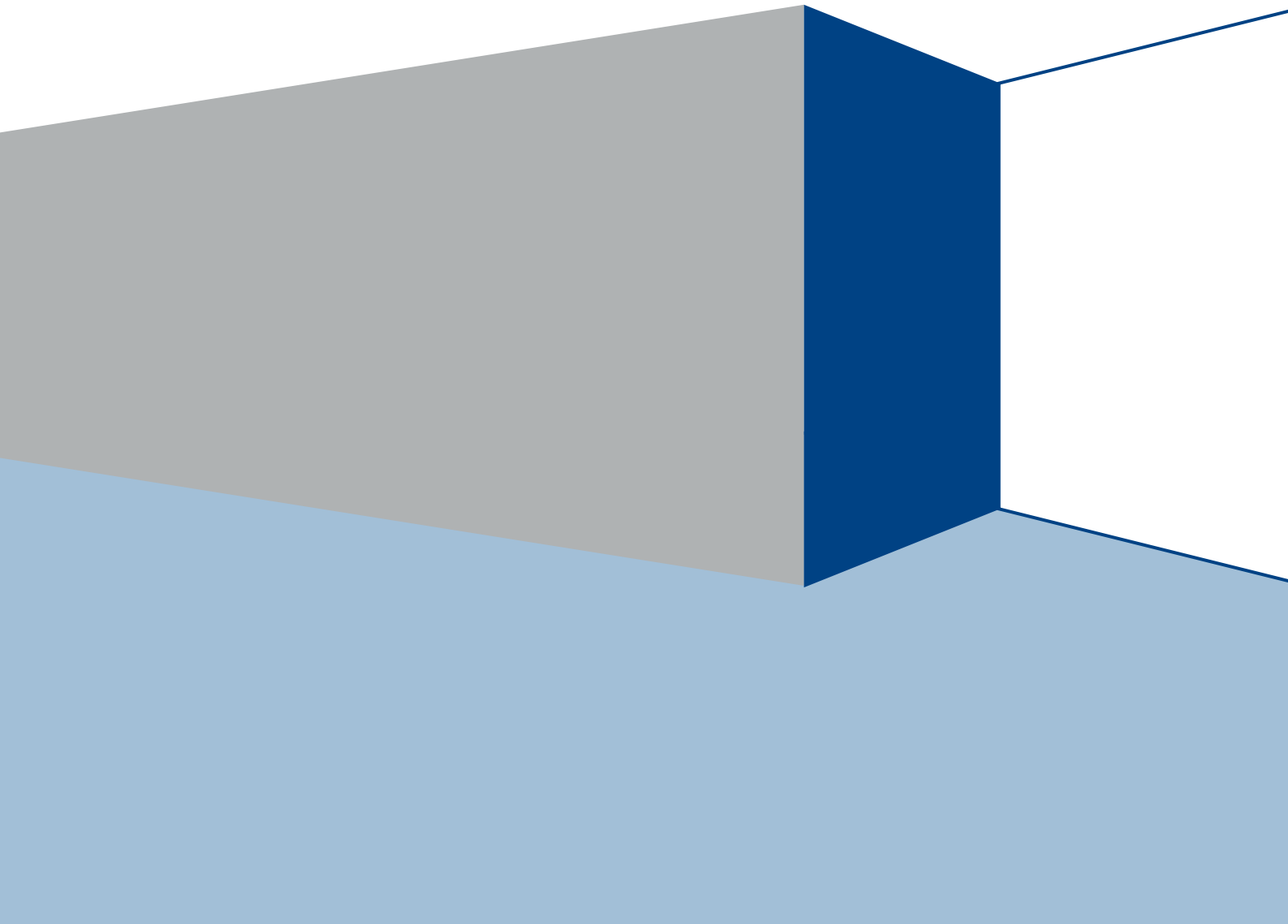
London Stock Exchange Group

MIT201 - BIT - MILLENNIUM EXCHANGE

Guide to new Trading System

Issue 9.0 · May 2017



Contents

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1. Introduction

Following the acquisition of Millennium IT, all the Borsa Italiana Cash Markets (MTA, MOT, ExtraMOT, SeEeX, ETFPlus, TAH) and Post Trade Transparency Service are hosted on the ultra-low latency platform of Millennium IT.

1.1. Purpose

The purpose of this document is to replace the current Guides to Trading Services and provide participants with:

- a high level technical overview of the following areas:
    - customer facing trading interfaces to the new Millennium Exchange trading system (both FIX 5.0 and Native);
    - user and market configuration;
    - disaster recovery; and
- generic operation of the Trading Services provided by Millennium Exchange.

All the technical documents should be read in conjunction with the Rules, Instructions and Guide to Parameters of Borsa Italiana.

1.2. Relevant Exchange communication channels

- ***Rules of Borsa Italiana***

  The full current Rules of Borsa Italiana in force can be found at:

  Italian Version:
  http://www.borsaitaliana.it/borsaitaliana/regolamenti/regolamenti/regolamentoborsa-istruzionialregolamento.htm

  English Version:
  http://www.borsaitaliana.it/borsaitaliana/regolamenti/regolamenti/regolamentoborsa-istruzionialregolamento.en.htm

  Changes to the Rules of Borsa Italiana and other key regulatory announcements are made by Stock Exchange Notice.

- ***Stock Exchange Notices***

  To sign up to E-mail notification of future Borsa Italiana Notices and view the library of previous ones please see:
  https://www.borsaitaliana.it/borsa/user/registration.html

- **Trading Services webpage**

  More details of the Exchange's Trading Systems, including where this document and the ***Millennium Exchange Business Parameters for BIT*** document will be found following go-live can be seen at:

  Italian Version:
  http://www.borsaitaliana.it/borsaitaliana/intermediari/gestione-mercati/migrazionemillenniumit-mit/millenniumitmigration.htm

  English Version:
  http://www.borsaitaliana.it/borsaitaliana/intermediari/gestione-mercati/migrazionemillenniumit-mit/millenniumitmigration.en.htm

1.3. Readership

This document outlines the Trading Services available on Millennium Exchange and highlights the key differences to the existing provision on the current trading systems.

When read in conjunction with the message specifications it is intended that these documents provide the information that participants require to develop to the new services.

This document is particularly relevant to trading, compliance and technical staff within the Exchange's member firms and software providers.

1.4. Document series

The current series of documents are set out below:

- ***Trading***
  - **MIT201 BIT - Guide to New Trading System (this document)**
  - MIT202 BIT – Trading Gateway (FIX 5.0) Specification
  - MIT203 BIT – Native Trading Gateway Specification
  - MIT204 BIT – Post Trade Gateway (FIX 5.0) Specification
  - MIT205 BIT – Drop Copy Gateway (FIX 5.0) Specification

- ***Market Data***
  - MIT301 BIT – Guide to Market Data Services
  - MIT303 BIT – MITCH Specification
  - MIT305 BIT – Markets Reference Data
  - MIT306 BIT – MOT / EuroMOT Instrument Currency
  - MIT308 BIT – Trading Calendars
  - MIT309 BIT – RFQ Market Maker Reference Data

This series principally covers non-regulatory information and does not override or supersede the Rules of Borsa Italiana.

The latest version of this document series can be found at the following links:

Italian Version:
http://www.borsaitaliana.it/borsaitaliana/intermediari/gestione-mercati/migrazionemillenniumit-mit/millenniumitmigration.htm

English Version:
http://www.borsaitaliana.it/borsaitaliana/intermediari/gestione-mercati/migrazionemillenniumit-mit/millenniumitmigration.en.htm.

1.5. Document history

This document has been through the follow iterations:

Issue	Date	Description
1.0	October 2011	First issue of this document published via the Borsa Italiana's website and distributed to customers
2.0	December 2011	Updated version published via the Borsa Italiana's website and distributed to customers: - Sections: 5.1.4, 6.1
3.0	February 2012	Updated version published via the Borsa Italiana's website and distributed to customers: - Sections: 2.1
3.1	March 2012	Updated version published via the Borsa Italiana's website and distributed to customers: - Sections: 4,5, 6.1, 6.2.1
4.0	April 2012	Updated version published via the Borsa Italiana's website and distributed to customers: - Added section: 5.1.5
4.1	April 2012	Updated version published via the Borsa Italiana's website and distributed to customers: - Added section: 5.1.5
4.2	May 2012	Updated version published via the Borsa Italiana's website and distributed to customers: - Added section: 1.5
5.0	June 2012	Updated version published via the Borsa Italiana's website and distributed to customers: - Sections: 6.3.2
5.1	June 2012	Updated version published via the Borsa Italiana's website and distributed to customers: - Sections: 8
6.0	May 2013	Updated version published via the Borsa Italiana's website and distributed to customers: - Changed Sections: 1, 4.1, 4.4, 5.0, 5.1.1, 5.1.2, 5.1.3, 5.1.4

		- Removed Section 1.4
6.1	September 2013	Updated version published via the Borsa Italiana's website and distributed to customers: - Changed Sections: 5.1.4, 6.2
6.2	November 2013	Updated version published via the Borsa Italiana's website and distributed to customers: - Changed Sections: 5.2.1 - Added new Section: 7.3
6.3	October 2014	Updated version published via the Borsa Italiana's website and distributed to customers: - Changed Sections: 5.1.4
6.4	March 2015	Updated version published via the Borsa Italiana's website and distributed to customers: Changed Sections: 1.4, 6.2
7.0	June 2015	Updated version published via the Borsa Italiana's website and distributed to customers: - Changed Sections: 2.5, 4.4, 5.1.4, 5.3.1, 6.3
7.1	July 2015	Added Certification Test Programme
7.2	September 2015	Updated version published via the Borsa Italiana's website and distributed to customers: Changed Sections: 5.3, 7.4.3

7.3	October 2015	Updated version published via the Borsa Italiana's website and distributed to customers: Changed Sections: 4.4.1, 4.4.2, 7.2, 7.5.1, 8.
7.4	February 2016	Updated version published via the Borsa Italiana's website and distributed to customers: Changed Sections: 4.4.1
7.5	May 2016	Updated version published via the Borsa Italiana's website and distributed to customers: Changed Sections: 8.
7.6	May 2016	Updated version published via the Borsa Italiana's website and distributed to customers: Changed Sections: 5.1, 5.1.1, 5.1.3, 5.1.4, 6. Added Section: 6.2
8.0	May 2016	Updated version published via the Borsa Italiana's website and distributed to customers: - Changed Sections: 1.4, 1.6, 5.1, 5.1.1, 6.3, 6.3.1, 7.5.2, 11.2 - Added new Section: 5.2.4, 5.2.4.1, 5.2.4.2, 5.2.4.3
8.1	July 2016	Updated version published via the Borsa Italiana's website and distributed to customers: - Changed Sections: Appendix 1 (A.4)
9.0	May 2017	Updated version published via the Borsa Italiana's website and distributed to customers: – Changed Sections: 2.1, 3.4, 4.1, 4.4, 5.1, 5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.2.2, 5.2.4.1, 5.2.4.2, 5.3.1, 6.3, 6.4, 6.4.1, 6.4.2, 6.5.4, 8, Appendix 1.

In subsequent issues, where amendments have been made to the previous version, these changes will be identified using a series of side bars as illustrated opposite.

1.6. Enquiries

Please contact either Client Technology Services Italy if you have any functional questions about the Millennium Exchange services outlined in this document. Client Technology Services Italy can be contacted at:

- **Service-Desk**
- Toll Free: 0080026772000
- From Mobile: +390245411399
- Email: service-desk@borsaitaliana.it
- **Market-Access**
- Telephone: +39 0272426 668
- Email: market-access@borsaitaliana.it
- **Technical Account management**
- Telephone: +39 0272426 348 – 606 – 333
- Email: clients-services@borsaitaliana.it

Please contact your Business Account Manager if you have any questions about the Millennium Exchange trading functionalities outlined in this document. Business Account Managers (ITA) can be contacted at:

MTA / AIM Italy/ MIV / TAH

- Telephone: +39 0272426418 - 550 – 503 – 539

ETFplus / MOT / ExtraMOT / SeDeX

- Telephone: +39 0272426517

2. Customer Interfaces

In the interest of increased performance and flexibility a new approach to customer interfaces will be introduced which is described below.

2.1. Overview

The following interfaces and protocols will now be available to participants (illustrated in Figure 1)

- Trading Interface
  order / quote entry and immediate confirmation of automated trades

- Post Trade Interface
  'Enriched' trade confirmation of automated trades (including cancellations)[1]
  Off Book Trade Reporting (Post Trade Transparency)
  Own Trades Book Download (OTBD)

- Drop Copy Interface
  'Copy To' functionality
  Own Order Book Download (OOBD)

- Reference Data Service

With the introduction of Millennium Trading System, the Exchange will standardise on FIX 5.0 SP2 for all of the above customer interfaces with the exception of Reference Data Service[2]. In addition a new fixed width Native interface will be introduced for the Trading Interface only. Participants will connect to each interface via a FIX or native Gateway, depending on the functionality they require.

- Native Trading Gateway
- FIX Trading Gateway
- FIX Drop Copy Gateway
- FIX Post Trade Gateway

[1] Including any Exchange initiated cancellations
[2] Will be supported via FTP and SFTP

