MiFID II PRE AND POST TRADE REPORTING SERVICE DESCRIPTION

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Contents

1. INTRODUCTION

This service description document ("**Service Description**") describes the features of the various Trade Reporting Services ("**Services**") offered by Cboe Europe Equities ("**Cboe**").

This Service Description is referred to, and forms part of, the Trade Reporting Services Addendum or Trade Reporting Services Agreement (as applicable).

The Services referred to in this Service Description are comprised of the following:

I. Approved Publication Arrangement ("**APA**"). An OTC trade publication service offered to users for the purposes of assisting them to meet their OTC post trade transparency obligations under MiFID II ("**MiFID**") for equity and equity like instruments (as defined in Regulatory Technical Standard 1 of MiFID) and for some ETC and ETN instruments (as defined in Regulatory Technical Standard 2 of MiFID).

II. Systematic Internaliser ("**SI**") quoting. Provision of quoting facilities to SI's for the purpose of assisting them to meet their OTC pre-trade quoting obligations under MiFID.

III. MTF Reporting ("**MTF**"). A service designed to permit MTF operators with a mechanism to provide post trade transparency for the activity on their platforms.

For the latest version of this Service Description and supporting technical documentation, which shall be treated as incorporated in this Service Description by reference, please refer to our website http://markets.cboe.com (the "**Website**").

2. HOW CBOE WORKS

The Cboe trade reporting environments ("**TRF**") are housed in world-class data centres in Equinix Slough (LD4) and Equinix Park Royal (LD3).

Equinix's LD4 (Cboe Primary) and LD3 (Cboe Secondary) data centres provide a high levels of security, redundant power supplies including an on-site backup generator, and reliable cooling. Data centre personnel are available 24/7 to maintain and service the system.

The TRF environments are distributed across multiple Linux servers to maximise throughput and minimise bottlenecks. More servers can be added easily to expand system capacity.

Outbound quote and trade data is published via Cboe proprietary real time data feeds consumed by major quote vendors as well as direct Trading Participants of Cboe.

Production access to the Services referred to in this Service Description are made available to firms after a successful integration/conformance test with Cboe' support team. Cboe will maintain a customer test/UAT environment in order to facilitate this process.

3. THE SERVICES

3.1 APA Service

The APA Service has been designed to assist firms in meeting their OTC post trade reporting obligations for equity and equity like instruments under MiFID.

Firms can achieve this via electronic submission of trade reports into the Cboe APA system, which are then subject to a validation layer. If the OTC trade reports fall within the parameters described in the following sections they are then published to the market on Cboe' outbound market data.

As part of the APA Service, firms are able to monitor and perform specific administrative functions in relation to trades submitted to the APA Service by means of a set of Administration tools (see Section 20) provided by Cboe. The tools are browser based and provided to authorised users only.

For Swiss securities:

- Cboe has obtained a TDM license from the SIX Swiss Exchange as well as BX Swiss to operate as a Foreign Swiss TDM. As such, remote member firms of either exchange can use Cboe' BXTR APA service to also report their OTC trades in Swiss securities. Please note that firms must inform Cboe of their intention to use this facility.

3.1.1 APA Service and Assisted Reporting

Cboe offers a model (the "Assisted Reporting" model) for APA reporting whereby an investment firm with a reporting obligation is able to utilise the connectivity of another Cboe APA customer. This model is delivered on the same contractual and commercial terms as the standard APA service outlined above.

3.2 SI Quoting Service

According to MiFID an SI is an investment firm "*which, on an organised, frequent and systematic basis, deals on its own account by executing customer order flow in liquid shares outside a regulated market or a multi-lateral trading facility*".

The regulation also defines quantitative thresholds that underpin the definition above. Once a firm has deemed itself to be an SI by assessing its trading against the quantitative thresholds, it then has ongoing obligations with regards to pre-trade quoting in the relevant securities.

The SI Quoting service permits an SI to make its quotes public via electronic submission of quotes into the Cboe systems, which are then published to the wider market by inclusion on on Cboe' outbound market data feeds (hence meeting MiFID "machine readability" requirements).

The quotes will also be attributed in a manner that permits consumers to identify the SI generating the quotes. As part of this mechanism Cboe requests that all firms utilising this service have a registered MIC code that can be used for quote identification purposes.

3.3 MTF Service

The MTF Service assists an MTF operator to meet their post trade reporting obligations under MiFID. The MTF Service helps them to achieve this by disseminating these trades via Cboe's outbound market data. The underlying venue is identified on the trade reports permitting interested parties to attribute volume correctly.

