



FPL EMEA Trade Data Standardisation Working Group

Standards for the Consolidation of Trade Reports and Market Data in Europe

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1 Introduction

1.1 Objective

In the context of improving the quality of post-trade data through the use of standards for post-trade transparency, this document proposes a standard approach to the publication of trade reports in accordance with the requirements laid out in MiFID and MiFIR.

FIX Protocol Limited's EMEA Governance Board has set up the FPL Trade Data Standardisation Working Group (TDSWG) with the main objective of achieving a practical and common solution for standards on post-trade data.

This work has built on CESR's "Technical Advice to the European Commission on Equity Markets: Post-trade Transparency Standards", and proposes a standard approach to a number of current industry identified issues relating to the collection and management of trade reports including:

- Minimising the extent of duplicate trade publications.
- Standards for execution venue identification, instrument identification and timestamps.
- Consistency of trade reporting codes.

It is widely accepted in the industry that the right solutions to data consolidation have to be underpinned by stronger standards for all data. In support of stronger standards for post-trade transparency, this document makes extensive usage of and reference to the Market Model Typology (MMT), being an industry-led proposed data standard for normalisation of trade reporting flags and indicators across European trading venues.

The findings herein propose a standard approach to be adopted across the industry by market participants involved in post-trade reporting in order to shape the clarifications of MiFID post-trade transparency obligations.

It should be noted that this document is based on the proposed legislation laid out in the 2011 issues of MiFID and MiFIR (document references COM(2011)-656/4 and COM(2011)-652/4 respectively). If, as part of the wider review of these proposals, any of these requirements change then the relevant sections of this document will be revised and republished accordingly.¹

1.2 Scope

The focus of this document is initially confined to post-trade data for equity and equity-like instruments as the delivery of post-trade transparency is well understood for these instruments. The scope of equity and equity-like instruments includes the following²:

¹ At the time of publication of this version of the document the final position within MiFID/MiFIR to the mechanism through which a Consolidated Tape or Tapes should be provided and the status of Organised Trading Facilities within equities has yet to be finalised. Whichever final position is reached on these topics would not materially change the recommendations within this document and so it was felt important to proceed with publication that includes reference to CTP/s and OTFs even though this may subsequently not be directly relevant to equity post trade data.

² This is the interpretation as agreed by the members of the TDSWG. This needs to be ratified by ESMA. Specifically excluded from this definition are exchange traded derivatives (futures and options), warrants and structured products.

- Equities, including ordinary and preference shares and rights
- Depository receipts
- ETFs
- Funds and units

Later versions of this document may expand the scope to include:

- Post-trade data requirements for other asset classes (including derivatives on equity instruments).
- Pre-trade data.

1.3 Target Audience

This document covers a broad range of topics pertaining to consolidated market data and trade reporting. As such it is recommended that it be read by the following:

- Compliance, market data and relevant project personnel at operators of all types of firms' in-scope (e.g. regulated markets, MTFs and brokerage houses).
- Compliance, market data and relevant project personnel at buy-side and sell-side firms active in in-scope products and markets.
- Market data vendors.
- Any organisations not covered by the above who are considering becoming an APA or CTP.
- Regulators.

Definitions for terms used here can be found in the next section.

1.4 Definitions

The following definitions are used throughout this document:

- Execution venue – an investment firm or trading platform at which orders can be executed. This includes (but is not limited to) exchanges, MTFs, brokerage houses³.
- UTC (ISO 8601) – Universal Co-ordinated Time – Internationally recognised standard for time format.
- ISIN (ISO 6166) – International Securities Identification Numbering System – ISO standard for instrument identification for certain asset classes⁴.
- ISO 4217 – ISO standard for the identification of currencies⁵.
- MIC (ISO 10383) – ISO standard for the identification of exchanges, trading platforms and markets⁶.

³ This definition of execution venue does not just include automated order matching platforms; it includes all trading activity including manual executions from brokers.

⁴ Further details can be found at http://www.iso.org/iso/iso_catalogue.htm.

⁵ Further details can be found at http://www.iso.org/iso/iso_catalogue.htm.

- ECT – European Consolidated Tape, being a consolidation of trade report data representing trading activity on execution venues covered by the MiFID requirements.

The following definitions are taken from the MiFID and MiFIR documents as referenced above – note these are reproduced here for convenience and the reader is recommended to refer to the referenced documents for the full definitions:

- CTP (Consolidated Tape Provider) – a person authorised to provide the service of collecting trade reports for financial instruments from regulated markets, MTFs, OTFs and APAs and consolidating them into a continuous data stream providing real-time price and volume data per financial instrument.
- APA (Approved Publication Arrangement) – a person authorised to provide the service of publishing trade reports on behalf of investment firms.
- Regulated Market (RM) – a multilateral system operated and/or managed by a market operator, which brings together or facilitates the bringing together of multiple third party buying and selling interests in financial instruments – in the system and in accordance with its non-discretionary rules – in a way that results in a contract, in respect of the financial instruments admitted to trading under its rules and/or systems, and which is authorised and functions regularly and in accordance with the provisions of MiFID.
- Multilateral Trading Facility (MTF) – a multilateral system, operated by an investment firm or a market operator, which brings together multiple third-party buying and selling interests in financial instruments – in the system and EN 26 EN in accordance with non-discretionary rules – in a way that results in a contract in accordance with the provisions of MiFID.
- Organised Trading Facility (OTF) – any system or facility, which is not a regulated market or MTF, operated by an investment firm or a market operator, in which multiple third-party buying and selling interests in financial instruments are able to interact in the system in a way that results in a contract in accordance with the provisions of MiFID.
- Broker Crossing Network (BCN) – an automatic trade matching system operated by an investment firm, not authorised as an RM or MTF.⁷
- Systematic Internaliser (SI) – an investment firm which, on an organised, frequent and systematic basis, deals on own account by executing client orders outside a regulated market, an MTF or OTF.

⁶ Further details can be found at www.iso15022.org/MIC/homepageMIC.htm.