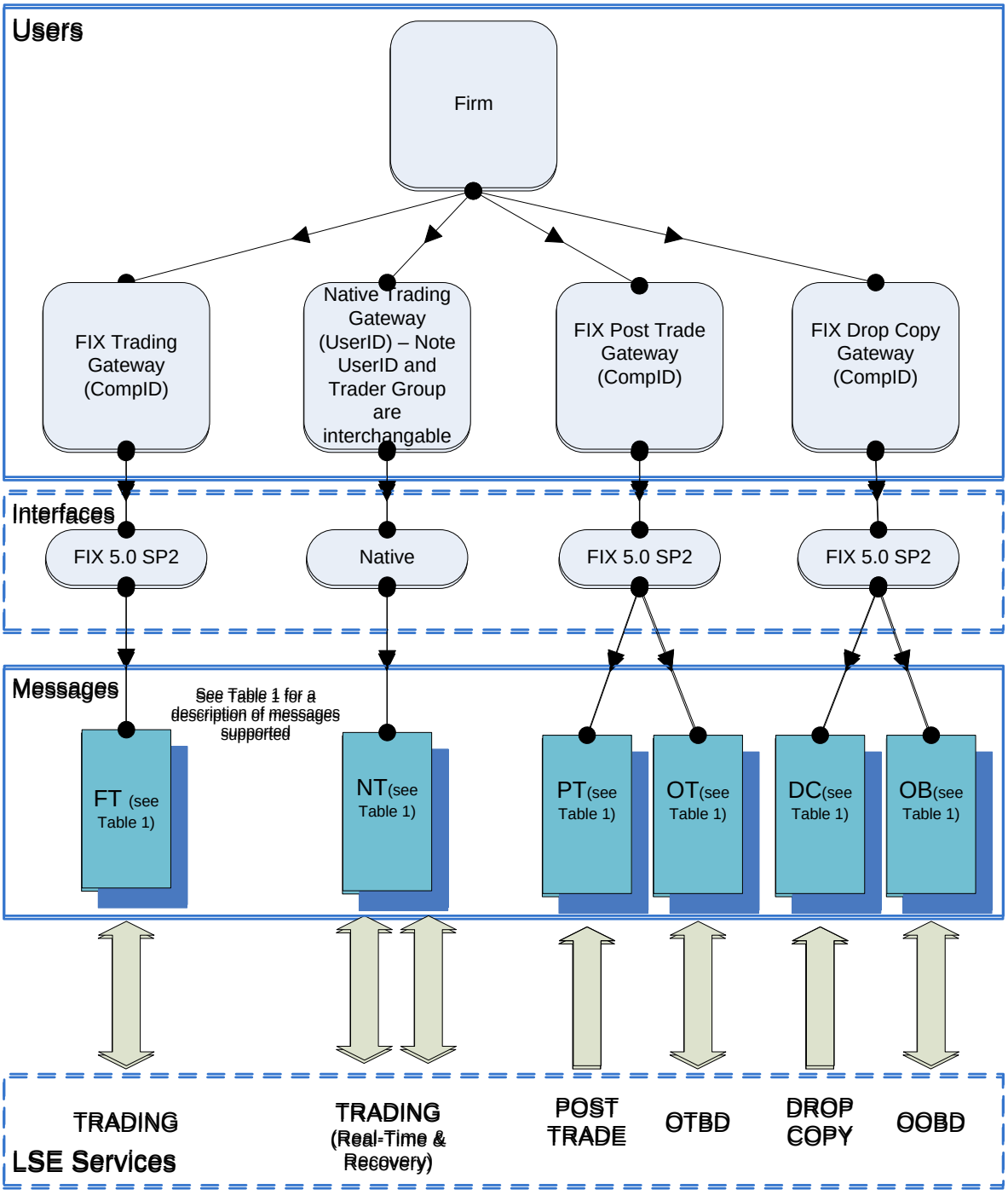


Figure 1 – Customer Interfaces

Table 1 – Functional messages supported

Interface	Message Group	Direction	Functional messages supported
FIX Trading	FT	Inbound (to Exchange)	D - New Order Single F - Order Cancel Request q - Order Mass Cancel Request G - Order Cancel/Replace Request s - New Order Cross u - Cross Order Cancel Request S - Quote Z - Quote Cancel R – Quote Request AJ - Quote Response AG - Quote Request Reject
FIX Trading	FT	Outbound (from Exchange)	8 - Execution Report 9 - Order Cancel Reject r - Order Mass Cancel Report AI - Quote Status Report b - Mass Quote Acknowledgement j – Business Message Reject R – Quote Request AJ- Quote Response S – Quote CW – Quote ack
Native Trading[3]	NT	Inbound	D - New Order Single F - Order Cancel Request q - Order Mass Cancel Request G - Order Cancel/Replace Request C - New Order Cross H - Cross Order Cancel Request S - Quote M - Missed Message Request a - Quote Request b - Quote Request Reject d - RFQ Quote f - Quote Response
Native Trading	NT	Outbound	8 - Execution Report 9 - Order Cancel Reject r - Order Mass Cancel Report N - Missed Message Request Acknowledgement P - Missed Message Report j - Business Reject a - Quote Request b - Quote Request Reject c - Quote Status Report d - RFQ Quote e – Quote Ack f – Quote Response g - RFQ Execution Report
Post Trade	PT	Inbound	AE - Trade Capture Report
Post Trade	PT	Outbound	AR - Trade Capture Report Acknowledgement

[3] Note – for consistency FIX message identifiers are used on the Native Interface. However, format and content of the messages are different.

Post Trade	OT	Inbound	AD - Trade Capture Report Request BW - Application Message Request
Post Trade	OT	Outbound	AQ - Trade Capture Report Request Acknowledgement AE - Trade Capture Report BX - Application Message Request Acknowledgement
Drop Copy	DC	Outbound	8 - Execution Report
Drop Copy	OB	Inbound	AF - Order Mass Status Request
Drop Copy	OB	Outbound	8 - Execution Report

2.2. Message workflow

Participants must use the Trading Interface (FIX or native) to send order, cross order and quote messages to Millennium Exchange via configured Users. In response, Millennium Exchange will send Execution Reports over the interface used giving the status of the order / executable quote.

Should a trade occur then the order / quote status will be immediately updated by an Execution Report[4] sent from the Trading Interface over the participant connection that sent in the order / quote. In addition to order status the Execution report will summarise the details of the trade and provide among the others the following information:

- Side
- Trade Quantity
- Trade Price
- Clearing House defined as Counterparty or Counterparty to the Trade
- Trade ID
- Order ID
- Transaction Time

In addition, an 'enriched' Trade Capture Report will be sent via the Post Trade Interface. This will include the trade details specified in the Execution Report as well as the following information:

- ISIN
- Matching Type (Continuous Trading or Auction)
- Clearing Type (is the trade cleared or not)

This means that participants will receive two messages notifying them of the trade. They will be free to choose which message to act on before submitting the next message.

Participants will be able to link the Execution Report and Trade Capture Report using either the ExecID or ClOrdID tags.

[4] Note – for Executable Quotes two Execution Reports will be sent – one for each side of the Quote

Participants should note:

- In normal circumstances the Trade Capture Report will be delivered after the Execution Report.
- Execution Reports will be sent to the CompID that sent the order or quote.
- Customers have the option to cancel at firm level so a "master" CompID could cancel all orders entered for the firm by all other CompIDs.
- Orders / quotes sent via one CompID cannot be modified or cancelled using another CompID (with the exception of “master” CompID cancellations).
- A new cancel on disconnect facility has been provided as a means of managing orders if a session is lost. See Section 3.7 Cancel on disconnect / logout for more details.
- A Post Trade / Drop Copy User can be configured to receive all Trade Capture Reports / Execution Reports for the Firm, or selected CompID / UserID.
- Customers are recommended to have a separate connection to the Post Trade Gateway for Off Book Trade Reporting, Real Time Trade Capture Reports and the OTBD service.
- Where a customer is using ‘Copy To’ functionality, a separate connection to the Drop Copy Gateway will be required over and above that used to support the OOBD service.

2.3. Time synchronisation

As per the FIX standard, all times on FIX trading messages must be specified in UTC. Customers are recommended to use the Sending Time in the FIX logon message sent by Millennium Exchange to synchronise system clocks. Also all times on Native messages are in UTC.

2.4. Reference Data Service

Reference data will be managed by a new Reference Data Service that will provide instrument reference data to participants in a new 'flat file' format and available via FTP. Full details of the interface are specified in the document "MIT305 – BIT - Markets Reference Data".

In addition to the flat file a subset of reference data will be available via the Market Data feed each morning:

- Symbol (unique identifier)
- Instrument status
- ISIN
- Segment
- Tick
- Price Bands Tolerances
- Dynamic Circuit Breaker Tolerances
- Static Circuit Breaker Tolerances

2.5. Technical details

Technical details of all interfaces are provided in the following documents:

- MIT202 BIT - Trading Gateway (FIX 5.0) Specification
- MIT203 BIT - Native Trading Gateway Specification
- MIT204 BIT - Post Trade Gateway (FIX 5.0) Specification
- MIT205 BIT - Drop Copy Gateway (FIX 5.0) Specification
- MIT301 BIT – Guide to Market Data Services
- MIT303 BIT – MITCH Specification
- MIT305 BIT – Markets Reference Data
- MIT306 BIT – MOT/EuroMOT Instrument Currency
- MIT308 BIT – Trading Calendars

3. User Configuration

A new, more flexible, approach will be taken to the configuration of participants on Millennium Exchange. Borsa Italiana will work closely with customers to agree a configuration that meets requirements but the following sections are provided for background.

3.1. Structure

Generically, a 3-tier hierarchy will be introduced consisting of Firm, Node and User. Each User will have an associated Role.

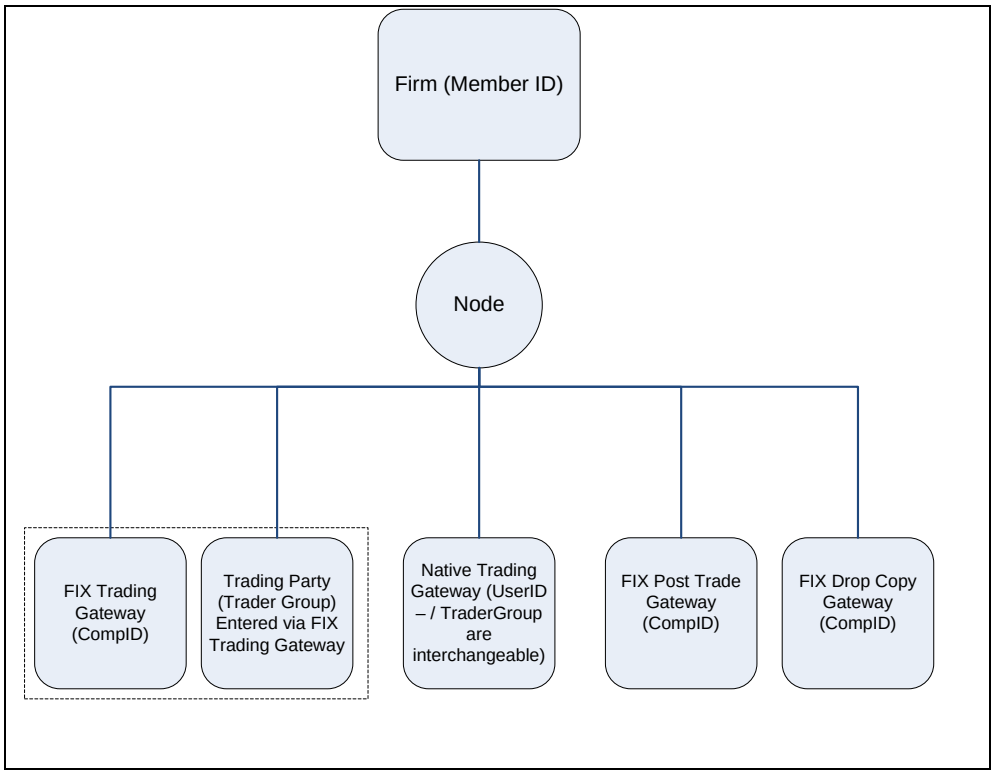


Figure 2 – User hierarchy

Each level in the hierarchy is described in the following sections.

3.2. Firm

A Firm represents the highest level when depicting a participant and is intended to represent the membership under which business is routed to the Exchange. The Firm is identified by a unique Member ID. No technical or business enablement will be held against a firm and there is a one to many relationship between Firm and Node.

3.3. Node

A Node represents a logical grouping of Users (see below), this is a new concept that forms part of the core Millennium Trading product.

A Node by itself has no technical meaning but allows customers a degree of further classification/segmentation within their business, for example a firm with different clearing arrangements can segment its business accordingly.

Once a Node is created all Users falling under that Node inherit the same configuration.

3.4. User

A User represents a generic business or technical enablement, such as a trading desk or a FIX Gateway. The exact type of User is defined by the associated Role. The same User can only be configured under one node. The User can only have one of the Roles outlined below.

Participant should note that the access to the Borsa Italiana Markets will be defined as follows:

- Users are dedicated to a specific Market (i.e. there are users dedicated to MTA, users dedicated to ETFplus, etc.); each user can send order on instruments listed on the market they are assigned to; the market as user is assigned to can be retrieved from the ID of the user.
- Specific activities have to be carried on with dedicated users (with a specific naming convention) :
    - Liquidity provision activity (e.g. trading activity under a liquidity provision / market making agreement with Borsa Italiana, or with an issuer).
    - Response to RFQ
    - Appointed user for ATF segment

3.4.1. TraderGroups for FIX Connections

This Role enables the User as a ‘Trading User’ which represents an identifiable trading entity such as trading desks, automated trading applications or individuals.

Specific enablements such as the ability to enter orders or the ability to market make will be controlled by attributes of the Trader Role associated with the TraderGroup.

One or more FIX Users must be configured which then send the appropriate trading messages to the Exchange.

Participants can continue to identify orders using TraderID[5], the TradeID will be returned in Execution Reports and Trade Capture Reports.

It should also be noted that orders on the book are effectively 'owned' by the CompID that was used to submit the order (see the following sections).

3.4.2. TraderGroups for Native connections

Participants should note that Users on the native interface are connected and identified via UserIDs. Existing TraderGroups can be used interchangeably as UserIDs for all Native Trading connections.

Native UserIDs are used to denote a single connection to Millennium Trading Product and as such individual User/TraderGroups are not transferrable across multiple connections.

Member firms are advised that Comp ID must follow a specific structure:

Market (2 char) + CED Code (4 digits) + "FT" (for FIX users)/"NT" (for native users) + "0" (for standard users)/"S" (for specialist users) + progressive code (2 digits)

This structure ensures that Comp ID pass through trading and post trade validation.

Any questions, please contact Client Implementation on +39 0272426409 - 348 – 606 – 647.

[5] Specified in the FIX message using Tag 448 – PartyID with Tag452 – Party Role set to 12

3.4.3. FIX Connection Users

These Roles enable the user as a 'FIX User' which represents a discrete FIX connection to a specified Millennium Exchange FIX Gateway. Each of the FIX Gateways will have a Role associated with them to enable the following User Types to be defined.

- FIX Trading Gateway User
- FIX Post Trade Gateway User – Real Time Enriched Trade Reports and Off Book Trade Reporting
- FIX Post Trade Gateway User – Own Trade Book Download
- FIX Drop Copy User – Real Time Execution Reports
- FIX Drop Copy User – Own Order Book Download

Each FIX Users will be identified by a unique FIX CompID and can be only one of the above types.

For Own Trade Book and Own Order Book downloads the Trader Groups for which the requests are made must be permissioned for each FIX CompID making the request.

3.4.4. Native connection Users

As set above Native connections are identified via the UserID. Only the Native Trading Gateway User will be supported.

TraderGroups will be used as the UserID for all Native Trading connections. To avoid clearing and settlement failures for cleared securities these need to be as per the clearing static data form. It should also be noted that orders on the book are effectively owned by the UserID that was used to submit the order.

3.5. Connection security

Following the FIX standard, Message Authentication will not be supported on Millennium Exchange. However, each CompID will be assigned a password on creation that must be specified in the first logon message. Participants will be required to change the default password on first logon.

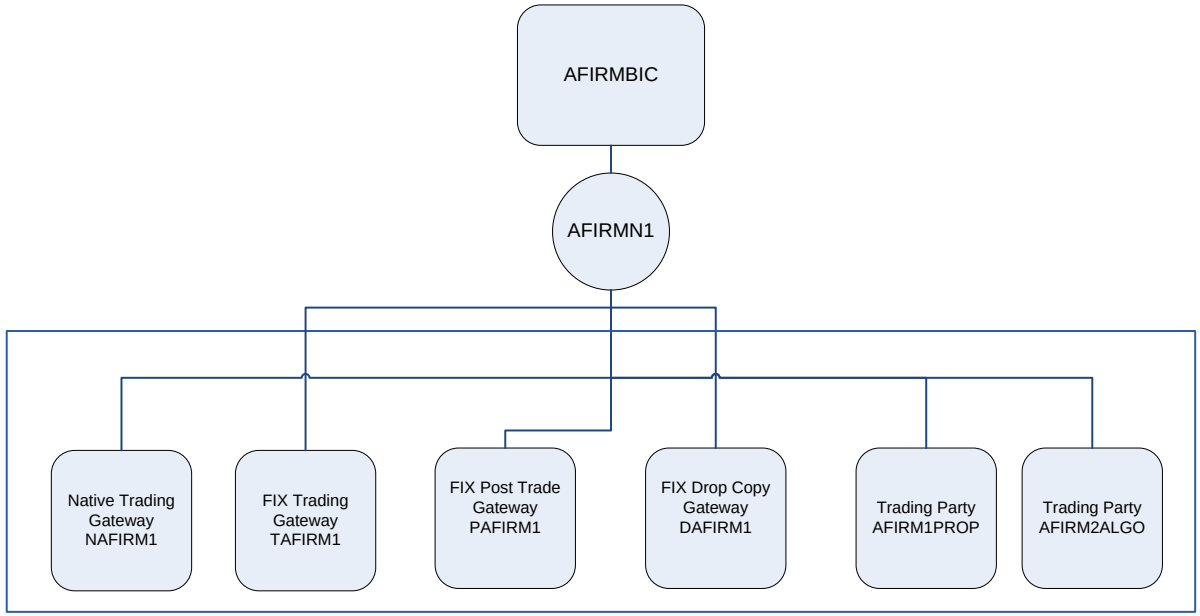
Following the first logon participants can manage passwords using the Logon message. Customers will now not be required to change passwords after a configurable number of days.

