION

Paragraph 18 of the Code stipulates the general principles that apply to a licensed or registered person which conducts electronic trading of securities and futures contracts that are listed or traded on an exchange. This Schedule sets out the specific requirements in this regard.

Paragraph 1 of this Schedule provides general requirements on electronic trading. Paragraph 2 provides specific requirements on internet trading and DMA. Paragraph 3 provides specific requirements on algorithmic trading.

Where an electronic trading system is provided by a third party service provider, a licensed or registered person should perform appropriate due diligence to ensure the licensed or registered person meets the requirements set out in paragraph 18 of the Code of Conduct and this Schedule in its use of the system.

Unless otherwise stated, the terms used in this Schedule are as defined in paragraph 18 of the Code.

### 1) REQUIREMENTS ON ELECTRONIC TRADING

#### 1.1 Management and Supervision

*A licensed or registered person should effectively manage and adequately supervise the design, development, deployment and operation of the electronic trading system it uses or provides to clients for use, as may be appropriate in the circumstances.*

- 1.1.1 A licensed or registered person should establish and implement written internal policies and procedures on the operation of the electronic trading system it uses or provides to clients for use, to ensure that:
- (a) there is at least one responsible officer or executive officer responsible for the overall management and supervision of the electronic trading system;
  - (b) there is a formalised governance process with input from the dealing, risk and compliance functions;
  - (c) there are clearly identified reporting lines with supervisory and reporting responsibilities assigned to appropriate staff members; and
  - (d) there are managerial and supervisory controls that are designed to manage the risks associated with the use of the electronic trading system by itself or by its clients.



- 1.1.2 A licensed or registered person which provides an electronic trading system for use by its clients should comply with the requirements set out in paragraph 1.1.1 in respect of the design, development and deployment of the system.
- 1.1.3 A licensed or registered person should conduct regular reviews to ensure that these internal policies and procedures are in line with changing market conditions and regulatory developments and promptly remedy any deficiencies identified.
- 1.1.4 A licensed or registered person should assign adequately qualified staff, expertise, technology and financial resources to the design, development, deployment and operation of the electronic trading system.

## 1.2 Adequacy of System

*A licensed or registered person should ensure the integrity of the electronic trading system it uses or provides to clients for use, as may be appropriate in the circumstances, including the system's reliability, security and capacity, and have appropriate contingency measures in place.*

### *System Controls*

- 1.2.1 A licensed or registered person should ensure that the electronic trading system it uses or provides to clients for use has effective controls to enable it, where necessary, to:
  - (a) immediately prevent the system from generating and sending orders to the market; and
  - (b) cancel any unexecuted orders that are in the market.

### *System Reliability*

- 1.2.2 A licensed or registered person should ensure that the electronic trading system it uses or provides to clients for use and all modifications to the system are ~~adequately~~ tested before deployment and are regularly reviewed to ensure that the system and modifications are reliable.
- 1.2.3 A licensed or registered person should promptly report to the Commission any material service interruption or other significant issues related to the electronic trading system it ~~uses~~ provides to clients for use.

### *System Security*

- 1.2.4 A licensed or registered person should employ adequate and appropriate security controls to protect the electronic trading system it uses or provides to clients for use from being abused. The security controls should at least include:
  - (a) reliable techniques to authenticate or validate the identity and authority of the system users to ensure that the access or the use of the system is restricted to persons approved to use the system on a need-to-have basis;
  - (b) effective techniques to protect the confidentiality and integrity of information stored in the system and passed between internal and external networks;



- (c) appropriate operating controls to prevent and detect unauthorised intrusion, security breach and security attack; and
- (d) appropriate steps to raise the awareness of system users on the importance of security precautions they need to take in using the system.

### *System Capacity*

1.2.5 A licensed or registered person which provides an electronic trading system for use by its clients should ensure that:

- (a) the capacity usage of the electronic trading system is regularly monitored and appropriate capacity planning is developed. As part of the capacity planning, a licensed or registered person should determine and keep a record of the required level of spare capacity;
- (b) the capacity of the electronic trading system is regularly stress tested to establish the system behavior under different simulated market conditions, and the results of the stress tests and any actions taken to address the findings of the stress tests are documented;
- (c) the electronic trading system has sufficient capacity to handle any foreseeable increase in the business volume and market turnover;
- (d) the electronic trading system has contingency arrangements to:
  - (i) handle client order instructions exceeding the capacity of which the system can handle; and
  - (ii) inform clients about the arrangements and ensure alternative means of order execution are available and offered to them.

