

MiFID II Post Trade Data - Some Practical Considerations

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1. Abstract / Executive Summary

This research paper examines the MiFID II post trade transparency data published by trading venues and APAs to assess the ease or otherwise of aggregating the 15-minute delayed post-trade data as mandated by ESMA's RTS 2 regulatory technical standard. Our aim is to provide practical insights into the operational challenges of aggregating this post-trade data. Our hope is that the lessons learnt from this research exercise can inform future policy recommendations by both industry and public authorities.

We examined the data published by those reporting entities of non-equity post-trade data that ESMA identified in March 2020¹ as having a greater than 1% market share in the EU. We then included additional reporting entities based on our conversations with market participants. Based on the data from the ESMA March 2020 paper, this group collectively contributed over 95% of the FITRS data in the period Jan 2018 – Dec 2019.

Methodology

We attempted to download and aggregate the free 15 minute delayed data from each of the reported entities' websites. We initially performed this operation manually, and then repeated the exercise by attempting to build an automated download and processing tool. We selected a single date (11 June 2020) for the exercise, to ensure consistency of timeline for our analysis.

We noted any deviations from the RTS2 specifications as well as any lack of clarity in the specifications that resulted in difficulties in automating the data access, or in aggregating the data.

We sent each reporting entity our observations and offered a call to provide the reporting entity an opportunity to check our analysis. We held calls with two entities and a third entity provided high-level feedback over e-mail. Where their feedback identified factual or logical errors, we updated the report accordingly. Some entities claimed that parts of our analysis were incorrect without providing sufficient data for us to assess the validity of the claim. In these circumstances we have referenced the information stated by the entity alongside our analysis.

The review is structured into two sections:

- **Data access** – specifically, the automated download of the post-trade files
- **Data consumption** – i.e. the post-trade file format and syntax

¹ ESMA, *Consultation Paper, MiFID II/ MiFIR review report on the transparency regime for non-equity instruments and the trading obligation for derivatives*, March 2020, p63
https://www.esma.europa.eu/sites/default/files/library/esma70-156-2189_cp_review_report_transparency_non-equity_tod.pdf

Data Access

All the reporting entities provided the 15 minute delayed post-trade data on their websites and we had no difficulty finding and navigating to them. Our key observations are provided below.

- Only one reporting entity provided online documentation on how to automate and obtain the data. A second entity provided us with a URL for instructions after we spoke to them. No other entities provided any information on automation.
- We were able to automate the download from four reporting entities, with the other reporting entities having specific challenges for automation. In our view, these challenges were primarily due to the website design being focused on human interaction rather than machine access.
- All reporting entities provided email support; however, we found some entities were unable to explain or assist our queries on how to achieve automated download

	Bloomberg	Fenics	LSEG	MarketAxess	NEX	Tradeweb
Instructions how to automate the download data	x	x	x	x ²	x	✓
Were we able to fully automate the download of the data?	✓	x ³	✓ ⁴	x	✓	✓
Is email support available?	✓	✓	✓	✓	✓	✓

² We were unable to find documentation online however MarketAxess sent us a PDF with instructions for manual download

³ We contacted Fenics Support but were unable to automate the download of the report based on their response

⁴ We contacted LSEG Support and were able to automate the download of the report based on their response

Data Consumption

Assuming automated access to the data were to be feasible, the next step is to aggregate the data across all entities. Therefore we looked at the ease of automating this aggregation.

Such aggregation requires a precise understanding of the format and syntax of each file in order to ensure the same data element is being aggregated across all reporting entities. Our key observations are provided below.

- There are some similarities across reporting entities in their publication formats. For example, all utilize data files containing a fragment of the day's trades. However, the detailed format and syntax of each reporting entity is unique.
- No entity documented their format and syntax. This meant that in most instances we needed to contact the entities support helpdesk for assistance to understand the format, syntax or content.

	Bloomberg	Fenics	LSEG	MarketAxess	NEX	Tradeweb
Online documentation on file format and syntax	x	x	x	x	x	x
Did we need to contact support for help to download the file, or understand the file format, syntax or content?	x	✓ ⁵	✓ ⁶	✓ ⁷	✓ ⁸	✓ ⁹
Main Delimiter	Comma	Comma	Semicolon	Comma	Comma	Comma
Secondary delimiter (to separate flags)	_10	Semicolon	Comma	Comma ¹¹	Comma ¹²	Comma ¹³
All data and syntax compliant with RTS2	✓	✓	✓	x	✓	x
Provide data for all required attributes for all records (detail below in Table 7)	✓	✓	x	x	x	x

⁵ Clarification to understand the content within column #4 and column #20

⁶ Clarification to understand prices as we found one instrument reported in both pounds and pence

⁷ Clarification required on understanding the secondary delimiter

⁸ Clarification required on understanding MIC codes and use of "ADFL" which is not on the ISO MIC list

⁹ Clarification required understanding time syntax as it appeared inconsistent with RTS2 spec (i.e. the record shows 2020-06-11 18:03:01, whereas ISO 8061 states the syntax should be 2020-06-11T18:03:01). A clarification was also required to clarify their use of 'PNDD' in an incorrect field (see Table 5 for further information)

¹⁰ Each flag is specified in its own separate attribute and therefore no secondary delimiter is required

¹¹ All secondary delimiters are represented within quotation marks e.g. "ILQD,LRGS"

¹² All secondary delimiters are represented within quotation marks e.g. "ILQD,LRGS"

¹³ All secondary delimiters are represented within quotation marks e.g. "TPAC, ILQD"

We also considered the validity of aggregating the data. Where we identified anomalous data values, we asked the 5 relevant reporting entity to clarify the accuracy of the data. All 5 reporting entities actively logged issues. 4 entities addressed all items, and 1 entity addressed all items apart from one. Our key observations are provided below.