⁷ Under the proposed MiFID/MiFIR rules, BCNs will be superseded by OTFs.

2 Data Standards

2.1 Instrument Identification

Various instrument symbolologies exist for the purpose of identifying financial instruments at various levels of granularity. For example, the ISIN (ISO 6166) identifies instruments at an 'issuer' level (i.e. regardless of where or how it trades) and many markets have their own symbology formats. A single ISIN will, in many cases, represent an instrument that can be traded on multiple execution venues, potentially in different currencies, and settling in different depositories. In order to define standards for a European Consolidated Tape, it is vital that a well-defined approach be taken when determining which execution venues are to be considered valid for the consolidation for a specific instrument.

The approach agreed by the TDSWG is to define an 'instrument' in terms of trade report consolidation by the unique combination of ISIN (ISO 6166) and trading currency. The implications of this for consolidated post-trade data are as follows:

- Where a security shares the same ISIN code across multiple execution venues and executions are reported in the same currency across those venues, this will be represented as a single instrument. This will include stocks such as ST Micro and EADS which settle in different depositories when traded on different venues (see illustration below).

Stock	Trading/Reporting Venue	Venue Stock ID	ISIN	Currency	SEDOL	Valoren	Wertpapier	Securities Depository
ST Micro	Euronext Paris	STM	NL0000226223	€	5962332	322853	893438	Euroclear Paris
ST Micro	Milan Stock Exchange	STM	NL0000226223	€	5962343	322853	893438	Monte Titoli
ST Micro	BATS Trading Europe	STMp	NL0000226223	€	Not Specified	322853	893438	Euroclear Paris
ST Micro	BATS Trading Europe	STMm	NL0000226223	€	Not Specified	322853	893438	Monte Titoli
ST Micro	Turquoise	STMp	NL0000226223	€	Not Specified	322853	893438	Euroclear Paris
ST Micro	CHI-X	STMm	NL0000226223	€	Not Specified	322853	893438	Monte Titoli
ST Micro	Equiduct	STMp	NL0000226223	€	Not Specified	322853	893438	Euroclear Paris
ST Micro	Markit BOAT	Not Specified	NL0000226223	€	Not Specified	322853	893438	Not Specified
ST Micro	Euronext Paris MiFID Trade Reporting	Not Specified	NL0000226223	€	Not Specified	322853	893438	Not Specified
ST Micro	XETRA MiFID Trade Reporting	Not Specified	NL0000226223	€	Not Specified	322853	893438	Not Specified
EADS	Euronext Paris	EAD	NL0000235190	€	4012250	1095306	938914	Euroclear Paris
EADS	CHI-X	EADp	NL0000235190	€	Not Specified	1095306	938914	Euroclear Paris
EADS	XETRA	EAD	NL0000235190	€	Not Specified	1095306	938914	Clearstream
EADS	CHI-X	EADd	NL0000235190	€	Not Specified	1095306	938914	Clearstream
EADS	BATS Trading Europe	EADp	NL0000235190	€	Not Specified	1095306	938914	Euroclear Paris
EADS	BATS Trading Europe	EADd	NL0000235190	€	Not Specified	1095306	938914	Clearstream
EADS	Turquoise	EADp	NL0000235190	€	Not Specified	1095306	938914	Euroclear Paris
EADS	Markit BOAT	Not Specified	NL0000235190	€	Not Specified	1095306	938914	Not Specified
EADS	Euronext Paris MiFID Trade Reporting	Not Specified	NL0000235190	€	Not Specified	1095306	938914	Not Specified
EADS	XETRA MiFID Trade Reporting	Not Specified	NL0000235190	€	Not Specified	1095306	938914	Not Specified

- Where a security shares the same ISIN code across multiple execution venues and executions are reported in the different currencies across those venues, this will be represented as a single instrument per currency. (see illustration below).

Stock	Trading/Reporting Venue	Venue Stock ID	ISIN	Currency	SEDOL	Valoren	Wertpapier	Securities Depository
Royal Dutch Shell A	LSE	RDSA	GB00B03MLX29	£	B03MLX2	1987674	A0D94M	Crest
Royal Dutch Shell A	CHI-X	RDSal	GB00B03MLX29	£	Not Specified	1987674	A0D94M	Crest
Royal Dutch Shell A	BATS Trading Europe	RDSal	GB00B03MLX29	£	Not Specified	1987674	A0D94M	Crest
Royal Dutch Shell A	Turquoise	RDSal	GB00B03MLX29	£	Not Specified	1987674	A0D94M	Crest
Royal Dutch Shell A	Markit BOAT	Not Specified	GB00B03MLX29	£	Not Specified	1987674	A0D94M	Not Specified
Royal Dutch Shell A	Euronext Amsterdam	RDSA	GB00B03MLX29	€	B09CBL4	1987674	A0D94M	Euroclear Amsterdam
Royal Dutch Shell A	CHI-X	RDSAa	GB00B03MLX29	€	Not Specified	1987674	A0D94M	Euroclear Amsterdam
Royal Dutch Shell A	Turquoise	RDSAa	GB00B03MLX29	€	Not Specified	1987674	A0D94M	Euroclear Amsterdam
Royal Dutch Shell A	Markit BOAT	Not Specified	GB00B03MLX29	€	Not Specified	1987674	A0D94M	Not Specified
Royal Dutch Shell A	Euronext Paris MiFID Trade Reporting	Not Specified	GB00B03MLX29	€	Not Specified	1987674	A0D94M	Not Specified
Vodafone	LSE	VOD	GB00B16GWD56	£	B16GWD5	2582928	A0J3PN	Crest
Vodafone	CHI-X	VODI	GB00B16GWD56	£	Not Specified	2582928	A0J3PN	Crest
Vodafone	BATS Trading Europe	VODI	GB00B16GWD56	£	Not Specified	2582928	A0J3PN	Crest
Vodafone	Turquoise	VODI	GB00B16GWD56	£	Not Specified	2582928	A0J3PN	Crest
Vodafone	Markit BOAT	Not Specified	GB00B16GWD56	£	Not Specified	2582928	A0J3PN	Not Specified
Vodafone	XETRA	VODE	GB00B16GWD56	€	Not Specified	2582928	A0J3PN	Clearstream
Vodafone	Frankfurt Stock Exchange	VODE	GB00B16GWD56	€	B17SDS2	2582928	A0J3PN	Clearstream
Vodafone	Tradegate AG	VODE	GB00B16GWD56	€	Not Specified	2582928	A0J3PN	Clearstream
Vodafone	Markit BOAT	Not Specified	GB00B16GWD56	€	Not Specified	2582928	A0J3PN	Not Specified
Dragon Oil PLC	Irish Stock Exchange	DRS	IE0000590798	€	5323218	708432	877789	Crest
Dragon Oil PLC	Turquoise	DRSi	IE0000590798	€	Not Specified	708432	877789	Crest
Dragon Oil PLC	CHI-X	DRSi	IE0000590798	€	Not Specified	708432	877789	Crest
Dragon Oil PLC	Frankfurt Stock Exchange	DRS	IE0000590798	€	Not Specified	708432	877789	Clearstream
Dragon Oil PLC	Markit BOAT	Not Specified	IE0000590798	€	Not Specified	708432	877789	Not Specified
Dragon Oil PLC	LSE	DGO	IE0000590798	£	0059079	708432	877789	Crest
Dragon Oil PLC	Turquoise	DGOI	IE0000590798	£	Not Specified	708432	877789	Crest
Dragon Oil PLC	BATS Trading Europe	DGOI	IE0000590798	£	Not Specified	708432	877789	Crest
Dragon Oil PLC	Markit BOAT	Not Specified	IE0000590798	£	Not Specified	708432	877789	Not Specified

