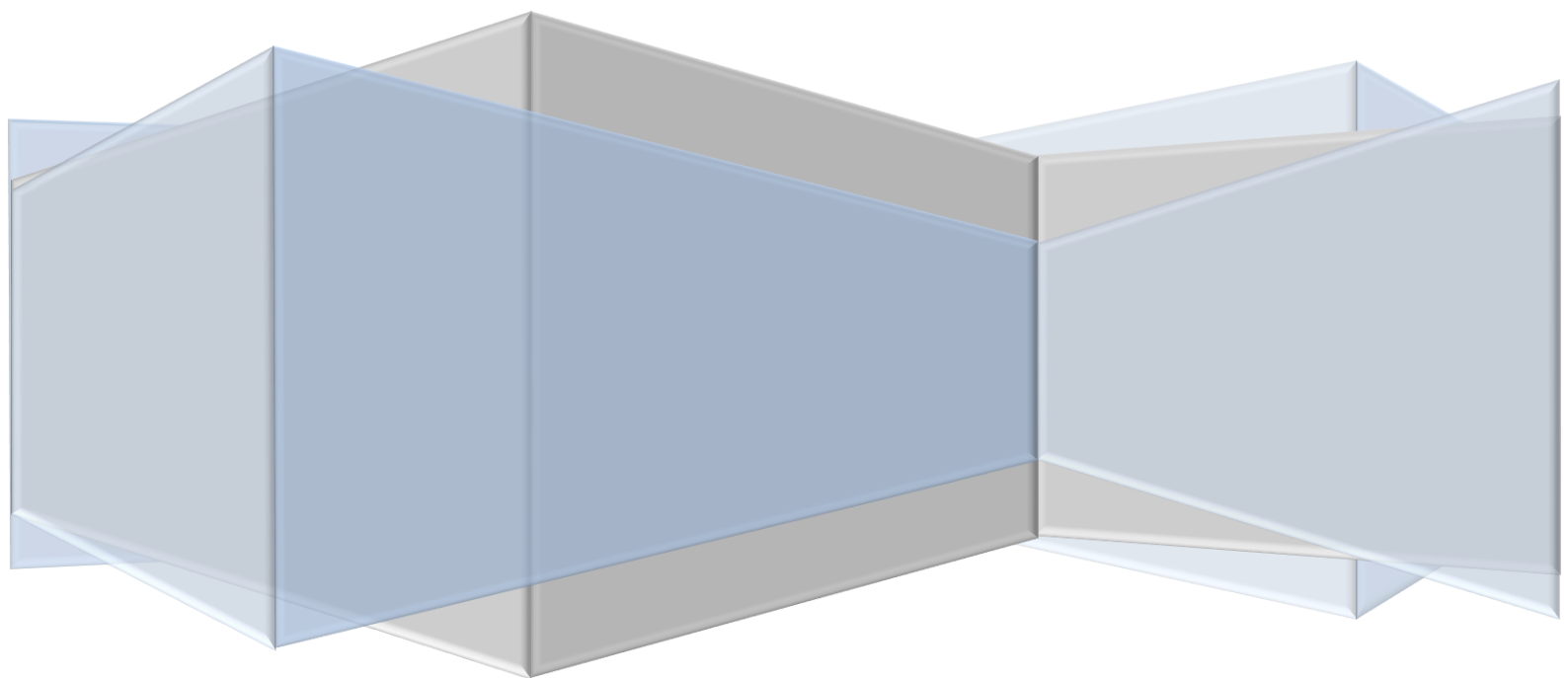


Recommended Display and Derived Information Guidelines

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1.1. Introduction

LSEG recommends that all vendors follow the principles laid out in this document.

The document covers recommendations relating to display of general information relating to instruments, order book creation and derivation of supporting information such as charting, statistics and reporting of recent trades.

The recommendations are designed in order ensure consistency of display of all market data across all participants.

1.2. General information for all Exchange securities

1.2.1. Identification

For each tradable instrument it is recommended that the following information is displayed:

- Unique Display Identifier ¹ e.g. ISIN, SEDOL, TIDM, InstrumentID;
- Market Segment Code e.g. SET1;
- Country of Register e.g. GB;
- Sector e.g FT10;
- Trading Currency e.g GBX.