- One reporting entity did not directly address any of the data quality items raised to them but instead stated that aggregation based on the RTS2 specification was not possible due to the complexity resulting from different trading scenarios and instruments. They stated that APAs and venues have spent significant time working with regulators beyond the RTS 2 documentation. The reporting entity did not provide any additional documentation to address any of the specific questions we asked.
- Two reporting entities mentioned that they offer more advanced paid-for services if clients require a fuller solution that offered by their free delayed solution

Conclusion

Our findings highlight the technical challenges market participants face to systematically aggregate the 15 minute delayed data files of the reporting entities we analysed. The key challenges were:

1. The design of some of the websites used for accessing the data appeared more suitable for human access rather than automated machine access
2. A lack of documentation on the formats and syntax of the files, alongside other implementation details such as frequency of file updates

Addressing the above items will assist market market participants to create an aggregation tool. However, it is not sufficient to maintain such a tool because the discretion available to each reporting entity on the design of their specific file format and on the mechanism for data access means there is no guarantee that the file format or data access mechanism will stay the same or that reporting entities will provide advance notice of any changes to the file formats or data access mechanisms.

This lack of certainty on the technical specifications makes the creation and maintenance of reliable aggregation tools based on the 15 minute delayed data difficult and costly, meaning that for the majority of market participants, the free delayed data is suitable only for human viewing, rather than for machine consumption.

2. Overview

This section describes the objective & construction methodology of the document.

Overview

This document describes how several Approved Publication Arrangements (APAs), Multilateral Trading Facilities (MTFs) and Organised Trading Facilities (OTF) (as defined by ESMA for MiFID II trade publications) have implemented the post trade publications according to [RTS2](#) and [RTS2 Annex](#).

The aim of this document is to provide potential implementers an understanding of where the commonality and differences are between the various implementations.

The following workflows are covered:

- Obtaining the post-trade publications
- Syntax and format of the post -trade publication
- Ability to automate processing of the data
- Help & support from the publishing APAs and MTFs

MICs in scope

The following table lists the MICs in scope. We chose this group based on:

- Having a greater than 1% market share according to ESMA:
 - o Tradeweb Europe
 - o London Stock Exchange
 - o Creditex Brokerage – ICE
 - o Abide Financial and NEX SEF
 - o BGC Brokers LP – Trayport
- Given the data ESMA used in over the period Jan 2018 – Dec 2019, we expanded this to those we deemed they had a sufficient footprint in reporting:
 - o Xtraker (now MarketAxess)
 - o Bloomberg

Group	MIC (or operating MIC)	In scope	MIC description
Bloomberg	BAPA	✓	Bloomberg APA UK
	BAPE	✓	Bloomberg APA NL
	BMTF	✓	Bloomberg MTF
Fenics	AURO	✓	Aurel BGC France OTF
	BGCO	✓	BGC Brokers LP OTF
	GFBM	✓	GFI Brokers MTF
	GFBO	✓	GFI Brokers OTF
	GFSO	✓	GFI Securities LTD – OTF
	SUNO	✓	Sunrise – OTF
	BGCI	✗	BGC Brokers LP – Trayport (No longer valid) ¹⁴
London Stock Exchange	XLON	✓	London Stock Exchange MTF This document refers to the MIC as LSE
	ECEU	✓	Trade Echo. This document refers to the MIC as TEC
	TQEX	✓	Turquoise MTF This document refers to the MIC as TQE
Market Axess	TRAX	✓	Xtraker
NEX / Abide Financial	AFDL	✓	Abide Financial APA (including NEXS reporting)
ICE Creditex	IFEU	✗	ICE Futures Europe ¹⁵

¹⁴ BGC / Fenics stated that the BGCI Operating Mic is no longer publishing post-trade transparency data

¹⁵ We found no data when reviewing the reports for ICE. We did not receive an explanation for this when we contacted the ICE Helpdesk

Group	MIC (or operating MIC)	In scope	MIC description
Tradeweb	FRTE	✓	Forte Securities OTF Post-Trade
	FXRQ	✓	Refinitiv BV FXALL Post-Trade
	FXFM	✓	Refinitiv BV TR Matching Post-Trade
	TWEA	✓	Tradeweb BV APA Post-Trade
	TWEM	✓	Tradeweb BV MTF Post-Trade
	TWEO	✓	Tradeweb BV OTF Post-Trade
	TWEM	✓	Tradeweb BV Pre-Trade
	TWEO	✓	Tradeweb BV Pre-Trade
	TREA	✓	Tradeweb UK APA Post-Trade
	TREU	✓	Tradeweb UK MTF Post-Trade
	TREU	✓	Tradeweb UK OTF Post-Trade
	TREO	✓	Tradeweb UK Pre-Trade
	TREO	✓	Tradeweb UK Pre-Trade

Table 1: MICs

Websites

this table summarises the 'reporting entities and websites of the MICs in scope.

Group	MIC	URL to Access Data
Bloomberg	BAPA	https://www.bloombergapa.com/
	BAPE	https://www.bloombergapae.com/historyfiles
	BMTF	https://data.bloombergmtf.com/transparency
Fenics	AURO	https://regdata.fenicsmd.com/dashboard
	BGCO	
	GFBM	
	GFBO	
	GFSO	
	SUNO	
London Stock Exchange	AIMX	https://dmd.londonstockexchange.com/dmd/delayed-market-data-documents.html
	ECEU	
	TQEA	
Market Access	TRAX	https://www.traxapa.com/apa-publication/index.html
NEX / Abide Financial	AFDL	https://apa.nexregreporting.com/
ICE Creditex	IFEU	https://www.theice.com/marketdata/reports/61
Tradeweb	FRTE	https://www.apa.tradeweb.com/
	FXRQ	
	FXFM	
	TWEA	
	TWEM	
	TWEO	
	TWEM	
	TWEO	
	TREA	
	TREU	
	TREU	
	TREO	
	TREO	
	TREO	

Table 2: Websites



Records Within Analysis

this table summarises the number of records from the file downloads in scope of this report, compared to the percentage noted by ESMA Market Share. The number of records were taken from 11th June 2020 (00:00-23:59 UTC).