3.6. Example configuration

Participants can have any number of trading nodes or trading groups on request. An example configuration for a typical trading participant for illustrative purposes is illustrated in Figure below.

Participants can discuss individual Test and Live configurations with the Exchange.

Figure 3 – Example configuration



Assumes the participant has a single membership entity, and requires a connection to all interfaces

- All Off Book Trading is done under the FirmID (AFIRMBIC)
- Native Trading Gateway NAFIRM1 can send messages only for NAFIRM1
- FIX Drop Copy Gateway DAFIRM1 can request orders for Trading Parties AFIRM1PROP and AFIRM2ALGO and Native CompID NAFIRM1
- FIX Trading Gateway TFAFIRM1 can send messages on behalf of Trading Parties AFIRM1PROP and AFIRM1ALGO
- FIX Post Trade Gateway can send Trade Reports under AFIRM1PROP and AFIRM2ALGO and request Own Trade Book Downloads for AFIRM1PROP and AFIRM2ALGO and Native CompID NAFIRM1

3.7 Cancel on disconnect / logout

As part of the transition to Millennium Exchange a new cancel on disconnect and cancel on logout facility will be provided. A disconnect is defined as a drop in the TCP session between the participant and Millennium Exchange, whether due to either party.

Cancel on disconnect / logout is configured for a CompID/UserID. Should the FIX / Native Trading Gateway associated with that CompID disconnect, then all orders / Executable Quotes entered under that CompID/UserID will automatically be deleted by Millennium Exchange. Participants can have a 'wait' period configured by which the system will wait a defined length of time before deleting orders / quotes.

Where a CompID/UserID has been opted in, if required, customers can elect to specifically exclude GTD orders from this automatic deletion process.

On reconnection, Millennium Exchange will send Execution Reports for the deleted orders and Quote Status messages for the deleted Executable Quotes.

3.8. Message throttling

In order to safeguard the Exchange Trading System against 'abnormal' participant behaviour each User/CompID enabled for access to the Native and FIX Trading Gateways will not be allowed to exceed a specified message throughput determined by the Exchange.

Every message sent by a participant that means that the maximum message rate of a User/CompID is exceeded (over a second period) will be rejected via a Business Message Reject for FIX and a Reject message for the Native Trading interface.

A User/CompID will be disconnected by the Trading Gateway if its message rate exceeds its maximum rate more than a configurable number of times in any 30 second duration. In such a case, the server will transmit a Logout message and immediately terminate the TCP/IP connection.

The maximum throughput of each participant's User/CompID will be defined by the Exchange considering the feedback provided by the Participants.

4. Market Structure

The same trading services will continue to be supported on Millennium Trading System following the transition, with identical market functionality.

4.1. Market configuration

Millennium Exchange will continue to support the same Markets as today, including TAH and Post Trade Transparency Service currently available on the Affari Trading System.

The table overleaf provides a summary.

Trading Service	Description	Coverage
MTA	**"Mercato Telematico Azionario"** **"Electronic share market"**	**Market for the trading of shares, convertible bonds, warrants, pre-emptive rights**
AIM Italia-MAC	**"Sistema multilaterale di negoziazione gestito e organizzato da Borsa Italiana"** **"The MTF (multilateral trading facility) organised and managed by Borsa Italiana"**	
MIV	**"Mercato telematico degli investment vehicles"** **"Electronic investment vehicles market (MIV)"**	**Market for the trading of shares of Investment Companies and Real Estate Investment Companies, financial instruments of SIVs and units/shares of closed-end funds listed on the Stock Exchange**
MOT[6]	**"Mercato Telematico delle Obbligazioni"** **"Electronic bond market"**	**Market for the trading of bonds other than convertible bonds, government bonds, Supranationals, foreign bonds, asset-backed securities (ABS) and other debt securities**
ExtraMOT	**"Mercato non regolamentato delle Obbligazioni"** **"The bond dedicated MTF (multilateral trading facility)**	**MTF mainly for the trading of Sovereign bonds, bonds issue by countries pertaining to OCSE, other debt securities already listed in other RM and**

[6] Participants should note that, even if in the Technical Documents is mentioned the Yield, the negotiation on MOT/ExtraMOT is based on Price.

	organised and managed by Borsa Italiana"	**MTFs, SMEs financial instruments**
ETFplus	**"Mercato telematico degli OICR aperti e degli strumenti finanziari derivati cartolarizzati"** **"Electronic open-end funds and securitised derivative financial instruments market"**	**Market for the trading of financial instruments as ETFs, exchange traded commodities and exchange traded notes**
SeDeX	**"Mercato telematico dei securitised derivatives"** **"Electronic securitised derivatives "market**	**Market for the trading of financial instruments as covered warrants and certificates**
TAH	**"Segmento after hours"** **"After-Hours Segment"**	**Segment of the Borsa Italiana Equity MTF , for the trading of listed shares that satisfy the liquidity requirements established by Borsa Italiana, securitised derivative financial instruments traded on the SEDEX market at the request of the issuer at different times from those established for the MTA and SEDEX markets**
PTTS	**Post Trade Transparency Service**	**Service to allow the entering of off-book trades**

Table 2 – Trading Services

4.2. Business categorisation of securities

From a business perspective an individual instrument is assigned to a grouping to form a ***trading segment.*** A specific ***Trading Service*** is a number of trading segments that share the same market model.

The ***Millennium Exchange Business Parameters for BIT Document*** maps these exact groupings and allows us to lay down criteria that operate at each specific grouping level.

4.3. Technical operation parameters

The sectorisation documented above has been maintained to ease transition to Millennium Exchange and to maintain categorisations from an Exchange Rules and wider regulatory perspective that are not specifically relevant to the trading system. Trading segments and trading sectors are not key fields for Millennium Exchange trading message entry. They will however, continue to be defined and provided via the Reference Data Service.

In Millennium Exchange, instruments are technically structured as follows:

- Each instrument will be assigned to a Market and Segment
- Instruments are assigned to an Order Book with a pre-determined Trading Cycle
- Instruments will have specified instrument, Trading and Post Trade parameters assigned that dictate how the instrument is traded
- A Trading parameter consists of session parameters and a price tick table
- A Post Trade parameter consists of trade types and delay model (PTTS)

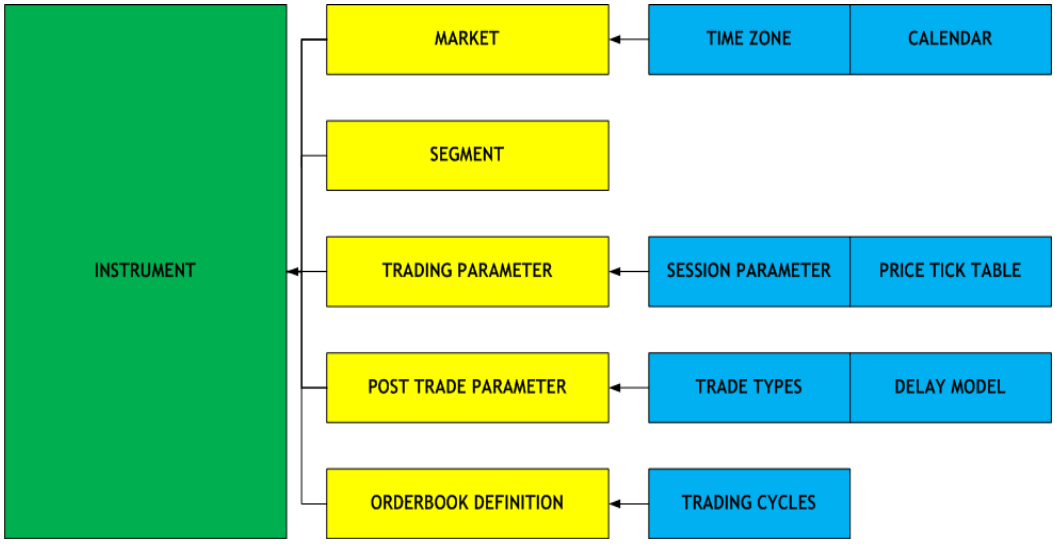


Figure 4 – Technical structure of an instrument on Millennium Exchange

The following section describes the structure components and parameters. The parameters will be available via the Reference Data Service (see Section 2.4).

4.4. Trading Sessions

Although there will continue to be a concept of 'Period' (or 'Sessions' on Millennium Exchange) the general approach to trading sessions will be simplified. Each instrument will generally follow a simple trading day consisting of an opening auction, continuous trading and a closing auction where applicable. Timings and associated trading parameters will vary according to the market model and will be communicated in due course. In addition, and as today, market control actions invoked by the Exchange will potentially override the normal schedule.

As an instrument moves from one trading session to another the new Millennium Exchange Information system will disseminate the new status of that instrument via the security status message. Please see MIT303 BIT - MITCH Specification for further information. The following status will be sent:

- Pre Trading (Start of Trading)
- Quoting Period
- Opening Auction Call
- Continuous Trading
- Close Auction Call
- Re-Opening (AESP or Resume) Auction Call
- Resume Order Deletion period
- Halt
- Frozen
- Trading Stop
- Market Closed
- Post Close
- End of Post Close
- Closing Price Cross
- No Active Session
- OPA Auction Call
- Start of Trade Reporting
- End of Trade Reporting

4.4.1. Quoting Period

A trading session applied to SeDeX market[7], the Quoting Period allows the Specialist only to display the quotes before the start of continuous trading.

This would be a method of preparing the order-book, populating the bid-ask of the instruments for the day, before the rest of the market starts entering their interest.

Any quotes entered during this period should not execute, but they could execute

afterwards during Continuous Trading. The average of the quotes displayed at the end of the quoting period determine the static and dynamic reference price at start of trading.

It should be noted that the Quoting Period session could be applied to “IGQ”, “EBQ” and “CBQ” sectors on MOT Market to allow dealers in charge of the placement to enter Single Side Quotes (SSQ) that could not be executed before the start of the Continuous Trading phase.

4.4.2 Frozen Period

A trading session applied to SeDeX market[8] only, especially to the sectors highlighted in the file “Millennium Exchange Business Parameters” available on Borsa website, the frozen period is automatically triggered anytime both quotes of the specialists are not on the book, because cancelled or hit.
When the specialist displays its quotes, new conditions for trade execution apply, whereby such trades may only be executed in the presence of the specialist, and only within the limits of those quotes displayed by said specialist. This provision permits trades to be executed with the specialist, or with other intermediaries displaying a better price.
For each trade executed by means of the automatic matching described in this paragraph, the price of the trade is equal to that of the order having greater time priority, except when an order already displayed on the market is matched with a quote entered subsequently by the specialist. In such cases, the price of the contract shall be that of the quote entered by the specialist.
In the case of a partial execution of an order, the residual quantity is cancelled if the latter could be matched with an order of opposite sign outside the range of quotes entered by the specialist.

4.5. Symbology

A new, more efficient, approach will be taken to the identification of trading instruments. The “4 way key” is no longer supported and an instrument must now be identified on trading messages using a unique InstrumentID.[9]

[7] For avoidance of doubt, the Quoting Period applies to all SeDeX segments.
[8] For avoidance of doubt, the Frozen Period applies only to some sectors of the market, as highlighted in the file “Millennium Exchange Business Parameters” available on Borsa website.
[9] Specified in Tag 48 – SecurityID on FIX and Native messages.

The InstrumentID will remain constant for the lifetime of the instrument, even if data pertaining to that instrument changes. However participants should note that in some cases (i.e.: corporate action).an instrument will continue to be deleted and re-added should the ISIN be changed.

The Exchange will provide InstrumentIDs via the Reference Data Service and over the Market Data Feeds.

Even though the same stock trades in MTA, After Hours Trading and PTTS Service, it will be managed as different instruments for MTA, After Hours Trading and PTTS Service, with different instruments IDs, same Symbol for MTA and TAH but different for PTTS but with same ISIN code.

Full details are specified in the Technical Details documents.

5. Orders and Quotes

The behaviour of an order or quote is defined by a combination of its Order Type and its time in force.

It should be noted that the Order Types are not *explicitly* stated on FIX and Native messages, but are defined via a combination of tags.

Please see the Technical Details documents for further information.

5.1. Order types

Table below summarises the Order Types supported on Millennium Exchange:

Order Type	Description
Limit Order	A limit order is an anonymous priced order that is fully displayed when persistent in an order book and may execute at prices equal to or better than its limit price. Limit orders never have price priority over market orders.
Market Order	A market order is un-priced, and therefore not price forming, but has price priority over all priced orders. Market orders cannot persist on the order book during continuous trading, therefore only market orders with non-persistent time in force can be entered during this period. Persistent market orders can be entered during auctions and will display on the order book during an auction. Any that remain unexecuted following the completion of the auction will be automatically deleted.
Market to Limit[10]	A order that will execute at the best available prices until it is filled. Any remainder will be converted to a limit order at the last traded price. A Market to Limit Order will aggress the system as a Market Order during an Auction Call and participate in the auction. At the end of the uncrossing, if there is left over quantity with the order, it will be converted to a Limit Order at the auction price. If the uncrossing did not happen then the Market to Limit Order will still be converted to a Limit Order at the Static Reference Price of the instrument.
Stop Limit Orders	A Stop Limit Order is a Limit Order that will remain unelected (will not be entered into order book) until the stop price is reached. Once elected, a Stop Limit Order will be treated similar to a regular new Limit Order. The trigger for electing Stop Limit Orders is based on the Last traded price
Stop Orders	A Stop Order is a Market Order that will remain unelected (will not be entered into order book) until the stop price is reached. Once elected, it will be treated similar to a regular new Market Order. The trigger for electing Stop Orders is based on the Last traded price.

[10] New Order type introduced with Millennium Trading System

Iceberg Orders	An iceberg order publicly displays only a portion of its total volume that is available for execution. The displayed size, known as the peak size, and the total size of the order (including the visible peak and the hidden part of the iceberg order) can be specified by the participant and must be above specified minimum sizes published in the Millennium Exchange Business Parameters document. Customers have the option to have the refreshed peak size randomised. On each peak refresh, the size will be randomised within a set band above the value of the initial peak size entered with parameters published in the Millennium Exchange Business Parameters document.
Named Orders	A named order is a non-anonymous limit order available on certain Trading Services only. These orders can be entered by Specialists.
Un-Priced Limit	An un-priced order which is treated as a limit order with a price, one tick better than the visible bid/offer.

Table 3 – Order Types

5.1.1. Order entry fields

The following table shows which fields are mandatory and which are optional for a Millennium Exchange Order.