Note the above does not mandate the use of ISIN+currency on actual trade report messages. Any appropriate alternate symbology may be used as long as there is a well defined one to one mapping with ISIN+currency.

2.2 Execution Venue Identification

In setting out the organisational requirements of a Consolidated Tape Provider the revised MiFID documentation states that a CTP will identify 'the trading venue the transaction was executed on' as follows:

- Where the execution venue is an RM, MTF or OTF, then the execution venue will be explicitly identified.
- Where the execution venue is an SI, then the code 'SI' will be used.
- For all other trades, the code 'OTC' will be used.

Where an execution venue is explicitly identified, it will use the venue's Market Identifier Code (MIC - ISO 10383).⁸

2.3 Timestamps

The following will be provided on every trade report:

- Time of execution
- Time of reporting by the execution venue

⁸ Market operators that operate discrete dark and lit books will in most cases have separate MICs for these. However 'integrated' books that contain dark and lit orders in a single book will use a single MIC.

All timestamps will be expressed at least to the nearest millisecond, though if individual execution venues have the capability to report at microsecond level, this will be supported.

If the execution venue or any other intermediary wishes to provide further timestamps (e.g. time of publication by the CTP) then these also will be provided in the same format.

2.4 Currency Codes

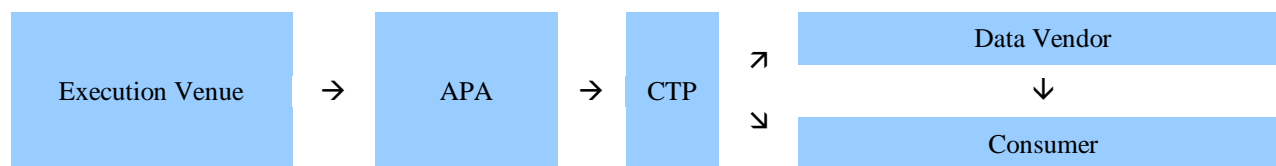
As described above, instruments will be identified as a unique combination of ISIN and trading currency. Prices on trade reports should also be provided in trading currency, and the currency code should be provided on messages to avoid any ambiguity. The currency code to be used should in general be the ISO currency code (ISO 4217) though for stocks that trade in a minor currency (e.g. many UK stocks), then the minor currency will be used.

It is recommended that APAs perform a sanity check of prices on trade reports to ensure that the correct currency is being used, especially for stocks that trade in minor currencies.

3 Data Flows

3.1 Overview

The overall data flow for trade reports will look like this:



It should be noted that execution venues may be APAs themselves (as will generally be the case for RMs and MTFs), and that an individual execution venue may use multiple APAs. However, a specific trade will only be reported to a single APA (and any subsequent amendments to or cancellation of that trade will be sent to that same APA). Every APA will publish to all CTPs. The CTPs will then make this data available to data vendors and/or end consumers.

3.2 Unique Trade Identifier (UTI)

Every trade report will have a Unique Trade Identifier (UTI)⁹. These will be assigned by the APAs and will be completely unique, both across APAs and across days¹⁰.

If an execution venue is not acting as its own APA, then it will report trades to its APA using its own references. The APA will then create the UTI which will be provided when publishing the data onwards. This UTI will be provided back to the execution venue that will be required to store it. The provision of UTI back to the execution venue fulfils two main functions:

- The execution venue should not consider a trade report as having been successfully delivered to an APA unless it receives an acknowledgement containing a UTI.
- The execution venue will be required to supply the UTI on cancellations or amendments to a trade it has previously reported (see next section).

3.3 Cancels and Amends

Cancellation of a trade report will be denoted by use of the MMT 'cancel' indicator¹¹. The minimum details required on a cancellation message are the original report's UTI, publication time (of the cancellation) and this MMT indicator. No other MMT codes need be provided.

Amendment of a trade report will be denoted by use of the MMT 'amendment' indicator¹². As with cancels, the original UTI is to be used. The publication timestamp will be the publication of this

⁹ It is noted that for auction uncrosses, some execution venues will publish a single trade (representing the total volume being uncrossed) and others will publish a separate trade for every order participating in the uncross. In the latter case, these trades will have their own separate UTIs even though they originate from the same event. Similarly, during continuous trading, if one order trades against multiple orders generating multiple executions, these will have separate UTIs.