2020-06-11	Files	Records
Bloomberg	1,515	17,249
BAPA	479	4,220
BAPE	260	4,410
BMTF	776	8,619
Fenics	119	1,078
AURO	11	29
BGCO	65	772
GFBM	-	-
GFBO	5	111
GFSO	33	145
SUNO	5	21
LSEG	2,508	2,443,393
LSE	836	1,297,397
TEC	836	494,824
TQE	836	651,172
MarketAxess	1	37,113
TRAX	1	37,113
NEX	1	12,648
AFDL	1	12,648
Tradeweb	695	87,092
Forte_Securities_OTF_Post-Trade_FRTE	1	1
Tradeweb_BV_APA_Post-Trade_TWEA	11	18
Tradeweb_BV_MTF_Post-Trade_TWEM	153	1,137
Tradeweb_BV_OTF_Post-Trade_TWEO	6	9
Tradeweb_UK_APA_Post-Trade_TREA	261	83,240
Tradeweb_UK_MTF_Post-Trade_TREU	263	2,687
Grand Total	4,839	2,598,573

3. Downloading or Obtaining Post-Trade Files

This table is a matrix of features the download data of each group. Results are based on information Etrading Software could find on their website and correspondence with their Support teams. Whilst automated download of the data is not mandated by RTS2, for aggregation of the data from the multiple entities to be achievable we deem this as a necessary step.

	Bloomberg	Fenics	LSEG	MarketAxess	NEX	Tradeweb
Instructions how to automate the download data	x	x	x	x ¹⁶	x	✓
Were we able to fully automate the download of the data?	✓	x ¹⁷	✓ ¹⁸	x	✓	✓
Is email support available?	✓	✓	✓	✓	✓	✓

Table 3: Download Feature Analysis Matrix

	Frequency of Update (minutes)	Data Available	Rules
Bloomberg	1	Records reported since last report	File is only published if there is at least a single post-trade report
Fenics	10-15	Records reported since last report	File is only published if there is at least a single post-trade report
LSEG	1	Records reported since last report	File is always published and may not contain post-trade reports
MarketAxess	On-demand	24 hours	File is always published and contains post-trade reports for the last 24 hours
NEX	On-demand	100 Records (manually downloaded) 1000 Records when automated	File is always published and contains the most recent 100 records
Tradeweb	2 (even minutes)	Records reported since last report	File is always published and may not contain post-trade reports

¹⁶ We were unable to find documentation online for automating the download however MarketAxess sent us a PDF with instructions for manual download

¹⁷ We contacted Fenics Support but were unable to automate the download of the report based on their response

¹⁸ We contacted LSEG Support and were able to automate the download of the report based on their response

Command line template used to download post-trade data	
Bloomberg	wget <ul style="list-style-type: none"> • <a href="https://www.bloomberggapa.com/download?key=BAPA-POST-<YYYYMMDD>-<hh:mm>.csv">https://www.bloomberggapa.com/download?key=BAPA-POST-<YYYYMMDD>-<hh:mm>.csv • <a href="https://www.bloombergapae.com/download?key=BAPE-POST-<YYYYMMDD>-<hh:mm>.csv">https://www.bloombergapae.com/download?key=BAPE-POST-<YYYYMMDD>-<hh:mm>.csv • <a href="https://data.bloombergmtf.com/download?key=BMTF-RTS2-POST-<YYYYMMDD>-<hh:mm>.csv">https://data.bloombergmtf.com/download?key=BMTF-RTS2-POST-<YYYYMMDD>-<hh:mm>.csv
Fenics	We were not able to automate the download ¹⁹ . All files were downloaded using web-browser.
LSEG	Automation could be achieved but we could not find a straightforward way to do this. We achieved this through the below steps: <ol style="list-style-type: none"> 1. Obtain a session token by opening Chrome developer tools and copying the session token 2. Use the token in the command line as per the below: <pre>curl https://dmd.londonstockexchange.com/dmd/download/<CHANNEL>/posttrade/<CHANNEL>-post-<YYYY-MM-DD>T<hh_mm>.csv -H "cookie: SESSION=<TOKEN>"</pre> <p>LSEG have stated they are analysing their download functionality with existing users to improve this.</p>
MarketAxess	We were not able to automate the download ²⁰ . All files were downloaded using web-browser.
NEX	curl "https://apa.nexregreporting.com/Home/DownloadData" -H "Referer: https://apa.nexregreporting.com/home/trades" --data-raw "isin=&mic=¤tDay=True&type=Trade&pageIndex=1&pageSize=10000" --output outputfileName.zip
Tradeweb	Each channel requires two settings: the channel name and the channel location. These were used as: <pre>wget http://fe7281349437.mifid.io.tradeweb.com/<CHANNEL_NAME>/<CHANNEL_LOCATION>-<YYYYMMDD> <hhmm>.csv</pre>
Sample file paths that were downloaded	
Bloomberg	https://www.bloomberggapa.com/download?key=BAPA-POST-20200428-00:57.csv
Fenics	N/A
LSEG	https://dmd.londonstockexchange.com/dmd/download/TEC/posttrade/TEC-post-2020-04-28T04_30.csv
MarketAxess	N/A
NEX	N/A
Tradeweb	http://fe7281349437.mifid.io.tradeweb.com/Forte_Securities_OTF_Post-Trade_FRTE/UK_FRTE_20200428_0500.csv

¹⁹ Fenics stated that they had a defect which they have since fixed.

²⁰ MarketAxess informed us that other firms have automated the download but did not explain how

4. Post-trade Files Format and Syntax

The following table is a matrix of the content, format and syntax features supported by each group.

