



CIRCULAR

CIR/MRD/DP/24/2013

August 19, 2013

To,

All Stock Exchanges.

Dear Sir / Madam,

Subject: Testing of software used in or related to Trading and Risk Management

SEBI vide circular SEBI/MRD/Policy/SE/15864/2003 dated August 21, 2003 advised stock exchanges to obtain an undertaking in the form of an affidavit from the members of the stock exchange stating that the members as well as their sub-brokers are using only authorized software. In this regard, stock exchanges have provided testing facilities to their stock brokers / trading members to facilitate testing of the software.

2. Further, vide various circulars issued by SEBI on Internet Based Trading (IBT), Direct Market Access (DMA), Securities Trading using Wireless Technology (STWT), Smart Order Routing (SOR) and Algorithmic Trading (AT), stock exchanges have been directed to ensure that various requirements specified in such circulars, including requirements related to systems, operations, testing, etc., are implemented and the systems of stock broker / trading member facilitate orderly trading and integrity of the securities market.

3. Various incidents of malfunctioning of software used by market participants have been observed in Indian as well as foreign securities market in the recent past. Such incidents have emphasized the need for a stringent and thorough testing of software before its introduction in the securities market. This applies equally to any subsequent changes to the software used by the stock brokers / trading members.

4. SEBI has engaged in a consultative process with the stock exchanges, software vendors, system auditors and the Technical Advisory Committee (TAC) to streamline and strengthen the process of testing of software. Based on the recommendations of TAC, it has been decided that market participants shall follow the testing procedure specified hereinafter before deployment of the software.



5. For the purpose of the circular, the term 'software' shall mean electronic systems or applications used by stock brokers / trading members for connecting to the stock exchanges and for the purposes of trading and real-time risk management, including software used for IBT, DMA, STWT, SOR, AT, etc.

6. Testing of Software

6.1. In addition to the testing and approval requirements specified through various circulars issued by SEBI on IBT, DMA, STWT, SOR and AT, stock exchanges shall frame appropriate testing policies for functional as well as technical testing of the software. Such framework shall at the minimum include the following:

(i) Testing in a simulated test environment: Stock exchanges shall provide suitable facilities to market participants / software vendors to test new software or existing software that have undergone change. Subjecting the new software or existing software that have undergone change to such testing facility shall be mandatory for market participants, before putting it in use.

(ii) Mock testing

(a) Stock exchanges shall organize mock trading sessions on regular basis, atleast once in a calendar month, to facilitate testing of new software or existing software that has undergone any change of functionality, in a close-to-real trading environment. Stock exchanges shall suitably design and plan such mock trading sessions to ensure maximum participation and sufficient trading volumes for the purpose of testing.

(b) Stock exchanges shall mandate a minimum time period for such testing in the mock trading sessions.

(c) In order to improve the efficacy of the mock trading sessions, all stock brokers / trading members shall ensure that all user-ids approved for Algo trading, irrespective of the algorithm having undergone change or not, shall participate in the mock trading sessions.

(d) User Acceptance Test (UAT): The stock broker / trading member shall undertake UAT of the software to satisfy itself that the newly developed / modified software meets its requirements.

6.2. Stock brokers / trading members shall also engage system auditor(s) to examine reports of mock tests and UAT in order to certify that the tests were satisfactorily undertaken.



6.3. Stock exchanges shall monitor compliance of stock brokers / trading members, who use trading algorithm, with regard to the requirement of participation in mock trading session as mandated with this circular. In cases where stock exchanges find that the stock broker / trading member has failed to participate in such mock trading sessions, stock exchange shall call for reasons and if found unsatisfactory, shall suspend the proprietary trading rights of the stock broker / trading member for a minimum period of one trading day.

6.4. Stock exchanges shall also ensure that the system auditors examine the compliance of stock broker / trading member, who use trading algorithms, with regard to the requirement of participation in mock trading session, as mandated with this circular, and provide suitable comments in the periodic system audit report. In cases where the system audit report indicate that the stock broker / trading member has failed to participate in such mock trading sessions, stock exchange shall call for reasons from the stock broker / trading member and if found unsatisfactory, shall suspend the proprietary trading rights of the stock broker / trading member for a minimum period of one trading day.

6.5. For pre-approval / periodic system audit of Computer-to-Computer Link (CTCL) or Intermediate Messaging Layer (IML), IBT, DMA, STWT, SOR and AT, stock brokers / trading members shall engage a system auditor with any of the certifications specified vide SEBI circular dated CIR/MRD/DP/16/2013 dated May 21, 2013. While finalizing the system auditor, stock brokers / trading members shall ensure the system auditor does not have any conflict of interest with the stock broker and the directors / promoters of the system auditor are not directly or indirectly related to the current directors or promoters of stock broker / trading member.