Field	Required	Description	Possible Values
Instrument	Yes	The unique identifier of the security.	
Side	Yes	Whether the order is to buy or sell.	- Buy - Sell
Order Type	Yes	The type of the order	- Market - Market to limit - Limit - Stop - Stop limit - Iceberg - Un-Priced Limit
Time in force	No	The duration the order is valid for. If the time in force is not stated, the system assumes it to be a DAY order. Even if it's not a TIF parameter, in this section it's highlighted that on MIT Trading it's possible to set the parameter "Auto Cancel Orders on Disconnect" to specify if the order should be cancelled in case of disconnection	- DAY - IOC - FOK - OPG - GTD /GTT[11] - GTC[12] - ATC - GFA - CPX[13] - ACP

[11] GTT must be specified in UTC

Expiry Time	Required if time in force = GTT	The time at which an order with GTT order should expire	
Expiry Date	Required if time in force = GTD	The date on which an order with GTD order should expire	
Order Quantity	Yes	The quantity being bought or sold. This should be a whole number that is greater than zero.	
Disclosed Quantity	No	The maximum quantity, if any, that may be displayed. This should be a whole number. For Iceberg Orders, this will be greater than zero but less than the order quantity. For Limit Orders, this will be the same as Order Quantity.	
Price	No	The maximum/minimum price a buy/sell order may be executed at. This value should be greater than zero and a multiple of the instrument's 'Tick'. This field is required if the order is a Limit or a Stop Limit Order.	
Stop Price	No	The price at which the order may be elected. This value is required if the order is a stop or stop Limit Order. This value should be greater than zero and a multiple of the instrument's 'Tick'.	
Capacity	Yes	Capacity of the order.	- Any other trading capacity (AOTC) - Agency - Dealing on own account (DEAL) - Principal - Matched Principal (MTCH)
Trading Party	Yes	The trading party of the order is identified by this field. For Exchange users this will be the trader group	
Client Reference	No	This will be the client reference of the order	
Clearing Account	Yes	Identifies the clearing account for the order	- Client - House
Pre Trade Anonymity	No	Whether the order is anonymous or named	- Anonymous - Named

[12] Although GTC is technically supported, all current Exchange market models specify a maximum duration for persistent orders of 30 days therefore GTC will not be permitted and the GTD Time In Force should be used. GTC is allowed in case of Take Over Bid (OPA).

[13] CPX – Closing Price Cross - via FIX it is not a TIF Parameter but a TradingSessionID Tag

Order Source[14]	Yes	Defines the source of the incoming order	- Authorized Direct Member - Institutional Client Interconnected - Private Client Interconnected - Branch - Retail Trading Online
ExecInst	No	Specifies if the order has to be cancelled upon a disconnection or a log out. The absence of this field is considered as that the member firm wants to go ahead with the user level configuration in the system for its orders. It should also be noted that a member firm can only override the user level configuration of cancel on disconnection/log out by indicating not to do so for some specific orders.	
Client ID	Yes	Identifier of the client of the member firm.	- None (when capacity is Dealing on own account (DEAL) or Matched Principal (MTCH) - AGGR (in the case of aggregated orders) - PNAL (in the case of orders pending allocations) - Short Code[16]
Investment Decision Maker ID	Yes	Identifier of the person or the algorithm within the member firm who is responsible for the investment decision.	- None (when the investment decision in relation to the order was not made by a person or algorithm within the member firm) - Short Code[17]

[14] It should be noted that, the source of the incoming order can only be specified for orders. It is not applicable for quotes.

[16] Client ID, Investment Decision Maker and Executing Trader will be provided by the member firm as Short Codes:

- on the Native Protocol, the short code will be a 4 bytes field so a value between 4 and 2^{32} - 1.
- on the FIX the short code will be a number between 4 and 2^{32} - 1

The association between the Short Code and the corresponding Long Code will have to be provided to the trading venue via the Member Portal.

[17] Client ID, Investment Decision Maker and Executing Trader will be provided by the member firm as Short Codes:

- on the Native Protocol, the short code will be a 4 bytes field so a value between 4 and 2^{32} - 1.
- on the FIX the short code will be a number between 4 and 2^{32} - 1

The association between the Short Code and the corresponding Long Code will have to be provided to the trading venue via the Member Portal..

Executing Trader ID	Yes	Identifier of the person or algorithm within the member firm who is responsible for the execution of the order.	- CLIENT (when the execution of the order was not done by a person or algorithm within the member firm) - Short Code[18]
Qualifier	Yes	Specifies: • If the Client ID is: - a LEI (Legal Entity Identifier) for Legal Entities - a National Client Identifier (e.g. Fiscal Code for Italy) for Natural Persons • If the Investment Decision Maker ID is: - a National Client Identifier for Natural Persons - an Algorithm • If the Executing Trader ID is: - a National Client Identifier for Natural Persons - an Algorithm	- Algorithm: applicable only for Investment Decision Maker ID and Executing Trader ID. - Legal Entity: applicable only for Client ID - Natural Person It will be required to specify the field Qualifier for a Short Code.
Algorithm Flag	No	Provides the ability to specify if the order was generated by an algorithm.	
DEA Flag	No	A flag to denote whether the order was submitted to the trading venue using Direct Electronic Access (DEA).	

Table 4 – Order entry fields

Following tables specify the FIX tags and Native fields that should be used to define each order type.

	FIX Tag			
Order Type	**Order Type**	**Anonymity**	**Display Qty**	**Display Method**
Limit Order	2	Y	TotalQty	NA
Market Order	1	Y	TotalQty	NA
Market to Limit	K	Y	TotalQty	NA
Named Limit Order	2	N	TotalQty	NA
Iceberg Order	2	Y	Peak Size[19]	NA

[18] Client ID, Investment Decision Maker and Executing Trader will be provided by the member firm as Short Codes:
- on the Native Protocol, the short code will be a 4 bytes field so a value between 4 and 2^{32} - 1.
- on the FIX the short code will be a number between 4 and 2^{32} - 1

The association between the Short Code and the corresponding Long Code will have to be provided to the trading venue via the Member Portal.

[19] See Millennium Exchange Business Parameters for minimum size

Random Peak Size Iceberg Order	2	Y	Initial Peak Size[20]	3
Stop Order	3	Y	TotalQty	NA
Stop Limit Order	4	Y	TotalQty / Peak Size	NA

Table 5 – FIX Tags

	Native Field			
Order Type	**Order Type**	**Anonymity**	**Display Qty**	**Order Sub Type**
Limit Order	2	0	TotalQty	0
Market Order	1	0	TotalQty	0
Market to Limit	5		TotalQty	0
Named Limit Order	2	1	TotalQty	0
Iceberg Order	2	0	Peak Size[21]	0
Random Peak Size Iceberg Order	2		Initial Peak Size[22]	51
Stop Order	3	0	TotalQty	0
Stop Limit Order	4	0	TotalQty / Peak Size	0

Table 6 – Native Fields

Full details of FIX tags and Native fields are provided in MIT202 – Trading Gateway (FIX 5.0) Specification and MIT203 – Native Trading Gateway Specification.

5.1.2. Time in Force

The current Validity types are supported on Millennium Exchange and mapped to FIX Time In Force (TIF) enumerations:

- Expiry times can no longer be specified for a GTD order. All orders with a GTD Time In Force will be deleted at the end of trading on the date of expiry (or following business day if a closed date)
- Any GTT orders with an expiry time during any auction call phase will not be deleted until after uncrossing has completed and are therefore eligible to participate in that uncrossing. To avoid possibility of execution in this scenario, a participant is required to manually delete their orders.
- Subject to above, GTT expiry times can be specified to the nearest second
- Orders will only be injected for auctions that day – any orders with a OPG, GFA or ATC Time In Force will be deleted at the end of day

[20] See Millennium Exchange Business Parameters for minimum size
[21] See Millennium Exchange Business Parameters for minimum size
[22] See Millennium Exchange Business Parameters for minimum size

- The GTC Time In Force will not be supported for those markets that have maximum order duration. Any GTD order specified with an expiry date greater than that allowed will be rejected.
- During auction call sessions, any order (including market orders) with IOC and FOK TIF will be rejected.

The following table summaries all the Millennium Exchange Time In Forces.

Time in Force	Behaviour
DAY	Orders with the DAY time in force will be expired at the end of the trading on the day they are submitted.
GTC[23]	Orders with the GTC time in force will remain in the system until cancelled by the trading party or a market operations user.
GTD	Deleted at the end of trading on the day specified in the order. If the specified day is a non-business day then the order will expire before start of trading on the next business day.
GTT[24]	Orders with the GTT time in force will expire at the time specified in the order or at the end of the trading day. These orders must contain a valid expiry time that can be specified down to seconds. Any GTT orders with an expiry time during any auction call phase will not be deleted until after uncrossing has completed and are therefore eligible to participate in that uncrossing. Any GTT orders remaining will be deleted at the end of trading day.
IOC[25]	Executed on entry and any remaining unexecuted volume deleted.
FOK	Executed in full on entry or immediately expired. An FOK order may not be partially filled.
OPG	OPG time in force is used to direct orders to the Opening Auction. OPG orders participate in the Opening Auction. The remainder of these orders will expire once the Opening Auction is completed. They will also expire if no uncrossing takes place during the Opening Auction Order rejected if an instrument does not have a scheduled Opening Auction.
GFA	GFA time in force is used to direct orders to the next auction.

[23] Although GTC is technically supported, all current Exchange market models specify a maximum duration for persistent orders of 30 days therefore GTC will not be permitted and the GTD Time In Force should be used. GTC will be used in case of Take Over Bid (OPA)
[24] GTT must be specified in UTC
[25] Immediate or Cancel

	GFA orders submitted during the Continuous Trading session will be parked until the next auction call period starts at which point they will be injected into the order book. Any remaining volume deleted after uncrossing and they will not be executed during Continuous Trading. If no auctions in a trading day then deleted after end of trading.
ATC	ATC time in force is used to direct orders to the Closing auction. ATC orders submitted during the Continuous Trading session will be parked until the Closing Auction Call period starts at which point they will be injected into the order book. A remaining volume deleted after uncrossing and they will not be executed during Continuous Trading. Order rejected if an instrument does not have a scheduled Closing Auction.
CPX[26].	CPX is used to inject order that may only be executed during the closing price cross.
ACP	An order that will be directed to the Closing Auction and, if not executed at the uncrossing of the Closing Auction, to the Closing Price Cross (CPX) session.

Table 7 – Millennium Exchange Time In Force

[26] It should be noted that over FIX the CPX is not a Time In Force but TradingSessionID TAG

5.1.3. Order Type / Time In Force combinations

Table below specifies which combinations of Order Type and Time In Force are valid on Millennium Exchange.

TIF \ Order Type	Limit	Un-priced Limit	Market	MTL	Stop / Stop Limit	Iceberg	Named	Quote
IOC	Y	Y	Y	N	Y	Y	Y	N
FOK	Y	Y	Y	N	Y	Y	Y	N
DAY	Y	Y	Y	Y	Y	Y	Y	Y
GFA	Y	N	Y	Y	N	N	Y	Y[27]
OPG	Y	N	Y	Y	N	N	Y	Y[28]
ATC	Y	N	Y	Y	N	N	Y	N
GTC	Y	Y	Y	Y	Y	Y	Y	N
GTD	Y	Y	Y	Y	Y	Y	Y	N
GTT	Y	Y	Y	Y	Y	Y	Y	N
CPX	Y	N	Y	Y	N	Y	Y	N
ACP	Y	N	Y	Y	N	N	Y	N

Table 8 – Order / Time In Force

[27] Participants should note that this parameter is admitted only during the auction call
[28] Participants should note that this parameter is admitted only during the auction call

5.1.4. Order Type - Time In Force / Trading Session combinations

Table below specifies which combinations of Order Type ,Time In Force and Trading Sessions are valid on Millennium Exchange.

		Start of Trading	Quoting Period	Opening/ Reopening Auction Call	Continuous Trading	Resume Auction Call	Closing Auction Call	Frozen	Halt	Post Close
TIF	IOC	N	N	N	Y	N	N	N	N	N
	FOK	N	N	N	Y	N	N	N	N	N
	DAY	N	Y	Y	Y	Y	Y	N	N	N
	GFA	N	N	Y	Y**	Y	Y	N	N	N
	OPG	N	N	Y***	N	N	N	N	N	N
	ATC	N	N	Y**	Y**	Y**	Y	N	N	N
	GTC	N	N	Y	Y	Y	Y	N	N	N
	GTD	N	N	Y	Y	Y	Y	N	N	N
	GTT	N	N	Y	Y	Y	Y	N	N	N
	CPX	N	N	Y	Y	Y	Y	N	N	N
	ACP	N	N	Y**	Y**	Y**	Y	N	N	N
Order Type	Market	N	N	Y	Y	Y	Y	N	N	N
	Limit	N	N	Y	Y	Y	Y	N	N	N
	Un-Priced Limit Order	N	N	N	Y	N	N	N	N	N
	Stop / Stop Limit	N	N	Y**	Y*	Y**	Y**	N	N	N
	Iceberg	N	N	N	Y	N	N	N	N	N
	Named	N	N	Y	Y	Y	Y	N	N	N
	Quote	N	Y	Y	Y	Y	Y	Y	N	N
	MTL	N	N	Y	N	Y	Y	N	N	N

* Parked or Injected on the Order Book
** Parked
*** Valid in case of opening auction call not in reopening

Table 9 – Order - Time In Force / Trading Sessions

It should be noted that clients can inject Market Orders during Auction Calls with GTD/GTC TIF in order to expire the market orders later (next days), but then, at the end of the Auction (any kind of Auction, Opening, AESP/Re-Opening, Closing), the Market Orders are expired by the system.
For example, if injected during a Closing Auction call with TIF GTD to expire the next day, the market order is expired at the end of the Closing Auction.

		During CPX Session Order Type						
		Market	Limit	Un-Priced Limit	Stop / Stop Limit	MTL	Quote	Iceberg
TIF	Day	Y	Y	N	N	Y	N	N
	IOC	Y	Y	N	N	Y	N	N
	FOK	Y	Y	N	N	Y	N	N
	OPG	N	N	N	N	N	N	N
	GTC	N	N	N	N	N	N	N
	GTD	N	N	N	N	N	N	N
	GTT	Y	Y	N	N	Y	N	N
	ATC	N	N	N	N	N	N	N
	GFA	N	N	N	N	N	N	N
	CPX	Y	Y	N	N	Y	N	N
	ACP	Y	Y	N	N	Y	N	N

Table 10 – Order / Time In Force during CPX

5.1.5. Order Source

The market participant, when entering the order, should indicate in the apposite field an identification code that differs depending on the order source. The classification is based on the type of order source, in the interest of which the order is entered in the market and prescinds from the technological solutions adopted for the transmission of the orders (therefore regardless of the utilization of on line trading systems, rather than manual entering of orders and of the utilization or not of computer-based systems for the automatic generation of orders).

The admitted codes are the following:

Code	Order source	Description
1	Market participant that deals on own account	The order source identifies all the orders entered in the market for which the market participant trades against proprietary capital

3	Institutional client of the market participant	The order source identifies all the orders entered in the market on behalf of the institutional clients of the market participant
7	Retail client that avails itself of an orders router different from the market participant	The order source identifies all the orders entered in the market on behalf of the retail clients of the orders router who accesses to the market through the market participant
8	Institutional client that avails itself of an orders router different from the market participant	The order source identifies all the orders entered in the market on behalf of the institutional clients of the orders router who accesses to the market through the market participant
9	Retail client of the market participant	The order source identifies all the orders entered in the market on behalf of the retail clients of the market participant

It should be highlighted that:

- institutional clients mean: the subjects referred to in Annex II, Part 1 of Directive 2004/39/EC (MiFID)
- retail clients mean: the subjects who are not institutional clients
  orders routers: the subjects which are authorised for the reception and transmission of the orders

5.2. Quotes types

A quote is a pair of buy and sell interest submitted simultaneously, and managed as a single entity. Quotes are generally used by participants interested in continually maintaining two sided presence in the market. These participants (Specialists) will enter Named Quotes. Participants should note that Borsa Italiana is planning to introduce the Anonymous Quote functionality and this feature will be available on certain trading services.