	Bloomberg	Fenics	LSEG	MarketAxess	NEX	Tradeweb
Online documentation on file format and syntax	x	x	x	x	x	x
Did we need to contact support for help to download the file, or understand the file format, syntax or content?	x	✓ ²¹	✓ ²²	✓ ²³	✓ ²⁴	✓ ²⁵
Main Delimiter	Comma	Comma	Semicolon	Comma	Comma	Comma
Secondary delimiter (to separate flags)	Comma ²⁶	Semicolon	Comma	Comma ²⁷	Comma ²⁸	Comma ²⁹
All data and syntax compliant with RTS2	✓	✓	✓	x	✓	x
Provide data for all required attributes for all records (detail below in Table 7)	✓	✓	x	x	x	x

Table 4: Format & Syntax Feature Analysis Matrix

Issues with file format, syntax and quality (further detail below in Table 7)	
Bloomberg	<ul style="list-style-type: none"> No issues found
Fenics	<ul style="list-style-type: none"> No issues found
LSEG	<ul style="list-style-type: none"> The price field for the same instrument was reported in both pounds and pence
MarketAxess	<ul style="list-style-type: none"> Time syntax does not match ISO 8061 Files contained non-visible white characters that prevented CSV parser to parse correctly the file. These characters are ignored by Excel but prevented Perl or Python parsing the file correctly. We had to remove such non-visible characters from the files in order to parse them
NEX	<ul style="list-style-type: none"> There are many records having Venue of Execution = ADFL, which is not a known MIC code³⁰

²¹ Clarification to understand the content within column #4 and column #20

²² Clarification to understand prices as we found one instrument reported in both pounds and pence

²³ Clarification required on understanding the secondary delimiter

²⁴ Clarification required on understanding MIC codes and use of "ADFL" which is not on the ISO MIC list

²⁵ Clarification required understanding time syntax as it is inconsistent with RTS2 spec (i.e. the record shows 2020-06-11 18:03:01, whereas ISO 8061 states the syntax should be 2020-06-11T18:03:01). A clarification was also required to clarify their use of 'PNDG' in an incorrect field (see Table 5 for further information)

²⁶ Each flag is specified in its own separate attribute and therefore there no secondary delimiter is required

²⁷ All secondary delimiters are represented within quotation marks e.g. "ILQD,LRGS"

²⁸ All secondary delimiters are represented within quotation marks e.g. "ILQD,LRGS"

²⁹ All secondary delimiters are represented within quotation marks e.g. "TPAC, ILQD"

³⁰ We queried NEX on the incorrect MIC but did not receive a response

Tradeweb	<ul style="list-style-type: none"> • Time syntax does not match ISO 8061 • Price Notation contains PNDG. However, RTS 2 specification requires PNDG to be used in the Price field (not Price Notation) in the case where the price is not available
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Table 5: Format and syntax issues

To derive the relevant fields from each file requires a manual uplift of effort to identify which field corresponds to the relevant RTS2 field. The following table list all attributes in RTS 2 annex II Table 2 (required by MTF or APA) and which column they appear in each file. This is

	Bloomberg	Fenics	LSEG	MarketAxess	NEX	Tradeweb
Trading date and time	1	3	7	5	4	1
Instrument identification code type	2	12	8	4	5	4
Instrument identification code	3	5	9	3	2	5
Price	4	6	5	6	1	6
Venue of execution	5	9	14	12	11	3
Price notation	6	13	10	7	8	11
Price Currency	7	7	11	8	9	12
Notation of the quantity in measurement unit	8	14	17	24	13	16
Quantity in measurement unit	9	15	18	25	12	15
Quantity	10	8	6	9	3	13
Notional amount	11	16	12	10	14	17
Notional currency	12	17	13	11	10	18
Type ³¹		18	19	27	15	19
Publication Date and Time	13	10	15	14	21	2
Venue of publication ³²	14		2		18	
Transaction Identification Code	15	11	4	1	17	20
Transaction to be cleared	16	19	16	15	16	22

Table 6: mappings to RTS2 annex II table 2

How flags in RTS 2 annex II table 3 show in the files	
Bloomberg	There is an attribute for each flag (attributes 17–37). Therefore separate delimiter not required
Fenics	Flags are in attribute 4 and 20. Separated by a comma
LSEG	Flags are in attribute 20. Separated by a comma
MarketAxess	Flags are in attribute 13. Separated by a comma
NEX	Flags are in attribute 19. Separated by a comma
Tradeweb	Flags are in attributes 24 and 25. Separated by a comma

Table 7: mappings to MiFID Flags: RTS2 annex II table 3

³¹ This field is only applicable for emission allowances and emission allowance derivatives.

³² This field is only applicable for use by a CTP

The following table list all attributes that are required (according to RTS 2 annex II table 2) and for each group the detail:

Symbol	Meaning
✓	All records contain a value for the attribute
x	Some records do not contain value for the attribute

	Bloomberg	Fenics	LSEG	MarketAxess	NEX	Tradeweb ³³
	✓	✓	✓	✓	✓	✓
Trading date and time	✓	✓	✓	✓	✓	✓
Instrument identification code type	✓	✓	✓	✓	✓	✓
Instrument identification code	✓	✓	✓	✓	✓	✓
Price	✓	✓	✓	✓	✓	✓
Venue of execution	✓	✓	✓	✓	✓	✓
Price notation	✓	✓	✓	✓	✓	✓
Price Currency	✓	✓	✓	✓	x ³⁴	✓
Quantity	✓	✓	✓	x ³⁵	✓	✓
Notional amount ³⁶	✓	✓	x	x ³⁷	x	✓
Notional currency ³⁸	✓	✓	x	x	x	x
Publication Date and Time	✓	✓	✓	✓	✓	✓
Transaction Identification Code	✓	✓	✓	✓	✓	✓