### *Contingencies*

1.2.6 A licensed or registered person which provides an electronic trading system for use by its clients should establish a written contingency plan to cope with emergencies and disruptions related to the electronic trading system. The contingency plan should at least include:

- (a) a suitable backup facility which will enable the licensed or registered person to provide electronic trading services or alternative arrangements for order execution in the event of an emergency;
- (b) arrangements to ensure business records, client and transaction databases, servers and supporting documentation are backed up in an off-line medium. Off-site storage is generally expected to be subject to proper security measures; and
- (c) a plan for dealing with client and regulatory enquiries by trained staff.

1.2.7 A licensed or registered person should ensure that the contingency plan to deal with potential emergencies and disruptions is periodically tested and the plan is viable and adequate.



- 1.2.8 In the event of [material](#) system delay or failure, a licensed or registered person which provides an electronic trading system for use by its clients, should, in a timely manner:
- (a) ensure the [material](#) system delay or failure is rectified; and
  - (b) inform clients the causes or possible causes of the [material](#) system delay or failure and how client orders will be handled.

### 1.3 Record Keeping

*A licensed or registered person should keep, or cause to be kept, proper records on the design, development, deployment and operation of its electronic trading system.*

- 1.3.1 With respect to the electronic trading system, a licensed or registered person should keep or cause to be kept:
- (a) comprehensive documentation of the design and development, including any testings, reviews, modifications, upgrades or rectifications of its system;
  - (b) comprehensive documentation of the risk management controls of its system;
  - (c) audit logs on the activities of its system;
  - (d) incident reports for all [material](#) system delays or failures of its system.

#### Note

Details of the requirements for the recording of audit logs and incident reports referred to in paragraphs 1.3.1 (c) and (d) are set out in the Annex to this Schedule.

- 1.3.2 A licensed or registered person should retain or cause to be retained:
- (a) documentation referred to in paragraphs 1.3.1 (a) and (b) for a period of not less than 2 years after the electronic trading system ceased to be used; and
  - (b) audit logs and incident reports referred to in paragraphs 1.3.1 (c) and (d) for a period of not less than 2 years.

#### Note

Where an electronic trading system is provided to a licensed or registered person by a third party service provider, the licensed or registered person should make arrangements with the service provider to ensure that the records described in paragraph 1.3.1 are kept and are retained for the periods described in paragraph 1.3.2. In response to a request for information made by the Commission, information in the possession of a third party service provider that is proprietary in nature may be provided to the Commission directly from the service provider.



## 2) SPECIFIC REQUIREMENTS ON INTERNET TRADING AND DMA

### 2.1 Risk Management

*In providing internet trading or DMA services, a licensed or registered person must ensure that all the client orders are transmitted to the ~~licensed or registered person's infrastructure~~ infrastructure used by the licensed or registered person and are subject to:*

- (a) *appropriate automated pre-trade risk management controls; and*
- (b) *regular post-trade monitoring.*

2.1.1 A licensed or registered person should put in place risk management and supervisory controls for the operation of its internet trading or DMA services that are directly controlled by the licensed or registered person. The risk management and supervisory controls should include:

- (a) automated pre-trade controls that are reasonably designed to:
  - (i) prevent the entry of any orders that would result in exceeding appropriate trading and credit thresholds prescribed for each client or proprietary account;
  - (ii) limit the financial exposure of the licensed or registered person;
  - (iii) alert the user to the entry of potential erroneous orders and prevent the entry of erroneous orders;
  - (iv) prevent the entry of orders that are not in compliance with the regulatory requirements; and
- (b) post-trade monitoring to reasonably identify any order instructions and transactions which may be manipulative or abusive in nature.

2.1.2 A licensed or registered person should, upon identification of any suspected manipulative or abusive trading activities, take immediate steps to prevent such activities from continuing.