As part of the MTF Service, firms are able to monitor and perform specific administrative functions in relation to trades submitted to the MTF service by means of an Administration

tool (see Section 20) provided by Cboe. The tools are browser based and provided to authorised users only.

4. OPENING HOURS

Subject to Section 5, the Services are available from 07:15 to 17:15 UK time with gateways available for connectivity from around 06:30 UK time.

5. OPERATING CALENDAR

The Services will be offered in accordance with the Cboe trading calendar.

https:// markets.cboe.com/newsroom/hours/europe/

Where a market segment closes early on the Cboe trading platforms, the Services for symbols in that segment will continue to be available for the remainder of APA opening hours for the day.

Where the Cboe MTF and Exchange platforms have an early close, the Services will close 45 minutes after the last on-exchange market closes for order-book activity.

6. MINIMUM LOT SIZE

The minimum lot size is 1 unit/share for all Services.

7. MAXIMUM ALLOWED QUANTITY

The maximum supported quantity is 99,999,999,999 units/shares.

8. SYMBOL UNIVERSE

The universe of symbols supported in the Services is a subset of the following:

- The MiFID reportable universe of equity and equity like instruments, as per the ESMA MiFID databases:
    - o ESMA Equity TTC list
    - o ESMA FITRs database

Cboe will provide a symbol list to users of the Services each day, prior to 07:15 UK time, in order for users to prepare their systems. This list will be made available via the Website.

ISINs that Cboe does not have corresponding symbol/s setup for are handled via unknown symbol processing

Users should be aware that this symbol list may not be a definitive list of reportable instruments so must undertake additional measures to understand the scope of the reportable instrument universe.

For next day symbol addition requests, participants must submit their request to SymbolAdditionsEU@cboe.com by 10:00 UK time. Any requests received after 10:00 will be treated on a reasonable endeavours basis. Ultimately, Cboe reserves the right to add or delete securities from its symbol universe, if Cboe deems it necessary or desirable to do so.

9. SYMBOL CURRENCY

For all Services, firms must report in the currency indicated in the symbol list. Currencies other than the primary currency listed for that symbol may trigger unknown symbol processing described later in this document.

10. DECIMAL PLACES

Cboe supports up to 6 decimal places in the Services. Any trade reports or quotes received with more than 6 decimal places will be truncated.

11. TICK SIZES

Cboe supports any tick size up to 6 decimal places in the Services. Any trade reports or quotes received with more than 6 decimal places will be truncated.

12. TRADE TIMESTAMPING

Trades submitted to the APA Service must be timestamped with an underlying transaction time. Users must prevent their systems simply copying the message sending time into this field.

Cboe strongly recommends timestamping to a minimum of millisecond precision and synchronising system clocks to a highly accurate timesource.

13. LATE TRADES

In line with MiFIR, APA users must endeavour to send trade reports in as near to real time as possible and no later than one minute after execution (unless publication deferral applies, as per Section 14).

Trades older than 90 calendar days will not be accepted by the system.

14. TRADES ELIGIBLE FOR DELAYED POST TRADE PUBLICATION

Within the APA and MTF Services, Cboe will support two models for delayed publication of eligible trade reports (an "eligible" trade report being one that meets the delay criteria laid out in Annex II of RTS1).

14.1 Model 1: User "Self Delays" submission to Cboe

The user of the APA "self delays" an eligible trade report, only submitting the report to Cboe once the delay period has ended. The eligibility for delay is therefore the responsibility of the user.   The user must send the underlying trade time to Cboe in order for it to verify if the delay timing has been correctly applied. In the event of an incorrectly applied delay by the user, Cboe will flag the outbound trade report as "late".

14.2 Model 2 : User requests Cboe delays publication

The user of the APA submits a trade report and requests delayed ("deferred" in the technical documentation) publication. Cboe will assess the eligibility of the trade report and delay/not delay as appropriate.

Where the instrument falls into "Unknown Symbol Processing" as described in Section 18 the APA user is still able to request a deferral subject to all of the following criteria being met:

- The currency is one recognised by Cboe
- The ISIN corresponds to an equity instrument, present in the ESMA dataset
- The ISIN has a Most Relevant Market which Cboe has setup in its APA system (where the MRM is not setup, Cboe will use its own market hours for deferral calculation).

See Appendix 1 for Cboe's handling of various trade delay scenarios.

The following sections outline the approaches for certain categories of non-MiFID instruments (for those clients who need to report them).