7. Approval of Software of stock broker / trading member

7.1. Stock brokers / trading members shall seek approval of the respective stock exchanges for deployment of the software in the securities market by submitting necessary details required by stock exchange including details of software, tests undertaken and certificate / report provided by the system auditor. Stock exchange may seek additional details as deemed necessary for evaluating the application of the stock broker / trading member.

7.2. Stock exchanges shall grant approval or reject the application of the stock broker as the case may be, and communicate the decision to the stock broker / trading member within fifteen working days from the date of receipt of completed application (or within any other such time period



specified vide SEBI circulars on DMA, IBT, STWT, SOR, AT, etc.). In case of rejection of the application, the stock exchange shall also communicate reasons of rejection to the stock broker / trading member within such time period.

7.3. Before granting approval to use software in securities market, stock exchange shall ensure that the requirements specified by SEBI / stock exchange with regard to software are met by the stock broker / trading member.

8. Undertaking to be provided by stock brokers / trading members

8.1. Stock brokers / trading members shall submit an undertaking to the respective stock exchanges stating the following at the minimum:

- (i) M/s (name of the stock broker / trading member) will take all necessary steps to ensure that every new software and any change thereupon to the trading and/or risk management functionalities of the software will be tested as per the framework prescribed by SEBI / stock exchange before deployment of such new / modified software in securities market.
- (ii) M/s (name of the stock broker / trading member) will ensure that approval of the stock exchange is sought for all new / modified software and will comply with various requirements specified by SEBI or the stock exchange from time to time with regard to usage, testing and audit of the software.
- (iii) The absolute liability arising from failure to comply with the above provisions shall lie entirely with M/s (name of the stock broker / trading member)

8.2. Stock exchanges may include additional clauses as deemed necessary in the undertaking.

9. Sharing of Application Programming Interface (API) specifications by the stock exchange with stock brokers / trading members

9.1. API is an interface that enables interaction of software with other software and typically includes language and message format that is used by an application program to communicate with the operating system or other application program. Stock brokers / trading members and software vendors require relevant API specifications to facilitate interaction of the developed software with the systems of the stock exchanges.



9.2. Technical Advisory Committee (TAC) had engaged with stock exchanges, software vendors and stock brokers / trading members to review the framework of sharing of APIs by stock exchanges.

9.3. Based on the recommendations of the committee, it is decided that stock exchanges shall provide relevant API specifications to all stock brokers / trading members and software vendors who are desirous of developing software for the securities market, after establishing their respective credentials.

9.4. In case of refusal to share APIs, stock exchanges shall provide reasons in writing to the desirous stock brokers / trading members or software vendors within a period of fifteen working days from the date of receipt of such request for sharing of API.

9.5. Further, stock exchanges shall not selectively release updates / modifications, if any, of the existing API specifications to few stock brokers / trading members or software vendors ahead of others and shall provide such updated / modified API specifications to all stock brokers / trading members and software vendors with whom the earlier API specifications were shared.

10. Penalty on malfunction of software used by stock broker / trading member: Stock exchanges shall examine the cases of malfunctioning of software used by stock brokers / trading members and apply deterrent penalties in form of fines or suspension to the stock broker / trading member whose software malfunctioned. In addition, stock brokers / trading members shall implement various mechanisms including the following to minimize their losses in the event of software malfunction:

10.1. include suitable clauses in their agreement with the software vendors to define liabilities of software vendor and stock broker / trading member in case of software malfunction, and / or,

10.2. consider taking suitable insurance cover to meet probable losses in case of software malfunction.

11. This circular shall be effective from October 01, 2013 and shall supersede circular no. SEBI/MRD/Policy/SE/15864/2003 dated August 21, 2003. Stock exchanges are directed to:

11.1. take necessary steps and put in place necessary systems for implementation of the provisions of this circular.

11.2. make necessary amendments to the relevant bye-laws, rules and regulations for the implementation of the above decision.



भारतीय प्रतिभूति और विनियम बोर्ड
Securities and Exchange Board of India

11.3. bring the provisions of this circular to the notice of the stock brokers / trading members and also disseminate the same on their website.

12. This circular is being issued in exercise of powers conferred under Section 11 (1) of the Securities and Exchange Board of India Act, 1992 to protect the interests of investors in securities and to promote the development of, and to regulate the securities market.

Yours faithfully,

Maninder Cheema
Deputy General Manager
email: maninderc@sebi.gov.in