### 2.2 Minimum client requirements for DMA services

*A licensed or registered person should establish minimum client requirements for its DMA services and assess whether each client meets the requirements before granting DMA services to a client.*

2.2.1 A licensed or registered person should ensure that the client using its DMA services meets the minimum requirements established by the licensed or registered person, which should include:

- (a) the client has appropriate arrangements in place to ensure that its users are proficient and competent in using the system for the DMA services;
- (b) the client understands and has the ability to comply with applicable regulatory requirements; and



- (c) the client has in place adequate arrangements to monitor the orders entered through the DMA services.
- 2.2.2 A licensed or registered person should from time to time evaluate the minimum client requirements in light of current market conditions.
- 2.2.3 A licensed or registered person should regularly assess whether the client using its DMA services continues to meet the minimum client requirements.
- 2.2.4 Where a licensed or registered person permits its client to sub-delegate the DMA services to another person, the client should be a licensed or registered person or an overseas securities or futures dealer [or an overseas bank subject to regulatory supervision](#). The licensed or registered person and its clients should have in place an arrangement to ensure that:
- (a) the orders of such person will flow through the systems of the client and will be subject to appropriate risk management and supervisory controls; and
  - (b) such person meets the minimum client requirements established by the licensed or registered person and a written agreement is in place between the client and such person that sets out the terms of the DMA services being sub-delegated.

### 3) SPECIFIC REQUIREMENTS ON ALGORITHMIC TRADING

#### 3.1 Qualification

*A licensed or registered person should establish and implement effective policies and procedures to ensure that persons:*

- (a) *involved in the design and development of, or*
- (b) *approved to use*

*its algorithmic trading system and trading algorithms are suitably qualified.*

- 3.1.1 A licensed or registered person which uses internally developed algorithmic trading system or trading algorithms, or provides its algorithmic trading system or trading algorithms for use by its clients, should ensure that the design and development of its algorithmic trading system and trading algorithms are supported by persons adequately qualified and trained to understand the compliance and regulatory issues which may arise from the use of the algorithmic trading system and the trading algorithms.
- 3.1.2 A licensed or registered person should ensure that a person who is approved to use its algorithmic trading system has a good understanding of:
- (a) the operation of the algorithmic trading system and trading algorithms; and
  - (b) the compliance and regulatory issues which may arise from the use of the algorithmic trading system and trading algorithms.



- 3.1.3 Where necessary, a licensed or registered person should provide training to the person on:
- (a) the use and operation of the algorithmic trading system;
  - (b) each of the trading algorithms contained in the algorithmic trading system including:
    - (i) its trading characteristics and execution behavior;
    - (ii) the potential market impact and risks to market integrity; and
    - (iii) whether it is appropriate to use a particular trading algorithm under certain market conditions in the execution of certain orders in light of the regulatory requirements.
- 3.1.4 A licensed or registered person should ensure that the person who is approved to use its algorithmic trading system is timely informed and, where necessary, is provided with the training in respect of any changes to the design and development of its algorithmic trading system and trading algorithms.
- 3.1.5 A licensed or registered person should provide the persons who are approved to use its algorithmic trading system with ~~an~~ up-to-date ~~user manual~~ [documentation](#) for operating its algorithmic trading system. The ~~user manual~~ [documentation](#) should contain an explanation of the operation of its algorithmic trading system and trading algorithms, as well as the risk, supervisory and compliance controls.

## 3.2 Testing

*A licensed or registered person should ensure that the algorithmic trading system and trading algorithms it uses or provides to clients for use are adequately tested to ensure that they operate as designed ~~at all times~~.*

- 3.2.1 A licensed or registered person should ensure that the algorithmic trading system and trading algorithms it uses or provides to clients for use, and any subsequent developments and modifications are adequately tested before deployment in such a way so as to be satisfied that:
- (a) the algorithmic trading system and trading algorithms will operate as designed;
  - (b) the design and development of the algorithmic trading system and trading algorithms have taken into account:
    - (i) foreseeable extreme market circumstances; and
    - (ii) the characteristics of different trading sessions, such as auction sessions and continuous trading sessions; and
  - (c) the deployment of the algorithmic trading system and trading algorithms would not interfere with the operation of a fair and orderly market.



3.2.2 A licensed or registered person should ensure that the algorithmic trading system as well as trading algorithms are regularly, and no less than annually, reviewed and tested for the algorithmic trading system's ability to handle sizable trading volume and for the trading algorithms' ability to execute orders without interfering with the operation of a fair and orderly market.

Note

Where an algorithmic trading system or a trading algorithm is provided to a licensed or registered person by a third party service provider, a licensed or registered person should perform appropriate due diligence to ensure that the testing conducted on the algorithmic trading system or the trading algorithm meets the requirements described in paragraph 3.2.