¹⁰ To achieve this, it is suggested that the UTI takes a standard format, to be defined as part of a wider review facilitated by the TDSWG.

¹¹ MMT level 3.4 = C 'Trade Cancellation'.

¹² MMT level 3.4 = A 'Trade Amendment'.

amendment, not the original trade report. The execution timestamp will be the time of the execution, not the time of the amendment.

Cancellation or amendments from execution venues will reference the original UTI as provided by the APA. Provision of the execution venue's original execution reference is optional¹³, but the UTI should always be used by the APA when matching the cancellation or amendment to the original trade report.

It is noted that some messaging protocols may allow (or even mandate) that amendments be treated as a cancellation followed by a new message. The UTI will not be changed under any cancel or amend scenario (including where an amendment takes place using a cancellation message followed by a 'new' message) except where the execution venue changes their execution reference. For example:

- If the APA or a CTP needs to modify a trade report where the execution venue has not changed anything (i.e. to correct a technical messaging issue), then the UTI will be unchanged. This modification may be published either as an amend or a cancel+new at the discretion of the APA or CTP.
- If the execution venue sends a modification to a trade report (whether using an amend message or cancel+new), but does not change the execution reference, then the UTI will be unchanged. The APA may publish this modification either as an amend or a cancel+new at their discretion, as can any CTPs.
- If the execution venue sends a modification to a trade report (whether using an amend message or cancel+new), and does change the execution reference, then the APA will issue a new UTI. A change in UTI will not be permitted using an amend message, so the APA must publish this as a cancellation of the original trade report followed by a new trade report with the new UTI.

Every amendment or cancellation arising from the execution venue will include a 'cancel/amend reason'. This will be a code with a well-defined list of values (as opposed to free text) A proposed list of what these values should be will be defined by the TDSWG and proposed to ESMA for consideration in their implementing measures.

Cancellations or amendments of trade reports from an APA or CTP will only ever happen for technical reasons or similar. These will also carry a cancel/amend reason code, though this will be separate to the cancel/amend code used by the execution venue. A proposed list of values for this field also will be defined by the TDSWG.

3.4 Implications of Having Multiple CTPs

An environment with more than one CTP creates a number of scenarios in the event that the CTPs handle their messaging differently or erroneously publish different data. The following scenarios are documented assuming there are two CTPs (CTP A and CTP B), though the same principles apply with larger numbers of CTPs.

- Execution venue (or APA) makes an amendment – CTP A publishes this as an amendment, CTP B as a cancel+new.

¹³ Though provision of execution reference on cancellation and amendment messages is optional, the TDSWG recommends that it be provided on such messages, and that the APA cross references the execution reference and UTI against its own records in order to validate the references and reduce the risk of one of the identifiers being incorrect.

- CTP A publishes a trade incorrectly¹⁴ and corrects it using an amendment. CTP B doesn't change anything.
- CTP A publishes a trade incorrectly and corrects it using a cancel+new. CTP B doesn't change anything.

In all three cases, the two consolidated tapes will represent the same change in data but in different ways. To ensure that data can be compared correctly across both tapes, then:

- Where we have multiple messages referencing the same UTI, only the most recent message will be considered to contain the current state of the trade report.
- Any trade count or trade frequency counts performed by tick history or statistics databases will need to count distinct UTIs (as opposed to counting messages)¹⁵.

3.5 Non-Immediate and Delayed Trades

MiFIR and MiFID permit certain types of trades (e.g. very large OTC trades) to be reported on a 'non-immediate' basis. Such trade reports will be flagged using the MMT coding for 'Non Immediate Publication' (level 4, value 1 'Non Immediate Publication').

It is also possible that a trade may be reported or published late due to technical reasons, for example an infrastructure or software fault at the execution venue, APA or CTP. Such trades will be flagged as 'delayed', using a separate field outside the MMT coding¹⁶. The MMT level 4 code will denote whether the trade was itself originally non-immediate or not. Scenarios regarding this can be found in the next section.

3.6 Trade Rejections and System Failures

If an APA rejects a trade report (e.g. due to a validation error), then the execution venue will receive a reject message with no UTI. Similarly, if the APA becomes unavailable then the execution venue will either receive a reject message or nothing at all (depending on the type of failure and the nature of the messaging protocol being used). Either way, the execution venue should consider the trade report not to be published and will need to take steps to publish the report (e.g. using a different APA).

If, by the time the execution venue does manage to report the trade, the reporting time is sufficiently later than the execution time for the trade report to be considered as delayed, then the execution venue will add the 'delayed' flag (as defined above). This applies also if the execution venue is itself temporarily unable to generate the trade report.

If a CTP becomes unavailable and cannot receive trade reports from APAs, then the APAs should resend the reports when the CTP becomes available and, as above, flag them as 'delayed'. If a CTP rejects a trade report (due to validation reasons or similar), then the CTP will need to liaise with the APA to establish the cause of the issue.

¹⁴ It is not expected that a CTP will ever amend a trade report except to correct a technical issue (e.g. system fault or data quality issue, e.g. bad instrument reference data). A change to a trade report that changes something fundamental about it (e.g. its price) is expected always to originate from the execution venue itself.

¹⁵ This comment applies to both a multiple-CTP and a single-CTP environment.

¹⁶ The key point here is that an infrastructure-related unintentional delay to a trade report be clearly distinguishable from a non-immediate trade report. This could be either by using different types of trade reporting messaging, or the same messaging with appropriate flags.

4 The Market Model Typology (MMT)

4.1 Introduction

The MMT is a standardised data model designed to represent all types of trade reports for products within its scope (currently European equities). MMT normalises the historically wide range of venue-specific reporting codes, providing a single set of codes and usage guidelines¹⁷. This section of this document describes how individual trade reports of various types are handled within MMT (i.e. how reports of different types are described through the MMT coding). The Trade Reporting Scenarios section later in this document covers the types of trade report required under various scenarios, making reference back to this section for the detail of how each trade report is to be coded.