1.2.2. Common Instrument information

To show the context in which the tradable instrument is being traded, vendors should display, where supplied by the Exchange, the following:

- Market e.g. London;
- Market Segment Code e.g. SET1;
- Market Sector Code e.g. FT10;
- Currency Code e.g. GBX;
- Security Status e.g. Halt;
- Tradable Instrument Action Type (e.g. Suspended/Active/Inactive);
- Ex-marker code;
- Ex-marker start and end date (either implicitly or explicitly);
- Exchange Market Size (EMS) value;
- Minimum Reserve Order value;
- Minimum Order Size value;
- ADT;
- Trade Parameter ID;
- Uncrossing Status (where applicable) e.g. Firm / Indicative;
- Uncrossing Price (where applicable);
- Time of Uncrossing (where applicable).

¹ Clients can choose which unique identifier to display either an industry standard identifier or an internal identifier or a combination of both.

It should also be clearly recognisable that an instrument is suspended, paused, halted or closed for trading.

In addition, it is recommended that the following information is available for each tradable instrument:

- Official Closing Price, as supplied by the Exchange Closing Price derivation method¹ as supplied by the Exchange;
- Opening Price
- Best Bid and Offer and volume
- Last five trade prices
- Volume
- Number of Trades
- Difference between the last order book trade price and the previous trading days Closing Price for order driven markets;
- Trade High / Low
- Current VWAP
- Indicative uncrossing price and volume during auction calls.

It is recommended that vendors display the following information for the closing price session:

- The trading status of the Post Close Session
- The closing price be clearly displayed by the vendor so that the qualifying price is obvious to trading participants
- All active orders that are at the qualifying price should be clear on the order book
- All non qualifying orders should still be present in the order book in order to allow firms to amend (to qualify for the session) or cancel if they so wish
- The qualifying orders may be highlighted in the order book, should the vendor find it necessary.

For those tradable instruments that are subject to auction calls (including SETSqx) it is recommended that the following information is available for each tradable instrument:

- Time to next uncrossing;
- Whether a monitoring extension is in force or not;
- Indicative uncrossing price; Last firm uncrossing price.
- Last firm uncrossing price

1.3. SETS, IOB and Securitised Derivatives recommended display principles

1.3.1. Level 1 display criteria

For Level 1 displays the aggregated order book should be displayed in accordance with the following criteria:

- The best buy price and best sell price should be clearly displayed with buy and sell side clearly distinguished, including the total number and volume of orders at best on the buy and sell sides of the order book.
- Level 1 service should aggregate all orders for this trading service and as such any Level 1 display should not show the identity of any Market Makers making the best price.
- For vendors offering only a Level 1 view, where provided, it should be clearly identified if there are additional orders on the book.

1.3.2. Level 2 display criteria

For Level 2 displays the full depth of the order book should be displayed in accordance with the following criteria:

- Orders should be displayed in price / time priority. Time priority should be determined by the sequence number attached to each order message by the Exchange. Market Orders will always have priority over Limit Orders; with the exception of order modifications where price/time priority is indicated by the Exchange.
- Market Orders and Limit Orders should be clearly differentiated.
- All buy orders and all sell orders should be displayed together.
- Vendors should not display orders for more than one tradable instrument in any block.
- Where each order is displayed separately, the time/date, price, and size should be displayed.
- Where orders at the same price are aggregated, the total volume at that price, together with the total number of separate orders at that price should be displayed.
- Executable Quotes should always be shown separately with the participant's mnemonic clearly displayed alongside the order. Enhanced Quotes should never be aggregated.
- Where Limit Orders exist with Executable Quotes the orders should be ranked in price and time priority.
- Where a price level contains both Executable Quotes and Limit Orders, only Limit Orders can be aggregated.
- While orders can be aggregated, as described above, the top 10 price levels on each side of the book should be displayed as a minimum

- In the event that two or more Executable Quotes from Market Makers are identical in terms of prices, the best order will be the order which was first disseminated by the Exchange.
- For those Level 2 displays showing the best price then Market Makers mnemonics should also be shown along with the best priced buy and sell orders. If more than one Market Maker is making the best price then they should be displayed in time order from the centre outwards e.g. with the Market Maker with the highest priority closest to the buy / sell price.

1.4. SETSqx recommended display principles

1.4.1. Level 1 display criteria

- Those securities with market maker support should have the top market maker quotes identified as the Best Bid or Best Offer (the order book BBO should be ignored if communicated by the Exchange). If more than one market maker quote is at the same price point, the quotes will be aggregated to indicate total available volume at the top price point. Securities without market maker support should have the BBO derived from the available orders on the book.
- The best buy price and best sell price should be clearly displayed with buy and sell side clearly distinguished, including the total number and volume of orders at best on the buy and sell sides of the order book.
- For vendors offering only a Level 1 view, where provided, it should be clearly identified if there are additional orders on the on the book.
- For all securities, any Level 1 displays should not show the identity of any participants making the best price. It should clearly identify if there are electronic orders on the book and if these orders match or are better than the BBO, this should also be identified.