### 3.3 Risk Management

A licensed or registered person should have **effective** controls that are reasonably designed to ensure:

- (a) *the integrity of its algorithmic trading system and trading algorithms; and*
- (b) *Its algorithmic trading system and trading algorithms operate in the interest of the integrity of the market.*

3.3.1 A licensed or registered person should have ~~ensure that it has effective~~ controls that are reasonably designed to:

- (a) monitor and prevent the generation of or passing to the market for execution order instructions from its algorithmic trading system which may:
  - (i) be erroneous; or
  - ~~(ii) be manipulative or abusive; or~~
  - ~~(iii)~~ (ii) interfere with the operation of a fair and orderly market; and
- (b) protect the licensed or registered person and its clients from being exposed to excessive financial risk.

3.3.2 A licensed or registered person should regularly conduct post-trade reviews of trading activities conducted through its algorithmic trading system, including the relevant order instructions, to identify any:

- (a) suspicious market manipulative or abusive activities; and
- (b) market events or system deficiencies such as unintended impact on the market which call for further risk control measures.

3.3.3 A licensed or registered person should, upon identification of any suspected market manipulative or abusive trading activities, take immediate steps to prevent these activities from continuing.



### 3.4 Record Keeping

*A licensed or registered person should keep, or cause to be kept, proper records on the design, development, deployment and operation of its electronic trading system.*

- 3.4.1 A licensed or registered person should ensure that ~~a complete audit trail~~ the design and development, including any modifications, of its algorithmic trading system and trading algorithms are documented and recorded in writing. The ~~audit trail~~ **documentation** should show the rationale for the design, development and modification, as well as their intended outcome. These records should be retained for a period of no less than 2 years after its system and algorithms are ceased to be used.
- 3.4.2 A licensed or registered person should ensure that records of all the parameters which its algorithmic trading system and trading algorithms take into account for each order is kept and is retained for a period of no less than 2 years.
- 3.4.3 A licensed or registered person should ensure that records of the reviews and tests conducted under paragraph 3.2.2 setting out the scope of findings of the tests are kept and are retained for a period of no less than 2 years.

#### Note

Where an algorithmic trading system and/or a trading algorithm is provided to a licensed or registered person by a third party service provider, the licensed or registered person should make arrangements with the service provider to ensure that the records described in paragraphs 3.4.1 to 3.4.3 are kept and are retained for the periods set out in those paragraphs. In response to a request for information made by the Commission, information in the possession of a third party service provider that is proprietary in nature may be provided to the Commission directly from the service provider.



## Requirements for Audit Logs and Incident Reports

A licensed or registered person should make arrangement to keep the audit logs and incident reports referred to in paragraphs 1.3.1 (c) and (d) of Schedule 7. The logs and reports should be made available to the Commission upon request. It is important that the logs and reports be reviewed regularly for detecting potential problems and planning preventive measures.

### (i) Audit Logs

Audit logs should document the order process and transaction flow through the trading system, where applicable. This will at a minimum include:

- (a) order placement / cancellation / modification / execution (with time stamping and the assignment of unique reference number);
- (b) system login attempts including login details such as user identity, date and time of the login attempts;
- (c) credit/margin validation exceptions - which for example, may include the logging of instances where the credit limit/cash limits available for trading have been exceeded thereby causing the client to have insufficient credit or cash to execute the transaction;
- (d) compliance validation exceptions - which for example may include logging exceptions where the client does not have enough stock holdings to actually sell the shares;
- (e) the assigning of hierarchical user access - where different levels of access are allocated to different job responsibilities within the firm;
- (f) details of the changes to critical system parameters and master files; and
- (g) erroneous order inputs – which for example may include order prices which materially deviated from the market, order sizes exceeding the client's trading limits, and orders in a stock which do not accord to client instructions.

### (ii) Incident Reports

Incident reports should document instances where the licensed or registered person's electronic trading system experiences a [material](#) delay or failure that renders it unusable by clients. At a minimum, it should include:

- (a) a clear explanation of the problem;
- (b) the time of outage or delay;
- (c) the duration of outage or delay;
- (d) the systems affected during outage or delay and subsequently;
- (e) whether this problem or a related problem has occurred before;
- (f) the number of clients affected at the time and the impact on these clients;
- (g) the steps taken to rectify the problem; and
- (h) steps taken to ensure that the problem does not occur again.