4.2 Basic Scenarios

The following table summarises the main types of trade reporting scenarios and how they are represented in the MMT. The MMT codes used here are using MMT version 2.0.

Scenario	MMT Level 1	MMT Level 2	MMT Level 3 ❶
Regular RM/MTF lit trade	1 (central limit order book)	O,K,I,U,2,3 or 4, depending on the market's trading phase	3.1 P (plain vanilla) 3.3 crossing indicator not set
Regular RM/MTF/OTF dark trade (on integrated order book) ❷	1 (central limit order book)	O,K,I,U,2,3 or 4, depending on the market's trading phase	3.1 D (dark trade) 3.3 crossing indicator not set
Regular RM/MTF/OTF dark book trade	3 (dark order book)	O,K,I,U,2,3 or 4, depending on the market's trading phase	3.1 D (dark trade) 3.3 crossing indicator not set
BCN (pre-MiFID2) dark trade	4 (off book)	6 (report off exchange)	3.1 D (dark trade) 3.3 crossing indicator may be set ❸
SI trade	4 (off book)	6 (report SI)	3.1 P (plain vanilla) ❹ 3.3 crossing indicator not set
Risk fill ❺	4 (off book)	6 (report off exchange)	3.1 P (plain vanilla) 3.3 crossing indicator not set
'On market' agency cross executed on an RM/MTF/OTF using dedicated agency cross	4 (off book)	5 (report on exchange)	3.1 P (plain vanilla) 3.2 N (negotiated)

¹⁷ Further details, including the list of MMT codes, usage guidelines and references, can be found at <http://www.marketdatastandards.com>.

Scenario	MMT Level 1	MMT Level 2	MMT Level 3 ❶
functionality			3.3 X (crossing trade)
Liquidity sourced externally, brought onto an RM/MTF	4 (off book)	5 (report on exchange)	3.1 P (plain vanilla) 3.2 N (negotiated) 3.3 crossing indicator not set

❶ The 'negotiated' (MMT level 3.2) flag may also be set where appropriate (typically used for MMT level 1 value 4 - 'Off book').

❷ See 'Dark vs. Lit' section below.

❸ The crossing indicator will be set if the execution is between two client orders (and we are including 'agency-like' client flow including swap hedge trades).¹⁸

❹ 'Plain vanilla trade', on the basis that 'Dark trade' is used for trades executed under pre-trade transparency waivers.

❺ Pre-MiFID2 (i.e. where BCN and risk fill flow appears as 'OTC'), BCN flow can be distinguished from risk fill flow by the trade type – BCN being a dark trade, risk fill being a plain vanilla trade.

4.3 Identification of Dark and Lit Trades

For the purposes of distinguishing between dark and lit executions, there are three types of order book to consider:

- Order books containing only dark orders (dark books)
- Order books containing only lit orders (lit books)
- Order books containing both (known as integrated books), where on an integrated order book, it is possible to have both dark orders and lit orders executing against each other. When this happens, the trade report will carry the dark/lit indicator of the passive (resting) order.

Note that executions arising from iceberg orders (i.e. where there is a lit portion of the order with the rest hidden, and are available on both lit and integrated books) are considered to be lit.

The following scenarios are possible:

- A resting lit order on a lit order book. Executed against by an incoming aggressive lit order. This will result in a single trade report flagged under MMT as a central limit order book plain vanilla trade.¹⁹ As mentioned above, this scenario includes iceberg orders.
- A resting dark order on an integrated book is executed against by an incoming aggressive lit order. This will result in a single trade report flagged under MMT as a dark trade.²⁰
- A resting lit order on an integrated book is executed against by an incoming aggressive dark order. This will result in a single trade report flagged under MMT as a lit trade.²¹

¹⁸ This use of the indicator needs to be confirmed with the regulators and industry users (especially on the buy side).

¹⁹ MMT level 1 = 1 'Central Limit Order Book', MMT level 3.1 = P 'Plain Vanilla Trade'.

²⁰ MMT level 1 = 1 'Central Limit Order Book', MMT level 3.1 = D 'Dark Trade'.

²¹ MMT level 1 = 1 'Central Limit Order Book', MMT level 3.1 = P 'Plain Vanilla Trade'.

- A resting dark order on a dark book is executed against by an incoming aggressive dark order. This will result in a single trade report flagged under MMT as a dark order book dark trade²².

4.4 Identification of Give-Up and Give-In Trades

In a scenario where a trade is given up from one broker to another, the broker giving up the trade (i.e. the executing broker) will report the trade as a give-up (MMT level 3.1 value G):

Scenario	MMT Level 1	MMT Level 2	MMT Level 3
Give-up	4 (off book)	6 (report off exchange)	3.1 G (give-up)

4.5 Identification of Technical Trades

There are a number of scenarios where a trade report is required to indicate a change of ownership of stock, but where no actual trading has taken place. Some examples can be found in the Trade Reporting Scenarios section of this document. These are reported as technical trades (MMT level 3.1 value T):

Scenario	MMT Level 1	MMT Level 2	MMT Level 3
Technical trade	4 (off book)	6 (report off exchange)	3.1 T (technical)

4.6 Identification of Benchmark Trades

MMT level 3.5 value B ('Benchmark') is used to denote a trade whose price has been determined using a pricing benchmark (e.g. an interval VWAP, an order arrival price, an opening or closing price). In theory, any of the reporting scenarios in the table above could generate a benchmark trade report if the execution venue supports that capability. So, for example, an OTC risk fill for an all-day VWAP price would be flagged as per the 'risk' row in the table above, but with MMT level 3.5 being set to B. Similarly, an automated VWAP crossing engine would be flagged as per the 'BCN' row in the table above, also with MMT level 3.5 being set to B.