Table 8: required attributes

³³ Tradeweb stated there is further guidance from ESMA beyond RTS 2 Annex II table 2 or 3 specifically around portfolio compression and weekly aggregation, but did not provide specific examples to allow us to validate

³⁴ See example record in Table 9: Example Records

³⁵ When we queried MarketAxess their understanding is their reporting is correct. However our understanding is that Quantity should be mandatory unless the deferral flag is set on such a record. We found missing Quantity values on records with no deferral flags. See example record in Table 9: Example Records

³⁶ 3 reporting entities did not always populate the Notional amount in the relevant record when the deferral flag was absent. Notional Amount may be deferred as per RTS2 but we expected deferral flags to be set on such records

³⁷ When we queried MarketAxess their understanding is their reporting is correct. However our understanding is that Notional amount should be mandatory unless the deferral flag is set on such a record. We found missing Notional amount values on records with no deferral flags. See example record in Table 9: Example Records

³⁸ 4 reporting entities did not always populate the Notional currency in the relevant record when the deferral flag was absent. Notional currency may be deferred as per RTS2 but we expected deferral flags set on such records

Example records that do not appear to match the RTS specifications:

LSEG	Record	Notes
Notional Amount	2020-06-11T07:00:05.736892Z;5;360287970339693040;107065687146505;115;113;2020-06-11T07:00:05.736534Z;;FR0010040865;;EUR;TRQX;2020-06-11T07:00:05.736892Z;;;	Attribute #12 (Notional Amount) is missing No deferral flag set in attribute #20 (Flags)
Notional Currency		Attribute #13 (Notional Currency) is missing No deferral flag set in attribute #20 (Flags)
MarketAxess		
Quantity	"2006110943580291662","NEW","AU0000083768","ISIN","10-Jun-2020 03:20:41.000000","0.3885","YIEL","AUD","AUD","XOFF","11-Jun-2020 08:43:58.908229","N",,,,,,,,,,,,,,	Attribute #9 (Quantity) is missing No deferral flag set in attribute #13 (Flags)
Notional Amount	"2006101734120197781","NEW","US00724F1012","ISIN","10-Jun-2020 16:34:11.207000","402.05","MONE","USD","100","XOFF","10-Jun-2020 16:34:12.120824",,,,,,,,,,,,,,	Attribute #10 (Notional Amount) is missing No deferral flag set in attribute #13 (Flags)
Notional Currency		Attribute #11 (Notional Currency) is missing No deferral flag set in attribute #13 (Flags)
NEX		
Price Currency	0.001600000000000000,EZG1Q9CV94J6,10000000.0000000000000000,2020-06-11T13:30:15.000000Z,ISIN,,,MONE,USD,TCDS,,,100000.00000000000000000000,,false,4acbc0836c3340f4a7708dd504063d5d,AFDL,,,2020-06-11T13:34:22.662000Z	Price Notation in Attribute #8 is MONE ³⁹ Therefore attribute #9 (Price Currency) should be populated
Notional Amount	13.277500000000000000,FR0000121501,26587.0000000000000000,2020-06-11T12:03:43.652000Z,ISIN,,,MONE,EUR,,XOFF,,,7aa065aa068041738200242f9a646b93,AFDL,,,2020-06-11T12:03:43.889000Z	Attribute #14 (Notional Amount) is missing No deferral flag set in attribute #19
Notional Currency		Attribute #10 is missing No deferral flag set in attribute #19 (Flags)
TradeWeb		
Notional Currency	2020-06-11 06:00:57,2020-06-11 06:01:05,SINT,ISIN,DE000DS6Q4K7,2.570000,,,,,MONE,EUR,1000.000000,Units,0.000000,,0.000000,'3604665308779906883,,N,,,,,,,,,,,,,	Attribute #18 (Notional Currency) is missing No deferral flag set in attribute #24, #25 (Flags)

Table 9: Example Records

³⁹ MONE indicates the price is expressed in a monetary value. Price Currency is applicable if the price is expressed as monetary value

	<pre> transactionToBeCleared; measurementUnit; quantityInMeasurementUnit; type; mifidFlags 2020-04-28T05:00:00.428874Z; 11; 0; 720829742592413760; 11.908; 1299; 2020-04-27T16:58:41.000000Z; ISIN; US45773H2013; MONE; GBP; ; ; XOFF; 2020-04-28T05:00:00.428874Z; 0; ; ; ; ,,,,,LRGS,,,,,,,,,,,,,,,,,,,,,; </pre>
<p>MarketAxess</p>	<pre> "TIC", "Action", "Security Code", "Security Code Type", "Trade Date", "Price", "Price Type", "Price Currency", "Quantity", "Notional Amount", "Notional Currency", "Venue of Execution", "Transparency Flags", "Publication Date", "Clearing Intention", "Price Condition", "Benchmark Price", "Benchmark Price Type", "Benchmark Security Code Type", "Benchmark Security Code", "Benchmark Curve Name", "Benchmark Curve Point", "Time Unit", "Unit of Measure", "Unit of Measure Quantity", "TIC Ref#", "Emissions Type", "Aggregate Count", "2004281321510314973", "NEW", "NL0014456808", "ISIN", "28-Apr-2020 12:21:35.929000", "1", "MONE", "EUR", "200", "200", "EUR", "SINT", , "28-Apr-2020 12:21:51.185318", "N", , </pre>



Data;"

""Intellectual Property Rights"" means copyrights, database rights, patents, patent applications, trademark registrations, trademark rights, trade secrets and all other intellectual property and proprietary information rights as may exist now or hereafter come into existence; all modifications, continuations, renewals and extensions of the foregoing; and all claims, actions, causes of action, damages, costs, expenses, profits, penalties, recoveries and remedies relating to any past, present or future infringement of any of the foregoing; arising under the laws of any country, state or jurisdiction in the world;"