Table below summarises the Quote Types supported on Millennium Exchange:

Quote Type	Description
Executable Quotes	The Named Quote is fully visible, electronically executable, registered specialist quotes that must meet prescribed size and spread requirements on entry. The Anonymous Quote is fully visible, electronically executable, available only on certain trading services. The single-sided quote is introduced in MIT Trading with Release 8, and is available to users, according to the applicable market rules (e.g. bid-only specialists), form Q4/2013.

Table 11 – Quote Types

A Trading Party can only maintain one quote for an instrument. Hence if a new quote is submitted, it will replace the current quote.

5.2.1. Single-Sided Quote

On certain trading services, the Single Quote functionality is available to specialists, specifically configured for the purpose.
In detail: a specific participant (Specialist) could submit a Single Sided Quote (SSQ), named, with either offer or bid side. If the price and size values are specified as zeros for a side, then it will be considered that particular side being not submitted in the SSQ.
A SSQ could be amended by overwriting the same with another Single Sided Quote for the same side.

5.2.2. Quote entry fields

The following table shows which fields are mandatory and which are optional for a Millennium Exchange Quote.

Field	Required	Description	Possible Values
Instrument	Yes	The unique identifier of the security.	
Quote Qualifier	No	Time qualifier of the quote. If the qualifier in force is not stated, the system assumes it to be a DAY quote.	- OPG (at the open) - GFA (good for auction)
Bid Size	Yes	Bid quantity. This should be a whole number that is greater than zero.	
Bid Price	Yes	Bid Price	
Offer Size	Yes	Offer quantity. This should be a whole number that is greater than zero.	
Offer Price	Yes	Offer Price	
Capacity	Yes	Capacity of the quote.	- Any other trading capacity (AOTC) - Agency - Dealing on own account (DEAL) - Principal - Matched Principal (MTCH)
Trading Party	Yes	The trading party of the quote is identified by this field. For Exchange users this will be the trader group	
Clearing Account	Yes	Identifies the clearing account for the quote	- Client - House
ExecInst	No	Specifies if the quote has to be cancelled upon a disconnection or a log out. It should be noted that the above indication should be done in each and every Quote Message for quotes if the member firm wants the existing quote not to be cancelled upon a disconnection/log out. If the indication it is not set in the last quote message sent, any previous indications will be overridden by that and if a disconnection/log out happens the quote will be cancelled provided the fact the user level configuration is set to do so	

Client ID	Yes	Identifier of the client of the member firm.	- None (when capacity is Dealing on own account (DEAL) or Matched Principal (MTCH) - AGGR (in the case of aggregated orders) - PNAL (in the case of orders pending allocations) - Short Code[30]
Investment Decision Maker ID	Yes	Identifier of the person or the algorithm within the member firm who is responsible for the investment decision.	- None (when the investment decision in relation to the order was not made by a person or algorithm within the member firm) - Short Code[31]
Executing Trader ID	Yes	Identifier of the person or algorithm within the member firm who is responsible for the execution of the order.	- CLIENT (when the execution of the order was not done by a person or algorithm within the member firm) - Short Code[32]

[30] Client ID, Investment Decision Maker and Executing Trader will be provided by the member firm as Short Codes:
- on the Native Protocol, the short code will be a 4 bytes field so a value between 4 and 2^{32} - 1.
- on the FIX the short code will be a number between 4 and 2^{32} - 1

The association between the Short Code and the corresponding Long Code will have to be provided to the trading venue via the Member Portal.

[31] Client ID, Investment Decision Maker and Executing Trader will be provided by the member firm as Short Codes:
- on the Native Protocol, the short code will be a 4 bytes field so a value between 4 and 2^{32} - 1.
- on the FIX the short code will be a number between 4 and 2^{32} - 1

The association between the Short Code and the corresponding Long Code will have to be provided to the trading venue via the Member Portal.

[32] Client ID, Investment Decision Maker and Executing Trader will be provided by the member firm as Short Codes:
- on the Native Protocol, the short code will be a 4 bytes field so a value between 4 and 2^{32} - 1.
- on the FIX the short code will be a number between 4 and 2^{32} - 1

The association between the Short Code and the corresponding Long Code will have to be provided to the trading venue via the Member Portal.

Qualifier	Yes	Specifies: • If the Client ID is: - a LEI (Legal Entity Identifier) for Legal Entities - a National Client Identifier (e.g. Fiscal Code for Italy) for Natural Persons • If the Investment Decision Maker ID is: - a National Client Identifier for Natural Persons - an Algorithm • If the Executing Trader ID is: - a National Client Identifier for Natural Persons - an Algorithm	- Algorithm: applicable only for Investment Decision Maker ID and Executing Trader ID. - Legal Entity: applicable only for Client ID - Natural Person It will be required to specify the field Qualifier for a Short Code.
Algorithm Flag	No	Provides the ability to specify if the quote was generated by an algorithm.	
DEA Flag	No	A flag to denote whether the order was submitted to the trading venue using Direct Electronic Access (DEA).	

Table 12 – Quote entry fields

5.2.3. Content of quotes

Quote size

Both the bid and offered size on a quote on entry must be equal to or greater than the Exchange Market Size (minimum quote size) for that specific security as established in the Rules. However, in case the quote size is less than the Exchange Market Size, the quote will be accepted by the Trading System but the specialist shall be in breach of its quotation obligation.

Maximum spread

The spread between the bid and offer prices must be at least one tick size and no more than the maximum spread specified in the relevant security. When validating maximum spreads the absolute spread (offer less bid) is divided by the mid price of the spread (offer plus bid, divided by 2) to determine a percentage spread which is assessed against the permitted maximum. Executable Quotes that are wider than the permitted maximum spread will be accepted but the specialist shall be in breach of its quotation obligation.

Quote Qualifier

On MIT Trading there can be DAY, Goof For Auction or OPG Qualifiers for quotes. In the absence of a Quote Qualifier, it will be defaulted to DAY. It is not allowed to amend the Quote Qualifier, therefore if the Quote Qualifier needs to be changed, the participant needs to cancel the existing quote and submit a new quote with the new Qualifier. All the remaining quotes will be expired at the end of the trading of the day.

5.2.4. Private Request for Quotes

RFQ is available as a functionality within Borsa Italiana markets ETFplus, MOT and ExtraMOT. A trader can request quotes by sending a private Request for Quote to the intended market makers specifying the quantity he wishes to trade. Market makers who receive the notification can either accept, reject or ignore the notification. The market makers' acceptance is sent to the system in the form of a Quote. The quote should indicate the quantity and the price the market maker wishes to offer. Then the requester can send instructions to the system to match with the best quote available at the point of matching.

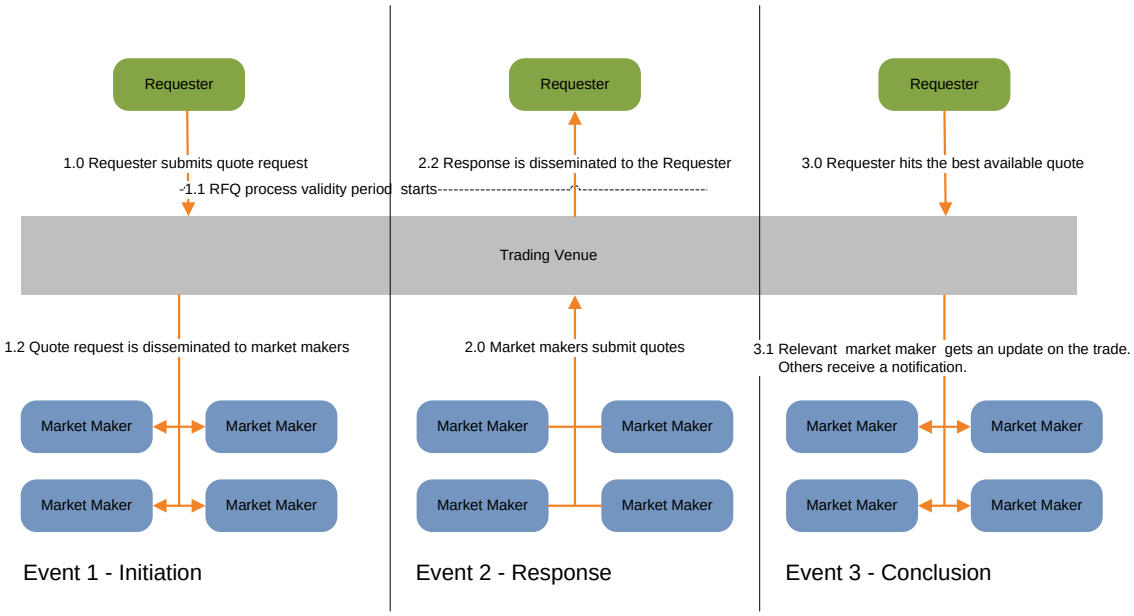


Figure 5 – General event flow for RFQ trade negotiation

5.2.4.1 RFQ Submission

The quote negotiation can be carried out named or anonymously based on allowed exchange configuration[33]. According to the named model, the identities of the two parties, requester and market makers, associated with the private RFQ are exposed to each other. Therefore, the requester may specify a list of registered market makers[34] (Firms) the request may be routed to (not exceeding the maximum allowed number[35]) and subsequently upon submission the request would only be routed to the specified market makers. Contrary to the named model, the anonymous model does not expose the requester and associated market makers to each other and a RFQ should be routed to all eligible market makers. Since the RFQ is private request between the requester and the market maker in both models, named and anonymous, markets makers are not exposed to each other. Similar to an order, the side of the RFQ (if specified) should refer to the side the requester is willing to take on a trade. I.e. if the requester wants to buy, the message should be populated with the fields relating to the "buy" side. However, side is an optional field hence when the requester doesn't specify this the market makers quotes won't be validated against the side (both sell and buy single-sided quotes and double quote will be accepted). RFQs submission should only be allowed when the Normal Order book is Regular Trading session. An RFQ already submitted should not be expired[36] upon Normal book transition to any other session. A RFQ can be valid until a time specified by the requester if does not exceed exchange allowed duration[37]. A quote request should have a quantity and value which is within the Exchange defined limits[38] (Minimum/Maximum values and Maximum Quantities).

5.2.4.2 Response to the RFQ

If the market makers wish to response to the submitted RFQ, then a quote (single sided or double sided) may be submitted. Side specified on a single sided quote should be the opposite side of the quote request (i.e. if the requester was requesting for buy, the market maker should submit a sell quote). However, market makers can reply with a double sided quote for any quote request (although the no relevant side will never be executed.) The quotes are continuously renewable; if a market maker submits another quote as a response to the same RFQ, the initially submitted quote by the same market maker should be replaced by the new quote. A double-sided quote cannot be replaced by a single-sided quote or vice-versa. The side of a single-sided quote cannot be amended. However a market maker can cancel the existing double/ single sided quote and submit a new quote to the same RFQ. Bid and offer quantities specified in the quote should be equal or greater than the initial RFQ quantity[39] and should have a quantity and value which is within the Exchange defined limit[40] (Maximum Values/Quantity). Price of the quotes submitted as a response to a private RFQ should be validated against the specific RFQ tick value that is always equal to 0.0001 or against the instrument tick table depending on the instrument configuration.

[33] As defined in "PvtRFQAnonymity" field in MIT305 - FTP Services Reference Data Specification.
[34] The list of instruments which are eligible to receive private RFQs and the firms of the eligible market makers is defined in MIT 309 - FTP Services RFQ Market Maker Reference Data Specification.
[35] As defined in "MaxNumMM" field in MIT305 - FTP Services Reference Data Specification
[36] The RFQ will be expired if it reaches end of the RFQ negotiation duration only.
[37] As defined in "PvtRFQDuration" field in MIT305 - FTP Services Reference Data Specification.
[38] As defined in MIT305 - FTP Services Reference Data Specification.
[39] Please note that in any case only the quantity initially submitted by the requester will be traded.
[40] As defined in MIT305 - FTP Services Reference Data Specification.

Moreover the submitted quote cannot be carried out at a price which is drastically different from the Normal Order Book prices. This controlling is imposed by the Exchange defined price bands[41] (a percentage deviation from bid and ask prices of the Normal Order Book, LTP or previous close price of the Normal Order Book). The market maker should be able to cancel a live quote submitted by himself as a response to an RFQ and to reject the RFQ instead of responding with a quote. Market makers are not obliged to reply to RFQs by either accepting or rejecting and can choose to ignore the quote request.

A quote submitted as a response to a private RFQ will only be routed to the requester. All quotes submitted by the market makers in response to a private RFQ will be accepted by the system only when the Normal Order Book is in regular trading session. Submitted quotes will be expired if the session of Normal Order Book changes from regular trading to any other session.

Different levels of market data pre-trade transparencies (denoted below) for RFQs based on the instrument type and RFQ size are supported by the system.

Pre-trade transparency model	Level of market data disseminated
Full pre-trade transparency model (FPT)	The "final" RFQ order book prior to the execution of the RFQ trade (ie. all live quotes available on the market when the requested decided to executed the RFQ) for the relevant RFQ session will be published. Terminating a RFQ session due to the execution of the RFQ trade, will result in the expiration of the quote responses. This event will be denoted by a series of delete orders being published through the market data gateway for the relevant RFQ session.
Partial pre-trade transparency model (PPT)	An Indicative Quote Information message will be published; this message contains the last indicative price prior to the execution of the RFQ trade.
No pre-trade transparency model (NPT)	None of the quotes submitted nor the bid/ask indicative price for an RFQ assigned with the NPT model will be disseminated.

Table 13 – RFQ Transparency models

The system will determine the applicable pre-trade transparency model based on RFQ value and the pre-trade transparency thresholds defined for each instrument.

5.2.4.3 Accepting a Quote submitted by Market Maker

Requester should be able to instruct the system only to match the RFQ with the highest prioritized quote based on the price-time priority. It is not allowed to select a specific quote to match with since matching to the best available quote is the only option. If the requester is not interested in any quote, then he can ignore it. The quantity that the requester is willing to trade should be equal to the initial RFQ quantity. The requester can accept a quote only if the Normal Order book is in the regular trading session. The trades cannot be carried out at a price which is drastically different from the Normal Order Book prices. This control is imposed by

[41] As defined in "RFQPriceDevPerc" field in MIT305 - FTP Services Reference Data Specification.

the Exchange defined price bands[42] (a percentage deviation from bid and ask prices of the Normal Order Book, LTP or previous close price of the Normal Order Book). If the price at which an execution takes place falls outside the allowed range, the corresponding quote response sent by the requester should be rejected by the system. The requester can resubmit Quote Response messages to accept a quote until a match is found (respecting the price limits provided) or until the RFQ process is terminated whichever occurs first. Once the Quote Response is accepted by the system then an RFQ trade is executed between the requester and the market maker quote that was accepted. Market maker whose quote got accepted as well as the requester should be notified of the trade; all the market makers (except the one who got the execution) who received the initial quote request message and who have live quotes at the time of the execution would receive a message indicating the expiration of the quotes. At the end, all the market makers to whom the RFQ was initially forwarded but who do not have live quotes at the time of the execution will not receive any message indicating the completion of the RFQ.
All trades generated from the private negotiation process are communicated via market data.
Clearing and settlement of such trades follows the same logic as per the current Normal Order Book as defined for the relevant instrument.