14.3 Non-MiFID Swiss securities

Trade publication deferrals for Swiss securities use the same delay framework as MiFID securities with the Average Daily Turnover value and the FX rate published by the SIX Swiss Exchange, where available.

15. TRADES OCCURRING OUTSIDE OF OPERATING HOURS

Firms transacting business outside of the opening hours of the Services should queue trades until the next opening time. Reports must be sent into the APA or MTF Services within 1 minute of the Services becoming available.

16. CORPORATE ACTION PROCESSING

16.1 New issues

New symbols can be supported from the "when issued" date.

16.2 Symbol deletions

Symbols will be made inactive in line with the listing market's communications. Where a trade for a symbol is being delayed beyond the date of deletion, Cboe will publish using the pre-deletion static data. The deleted symbol will remain in the symbol file flagged as not live until three days after deletion.

16.3 Stock splits/renames

Symbols will be amended in line with the listing market's communications. Where a trade for a symbol is being delayed beyond the date of change, Cboe will publish using the pre-corporate action static data. The amended symbol will remain in the symbol file flagged as not live until three days after amendment.

16.4 Trading Suspensions

Cboe will not monitor for symbol suspensions, but will continue to accept trade reports which are subject to market suspensions, for example delayed reports. For SI quotes, Cboe will continue to permit quoting.

16.5 Manual Request

In order to request the addition of a symbol/s please contact symboladditionseu@cboe.com.

17. DUPLICATIVE TRADE REPORTS

Cboe requires firms to send original trade reports to the APA Service. Trade reports flagged as duplicate will be rejected.

18. UNKNOWN SYMBOL PROCESSING

In the event of Cboe being unable to resolve an ISIN/Currency/MIC combination to a symbol in the Cboe Symbol Universe, as per section 8 (and assuming the ISIN is correctly formatted), a warning will be sent to the user and the trade report will be published on market data feeds to consumers.

If the ISIN is not in the Cboe Symbol Universe, but is in the MiFID reportable universe (see Section 8), trade delays may still be requested as described in Section 14.

Appropriately permissioned users can view a list of their firm's unknown trades via the secure area of the Cboe website.

19. CORRECTION OF TRADE INFORMATION

Firms are responsible for correcting erroneous trade reports and Cboe provides the means for firms to do this electronically. At the current time only amendments to price or quantity are supported.

Where a firm is not able to correct, submit or delete reports, Cboe has the ability to do so at their request by contacting the TradeDesk.

Where Cboe reports a trade incorrectly it will ensure, once identified, that the error is corrected as soon as is reasonably practicable and notify the submitting firm.

20. APA ADMINISTRATIVE TOOL

Cboe will provide (via a web portal) to APA users a set of web delivered administrative tools in order to permit authorised personnel to enter, view, cancel, amend, release and query trade reports.

As part of the APA Service firms can elect to implement risk parameters to their reported business in order to avoid erroneous trade publication. At the current time, Cboe does not apply any defaults however it is strongly recommended firms review what is available and implement controls they deem desirable.

The web portal will be password protected and, in addition, access control will be put in place to ensure only connections sourced from approved networks can successfully login.

21. PRE ACCEPTANCE VALIDATION

For symbols in the Cboe symbol universe, and in addition to instrument validation checks, Cboe will apply:

1. A price tolerance of 20% from the previous close of the listing market for trades submitted to the APA Service

2. A volume tolerance of >5% of ADT (determined by the Average Daily Turnover (ADT) value specified in the ESMA MiFID databases).

3. A further price tolerance check of 5000% away from the previous close of the listing market for trades submitted to the APA Service

With regards to points 1 and 2 above, if these tolerances are breached an alert will be sent to the user but the trade will be printed to the market.

With regards to point 2 above, the volume percentage triggering the alert is configurable at the client level.

With regards to point 3 above, if the tolerance is breached then the trade is rejected back to the user and no trade will be printed to the market.

22. USER LEVEL AND AGGREGATED POST PUBLICATION REPORTS

Cboe will provide to APA users the following reports:

- Daily trade data downloads.

- Anonymous ranking information.

- Data quality reports.

23. OVERSIGHT OF THE APA SERVICE

Management oversight of the APA Service resides with the CEO of Cboe and ongoing compliance of the Service is performed by the Head of Compliance at Cboe.

24. MESSAGE INTEGRITY CHECKING

All trade information submitted into the TRF environment utilises the industry recognised FIX protocol. Additional validation checks are also be performed from within the application against all submitted trade information. In addition to the portal login, each firm is validated at the application level to further identify and authorise each firm for the use of the Trade Reporting Facility.