4.7 Identification of Ex/Cum Dividend Trades

It is possible to fill an order with an ex-div price when cum div or vice versa. Similar to benchmark trades, these could arise in theoretically any situation (e.g. OTC, on a market) where the execution venue permits, though the majority is OTC. These are flagged as per the scenarios listed above, with the addition of MMT level 3.5 being set to E.

²² MMT level 1 = 3 'Dark Order Book', MMT level 3.1 = D 'Dark Trade'.

5 Identification of Accessible Liquidity

5.1 Definitions

Based on consultation with a number of industry participants, it is clear that there are two distinct requirements for consolidated post-trade data:

- There is a need for a view of the entire market's activity, including technical trades, give-ups and similar. This is the content that the revised MiFID text sets out as the output of any authorised CTP and will be referred to in this document as a European Consolidated Tape (ECT).
- There is a need for a subset of the ECT that references activity that is deemed to be 'publicly accessible'. This will typically be used for standardised VWAP calculations and similar.

The definition, or definitions, of what qualifies as 'accessible liquidity' will be developed as a separate exercise outside the scope of this document²³. However, any such definition will be required to meet the condition that qualifying trades be unambiguously identifiable using the data standards outlined in this document and therefore that any market participants adhering to these data standards and using the same definition of accessible liquidity will produce identical views of the data.

It should be noted that it is entirely possible that different industry participants may wish to have different definitions of accessible liquidity, though the above comments regarding adherence to standards will still apply.

5.2 Derived Data and Statistics

It will be possible to compute a full market volume from the ECT, though it should be noted that it will be an inflated volume figure due to the presence of technical trades and the like. For the same reason, the ECT will not produce accurate statistics for market VWAP, day high or day low prices.

It will also be possible to compute a market volume for accessible liquidity. This will allow market-wide definitions of accessible volume, essential for consistent calculation and application of trading benchmarks. Other derived market data elements will also be generated from accessible liquidity, though subject to some further filtering. Specifically, anything involving a price (e.g. VWAP calculations, day high/day low) will need to exclude any trade reports flagged as using a non-market price, specifically benchmark trades²⁴ and ex/cum dividend trades²⁵.

5.3 Derived Data and Delayed Trade Reports

In the event that a trade is reported on a date later than trade date (either 'non-immediate' under MiFIR rules or 'delayed' due to technical issues), then intraday calculations of derived data will not be impacted, but the trade report will be factored into tick databases and similar so that back-dated calculations can be re-computed correctly²⁶. For example:

²³ This will be taken up by FPL with a view to producing a Best Practices paper on the subject.

²⁴ MMT level 3.5 = B 'Benchmark trade'.

²⁵ MMT level 3.6 = E 'Ex/cum dividend trade'.

²⁶ It should be noted that the intention here is to ensure that unofficial calculations of benchmark prices and similar (e.g. for Transaction Cost Analysis purposes) can be recalculated correctly. It is noted that certain 'official'

- Today is the 22nd August 2012.
- A trade report is received for a trade for 1,000 at a price of 23 with trade date 21st August 2012.
- The full market volume, accessible volume and VWAP for the 22nd August are unchanged by this trade report (as are day high/low and similar).
- Any new trade history queries run against data from the 21st August will now include this trade report.

5.4 Derived Data and Cancels/Amends

Trade report amendments and cancellations made on trade date will result in a change to that day's derived market data (e.g. day high, day low, volume, VWAP).

If a trade report from a prior date is cancelled or amended, then this will not impact any intraday calculations of derived data, though the amendment/cancellation will be factored into tick databases and similar so that back-dated calculations can be re-computed correctly. For example:

- Today is the 22nd August 2012.
- A cancellation is received for a trade report for 500 shares with trade date 21st August 2012.
- The full market volume, accessible volume and VWAP for the 22nd August are unchanged by this trade report (as are day high/low and similar).
- Any new trade history queries run against data from the 21st August will recognise that this trade report has been cancelled (and so will exclude it from volume, VWAP calculations etc.).

benchmark prices may, at the discretion of the owner of the benchmark, may not be recalculated under these circumstances (this applies both to delayed trades and cancels/amends).

6 Trade Reporting Scenarios

6.1 The Creation and Redemption of ETFs

Trading of ETFs can result in the ETF issuer being asked to create or redeem units of the ETF, i.e. buy/sell shares in the constituent products. Here, the executing broker can use an AP (authorised participant) to do this (or may themselves be an AP, in which case they can do this themselves). The creation/redemption process can happen in one of two ways:

- The ‘traditional’ route known as in-specie (in kind) which involves a re-registration of securities. The AP buys the shares, then re-registers them to the ETF issuer.
- Issuer creates a program trade to buy/sell the shares on behalf of the fund, then gets the cash from the AP in return for the ETF.

In both cases there are three steps involved:

Step	Reporting Requirement
The act of buying or selling an ETF in the secondary market.	This will be trade reported just as for a regular equity trade.
The AP creates/redeems the ETF on behalf of the executing broker.	This will be trade reported as an OTC technical trade ²⁷ . Note this could be reported at a different price to the original market trade.
The AP or issuer buys/sells shares to create/redeem the ETF.	These will be trade reported as normal equity trades.

The ECT will contain all three of the above, with the ETF volume reported twice (once as technical).

6.2 Worked Orders

This section covers scenarios where brokers execute client orders, either on their own books or using external execution venues.

Client buys from broker A – broker A works the order

In this first scenario, a client wishes to purchase some stock and the broker uses various execution venues (including public markets, another broker and his/her own book) to execute the client’s order.

Step	Reporting Requirement
Client wants to buy 100	No trade report
Broker A fills 20 on an RM	This is trade reported automatically by the RM ²⁸
Broker A fills 30 on an MTF	This is trade reported automatically by the MTF ²⁹
Broker A fills 40 from another broker (broker B)	Refer to the ‘Duplication of Trade Reporting’

²⁷ As per ‘Risk fill’ in the MMT Basic Scenarios section, with the addition of MMT level 3.1 = T (‘Technical trade’).