1.4.2. Level 2 display criteria

For Level 2 products the full depth of the quote / order book should be displayed in accordance with the following criteria:

- Orders should be displayed in price / time priority. Time priority should be determined by the sequence number attached to each order message by the Exchange. Market Orders will always have priority over Limit Orders.
- When an order is displayed it should be clear whether it is a buy or a sell order.
- All buy orders and all sell orders should be displayed together
- Named Orders should always be shown separately with the participant's mnemonic clearly displayed alongside the order. Participants are allowed to submit more than one Named Order for each side of the book.

- Where orders at the same price are aggregated, the total volume at that price, together with the total number of separate orders at that price should be displayed
- Where a price level contains both Named and Limit Orders, only Limit Orders can be aggregated.
- In the event that two or more Named Orders from participants are identical in terms of prices, the best order will be the order which was first disseminated by the Exchange. Time priority should be determined by the sequence number attached to each order message.
- Where Market Maker quotes are supported alongside the order book then these should be displayed separately on the same screen.
- **Where RFQ trading is supported, RFQ orders should also be displayed separately from Market Maker quotes and orders.**
- RFQ quotes must be displayed with their specific RFQ ID.
- **Market Maker** quotes, **RFQ** quotes and orders for a single security should be shown on a single page.
- Each two way quote should be clearly shown separately with the participant's mnemonic, in time priority order. Time priority should be determined by the sequence number attached to each quote message by the Exchange.
- Each two way quote should be shown together with the quote sizes expressed as "n x n" where n is the quote size divided by 1000.
- The current trading status of the instrument should be clearly displayed.

1.4.3. Securities with Market Maker support:

- Where Market Maker quotes are supported then these form the best price for that security. Orders are not eligible for inclusion as best bid and offer prices. The best bid quote and best offer quote should be clearly displayed with buy and sell side clearly distinguished.
- The indicative uncrossing price for the order book should also be shown separate to the best prices and is the only indicator of order book best price that should be displayed.

1.4.4. Securities with no Market Maker support:

- Where Market Maker quotes are not supported then orders will form the best bid and offer price for that security. The best priced buy and best price sell order should be clearly displayed with the buy and sell side clearly distinguished. Those participant mnemonics (if Named Orders make up the 'best' price) should also be shown along the best priced buy and sell orders. If more than one participant is making the best price then they should be displayed in time order, with the participant with the highest priority closest to the buy / sell price.
- The indicative uncrossing price for the order book should also be shown separate to the best prices.

1.5. EQS and SEAQ recommended display principles

1.5.1. Level 1 display criteria

For Level 1 products the SETS recommended display principles should be followed with the following differences:

- The best bid price and best offer quote should be clearly displayed with buy and sell side clearly distinguished
- Any Level 1 display should not show the identity of any Market Makers making the best price

1.5.2. Level 2 display criteria

For Level 2 products the full depth of the quote book should be displayed in accordance with the following criteria:

- Each two way quote should be clearly shown separately with the participant's mnemonic, in time priority order. Time priority should be determined by the sequence number attached to each quote message by the Exchange.
- Each two way quote should be shown together with the quote sizes expressed as "n x n" where n is the quote size divided by 1000.
- Ideally all quotes for a single security should be displayed on a single page. Where two or more pages are required to display all Market Makers' quotes, it is recommended that each page contains approximately the same number of quotes, and that each page bears a reference to indicate that it is part of a series.
- Firm and Enhanced Quotes should be clearly differentiated, ideally through colour coding.
- In the event that quotations by two or more Market Makers are identical in terms of prices, the best quote will be the quote which was first disseminated by the Exchange. Time priority should be determined by the sequence number attached to each quote message.

For those Level 2 displays showing the best price then Market Makers mnemonics should also be shown along the best priced buy and sell quotes. If more than one Market Maker is making the best price then they should be displayed in time priority order from the centre outwards e.g. with the Market Maker with the highest time priority closest to the buy/sell price.

1.6. Systematic Internaliser (SI) Quotes recommended display principles

1.6.1. Display of SI Quotes

Quotes published via LSE Market Data Channels by Systematic Internalisers should be shown separately with the participant's mnemonic clearly displayed alongside the quote.