25. SYSTEM MONITORING AND SECURITY

24.1 Monitoring

The TRF infrastructure is monitored utilising multiple tools to ensure performance, availability, and uptime.

Logging is enabled throughout the TRF infrastructure to proactively identify issues and to ensure the swift recovery and restoration of services.

External and internal access to the Trade Reporting System is reviewed on a periodic basis to ensure continued compliance and security.

24.2 System Security

The TRF infrastructure is protected by multiple layers of network perimeter controls. All web sessions utilise the SSL protocol to secure and identify the communications to and data entered into the Trade Reporting Facility.

Passwords to utilise trade submission tools are subjected to additional complexity requirements to further enhance the security and integrity of the online session.

In addition to the assigned unique firm logon details and enhanced password requirements, access to the Trade Reporting Facility is further restricted through the use of network level authorisation controls.

Firms shall remain responsible for ensuring that only authorised individuals are permitted to access the Services.

25. RECORD RETENTION

As per MiFID record keeping requirements for Data Reporting Services Providers Cboe will retain records for five years.

26. CONTACTS

https://markets.cboe.com/contact/

Participant Services

participantserviceseurope@cboe.com

+44 (0) 207 012 8902

Trade Desk

tradedeskeu@cboe.com

+44 (0) 207 012 8901

Network Operations (NOC)

noceurope@cboe.com

+44 (0) 207 012 8905

Stock additions/stock queries symboladditionseu@cboe.com

APPENDIX 1: CBOE's DELAYED PUBLICATION LOGIC

This Appendix describes the logic that Cboe will apply to eligible trade reports that users request be subject to delayed publication (both MiFID and non-MiFID securities). This Appendix refers to Equities and Equity Like (RTS 1) instruments.

- For MiFID instruments Cboe will use the Most Relevant Market (MRM) for deferral calculation and publication

- Delay timers calculate a sheduled release time and are based upon the trade time. (i.e. trade time + delay period = scheduled release time)

For trades with a trade time within the APA service hours, the following behaviour applies:

- Where a delay is granted and expires within the APA Service opening hours on the day of reporting, the trade will simply be printed at the sheduled release time.

- Where a 1 or 2 hour delay is granted and expires after the APA service opening hours, the sheduled publication time will be the APA closing time.

- Where an end of day delay is granted and the trade time is within 2 hours prior the end of Trading Hours of the MRM, the trade will be published at noon (12:00) UK time the next trading day of the MRM.

- Where an end of day/end of next day delay is granted, the trade will be published 30 minutes after the close of the MRM on the relevant publication day (T0 or T+1, as appropriate).

For trades with a trade time outside of the APA service hours, submitted at service open, the following behaviour applies:

- Where a trade was eligible for a delay but the delay expired by the time of the APA opening time, the trade will be published immediately. The trade will be marked as late if the trade was arranged after Trading Hours of the MRM and not submitted before the commencement of the MRM's next trading day.

- Where a delay is granted for a trade arranged outside of the APA service hours and the scheduled release time is set for after the open of the APA service the trade will be published at the scheduled release time.

- Where a trade was eligible for end of day delay and arranged outside of the APA service hours but before 00:00, the trade will be published at noon (12:00) UK time, the next trading day of the MRM.

- Where a trade was eligible for end of day delay and arranged outside of the APA service hours but after 00:00 UK time, the trade will publish at end of day +30 minutes the next trading day of the MRM.

For trades in ETCs or ETNs (RTS2) that are eligible for delay, the trade will be published at APA closing time on T +2. Note, the delay in this case is always two working days relative to the trade date.

For non-MiFID Securities with no MiFID ADT, Cboe will not apply any deferral.

REVISION HISTORY

Date	Change Notes
March 2017	• v1.0 Initial draft published.
June 2017	• v1.1 created • Added wording to Section 2 regarding customer test access and Cboe test system • Added wording to Section 3.2 clarifying SI quotes are attributed and that the market data output meets machine readability requirements in MiFID II • Added Section 3.1.1 • Added wording to Section 19. • Added a new Section 25
August 2017	• v1.2 created • Removed draft status and draft watermarks
February 2018	• v1.3 created • Document rebranded • Changes to Section 8 to reflect ESMA data sources • Change to Sections 14 and 18 to reflect the ability to request deferrals on unknown symbols • Change to Appendix 1 to reflect the amended MiFID II deferral behaviour