5.3. Cross Order types

On Millennium Exchange it's possible to enter the Cross order. Table below summarises these further order types supported on Millennium Exchange:

Cross Order Type	Description
Internal Cross	A dual sided order, agreed or identified within a single member firm. The price of the order must be within the spread as described in section 6.3.
Internal BTF	A dual sided order, agreed or identified within a single member firm, that will execute with each other side at a price between visible best bid – a configurable percentage and visible best offer + configurable percentage (including extremes). The percentage will be determined by the Exchange.
Committed Cross	A single sided order, agreed or identified by two different member firms. The price of the order must be within the spread as described in section 6.3.
Committed BTF	A single sided order, agreed or identified by two different member firms, that will execute with the other side of BTF at a price between visible best bid - configurable percentage & visible best offer + configurable percentage (including extremes). The percentage will be determined by the Exchange.

Table 14 – Cross Order Types

[42] As defined in "RFQPriceDevPerc" field in MIT305 - FTP Services Reference Data Specification.

5.3.1. Cross Order entry fields

The following table shows which fields are mandatory and which are optional for a Millennium Exchange Cross Order.

Field	Required	Description	Possible Values
Instrument	Yes	The unique identifier of the security.	
Cross ID	Yes	The unique ID of the Cross/BTF Order	
Cross Type	Yes	The type of the cross order	- Internal Cross - Internal BTF - Committed Cross - Committed BTF
Order Type	Yes	Type of the order	- Limit
Side	Yes	Side of the cross order	
Quantity	Yes	Order quantity	
Price	Yes	Price of the order	
Capacity	Yes	Capacity of the order.	- Any other trading capacity (AOTC) - Agency - Dealing on own account (DEAL) - Principal - Matched Principal (MTCH)
Trading Party	Yes	The trading party of the order is identified by this field. For Exchange users this will be the trader group	
Client Reference	No	This will be the client reference of the order	
Clearing Account	Yes	Identifies the clearing account for the order	- Client - House
Client ID	Yes	Identifier of the client of the member firm.	- None (when capacity is Dealing on own account (DEAL) or Matched Principal (MTCH) - AGGR (in the case of aggregated orders) - PNAL (in the case of orders pending allocations) - Short Code[43]

[43]Client ID, Investment Decision Maker and Executing Trader will be provided by the member firm as Short Codes:

- on the Native Protocol, the short code will be a 4 bytes field so a value between 4 and 2^{32} - 1.

Investment Decision Maker ID	Yes	Identifier of the person or the algorithm within the member firm who is responsible for the investment decision.	- None (when the investment decision in relation to the order was not made by a person or algorithm within the member firm) - Short Code[44]
Executing Trader ID	Yes	Identifier of the person or algorithm within the member firm who is responsible for the execution of the order.	- CLIENT (when the execution of the order was not done by a person or algorithm within the member firm) - Short Code[45]
Qualifier	Yes	Specifies: • If the Client ID is: - a LEI (Legal Entity Identifier) for Legal Entities - a National Client Identifier (e.g. Fiscal Code for Italy) for Natural Persons • If the Investment Decision Maker ID is: - a National Client Identifier for Natural Persons - an Algorithm • If the Executing Trader ID is: - a National Client Identifier for Natural Persons - an Algorithm	- Algorithm: applicable only for Investment Decision Maker ID and Executing Trader ID. - Legal Entity: applicable only for Client ID - Natural Person It will be required to specify the field Qualifier for a Short Code.
Algorithm Flag	No	Provides the ability to specify if the order was generated by an algorithm.	
DEA Flag	No	A flag to denote whether the order was submitted to the trading venue using Direct Electronic Access (DEA).	

Table 15 – Cross Order Entry Fields

Only TIF = DAY is allowed for Cross Orders.
Execution Report message generated for Cross Orders, submitted on a Cleared instrument, will include as a Counterparty Firm the same party submitted with the

- on the FIX the short code will be a number between 4 and 2^{32} - 1

The association between the Short Code and the corresponding Long Code will have to be provided to the trading venue via the Member Portal..

[44] Client ID, Investment Decision Maker and Executing Trader will be provided by the member firm as Short Codes:

- on the Native Protocol, the short code will be a 4 bytes field so a value between 4 and 2^{32} - 1.
- on the FIX the short code will be a number between 4 and 2^{32} - 1

The association between the Short Code and the corresponding Long Code will have to be provided to the trading venue via the Member Portal.

[45] Client ID, Investment Decision Maker and Executing Trader will be provided by the member firm as Short Codes:

- on the Native Protocol, the short code will be a 4 bytes field so a value between 4 and 2^{32} - 1.
- on the FIX the short code will be a number between 4 and 2^{32} - 1

The association between the Short Code and the corresponding Long Code will have to be provided to the trading venue via the Member Portal.

New Order Cross Message, while in Trade Capture Report message, sent via Post Trade Gateway, the Counterparty Firm will be the CCP.

5.4. Price Format Code ("tick size")

The Price Format or tick size is the minimum valid increment in which order and quote prices can be entered and displayed. Each tick size is a numeric amount, representing a multiple of the unit of currency in which the instrument is quoted, and is identified by a single letter price format code.

If the price of an order/quote is not a multiple of the tick size on entry it will be rejected.

Tick sizes may either be 'static' or 'dynamic':

- a static tick size is a single, fixed value applied to all orders / quotes in a specific security until amended by the Exchange;
- where a dynamic tick schedule is in place the tick size in operation is determined with reference to the intended price of the incoming order / quote.

5.5. Order book priority

Millennium operates on a price-time priority basis. As per price-time priority, the buy order or the bid of a quote having the highest price will have the highest priority in the order book; as per price-time priority, the sell order or the offer of a quote having the lowest price will have the highest priority in the order book.

Displayed parts of orders take precedence over non-displayed parts at any price point. Further explanation for non-displayed part of icebergs can be found in section Iceberg Orders.

6. Order Behaviour

Customers should note the following features that are described in more detail in the following sections:

- Support for Stop and Stop Limit Orders
- Un-Priced Limit Orders
- Changes to the way priority and executions are handled for iceberg orders
- Cross Orders
- Change to Order Management

6.1. Stop and Stop Limit Orders

Definition of Stop and Stop Limit Orders

A Stop Order is a Market Order that will be parked until the stop price is met. The trigger for electing Stop Orders is based on the Last traded price. At this point, the order is injected into the order book as a 'regular' un-priced market order e.g. does not persist on the book.

Stop and Stop Limit Orders will only be injected onto the book during continuous trading. If an expiry time is specified for a Stop order whilst parked then it will be deleted without being injected onto the book. Participants may modify Stop and Stop Limit orders whilst parked.

The order Time In Force is generally applied once the order is injected. However, participants should note that only specified Time In Force are supported, depending on the trading phase. Any Stop or Stop Limit orders entered with a Time In Force that is not supported will be rejected.

Time In Force	Valid during Continuous Trading
DAY	Y
GTC	Y
GTD	Y
GTT	Y
IOC	Y
FOK	Y

Table 16 – Stop and Stop Limit order Time In Force

If an IOC/FOK stop order is elected/triggered, it is treated by the system as an incoming IOC or FOK market order. If an IOC/FOK stop limit order is elected/triggered, it is treated by the system as an incoming IOC or FOK limit order. Unelected stop and stop limit orders with the time qualifier IOC or FOK expire on market close.

Injection Rules for Stop and Stop Limit Orders

Stop and Stop Limit orders are injected on the basis of the last automated trade price (including Uncrossing Trades)

- Stop and Stop Limit buy orders will be injected if the last traded automated trade price is equal or greater than the stop price
- Stop and Stop Limit sell orders will be injected if the last traded automated trade price is equal or less than the stop price

An incoming Stop or Stop Limit Order will be injected on entry if the stop price is already reached. If there has been no automated trading on the day of entry then any incoming Stop or Stop Limit order will be parked.

If multiple Stop and Stop Limit Orders are injected onto the book then the order of injection will be based on the stop price value and time of entry.

- Eligible Stop and Stop Limit buy orders with the lowest stop price will be injected first.
- Eligible Stop and Stop Limit sell orders with the highest stop price will be injected first.

- Stop and Stop Limit Orders at the same stop price are injected based on time priority.

After uncrossing, order of injection will be as follows:

- Orders will be injected in terms of the difference between their stop price and the auction price.
- The buy or sell order with the greatest difference between its stop price and the auction price will be injected first.
- If multiple orders are at the same difference (buy and sell), the oldest order will be injected first.

6.2. Un-Priced Limit Order

An Un-Priced Limit (UPL) Order allows clients to submit un-priced orders which converts to a limit price based on the currently available best bid and offer of the instrument's order book.
An UPL orders must be injected without specifying the limit price, otherwise will be rejected . Such orders will be treated as limit orders with a price assigned as follows:

- Buy orders: Immediate better price point (defined by tick structure) compared to the best visible bid;
- Sell orders: Immediate better price point (defined by tick structure) compared to the best visible offer.

In case, at the submission time, the best bid (in case if the aggressing UPL order is a buy order) or the best ask (in case if the aggressing UPL order is a sell order) are not available in the order book, then the submitted order will be rejected.
An UPL order will aggress through all match-able orders on the contra-side with the limit price assigned and If there is left over quantity of the UPL order after the aggression, then the UPL order will be added to the order book as Limit order with the assigned limit price.
If the UPL order did not receive any execution upon submission then the UPL order will be added to the order book as Limit order with the assigned limit price.

If the UPL order is entered with a TIF of FOK or IOC, then the order will be treated as a normal limit order with the assigned limit price and adhere to the FOK or IOC trading rules.
Un-Price Limit Orders are allowed to be submitted during continuous trading only.
The order Time In Force is generally applied once the order is injected. However, participants should note that only specified Time In Force are supported, depending on the trading phase. Any Un-Priced Limit orders entered with a Time In Force that is not supported will be rejected.

Time In Force	Valid during Continuous Trading
DAY	Y
GTC	Y
GTD	Y
GTT	Y
IOC	Y
FOK	Y

Table 17 –Un-Priced Limit order Time In Force

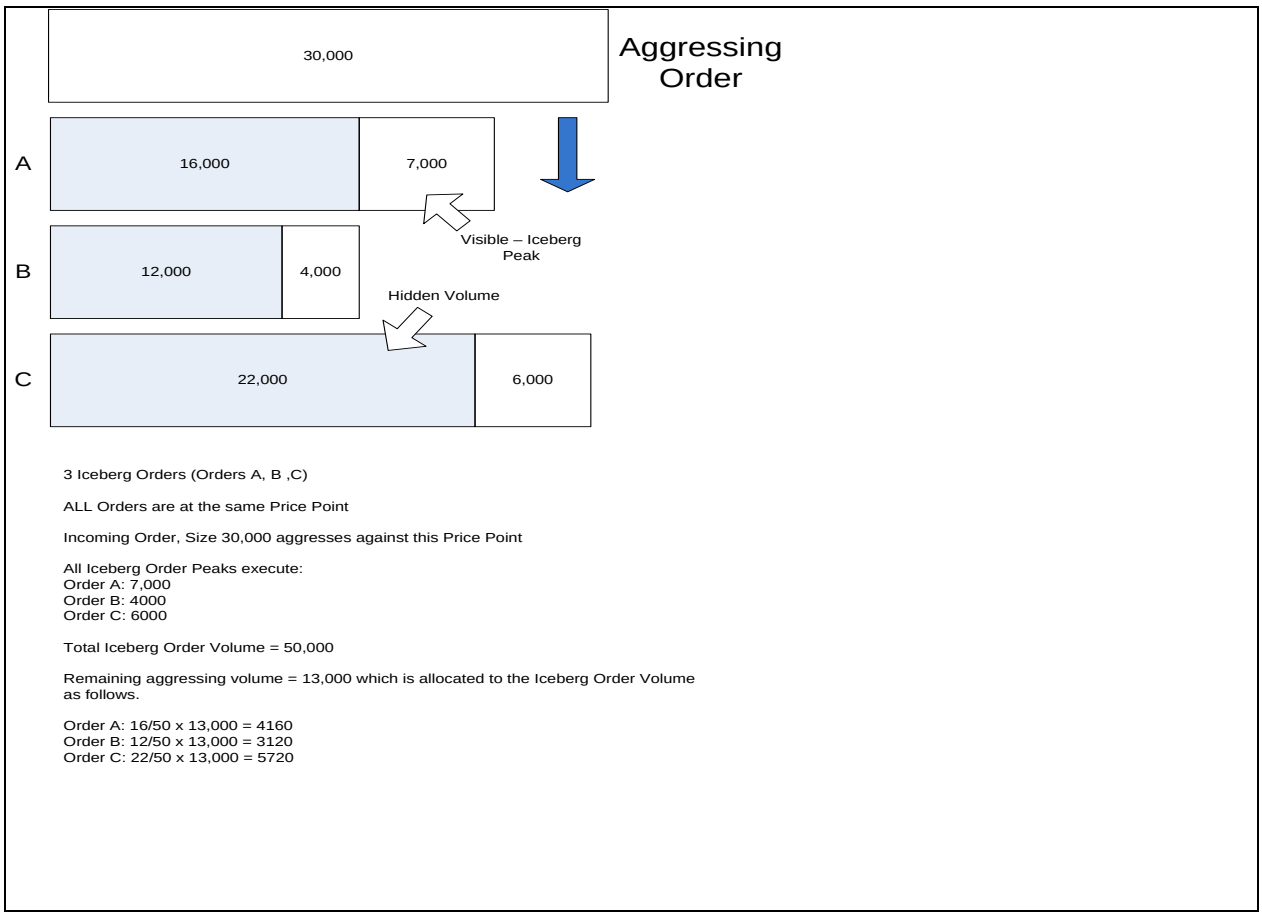
6.3. Iceberg Orders

The display (peak) quantity of an Iceberg Order is refreshed once the display quantity has been fully executed. On refresh, the peak will be prioritised after all existing, visible orders at that price point. Customers have the option to have the refreshed peak size randomised. Using the randomised peak size refresh iceberg order type, on each peak refresh, the size will be randomised within a set band above the value of the initial peak size entered. The Millennium Exchange Business Parameters document provides the applicable maximum percentage above the initial peak size that the randomised peak refresh size could be. Customers are always able to opt for fixed peak size for all iceberg orders where they prefer.
It is worth noting how the following scenarios will be handled:

- If the incoming order is sufficiently large then each peak will be executed against in time priority as today. However, once peak volume of all iceberg orders at a price level has been fully executed then any remaining incoming volume is allocated to the hidden volume of each iceberg order pro-rated on the remaining size of each iceberg order. Note that, in such situations, participants will receive two executions for each iceberg order – one for the visible, and one for the hidden volume.

This approach is illustrated below. Order sizes are for illustrative reasons only and do not reflect any actual configuration or market model.

Figure 6 – Iceberg Order Execution



If there are any existing Iceberg orders at the beginning of an auction call, these will be expired without considering them for the auction call. Also, if an Iceberg order is submitted during an auction call it will be rejected by the system.

It should be also noted that when a passive iceberg order receives an execution, the execution takes place first from the visible quantity. If there is left over quantity of the aggressive order after executing the visible quantity and there are no other orders at the price point, the rest of the execution takes place from the hidden quantity of the order. When the disclosed portion of an iceberg order is exhausted, if there is any left over quantity in the hidden portion, the order gets replenished based on the replenishment method (fixed or random).

Iceberg orders are subject to minimum size validation at order entry and at user-triggered modifications, as concerns the total quantity of the order (visible plus hidden) and of the visible peak.

6.3.1. Modification of an Iceberg Order / Stop Limit Orders

When modifying an Iceberg order a participant must submit both a value for Order quantity and Disclosed quantity. If the latter is set to a quantity greater than the actual visible peak of that order on receipt by the trading system, the order will lose time priority.
Customers cannot switch from a randomised peak size refresh iceberg order to a fixed peak size refresh iceberg order, or vice versa.