""Party"" means either the Recipient or the Provider(s), ""Parties"" means the Provider(s) and the Recipient;"

""Recipient"" means the person who accesses the Website and / or who downloads the Data;"

""Term"" shall have the meaning set forth in Clause 8.1;"

""Provider"" means the relevant provider of the Data, being either (or both as may be applicable) Trax®, a trading name of Xtrakter Limited (a company incorporated in England and Wales with registered number 01917944) or Trax NL B.V. (a company incorporated in the Netherlands with registered number 69597774) or any other member of the Trax Group, as applicable;"

""Trax Group"" means the Provider and any company that is from time to time (i) a holding company, (ii) a subsidiary or (iii) a subsidiary of a holding company, of Xtrakter Limited and /or Trax NL B.V.. For the purposes of this definition of the Trax® Group the expressions ""holding company"" and ""subsidiary"" have the meanings given to them in section 1159 Companies Act 2006. In these Terms, companies within the Trax® Group are called a 'member' of the Trax® Group; and"

""Website"" means www.traxapa.com or any other website as operated by Provider (or on behalf of the Provider) from time to time which provides access to the Data, including such parts of the Website that may only be accessible via a user name and /or password."

"1.2. References to Clauses are, unless otherwise provided, references to the Clauses of these Terms."

"1.3. A reference to a statute or statutory provision is a reference to it as it is in force for the time being, taking account of any amendment, replacement, extension or re-enactment and includes any subordinate legislation for the time being in force made under it."

"1.4. Unless a right or remedy of a Party is expressed to be an exclusive right or remedy, the exercise of it by a Party is without prejudice to that Party's other rights and remedies."

"1.5. Any phrase introduced by the words ""including"", ""includes"", ""in particular"" or ""for example"" or similar shall be construed as illustrative and shall not limit the generality of the related general words."

"2. Access to the Website and the Data"

"2.1. Access to the Website, and the Data, is subject to the Recipient's compliance with these Terms and such other terms of use as the Provider may impose in relation to access to the Website from time to time."

"2.2. The Recipient agrees that access to the Website and to the Data may be suspended by the Provider temporarily, in the case of system failure, maintenance or repair or for other reasons beyond the Provider's control."

"2.3. The Provider does not guarantee that the Website, or any Data, will always be available or will be uninterrupted."

"2.4. The Provider may from time to time vary the structure, content or delivery format of the Data."

"3. Scope of Use"

"3.1. The Provider hereby grants to the Recipient a non-exclusive, non-transferable, revocable right to access, download and use the Data for the internal business purposes of the Recipient only during the Term, subject at all times to Clause 3.2."

"3.2. The Customer shall not:"

"a) permit access to, copy (save where it may be strictly necessary for production, back-up, contingency and archiving purposes of the Recipient), distribute, sub-license or publish the Data or any part of it (or any Derived Data or any part of it) to any third party unless the provision of the Data or Derived Data to such third party as a result of any of the foregoing activities is conducted completely Free of Charge;"

"b) create or redistribute any Derived Data other than where completely Free of Charge;"

"c) use the Data as a Benchmark or in connection with the determination of a Benchmark or pass the Data or Derived Data to an administrator in connection with the determination of a Benchmark and in particular shall not create, sell, trade, promote or become a party to any financial instrument or financial contract where the amount payable under, or the value of, the financial instrument or contract is determined by reference to a Trax Data product or any Derived Data that is also an index, or to use a Trax Data product or any Derived Data that is also an index for the purpose of measuring the performance of an investment fund, or defining the asset allocation of a portfolio, or computing performance fees;"

"d) place or maintain the Data, or permit the Data to be placed or maintained, in a database accessible by anyone other than the Recipient;"

"e) use, directly or indirectly, the Data for any commercial purpose; and/or"

"f) refresh or download the Data on the Website with a frequency of less than sixty (60) seconds."

"3.3. A failure by a Customer to comply with Clause 3.2 may result in the Customer's access to the Website and the Data being immediately suspended by the Provider, without notice to the Customer."

"3.4. No provision of these Terms shall be deemed to restrict or limit the Provider's right to use, market, sell, distribute, display or otherwise provide access to the Data directly or indirectly anywhere in the world, or enter into contracts, grant licenses or make arrangements with any other party to use, market, sell, distribute, display or otherwise provide access to the Data anywhere in the world."

"3.5. The Recipient shall promptly notify the Provider of any unlawful or unauthorised use of all or any part of the Data of which it becomes aware and shall give full details to the Provider and respond promptly to any request from the Provider for further information."

"4. Recipient's Obligations"

"The Recipient shall ensure that any third parties who are granted access to the Data by the Recipient comply both during the Term and thereafter with these Terms in relation to their access and use of the Data."

"5. Fees"

"5.1. No sums are payable by either Party to the other under or in connection with these Terms."

"5.2. Each Party shall bear its own costs (including connectivity costs) in respect of the supply and receipt of Data under these Terms."

"6. Limitation of Liability"

"6.1. The Recipient acknowledges that information used to provide the Data is obtained from third party sources and has not been independently verified by the Provider."

"6.2. The Recipient agrees that the Data is, to the fullest extent permitted by applicable law, provided without any warranties, representations, guarantees, undertakings, terms or conditions of any kind, whether express or implied, including (but not limited to) those relating to satisfactory quality, quantity, fitness for purpose or use, completeness, accuracy, timeliness and uninterrupted or error-free availability."

"6.3. Subject to Clause 6.6, the Provider excludes any liability to the other Party or to any other third party whether in contract (including under any indemnity or warranty), in tort (including negligence), for breach of statutory duty, or otherwise, arising under or in connection with these Terms for:"

"a) loss of profit;"

"b) loss of revenue;"

"c) loss of anticipated savings;"

"d) loss, destruction or corruption of data;"

"e) loss of contract, business or opportunity;"

"f) loss of goodwill; or"

"g) indirect or consequential losses of any kind whatsoever and however caused, whether or not reasonably foreseeable, reasonably contemplatable, or actually foreseen or actually contemplated, by that Party at the time of entering into these Terms."