²⁸ As per the ‘Regular RM/MTF trade’ scenarios in the MMT Basic Scenarios section.

²⁹ As per ‘Regular RM/MTF lit trade’ or ‘Regular RM/MTF dark trade’ in the MMT Basic Scenarios section.

Step	Reporting Requirement
	section later in this document ³⁰
Broker A fills 10 from own book	This is trade reported by broker A (as a risk fill) to broker A's APA ³¹

Here everything is being trade reported once.

Client buys from broker A – broker A risk fills the order and then unwinds the position

Step	Reporting Requirement
Client wants to buy 100	No trade report
Broker A fills the client order from own book	Trade reported by broker A (as a risk fill)
Broker A then unwinds the position on an RM	Trade reported automatically by the RM ³²

Here everything is being trade reported twice, once for the client trade and once for the 'unwind'.

Direct Electronic Access

Step	Reporting Requirement
Client wants to buy 100	No trade report
Broker A routes the order to an RM or MTF	Trade reported automatically by the RM or MTF ³³

Here everything is being trade reported once. The scenario is the same regardless of whether the broker is trading on the RM/MTF in an agency or riskless principal capacity. This scenario applies to 'direct market access', where the broker either simply on-routes the order or uses a smart order router, and also covers 'direct strategy access', where the broker uses a trading algorithm to work the order automatically. Sponsored access, where the client connects directly to the market, also works the same way from a trade reporting perspective.

6.3 Give-Ups and Give-Ins

In a scenario where a trade is given up from one broker to another, the broker giving up the trade will report the trade as a give-up once the give-in (clearing) broker has accepted it³⁴. If the give-in broker then writes a derivative to the client (e.g. CFD or equity swap), then that will also be trade reported but as an OTC derivative under EMIR rules. Note this document does not currently cover the trade reporting rules for OTC derivatives (these will follow in a later version).

Here are some examples:

³⁰ Whichever broker reports, it will be reported as per 'Risk fill' in the MMT Basic Scenarios section.

³¹ As per 'Risk fill' in the MMT Basic Scenarios section.

³² As per 'Regular RM/MTF lit trade' or 'Regular RM/MTF dark trade' in the MMT Basic Scenarios section.

³³ As per 'Regular RM/MTF lit trade' or 'Regular RM/MTF dark trade' in the MMT Basic Scenarios section.

³⁴ MMT level 3.1 = G 'Give-up/give-in trade'.

Client buys from broker – broker ('executing broker') works the order – order given up to another broker (the 'clearing broker')

Step	Reporting Requirement
1 Client wants to buy 100 to be given up to a specific clearing broker	No trade report
2 Executing broker fills 20 on an RM	Trade reported automatically by the RM ³⁵
3 Executing broker fills 30 on an MTF	Trade reported automatically by the MTF ³⁶
4 Executing broker fills 40 from another broker	Trade reported by the other broker ³⁷
5 Executing broker fills 10 from own book	Trade reported by the executing broker (as a risk fill) ³⁸
6 Executing broker books the 100 against the clearing broker	Trade reported as a give-up ³⁹
7 Clearing broker receives the give-in and writes a swap to the client	Trade reported as an OTC swap ⁴⁰

Note that the volume is being reported twice, once as regular trading and once as a give-up. The ECT will include both (200 shares).⁴¹

Client buys from broker – broker ('executing broker') risk fills the order and then unwinds the position– order given up to another broker (the 'clearing broker')

Step	Reporting Requirement
1 Client wants to buy 100 to be given up to a specific clearing broker	No trade report
2 Broker fills the order from own book and books it to the clearing broker	Trade reported by the executing broker (as a risk fill)
3 Broker then unwinds the position on an RM	Trade reported automatically by the RM ⁴²
4 Clearing broker receives the give-in and writes a swap to the client	Trade reported as an OTC swap ⁴³

³⁵ As per 'Regular RM/MTF lit trade' or 'Regular RM/MTF dark trade' in the MMT Basic Scenarios section.

³⁶ As per 'Regular RM/MTF lit trade' or 'Regular RM/MTF dark trade' in the MMT Basic Scenarios section.

³⁷ This could be a risk fill or the broker may use another broker, RM, MTF etc.

³⁸ As per 'Risk fill' in the MMT Basic Scenarios section.

³⁹ MMT level 3.1 = G 'Give-up/give-in trade'.

⁴⁰ Details to follow in a later version of this document.

⁴¹ Any measure of accessible liquidity that sought to measure trading activity on publicly accessible venues would see a volume of 50 shares, arising from steps 2 and 3 only.

⁴² As per 'Regular RM/MTF lit trade' or 'Regular RM/MTF dark trade' in the MMT Basic Scenarios section.

⁴³ Details to follow in a later version of this document.

Steps 2 and 3 between them result in the volume being reported twice on the ECT, once for the client fill and once for the risk unwind. Step 4 results in a third publication of the volume, this time as give-up.⁴⁴

6.4 Crosses

This topic covers the following scenarios:

Scenario	Reporting Requirement
A fund manager uses their own infrastructure to move a position from one fund to another	Fund manager reports to their APA as a risk fill ⁴⁵
A fund manager uses a broker's infrastructure to move a position from one fund to another	Broker reports to their APA as a risk fill ⁴⁶
Fund manager crosses with another fund manager without using a broker	The selling fund manager reports to their APA as a risk fill (the buying fund manager will not report at all) ⁴⁷
'On-market' agency cross, i.e. where an RM/MTF provides a facility to use their book to execute such a cross	The RM/MTF reports this as an agency cross (i.e. with crossing indicator set) ⁴⁸
Broker crosses two client orders in a BCN	The broker reports this as a BCN trade, with the cross indicator set

In the first three cases, the fund manager is operating as their own broker and the MMT codes used will be the same as for broker risk fills.

6.5 Market-Operated Smart Routing and Liquidity Provision Facilities

Some market operators (MTFs in particular) operate services whereby orders may be filled outside their own order books. Some services make use of third party liquidity providers, others use smart order routing technology to route to other RMs or MTFs.