6.4. Cross Order and Block Trade Facility

Participants can use the Cross Order functionality to enter an already agreed/identified trade to the trading system. Cross Orders are hidden (e.g. they are not disseminated via public data feeds) and, apart for price controls described below, do not interact with the public order book. The Cross Order functionality is of two types: Cross Orders and Block Trade Facility (BTF).

If the trade is agreed or identified within a single member firm, it will be considered as an "Internal Cross/BTF" whereas if the trade is agreed or identified by two different member firms, it will be referred to as a "Committed Cross/BTF".
If case of Internal Cross or Committed Cross Order, depending on specific market configuration and liquidity of the instrument, the price of the order must be within the volume weighted average bid price and volume weighted average offer price available in the order book (the "VW spread"), for the size of the incoming cross order, calculated considering visible orders only. In case the total cumulative size on the order book, on one or both sides, is less than the size of the cross order, the VW spread is calculated on the basis of the total visible quantity in the order book.

In case the volume weighted bid or offer price (or both) cannot be determined (no visible orders available on one or both sides of the order book), then the cross order:

- for liquid instruments, will be rejected;[47]
- for illiquid instruments, will be checked against the Last Trade Price (or, in case no LTP is available, the Previous Close) plus/minus a pre-defined percentage. A maximum permissible age is assigned to the Previous Close Price in terms of number of trading days. In case the age is above the predefined maximum and the Previous Close price is considered for this check, the cross order will be rejected.

Cross Order may be disabled for some instruments, according to the Volume Cap Mechanism defined by Art. 5 of MiFIR.

If the type is Internal BTF or Committed BTF, the price of the order must be within the spread defined by:

Visible best bid - a configurable percentage AND visible best offer + a configurable percentage. The above will include the extreme values of the spread as well.

Participants should note that once an "Internal Cross Order" or "Internal BTF" is accepted, the two sides will immediately be matched as per the normal matching

[47] For non equity instruments, Cross orders will be available on illiquid instruments only.

rules and the resulting trade will be executed and notified to the Participant who entered the order.

In case of an incoming “Committed Cross Order” or “Committed BTF”, the system will look for a corresponding Cross Order with the same Cross ID in the system. If not found, the Cross Order will be cached. Once an opposite corresponding Cross Order is submitted to the system, the two orders will immediately be matched and the resulting trade will be executed and notified to the Participants.

6.4.1. Cross Order behavior

Cross Orders are allowed only during the Continuous Trading session.
The last traded price is not updated by a trade resulting from Cross Orders.
For this reason:

i) High Price and Low Price for the day will not include prices of Cross Orders;
ii) Stop or Stop Limit Orders will not be elected due to the execution of a Cross Order trade);
iii) Prices of Cross Orders will not influence circuit breaker validations for the following trade;
iv) Cross trades will not be considered for any closing price calculation (either as the final automatic trade or as part of the VWAP).

Cross Order trades will update the statistics such as Volume and Turnover for on-book trades.

6.4.2. Block Trade Facility behavior

BTF Orders are allowed only during the Continuous Trading session.
The last traded price is not updated by a trade resulting from BTF Orders.
For this reason:

v) High Price and Low Price for the day will not include prices of BTF Orders;
vi) Stop or Stop Limit Orders will not be elected due to the execution of a BTF Order trade);
vii) Prices of BTF Orders will not influence circuit breaker validations for the following trade;
viii) BTF trades will not be considered for any closing price calculation (either as the final automatic trade or as part of the VWAP).

BTF Order trades will update the statistics such as Volume and Turnover for on-book trades.

6.5. Order management

6.5.1. Order modification

The following aspects of orders present in Millennium Exchange may be updated by participants:

- order quantity
- order price (where applicable)

- date and time validity (where applicable)
- client reference

Modifications of an order may result in a change in its price and/or time priority and public order code as set out in the table below.

Modified field	Modification	Impact on priority
Order Quantity	Increase	Loses time priority
	Decrease	No impact
Order price	Improve	Gains price priority Loses time priority
	Worsen	Loses price priority Loses time priority
Date and time validity	Any change	No impact
Client reference	Any change	No impact

Table 18 – Impact of order modification on order priority

6.5.2. Exchange deletion of orders

Under certain circumstances orders will now be deleted on Millennium Exchange without a corresponding confirmation being sent to participants by the Exchange. These are described below.

- On the last day of trading in an instrument if any orders reside on the book
- Outside regular trading hours due to a reference data change e.g. if a clearing arrangement is no longer valid[48]
- Following loss of the Primary Site
- Partial loss of a Matching Engine requiring the Exchange to re-start processing from a previous known point.

In all cases participants should request an Own Order Book Download to confirm the current state of the order book.

6.5.3. Specifying ClOrdID

Participants should ensure that ClOrdID is unique for a trading day across a CompID / TraderGroup and for the life of an order. For performance reasons MIT Exchange will not carry out any duplicate detection based on ClOrdID. Should a participant re-send an order with the same ClOrdID that has previously been used then it **will** be processed. In this situation and to guarantee that orders can be successfully

[48] This will be under exceptional circumstances

managed it is recommended that customers use OrderID when modifying active orders.

Participants should also ensure that their ClOrdIDs are unique across trading days (e.g. embed the date within the ClOrdID).

6.5.4. Trade Cancels

Market Supervision may cancel a trade until the day before the settlement date. For trades cancelled after the execution date the server will transmit only the Trade Capture Reports via Post Trade Gateway to the relevant clients to notify them of a trade cancellation.

7. Order Book Execution

7.1. Execution Priority

The trade execution will always happen as per the price-visibility-time priority which is explained below:

- within a price point, the visible quantities of all the Fully Visible and Iceberg Orders have the highest priority over any hidden quantities. The visible quantities of all orders will be executed based on their time priority within the price point;

- when a parked order (Stop and Stop Limit) is injected into the order book, the time priority is considered based on the order injection time not based on the original submission time of the order.

7.2. Execution Criteria

If the incoming order quantity or the remainder is equal to or greater than the cumulative total quantity (including hidden quantity of Iceberg Orders) at a contra side price point, then the system executes against the total quantity of each order based on the price-time priority.

If the incoming order quantity or the remainder is equal to or greater than the cumulative quantity (including hidden quantity of Iceberg Orders) of Fully Visible and Iceberg Orders at a contra side price point but less than the cumulative total quantity, then the system first executes against the total quantity of each Fully Visible and Iceberg Order based on the price-time priority of those orders.

In these two cases when executing against an Iceberg Order, a single execution will be generated against both the visible quantity and the hidden quantity.

If the incoming order quantity or the remainder is less than the cumulative quantity of Fully Visible and Iceberg Orders at a contra side price point, but it is equal to or greater than the cumulative visible quantity of the price point, the system first executes the visible quantity based on the price-visibility-time priority.
After the execution of the visible quantity, the remainder of the incoming order is pro-rated among the hidden quantities of the Iceberg Orders based on the ratio of hidden quantities of the Iceberg Orders.

Visible quantity of an Iceberg Order is replenished upon executing the full quantity of an incoming order.

When an incoming order executes against a passive order the trade price will be the price of the passive order[49].

If, after executing against all appropriately priced orders in the order book, there is a remainder, the incoming order will either be added to the order book, or will be expired based on the order type or the time in force.

The steps outlined above will continue until the incoming order is fully filled or the passive orders at the price point are fully filled.

7.3. Self Execution Prevention (SEP)

Member firms are offered the choice to prevent their orders from self matching, via automatic cancellation of the incoming or resting order involved in self-execution.

Participants shall identify the FIX CompIDs/Native Users they want to prevent executing orders against each-other, these Users will be included in the same SEP Group, configured at the Exchange. When a CompID is assigned to a SEP Group, If two orders sent by this CompID cross each other the SEP is applied

The following Self Execution Prevention attributes can be implemented at SEP Group level:

- Cancel Incoming Order (CIO), leaves the resting order;
- Cancel Resting Order (CRO), allows the incoming order to be executed/rest.

Self-Execution Prevention applies during Continuous Trading only (including CPX phase) and does not apply to single side and double side quotes and to “Fill-or-Kill” orders.

7.4. Auctions

Auctions are intended to concentrate liquidity at these specific key times. Auctions occur as follows:

- the Exchange’s order book trading day commences with an opening auction
- if a security in continuous trading breaches its price monitoring it will enter an auction call period
- the closing price is generated from the closing auction process

At the commencement of an auction call, all orders that have been parked for that specific auction will be injected immediately. Orders may be entered, modified and deleted during an auction call, (along with any extensions and random periods) but no automated execution occurs. Throughout the entire period the Exchange

[49] Except for the case described in 4.4.2 for the SeDeX market.

disseminates the indicative auction price and uncrossing volume. This will be updated whenever orders are added, deleted, modified and result in a new auction price / volume.

Before an auction generates an execution it will check whether a price monitoring extension should be invoked.

To avoid participants knowing the exact time of uncrossing a configured random period precedes invocation of each extension and the final uncrossing.

7.4.1. Price monitoring extension

A price monitoring extension is triggered when at the end of the call period (or any preceding auction extension period) the indicative auction match price is greater than a configured tolerance away from the dynamic reference price (see below).

The price monitoring extension consists of an extension to the auction call period of a configurable amount of time.

The extra time a price monitoring extension provides draws attention to a potential price movement, giving participants the chance to review the prices of the orders that have been entered and if appropriate add, delete or amend.

7.4.2. Uncrossing algorithm

The execution price generated for an auction will be as follows:

Step 1 - The auction price will be the price at which the largest number of instruments can be executed. I.e. The price at which volume is maximized.

Step 2 - If the volume is maximized at multiple prices then the auction price will be the price at which the Order Imbalance[50] is minimized. The Order Imbalance at a particular price will be the difference between the following two quantities:

for the buy side the aggregate quantity of all the Market Orders as together with all the Limit Orders' having a price greater than or equal to the price being considered;

for the sell side the aggregate quantity of all the Market Orders as together with all the Limit Orders' having a price less than or equal to the price being considered.

Step 3 - If the Order Imbalance is minimized at multiple prices then the concept of Market Pressure will be used. Market Pressure will be calculated as follows:

if all the prices at which the Order Imbalance is minimized have a buy imbalance, then the highest price will be the auction price. (An Order Imbalance on the buy side means there will be a remaining quantity in the buy side; this remaining buy pressure is likely to cause the price to rise after the auction; hence the highest price is taken);

[50] During any of the auction call sessions (which can be Opening, Closing, etc) the imbalance quantity and the imbalance side will be disseminated via the market data feeds

if all the price points at which the Order Imbalance is minimized has a sell imbalance, then the lowest price will be the auction price (an Order Imbalance on the sell side means there will be a remaining quantity in the sell side; this remaining sell pressure is likely to cause the price to fall after the auction; hence the lowest price is taken);
if the prices at which the Order Imbalance is minimized have buy and sell imbalances, then the highest price out of the prices with buy imbalances and lowest price out of the prices with sell imbalances will be chosen.

Step 4[51] - If step 3 resulted in two prices then the auction price is determined as below:

if the STATIC Reference Price is equal or greater than the highest price, then the highest price is chosen as the auction price;
if the STATIC Reference Price is equal or less than the lowest price, then the lowest price is chosen as the auction price;
if the STATIC Reference Price is in between the two prices, then the STATIC Reference Price is chosen as the auction price.

7.4.3. Antispoofing mechanisms during auctions

In order to improve the price discovery process and to avoid conduct involving the issue and cancellation of orders for large quantities, designed to influence auction price formation at the end of a session, so-called antispoofing mechanisms have been introduced to monitor the trend of the key defining elements of the book (indicative prices, tradable volumes and corresponding variations) in the last seconds of the auction phase.

The process applies all auctions (opening, closing and volatility) and it postpones closure by few moments only in case of successful verification and it would be reiterated several times until the end of the time scheduled for the end of the auction.

The final validation period duration and the stability criteria of indicative auction prices and corresponding volumes are established in the Guide to the Parameters.

7.5. Trading price monitoring

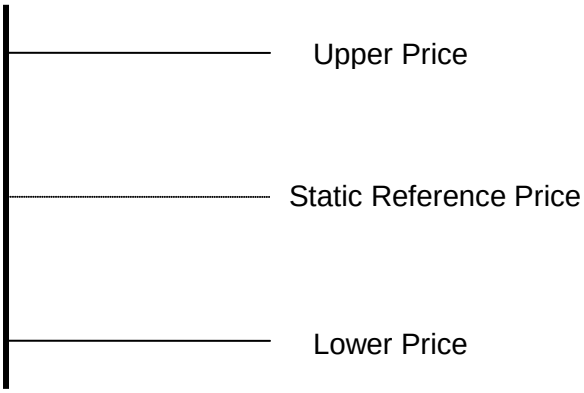
Order books can be subject to rapid price movements. Millennium Exchange operates price monitoring functionality that tracks the prices at which automatic executions are due to occur and will halt continuous trading / delay an auction execution if certain price movement tolerances would be breached.

The presence of price monitoring functionality in Millennium Exchange does not remove the requirement for participants' systems to have adequate safeguards in place to avoid erroneous order inputs.

7.5.1. Price Bands

[51] This is a different step introduced with MIT Trading

Price bands are defined based on an upper and lower demarcation based on the Static Reference Price and if it does not exist the price bands will not be computed.



The Static Reference Price is the most recent auction price[52] from the current day. Where the most recent auction did not generate an execution, it will instead be the first automated trade that followed the previous auction period.

With regard to the SeDeX market, the Static Reference Prices shall be set equal to the average price of the specialist's quotes displayed at the end of the quoting period. In the event that it is not possible to determine such prices, the Static Reference Prices shall be the previous day's closing price until the conclusion of the first contract and, subsequently, it shall be the price of the first contract concluded[53].

Against the Static Reference Price, the offset will be defined as a percentage.

Price bands validation is applied, during all the trading sessions, at the below scenarios:

- Entry of a new order
- Amendment to an existing order
- An injection of an already parked order to the order book (for example after a parked Stop/Stop Limit order is injected).

Price bands do not apply to Market or Stop orders. They are only applied to Limit, Stop Limit and Market to Limit (when injected) orders as well as to Quotes.

Limit orders and quotes will be rejected due to the following conditions:

- Buy order or an amendment to a buy order whose prices are greater than the Upper Price Band or less than the Lower Price Band.

- Sell order or an amendment to a sell order whose prices are greater than the Upper Price Band or less than the Lower Price Band.

[52] This is not applicable to the Markets where is not defined the auction (i.e. SeDeX Market)

[53] With regard to the SeDeX market, the Dynamic Reference Price shall be set equal to the average price of the specialist's quotes displayed at the end of the quoting period. In the event that it is not possible to determine such price, the Dynamic Reference Price shall be the previous day's closing price until the conclusion of the first contract and, subsequently, it shall be the price of the latest contract concluded.

- Quotes which have either a bid or offer price that violates the Upper or Lower Price Bands.

Limit orders, Stop Limit orders and Quotes with limit prices equal to the price band price are permitted.

If the GTC/GTD orders, carried forward from the previous day, are priced away from the price bands, those should be expired before the beginning of the trading (this will be done at the Market Open). The Execution Report published to report the expiration should contain the reason “Expired (price band breached)”.

Price bands will be set up at the individual instrument level. Market supervision can switch off price bands validation if required intra-day and can change the price bands intra-day as well.

7.5.2. Circuit Breakers

Circuit breakers will be evaluated against both static and dynamic reference prices.