"6.4. The Recipient agrees that in no event will the Provider be liable for any and all liability related to the Recipient's obligation to comply with applicable laws and regulations in any jurisdiction, including, but not limited to, all relevant privacy, securities and financial services laws and regulations."

"6.5. The Parties acknowledge that no fees are to be paid under these Terms and accordingly, Subject to Clause 6.6, the Trax Group's total liability whether in contract (including under any indemnity or warranty), in tort (including negligence), for breach of statutory duty, or otherwise, arising under or in connection with these Terms for any losses incurred, claimed or suffered by the other Party shall be limited for all claims in aggregate to £100 (one hundred pounds)."

"6.6. The exclusions in this Clause 6 shall apply to the fullest extent permitted by applicable law to acts and omissions of the Trax Group and any of the Providers' or the Trax Group's representatives but nothing in these Terms limits or excludes a Party's liability:"

"a) to the extent that it cannot be legally limited or excluded by law;"

"b) for death or personal injury arising out of its negligence; and"

"c) for losses suffered by the other Party arising out of the first Party's fraud or fraudulent statement."

"7. Intellectual Property Rights"

"7.1. The Provider hereby grants to the Recipient a royalty-free, non-exclusive, non-transferable license for the Term to use the Data supplied in accordance with these Terms only."

"7.2. Neither Party shall acquire any right, title or interest in or to the Intellectual Property Rights of the other or its licensors."

"8. Term and Termination"

"8.1. The ""Term"" shall commence on the Effective Date and end on the date on which these Terms are terminated in accordance with either Clause 8.2 or Clause 8.3."

"8.2. The Recipient shall have the right to terminate these Terms at any time upon written notice to the Provider, to be sent to the registered address of the applicable Provider ("Notice") except that any continued access to, receipt or downloading or use of the Data, or access to the Website after the issue of the Notice shall be deemed to constitute a revocation of such termination."

"8.3. The Provider shall have the right to suspend or terminate these Terms and access to the Website at its option for any reason at any time with immediate effect, with or without cause."

"9. Assignment and Sub-contracting"

"The Recipient may not assign, sub-license, sub-contract, mortgage or otherwise transfer any of its rights or obligations under these Terms to a third party without the prior written consent of the Provider."

"10. Amendments"

"The Provider may amend the Terms upon notice in writing at any time, and continued access to the Website and/or usage of the Data following delivery of revised terms and conditions shall constitute deemed acceptance of such revised terms."

"11. Third Party Rights"

"No element of these Terms is intended to confer a benefit on or to be enforceable by, any person who is not a party to these Terms. Accordingly, a person who is not a party to these Terms has no right under the Contracts (Rights of Third Parties) Act 1999 to enforce or to enjoy the benefit of these Terms."

"12. Survivorship"

"The rights and obligations under provisions of these Terms which expressly or by their nature survive termination shall remain in full force and effect, including without limitation Clause 3.2 (Scope of Use), Clause 4 (Recipient's Obligations), Clause 6 (Limitation of Liability), Clause 7 (Intellectual Property Rights), and Clause 14 (Governing Law and Jurisdiction)."

"13. Entire Agreement"

"These Terms constitute the entire agreement between the Parties relating to the subject matter hereof, and supersede all prior agreements, purchase order terms, arrangements and understandings between the Parties relating to the subject matter hereof. Each Party acknowledges that, in entering into these Terms, it does not rely on, and shall have no remedies in respect of, any statement, promises, assurances, warranties, representations or understandings (whether oral or written, and whether made innocently or negligently) made by or on behalf of the other Party (or any of its representatives) that are not set out in these Terms."

"14. Governing Law and Jurisdiction"

"These Terms and any non-contractual obligations arising out of or in connection it are governed by English law. The Parties irrevocably agree that the courts of England are to have exclusive jurisdiction to settle any disputes which may arise out of or in connection with these Terms and that accordingly any proceedings arising out of or in connection with these Terms shall be brought in such courts. Each of the Parties irrevocably submits to the jurisdiction of such courts and waives any objection to proceedings in any such court on the ground of venue or on the ground that proceedings have been brought in an inconvenient forum."

<p>NEX</p>	<pre> price, instrumentCode, quantity, tradeDateTime, instrumentType, price2, swapPoint, priceNotation, priceCurrency, notionalCurrency, venueExecution, quantityUnit, notionQuantityPeriod, notionalAmount, emisType, transactionCleared, transactionIdentificationCode, venuePublication, apaConditionFlag, pricePending, publicationDateTime 49.940000000000000000, EZ1K82BXSRS57, 1.000000000000000000, 2020-06-04T12:29:40.427000Z, ISIN, , , MONE, PHP, USD, NEXS, , , 1000000.000000000000000000, , false, 231e1701d10e4f449e62bcd07b3a6ce8, ADFL, , , 2020-06-04T12:29:40.451000Z </pre>
<p>Tradeweb⁴⁰</p>	<pre> "FileName"="UK_FRTE_20200428_0500 "FileDate"="20200428 "FileTime"="05:00 "FileExpiration"="20200429 05:00 "FileSequence"="871" "DataDelimiter"="," TRADE DATE EXECUTION TIME, PUBLICATION DATE, PUBLICATION TYPE, VENUE OF EXECUTION, INSTRUMENT ID TYPE, ISIN, ASSET CLASS, SUB ASSET CLASS, PRICE, MONE, PERC, YIEL, BAPO, PRICE NOTATION, PRICE CURRENCY, </pre>

⁴⁰ Tradeweb have informed us they have since updated (as of August 2020) the T&Cs in the report