Scenario	Reporting Requirement
Market smart router routes an order to an RM or MTF	The destination RM or MTF reports the trade as normal ⁴⁹ ; the smart router operator does not report the trade
Market fills the order using an external liquidity provider	The destination RM or MTF reports the trade as a negotiated trade sourced from external liquidity ⁵⁰

⁴⁴ Any measure of accessible liquidity that sought to measure trading activity on publicly accessible venues would see a volume of 100 shares, arising from step 3 only.

⁴⁵ As per 'Risk fill' in the MMT Basic Scenarios section.

⁴⁶ As per 'Risk fill' in the MMT Basic Scenarios section.

⁴⁷ As per 'Risk fill' in the MMT Basic Scenarios section.

⁴⁸ As per 'On market agency cross' in the MMT Basic Scenarios section.

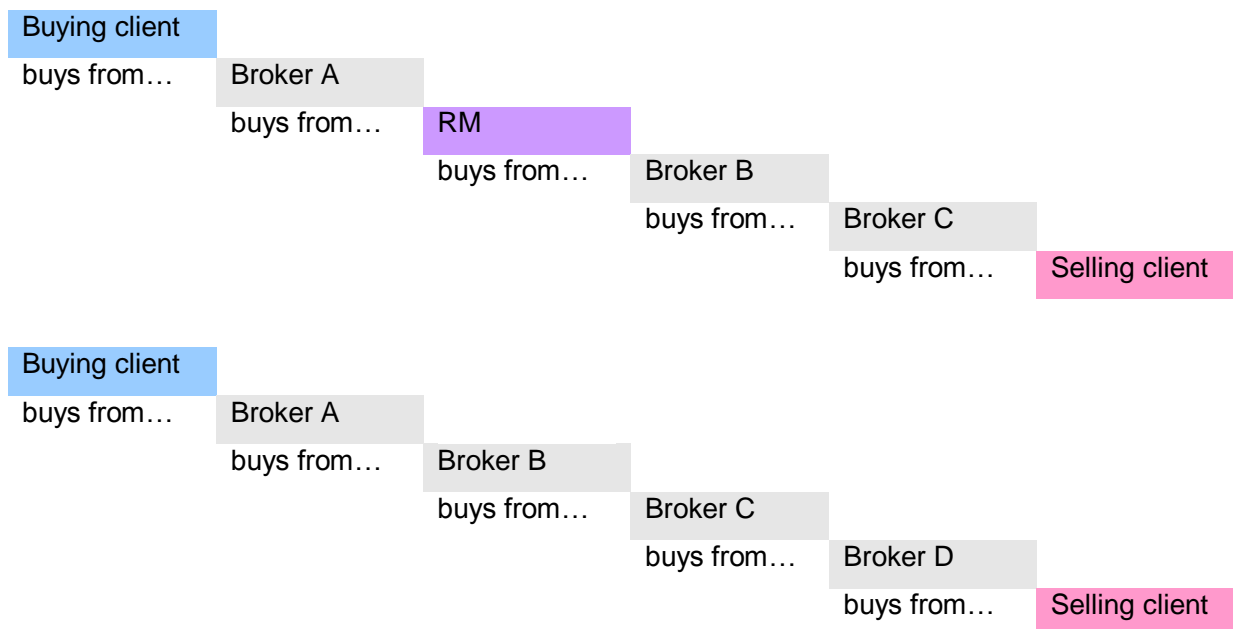
⁴⁹ As per the 'Regular RM/MTF trade' scenarios in the MMT Basic Scenarios section.

6.6 Avoiding Duplication of Trade Reporting

There are a number of scenarios which involve multiple investment firms buying from and selling to each other. CESR/10-882 makes some very clear recommendations regarding how investment firms should determine whether or not to report a trade:

- If the trade was executed on an RM or MTF, then the execution venue will trade report and all other parties to the trade will not trade report. Note this will also apply to trades executed on a BCN, OTF or SI.
- If the trade was executed OTC (here 'OTC' not including BCN, OTF or SI trades) then the following precedence rules will apply:
 - If only one of the counterparties to the trade is an EEA investment firm, then that firm will report the trade
 - If both of the counterparties to the trade are EEA investment firms, then the selling firm will report the trade (though the two firms may bilaterally agree that one of them always reports, regardless of whether they are buying or selling)
- Any change in price or size will result in a separate trade report; a change in either will involve a position being taken and unwound on a broker book and so would be covered by the 'Worked Orders' scenarios above. The scenarios below assume no price changes.

It is theoretically possible that a chain of multiple brokers could be involved in executing a single transaction. This transaction could still be executed on an RM or MTF, or could be executed OTC by one or more of the brokers in the chain. For example:



In the first example, RM is reporting the trade so none of brokers A, B or C should report. In the second example, there is no RM so one (and ideally only one) of the brokers should report the trade. Even with the guidelines above, a broker in the chain might not always know or be able to determine whether they need to report the trade. It is therefore suggested that a 'trade reported' flag be added to the execution report message such that, for electronic communication between brokers (as is the

⁵⁰ As per the 'Liquidity sourced externally' scenario in the MMT Basic Scenarios section.

majority case in European markets), the broker receiving the execution knows whether it has already been trade reported or not. For example, if we have a chain of brokers culminating in an RM/MTF, then the RM/MTF trade reports and the broker accessing that market will know it's been trade reported. That broker then sets the 'trade reported' flag which gets carried to the broker who sent the order, who then knows not to trade report. If there is a further broker up the chain, the flag gets carried on. Similarly, if we have a chain of brokers culminating in another end client (so the whole chain is OTC), then in theory any one of the brokers could trade report and will then set the flag. All brokers upstream will know not to report the trade again.

It is noted that the scenarios under which this happens are very rare and account for a very small proportion of overall volume. It is therefore recommended that, should such a flag be introduced, it be made optional.