MTA/MOT Markets

If a circuit breaker is triggered, instrument will move to a AESP (Re-Opening) Auction Call session, where trader groups of member firms can enter, amend and cancel orders/quotes; also when moving to Re-Opening Auction Call, all existing Iceberg Orders will be expired and no new Iceberg Orders will be accepted.

After the defined time duration, the AESP (Re-Opening) Auction will be performed and the instrument will be moved back to Continuous Trading session.

Incoming order that triggers circuit breaker tolerance limits will not be expired and added to the order book (as the instrument moves in to an AESP (Re-Opening) Auction).

ETFplus/SeDeX/TAH Markets

If a circuit breaker is triggered, instrument will move to a Halt session (where trader groups of member firms can only cancel orders/quotes and they cannot enter or amend orders/quotes); after the defined time duration, the instrument will be moved back to Continuous Trading session.

Incoming order that triggers circuit breaker tolerance breach will be automatically expired.

FOK orders that would breach a circuit breaker tolerance limits will be expired upon entry and circuit breaker will not be triggered.

8. Closing prices

MIT Trading Systems can calculate the closing price according to a configured set of rules as described below:

MTA Market

1. Closing price is the Closing Auction Price, if determined
2. If the price of the Closing Auction is not determined (means closing auction did not happen), the weighted average price of the trades executed in the last 'n' ('n' configurable) minutes of the Continuous Trading session[54]
3. If the price of the Closing Auction is not determined and no trades were executed during the defined interval of Continuous Trading session referred to above, the price of the last trade executed during the trading day
4. If no trades were executed, the closing price of the previous trading day

MOT and ExtraMOT Markets

1. The weighted average price of the trades executed in the last 'n' ('n' configurable) minutes of the Continuous Trading session[55].
2. If no trades were executed during the interval of Continuous Trading referred to above, average of a configurable number (e.g. 10) of best bids and offers displayed on the order book during the Continuous Trading session
3. If no bids and offers have been displayed during the Continuous Trading session, the reference price is the average of a configurable number (e.g. 10) of best bids
4. If no bids have been displayed during the Continuous Trading session, the reference price is the previous trading day's closing price.

ETF Market

5. Closing price is the Closing Auction Price, if determined
6. If no Closing Auction occurred, average of a configurable number (e.g. 10) of best bids and offers displayed on the order book during the Continuous Trading session
7. If no bids and offers have been displayed during the Continuous Trading session, the reference price is the average of a configurable number (e.g. 10) of best bids

[54] It should be noted that in case of deviation from the standard trading cycle, the interval to calculate the weighted average price might be less than 'n' configured minutes.
[55] It should be noted that in case of deviation from the standard trading cycle, the interval to calculate the weighted average price might be less than 'n' configured minutes.

8. If no bids have been displayed during the Continuous Trading session, the reference price is the previous trading day's closing price.

SeDeX Market

1. Average of a configurable number (e.g.10) of bids and offers of dual side quotes displayed on the order book during the Continuous Trading session[56].
2. If no dual side quotes have been displayed during the Continuous Trading session, the closing price is the average of a configurable number (e.g. 10) of bids of single sided quotes displayed on the order book during the Continuous Trading session[57].
3. If no single sided quotes have been displayed during the Continuous Trading session, the closing price is the average of a configurable number (e.g.10) of best bids and offers displayed on the order book during the Continuous Trading session.
4. If no bids and offers have been displayed during the Continuous Trading session, the closing price is the average of a configurable number (e.g. 10) of best bids
5. If no bids have been displayed during the Continuous Trading session, the closing price is the previous trading day's closing price

TAH Market

1. The weighted average price of the trades executed in the last 'n' ('n' configurable) minutes of the continuous trading phase. For TAH 'n' will be the whole TAH duration (i.e. n=120)
2. If no trades were executed, the closing price of the daily session (means Static Reference Price)

[56] Quotes submitted during Quoting Period are not considered for Closing Price Calculation.
[57] Quotes submitted during Quoting Period are not considered for Closing Price Calculation

9. Additional Services

The following additional services, not core to any specific trading functionality, will be supported.

9.1. Drop Copy

Millennium Exchange will provide the 'Copy To' functionality by which a copy of Execution Reports generated by one trading user can be sent to a separate drop copy user. However, since only Execution Reports will be sent by Drop Copy, it should be noted that quotes are not supported.

This functionality may be used by trading parties within a firm for supervisory purposes and a trading party may request a copy of all the order related execution report messages generated by the trading system for another trading user (parties) of the same firm.

Full details of the Drop Copy Interface are given in MIT205 – MIT - Drop Copy Gateway Specification.

9.2. Own Order / Trade Book Download

Millennium Exchange will continue to support both the Own Trade Book Download and Own Order Book Download services.

The Own Trade Book Download will be supported via the Post Trade Gateway. In response to a request (sent via a Trade Capture Report Request message) sent by a participant the gateway will return a Trade Capture Report for each trade[58] that has occurred that day for the Firm. It is possible to configure so that download is restricted to pre-assigned specific FIX CompIDs.

Own Trade Book Download will only include those trades that have occurred, have been published or are pending publication on the day of the request.

Participants can use criteria, such as Instrument ID, Trade Status, etc., to perform the trade download. Full details of the Own Trade Book Download service is given in MIT204 – BIT - Post Trade Gateway Specification.

The Own Order Book Download will be supported via the Drop Copy Gateway. Although such a request may be made at any time, the primary purpose of this functionality is to provide trading parties with details of their open orders to assist them during a system recovery. A user parameter will determine the maximum number of own order book download requests a drop copy user trading party can use within a trading day; any request exceeding this amount will be rejected.

[58] Participants can request automatic, off-book, cancelled or all trades

In response to a request (sent via a Mass Order Status Request message) sent by a participant the gateway will return an Execution Report for each active order. Also, client may select to download the current status of each active order for a specified user, for a specified segment, for a specific instrument.

Full details of the Own Order Book Download service are given in MIT205 – BIT - Drop Copy Gateway Specification.

10. Systems and Partitions

The transition to Millennium Exchange will introduce the following architecture in terms of Systems and Partitions.

The MTA, ETFplus, MOT, SeDeX Markets and OPA (Take Over Bid) Service will be hosted in Trading System, whereas TAH Market and Post Trade Transparency Service will be hosted in another dedicated Trading System.

The Markets Load Balancing will be managed using different partitions that can manage up to 10,000 transactions per second.

11. Recovery Model

The transition to Millennium Exchange will introduce a new recovery model in case of serious incident. This is described below.

11.1. Connection

A new recovery model will be introduced alongside Millennium Exchange.

Each participant connection (identified by CompID) will be enabled for access to the trading system via a Primary and Secondary Gateway for each interface:

- FIX Trading
- FIX Post Trade (2 connections , one for Post Trade, one for OTBD)
- FIX Drop Copy (2 connections , one for Drop Copy, one for OOBD)
- Native Trading (2 connection, one for real time messages, and one for recovery)

11.1.1. FIX Recovery

One of the pair of Gateways will be designated the Primary, and the other Secondary. In the event of failure of the Primary Gateway participants should connect / logon via the Secondary gateway. Any attempt to logon to the Secondary gateway outside of any failure event will be refused.

In case of unexpected disconnection from the Primary Gateway participants should attempt to re-connect to the Primary Gateway a total of three times, with 3 seconds between each attempt before attempting to connect the Secondary Gateway.

Likewise, if there are further issues in connecting to the Secondary Gateway a total of three connections, with 3 seconds between them, should be attempted.

After six failed connection attempts (three on each Gateway) this may indicate a serious issue and the Exchange should be contacted for guidance.

Both Primary and Secondary Gateways are duplicated at the Disaster Recovery Site.

11.1.2. Native Recovery

Customers will be allocated two Gateways, one designated as the Primary and one as the Secondary. Although connections to the Secondary will be permitted customers should avoid unnecessary connections to the Secondary Gateway to guarantee the maximum performance.

In case of unexpected disconnection from the Primary Gateway then participants should connect to the Secondary Gateway.

Both Primary and Secondary Gateways are duplicated at the Disaster Recovery Site.

11.2. Disaster recovery site

Millennium Exchange can operate in “active-active” mode. In the event of total loss of the Primary Site the Exchange will activate the Disaster Recovery Site. This procedure is expected to take in the order of indicatively 1 hour.

In the event of disaster then only those trades that have been sent to participants via a Trade Capture Report from the Post Trade Gateway can be guaranteed to have been sent to settlement and clearing. Participants should disregard any trades for which only an Execution Report has been sent and not received on the settlement and clearing systems.

Once the Disaster Recovery Site is invoked then the active orders and quotes entered on the Primary Site will be injected on the book and the trading system re-started. The very latest orders and quotes entered on the Primary Site can be not available on the Disaster Recovery Site. Participants should note that no updated Execution Reports will be sent identifying those orders that have not been uploaded onto the Disaster Recovery Site.

Following this, participants will be asked to connect to the Disaster Recovery Gateways.

As per the current procedure, order book securities will be reinstated in a halt session.

Following recovery to the Disaster Recovery Site it is recommended that all participants should:

- Carry out an Own Trade Download to confirm which trades have been sent to clearing and settlement
- Carry out an Own Order Book Download to confirm that no orders are currently active.

11.3. Exchange market intervention

When a system issue impacting a wide sector of the market is identified, the Exchange will undertake an initial assessment of its severity and impact on its Trading Services. The Exchange has a number of actions it can take that will be enforced at instrument, trading segment, trading cycle, matching engine partition or if necessary whole market level.

11.3.1. Urgent Notices Session

The current system status of the Exchange's services are displayed on its Urgent Notices (www.borsaitaliana.it). This is the mechanism for the Exchange communicating any market intervention actions it takes as result of a service interruption.

11.3.2. Market situation options

Title	Overview	Impact
Halt	Interruption of continuous trading and no further order entry which can be imposed at Instrument / Segment / Trading Cycle / market level	No order / quote entry Deletion allowed No automatic execution No indicative uncrossing prices No impact on closing prices
Market / Partition Suspension	Market or Partition wide suspension of automatic trading and quote dissemination	Total lockout - messages rejected at Trading Gateway(s) No order or trade report entry or deletion No execution No indicative uncrossing prices No impact on closing prices
Halt & Close	Continuous trading disabled and closing prices issued. Very unlikely that there will be further automated trading that day. Can be imposed at Instrument / Segment / Trading Cycle / market level	No order / quote entry Deletion allowed No indicative uncrossing prices Closing prices frozen and disseminated

Table 19 – Overview of different intervention options Exchange may take

12. Service Interruptions Protocol

The term “outage” is used in this section to describe a significant, unforeseen interruption to the Exchange’s customer facing critical IT systems – usually the trading or market data systems. Outages may result from either technological failure or from a physical security/safety issue and will vary in length and severity of impact on the market and its participants.

When an issue is sufficiently serious to constitute an outage, the Exchange will endeavour to follow this outage protocol in its handling of the situation. This protocol should be read in conjunction with the Recovery Model section of this document. For market data information please see MIT303 BIT - MITCH Specification.

12.1. Overarching Principles

In managing outages the Exchange will seek to act in the interests of all market participants and of the wider market. The Exchange will generally seek to keep its markets open even if it has serious system issues. However, if the Exchange considers the orderliness or fairness of our markets and/or the wider market to be impaired by the incident then the Exchange will intervene to pause, halt or suspend the affected market(s).

The Exchange always welcomes feedback from market participants that have been affected by outages – this will be used to improve the handling of any subsequent incidents and to amend this protocol as necessary.

12.2. Different Types of Outage

Since outages can be caused by a variety of different situations it is difficult to be specific or prescriptive about how any particular situation will be managed. Some examples of the causes of outages are:

- Failure/malfunction of significant components of the trading system.
- Sustained or repeated loss of connectivity between customers’ systems and the Exchange’s systems.
- Major delays or gaps in the dissemination or receipt of market data.

The Exchange will use its judgement to decide how best to manage any particular outage and is mindful of the fact that many but not all market participants are now able to trade securities on other trading venues.

12.3. Assessment & Response

The Exchange has a comprehensive internal escalation process to identify and manage its system issues. Most of these system issues are very minor and are entirely invisible to market participants. However, in the unfortunate event that we experience a major service interruption (an outage) we will invoke our incident management procedures and form an incident management team, which is responsible for deciding on the appropriate response to the outage.

In the event of an incident, the Exchange's Urgent Notices Session will commence operation. Participants may also continue to use their existing account manager contacts at the Exchange during such outages.

12.4. Alternative Site Procedures

If the outage relates to a hardware failure or environmental incident in the Exchange Primary Data Centre, the incident management team may decide to invoke the secondary site in order to utilise the Exchange's backup hardware at the Secondary Data Centre.

The likely effort between the invocation of the secondary site and restoration of trading is difficult to forecast exactly but is likely to take in the region of 1 hour. Once trading resumes at the Secondary Data Centre, participants are encouraged to perform an own order book download in order to prepare themselves for the resumption of trading. Importantly, if there has been a significant interruption of service (defined by whether the incident team has been deployed) the Exchange will always restore trading using an auction where at least some minutes notice of uncrossing can be given.

The Exchange undertakes regular tests of its procedures in order to check the technical performance of the system, the readiness of Exchange personnel and to ensure that participants are familiar with the operation of the procedures.

12.5. Closing Prices

In the event of a service interruption, the Exchange has procedures in place to derive closing prices for affected instruments.

12.6. Communication

The Exchange is committed to communicating with customers frequently during an outage and will provide as much information as possible in the circumstances. Given the unpredictable real-time nature of outages it is not possible for the Exchange to guarantee how often communications will be issued but during an outage updates will normally be provided every time the situation changes.

The Exchange has a dedicated Urgent Notices Session, that represents the primary means of communicating with market participants and other relevant parties during an outage. Updates posted on the Urgent Notices Session will always include an indication of when the next update will be provided.

Appendix 1: Certification Test Programme

The Certification Programme is based on regulatory compliance supporting interoperability against the three eligible London Stock Exchange Group (LSEG) venues.
The following Certification Programme applies to anyone connecting a software application to an LSEG Live Service. A Live service is any production Trading or Information Services environment across LSEG.
Under EU and national regulatory requirements (including the ESMA Guidelines on Systems and Controls in a Highly Automated Trading Environment and MiFID II Regulatory Technical Standards) the eligible LSEG venues are required to have procedures and arrangements to ensure fair and orderly trading. This includes requirements for physical and electronic security to protect systems from misuse or unauthorised access and to ensure the integrity of the data that is part of or passes through the systems. The eligible venues are required to undertake standardised certification testing to ensure that members and participants systems used to access the venues have a minimum level of functionality that is compatible with fair and orderly trading on those venues.
Customer non-compliance with this certification programme may constitute a breach of the eligible venue terms and conditions or rules.

A.1 Access to the Live Service

Access to the LSEG Live Services is permitted only when a customer's software application has been certified as being fit for purpose.

A.2 Software Identification

All customer software must be identifiable by a software name and version number. Software applications that do not have both a name and version number will not be certified. Certification is limited to a single version of the named software.

A.3 Certification Policy

Customers are required to certify or re-certify their applications under the following conditions:

- Prior to use the application in the live environment (for new applications)
- The customer modifies the software in any way that directly impacts LSEG interfaces. This includes but is not limited to updates to Gateways, Order Management, Execution Management and Quote Management Software
- The Exchange upgrades its production environment to a later version of software
- The customer is requested to re-certify their application by the relevant venue

If no certifications have been performed during a solar year (because any of the previous conditions occurred), the customer will be asked to self-certify (by sending

an email to the relevant Trading Venue team that look after certifications) that no changes have been applied to the application since the last certification.

London
Stock Exchange

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