QUANTITY,
QUANTITY TYPE,
QUANTITY IN MEASUREMENT UNIT,
QUANTITY NOTATION MEASUREMENT UNIT,
NOTIONAL AMOUNT,
NOTIONAL CURRENCY,
TYPE,
PUBLICATION ID,
ORIGINAL ID,
TRANSACTION TO BE CLEARED,
TRANSACTION COUNT,
FLAGS,
SUPPLEMENTARY DEFERRAL FLAGS,
NO SUBMITTED TRANS (TPCC),
SUBMITTED NOTIONAL (TPCC),
SUBMITTED NOTIONAL 2 (TPCC),
NOTIONAL CURRENCY 2 (TPCC),
NO TERMINATED/REDUCED TRANS (TPCC),
TERMINATED/REDUCED NOTIONAL (TPCC),
TERMINATED/REDUCED NOTIONAL 2 (TPCC),
REPLACEMENT NOTIONAL (TPCC),
REPLACEMENT NOTIONAL 2 (TPCC),
SUB ASSET CLASSES (TPCC),
REPLACEMENT SUB ASSET CLASSES (TPCC),
REPLACEMENT CURRENCIES (TPCC),
NO REPLACEMENT TRANS (TPCC)

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	<p>"Terms & Conditions"</p> <p>"The download and use of the MiFID II delayed transparency data (the "MiFID II Data") is subject to the following licence terms and conditions."</p> <p>"The MiFID II Data is available free of charge for the recipient's internal use for query and display use purposes, for example, to perform price discovery or research executed price and volume activity for MiFID instruments."</p> <p>"This free use excludes using the MiFID II Data in derived form, e.g. to produce an index, benchmark or evaluated price; as fuel for an algorithm; or tool other than outlined in the examples above."</p> <p>"Under these terms and conditions, recipients may not display or redistribute MiFID II Data or any derived data to a third party to whom the recipient charges any fees, including, without limitation: (i) a general fee for accessing recipient's services; (ii) redistribution fees; (iii) a bundled fee; (iv) terminal or portal fees including access to the delayed data or derived data; and / or (v) fees for any added-value services created, or derived from any or all of the MiFID II Data or such derived data."</p> <p>"The MiFID II Data intended for free use under these terms and conditions is limited to the MiFID II Data that is not more than 24 hours old in accordance with the guidance provided: MiFIR/MiFID ESMA Q&A responses in document ESMA70-872942901-35. [https://www.esma.europa.eu/sites/default/files/library/esma70-872942901-35_gas_transparency_issues.pdf] Tradeweb reserves the right to charge fees for the use and redistribution of historical data (MiFID II Data older than 24 hours)."</p> <p>"If the recipient is using the MiFID II Data for a purpose not permitted under these terms and conditions of use, such use will be liable to a fee. If you would like to learn more about our MiFID market data products, please contact TWMiFMD@tradeweb.com for more information."</p> <p>"The URL and access rights granted to you is for your personal use for the retrieval of the machine readable MiFID II Data that is licensed in accordance with the above terms and conditions. Tradeweb reserves the right to revoke access to the MiFID II Data where recipients do not comply with any of the above terms and conditions."</p> <p>"The personal data that you provide in registering for access is used only for the purposes of managing your login account and Tradeweb may contact you regarding your usage of the MiFID II Data. By registering, you agree to the terms of the Tradeweb Privacy Policy. To learn more about how we use personal data and understand your rights, please review the Privacy Policy here [https://www.tradeweb.com/privacy-policy/]."</p>
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Table 10: Sample content

Header and Footer Format

The following table list all attributes in that are in the post-trade files but are not listed RTS 2 annex II table 2 or table 3

Group	Attribute	Attribute number
LSEG	distributionTime	1
	instrumentId	3
Fenics	CFI Code	1
	ISIN	2
MarketAxess	Action	1
	Price Condition	16
	Benchmark Price	17

	Benchmark Price Type	18
	Benchmark Security Code Type	19
	Benchmark Security Code	20
	Benchmark Curve Name	21
	Benchmark Curve Point	22
	Time Unit	23
	TIC Ref#	26
	Aggregate Count	28
NEX	Price2	6
	SwapPoint	7
	PricePending	20
Tradeweb	PUBLICATION TYPE	3
	ASSET CLASS	7
	SUB ASSET CLASS	8
	MONE	10
	PERC	11
	YIEL	12
	BAPO	13
	QUANTITY TYPE	17
	ORIGINAL ID	24
	TRANSACTION COUNT	26
	SUPPLEMENTARY DEFERRAL FLAGS	28
	NO SUBMITTED TRANS (TPCC)	29
	SUBMITTED NOTIONAL (TPCC)	30
	SUBMITTED NOTIONAL 2 (TPCC)	31
	NOTIONAL CURRENCY 2 (TPCC)	32
	NO TERMINATED/REDUCED TRANS (TPCC)	33
	TERMINATED/REDUCED NOTIONAL (TPCC)	34
	TERMINATED/REDUCED NOTIONAL 2 (TPCC)	35
	REPLACEMENT NOTIONAL (TPCC)	36
	REPLACEMENT NOTIONAL 2 (TPCC)	37
	SUB ASSET CLASSES (TPCC)	38
REPLACEMENT SUB ASSET CLASSES (TPCC)	39	
REPLACEMENT CURRENCIES (TPCC)	40	
NO REPLACEMENT TRANS (TPCC)	41	

Table 11: non-RTS 2 attributes

About Etrading Software

Etrading Software is a trusted and independent professional services firm, assisting industry to simplify the market structure and improve operational efficiency through the creation and propagation of new technology standards and services. We assist stakeholders to accelerate the adoption of these standards via open source utility models and services.

Additional information and case studies are available from the Etrading Software website <http://www.etradingsoftware.com>

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