Vendors should display SI quotes grouped per instruments with the following information clearly visible

- Participant Code
- Instrument Identification Code (ISIN)
- Time and date with microsecond granularity
- Bid and Offer Quantity and Price
- Currency in which the price of the quote is reported

SI quotes shall not be sorted in any particular order.

1.7. Display and Derivation of Trades, Charts and Statistics

This section outlines recommendations for how to display and calculate supporting information relating to all exchange listed and non-exchange listed instruments, making specific reference to MiFID II information, where applicable.

1.7.1. Display of Trades

Vendors should display, at a minimum, the past five trades relating to an instrument.

For On-Book, Off-Book On-Exchange, OTC and SI Trades, the instrument SEDOL should be used to classify trades per instrument.

In addition, clients should display combined trades window using the ISIN to classify trades per instrument.

Next to every displayed trade, the following information should be clearly visible:

- Time and date with microsecond granularity
- Quantity² and Price.
- Venue of Execution (Venue MIC codes, or OTC/SINT)
- ESMA Flags where applicable

² For non-equity instruments, MiFID II RTS2 requires that the Quantity is displayed in Units of the financial instruments. For bond instruments having a minimum denomination greater than 1, the unit quantity is equal to the Notional Amount divided by the minimum denomination. For such type of instruments, Market Data Vendors might choose to display to their clients the Notional Amount instead.

- Currency in which the trade was reported (for Off-Book Trades, this currency may be different to that of the base instrument currency)
- Cancelled, amended and duplicated trades should be clearly marked as such, in addition to display of the relevant ESMA flags
- Trades published with a trading date and time in the past should be clearly highlighted as deferred publication (in addition to the display of the relevant ESMA flag).

1.7.2. Charting

For LSE and non-LSE listed instruments the SEDOL should be used to classify trades per instrument.

Where a SEDOL is not available, then the ISIN should be used to classify trades per instrument.

Vendors' charts should be derived using On-book executions only

For illiquid instruments, where no On-Book Trades have taken place, LSEG notices that vendors may want to continue providing charts. In this case, the mid point of the instrument BBO should be used.

If no BBO is available, clients should take the most recent Off-Book On Exchange or OTC trade where none of the following ESMA flags have not been reported; PRIC, NLIQ, OLIQ, NPFT, TNCP, SIZE, LRGS, ILQD, DUPL.

Where an Off-Book On Exchange or OTC trade takes place in a currency other than the base currency of the instrument, the trade should not contribute to charting.

End users should be alerted when a trade is excluded from the chart, with the reason clearly provided.

1.7.3. Currency Based Statistics

LSEG defines currency based statistics as any statistic which is derived in part by using price.

For LSE and non-LSE listed instruments the SEDOL should be used to classify trades per instrument.

In addition, clients should display combined statistics using the ISIN to classify trades per instrument.

Statistics should be calculated using on-book executions only.

Trades reported with CANC ESMA flag should reverse the statistic calculation

Where clients wish to include Off-Book trades in the calculation of the statistic, the following rules should be applied:

- Exclude trades which have taken place in a currency other than the base currency of the instrument
- Both OTC and Off-Book On Exchange trade should be included
- Exclude trades which have been reported with any of the following ESMA flags; PRIC, NLIQ, OLIQ, NPFT, TNCP, SIZE, LRGS, ILQD, DUPL
- Bond statistics should use the unit quantity of the trade in the calculation

End users should be alerted when a trade is excluded from the calculation of a statistic, with the reason clearly provided

1.7.4. Non-currency based statistics

LSEG defines a non-currency based statistics as any statistic calculation which does not use the price to derive the final value.

For LSE and non-LSE listed instruments the SEDOL should be used to classify trades per instrument.

In addition, clients should display combined statistics using the ISIN to classify trades per instrument.

Both OTC and Off Book on Exchange trades should be included

Trades reported with ESMA flag CANC should reverse the statistic calculation

Trades reported with ESMA flag DUPL should not contribute towards the statistic

If Vendors' chose not include Off-Book trades for Currency based statistics, then a non-currency based on-book only statistic should be provided in addition to the combined non-currency based statistic

Bond statistics should use the unit quantity of the trade in the calculation

1.7.5. Venue Classification

All On-Book trades should be classified as LSEG data.

All Off-Book trades with the following MIC codes (Off Book on Exchange) should be classified as LSEG Off book On-Exchange data; XLON, XLOM, AIMX.

Any OTC trades are classified separately as Off Exchange data.