**Amendments to Schedule 6 to the Code of Conduct for Persons Licensed by or Registered with the Securities and Futures Commission**

**Schedule 6 Additional Requirements for licensed persons engaging in leveraged foreign exchange trading**

**Electronic trading**

66. For the purpose of this Schedule, “electronic trading” means the trading of leveraged foreign exchange contracts electronically by means of internet trading. Paragraph 18 of and Schedule 7 to the Code should be interpreted accordingly.
67. A licensed person should comply with the following principles and requirements when conducting electronic trading:
  - Paragraphs 18.4 to 18.7 of the Code; and
  - Paragraphs 1.1, 1.2.2 to 1.2.8, 1.3 [and](#) 2.1 of Schedule 7 to the Code.



## Part IV of the Fund Manager Code of Conduct

### IV. ELECTRONIC TRADING

#### 9. Electronic Trading

- 9.1 This paragraph applies to a Fund Manager who conducts electronic trading of securities and futures contracts that are listed or traded on an exchange on behalf of collective investment schemes managed by it. The interpretation of “electronic trading” provides in paragraph 18.2 of the Code of Conduct for Persons Licensed by or Registered with the SFC (**Code of Conduct**) should be interpreted accordingly.
- 9.2 A Fund Manager should comply with the following principles and requirements, ~~where applicable~~, when conducting electronic trading on behalf of collective investment scheme managed by it:
- (a) Paragraphs 18.3 to 18.7~~6~~ and 18.9 to 18.11 of the Code of Conduct; and
  - (b) Paragraphs 1.1 to 2.4~~1.3~~ and 3.1 to 3.4 of Schedule 7 to the Code of Conduct.



### List of respondents to the Consultation Paper

Respondents with no objection to publication of name and content of submission (in alphabetical order)

1. ABN AMRO Clearing Hong Kong Limited
2. Alternative Investment Management Association
3. BOC International Holdings Limited
4. Celestial Securities Limited
5. Professor David Donald, Faculty of Law, The Chinese University of Hong Kong
6. Eclipse Options (HK) Limited
7. eTrading Association
8. Excalibur Futures Limited
9. FIX Protocol Ltd
10. GETCO Asia (Hong Kong) Limited
11. Guardian Regulatory Consulting Ltd
12. The Hong Kong Association of Banks
13. The Hong Kong Association of Online Brokers Limited
14. Hong Kong Investment Funds Association
15. Hong Kong Mercantile Exchange Limited
16. Hong Kong Securities Association
17. Hong Kong Securities Professionals Association
18. I-Access Investors Limited
19. ICAP
20. ICI Investment Company Institute and ICI Global
21. IMC Asia Pacific Limited
22. The Institute of Securities Dealer Ltd
23. Karl-Thomson Securities Company Limited / Karl-Thomson Commodities Company Limited
24. Linklaters on behalf of 25 financial institutions and industry associations including:
  - ABN Amro Clearing Hong Kong Limited
  - Asia Securities Industry & Financial Markets Association
  - Barclays Capital Asia Limited
  - BNP Paribas
  - CCB International (Holdings) Limited
  - China International Capital Corporation Hong Kong Securities Limited
  - Citigroup Global Markets Asia Limited



- CLSA Limited
  - Credit Suisse (Hong Kong) Limited
  - Deutsche Bank AG
  - FIA Asia
  - Goldman Sachs (Asia) L.L.C.
  - The Hong Kong and Shanghai Banking Corporation Limited
  - ICBC International
  - Instinet Pacific Limited
  - J.P. Morgan Securities (Asia Pacific) Limited
  - Jefferies Hong Kong Limited
  - Macquarie Bank Limited
  - Merrill Lynch Asia Pacific Limited
  - Morgan Stanley Hong Kong Securities Limited
  - Nomura International (Hong Kong) Limited
  - The Royal Bank of Scotland plc
  - Societe Generale
  - Standard Chartered Bank (Hong Kong) Limited
  - UBS AG
25. Managed Funds Association
  26. Newedge Financial Hong Kong Limited
  27. Optiver Trading Hong Kong Limited
  28. Thomson Reuters
  29. 周先生

Respondents who requested to withhold identity / submission.

5 submissions